AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

6 October 2022

Rick Chellman, Planning Board Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Application for Subdivision Approval, Tax Map 218, Lot 5, 201 Kearsarge Way

Dear Chair Chellman and Planning Board members:

On behalf of Richard P. Fusegni we submit herewith the attached package for the ***subdivision of one lot into three lots*** at the above-mentioned site. In support thereof, we are submitting a subdivision plan set and associated documents for review and approval. The property is located at 201 Kearsarge Way and is depicted on Portsmouth Tax Map 218 as Lot 5. The lot is in the Single Residence B (SRB) District. The lot is currently developed with a single family dwelling. The existing dwelling will be demolished in advance of constructing on the new lots. A *nearly identical project* received Planning Board approval on February 27, 2020. This project (also) required variance relief for Lot 3 to have 83 feet of frontage where 100 feet is required. The relief was granted by the Portsmouth ZBA for this project on August 16, 2022.

The proposal is to divide the property into three lots to create two additional dwelling units to add to the available housing in the city. Proposed Lots 1, 2, and 3 will contain single family residences. To aid in the analysis of the proposed subdivision conceptual home designs (footprints) are depicted on the proposed lots; and site analysis is performed on using these locations and dimensions. Lots 1 and 2 will have parking in 2 car garages; Lot 3 will have a one car garage with one exterior parking space. Lots 1 and 2 will be accessed from Birch Street; while Lot 3 is accessed from Kearsarge Way.

There is one easement as well as a conservation area proposed with this subdivision. The city desires an easement for the snow plowing vehicles maintaining Birch Street to be able to turn around. Easement Area “A” is for this purpose and is shown on the plan. A proposed deed is included in the submission. The applicant on his own wishes to preserve the rear portion of the property as treed open space and is proposing a Conservation Area that will be protected by the dedication of a Restrictive Covenant in the location shown on the subdivision plan, and the proposed deed is attached. These features are accurately represented on the Subdivision Plan which will be recorded as a condition of approval.

Additionally the project shows proposed utility improvements in Birch Street. These utilities will be an improvement over the current sub-standard utilities. The size and location of Birch Street is remaining essentially as-is, however a more formal driveway approach to Tax Map 218, Lot 2 is provided.

The following plans are included in our submission:

- Cover Sheet – This shows the Development Team, Legend, Site Location, and Site Zoning.
- Subdivision Plan – This plans show the proposed lot division lines and areas, proposed easement and covenant locations, dimensional requirements, and shows the variance relief granted by the Portsmouth ZBA for this project.
- Existing Conditions Plan C1 – This plan shows the existing conditions on the parcel.
- Subdivision Site Plan C1A – This plan shows conceptual building locations and proposed driveway locations. Also, a proposed retaining wall on Lots 2 and 3 is shown. The retaining wall creates a useable rear yard area and also provides space (under the yard area) for a drainage detention system.
- Grading and Erosion Control Plan C2 – This plan shows the conceptual layout of the homes with proposed grading, erosion control, and run-off treatment / mitigation. The proposed retaining wall details are shown on this plan.
- Utility Plan C3 – This plan shows the proposed site utilities including sewer, electric, communication and water service connections.
- Utility Plan and Profile P1 – This plans shows the proposed utility improvements in Birch Street. Improvements include new water and sewer lines.
- Demolition Plan C4 – This plan shows site demolition. The existing single family residence will be removed from the property.
- Detail Sheets D1 to D6 – These plans show the associated construction details.

Also included herewith is the following Supplemental Information to assist in the review of the project: Subdivision Checklist, Easement and Restrictive Covenant example deeds, and a complete Drainage Analysis based on potential site development.

The project was vetted by the Technical Advisory Committee at the October 4 Technical Advisory Committee meeting. The Committee voted to recommend that the Planning Board approve the project subject to stipulations. The stipulations are repeated below with our response in **bold** text:

1. Applicant will confirm with Assessing Department that previously assigned addresses and Map and Lot numbers are still valid. **This request has been submitted to the Assessing Department.**
2. A declarative covenant or some other mechanism shall be developed and recorded to preserve areas noted for conservation on proposed lots. **The proposed Restrictive Covenant deed is attached for review.**
3. Water service will use existing 2” water main. **The Utility Plan C3 has been updated.**
4. Utility plan will be updated to depict the conduit feeding electric and communications will be no closer than 8 feet from the existing manhole and will be reviewed by DPW. **See Note 7 on Utility Plan C3.**
5. A letter detailing plan changes and updates will be submitted with the plan resubmission. **This letter serves to detail the changes. Also added was Note 8 on Utility Plan C3, and a revised saw cut line on the Birch Street Plan and Profile P1 to address other TAC comments.**

We request that this application be placed on the agenda for the October 20th Planning Board Meeting.

We look forward to your review of this submission and our in person presentation at the October Planning Board meeting. We respectfully request the Planning Board approve the proposed subdivision. Thank you for your time and attention to this proposal.

Sincerely,

John Chagnon

John R. Chagnon, PE
CC: Richard Fusegni, Chris Mulligan

AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

4 October 2022

Peter Stith, TAC Committee Chair
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Application for Subdivision Approval, Tax Map 218, Lot 5, 201 Kearsarge Way

Dear Peter and TAC members:

We are in receipt of the TAC staff comments email from the city dated October 3. On behalf of Richard P. Fusegni we submit our response in advance of the TAC Meeting today. The comments are repeated below, with our response in bold text.

1) Please address the change in lot area from the original approval to the new request. **Please see Note 8 on the Subdivision Plan. This plan shows the lot area including the abandoned right of way. Please note the abutting properties fence to the middle of the abandoned street.**

2) Please contact the Assessing Department for preliminary Map Lot and Block numbers and Addresses. **We show the assigned Map and Lot numbers from the previous submission. We will verify these with the Assessor.**

3) Please provide an easement plan and table with unique identifiers. **The proposed access easement to the city (we will update the label) is shown on the subdivision plan. The easement identifiers are shown in a table as E1. E2, etc. The proposed Conservation Easement lines NOT coincident with exterior property lines will be revised to a label identifier, and a Table created. Showing the easements on the subdivision plan we feel is the best way to identify the property burdens for all future examiners and we request concurrence to leave this as one plan.**

4) No new water main. Use existing 2". **The end of, and extent of the 2" pipe on Birch Street needs to be identified as we understand it does transition to a 1" pipe. Once identified we can show an upgrade to 2" pipe for the remainder of the run to the flushing hydrant. Lot 3 will be re-served by the water line to the existing residence. We understand that is a ¾ inch service.**

5) No excavation in City Street. Kearsarge Way under moratorium. Utilities will need to be reconfigured. **Since there would only be a slight impact at the intersection to set the required manhole for the new sewer main, and the saw cut line could be bowed out and align with the repaving of birch Street, we ask that this be allowed to move forward.**

We look forward to your review of this submission and our in person presentation at the October TAC meeting. We respectfully request approval the proposed subdivision. Thank you for your time and attention to this proposal.

Sincerely,

John Chagnon

John R. Chagnon, PE
CC: Richard Fusegni, Chris Mulligan

EASEMENT DEED

Richard P. Fusegni, a single person, with a mailing address of 201 Kearsarge Way, Portsmouth, NH 03801, (herein called "Grantor") for consideration paid, grants to the **CITY OF PORTSMOUTH**, a municipal body with a mailing address of 1 Junkins Avenue, Portsmouth New Hampshire 03901 (hereinafter "Grantee"), with **QUITCLAIM COVENANTS,** upon the conditions hereafter set forth, a permanent access easement (hereinafter the "Easement") over and upon land of the Grantor located in the City of Portsmouth, County of Rockingham State of New Hampshire.

Said Easement being shown as "Proposed Access Easement to the City of Portsmouth." on a plan entitled, "Subdivision Plan Tax Map 218-Lot 5, Owner: Richard P. Fusegni, 201 Kearsarge Way, City of Portsmouth, County of Rockingham, State of New Hampshire", prepared by Ambit Engineering, Inc. dated June 2022 and recorded in the Rockingham County Registry of Deeds as Plan #_____ said Easement being more particularly bounded and described as follows:

Beginning at a point on the northerly side of Birch Street which is N 46°02'10" E a distance of 10.01 feet from an iron rod at an angle point in Birch Street; thence turning and running over and across the land of the Grantor N 48°13'46" E a distance of 19.25 feet; N 41°46'14" E a distance of 23.59 feet and S 46°58'50" E a distance of 26.65 feet to the northerly side of Birch Street; thence running along the northerly side of Birch Street on a curve to the left with an arc length of 24.29 feet, a radius of 70.00 feet, and a delta angle of 19°52'46" to the point of beginning

The above described easement containing 519 square feet, more or less (hereinafter "Easement Area").

DRAFT

Grantor grants to Grantee such access easement for all purposes for which roads are customarily used, including but not limited to vehicular, pedestrian and equipment access and travel and the installation and maintenance of utilities above the Easement Area. The Grantee shall have the obligation to construct, maintain in good order and promptly repair damage to all portions of the roadway built within the Easement Area, at Grantee's sole cost and expense. Any land or property of the Grantor disturbed or damaged by the Grantee's installation, maintenance or repair of the roadway within the Easement Area, shall be immediately restored or replaced to the condition of such land of property prior to the disturbance or damage. The Grantee shall be sole responsibility for any liability, damage, costs, or loss to persons, including death, and property, of any kind whatsoever, arising from or relating to the installation, maintenance, repair and use of the Easement Area, and hereby agrees to indemnify, defend and hold harmless the Grantor from any and all such claims, causes, demands and actions.

Reserving to Grantor, their successors and assigns, and Grantee, their successors and assigns, access and utility rights in the Easement Area, together with the use and enjoyment of said Easement Area for such purposes only as will in no way interfere with the perpetual use thereof by the Grantee, its successors and assigns for the purposes contained herein; and to that end, the Grantor, its successors and assigns shall not erect any building, structures sidewalks, parking areas, surface curbs, landscaping and other similar improvements on said Easement Area; provided however, that Grantor may install underground utility structures or systems within the Easement Area which do not interfere with Grantee's use of the Easement Areas and Grantor reserves all rights to cross the Easement Area and all rights and easements necessary or desirable for the use, occupation, repair, maintenance and replacement of any improvements now or hereafter located upon Grantor's remaining land.

This Easement Deed and the rights and privileges granted hereby are perpetual and shall run with the land.

The easements, covenants and conditions herein shall be binding and/or to the benefit of the parties hereto, their heir, successors and assigns.

Meaning and intending to convey an easement over a portion of the premises conveyed to Richard P. Fusegni by Elda Fusegni dated September 5, 2013 and recorded on September 6, 2013 in the Rockingham County Registry of Deeds at Book 5476 Page 2661.

Executed this ____ day of October, 2022.

_____ _____

Witness: Richard P. Fusegni

DRAFT

State of New Hampshire
County of Rockingham

This instrument was acknowledged before me on this ____ day of October, 2022 by Richard P. Fusegni.

_____
Notary Public/Justice of the Peace

DRAFT

DECLARATION OF RESTRICTIVE COVENANTS

KNOW ALL PERSONS BY THESE PRESENTS that **Richard P. Fusegni**, an individual with an address of 201 Kearsarge Way, Portsmouth, NH 03801, (hereinafter, the "Declarant") being the owner of property located on the westerly side of Kearsarge Way, in the City of Portsmouth, being depicted as City of Portsmouth Tax Map 218, Lots 5-2. 5-3 and 5-4 on the plan entitled "Subdivision Plan, Tax Map 218 – Lot 5, Owner Richard P. Fusegni, 201 Kearsarge Way, City of Portsmouth, County of Rockingham, State of New Hampshire" dated October ___, 2022, prepared by Ambit Engineering, Inc., and recorded at the Rockingham County Registry of Deeds as Plan No. _____, (hereinafter, the "Plan") does hereby declare that the parcels identified on said Plan as Tax Map 218, Lots 5-2, 5-3 and 5-4 are subject to restrictive covenants, as follows:

"Lot Owners" shall refer to the Owners, or their successors and assigns, of Tax Map 218, Lots 5-2. 5-3 and 5-4 as further described above shown on the Plan.

ARTICLE I
SUBJECT PROPERTY

The provisions, conditions, covenants, and restrictions as set forth herein shall run with and bind, Lots 5-2. 5-3 and 5-4.

ARTICLE II
RESTRICTIVE COVENANTS FOR CONSERVATION

The relevant portion of the Lots described herein for purposes of this Article II is shown on the Plan as a "Conservation Area" (hereinafter, the "Conservation Area") bounded and described as follows:

On Map 218, Lot 5-2, beginning at a point on the southwesterly side of Lot 3 at Lot 2; thence turning and running along Lot 2 N 52°11'14" W a distance of 93.06 feet to a point; thence

N 55°04'52" W a distance of 24.98 feet to the centerline of paper street formerly known as Oak Street; thence turning and running along said centerline N 34°55'08" E a distance of 80.06 feet to a point; thence turning and running S 55°04'52" E a distance of 24.98 feet to land now or formerly of Jennifer K. Armstrong; thence running along said Armstrong land S 46°41'00" E a distance of 93.86 feet to point; thence turning and running across Lot 3 S 34°51'05" W a distance of 71.05 feet to the point of beginning.

On Map 218, Lot 5-3, beginning at a point on the southwesterly side of Lot 2 at Lot 1; thence turning and running along Lot 1 N 55°04'52" W a distance of 92.80 feet to a point; thence N 55°04'52" W a distance of 24.98 feet to the centerline of a paper street formerly known as Oak Street; thence turning and running along said centerline N 34°55'08" E a distance of 62.05 feet to the northwest corner of Proposed Lot 3; thence turning and running along Lot 3 S 55°04'52" E a distance of 24.98 feet and S 52°11'14" E a distance of 93.06 feet to point; thence turning and running across Lot 2 S 35°03'15" W a distance of 57.36 feet to the point of beginning.

On Map 218, Lot 5-4, beginning at an iron rod on the southwesterly side of Proposed Lot 1 at land now or formerly of David T. Murray; thence turning and running along land of Murray N 45°48'00" W a distance of 94.00 feet to an iron rod; thence N 54°23'09" W a distance of 24.98 feet to the centerline of paper street formerly known as Oak Street; thence turning and running along said centerline N 34°55'08" E a distance of 65.59 feet to the northwest corner of Proposed Lot 2; thence turning and running along Lot 2 S 55°04'52" E a distance of 24.98 feet and S 55°04'52" E a distance of 92.80 feet to point; thence turning and running across Lot 2 S 34°56'31" W a distance of 81.06 feet to an iron rod and the point of beginning.

The following covenants are created for the purpose of preserving and protecting in perpetuity the natural vegetation, soils, hydrology, natural habitat and scenic and aesthetic character of the Conservation Area so that the Conservation Area retains its natural qualities and functions.

USE LIMITATIONS:

A. The Conservation Area shall be maintained in perpetuity in an undeveloped and natural condition without there being conducted thereon any industrial or commercial activities, except as described below, and provided that such uses shall not degrade the conservation purposes of this Declaration. No use shall be made of the Conservation Area, and no activity shall be permitted thereon, which is inconsistent with the intent of this Declaration, that being the perpetual protection and preservation of the Conservation Area.

B. The Conservation Area shall not be subdivided and none of the individual tracts that together comprise the Conservation Area shall be conveyed separately from the individual Lots in which they are situated.

C. No structure or improvement, including, but not limited to, a dwelling, any portion of a septic system, tennis court, swimming pool, dock, tower, commercial facility, conduit or utility line, billboard or other means of advertising display, driveway or road made of asphalt or other impervious surface, or other temporary or permanent structure or improvement, shall be constructed, placed, or introduced onto the Conservation Area. However, with the approval of the Planning Director for the City of Portsmouth, ancillary structures and improvements including, but not limited to, a road, dam, fence, bridge, culvert, barn, maple sugar house, or shed may be constructed, placed, or introduced onto the Conservation Area only as necessary in the accomplishment of the agricultural, forestry, conservation, or noncommercial outdoor recreational uses of the Conservation Area and provided that they are not detrimental to the scenic, agricultural, historic, recreational, wildlife habitat protection purposes of this Declaration. Any such ancillary structure or improvement shall be constructed in a manner least detrimental to the conservation purposes of this Declaration. This provision shall not apply to any preexisting utility easements.

D. There shall be no dumping, injection, burning, or burial of refuse, trash, rubbish, debris, junk, waste, man-made materials or materials then known to be environmentally hazardous, including vehicle bodies or parts, or other similar substances in or upon the Conservation Area.

ARTICLE III
AMENDMENTS

This Declaration may be amended from time to time with a written instrument duly executed by all of the Lot Owners only with the express written consent of the City of Portsmouth or its Planning Board.

ARTICLE IV
ENFORCEMENT

Each Lot Owner, the Declarant or the City of Portsmouth may, but are not obligated to, enforce the provisions of this Declaration. Failure by any of the aforesaid parties to enforce any of the provisions of this Declaration or any amendment thereto shall, in no event, be deemed a waiver of the right to do so thereafter as to the same breach or as to one occurring prior or subsequent thereto. In the event that any party subject to the terms of this Declaration is required to resort to judicial intervention in order to enforce its terms, the prevailing party in any such action shall be entitled to its costs and reasonable attorneys' fees incurred in connection therewith.

DRAFT

ARTICLE V
GOVERNING LAW

It is agreed that this instrument and the Lot Owners' rights and obligations hereunder shall be governed by, construed and enforced in accordance with the laws of the State of New Hampshire.

If any provision of this Declaration, or the application thereof to any person or circumstance, is found to be invalid by a court of competent jurisdiction or otherwise, the remainder of the provisions of this Declaration or the application of such provision to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby unless the purpose of this Declaration can no longer be achieved in the absence of the invalid provision.

Any deed conveying one of the above referenced parcels which is subject to this Declaration shall hereafter include reference to this Declaration incorporating the provisions, conditions, covenants, and restrictions contained herein.

This Declaration and provisions, conditions, covenants, and restrictions contained herein shall apply to all present and future owners, tenants, and occupants of any of the Lots and to all other persons who shall at the time use the Lots or any portion thereof. The mere acquisition or rental of any Lot or the mere act of occupancy of any Lot will signify that this Declaration is accepted, ratified and will be complied with. This Declaration and provisions, conditions, covenants, and restrictions contained herein shall run with the land and with each Lot and shall be binding thereon in perpetuity.

Meaning and intending to establish the above-described easements over and across a portion of the property conveyed to Richard P. Fusegni by deed recorded at Rockingham County Registry of Deeds at Book 5476, Page 2661.

By: _____

Richard P. Fusegni, Declarant

STATE OF NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

Personally appeared Richard P. Fusegni and acknowledged that he executed the above instrument as his free act and deed, before me, this _____ day of October, 2022.

_____
Notary Public
My Commission Expires:

DRAFT

DRAINAGE ANALYSIS

PROPOSED SUBDIVISION

201 KEARSARGE WAY
PORTSMOUTH, NH

PREPARED FOR
RICHARD FUSEGNI

20 SEPTEMBER 2022

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7651
LICENSED
PROFESSIONAL ENGINEER

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road, Unit 3
Portsmouth, NH 03801
Phone: 603.430.9282; Fax: 603.436.2315
E-mail: jrc@ambitengineering.com
(Ambit Job Number 2258)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed subdivision of a residential lot and associated future site improvements at 201 Kearsarge Way in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 218 as Lot 5. The project proposes to subdivide the existing single lot into three lots. The total size of all the lots together is 52,265 square-feet (1.200 acres). The size of the total drainage area is 63,570 square-feet (1.459 acres).

The subdivision will provide for the future construction of a single family residence on each lot, with associated landscaping, utilities, and driveways. The new buildings will be serviced by public water and sewer. The development has the potential to increase stormwater runoff to adjacent properties, and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no increase in peak runoff from the site as a result of this project.

The hydrologic modeling utilized for this analysis uses the "Extreme Precipitation" values for rainfall from The Northeast Regional Climate Center (Cornell University), with a 15% increase to comply with local ordinance.

INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, planning board, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 218 as Lot 5. Bounding the site to north is a single family residence and Mangrove Street. Bounding the site to east is Kearsarge Way and single family residences. Bounding the site to south is Birch Street and a single family residence. Bounding the site to the west is forested land and beyond is the City of Portsmouth Spinnaker Point Recreation Center. The property is situated in the Single Residence B (SRB) District. A vicinity map is included in the Appendix to this report. The proposed subdivision will demolish an existing single family residence and associated driveway. This report includes information about the existing site and the proposed subdivision necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre-development and post-development watersheds, subcatchment areas and calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management and treatment structures and methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

METHODOLOGY

"Extreme Precipitation" values from The Northeast Regional Climate Center (Cornell University) have been used for modeling purposes. These values have been used in this analysis, with a 15% addition to comply with local ordinances.

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 “Hydrology” and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) “Urban Hydrology for Small Watersheds” methods. This report uses the HydroCAD version 10.20 program, written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. Rainfall data and runoff curve numbers are taken from “The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.”

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.

The storm events used for the calculations in this report are the 2-year, 10-year, 25-year, and 50-year (24-hour) storms. Watershed basin boundaries have been delineated using topographic maps prepared by Ambit Engineering and field observations to confirm.

SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire the site is made up of one soil type:

Soil Symbol	Soil Name and Slopes
799	Urban land – Canton Complex (3-15% slopes)

Urban land - Canton complex is well drained with a stated depth to restrictive feature of more than 80 inches. Due to the observed presence of ledge, the site is assumed to have a Hydrological Soil Group of C.

The physical characteristics of the site consist of flat (1-3%) to moderate (10-20%) grades that generally slope downward from the high point at the center of the lot to the north (rear) and southeast (front). Elevations on the site range from 62 to 74 feet above sea level.

The existing site is partially developed and includes an existing building located at the front of the lot, with an asphalt driveway. Vegetation around the developed portion of the lot consists of established grasses, shrubs, and trees. The rear of the lot is mostly undeveloped, forested land.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0259F (effective date January 29, 2021), the project site is located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix.

PRE-DEVELOPMENT DRAINAGE

In the pre-development condition, the site has been analyzed as three watershed basins (E1, E2 and E3) based on localized topography and discharge location. Subcatchment E1 contains the southern half of the lot and drains to the southeast. Subcatchment E2 contains the northern half of the lot and drains north. Subcatchment E3 contains a portion of the eastern edge of the lot and drains east. Subcatchments E1, E2, and E3 drain to discharge points DP1, DP2, and DP3 respectively.

Table 1: Pre-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	To Design Point
E1	13,564	5.0	80	1.29	2.25	DP1
E2	45,007	6.1	72	3.19	6.15	DP2
E3	4,999	5.0	78	0.45	0.80	DP3

POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as five subcatchment basins, (P1, P2, P2a, P2b, and P3). Subcatchments P2,

P2a and P2b combined match the area of subcatchment E2, and drain to Discharge Point DP2. Subcatchments P2a and P2b contain part of the new development and each drain to subsurface StormTech storage units before running over a buffer area. Subcatchments P1 and P3 contain the rest of the development, and match the discharge points of E1 and E3, respectively. Subcatchment P1 drains to DP1, and P3 drains to DP3.

Table 2: Post-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
P1	11,693	5.0	83	1.20	2.03	DP1
P2	39,185	6.1	72	2.78	5.35	DP2
P2a	4,381	5.0	80	0.42	0.73	DP2
P2b	4,392	5.0	82	0.44	0.75	DP2
P3	3,921	5.0	80	0.37	0.65	DP3

The overall impervious coverage of the subcatchment areas analyzed in this report **increases** from 7,288 s.f. (11.46%) in the pre-development condition to 9,939 s.f. (15.63%) in the post-development condition. The project proposes the construction of subsurface StormTech storage units on site, reducing the peak flow discharge from the site.
Table 3 shows a summary of the comparison between pre-developed flows and post-developed flows for each design point. The comparison shows the reduced flows as a result of the StormTech units.

Table 3: Pre-Development to Post-Development Comparison

	Q2 (CFS)		Q10 (CFS)		Q50 (CFS)		
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Description**
DP1	0.67	0.66	1.29	1.20	2.25	2.03	Birch Street
DP2	1.43	1.41	3.19	3.02	6.15	6.04	North edge of lot
DP3	0.23	0.19	0.45	0.37	0.80	0.65	Kearsarge Way

Note that all post-development peak discharges are either equivalent or less than the existing peak discharges.

OFFSITE INFRASTRUCTURE CAPACITY

There is no Town infrastructure utilized in this project in regard to storm drainage. All retention and routing to the final destination of the stormwater is done on-site, therefore no impact to city infrastructure is anticipated.

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is moderate due to the presence of gravel areas that are highly erodible. During construction, the major potential for erosion is wind and stormwater runoff. The contractor will be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire." Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

- Silt Soxx (or approved alternative) located at the toe of disturbed slopes
- Stabilized construction entrance at access point to the site
- Temporary mulching and seeding for disturbed areas
- Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by permanent seeding, landscaping, and surfacing the access drives and parking areas with asphalt paving and other areas with impervious walkways.

CONCLUSION

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the StormTech storage system, the post-development runoff rates are reduced to below the pre-development runoff rates. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project.

REFERENCES

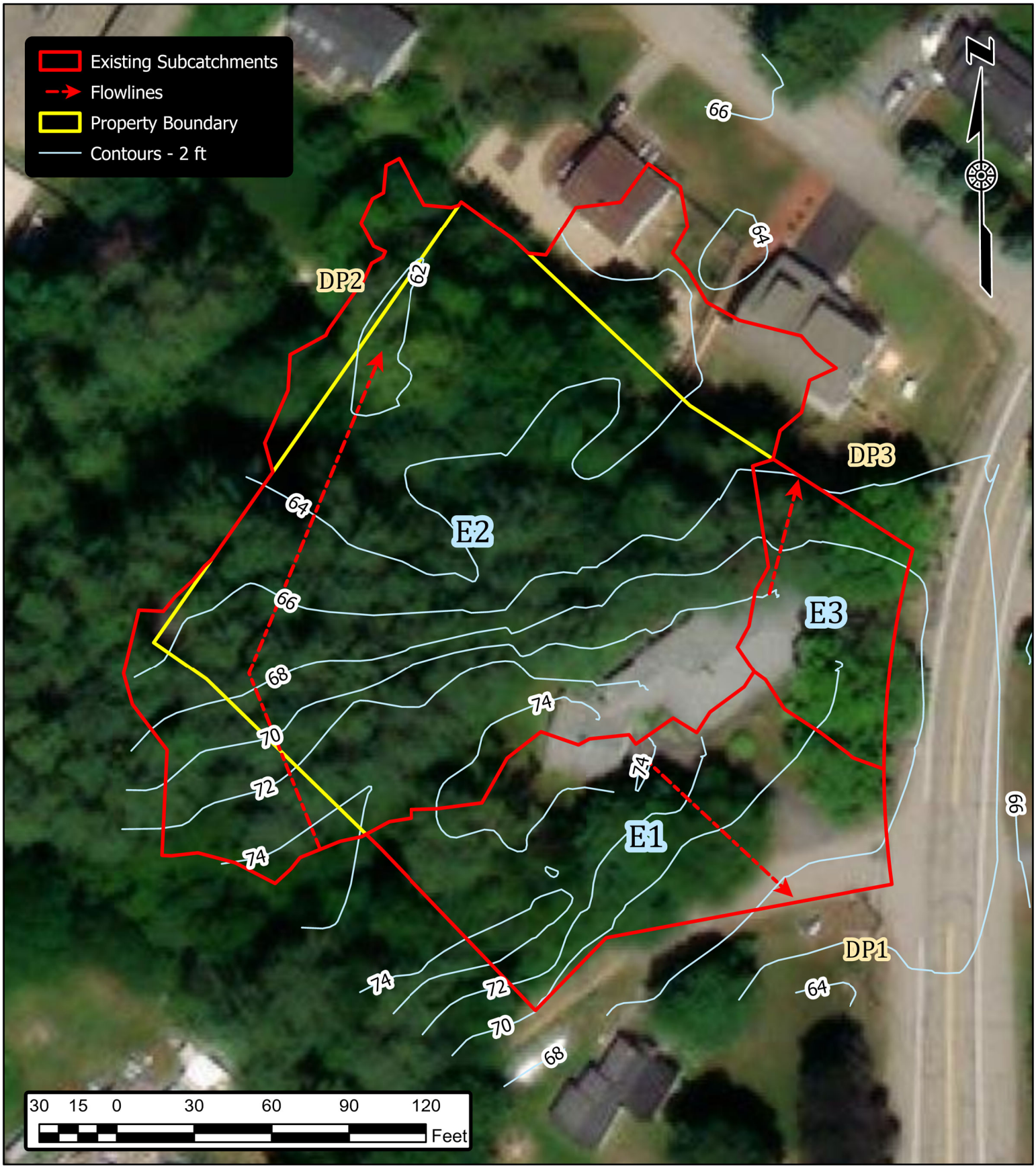
1. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).
2. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.
3. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.20* copyright 2013.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Map of Existing Subcatchments

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

JOB NUMBER: 2258
SCALE: 1" = 50'
SUBMITTED: 06-02-2022

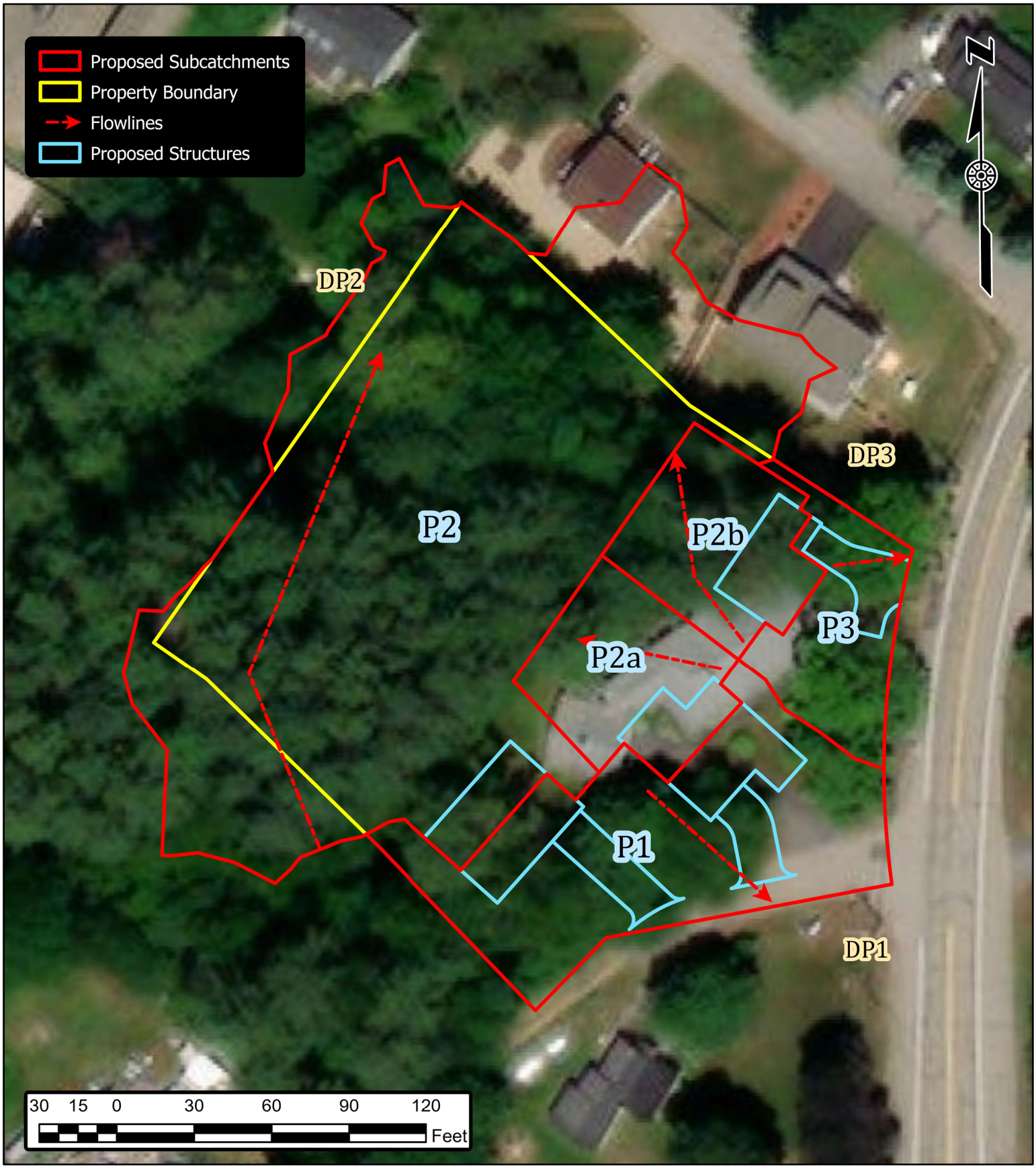


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Map of Proposed Subcatchments

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

JOB NUMBER: 2258
SCALE: 1" = 50'
SUBMITTED: 09-14-2022



APPENDIX A

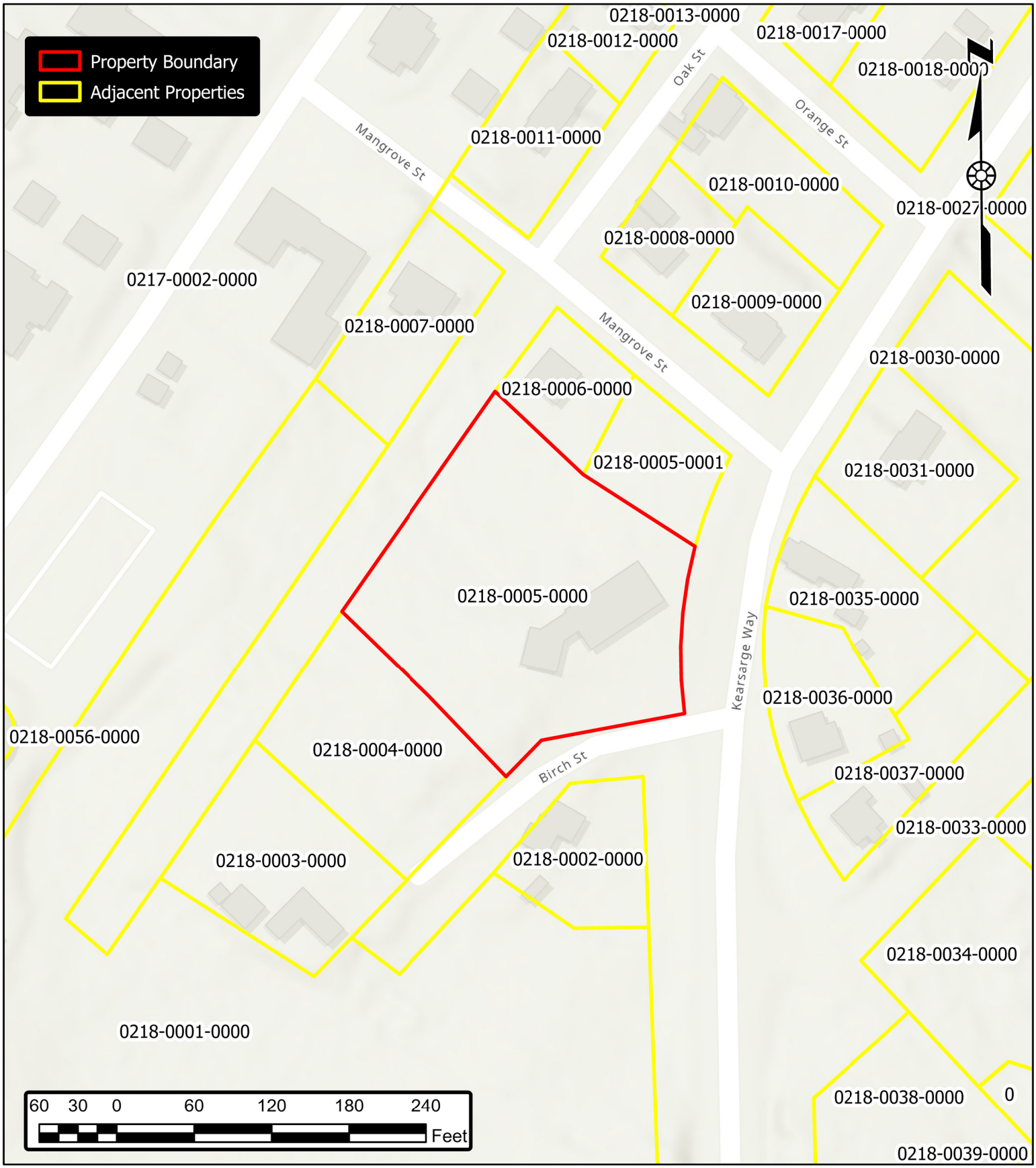
VICINITY (TAX) MAP

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Vicinity Map

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

JOB NUMBER: 2258
SCALE: 1" = 100'
SUBMITTED: 09-14-2022



APPENDIX B

TABLES, CHARTS, ETC.

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.776 degrees West
Latitude	43.086 degrees North
Elevation	0 feet
Date/Time	Tue, 14 Jan 2020 16:14:06 -0500

Q2 = 3.20 in. X 1.15 = 3.68 in.

Q10 = 4.85 in. X 1.15 = 5.58 in.

Q25 = 6.15 in. X 1.15 = 7.07 in.

Q50 = 7.36 in. X 1.15 = 8.46 in.

Q100 = 8.82 in. X 1.15 = 10.14 in.

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.02	2.65	2.91	**1yr**	2.35	2.80	3.21	3.93	4.53	**1yr**
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	3.56	**2yr**	2.83	3.42	3.92	4.66	5.31	**2yr**
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	4.39	5.02	5.91	6.68	**5yr**
10yr	0.41	0.65	0.82	1.11	1.44	1.88	**10yr**	1.25	1.72	2.22	2.88	3.73	4.85	5.51	**10yr**	4.29	5.30	6.06	7.08	7.95	**10yr**
25yr	0.48	0.76	0.96	1.33	1.76	2.32	**25yr**	1.52	2.13	2.76	3.61	4.72	6.15	7.07	**25yr**	5.44	6.80	7.76	8.98	10.01	**25yr**
50yr	0.53	0.85	1.09	1.53	2.06	2.74	**50yr**	1.77	2.51	3.27	4.30	5.64	7.36	8.55	**50yr**	6.51	8.22	9.37	10.76	11.93	**50yr**
100yr	0.60	0.97	1.25	1.76	2.40	3.22	**100yr**	2.07	2.96	3.86	5.11	6.72	8.82	10.34	**100yr**	7.80	9.94	11.31	12.89	14.22	**100yr**
200yr	0.67	1.09	1.41	2.03	2.80	3.80	**200yr**	2.41	3.49	4.58	6.09	8.03	10.56	12.50	**200yr**	9.35	12.02	13.66	15.46	16.95	**200yr**
500yr	0.79	1.30	1.69	2.46	3.44	4.72	**500yr**	2.97	4.34	5.71	7.64	10.16	13.42	16.08	**500yr**	11.88	15.46	17.53	19.66	21.41	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.88	**1yr**	0.63	0.87	0.92	1.32	1.67	2.21	2.48	**1yr**	1.96	2.39	2.85	3.16	3.86	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.05	3.44	**2yr**	2.70	3.31	3.81	4.53	5.06	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.74	3.78	4.17	**5yr**	3.34	4.01	4.70	5.51	6.22	**5yr**
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	4.84	**10yr**	3.86	4.66	5.41	6.38	7.16	**10yr**

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
25yr	0.44	0.67	0.83	1.18	1.56	1.90	**25yr**	1.34	1.86	2.10	2.77	3.55	4.67	5.87	**25yr**	4.13	5.64	6.61	7.75	8.64	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.16	**50yr**	1.52	2.12	2.35	3.09	3.95	5.27	6.77	**50yr**	4.66	6.51	7.67	8.99	9.97	**50yr**
100yr	0.53	0.81	1.01	1.46	2.00	2.47	**100yr**	1.73	2.41	2.62	3.44	4.38	5.91	7.82	**100yr**	5.23	7.52	8.91	10.43	11.50	**100yr**
200yr	0.59	0.89	1.12	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.81	4.83	6.61	9.02	**200yr**	5.85	8.67	10.34	12.13	13.28	**200yr**
500yr	0.68	1.02	1.31	1.90	2.70	3.36	**500yr**	2.33	3.29	3.40	4.36	5.51	7.66	10.89	**500yr**	6.78	10.47	12.58	14.82	16.06	**500yr**

Upper Confidence Limits

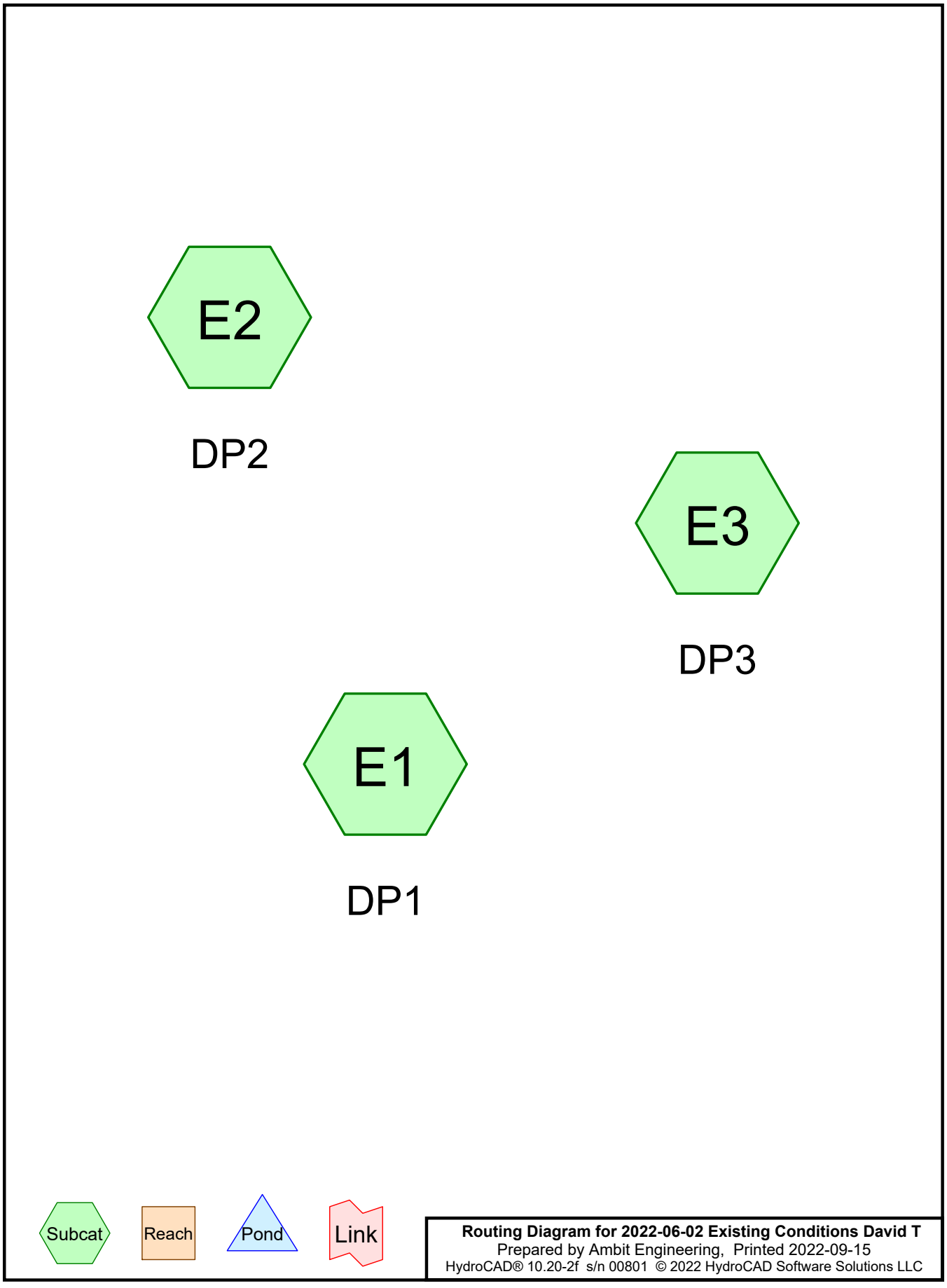
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.25	1.74	2.21	2.98	3.15	**1yr**	2.64	3.03	3.57	4.37	5.03	**1yr**
2yr	0.33	0.52	0.64	0.86	1.06	1.26	**2yr**	0.92	1.24	1.48	1.96	2.51	3.42	3.69	**2yr**	3.03	3.55	4.07	4.82	5.62	**2yr**
5yr	0.40	0.61	0.76	1.05	1.33	1.61	**5yr**	1.15	1.58	1.88	2.53	3.24	4.32	4.94	**5yr**	3.83	4.75	5.36	6.35	7.13	**5yr**
10yr	0.47	0.72	0.89	1.24	1.60	1.97	**10yr**	1.38	1.92	2.27	3.10	3.94	5.32	6.18	**10yr**	4.71	5.94	6.79	7.81	8.72	**10yr**
25yr	0.57	0.87	1.08	1.55	2.03	2.55	**25yr**	1.75	2.50	2.94	4.06	5.13	7.79	8.31	**25yr**	6.89	7.99	9.10	10.29	11.37	**25yr**
50yr	0.67	1.01	1.26	1.81	2.44	3.10	**50yr**	2.11	3.04	3.58	4.98	6.28	9.76	10.41	**50yr**	8.64	10.01	11.37	12.67	13.91	**50yr**
100yr	0.78	1.18	1.48	2.14	2.93	3.78	**100yr**	2.53	3.69	4.35	6.13	7.70	12.22	13.05	**100yr**	10.81	12.55	14.22	15.62	17.03	**100yr**
200yr	0.91	1.37	1.74	2.52	3.52	4.61	**200yr**	3.03	4.50	5.31	7.54	9.45	15.34	16.37	**200yr**	13.57	15.74	17.80	19.26	20.85	**200yr**
500yr	1.13	1.68	2.16	3.15	4.47	5.97	**500yr**	3.86	5.84	6.89	9.95	12.41	20.74	22.11	**500yr**	18.36	21.26	23.96	25.39	27.26	**500yr**

Powered by ACIS
Northeast Regional Climate Center

APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Routing Diagram for 2022-06-02 Existing Conditions David T
Prepared by Ambit Engineering, Printed 2022-09-15
HydroCAD® 10.20-2f s/n 00801 © 2022 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.68	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.58	2
3	25-Year	Type III 24-hr		Default	24.00	1	7.07	2
4	50-Year	Type III 24-hr		Default	24.00	1	8.46	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
15,904	74	>75% Grass cover, Good, HSG C (E1, E2, E3)
2,996	98	Paved parking, HSG C (E1, E3)
4,292	98	Roofs, HSG C (E1, E2, E3)
40,378	70	Woods, Good, HSG C (E1, E2, E3)
63,570	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
63,570	HSG C	E1, E2, E3
0	HSG D	
0	Other	
63,570		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	0	15,904	0	0	15,904	>75% Grass cover, Good	
0	0	2,996	0	0	2,996	Paved parking	
0	0	4,292	0	0	4,292	Roofs	
0	0	40,378	0	0	40,378	Woods, Good	
0	**0**	**63,570**	**0**	**0**	**63,570**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: DP1 Runoff Area=13,564 sf 28.45% Impervious Runoff Depth=1.78"
Tc=5.0 min CN=80 Runoff=0.67 cfs 2,012 cf

Subcatchment E2: DP2 Runoff Area=45,007 sf 5.33% Impervious Runoff Depth=1.24"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=1.43 cfs 4,652 cf

Subcatchment E3: DP3 Runoff Area=4,999 sf 20.58% Impervious Runoff Depth=1.64"
Tc=5.0 min CN=78 Runoff=0.23 cfs 681 cf

Total Runoff Area = 63,570 sf Runoff Volume = 7,345 cf Average Runoff Depth = 1.39"
88.54% Pervious = 56,282 sf 11.46% Impervious = 7,288 sf

Summary for Subcatchment E1: DP1

Runoff = 0.67 cfs @ 12.08 hrs, Volume= 2,012 cf, Depth= 1.78"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
6,342	74	>75% Grass cover, Good, HSG C
3,363	70	Woods, Good, HSG C
2,952	98	Paved parking, HSG C
907	98	Roofs, HSG C
13,564	80	Weighted Average
9,705		71.55% Pervious Area
3,859		28.45% Impervious Area

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

Summary for Subcatchment E2: DP2

Runoff = 1.43 cfs @ 12.10 hrs, Volume= 4,652 cf, Depth= 1.24"
Routed to nonexistent node DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
36,240	70	Woods, Good, HSG C
2,400	98	Roofs, HSG C
6,367	74	>75% Grass cover, Good, HSG C
45,007	72	Weighted Average
42,607		94.67% Pervious Area
2,400		5.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

Summary for Subcatchment E3: DP3

Runoff = 0.23 cfs @ 12.08 hrs, Volume= 681 cf, Depth= 1.64"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
3,195	74	>75% Grass cover, Good, HSG C
775	70	Woods, Good, HSG C
44	98	Paved parking, HSG C
985	98	Roofs, HSG C
4,999	78	Weighted Average
3,970		79.42% Pervious Area
1,029		20.58% Impervious Area

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

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: DP1 Runoff Area=13,564 sf 28.45% Impervious Runoff Depth=3.40"
Tc=5.0 min CN=80 Runoff=1.29 cfs 3,848 cf

Subcatchment E2: DP2 Runoff Area=45,007 sf 5.33% Impervious Runoff Depth=2.65"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=3.19 cfs 9,952 cf

Subcatchment E3: DP3 Runoff Area=4,999 sf 20.58% Impervious Runoff Depth=3.21"
Tc=5.0 min CN=78 Runoff=0.45 cfs 1,337 cf

Total Runoff Area = 63,570 sf Runoff Volume = 15,138 cf Average Runoff Depth = 2.86"
88.54% Pervious = 56,282 sf 11.46% Impervious = 7,288 sf

Summary for Subcatchment E1: DP1

Runoff = 1.29 cfs @ 12.07 hrs, Volume= 3,848 cf, Depth= 3.40"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
6,342	74	>75% Grass cover, Good, HSG C
3,363	70	Woods, Good, HSG C
2,952	98	Paved parking, HSG C
907	98	Roofs, HSG C
13,564	80	Weighted Average
9,705		71.55% Pervious Area
3,859		28.45% Impervious Area

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

Summary for Subcatchment E2: DP2

Runoff = 3.19 cfs @ 12.09 hrs, Volume= 9,952 cf, Depth= 2.65"
Routed to nonexistent node DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
36,240	70	Woods, Good, HSG C
2,400	98	Roofs, HSG C
6,367	74	>75% Grass cover, Good, HSG C
45,007	72	Weighted Average
42,607		94.67% Pervious Area
2,400		5.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

Summary for Subcatchment E3: DP3

Runoff = 0.45 cfs @ 12.07 hrs, Volume= 1,337 cf, Depth= 3.21"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
3,195	74	>75% Grass cover, Good, HSG C
775	70	Woods, Good, HSG C
44	98	Paved parking, HSG C
985	98	Roofs, HSG C
4,999	78	Weighted Average
3,970		79.42% Pervious Area
1,029		20.58% Impervious Area

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

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: DP1 Runoff Area=13,564 sf 28.45% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=80 Runoff=1.78 cfs 5,379 cf

Subcatchment E2: DP2 Runoff Area=45,007 sf 5.33% Impervious Runoff Depth=3.89"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=4.70 cfs 14,585 cf

Subcatchment E3: DP3 Runoff Area=4,999 sf 20.58% Impervious Runoff Depth=4.54"
Tc=5.0 min CN=78 Runoff=0.63 cfs 1,891 cf

Total Runoff Area = 63,570 sf Runoff Volume = 21,855 cf Average Runoff Depth = 4.13"
88.54% Pervious = 56,282 sf 11.46% Impervious = 7,288 sf

Summary for Subcatchment E1: DP1

Runoff = 1.78 cfs @ 12.07 hrs, Volume= 5,379 cf, Depth= 4.76"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
6,342	74	>75% Grass cover, Good, HSG C
3,363	70	Woods, Good, HSG C
2,952	98	Paved parking, HSG C
907	98	Roofs, HSG C
13,564	80	Weighted Average
9,705		71.55% Pervious Area
3,859		28.45% Impervious Area

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

Summary for Subcatchment E2: DP2

Runoff = 4.70 cfs @ 12.09 hrs, Volume= 14,585 cf, Depth= 3.89"
Routed to nonexistent node DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
36,240	70	Woods, Good, HSG C
2,400	98	Roofs, HSG C
6,367	74	>75% Grass cover, Good, HSG C
45,007	72	Weighted Average
42,607		94.67% Pervious Area
2,400		5.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

Summary for Subcatchment E3: DP3

Runoff = 0.63 cfs @ 12.07 hrs, Volume= 1,891 cf, Depth= 4.54"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
3,195	74	>75% Grass cover, Good, HSG C
775	70	Woods, Good, HSG C
44	98	Paved parking, HSG C
985	98	Roofs, HSG C
4,999	78	Weighted Average
3,970		79.42% Pervious Area
1,029		20.58% Impervious Area

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

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: DP1 Runoff Area=13,564 sf 28.45% Impervious Runoff Depth=6.06"
Tc=5.0 min CN=80 Runoff=2.25 cfs 6,847 cf

Subcatchment E2: DP2 Runoff Area=45,007 sf 5.33% Impervious Runoff Depth=5.10"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=6.15 cfs 19,129 cf

Subcatchment E3: DP3 Runoff Area=4,999 sf 20.58% Impervious Runoff Depth=5.82"
Tc=5.0 min CN=78 Runoff=0.80 cfs 2,424 cf

Total Runoff Area = 63,570 sf Runoff Volume = 28,400 cf Average Runoff Depth = 5.36"
88.54% Pervious = 56,282 sf 11.46% Impervious = 7,288 sf

Summary for Subcatchment E1: DP1

Runoff = 2.25 cfs @ 12.07 hrs, Volume= 6,847 cf, Depth= 6.06"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
6,342	74	>75% Grass cover, Good, HSG C
3,363	70	Woods, Good, HSG C
2,952	98	Paved parking, HSG C
907	98	Roofs, HSG C
13,564	80	Weighted Average
9,705		71.55% Pervious Area
3,859		28.45% Impervious Area

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

Summary for Subcatchment E2: DP2

Runoff = 6.15 cfs @ 12.09 hrs, Volume= 19,129 cf, Depth= 5.10"
Routed to nonexistent node DP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
36,240	70	Woods, Good, HSG C
2,400	98	Roofs, HSG C
6,367	74	>75% Grass cover, Good, HSG C
45,007	72	Weighted Average
42,607		94.67% Pervious Area
2,400		5.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

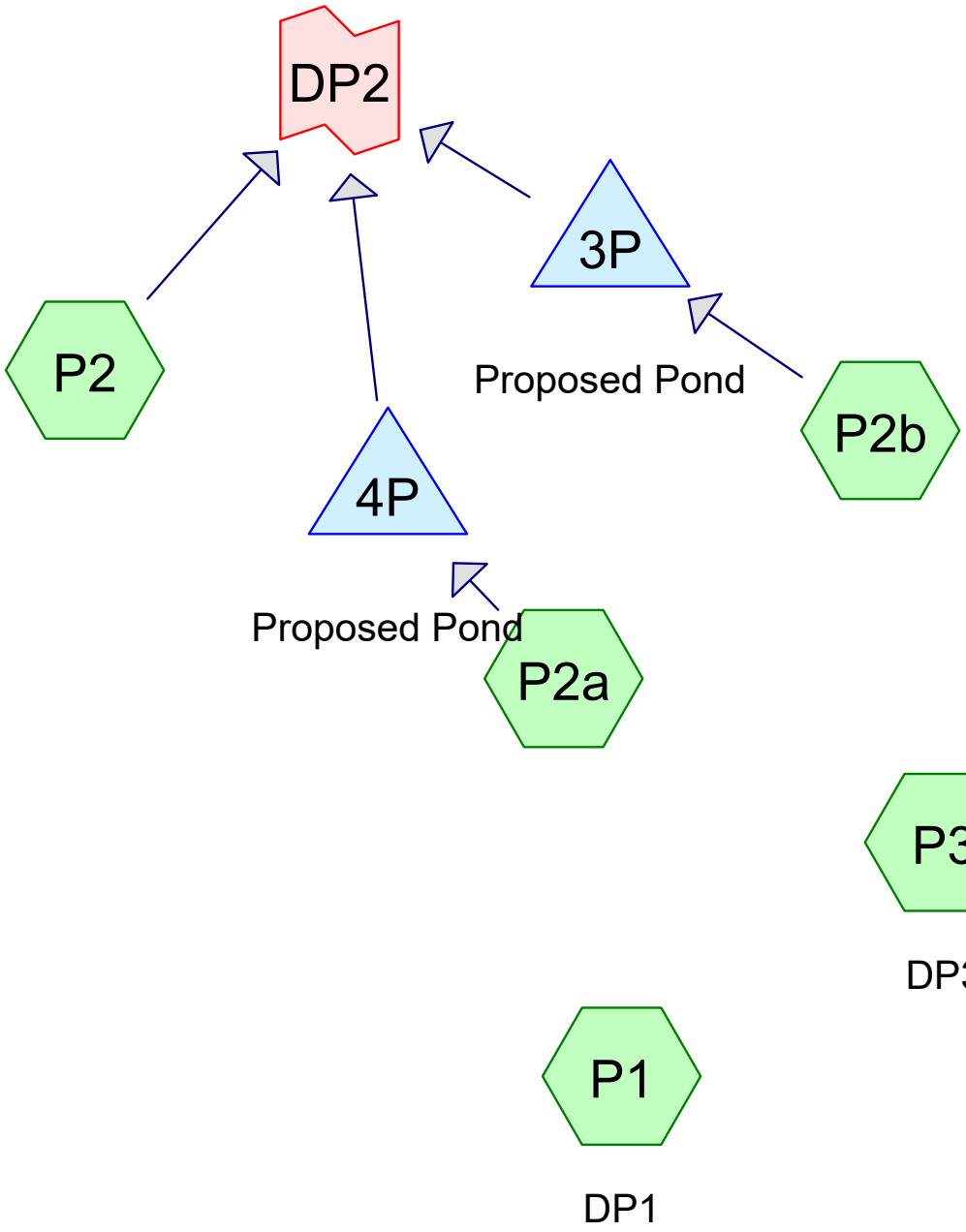
Summary for Subcatchment E3: DP3

Runoff = 0.80 cfs @ 12.07 hrs, Volume= 2,424 cf, Depth= 5.82"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
3,195	74	>75% Grass cover, Good, HSG C
775	70	Woods, Good, HSG C
44	98	Paved parking, HSG C
985	98	Roofs, HSG C
4,999	78	Weighted Average
3,970		79.42% Pervious Area
1,029		20.58% Impervious Area

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



Subcat Reach Pond Link

Routing Diagram for 2022-06-02 Proposed Conditions David T
Prepared by Ambit Engineering, Printed 2022-09-15
HydroCAD® 10.20-2f s/n 00801 © 2022 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.68	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.58	2
3	25-Year	Type III 24-hr		Default	24.00	1	7.07	2
4	50-Year	Type III 24-hr		Default	24.00	1	8.46	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
18,238	74	>75% Grass cover, Good, HSG C (P1, P2, P2a, P2b, P3)
3,741	98	Paved parking, HSG C (P1, P2a, P2b, P3)
6,198	98	Roofs, HSG C (P1, P2, P2a, P2b, P3)
35,395	70	Woods, Good, HSG C (P1, P2, P3)
63,572	**76**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
63,572	HSG C	P1, P2, P2a, P2b, P3
0	HSG D	
0	Other	
63,572		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	0	18,238	0	0	18,238	>75% Grass cover, Good	
0	0	3,741	0	0	3,741	Paved parking	
0	0	6,198	0	0	6,198	Roofs	
0	0	35,395	0	0	35,395	Woods, Good	
0	**0**	**63,572**	**0**	**0**	**63,572**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	3P	0.00	-0.60	30.0	0.0200	0.013	0.0	6.0	0.0
2	4P	0.00	-0.60	30.0	0.0200	0.013	0.0	6.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: DP1 Runoff Area=11,693 sf 39.37% Impervious Runoff Depth=2.01"
Tc=5.0 min CN=83 Runoff=0.66 cfs 1,959 cf

Subcatchment P2: Runoff Area=39,185 sf 5.08% Impervious Runoff Depth=1.24"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=1.24 cfs 4,050 cf

Subcatchment P2a: Runoff Area=4,381 sf 23.49% Impervious Runoff Depth=1.78"
Tc=5.0 min CN=80 Runoff=0.22 cfs 650 cf

Subcatchment P2b: Runoff Area=4,392 sf 31.83% Impervious Runoff Depth=1.93"
Tc=5.0 min CN=82 Runoff=0.24 cfs 707 cf

Subcatchment P3: DP3 Runoff Area=3,921 sf 23.36% Impervious Runoff Depth=1.78"
Tc=5.0 min CN=80 Runoff=0.19 cfs 582 cf

Pond 3P: Proposed Pond Peak Elev=0.88' Storage=133 cf Inflow=0.24 cfs 707 cf
Outflow=0.09 cfs 707 cf

Pond 4P: Proposed Pond Peak Elev=0.95' Storage=102 cf Inflow=0.22 cfs 650 cf
Outflow=0.10 cfs 650 cf

Link DP2: above 1,000.00 cfs Inflow=1.41 cfs 5,407 cf
Primary=0.00 cfs 0 cf Secondary=1.41 cfs 5,407 cf

Total Runoff Area = 63,572 sf Runoff Volume = 7,948 cf Average Runoff Depth = 1.50"
84.37% Pervious = 53,633 sf 15.63% Impervious = 9,939 sf

Summary for Subcatchment P1: DP1

Runoff = 0.66 cfs @ 12.08 hrs, Volume= 1,959 cf, Depth= 2.01"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
2,043	70	Woods, Good, HSG C
2,547	98	Paved parking, HSG C
2,057	98	Roofs, HSG C
5,046	74	>75% Grass cover, Good, HSG C
11,693	83	Weighted Average
7,089		60.63% Pervious Area
4,604		39.37% Impervious Area

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

Summary for Subcatchment P2:

Runoff = 1.24 cfs @ 12.10 hrs, Volume= 4,050 cf, Depth= 1.24"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
33,306	70	Woods, Good, HSG C
1,992	98	Roofs, HSG C
3,887	74	>75% Grass cover, Good, HSG C
39,185	72	Weighted Average
37,193		94.92% Pervious Area
1,992		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

Summary for Subcatchment P2a:

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 650 cf, Depth= 1.78"
Routed to Pond 4P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
3,352	74	>75% Grass cover, Good, HSG C
909	98	Roofs, HSG C
120	98	Paved parking, HSG C
4,381	80	Weighted Average
3,352		76.51% Pervious Area
1,029		23.49% Impervious Area

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

Summary for Subcatchment P2b:

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 707 cf, Depth= 1.93"
Routed to Pond 3P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
1,171	98	Roofs, HSG C
2,994	74	>75% Grass cover, Good, HSG C
227	98	Paved parking, HSG C
4,392	82	Weighted Average
2,994		68.17% Pervious Area
1,398		31.83% Impervious Area

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

Summary for Subcatchment P3: DP3

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 582 cf, Depth= 1.78"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
2,959	74	>75% Grass cover, Good, HSG C
46	70	Woods, Good, HSG C
787	98	Paved parking, HSG C
69	98	Roofs, HSG C
60	98	Paved parking, HSG C
3,921	80	Weighted Average
3,005		76.64% Pervious Area
916		23.36% Impervious Area

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

Summary for Pond 3P: Proposed Pond

Inflow Area = 4,392 sf, 31.83% Impervious, Inflow Depth = 1.93" for 2-Year event
Inflow = 0.24 cfs @ 12.08 hrs, Volume= 707 cf
Outflow = 0.09 cfs @ 12.31 hrs, Volume= 707 cf, Atten= 60%, Lag= 14.3 min
Primary = 0.09 cfs @ 12.31 hrs, Volume= 707 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.88' @ 12.31 hrs Surf.Area= 275 sf Storage= 133 cf

Plug-Flow detention time= 17.1 min calculated for 707 cf (100% of inflow)
Center-of-Mass det. time= 17.1 min (845.9 - 828.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	274 cf	**11.00'W x 24.98'L x 3.50'H Field A** 962 cf Overall - 276 cf Embedded = 686 cf x 40.0% Voids
#2A	0.50'	276 cf	**ADS_StormTech SC-740 +Cap** x 6 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 2 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	2.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 2.50 3.30 3.30 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.09 cfs @ 12.31 hrs HW=0.88' (Free Discharge)
└**1=Culvert** (Passes 0.09 cfs of 0.75 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.09 cfs @ 4.30 fps)

Summary for Pond 4P: Proposed Pond

Inflow Area = 4,381 sf, 23.49% Impervious, Inflow Depth = 1.78" for 2-Year event
Inflow = 0.22 cfs @ 12.08 hrs, Volume= 650 cf
Outflow = 0.10 cfs @ 12.27 hrs, Volume= 650 cf, Atten= 55%, Lag= 11.5 min
Primary = 0.10 cfs @ 12.27 hrs, Volume= 650 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 0.95' @ 12.27 hrs Surf.Area= 196 sf Storage= 102 cf

Plug-Flow detention time= 12.5 min calculated for 650 cf (100% of inflow)
Center-of-Mass det. time= 12.5 min (847.4 - 834.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	201 cf	**11.00'W x 17.86'L x 3.50'H Field A** 687 cf Overall - 184 cf Embedded = 504 cf x 40.0% Voids
#2A	0.50'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Chambers in 2 Rows
		385 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	1.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.50 3.00 3.00 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 12.27 hrs HW=0.95' (Free Discharge)
└**1=Culvert** (Passes 0.10 cfs of 0.79 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.10 cfs @ 4.47 fps)

Summary for Link DP2:

[79] Warning: Submerged Pond 3P Primary device # 1 OUTLET by 0.60'
[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.60'

Inflow Area = 47,958 sf, 9.21% Impervious, Inflow Depth = 1.35" for 2-Year event
Inflow = 1.41 cfs @ 12.10 hrs, Volume= 5,407 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Secondary = 1.41 cfs @ 12.10 hrs, Volume= 5,407 cf

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: DP1 Runoff Area=11,693 sf 39.37% Impervious Runoff Depth=3.70"
Tc=5.0 min CN=83 Runoff=1.20 cfs 3,609 cf

Subcatchment P2: Runoff Area=39,185 sf 5.08% Impervious Runoff Depth=2.65"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=2.78 cfs 8,665 cf

Subcatchment P2a: Runoff Area=4,381 sf 23.49% Impervious Runoff Depth=3.40"
Tc=5.0 min CN=80 Runoff=0.42 cfs 1,243 cf

Subcatchment P2b: Runoff Area=4,392 sf 31.83% Impervious Runoff Depth=3.60"
Tc=5.0 min CN=82 Runoff=0.44 cfs 1,319 cf

Subcatchment P3: DP3 Runoff Area=3,921 sf 23.36% Impervious Runoff Depth=3.40"
Tc=5.0 min CN=80 Runoff=0.37 cfs 1,112 cf

Pond 3P: Proposed Pond Peak Elev=1.80' Storage=310 cf Inflow=0.44 cfs 1,319 cf
Outflow=0.14 cfs 1,319 cf

Pond 4P: Proposed Pond Peak Elev=1.86' Storage=224 cf Inflow=0.42 cfs 1,243 cf
Outflow=0.21 cfs 1,243 cf

Link DP2: above 1,000.00 cfs Inflow=3.02 cfs 11,226 cf
Primary=0.00 cfs 0 cf Secondary=3.02 cfs 11,226 cf

Total Runoff Area = 63,572 sf Runoff Volume = 15,947 cf Average Runoff Depth = 3.01"
84.37% Pervious = 53,633 sf 15.63% Impervious = 9,939 sf

Summary for Subcatchment P1: DP1

Runoff = 1.20 cfs @ 12.07 hrs, Volume= 3,609 cf, Depth= 3.70"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
2,043	70	Woods, Good, HSG C
2,547	98	Paved parking, HSG C
2,057	98	Roofs, HSG C
5,046	74	>75% Grass cover, Good, HSG C
11,693	83	Weighted Average
7,089		60.63% Pervious Area
4,604		39.37% Impervious Area

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

Summary for Subcatchment P2:

Runoff = 2.78 cfs @ 12.09 hrs, Volume= 8,665 cf, Depth= 2.65"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
33,306	70	Woods, Good, HSG C
1,992	98	Roofs, HSG C
3,887	74	>75% Grass cover, Good, HSG C
39,185	72	Weighted Average
37,193		94.92% Pervious Area
1,992		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

Summary for Subcatchment P2a:

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 1,243 cf, Depth= 3.40"
Routed to Pond 4P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
3,352	74	>75% Grass cover, Good, HSG C
909	98	Roofs, HSG C
120	98	Paved parking, HSG C
4,381	80	Weighted Average
3,352		76.51% Pervious Area
1,029		23.49% Impervious Area

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

Summary for Subcatchment P2b:

Runoff = 0.44 cfs @ 12.07 hrs, Volume= 1,319 cf, Depth= 3.60"
Routed to Pond 3P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
1,171	98	Roofs, HSG C
2,994	74	>75% Grass cover, Good, HSG C
227	98	Paved parking, HSG C
4,392	82	Weighted Average
2,994		68.17% Pervious Area
1,398		31.83% Impervious Area

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

Summary for Subcatchment P3: DP3

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 1,112 cf, Depth= 3.40"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
2,959	74	>75% Grass cover, Good, HSG C
46	70	Woods, Good, HSG C
787	98	Paved parking, HSG C
69	98	Roofs, HSG C
60	98	Paved parking, HSG C
3,921	80	Weighted Average
3,005		76.64% Pervious Area
916		23.36% Impervious Area

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

Summary for Pond 3P: Proposed Pond

Inflow Area = 4,392 sf, 31.83% Impervious, Inflow Depth = 3.60" for 10-Year event
Inflow = 0.44 cfs @ 12.07 hrs, Volume= 1,319 cf
Outflow = 0.14 cfs @ 12.38 hrs, Volume= 1,319 cf, Atten= 69%, Lag= 18.6 min
Primary = 0.14 cfs @ 12.38 hrs, Volume= 1,319 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1.80' @ 12.38 hrs Surf.Area= 275 sf Storage= 310 cf

Plug-Flow detention time= 21.8 min calculated for 1,318 cf (100% of inflow)
Center-of-Mass det. time= 21.8 min (832.7 - 810.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	274 cf	**11.00'W x 24.98'L x 3.50'H Field A** 962 cf Overall - 276 cf Embedded = 686 cf x 40.0% Voids
#2A	0.50'	276 cf	**ADS_StormTech SC-740 +Cap** x 6 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 2 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	2.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 2.50 3.30 3.30 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 12.38 hrs HW=1.80' (Free Discharge)
└**1=Culvert** (Passes 0.14 cfs of 1.10 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 6.31 fps)

Summary for Pond 4P: Proposed Pond

Inflow Area = 4,381 sf, 23.49% Impervious, Inflow Depth = 3.40" for 10-Year event
Inflow = 0.42 cfs @ 12.07 hrs, Volume= 1,243 cf
Outflow = 0.21 cfs @ 12.21 hrs, Volume= 1,243 cf, Atten= 49%, Lag= 8.0 min
Primary = 0.21 cfs @ 12.21 hrs, Volume= 1,243 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1.86' @ 12.21 hrs Surf.Area= 196 sf Storage= 224 cf

Plug-Flow detention time= 14.1 min calculated for 1,243 cf (100% of inflow)
Center-of-Mass det. time= 14.1 min (830.3 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	201 cf	**11.00'W x 17.86'L x 3.50'H Field A** 687 cf Overall - 184 cf Embedded = 504 cf x 40.0% Voids
#2A	0.50'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Chambers in 2 Rows
		385 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	1.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.50 3.00 3.00 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.21 hrs HW=1.86' (Free Discharge)
↑└**1=Culvert** (Passes 0.21 cfs of 1.12 cfs potential flow)
↑└**2=Custom Weir/Orifice** (Weir Controls 0.07 cfs @ 1.97 fps)
└**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 6.42 fps)

Summary for Link DP2:

[79] Warning: Submerged Pond 3P Primary device # 1 OUTLET by 0.60'
[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.60'

Inflow Area = 47,958 sf, 9.21% Impervious, Inflow Depth = 2.81" for 10-Year event
Inflow = 3.02 cfs @ 12.09 hrs, Volume= 11,226 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Secondary = 3.02 cfs @ 12.09 hrs, Volume= 11,226 cf

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: DP1 Runoff Area=11,693 sf 39.37% Impervious Runoff Depth=5.09"
Tc=5.0 min CN=83 Runoff=1.63 cfs 4,964 cf

Subcatchment P2: Runoff Area=39,185 sf 5.08% Impervious Runoff Depth=3.89"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=4.09 cfs 12,698 cf

Subcatchment P2a: Runoff Area=4,381 sf 23.49% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=80 Runoff=0.58 cfs 1,737 cf

Subcatchment P2b: Runoff Area=4,392 sf 31.83% Impervious Runoff Depth=4.98"
Tc=5.0 min CN=82 Runoff=0.60 cfs 1,823 cf

Subcatchment P3: DP3 Runoff Area=3,921 sf 23.36% Impervious Runoff Depth=4.76"
Tc=5.0 min CN=80 Runoff=0.52 cfs 1,555 cf

Pond 3P: Proposed Pond Peak Elev=2.69' Storage=458 cf Inflow=0.60 cfs 1,823 cf
Outflow=0.20 cfs 1,823 cf

Pond 4P: Proposed Pond Peak Elev=2.32' Storage=280 cf Inflow=0.58 cfs 1,737 cf
Outflow=0.40 cfs 1,737 cf

Link DP2: above 1,000.00 cfs Inflow=4.54 cfs 16,259 cf
Primary=0.00 cfs 0 cf Secondary=4.54 cfs 16,259 cf

Total Runoff Area = 63,572 sf Runoff Volume = 22,778 cf Average Runoff Depth = 4.30"
84.37% Pervious = 53,633 sf 15.63% Impervious = 9,939 sf

Summary for Subcatchment P1: DP1

Runoff = 1.63 cfs @ 12.07 hrs, Volume= 4,964 cf, Depth= 5.09"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
2,043	70	Woods, Good, HSG C
2,547	98	Paved parking, HSG C
2,057	98	Roofs, HSG C
5,046	74	>75% Grass cover, Good, HSG C
11,693	83	Weighted Average
7,089		60.63% Pervious Area
4,604		39.37% Impervious Area

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

Summary for Subcatchment P2:

Runoff = 4.09 cfs @ 12.09 hrs, Volume= 12,698 cf, Depth= 3.89"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
33,306	70	Woods, Good, HSG C
1,992	98	Roofs, HSG C
3,887	74	>75% Grass cover, Good, HSG C
39,185	72	Weighted Average
37,193		94.92% Pervious Area
1,992		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

Summary for Subcatchment P2a:

Runoff = 0.58 cfs @ 12.07 hrs, Volume= 1,737 cf, Depth= 4.76"
Routed to Pond 4P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
3,352	74	>75% Grass cover, Good, HSG C
909	98	Roofs, HSG C
120	98	Paved parking, HSG C
4,381	80	Weighted Average
3,352		76.51% Pervious Area
1,029		23.49% Impervious Area

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

Summary for Subcatchment P2b:

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 1,823 cf, Depth= 4.98"
Routed to Pond 3P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
1,171	98	Roofs, HSG C
2,994	74	>75% Grass cover, Good, HSG C
227	98	Paved parking, HSG C
4,392	82	Weighted Average
2,994		68.17% Pervious Area
1,398		31.83% Impervious Area

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

Summary for Subcatchment P3: DP3

Runoff = 0.52 cfs @ 12.07 hrs, Volume= 1,555 cf, Depth= 4.76"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
2,959	74	>75% Grass cover, Good, HSG C
46	70	Woods, Good, HSG C
787	98	Paved parking, HSG C
69	98	Roofs, HSG C
60	98	Paved parking, HSG C
3,921	80	Weighted Average
3,005		76.64% Pervious Area
916		23.36% Impervious Area

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

Summary for Pond 3P: Proposed Pond

Inflow Area = 4,392 sf, 31.83% Impervious, Inflow Depth = 4.98" for 25-Year event
Inflow = 0.60 cfs @ 12.07 hrs, Volume= 1,823 cf
Outflow = 0.20 cfs @ 12.36 hrs, Volume= 1,823 cf, Atten= 67%, Lag= 17.2 min
Primary = 0.20 cfs @ 12.36 hrs, Volume= 1,823 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 2.69' @ 12.36 hrs Surf.Area= 275 sf Storage= 458 cf

Plug-Flow detention time= 24.9 min calculated for 1,823 cf (100% of inflow)
Center-of-Mass det. time= 24.9 min (826.6 - 801.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	274 cf	**11.00'W x 24.98'L x 3.50'H Field A** 962 cf Overall - 276 cf Embedded = 686 cf x 40.0% Voids
#2A	0.50'	276 cf	**ADS_StormTech SC-740 +Cap** x 6 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 2 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	2.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 2.50 3.30 3.30 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.20 cfs @ 12.36 hrs HW=2.69' (Free Discharge)
└**1=Culvert** (Passes 0.20 cfs of 1.34 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Weir Controls 0.03 cfs @ 1.43 fps)
  └**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 7.77 fps)

Summary for Pond 4P: Proposed Pond

Inflow Area = 4,381 sf, 23.49% Impervious, Inflow Depth = 4.76" for 25-Year event
Inflow = 0.58 cfs @ 12.07 hrs, Volume= 1,737 cf
Outflow = 0.40 cfs @ 12.15 hrs, Volume= 1,737 cf, Atten= 30%, Lag= 4.5 min
Primary = 0.40 cfs @ 12.15 hrs, Volume= 1,737 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 2.32' @ 12.15 hrs Surf.Area= 196 sf Storage= 280 cf

Plug-Flow detention time= 13.1 min calculated for 1,737 cf (100% of inflow)
Center-of-Mass det. time= 13.1 min (819.7 - 806.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	201 cf	**11.00'W x 17.86'L x 3.50'H Field A** 687 cf Overall - 184 cf Embedded = 504 cf x 40.0% Voids
#2A	0.50'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Chambers in 2 Rows
		385 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	1.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.50 3.00 3.00 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.40 cfs @ 12.15 hrs HW=2.32' (Free Discharge)
↑└**1=Culvert** (Passes 0.40 cfs of 1.25 cfs potential flow)
↑└**2=Custom Weir/Orifice** (Weir Controls 0.24 cfs @ 2.97 fps)
└**3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 7.20 fps)

Summary for Link DP2:

[79] Warning: Submerged Pond 3P Primary device # 1 OUTLET by 0.60'
[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.60'

Inflow Area = 47,958 sf, 9.21% Impervious, Inflow Depth = 4.07" for 25-Year event
Inflow = 4.54 cfs @ 12.10 hrs, Volume= 16,259 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Secondary = 4.54 cfs @ 12.10 hrs, Volume= 16,259 cf

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P1: DP1 Runoff Area=11,693 sf 39.37% Impervious Runoff Depth=6.42"
Tc=5.0 min CN=83 Runoff=2.03 cfs 6,253 cf

Subcatchment P2: Runoff Area=39,185 sf 5.08% Impervious Runoff Depth=5.10"
Flow Length=328' Slope=0.0730 '/' Tc=6.1 min CN=72 Runoff=5.35 cfs 16,655 cf

Subcatchment P2a: Runoff Area=4,381 sf 23.49% Impervious Runoff Depth=6.06"
Tc=5.0 min CN=80 Runoff=0.73 cfs 2,211 cf

Subcatchment P2b: Runoff Area=4,392 sf 31.83% Impervious Runoff Depth=6.30"
Tc=5.0 min CN=82 Runoff=0.75 cfs 2,305 cf

Subcatchment P3: DP3 Runoff Area=3,921 sf 23.36% Impervious Runoff Depth=6.06"
Tc=5.0 min CN=80 Runoff=0.65 cfs 1,979 cf

Pond 3P: Proposed Pond Peak Elev=3.19' Storage=516 cf Inflow=0.75 cfs 2,305 cf
Outflow=0.37 cfs 2,305 cf

Pond 4P: Proposed Pond Peak Elev=2.68' Storage=318 cf Inflow=0.73 cfs 2,211 cf
Outflow=0.59 cfs 2,211 cf

Link DP2: above 1,000.00 cfs Inflow=6.04 cfs 21,171 cf
Primary=0.00 cfs 0 cf Secondary=6.04 cfs 21,171 cf

Total Runoff Area = 63,572 sf Runoff Volume = 29,404 cf Average Runoff Depth = 5.55"
84.37% Pervious = 53,633 sf 15.63% Impervious = 9,939 sf

Summary for Subcatchment P1: DP1

Runoff = 2.03 cfs @ 12.07 hrs, Volume= 6,253 cf, Depth= 6.42"
Routed to nonexistent node DP1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
2,043	70	Woods, Good, HSG C
2,547	98	Paved parking, HSG C
2,057	98	Roofs, HSG C
5,046	74	>75% Grass cover, Good, HSG C
11,693	83	Weighted Average
7,089		60.63% Pervious Area
4,604		39.37% Impervious Area

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

Summary for Subcatchment P2:

Runoff = 5.35 cfs @ 12.09 hrs, Volume= 16,655 cf, Depth= 5.10"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
33,306	70	Woods, Good, HSG C
1,992	98	Roofs, HSG C
3,887	74	>75% Grass cover, Good, HSG C
39,185	72	Weighted Average
37,193		94.92% Pervious Area
1,992		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	328	0.0730	0.90		**Lag/CN Method,**

Summary for Subcatchment P2a:

Runoff = 0.73 cfs @ 12.07 hrs, Volume= 2,211 cf, Depth= 6.06"
Routed to Pond 4P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
3,352	74	>75% Grass cover, Good, HSG C
909	98	Roofs, HSG C
120	98	Paved parking, HSG C
4,381	80	Weighted Average
3,352		76.51% Pervious Area
1,029		23.49% Impervious Area

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

Summary for Subcatchment P2b:

Runoff = 0.75 cfs @ 12.07 hrs, Volume= 2,305 cf, Depth= 6.30"
Routed to Pond 3P : Proposed Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
1,171	98	Roofs, HSG C
2,994	74	>75% Grass cover, Good, HSG C
227	98	Paved parking, HSG C
4,392	82	Weighted Average
2,994		68.17% Pervious Area
1,398		31.83% Impervious Area

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

Summary for Subcatchment P3: DP3

Runoff = 0.65 cfs @ 12.07 hrs, Volume= 1,979 cf, Depth= 6.06"
Routed to nonexistent node DP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
2,959	74	>75% Grass cover, Good, HSG C
46	70	Woods, Good, HSG C
787	98	Paved parking, HSG C
69	98	Roofs, HSG C
60	98	Paved parking, HSG C
3,921	80	Weighted Average
3,005		76.64% Pervious Area
916		23.36% Impervious Area

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

Summary for Pond 3P: Proposed Pond

Inflow Area = 4,392 sf, 31.83% Impervious, Inflow Depth = 6.30" for 50-Year event
Inflow = 0.75 cfs @ 12.07 hrs, Volume= 2,305 cf
Outflow = 0.37 cfs @ 12.20 hrs, Volume= 2,305 cf, Atten= 50%, Lag= 8.0 min
Primary = 0.37 cfs @ 12.20 hrs, Volume= 2,305 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 3.19' @ 12.20 hrs Surf.Area= 275 sf Storage= 516 cf

Plug-Flow detention time= 23.5 min calculated for 2,305 cf (100% of inflow)
Center-of-Mass det. time= 23.4 min (818.6 - 795.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	274 cf	**11.00'W x 24.98'L x 3.50'H Field A** 962 cf Overall - 276 cf Embedded = 686 cf x 40.0% Voids
#2A	0.50'	276 cf	**ADS_StormTech SC-740 +Cap** x 6 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 6 Chambers in 2 Rows
		550 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	2.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 2.50 3.30 3.30 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 12.20 hrs HW=3.19' (Free Discharge)
└**1=Culvert** (Passes 0.37 cfs of 1.45 cfs potential flow)
  ├**2=Custom Weir/Orifice** (Weir Controls 0.19 cfs @ 2.72 fps)
  └**3=Orifice/Grate** (Orifice Controls 0.19 cfs @ 8.48 fps)

Summary for Pond 4P: Proposed Pond

Inflow Area = 4,381 sf, 23.49% Impervious, Inflow Depth = 6.06" for 50-Year event
Inflow = 0.73 cfs @ 12.07 hrs, Volume= 2,211 cf
Outflow = 0.59 cfs @ 12.13 hrs, Volume= 2,211 cf, Atten= 19%, Lag= 3.3 min
Primary = 0.59 cfs @ 12.13 hrs, Volume= 2,211 cf
Routed to Link DP2 :

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 2.68' @ 12.13 hrs Surf.Area= 196 sf Storage= 318 cf

Plug-Flow detention time= 12.3 min calculated for 2,211 cf (100% of inflow)
Center-of-Mass det. time= 12.4 min (812.2 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	201 cf	**11.00'W x 17.86'L x 3.50'H Field A** 687 cf Overall - 184 cf Embedded = 504 cf x 40.0% Voids
#2A	0.50'	184 cf	**ADS_StormTech SC-740 +Cap** x 4 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 4 Chambers in 2 Rows
		385 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**6.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.60' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	1.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.50 3.00 3.00 3.50 Width (feet) 0.10 0.10 2.00 2.00
#3	Device 1	0.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.59 cfs @ 12.13 hrs HW=2.68' (Free Discharge)
↑└**1=Culvert** (Passes 0.59 cfs of 1.33 cfs potential flow)
↑└**2=Custom Weir/Orifice** (Weir Controls 0.42 cfs @ 3.55 fps)
└**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 7.75 fps)

Summary for Link DP2:

[79] Warning: Submerged Pond 3P Primary device # 1 OUTLET by 0.60'
[79] Warning: Submerged Pond 4P Primary device # 1 OUTLET by 0.60'

Inflow Area = 47,958 sf, 9.21% Impervious, Inflow Depth = 5.30" for 50-Year event
Inflow = 6.04 cfs @ 12.09 hrs, Volume= 21,171 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Secondary = 6.04 cfs @ 12.09 hrs, Volume= 21,171 cf

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

APPENDIX D

SOIL SURVEY INFORMATION

United States Department of Agriculture

NRCS

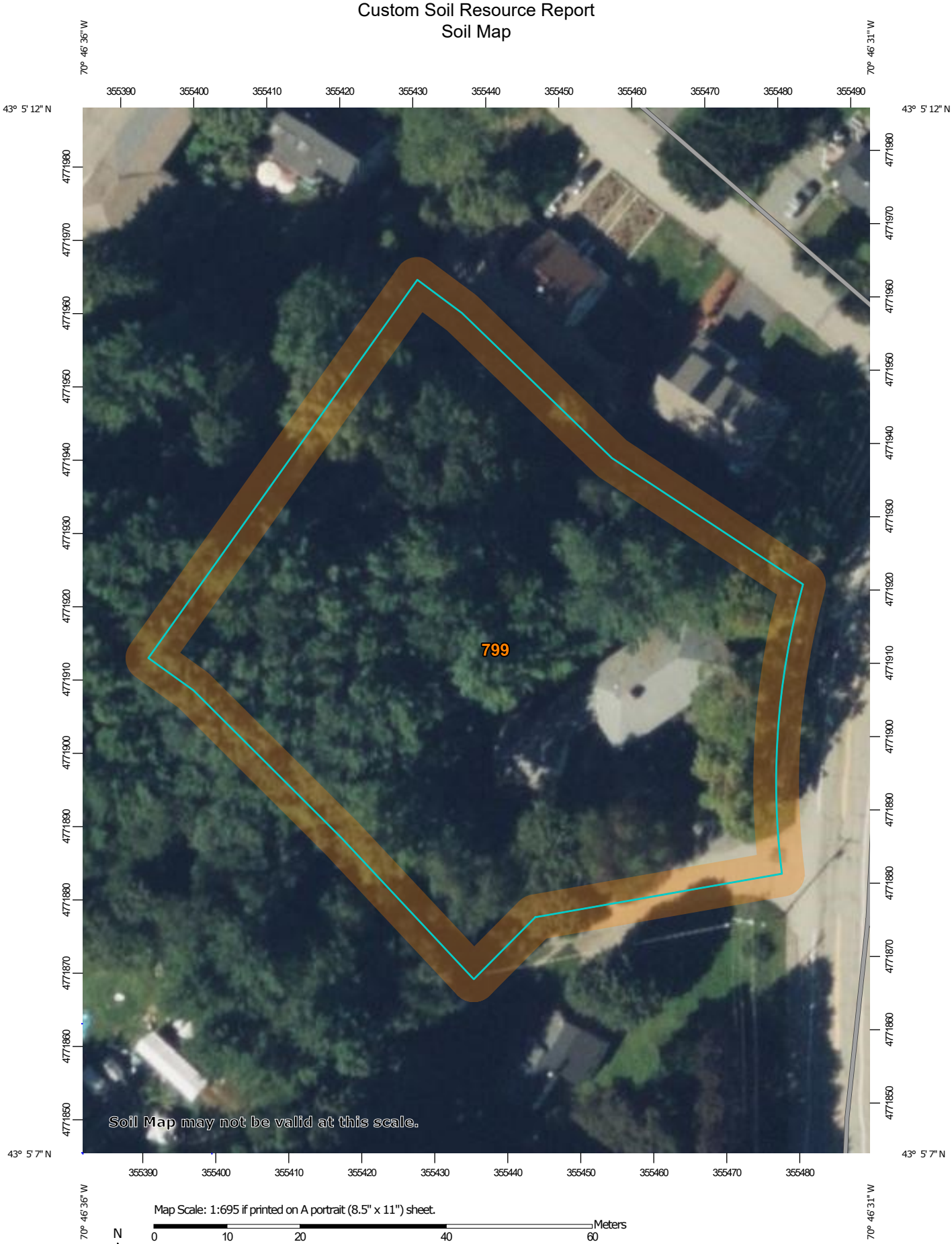
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

May 31, 2022

Custom Soil Resource Report
Soil Map



Map Scale: 1:695 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 19, 2021—Nov 1, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
799	Urban land-Canton complex, 3 to 15 percent slopes	1.2	100.0%
Totals for Area of Interest		**1.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Canton and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott and scitico

Percent of map unit: 4 percent
Landform: Marine terraces

Hydric soil rating: Yes

Walpole

Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Chatfield

Percent of map unit: 4 percent
Hydric soil rating: No

Scituate and newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Boxford and eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

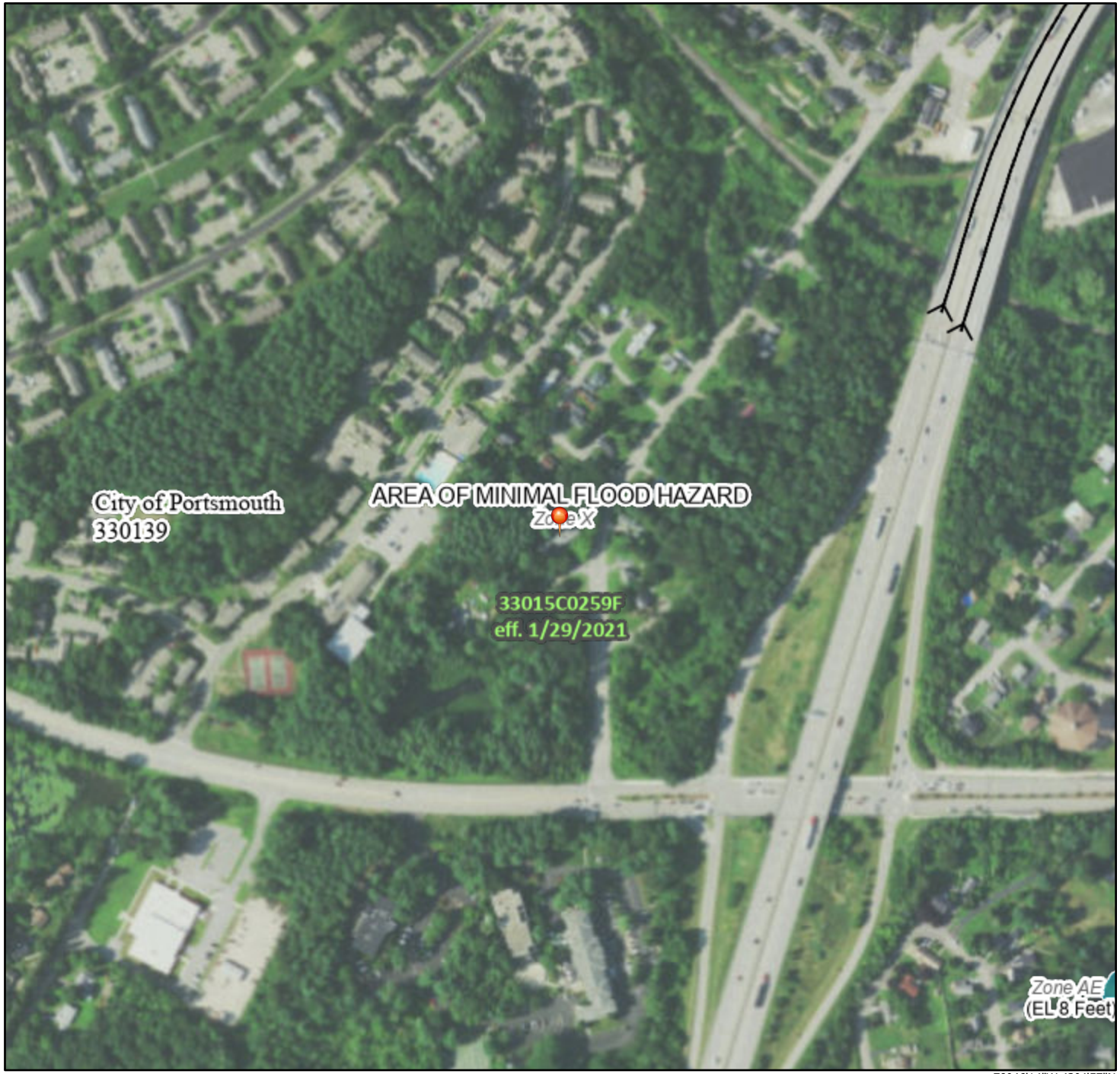
APPENDIX E

FEMA FIRM MAP

National Flood Hazard Layer FIRMette

FEMA

70°46'52"W 43°5'23"N



70°46'14"W 43°4'57"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/31/2022 at 3:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX F

INSPECTION & LONG TERM MAINTENANCE PLAN

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

INSPECTION & LONG-TERM MAINTENANCE PLAN
FOR
PROPOSED SUBDIVISION

201 KEARSAGE WAY
PORTSMOUTH, NH

Introduction

The intent of this plan is to provide Richard Fusegni (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the Stormtech Subsurface Storage System and associated structures on the project site (collectively referred to as the "Stormwater Management System"). The contact information for the owner shall be kept current, and if there is a change of ownership of the property this plan must be transferred to the new owner.

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly and will help in maintaining a high quality of stormwater runoff to minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Annual Report

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the City of Portsmouth Public Works Department, if required.

Inspection & Maintenance Checklist/Log

The following pages contain the Stormwater Management System Inspection & Maintenance Requirements and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

Stormwater Management System Components

The Stormwater Management System is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, the design includes the following elements:

Non-Structural BMPs

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project include but are not limited to:

- Temporary and Permanent mulching
- Temporary and Permanent grass cover
- Trees
- Shrubs and ground covers
- Miscellaneous landscape plantings
- Dust control
- Tree protection
- Topsoiling
- Sediment barriers
- Stabilized construction entrance
- Vegetated buffer area

Structural BMPs

Structural BMPs are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to:

- StormTech Subsurface Stormwater System
- Outlet Control Structures and Storm Drains

Inspection and Maintenance Requirements

The following summarizes the inspection and maintenance requirements for the various BMPs that may be found on this project.

1. **Grassed areas (until established):** After each rain event of 0.5" or more during a 24-hour period, inspect grassed areas for signs of disturbance, such as erosion. If damaged areas are discovered, immediately repair the damage. Repairs may include adding new topsoil, lime, seed, fertilizer and mulch.
2. **Plantings**: Planting and landscaping (trees, shrubs) shall be monitored bi-monthly during the first year to insure viability and vigorous growth. Replace dead or dying vegetation with new stock and make adjustments to the conditions that caused the dead or dying vegetation. During dryer times of the year, provide weekly watering or irrigation during the establishment period of the first year.

Make the necessary adjustments to ensure long-term health of the vegetated covers, i.e. provide more permanent mulch or compost or other means of protection.

3. **Vegetated buffer area:** Check for scour or sediment buildup in buffer area, at least annually. Replace any vegetation removed by scour or sediment buildup with similar vegetation.
4. **StormTech Subsurface Stormwater System Maintenance:** Reference the attached operations and maintenance manual for proper maintenance of the system.
5. **Outlet Control Structures and Storm Drains:** Monitor accumulation of debris in outlet control structures monthly or after significant rain events. Remove sediments when they accumulate within the yard drains and outlet pipe. During construction, maintain inlet protection until the site has been stabilized. Prior to the end of construction, inspect the drains and basins for accumulations and remove and clean by jet-vacuuming.

Pollution Prevention

The following pollution prevention activities shall be undertaken to minimize potential impacts on stormwater runoff quality. The Contractor is responsible for all activities during construction. The Owner is responsible thereafter.

Spill Procedures

Any discharge of waste oil or other pollutant shall be reported immediately to the New Hampshire Department of Environmental Services (NHDES). The Contractor/Owner will be responsible for any incident of groundwater contamination resulting from the improper discharge of pollutants to the stormwater system, and may be required by NHDES to remediate incidents that may impact groundwater quality. If the property ownership is transferred, the new owner will be informed of the legal responsibilities associated with operation of the stormwater system, as indicated above.

Sanitary Facilities

Sanitary facilities shall be provided during all phases of construction.

Material Storage

No on site trash facility is provided until homes are constructed. The contractors are required to remove trash from the site. Hazardous material storage is prohibited.

Material Disposal

All waste material, trash, sediment, and debris shall be removed from the site and disposed of in accordance with applicable local, state, and federal guidelines and regulations. Removed sediments shall be if necessary dewatered prior to disposal.

Invasive Species

Monitor the Stormwater Management System for signs of invasive species growth. If caught early, their eradication is much easier. The most likely places where invasions start is in wetter, disturbed soils or detention ponds. Species such as phragmites and purple loose-strife are common invaders in these wetter areas. If they are found, the owner shall refer to the fact-sheet created by the University of New Hampshire Cooperative Extension (or other source) or contact a wetlands scientist with experience in invasive species control to implement a plan of action for eradication. Measures that do not require the application of chemical herbicides should be the first line of defense.

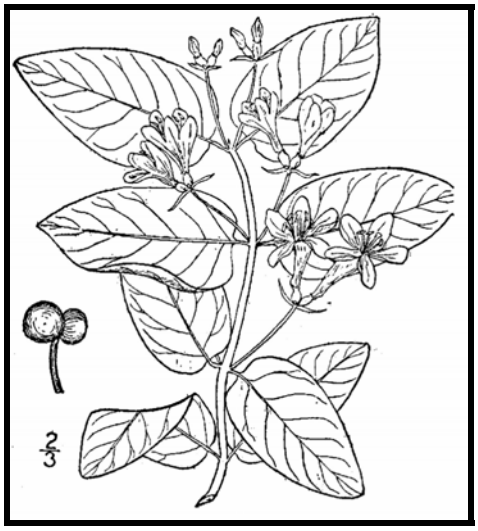
Figure 1: Lythrum salicaria, Purple Loosestrife. Photo by Liz West.

Figure 2: Phragmites australis. Photo by Le Loup Gris

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

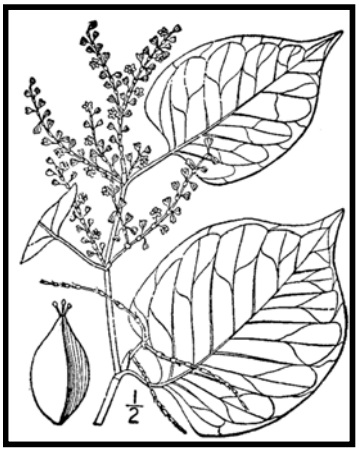
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.



Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

<table>
<tr><th>Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">Norway maple
(Acer platanoides)
European barberry
(Berberis vulgaris)
Japanese barberry
(Berberis thunbergii)
autumn olive
(Elaeagnus umbellata)
burning bush
(Euonymus alatus)
Morrow's honeysuckle
(Lonicera morrowii)
Tatarian honeysuckle
(Lonicera tatarica)
showy bush honeysuckle
(Lonicera x bella)
common buckthorn
(Rhamnus cathartica)
glossy buckthorn
(Frangula alnus)</td><td rowspan="2">Fruit and Seeds
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Use as firewood.
▪ Make a brush pile.
▪ Chip.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip once all fruit has dropped from branches.
▪ Leave resulting chips on site and monitor.</td></tr>
<tr><td rowspan="2">oriental bittersweet
(Celastrus orbiculatus)
multiflora rose
(Rosa multiflora)</td><td rowspan="2">Fruits, Seeds, Plant Fragments
  </td><td>Prior to fruit/seed ripening
Seedlings and small plants
▪ Pull or cut and leave on site with roots exposed. No special care needed.
Larger plants
▪ Make a brush pile.
▪ Burn.</td></tr>
<tr><td>After fruit/seed is ripe
Don't remove from site.
▪ Burn.
▪ Make a covered brush pile.
▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</td></tr>
</table>

<table>
<tr><th>Non-Woody Plants</th><th>Method of Reproducing</th><th>Methods of Disposal</th></tr>
<tr><td rowspan="2">garlic mustard
(Alliaria petiolata)
spotted knapweed
(Centaurea maculosa)
▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.
black swallow-wort
(Cynanchum nigrum)
▪ May cause skin rash. Wear gloves and long sleeves when handling.
pale swallow-wort
(Cynanchum rossicum)
giant hogweed
(Heracleum mantegazzianum)
▪ Can cause major skin rash. Wear gloves and long sleeves when handling.
dame’s rocket
(Hesperis matronalis)
perennial pepperweed
(Lepidium latifolium)
purple loosestrife
(Lythrum salicaria)
Japanese stilt grass
(Microstegium vimineum)
mile-a-minute weed
(Polygonum perfoliatum)</td><td rowspan="2">Fruits and Seeds
  </td><td>Prior to flowering
Depends on scale of infestation
Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>During and following flowering
Do nothing until the following year or remove flowering heads and bag and let rot.

Small infestation
▪ Pull or cut plant and leave on site with roots exposed.

Large infestation
▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).
▪ Monitor. Remove any re-sprouting material.</td></tr>
<tr><td>common reed
(Phragmites australis)
Japanese knotweed
(Polygonum cuspidatum)
Bohemian knotweed
(Polygonum x bohemicum)</td><td>Fruits, Seeds, Plant Fragments
Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn’t materially influence disposal activities.</td><td>Small infestation
▪ Bag all plant material and let rot.
▪ Never pile and use resulting material as compost.
▪ Burn.

Large infestation
▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.
▪ Monitor and remove any sprouting material.
▪ Pile, let dry, and burn.</td></tr>
</table>

January 2010

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

AREA BUFFER LONG-TERM MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Check vegetation health. *-Inspect buffer for signs of erosion or sediment buildup.*	Annually	*-Remove sediment buildup.* *-Replace vegetation in damaged areas similar to prior vegetation.* *-Otherwise, buffer area should remain undisturbed.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Outlet Control Structures *-Drain Manholes* *-Catch Basins*	Every other Month	*Check for erosion or short-circuiting* *Check for sediment accumulation* *Check for floatable contaminants*
-Drainage Pipes	1 time per 2 years	*Check for sediment accumulation/clogging, or soiled runoff.* *Check for erosion at outlets.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

RIPRAP LONG-TERM MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
ENTRANCE SURFACE *-Check for sediment accumulation/clogging of stone* *-Check for migration of stone*	After heavy rains, as necessary	*-Top dress area with new stone.* *-Replace stone completely if completely clogged.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

STABILIZED CONSTRUCTION ENTRANCE CONSTRUCTION MAINTENANCE SHEET

INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
ENTRANCE SURFACE *-Check for sediment accumulation/clogging of stone* *-Check Vegetative filter strips*	After heavy rains, as necessary	*-Top dress pad with new stone.* *-Replace stone completely if completely clogged.* *-Maintain vigorous stand of vegetation.*
WASHING FACILITIES (if applicable) *-Monitor Sediment Accumulation*	As often as necessary	*-Remove Sediments from traps.*

MAINTENANCE LOG	
PROJECT NAME	
INSPECTOR NAME	**INSPECTOR CONTACT INFO**
DATE OF INSPECTION	**REASON FOR INSPECTION** ☐LARGE STORM EVENT ☐PERIODIC CHECK-IN
IS CORRECTIVE ACTION NEEDED? ☐YES ☐NO	**DESCRIBE ANY PROBLEMS, NEEDED MAINTENANCE**
DATE OF MAINTENANCE	**PERFORMED BY**
NOTES	

StormTech
Detention • Retention • Water Quality
An ADS company

Isolator® Row O&M Manual

THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

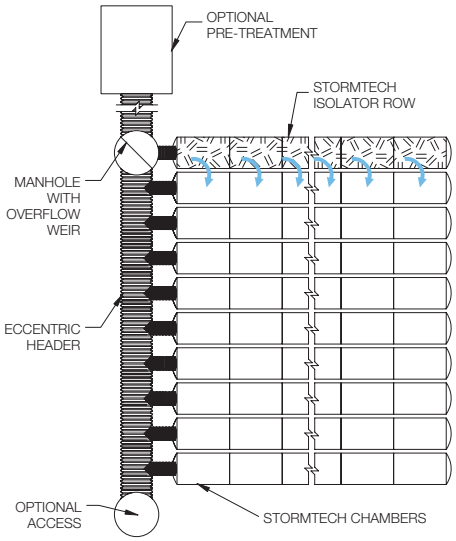
The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (not to scale)



ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

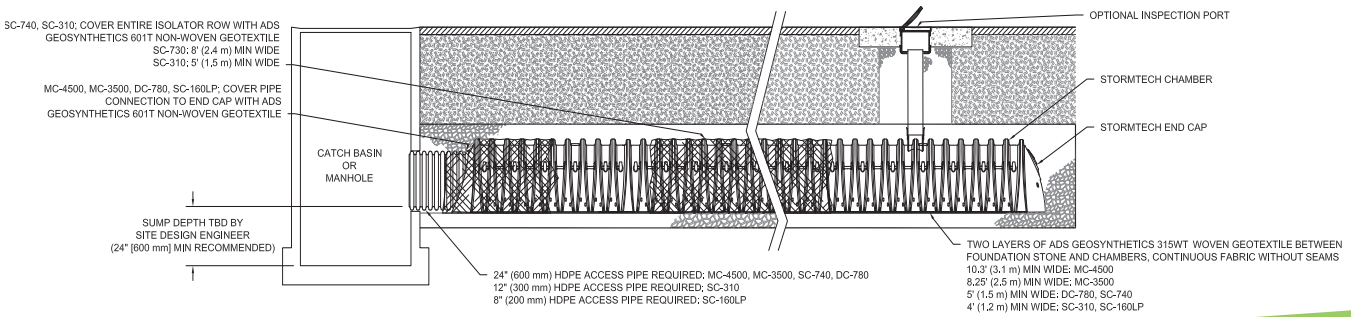
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



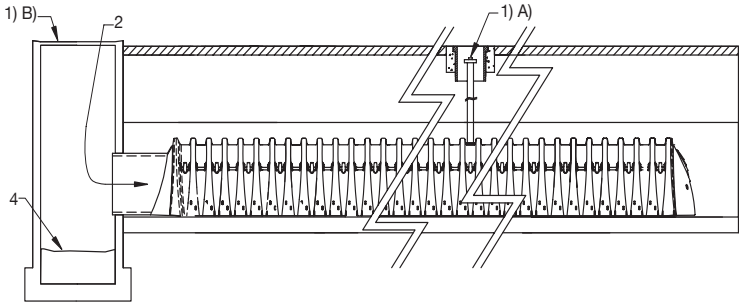
ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1
Inspect Isolator Row for sediment.
- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
  - i. Remove cover from manhole at upstream end of Isolator Row
  - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
    1. Mirrors on poles or cameras may be used to avoid a confined space entry
    2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2
Clean out Isolator Row using the JetVac process.
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3
Replace all caps, lids and covers, record observations and actions.

STEP 4
Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com
The ADS logo and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc.
Stormtech® and the Isolator® Row are registered trademarks of StormTech, Inc.
© 2017 Advanced Drainage Systems, Inc. #11011 03/17 CS

StormTech® Detention • Retention • Water Quality
A division of ADS

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

PROPOSED SUBDIVISION RESIDENTIAL DEVELOPMENT
201 KEARSARGE WAY
PORTSMOUTH, NEW HAMPSHIRE
PERMIT PLANS

OWNER:

RICHARD P. FUSEGNI
201 KEARSARGE WAY
PORTSMOUTH, N.H. 03801
TEL. (603)502–9009

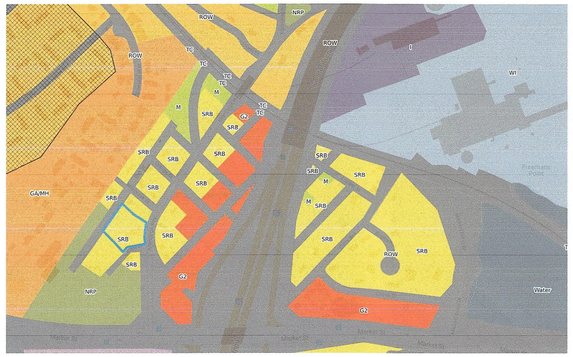
CIVIL ENGINEER & LAND SURVEYOR:

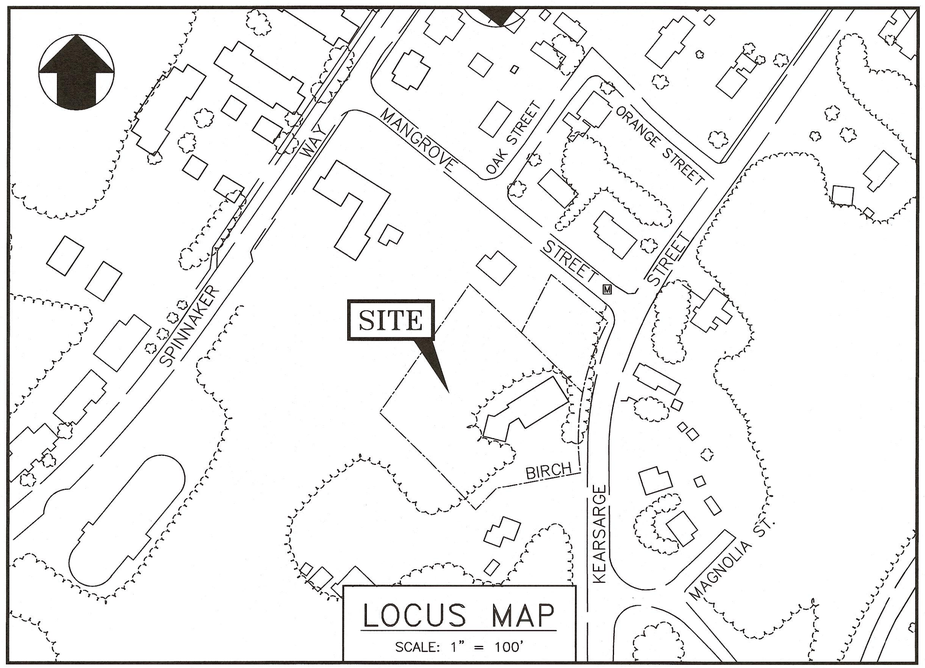
AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801
TEL. (603) 430–9282
FAX (603) 436–2315

AUTORNEY:

CHRISTOPHER MULLIGAN
266 MIDDLE STREET
PORTSMOUTH, N.H. 03801
TEL. (603) 427–5500

PORTSMOUTH ZONING MAP





LEGEND:

EXISTING	*PROPOSED*	
		PROPERTY LINE
		SETBACK
S	S	SEWER PIPE
SL	SL	SEWER LATERAL
G	G	GAS LINE
D	D	STORM DRAIN
W	W	WATER LINE
WS	WS	WATER SERVICE
UGE	UGE	UNDERGROUND ELECTRIC
OHW	OHW	OVERHEAD ELECTRIC/WIRES
	UD	FOUNDATION DRAIN
		EDGE OF PAVEMENT (EP)
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		UTILITY POLE
		WALL MOUNTED EXTERIOR LIGHTS
		TRANSFORMER ON CONCRETE PAD
		ELECTRIC HANDHOLD
		SHUT OFFS (WATER/GAS)
	GV	GATE VALVE
	HYD	HYDRANT
CB	CB	CATCH BASIN
S	SMH	SEWER MANHOLE
D	DMH	DRAIN MANHOLE
T	TMH	TELEPHONE MANHOLE
14	14	PARKING SPACE COUNT
PM		PARKING METER
LSA		LANDSCAPED AREA
TBD	TBD	TO BE DETERMINED
CI	CI	CAST IRON PIPE
COP	COP	COPPER PIPE
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
AC	–	ASBESTOS CEMENT PIPE
VC	VC	VITRIFIED CLAY PIPE
EP	EP	EDGE OF PAVEMENT
EL.	EL.	ELEVATION
FF	FF	FINISHED FLOOR
INV	INV	INVERT
S =	S =	SLOPE FT/FT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL

DIG SAFE
MA – ME – NH – RI – VT
1-888-344-7233
CALL TOLL FREE

PORTSMOUTH APPROVAL CONDITIONS NOTE:
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

INDEX OF SHEETS

UTILITY CONTACTS

ELECTRIC:
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 436–7708, Ext. 555.5678
ATTN: MICHAEL BUSBY, P.E. (MANAGER)

NATURAL GAS:
UNITIL
325 WEST ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 294–5144
ATTN: DAVE BEAULIEU

CABLE:
COMCAST
155 COMMERCE WAY
PORTSMOUTH, N.H. 03801
Tel. (603) 679–5695 (X1037)
ATTN: MIKE COLLINS

SEWER & WATER:
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427–1530
ATTN: JIM TOW

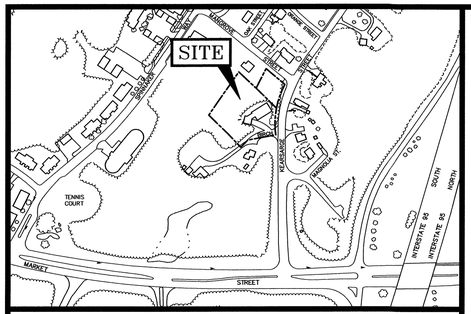
COMMUNICATIONS:
CONSOLIDATED COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427–5525

PROPOSED RESIDENTIAL DEVELOPMENT
201 KEARSARGE WAY
PORTSMOUTH, N.H.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

PLAN SET SUBMITTAL DATE: 5 OCTOBER 2022

J:\JOBS2\JN2200s\JN2258\2022 Subdivision\Plans & Specs\Site\2258 COVER 2022.dwg, 10/6/2022 9:42:34 AM, Canon TX-3000.pc3



LOCATION MAP SCALE: 1" = 300'

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
11/21	MAP 11/LOT 21
○IR FND	IRON ROD FOUND
○IP FND	IRON PIPE FOUND
●IR SET	IRON ROD SET
◉DH FND	DRILL HOLE FOUND
⊙DH SET	DRILL HOLE SET
▣NHHB	NHDOT BOUND FOUND
	EDGE OF PAVEMENT
	OVERHEAD WIRE

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	330.00'	131.02'	130.16'	S03°34'31"W	22°44'52"
C2	330.00'	82.84'	82.62'	S07°45'28"W	14°22'59"
C3	330.00'	48.18'	48.13'	S03°36'58"E	8°21'53"

LINE TABLE

LINE	BEARING	DISTANCE
L1	N54°23'09"W	24.98'
L2	N55°04'52"W	24.98'
L3	N55°04'52"W	24.98'
L4	S55°04'52"E	24.98'

ACCESS EASEMENT
LOT 1: 519 S.F.
EASEMENT LENGTH TABLE

LINE	BEARING	DISTANCE
E1	N48°13'46"W	19.25'
E2	N41°46'14"E	23.59'
E3	S46°58'50"E	26.65'
T1*	S46°02'10"W	10.01'
T2**	S75°46'03"E	32.67'

*TIE TO ANGLE POINT AT BIRCH STREET
**TIE TO SE'LY CORNER OF LOT 2
BOTH LINES NOT BOUNDARY LINES

EASEMENT CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
EC1	70.00'	24.29'	24.17'	S59°35'11"W	19°52'46"

CONSERVATION AREA
LOTS 1,2,3: AREA: 24,400 S.F

LINE	BEARING	DISTANCE
CN1	N34°56'31"E	81.06'
CN2	N35°03'15"E	57.36'
CN3	N34°51'05"E	71.05'

"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

10.5.22
JOHN R. CHAGNON, LLS DATE

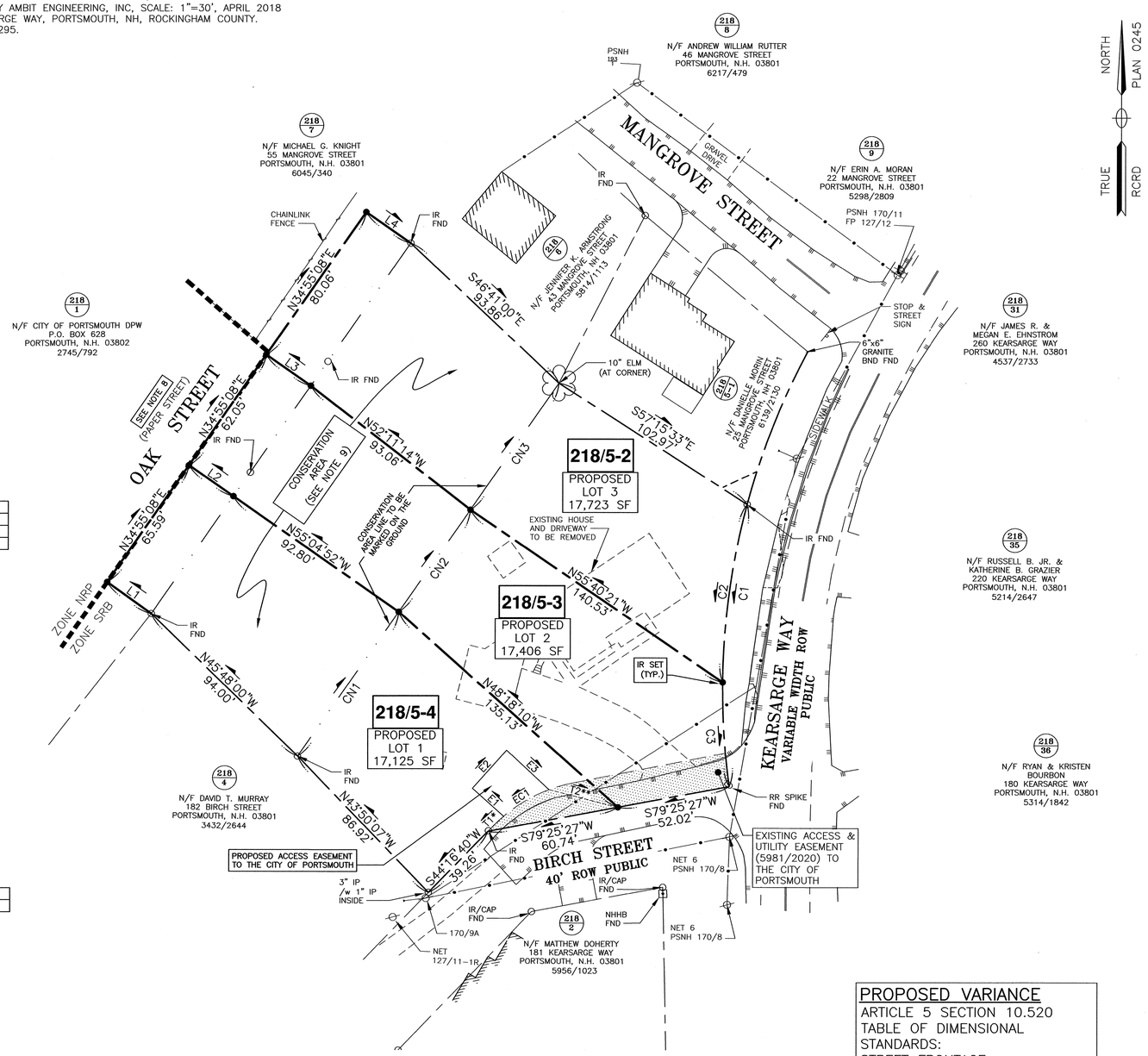
STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 738 JOHN R. CHAGNON

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

PLAN REFERENCES

1) "SUBDIVISION PLAN TAX MAP 218–LOT 5, OWNER RICHARD P. FUSEGNI", BY AMBIT ENGINEERING, INC, SCALE: 1"=30', APRIL 2018 201 KEARSARGE WAY, PORTSMOUTH, NH, ROCKINGHAM COUNTY. RCRD–D–41295.



PROPOSED VARIANCE
ARTICLE 5 SECTION 10.520
TABLE OF DIMENSIONAL STANDARDS:
STREET FRONTAGE:
* PROPOSED LOT 3: FRONTAGE OF 83 FEET WHERE 100 FEET IS REQUIRED

APPROVED: 16 AUGUST 2022

GRAPHIC SCALE
30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 218 AS LOT 5.

2) OWNER OF RECORD:
RICHARD P. FUSEGNI
201 KEARSARGE WAY
PORTSMOUTH, N.H. 03801
5476/2661 (5979/2783)
RCRD PLAN 0245

3) PARCEL IS NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021.

4) EXISTING LOT AREA:
52,253 S.F.
1.1996 AC.

5) PARCEL IS LOCATED IN THE SINGLE RESIDENCE B (SRB) DISTRICT & PARTIALLY IN THE NOISE OVERLAY DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA:		15,000 S.F.
FRONTAGE:		100 FT.
SETBACKS:	FRONT:	30 FT.
	SIDE:	10 FT.
	REAR:	30 FT.
MAXIMUM STRUCTURE HEIGHT: 35 FT.		
MAXIMUM STRUCTURE COVERAGE: 20%		
MINIMUM OPEN SPACE: 40%		

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE SUBDIVISION OF TAX MAP 218 LOT 5 INTO 3 LOTS.

8) OAK STREET WAS CREATED BY A PLAN DATED 1919 AND WAS NEVER CONSTRUCTED. BY OPERATION OF LAW THE AREAS SHOWN BELONG TO THE RESPECTIVE LOTS BY WAY OF APPROPRIATION OF REVERSION RIGHTS.

9) PROPOSED DECLARATION OF RESTRICTIVE COVENANTS AREA.

10) MAP 218 LOT 5–2 (PROPOSED LOT 1) WILL GRANT AN EASEMENT TO THE CITY OF PORTSMOUTH TO TURN AROUND IN DRIVEWAY OF LOT 5–2 FOR PLOWING AND ACCESS

11) STREET ADDRESSES SHALL MATCH DRIVEWAY LOCATIONS.

12) DURING CONSTRUCTION ON LOTS 1 AND 2, ACCESS TO EXISTING PROPERTIES ON BIRCH STREET SHALL BE MAINTAINED.

NO.	DESCRIPTION	DATE
4	RESTRICTIVE COVENANTS	10/5/22
3	EASEMENT TABLE, LABELS	10/4/22
2	ISSUED FOR PB APPROVAL	9/20/22
1	ISSUED FOR ZBA APPROVAL	7/20/22
0	ISSUED FOR COMMENT	6/1/2022

REVISIONS

SUBDIVISION PLAN
TAX MAP 218 – LOT 5

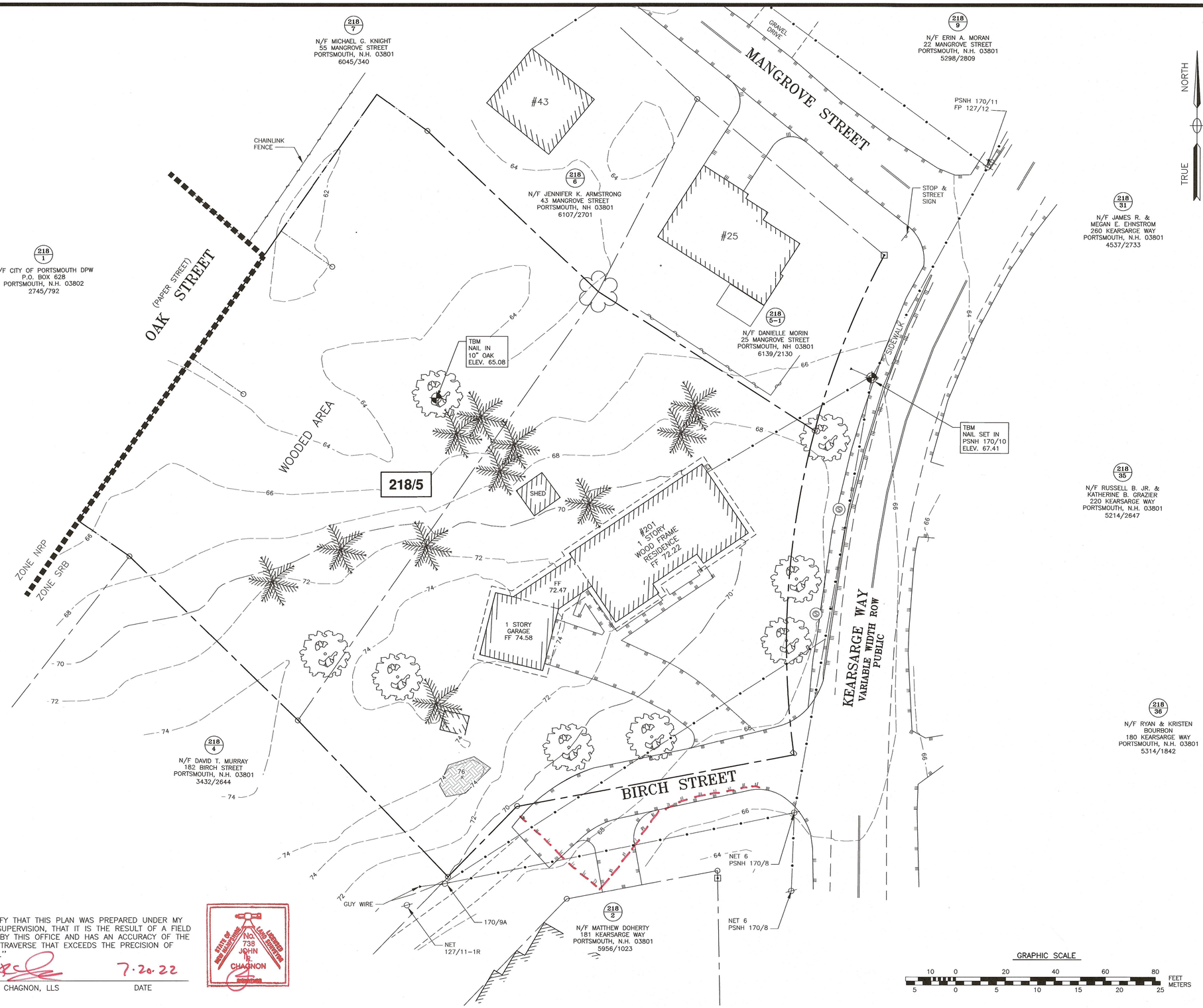
OWNER
RICHARD P. FUSEGNI

LAND LOCATED AT:
201 KEARSARGE WAY
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 30' *JUNE 2022*

FB 311, PG 1 2258

J:\JOBS2\JN2200s\JN2250s\JN2258\2022 Subdivision\Plans & Specs\Site\2258 VARIANCE 2022.dwg, 10/6/2022 9:28:49 AM, Canon TX-3000.pc3



"I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

7.20.22

JOHN R. CHAGNON, LLS — DATE

STATE OF NEW HAMPSHIRE — No. 738 JOHN R. CHAGNON — LICENSED LAND SURVEYOR

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON TAX MAP 218 LOT 5.

5) EXISTING HOUSE AND SHED TO BE REMOVED. SEE DEMOLITION PLAN.

6) DURING CONSTRUCTION, ACCESS TO EXISTING PROPERTIES ON BIRCH STREET SHALL BE MAINTAINED.

SITE DEVELOPMENT
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	7/20/22
0	ISSUED FOR COMMENT	5/19/21

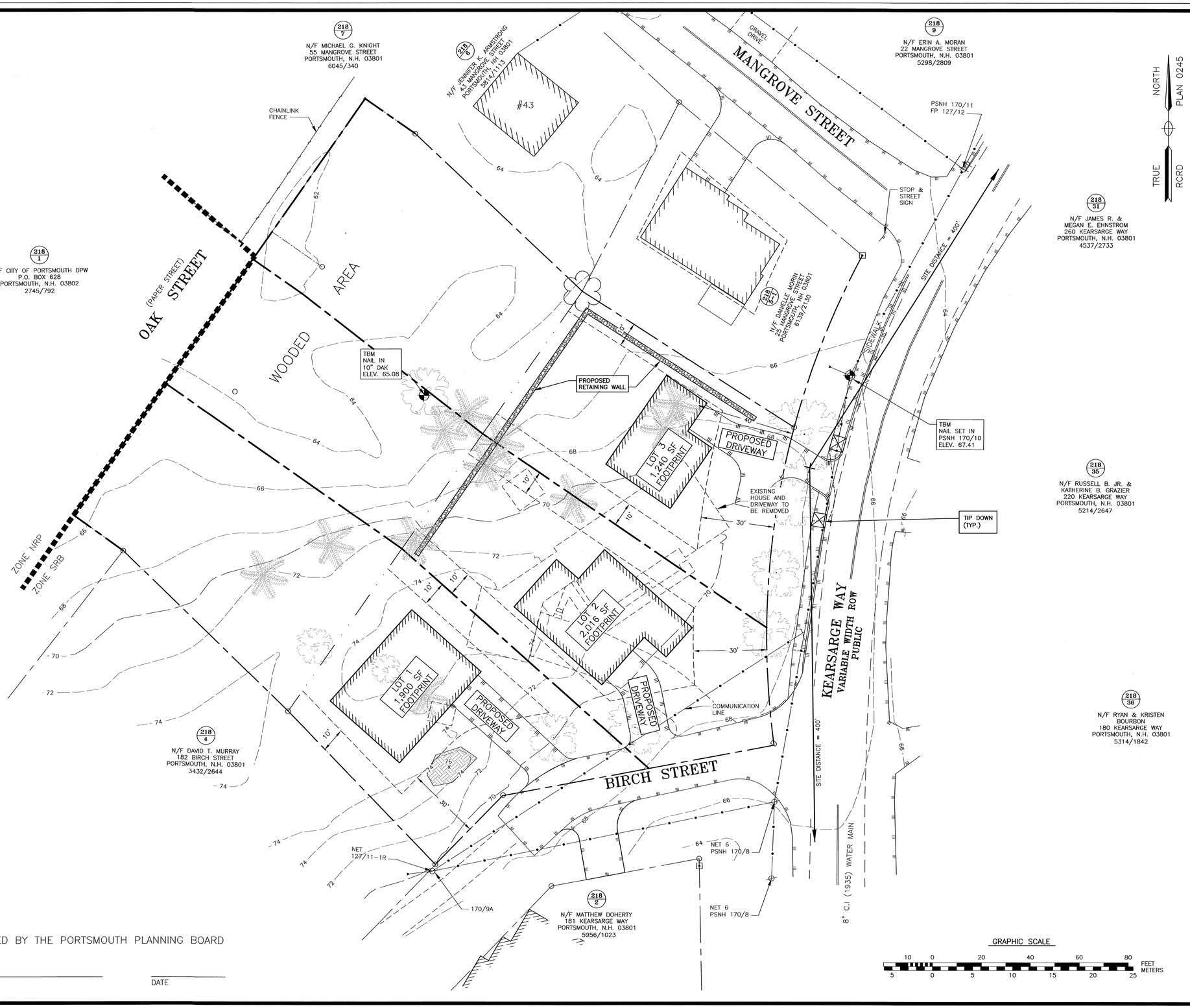
REVISIONS

SCALE: 1" = 20' — MAY 2021

EXISTING CONDITIONS PLAN — **C1**

FB. 311 PG 1 — 2258

J:\OBS2\JN2200s\JN2250s\JN2258\2021 Site Plan Lot 2\Plans & Specs\Site\2258 Site 2021.dwg, Thu Jul 21 09:13:43 2022, Canon TX-3000.pc3



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) THE PURPOSE OF THIS PLAN IS TO SHOW A CONCEPTUAL DEVELOPMENT LAYOUT ON THE PROPERTY.

5) EXISTING HOUSE AND SHED TO BE REMOVED. SEE DEMOLITION PLAN.

6) DURING CONSTRUCTION ON LOTS 1 AND 2, ACCESS TO EXISTING PROPERTIES ON BIRCH STREET SHALL BE MAINTAINED.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	9/20/22
0	ISSUED FOR COMMENT	7/20/22

REVISIONS

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

No. 738 JOHN R. CHAGNON LICENSED LAND SURVEYOR – STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' JUNE 2022

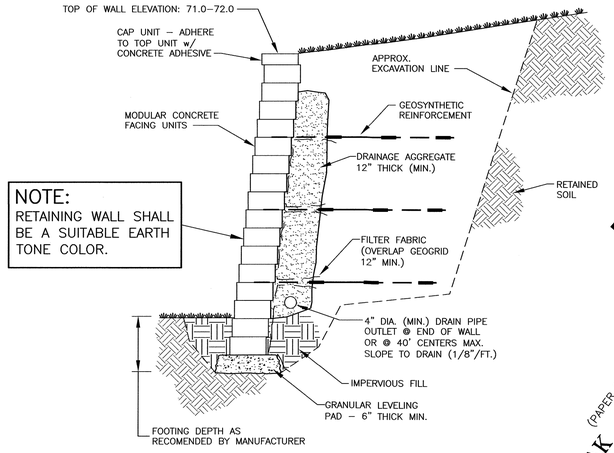
SUBDIVISION SITE PLAN

C1A

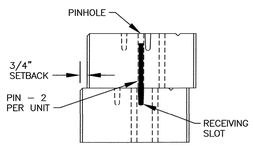
FB. 311, PG 1

2258

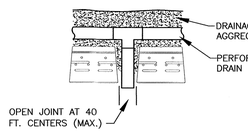
J:\O&E\2J\N2200s\JN2250\JN2258\2022 Subdivision\Plans & Specs\Site\2258 SUBDIVISION 2022.dwg, 9/20/2022 9:09:13 AM, Canon TX-3000.pc3



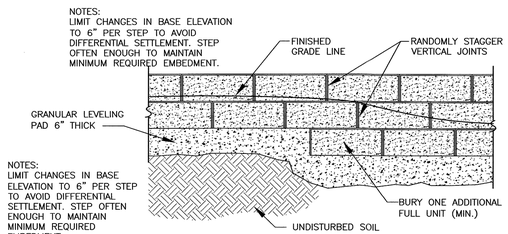
NOTE:
RETAINING WALL SHALL BE A SUITABLE EARTH TONE COLOR.



PINNING DETAIL
CROSS SECTION NTS



WALL DRAIN DETAIL
WALLS OVER 4' NTS



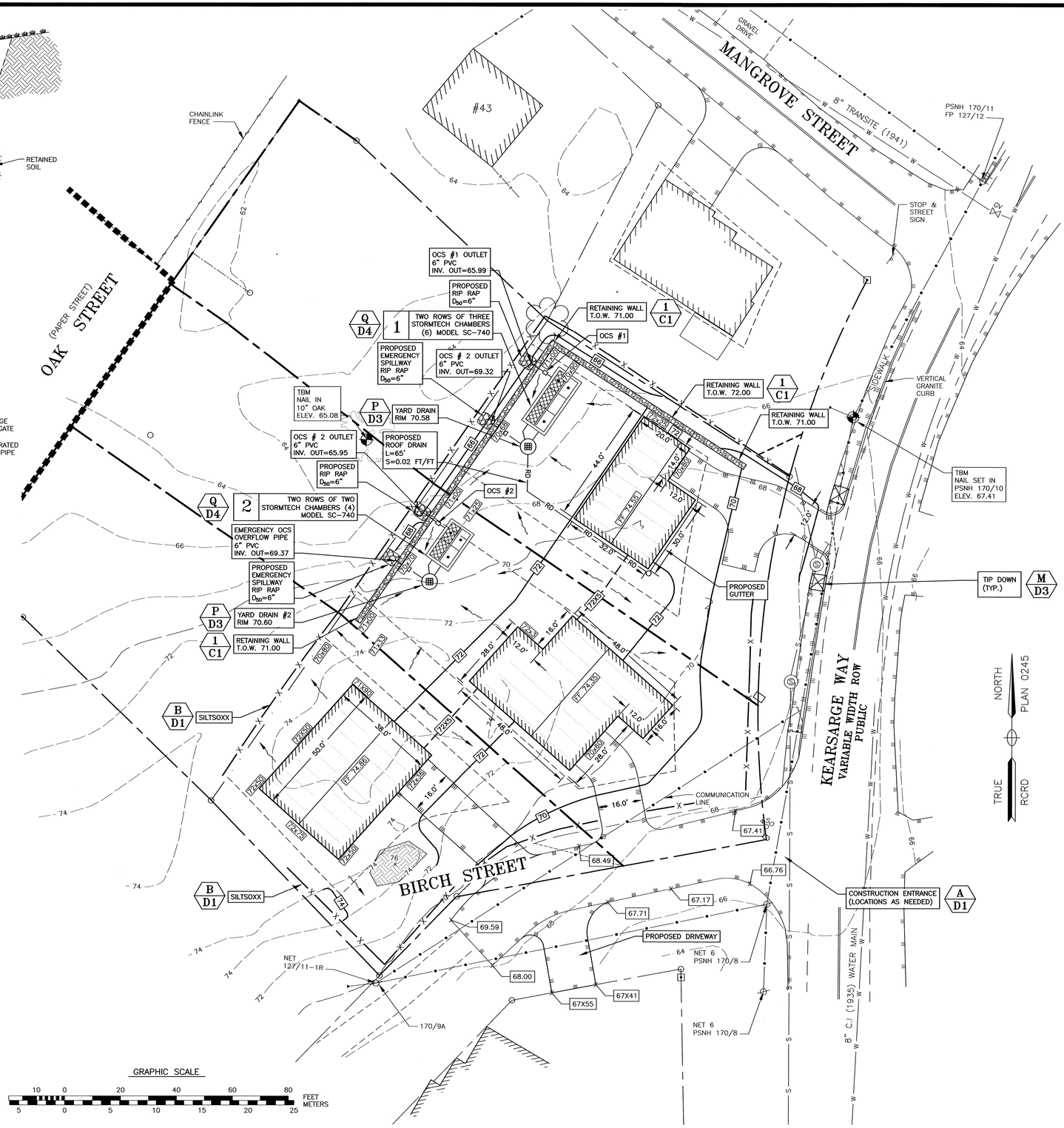
STEPPING BASE DETAIL
NTS

NOTE:
FINAL WALL CONSTRUCTION PLANS SHALL BE PREPARED BY A QUALIFIED LICENSED PROFESSIONAL ENGINEER AND BE SUBMITTED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. RETAINING WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

1/C2 RETAINING WALL
VERSA–LOK OR APPROVED EQUAL (800–770–4525) NTS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____



GRAPHIC SCALE
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) THERE ARE NO WETLANDS ON SUBJECT PROPERTY.

5) BUILDING WILL BE GUTTERED TO DIRECT ROOF RUNOFF TO THE DRAINAGE SYSTEM.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	9/20/22
0	ISSUED FOR COMMENT	7/20/22

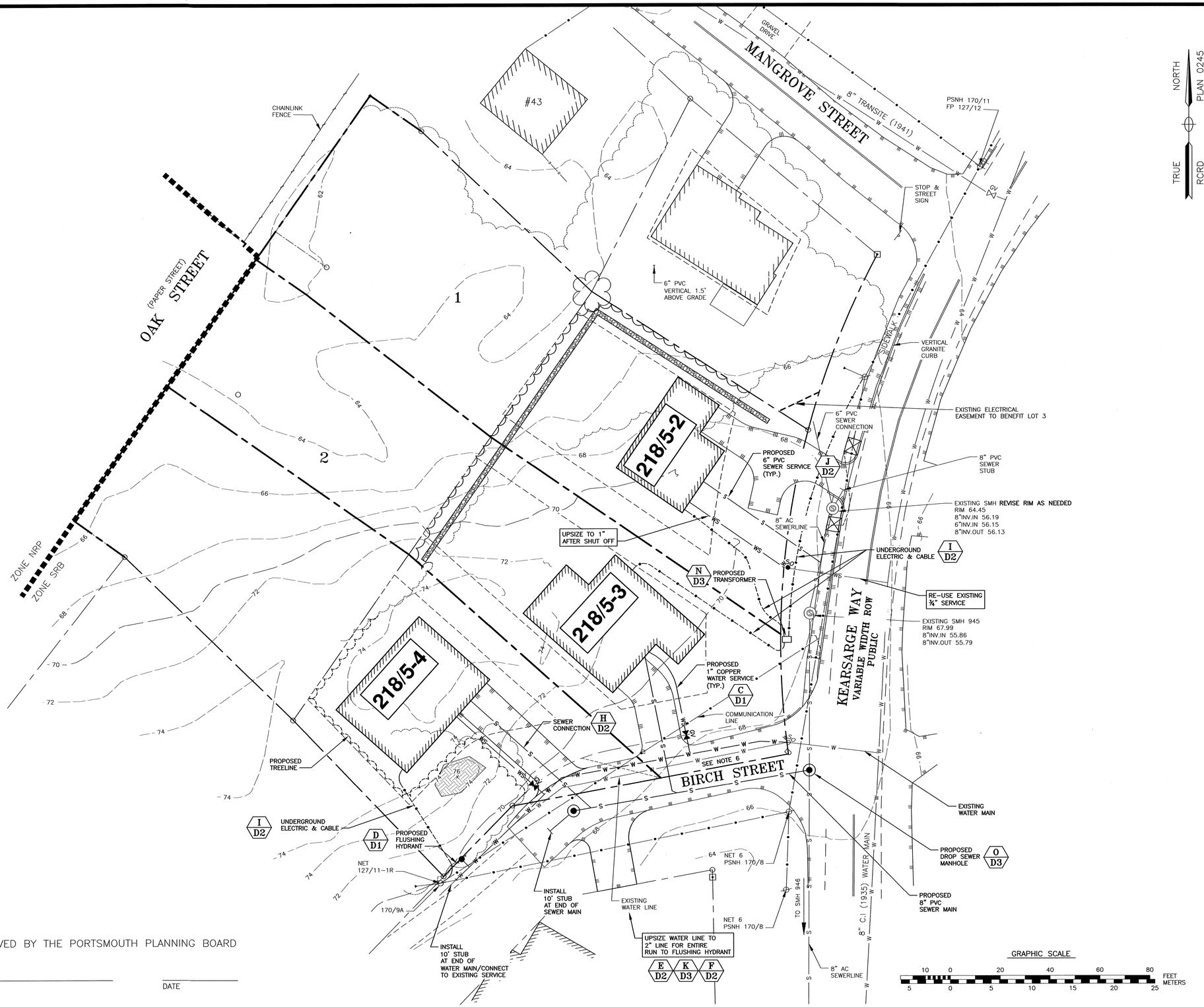
REVISIONS

SCALE: 1" = 20' JUNE 2022

GRADING & EROSION CONTROL PLAN C2

FB. 311, PG 1 2258

J:\JOBS2\JN2200s\JN2250s\JN2258-2022 Subdivision\Plans & Specs\Site\2258 SUBDIVISION 2022.dwg, 9/20/2022 12:46:32 PM, Canon TX-3000.pc3



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) THERE ARE NO WETLANDS ON SUBJECT PROPERTY.

5) TEMPORARY WATER SERVICE SHALL BE PROVIDED TO MAP 218 LOTS 2 & 3 DURING CONSTRUCTION OF NEW WATER LINE.

6) BIRCH STREET SHALL BE RECLAIMED AND RECONSTRUCTED, SEE SHEET P1.

7) CONDUIT RUNS FOR ELECTRIC AND COMMUNICATIONS SERVICES SHALL BE INSTALLED AT A MINIMUM OF EIGHT (8) FEET FROM THE SEWER MANHOLES.

8) DISTURB KEARSARGE STREET AS LITTLE AS POSSIBLE FOR THE INSTALLATION OF THE SIDEWALK TIP DOWNS.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	ELECTRIC LINES; NOTE 7&8	10/5/22
2	WATER LINES	10/4/22
1	ISSUED FOR APPROVAL	9/20/22
0	ISSUED FOR COMMENT	7/20/22

REVISIONS

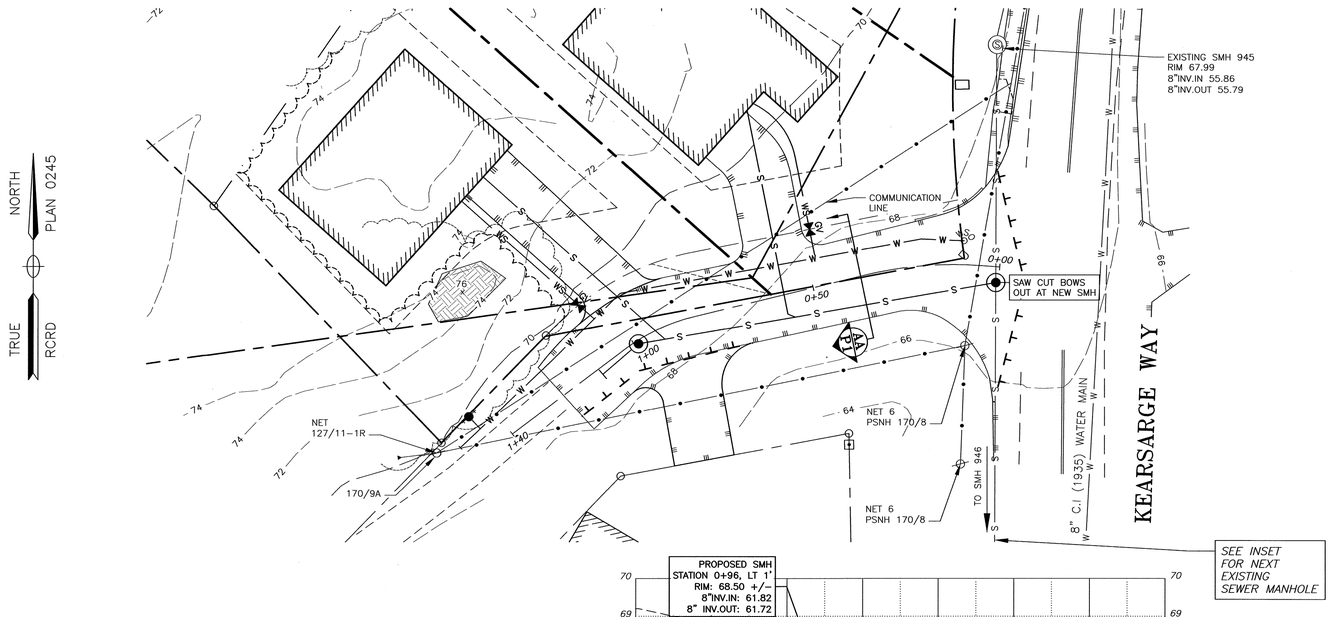
STATE OF NEW HAMPSHIRE · JOHN R. CHAGNON NO. 7864 · LICENSED PROFESSIONAL ENGINEER

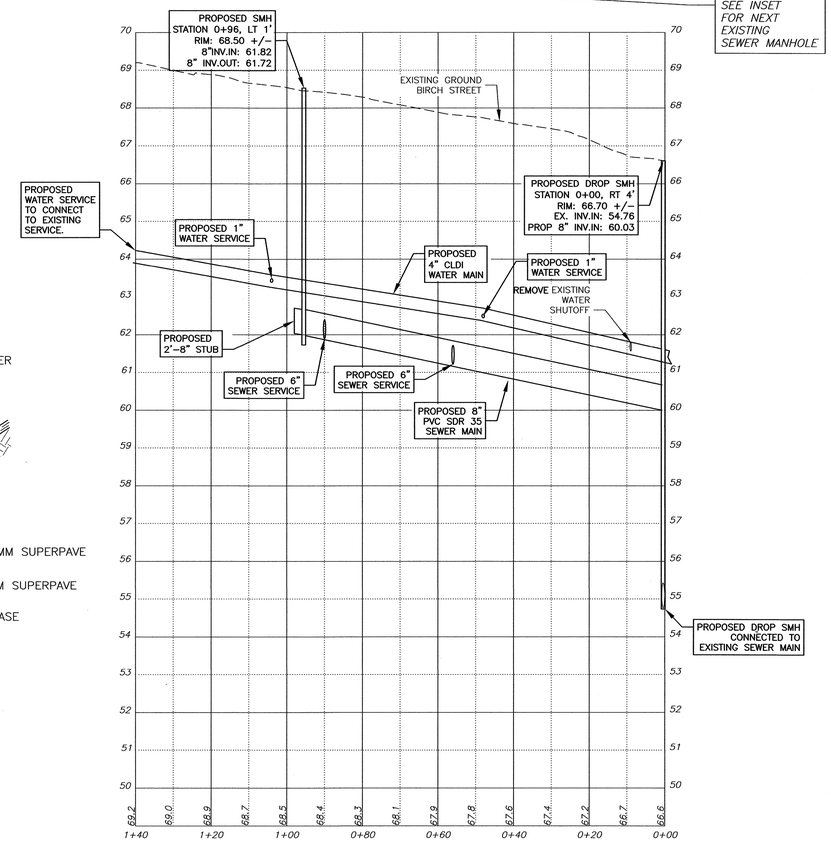
SCALE: 1" = 20' MAY 2021

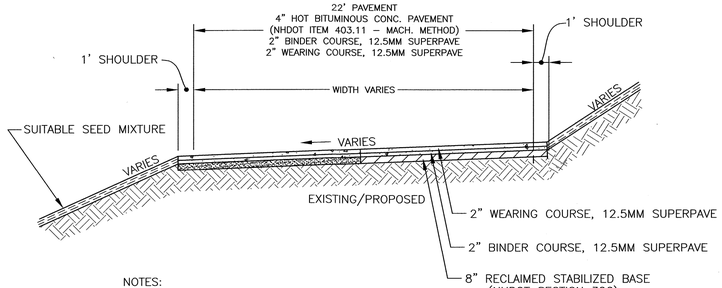
UTILITY PLAN **C3**

FB. 311, PG 1 2258

J:\JOBS2\JN2200s\JN2258\JN2258\2022 Subdivision\Plans & Specs\Site\2258 SUBDIVISION 2022.dwg, 10/6/2022 8:39:38 AM, Canon TX-3000.pc3





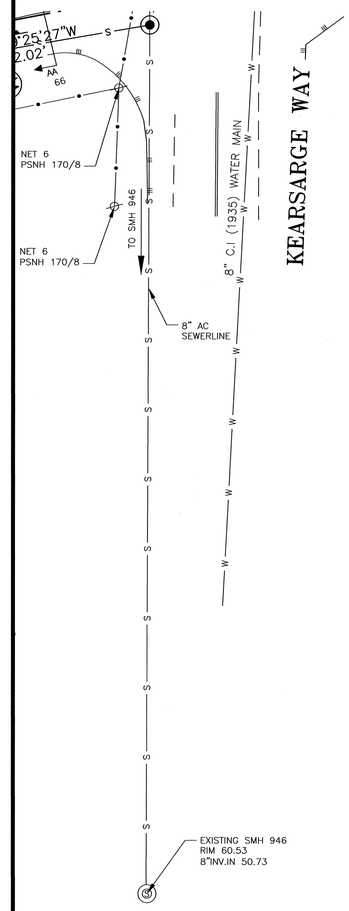


NOTES:
1) STREET TO BE GRADED TO MATCH THE EXISTING SLOPE & GRADES. NO CROWN

AA P1 BIRCH STREET CROSS SECTION
NTS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____



INSET

SCALE:
HORIZONTAL: 1"= 20'
VERTICAL: 1"= 2'

GRAPHIC SCALE
1" = 2' VERT.
1" = 20' HOR.

20 10 0 20 40 60 80 HORIZONTAL
2 1 0 2 4 6 8 VERTICAL

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY WITHIN 100 FEET OF UNDERGROUND UTILITIES. THE EXCAVATOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) ALL UTILITY MATERIALS TO BE APPROVED BY PORTSMOUTH WATER AND SEWER DEPARTMENTS.

5) UTILITY INSTALLATION SHALL BE WITNESSED BY THE CITY OF PORTSMOUTH.

6) DURING CONSTRUCTION ON LOTS 1 AND 2, ACCESS TO EXISTING PROPERTIES ON BIRCH STREET SHALL BE MAINTAINED.

7) PROVIDE EROSION CONTROL AS NEEDED FOR BIRCH STREET CONSTRUCTION.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	SAW CUT LINE	10/5/22
1	ISSUED FOR APPROVAL	9/20/22
0	ISSUED FOR COMMENT	7/20/22

REVISIONS

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: AS SHOWN — MAY 2021

BIRCH STREET PLAN AND PROFILE

P1

FB. 311, PG 1

2258

J:\JOBS2\JN2200s\JN2250\JN2258\2022 Subdivision\Plans & Specs\Site\2258 SUBDIVISION 2022.dwg, 10/6/2022 9:41:35 AM, Canon TX-3000.pc3

DEMOLITION NOTES

A) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.

B) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.

C) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

D) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.

E) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT TRENCH IN AREAS WHERE PAVEMENT IS TO BE REMOVED.

F) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.

G) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

H) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE.

I) ALL WORK WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW).

J) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL SLUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

K) CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED, THE CONTRACTOR SHALL EMPLOY A NH LICENSED LAND SURVEYOR TO REPLACE THEM.

L) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.

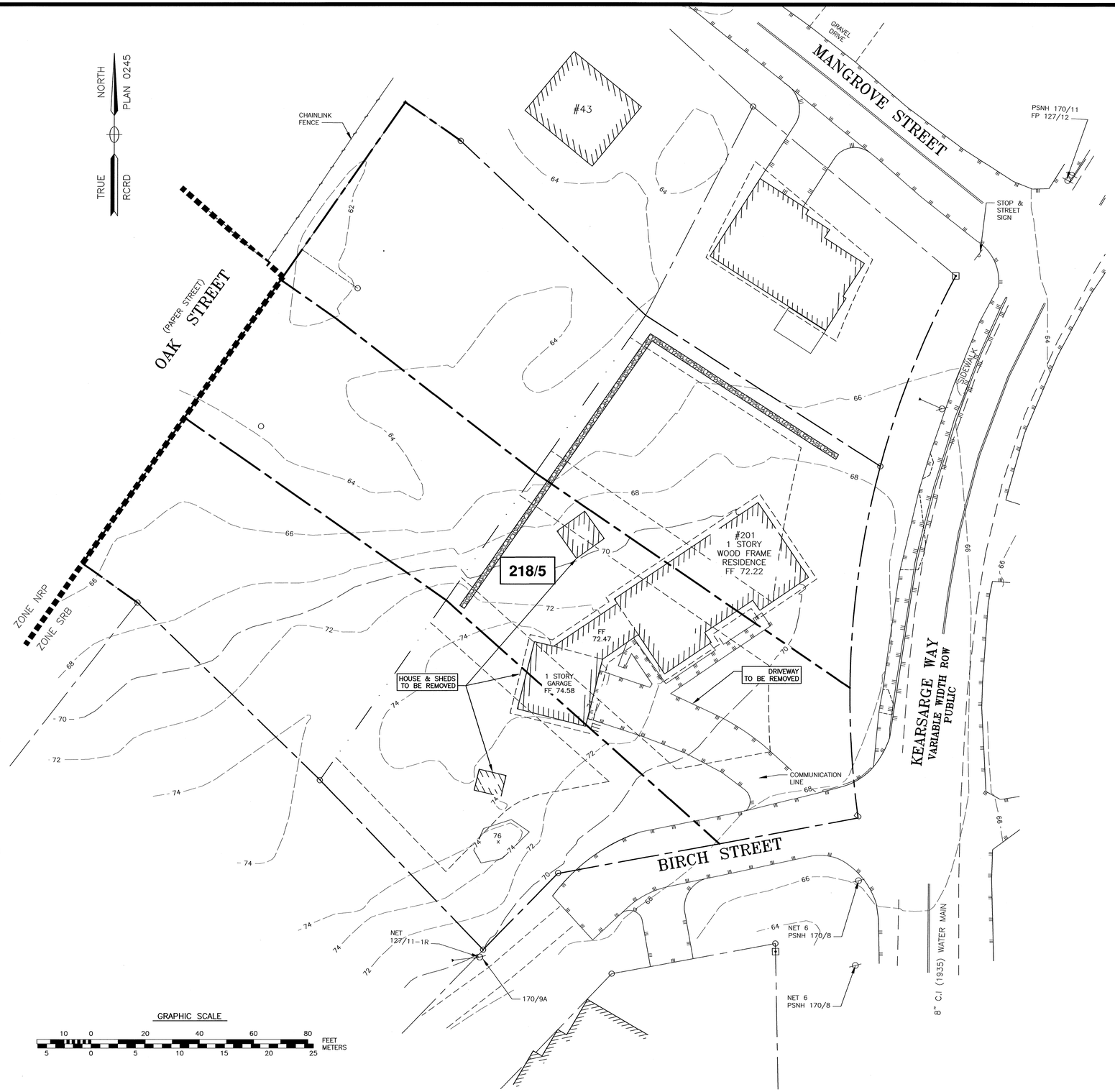
M) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFELY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

N) ANY CONTAMINATED MATERIAL REMOVED DURING THE COURSE OF THE WORK WILL REQUIRE HANDLING IN ACCORDANCE WITH NHDES REGULATIONS. CONTRACTOR SHALL HAVE A HEALTH AND SAFETY PLAN IN PLACE, AND COMPLY WITH ALL APPLICABLE PERMITS, APPROVALS, AUTHORIZATIONS, AND REGULATIONS.

O) DURING CONSTRUCTION ACCESS WILL BE PROVIDED TO ALL EXISTING PROPERTIES LOCATED ON BIRCH ST.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	9/20/22
0	ISSUED FOR COMMENT	7/20/22
	REVISIONS	

JOHN R. CHAGNON NO. 7851 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' MAY 2021

DEMOLITION PLAN C4

FB. 311, PG 1 2258

J:\OBS2\JN2200s\JN2259\JN2259.2022 Subdivision\Plans & Specs\Site\2258 SUBDIVISION 2022.dwg 9/20/2022 9:02:16 AM, Canon TX-3000.pc3

EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

INSTALL INLET PROTECTION AND PERIMETER CONTROLS, i.e., SILT FENCING OR SILTSOXX AROUND THE LIMITS OF DISTURBANCE BEFORE ANY EARTH MOVING OPERATIONS.

CUT AND GRUB ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND REMOVE OTHER DEBRIS AND RUBBISH AS REQUIRED.

REMOVE EXISTING HOUSE AND SHED

PERFORM BIRCH STREET RECONSTRUCTION & UTILITY IMPROVEMENTS. CONSTRUCT SITE UTILITIES AND BUILD HOMES.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES UPON COMPLETION OF FINAL STABILIZATION OF THE SITE.

DURING CONSTRUCTION ACCESS WILL BE PROVIDED TO ALL EXISTING PROPERTIES LOCATED ON BIRCH ST.

GENERAL CONSTRUCTION NOTES

THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED FOR MORE THAN 45 DAYS.

ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION.

DUST CONTROL: IF TEMPORARY STABILIZATION PRACTICES, SUCH AS TEMPORARY VEGETATION AND MULCHING, DO NOT ADEQUATELY REDUCE DUST GENERATION, APPLICATION OF WATER OR CALCIUM CHLORIDE SHALL BE APPLIED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

SILT FENCES AND SILTSOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILT FENCES AND SILTSOXX SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED IN A SECURED LOCATION.

AVOID THE USE OF FUTURE OPEN SPACES (LOAM AND SEED AREAS) WHEREVER POSSIBLE DURING CONSTRUCTION. CONSTRUCTION TRAFFIC SHALL USE THE ROADBEDS OF FUTURE ACCESS DRIVES AND PARKING AREAS.

ADDITIONAL TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNTS NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS--CONSTRUCT SILT FENCE OR SILTSOXX AROUND TOPSOIL STOCKPILE.

AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. STUMPS SHALL BE DISPOSED OF IN AN APPROVED FACILITY.

ALL FILLS SHALL BE PLACED AND COMPACTED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.

ALL NON-STRUCTURAL, SITE-FILL SHALL BE PLACED AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY IN LAYERS NOT EXCEEDING 18 INCHES IN THICKNESS UNLESS OTHERWISE NOTED.

FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIAL, TRASH, WOODY DEBRIS, LEAVES, BRUSH OR ANY DELETERIOUS MATTER SHALL NOT BE INCORPORATED INTO FILLS.

FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.

DURING CONSTRUCTION AND UNTIL ALL DEVELOPED AREAS ARE FULLY STABILIZED, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH ONE HALF INCH OF RAINFALL.

THE CONTRACTOR SHALL MODIFY OR ADD EROSION CONTROL MEASURES AS NECESSARY TO ACCOMMODATE PROJECT CONSTRUCTION.

ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED ON AREAS TO BE PAVED
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
- EROSION CONTROL BLANKETS HAVE BEEN INSTALLED

VEGETATIVE PRACTICE

FOR PERMANENT MEASURES AND PLANTINGS:

LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF 2 TONS PER ACRE.

FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 500 POUNDS PER ACRE OF 10-20-20 FERTILIZER.

SEED SHALL BE SOWN AT THE RATES SHOWN IN THE TABLE BELOW. 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. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE, AND SHALL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.

THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING ANY AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.

A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE:

GENERAL COVER	PROPORTION	SEEDING RATE
CREEPING RED FESCUE	50%	100 LBS/ACRE
KENTUCKY BLUEGRASS	50%	
SLOPE SEED (USED ON ALL SLOPES GREATER THAN OR EQUAL TO 3:1)		
CREEPING RED FESCUE	42%	
TALL FESCUE	42%	48 LBS/ACRE
BIRDSFOOT TREFOIL	16%	

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH APPLICABLE STATE AND FEDERAL SEED LAWS.

FOR TEMPORARY PROTECTION OF DISTURBED AREAS:
MULCHING AND SEEDING SHALL BE APPLIED AT THE FOLLOWING RATES:
PERENNIAL RYE: 0.7 LBS/1,000 S.F.
MULCH: 1.5 TONS/ACRE

MAINTENANCE AND PROTECTION

THE CONTRACTOR SHALL MAINTAIN ALL LOAM & SEED AREAS UNTIL FINAL ACCEPTANCE AT THE COMPLETION OF THE CONTRACT. MAINTENANCE SHALL INCLUDE WATERING, WEEDING, REMOVAL OF STONES AND OTHER FOREIGN OBJECTS OVER 1/2 INCHES IN DIAMETER WHICH MAY APPEAR AND THE FIRST TWO (2) CUTTINGS OF GRASS NO CLOSER THEN TEN (10) DAYS APART. THE FIRST CUTTING SHALL BE ACCOMPLISHED WHEN THE GRASS IS FROM 2 1/2 TO 3 INCHES HIGH. ALL BARE AND DEAD SPOTS WHICH BECOME APPARENT SHALL BE PROPERLY PREPARED, LIMED AND FERTILIZED, AND RESEEDED BY THE CONTRACTOR AT HIS EXPENSE AS MANY TIMES AS NECESSARY TO SECURE GOOD GROWTH. THE ENTIRE AREA SHALL BE MAINTAINED, WATERED AND CUT UNTIL ACCEPTANCE OF THE LAWN BY THE OWNER'S REPRESENTATIVE.

THE CONTRACTOR SHALL TAKE WHATEVER MEASURES ARE NECESSARY TO PROTECT THE GRASS WHILE IT IS DEVELOPING.

TO BE ACCEPTABLE, SEEDED AREAS SHALL CONSIST OF A UNIFORM STAND OF AT LEAST 90 PERCENT ESTABLISHED PERMANENT GRASS SPECIES, WITH UNIFORM COUNT OF AT LEAST 100 PLANTS PER SQUARE FOOT.

SEEDED AREAS WILL BE FERTILIZED AND RESEEDED AS NECESSARY TO INSURE VEGETATIVE ESTABLISHMENT.

THE SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY UNTIL ADEQUATE VEGETATION IS ESTABLISHED.

THE SILT FENCE OR SILTSOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

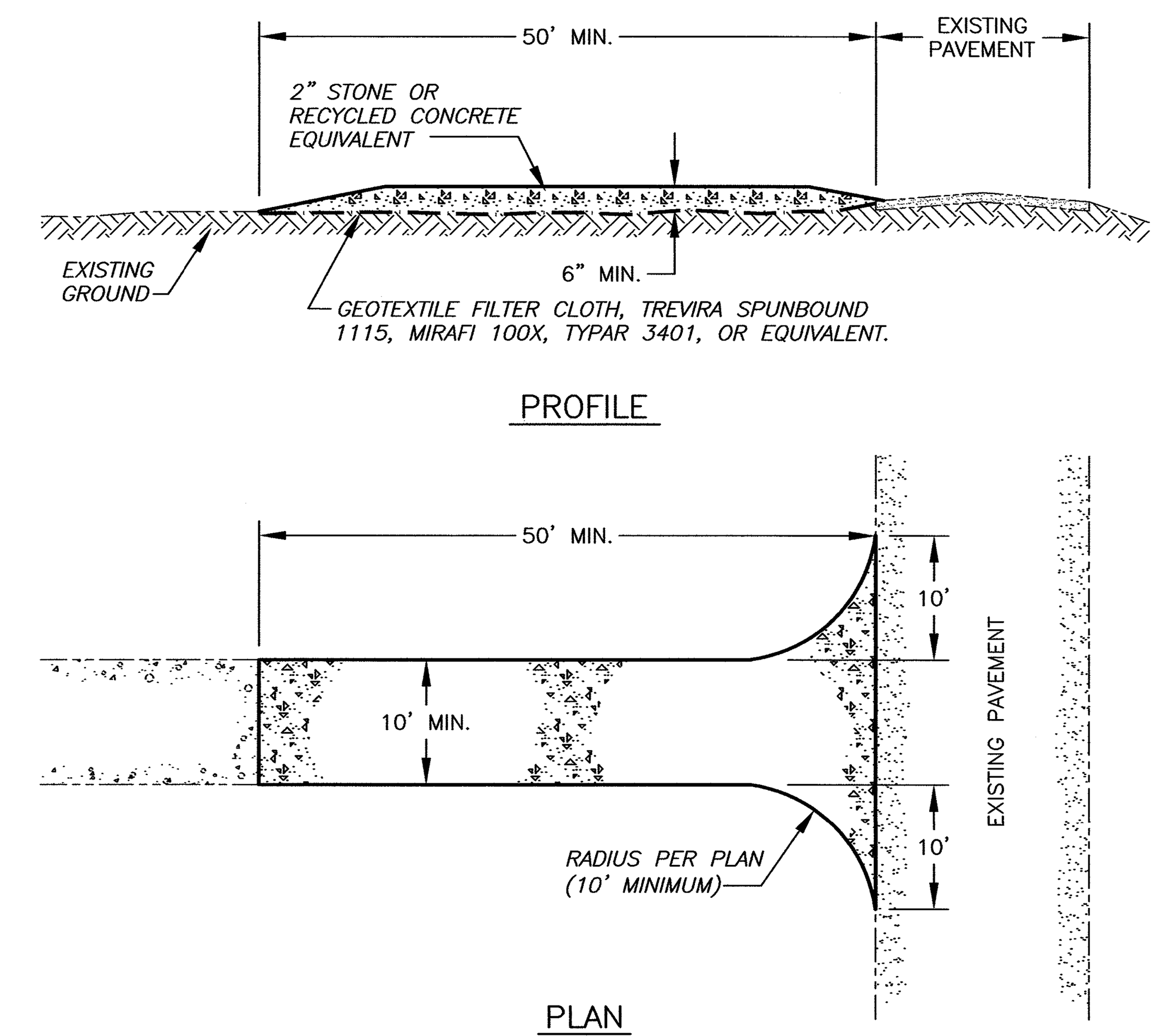
SILT FENCING AND SILTSOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

WINTER NOTES

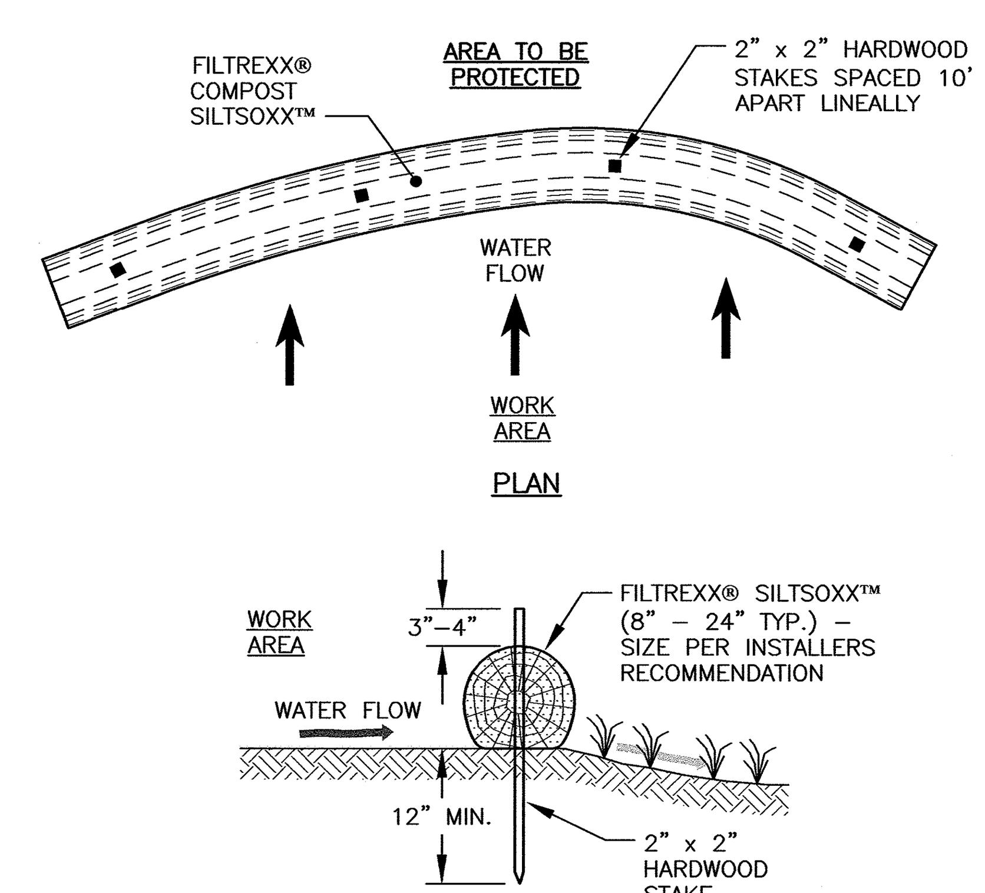
ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.



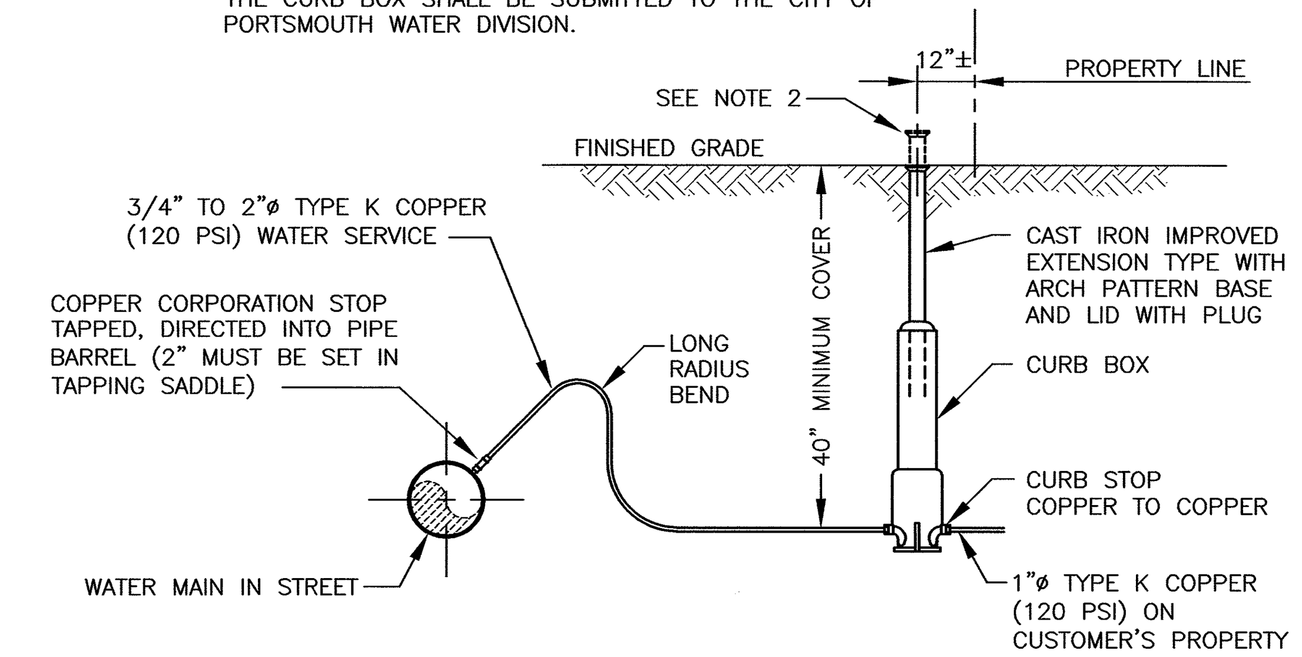
A / C2 STABILIZED CONSTRUCTION ENTRANCE
SUBSTITUTE FODS IF DESIRED — NTS



NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

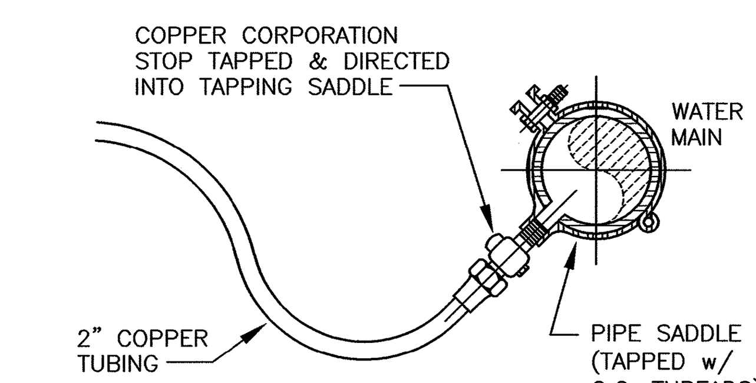
B / C2 FILTREXX® SILTSOXX™ FILTRATION SYSTEM — NTS

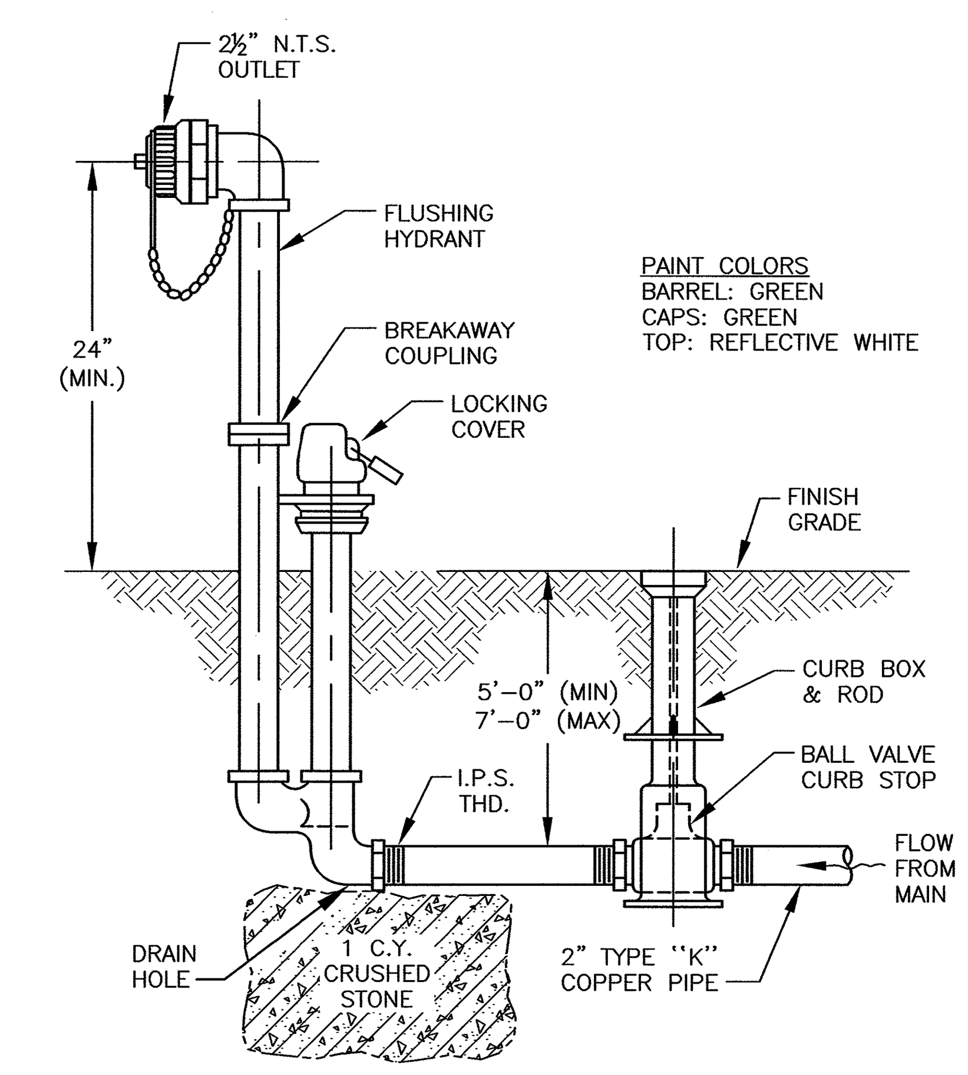
NOTE:
1) INSTALLATION OF WATER MAIN TAP & CURB STOP & BOX SHALL ONLY BE PERFORMED BY THOSE AUTHORIZED BY THE PUBLIC WORKS DEPARTMENT.
2) IN AREAS OF HEAVY GROWTH THE CURB BOX COVER SHALL BE SET 6" ABOVE FINISH GRADE AND A WITNESS STAKE SET.
3) CURB BOX SHALL BE SET APPROXIMATELY 12" OUTSIDE PROPERTY LINE AS SHOWN.
4) PRIOR TO ACCEPTANCE, A PLAN INDICATING THE LOCATION OF THE CURB BOX SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH WATER DIVISION.



C / C3 WATER SERVICE CONNECTION
(PORTSMOUTH) — NTS

NOTES:
1. FLUSHING HYDRANTS SHALL BE POST TYPE HYDRANTS, 5' BURY (MIN.), WITH 1 CU. YD. OF CRUSHED STONE BENEATH HYDRANT TO ALLOW FREE DRAINAGE.
2) ALL WORKING PARTS SHALL BE BRASS. HYDRANT MAIN VALVE OPENING TO BE 2³⁄₁₆" (MIN.).
3) INLET CONNECTION SHALL BE 2" I.P. WITH ONE OUTLET BEING 2½" NATIONAL STANDARD HOSE THREAD.
4) ALL OPERATING PARTS SHALL BE REMOVABLE FROM ABOVE GROUND WITH NO SPECIAL TOOLS.
5) THE HYDRANT SHALL BE SELF-DRAINING, NONFREEZING.
6) THE HYDRANT SHALL HAVE A PENTAGON SOCKET OPERATOR AND BE SUPPLIED WITH AN APPROPRIATE WRENCH.
7) THE HYDRANT SHALL BE A MAINGUARD MODEL #77 BLOW-OFF HYDRANT W/ TAMPER PROOF OPTION AS MANUFACTURED BY KUPFERLE FOUNDRY, 2511 n. 9TH ST., ST. LOUIS, MISSOURI 63102 TEL. (800) 231-3990.





D / C3 TYPE II FLUSHING HYDRANT DETAIL — NTS

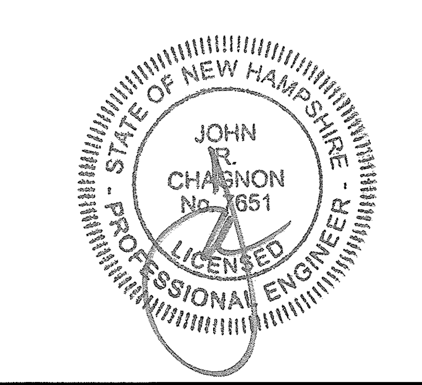
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:
1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.
2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.
3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).
4) DURING CONSTRUCTION ON LOTS 1 AND 2, ACCESS TO EXISTING PROPERTIES ON BIRCH STREET SHALL BE MAINTAINED.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	9/20/22

REVISIONS



SCALE AS SHOWN — MAY 2021

EROSION CONTROL NOTES & DETAILS — D1

FB. 311, PG 1 — 2258

HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
6"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
8"	1'-2"	1'-2"	1'-2"	1'-2"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
10"	1'-4"	1'-4"	1'-4"	1'-4"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0'
12"	1'-8"	1'-8"	1'-8"	1'-8"	1'-3"	1'-3"	1'-0"	1'-0"	0'-9"	1'-0"

* – FOR 3" AND SMALLER PIPES

HORIZONTAL ANCHOR DIMENSIONS FOR AVERAGE SOIL CONDITIONS

UP TO 150 P.S.I. WORKING PRESSURE

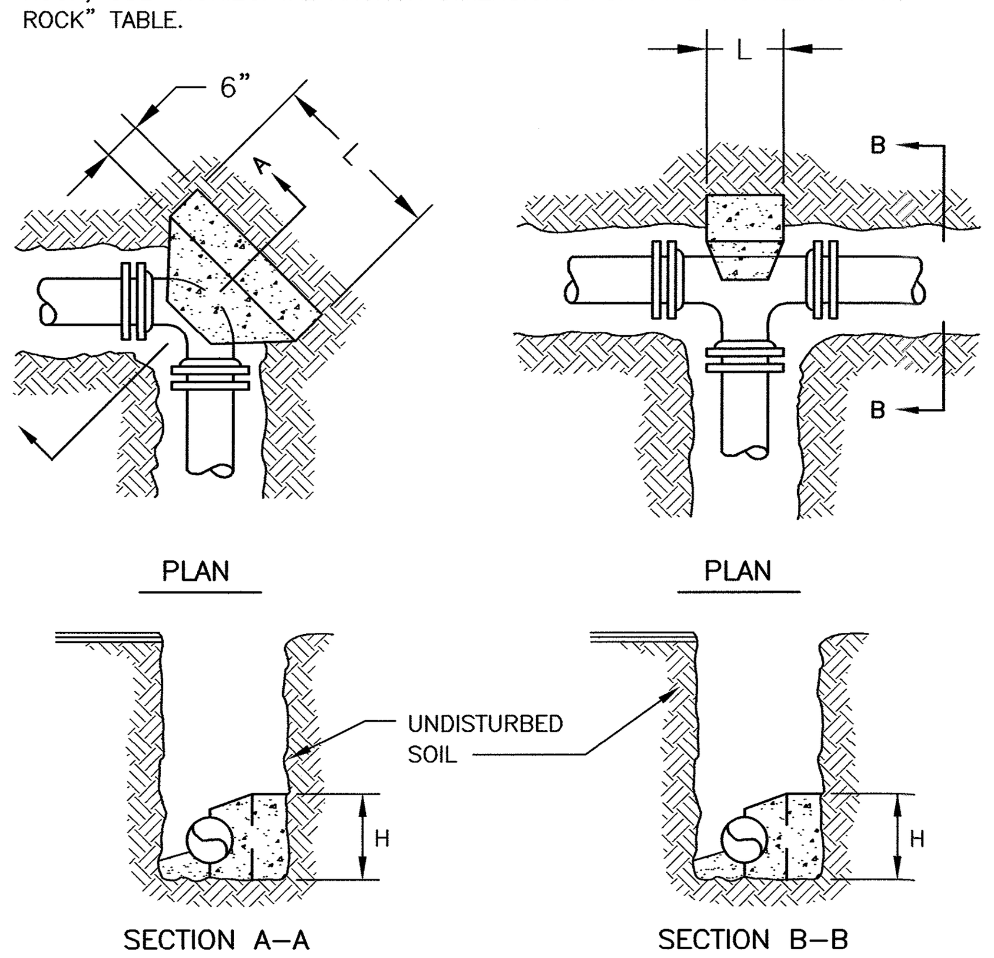
PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
6"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
8"	1'-4"	2'-8"	1'-4"	2'-8"	1'-4"	1'-6"	1'-0"	1'-0"	0'-9"	1'-0"
10"	1'-8"	3'-4"	1'-8"	3'-4"	1'-8"	2'-0"	1'-3"	1'-3"	1'-0"	1'-0'
12"	2'-0"	4'-0"	2'-0"	4'-0"	2'-0"	2'-2"	1'-6"	1'-6"	1'-3"	1'-3"

* – FOR 3" AND SMALLER PIPES

NOTES:

1) TABLES ARE BASED ON AN ALLOWABLE SOIL PRESSURE OF 3000 PSF ON UNDISTURBED EARTH BEHIND THE ANCHOR BLOCK. WHERE SOIL HAS BEEN DISTURBED BY ADJACENT EXCAVATIONS OR WHERE SOIL CANNOT WITHSTAND SUCH A PRESSURE, THE TABLE DOES NOT APPLY.

2) WHERE ENTIRE DEPTH OF PIPE IS BELOW THE TOP SURFACE OF SOUND ROCK, USE "HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK" TABLE.



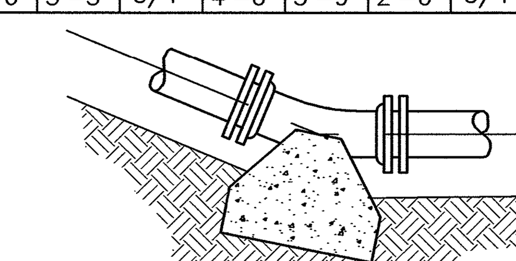
ALL HORIZONTAL BENDS — TEE OR TAPPING SLEEVE

HORIZONTAL ANCHORING

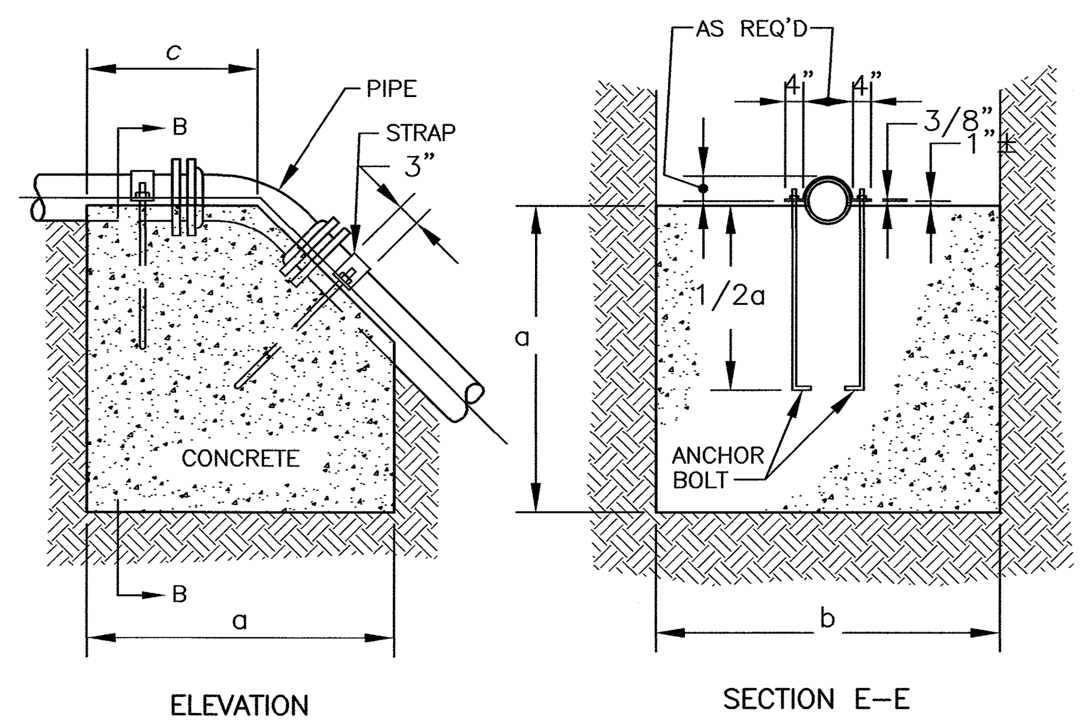
VERTICAL ANCHOR DIMENSIONS

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	45° BEND				22 1/2° BEND				11 1/4° BEND			
	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.
	a	b	c		a	b	c		a	b	c	
4"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
6"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
8"	3'-6"	3'-6"	2'-6"	3/4"	3'-0"	3'-0"	1'-9"	3/4"	2'-6"	2'-6"	1'-3"	3/4"
10"	4'-3"	4'-0"	3'-0"	3/4"	3'-6"	3'-3"	2'-0"	3/4"	2'-9"	2'-9"	1'-6"	3/4"
12"	4'-9"	4'-6"	3'-3"	3/4"	4'-0"	3'-9"	2'-6"	3/4"	3'-3"	3'-3"	1'-9"	3/4"

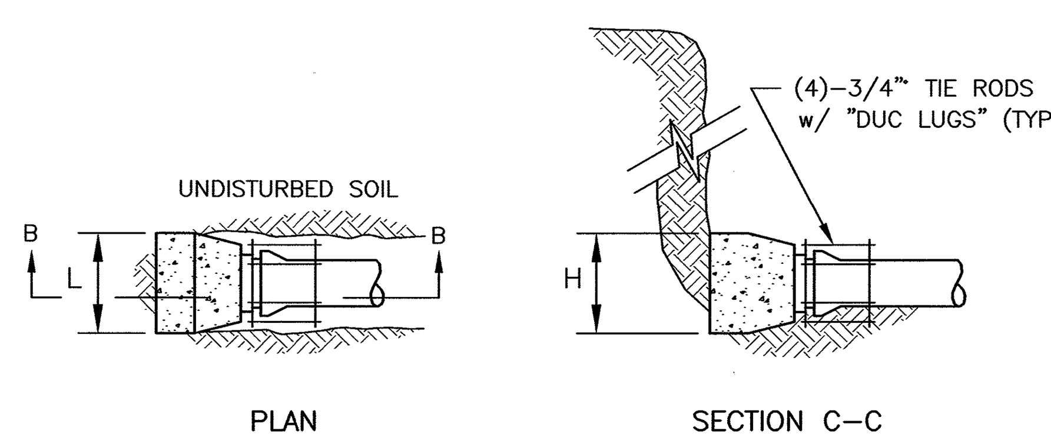


USE SAME DIMENSIONS AS FOR HORIZONTAL BEND ANCHORS



VERTICAL BEND

ALL EXPOSED PORTIONS OF ANCHOR STRAPS TO RECEIVE TWO FIELD COATS (MIN.) OF BITUMASTIC MATERIAL

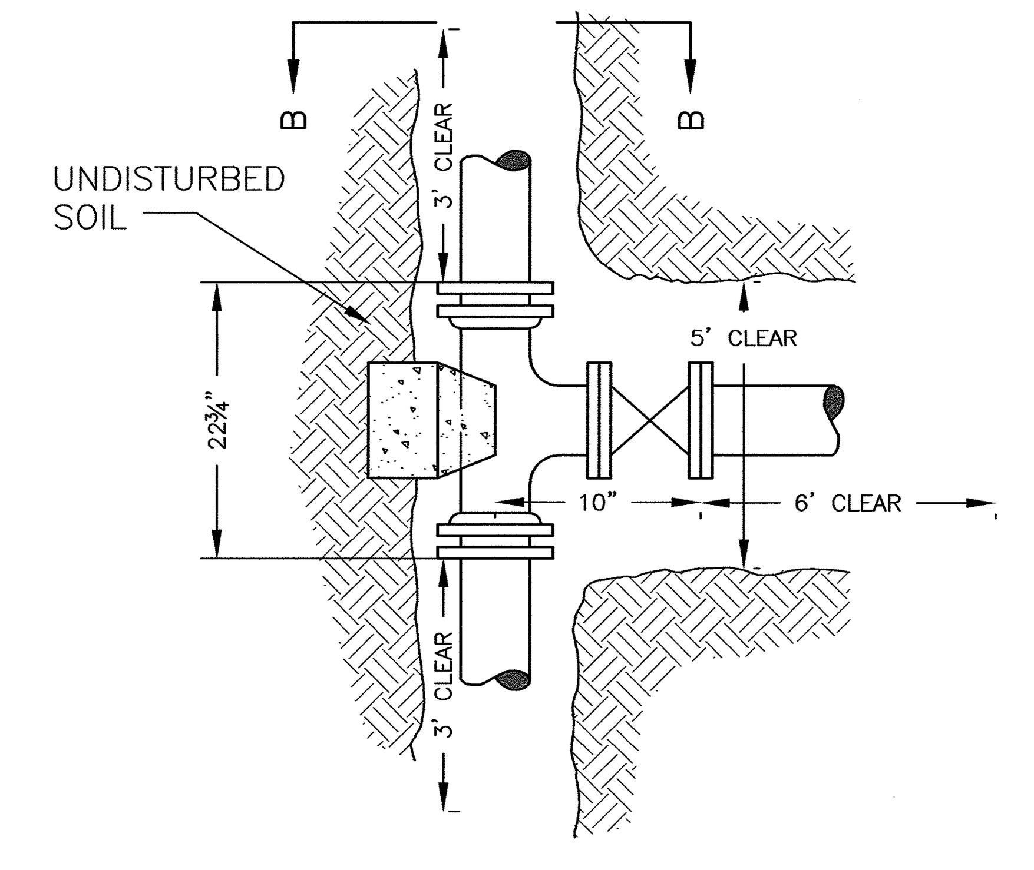


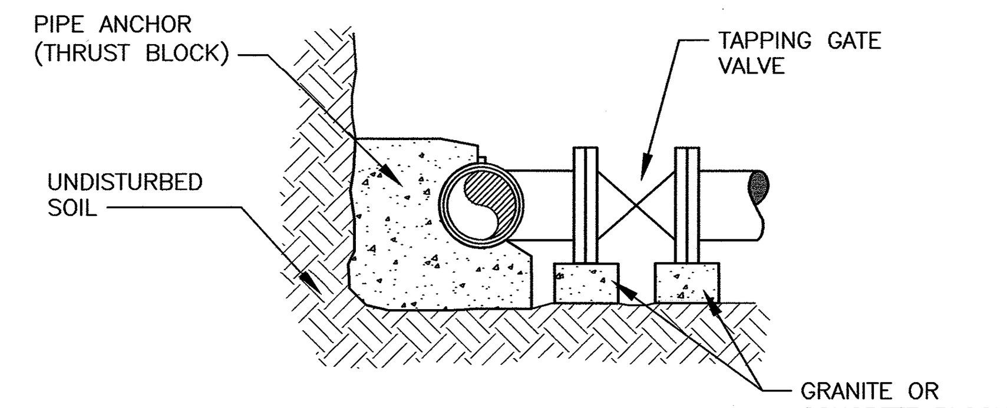
RESTRAINED PLUG OR CAP

NOTE: SEE CHART "HORIZONTAL ANCHOR DIMENSIONS" TIE RODS TO BE PROVIDED IN LIEU OF THRUST BLOCK

VERTICAL ANCHORING

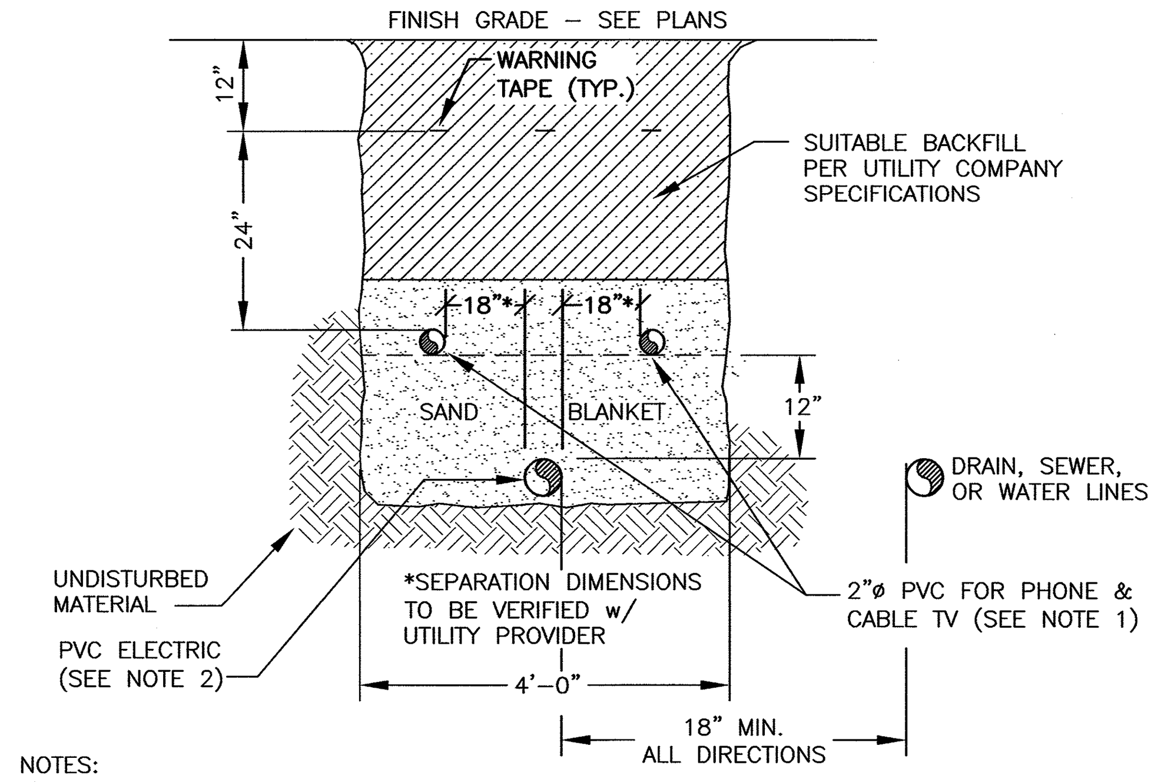
E / C3 — PRESSURE PIPE ANCHORING DETAILS
INSTALL PER PORTSMOUTH REQUIREMENTS — NTS





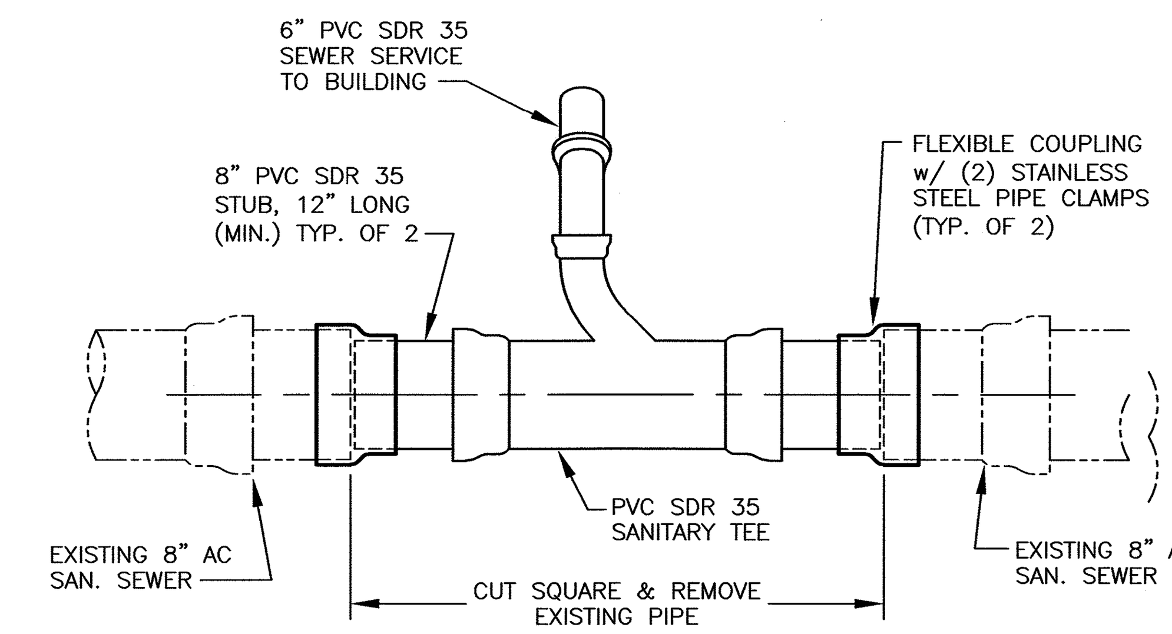
NOTES:
1) ALL MATERIALS SHALL BE APPROVED BY THE PORTSMOUTH WATER DEPARTMENT PRIOR TO INSTALLATION AND USE.
2) ALL JOINTS SHALL BE MECHANICAL.
3) "CLEAR" DIMENSIONS SHOWN ATE REQUIRED FOR WORKSPACE. NO JOINTS ON PIPE BEING TAPPED WITHIN "CLEAR" AREA.
4) FORD TYPE STAINLESS STEEL TAPPING SADDLES OR APPROVED EQUAL ARE ALSO ACCEPTABLE.

G / C3 — TAPPING SLEEVE AND GATE
INSTALL PER PORTSMOUTH REQUIREMENTS — NTS

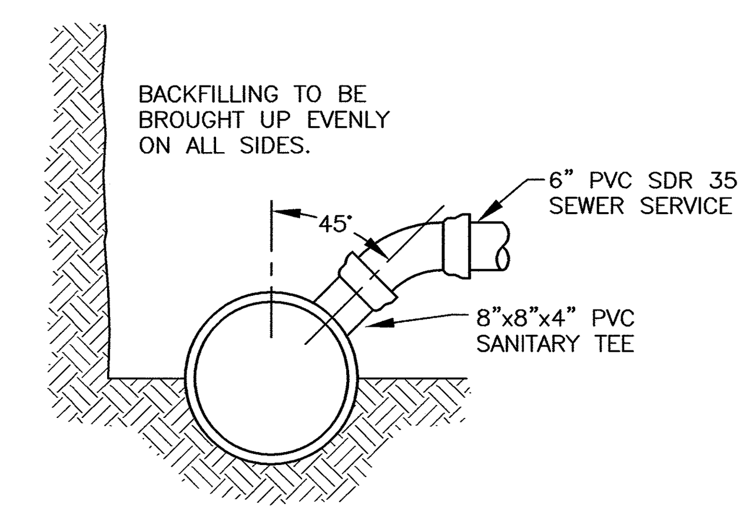


NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCH. 40 FOR THE REMAINDER.
2) NORMAL CONDUIT SIZES FOR PSNH ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT
5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

I / C3 — UTILITY TRENCH
ELECTRIC/PHONE/CABLE — NTS

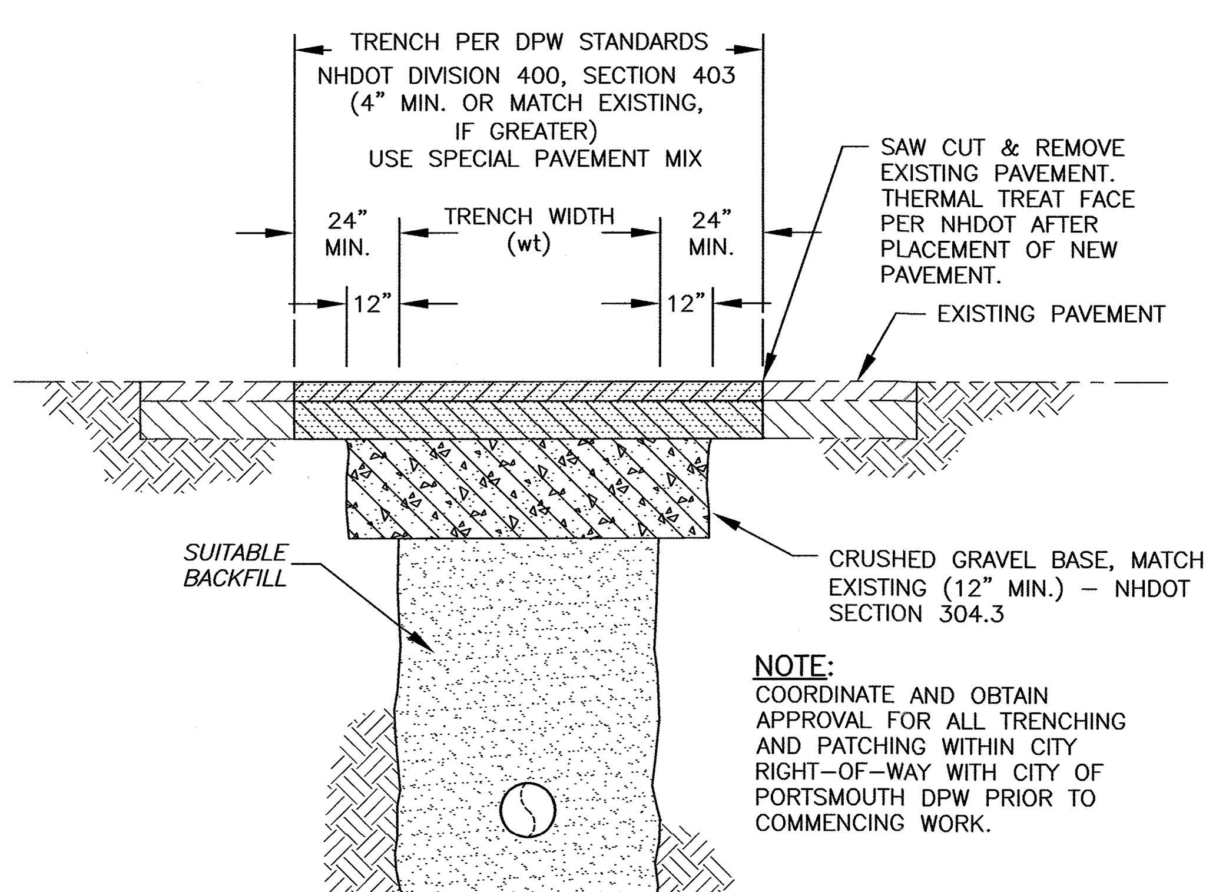


PLAN



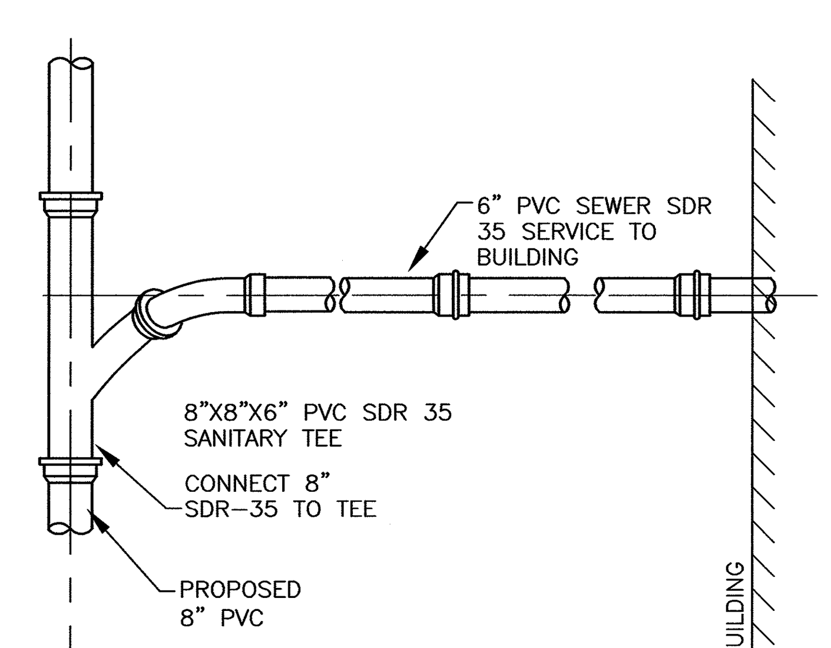
SECTION

J / C3 — SEWER SERVICE TAP DETAIL
EXISTING AC LINE — NTS

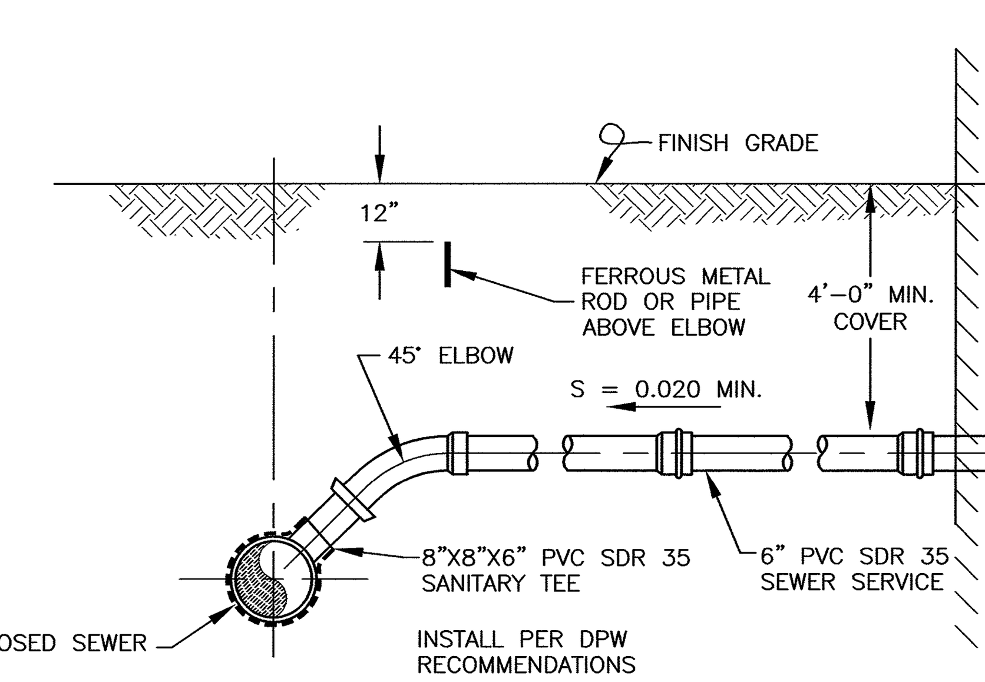


NOTE:
COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT-OF-WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

F / C3 — TRENCH – PAVEMENT REPLACEMENT
NTS



PLAN



ELEVATION

H / C3 — TYPE "A" SEWER SERVICE CONNECTION
NEW SEWER LINE ON BIRCH STREET — NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

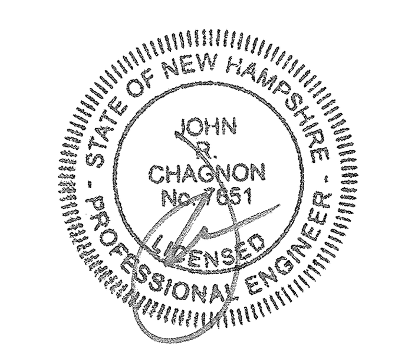
3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) ALL WATER LINE INSTALLATION WORK SHALL BE TO CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS. DETAILS MAY OR MAY NOT BE UP-TO-DATE.

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	9/20/22

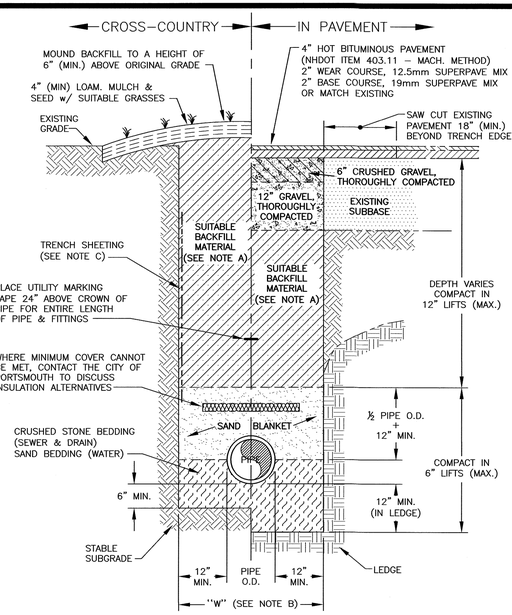
REVISIONS



SCALE AS NOTED — MAY 2021

DETAILS — D2

2258



TRENCH NOTES:

A) TRENCH BACKFILL:

– IN PAVED AREAS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIALS DEEMED TO BE UNACCEPTABLE BY THE ENGINEER.

– IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE.

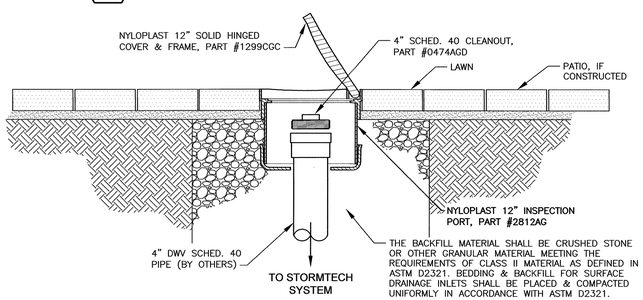
B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

C) TRENCH SHEETING:
IF REQUIRED. WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

D) MINIMUM PIPE COVER FOR UTILITY MAINS (UNLESS GOVERNED BY OTHER CODES):
- 6' MINIMUM FOR SEWER (IN PAVEMENT)
- 4' MINIMUM FOR SEWER (CROSS COUNTRY)
- 3' MINIMUM FOR STORMWATER DRAINS
- 5' MINIMUM FOR WATER MAINS

E) ALL PAVEMENT CUTS SHALL BE REPAIRED BY THE INFRARED HEAT METHOD.

K / C3 TYPICAL PIPE TRENCH NTS



NYLOPLAST 12" INSPECTION PORT
LAWN – NON TRAFFIC RATED

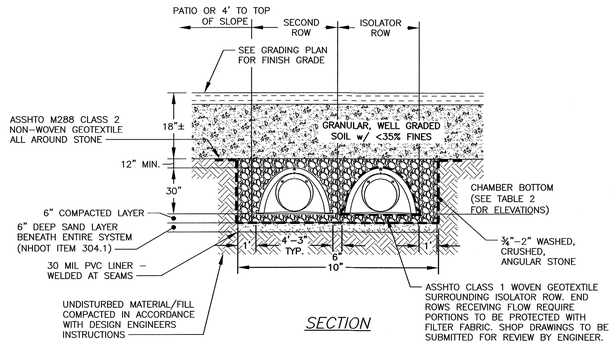
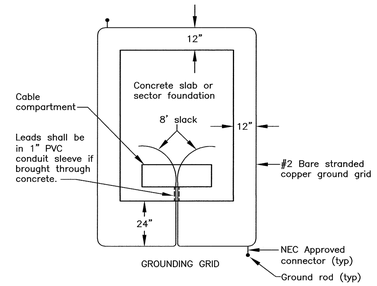
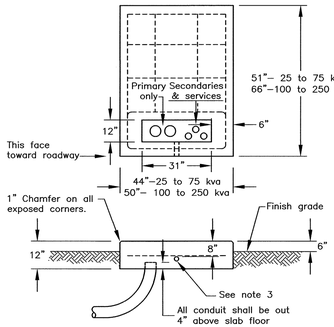


TABLE 1

SYSTEM #	CHAMBER BOTTOM	QUANTITY
1	66.57	2 ROWS OF 3 CHAMBERS
2	66.58	2 ROWS OF 3 CHAMBERS

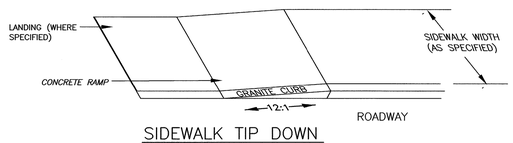
L / C2 TYPICAL PIPE TRENCH NTS



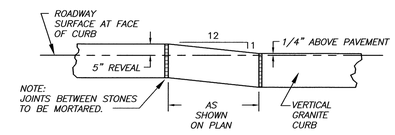


NOTES
1. See sheet "Requirements for Padmounted Transformer Slab Details".
2. All reinforcing to be #6 bars.
3. 1" PVC conduit sleeve for ground grid leads.
4. The ground grid shall be supplied and installed by the customer and is to be buried at least 12" below grade. Eight feet of extra wire for each ground grid leg shall be left exposed in the cable compartment to allow for the connection to the transfomer. the two 8' ground rods may be either galvanized steel or copperweld and they shall be connected to the grid with NEC approved connectors.

N / C3 SINGLE PHASE TRANSFORMER PAD
PSNH NTS



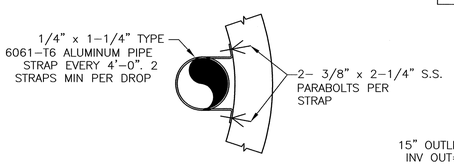
SIDEWALK TIP DOWN
(NON INTERSECTION) NTS



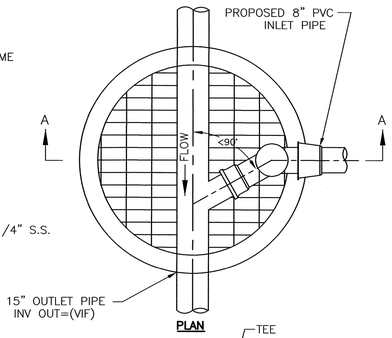
CURB TIP DOWN DETAIL
NTS

M / C2 TYPICAL SIDEWALK TIP DOWNS NTS

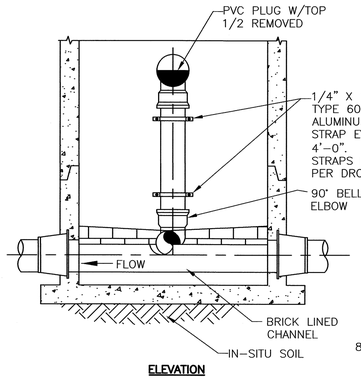
NOTES:
1. RISER PIPE AND FITTINGS SHALL BE THE SAME DIAMETER AS THE INLET PIPE AND SHALL BE CONSTRUCTED OF SDR35 PVC PIPE.
3. SANITARY SEWER SHALL BE INSTALLED PER THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.



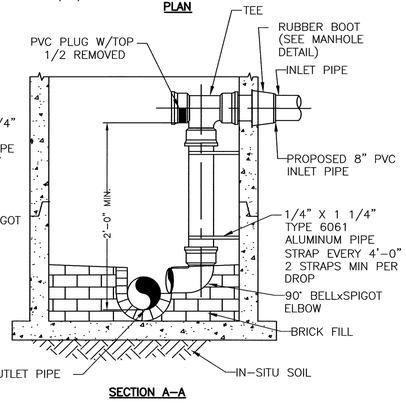
PIPE STRAP DETAIL



PLAN

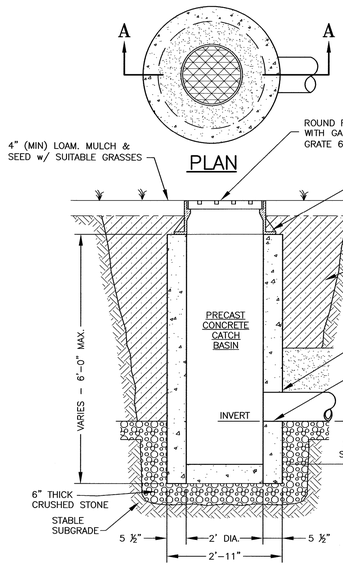


ELEVATION



SECTION A-A

0 / C3 DROP MANHOLE (INSTALLATION OVER EXISTING MAIN) NTS



NOTES:
1. CONCRETE 5,000 PSI AFTER 28 DAYS.
2. REINFORCING 1 LAYER OF 4 x 4/4 x 4 W.W.M.
3. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
4. ALL JOINTS ON THE STRUCTURE AND PIPING SHALL BE WATERTIGHT.
5. PRECAST CONCRETE YARD DRAINS SHALL BE PHOENIX PRECAST PRODUCTS OR EQUAL

P / C2 YARD DRAIN NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	9/20/22

REVISIONS

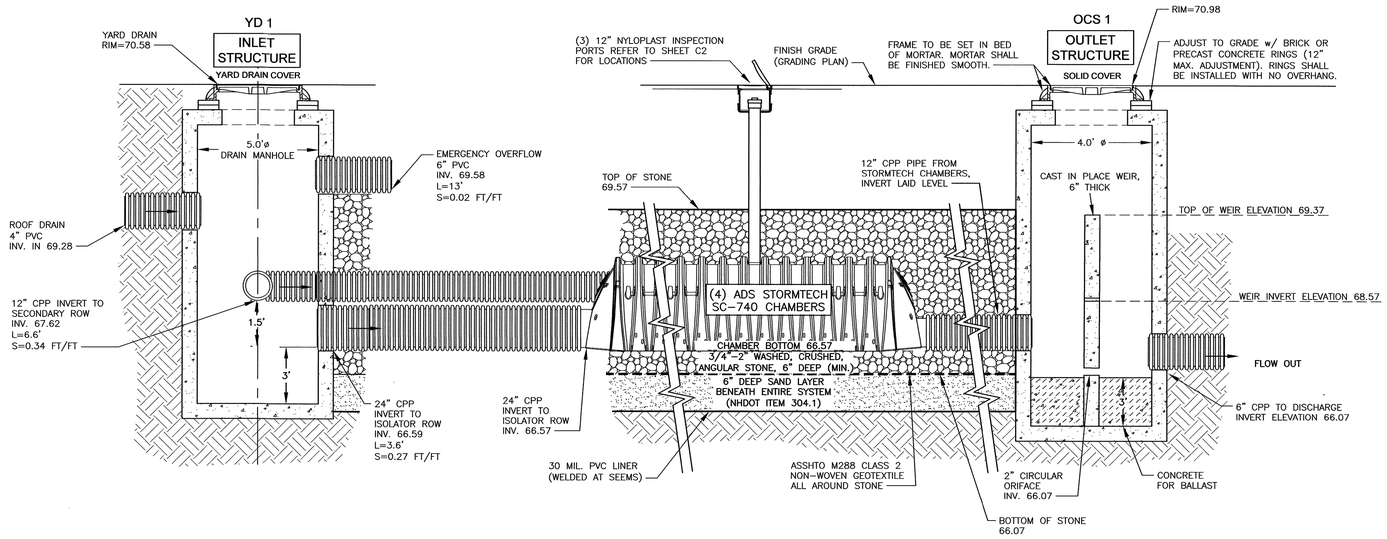
STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON NO. 7855 - LICENSED PROFESSIONAL ENGINEER -

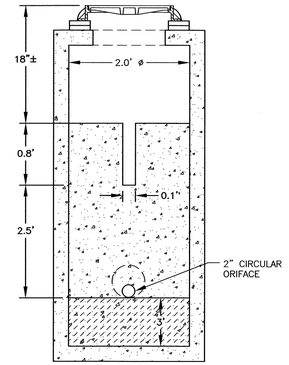
AS NOTED — MAY 2021

DETAILS — **D3**

2258

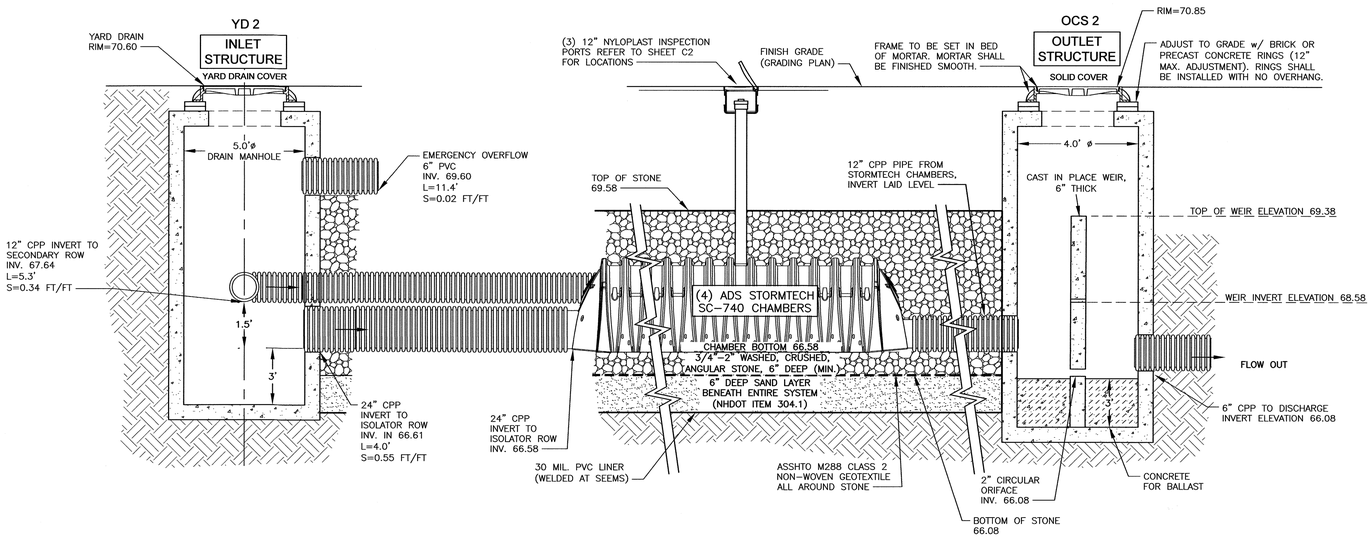
J:\JOBS2\JN2200s\JN2250s\JN2258\2022 Subdivision\Plans & Specs\Site\2258 DETAILS 2022.dwg, 9/20/2022 1:01:19 PM, Canon TX-3000.pc3

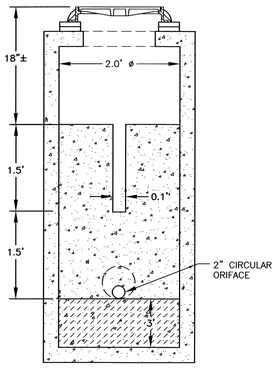




OCS #1

SECTION





OCS #2

SECTION

Q C2 STORMTECH SC-740 STORMWATER CHAMBER SYSTEMS

INSTALL PER MANUFACTURER'S INSTRUCTIONS (1-888-892-2694). A STORMTECH REPRESENTATIVE SHALL BE CONSULTED PRIOR TO CONSTRUCTION AND ON SITE DURING CONSTRUCTION OF THE STORMTECH SYSTEM

NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	9/20/22

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7851
LICENSED PROFESSIONAL ENGINEER

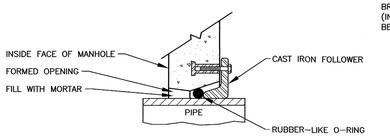
AS NOTED — MAY 2021

CHAMBER SYSTEM DETAILS

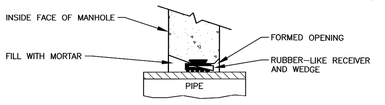
D4

2258

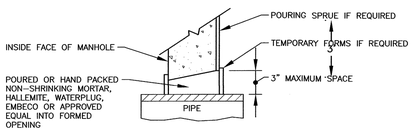
J:\JOBS2\JN2200s\JN2259s\JN2258\2022 Subdivision\Plans & Specs\Site\2259 DETAILS 2022.dwg, 9/20/2022 1:24:46 PM, Canon TX-3000.pc3



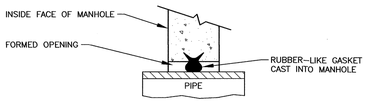
RES-SEAL
(OR ACCEPTABLE SUBSTITUTE)



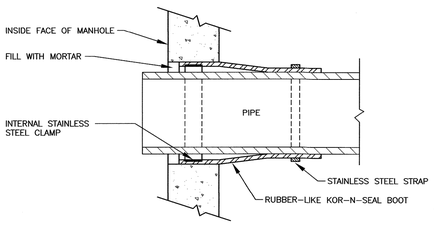
PRESS-WEDGE II
(OR ACCEPTABLE SUBSTITUTE)



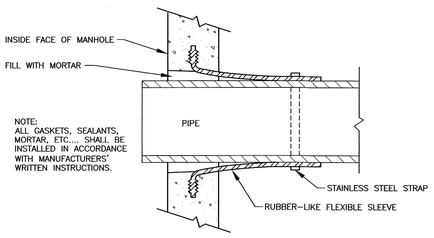
NON-SHRINKING MORTAR
(OR ACCEPTABLE SUBSTITUTE)



A-LOK
(OR ACCEPTABLE SUBSTITUTE)



KOR-N-SEAL JOINT SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

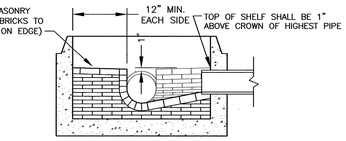


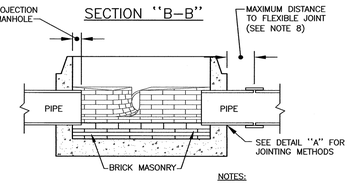
LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

DETAIL "A" – PIPE TO MANHOLE JOINTS

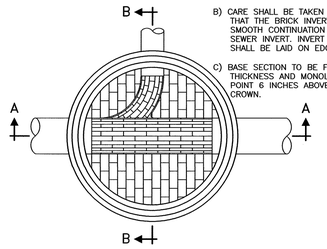
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____





SECTION "B-B"



TYPICAL MANHOLE – PLAN VIEW

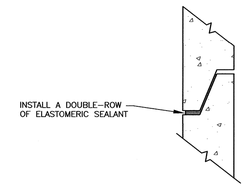
NOTES:

A) INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.

B) CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.

C) BASE SECTION TO BE FULL WALL THICKNESS AND MONOLITHIC TO A POINT 6 INCHES ABOVE THE PIPE CROWN.

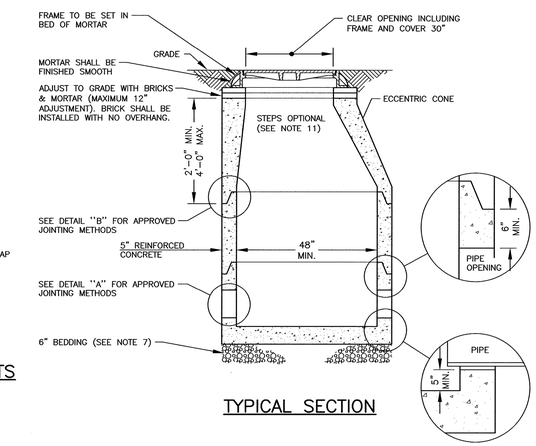
SECTION "A-A"



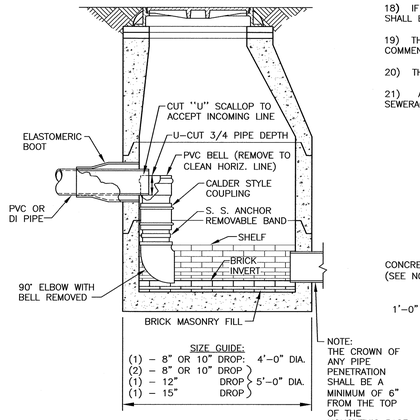
ELASTOMERIC SEALANT

NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

DETAIL "B" – HORIZONTAL JOINTS



TYPICAL SECTION



INSIDE DROP MANHOLE

SEWER MANHOLE DETAILS

INSTALL PER PORTSMOUTH REQUIREMENTS NTS

GENERAL NOTES

1) IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAK PROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.

2) BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE, OR POURED IN PLACE REINFORCED CONCRETE IF POURED AS A COMPLETE MANHOLE.

3) PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.

4) LEAKAGE TEST MAY NOT BE FEASIBLE, BUT SHALL CONFORM TO ENV-WQ 704.17.

5) INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE AND TANGENT TO THE CENTERLINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.

6) FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A THREE INCH (MINIMUM HEIGHT) WORD "SEWER" FOR SEWERS AND "DRAIN" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER. CASTINGS SHALL CONFORM TO CLASS 30, ASTM A48.

7) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90%–100% PASSING	3/4 INCH SCREEN
20%– 55% PASSING	3/8 INCH SCREEN
0%– 10% PASSING	#4 SIEVE
0%– 5% PASSING	#8 SIEVE

WHEN ORDERED BY THE ENGINEER TO STABILIZE THE BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.

8) FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:
RCP & CI PIPE – ALL SIZES – 48"

9) SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.

10) MANHOLE STEPS MAY BE PERMITTED UPON REQUEST BY THE OWNER AS SECONDARY ADDITIONAL SAFETY FEATURE SUPPLEMENTARY TO THE PRIMARY PORTABLE LADDER ENTRY AND WHEN INSTALLED UNDER THE FOLLOWING CONDITIONS:

1. THE STEPS SHALL BE MANUFACTURED OF 5/8ths INCH ROUND STAINLESS STEEL, PLASTIC COVERED STEEL OR PLASTIC. THEY SHALL BE SHAPED SO THAT THEY CANNOT BE PULLED OUT OF THE CONCRETE WALL IN WHICH THEY ARE EMBEDDED.
2. THE STEPS SHALL BE EMBEDDED IN THE CONCRETE BY THE MANUFACTURER DURING MANUFACTURE OR IMMEDIATELY FOLLOWING REMOVAL OF FORMS. SECURING THE STEPS WITH MORTAR IN DRILLED OR CAST HOLES, WILL NOT BE ACCEPTABLE.
3. THE STEPS SHALL BE OF THE DROP TYPE WITH A DEPRESSED SECTION FOR HANDHOLD. APPROXIMATELY 14" x 10" IN DIMENSION.

11) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF A TYPE APPROVED BY THE ENGINEER, WHICH TYPE SHALL, IN GENERAL, DEPEND FOR WATER TIGHTNESS UPON AN ELASTOMERIC OR MASTIC-LIKE GASKET, IN 2 ROWS.

12) PIPE TO MANHOLE JOINTS SHALL BE ONLY AS APPROVED BY THE ENGINEER AND IN GENERAL, WILL DEPEND FOR WATERTIGHTNESS UPON EITHER AN APPROVED NON-SHRINKING MORTAR OR ELASTOMERIC SEALANT.

13) THE PURPOSE OF THIS PLAN IS TO SHOW STANDARDS FOR SEWER CONSTRUCTION.

14) ALL WORK SHALL BE IN COMPLIANCE WITH NHDES CODE OF ADMINISTRATIVE RULES PART ENV-WQ 704 DESIGN OF SEWERAGE.

15) BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE LARGEST INCOMING PIPE.

GENERAL NOTES

1) MINIMUM PIPE SIZE FOR HOUSE SERVICE SHALL BE FOUR INCHES.

2) PIPE AND JOINT MATERIALS:

A. PLASTIC SEWER PIPE

1. PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034	*PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F794	PVC (RIBBED WALL)	8" THROUGH 36"
AWWA C900	PVC (SOLID WALL)	8" THROUGH 18"

*PVC: POLYVINYL CHLORIDE

2. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212 AND SHALL BE PUSH-ON BELL AND SPIGOT TYPE.

3) DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4) JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.

5) HOUSE SEWER INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND REFILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

6) THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE FOUNDATION AT A GRADE OF NOT LESS THAN 1/4 INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7) TESTING: WHEN REQUIRED BY THE GOVERNING AUTHORITY, TESTING SHALL CONFORM TO ENV-WQ 704.09.

8) ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM HOUSE TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.

9) HOUSE WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE, UNLESS IT IS ON A SHELF 12" HIGHER, AND 18" APART.

10) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

100% PASSING	1 INCH SCREEN
90%–100% PASSING	3/4 INCH SCREEN
20%– 55% PASSING	3/8 INCH SCREEN
0%– 10% PASSING	#4 SIEVE
0%– 5% PASSING	#8 SIEVE

WHERE ORDERED BY THE ENGINEER, OVEREXCAVATE UNSTABLE TRENCH BOTTOM AND BACKFILL WITH CRUSHED STONE.

11) LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.

12) CAST-IN-PLACE CONCRETE: SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000 PSI) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AS FOLLOWS:

CEMENT: 6.0 BAGS PER CUBIC YARD
WATER: 5.75 GALLONS PER BAG OF CEMENT
MAXIMUM AGGREGATE SIZE: 3/4 INCH

13) BACKFILL UP TO SUBBASE GRAVEL SHALL BE WITH EXCAVATED SOIL FROM TRENCHING OPERATIONS. COMPACT IN 8" LIFTS WITH VIBRATORY PLATE COMPACTORS TO 90% OF MODIFIED PROCTOR DENSITY. IF FINE-GRAINED, COMPACT WITH POGO STICKS OR SHEEPSFOOT ROLLERS. PLACE NO LARGE ROCKS WITHIN 24" OF PIPE. TRENCHES THAT ARE NOT ADEQUATELY COMPACTED SHALL BE RE-EXCAVATED AND BACKFILLED UNDER THE SUPERVISION OF THE DESIGN ENGINEER OR GOVERNING BODY. UNSUITABLE BACKFILL MATERIAL INCLUDES CHUNKS OF PAVEMENT, TOPSOIL, ROCKS OVER 6" IN SIZE, MUCK, PEAT OR PIECES OF PAVEMENT.

14) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB-SITE SAFETY AND COMPLIANCE WITH GOVERNING REGULATIONS.

15) ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL. FOR TRENCH WIDTH SEE TRENCH DETAIL.

16) SAND BLANKET: CLEAN SAND, FREE FROM ORGANIC MATTER, SO GRADED THAT 90% – 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.

17) BASE COURSE GRAVEL, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE:

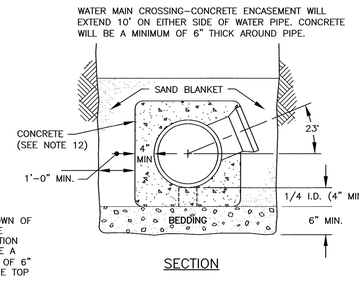
STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION.

18) IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.

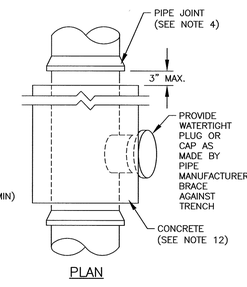
19) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION.

20) THE PURPOSE OF THIS PLAN IS TO SHOW STANDARDS FOR SEWER CONSTRUCTION.

21) ALL WORK SHALL BE IN COMPLIANCE WITH NHDES CODE OF ADMINISTRATIVE RULES PART ENV-WQ 704 DESIGN OF SEWERAGE.



SECTION



PLAN

CONCRETE FULL ENCASEMENT

NOT TO SCALE

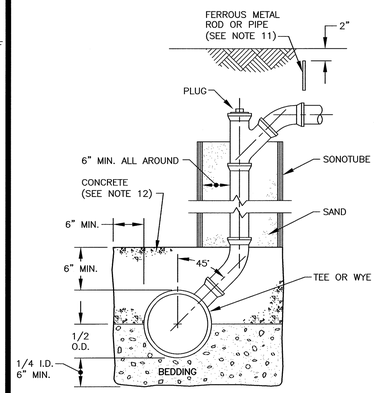
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).



NO BACKFILLING BEFORE CONCRETE HAS TAKEN INITIAL SET (7 HRS. MIN.). BACKFILLING TO BE BROUGHT UP EVENLY ON ALL SIDES.

CHIMNEY (SEE NOTE)
NOT TO SCALE

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	9/20/22

REVISIONS

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE

SCALE: AS SHOWN MAY 2021

SEWER DETAILS

D5

2258

J:\JOBS2\JN2200s\JN2250s\JN2258\2022 Subdivision\Plans & Specs\Site\2258 DETAILS 2022.dwg, 9/20/2022 10:44:44 AM, Canon TX-3000.pc3

Advanced Drainage Systems, Inc.

ADS SiteAssist™ FOR STORMTECH INSTALLATION INSTRUCTIONS VISIT OUR APP

SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

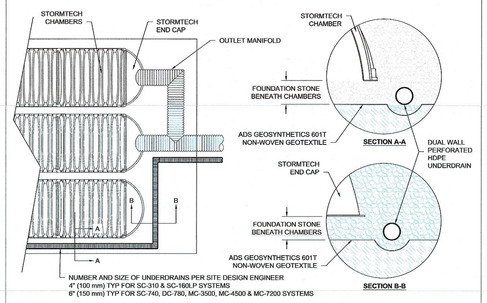
1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

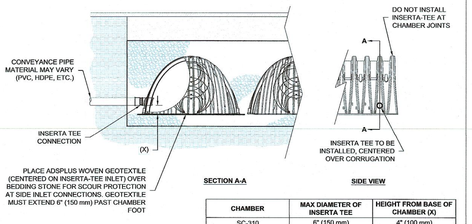
1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



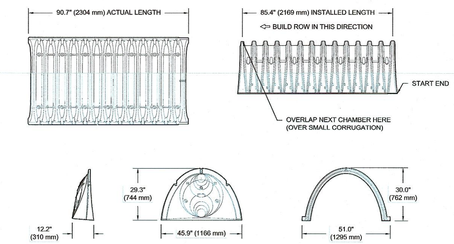
5 UNDERDRAIN DETAIL



NOTES:
- PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
- CONTACT ADS ENGINEERING SERVICES IF INSERTA TEE INLET MUST BE RAISED AS NOT ALL INVERTS ARE POSSIBLE.

CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	6" (200 mm)
MC-7200	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

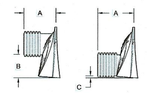
6 INSERTA-TEE SIDE INLET DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "SR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "S"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

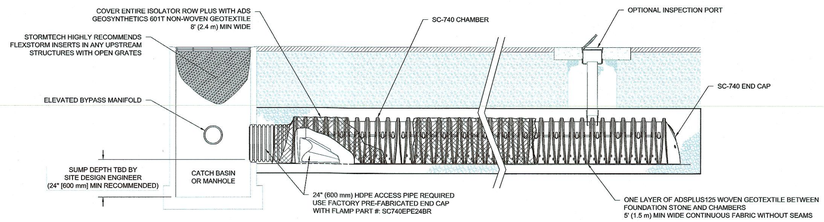
PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	—
SC740EPE06B / SC740EPE06BPC			—	0.5" (13 mm)
SC740EPE08T / SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	—
SC740EPE08B / SC740EPE08BPC			—	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	—
SC740EPE10B / SC740EPE10BPC			—	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	—
SC740EPE12B / SC740EPE12BPC			—	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	—
SC740EPE15B / SC740EPE15BPC			—	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	—
SC740EPE18B / SC740EPE18BPC			—	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	—	0.1" (3 mm)
SC740EPE24BR*	24" (600 mm)	18.5" (470 mm)	—	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B/SC740EPE24BR ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

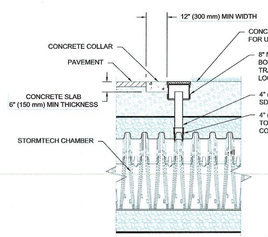
* FOR THE SC740EPE24B/SC740EPE24BR THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

2 SC-740 TECHNICAL SPECIFICATIONS



3 SC-740 ISOLATOR ROW PLUS DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

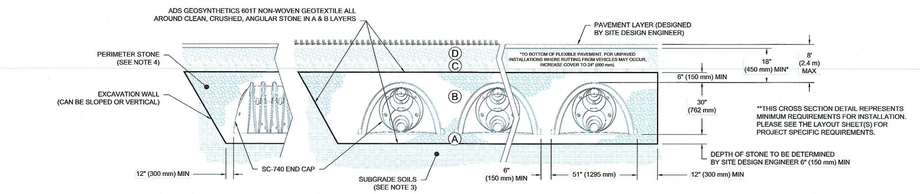
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

4 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT/%, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

1 SC-740 CROSS SECTION DETAIL

DRAWN: | DATE:
REVIEWED: | PROJECT NO:
REV: | NOT TO SCALE

SC-740 STANDARD DETAILS

StormTech® Chamber System
888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD
HILLIARD, OH 43026

ADS Advanced Drainage Systems, Inc.

SHEET

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON REFERENCED STANDARDS. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, AND ADS MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE ACCURACY OF THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. UNLESS THE PLANS ARE SIGNED AND SEALED BY THE SITE DESIGN ENGINEER, THE SITE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION AND SEALING THE DOCUMENT. IT IS THE SITE DESIGN ENGINEER'S RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

PROPOSED SUBDIVISION
201 KEARSARGE WAY
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	9/20/22

REVISIONS

AS NOTED | MAY 2021

CHAMBER SYSTEM DETAILS

D6

2258

J:\JOBS2\JN2200s\JN2250s\JN2258\2022 Subdivision\Plans & Specs\Site\2258 DETAILS 2022.dwg, 9/20/2022 10:34:30 AM, Canon TX-3000.pc3

City of Portsmouth, New Hampshire

Subdivision Application Checklist

This subdivision application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all subdivision review requirements. Please refer to the Subdivision review regulations for full details.

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

Owner: Richard Fusegni Date Submitted: 9-20-2022

Applicant: Richard Fusegni

Phone Number: _____ E-mail: rfusegni@gmail.com

Site Address 1: 201 Kearsarge Way Map: 218 Lot: ____

Site Address 2: _____ Map: _____ Lot: ____

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

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

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

Requirements for Preliminary/Final Plat				
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	Location of significant physical features, including bodies of water, watercourses, wetlands, railroads, important vegetation, stone walls and soils types that my influence the design of the subdivision. **(Section IV.9/V.8)**	Sheet C1	☑ Preliminary Plat ☑ Final Plat	
☐	**Preliminary Plat** Proposed locations, widths and other dimensions of all new streets and utilities, including water mains, storm and sanitary sewer mains, catch basins and culverts, street lights, fire hydrants, sewerage pump stations, etc. **(Section IV.10)** **Final Plat** Proposed locations and profiles of all proposed streets and utilities, including water mains, storm and sanitary sewer mains, catchbasins and culverts, together with typical cross sections. Profiles shall be drawn to a horizontal scale of 1"=50' and a vertical scale of 1"=5', showing existing centerline grade, existing left and right sideline grades, and proposed centerline grade. **(Section V.9)**	Sheet P1	☑ Preliminary Plat ☑ Final Plat	
☐	When required by the Board, the plat shall be accompanied by profiles of proposed street grades, including extensions for a reasonable distance beyond the subject land; also grades and sizes of proposed utilities. **(Section IV.10)**	Sheet P1	☑ Preliminary Plat ☑ Final Plat	
☐	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	N/A	☑ Preliminary Plat ☑ Final Plat	
☐	For subdivisions of five (5) lots or more, or at the discretion of the Board otherwise, the preliminary plat shall show contours at intervals no greater than two (2) feet. Contours shall be shown in dotted lines for existing natural surface and in solid lines for proposed final grade, together with the final grade elevations shown in figures at all lot corners. If existing grades are not to be changed, then the contours in these areas shall be solid lines. **(Section IV.12/ V.12)**	Sheet C2	☑ Preliminary Plat ☑ Final Plat	

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

General Requirements[1]			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**1. Basic Requirements: (VI.1)** a. Conformity to Official Plan or Map b. Hazards c. Relation to Topography d. Planned Unit Development	Plan Set	
☐	**2. Lots: (VI.2)** a. Lot Arrangement b. Lot sizes c. Commercial and Industrial Lots	Subdivision Plan	
☐	**3. Streets: (VI.3)** a. Relation to adjoining Street System b. Street Rights-of-Way c. Access d. Parallel Service Roads e. Street Intersection Angles f. Merging Streets g. Street Deflections and Vertical Alignment h. Marginal Access Streets i. Cul-de-Sacs j. Rounding Street Corners k. Street Name Signs l. Street Names m. Block Lengths n. Block Widths o. Grade of Streets p. Grass Strips	N/A	
☐	**4. Curbing: (VI.4)**	N/A	
☐	**5. Driveways: (VI.5)**	Sheet C1A	
☐	**6. Drainage Improvements: (VI.6)**	Sheet C2	
☐	**7. Municipal Water Service: (VI.7)**	Sheet C3	
☐	**8. Municipal Sewer Service: (VI.8)**	Plan Set	
☐	**9. Installation of Utilities: (VI.9)** a. All Districts b. Indicator Tape	Sheet C3	
☐	**10. On-Site Water Supply: (VI.10)**	N/A	
☐	**11. On-Site Sewage Disposal Systems: (VI.11)**	N/A	
☐	**12. Open Space: (VI.12)** a. Natural Features b. Buffer Strips c. Parks d. Tree Planting	Subdivision Plan	
☐	**13. Flood Hazard Areas: (VI.13)** a. Permits b. Minimization of Flood Damage c. Elevation and Flood-Proofing Records d. Alteration of Watercourses	N/A	
☐	**14. Erosion and Sedimentation Control (VI.14)**	Sheet C2	

☑	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
☐	**15. Easements (VI.15)** a. Utilities b. Drainage	Subdivision Plan	
☐	**16. Monuments: (VI.16)**	Subdivision Plan	
☐	**17. Benchmarks: (VI.17)**	Sheet C1	
☐	**18. House Numbers (VI.18)**	TBD	

Design Standards			
	Required Items for Submittal	**Indicate compliance and/or provide explanation as to alternative design**	**Waiver Requested**
☐	**1. Streets have been designed according to the design standards required under Section (VII.1).** a. Clearing b. Excavation c. Rough Grade and Preparation of Sub-Grade d. Base Course e. Street Paving f. Side Slopes g. Approval Specifications h. Curbing i. Sidewalks j. Inspection and Methods	N/A	
☐	**2. Storm water Sewers and Other Drainage Appurtenances have been designed according to the design standards required under Section (VII.2).** a. Design b. Standards of Construction	Sheet C2	
☐	**3. Sanitary Sewers have been designed according to the design standards required under Section (VII.3).** a. Design b. Lift Stations c. Materials d. Construction Standards	Sheet P1	
☐	**4. Water Mains and Fire Hydrants have been designed according to the design standards required under Section (VII.4).** a. Connections to Lots b. Design and Construction c. Materials d. Notification Prior to Construction	Sheet P1	

Applicant's/Representative's Signature:_____ **Date:** 9-20-2022

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