Findings of Fact | Site Plan Review
City of Portsmouth Planning Board

Date: 12-15-2022
Property Address: 161 Deer Street
Application #: LU-22-173
Decision: □ Approve □ Deny □ Approve with Conditions

Findings of Fact:

Effective August 23, 2022, amended RSA 676:3, I now read as follows: The local land use board shall issue a final written decision which either approves or disapproves an application for a local permit and make a copy of the decision available to the applicant. **The decision shall include specific written findings of fact that support the decision. Failure of the board to make specific written findings of fact supporting a disapproval shall be grounds for automatic reversal and remand by the superior court upon appeal, in accordance with the time periods set forth in RSA 677:5 or RSA 677:15, unless the court determines that there are other factors warranting the disapproval.** If the application is not approved, the board shall provide the applicant with written reasons for the disapproval. If the application is approved with conditions, the board shall include in the written decision a detailed description of all conditions necessary to obtain final approval.

Site Plan Regulations Section 2.9 Evaluation Criteria - in order to grant site plan review approval, the TAC and the Planning Board shall find that the application satisfies evaluation criteria pursuant to NH State Law and listed herein. In making a finding, the TAC and the Planning Board shall consider all standards provided in Articles 3 through 11 of these regulations.

	Site Plan Review Regulations Section 2.9 Evaluation Criteria	**Finding** **(Meets Standard/Criteria)**	**Supporting Information** **(Provided by applicant)**
1	Compliance with all City Ordinances and Codes and these regulations. Applicable standards:	**Meets** **Does Not Meet**	Applicable standards: No Variances Required. Project complies with all Ordinance requirements including parking; see Sheet C3 Table. Community space allows resulting height of Penthouse.
2	Provision for the safe development, change or expansion of use of the site.	**Meets** **Does Not Meet**	Developer also owns the adjacent parcel (Lot 4) which will facilitate construction crane and truck deliveries to minimize the traffic burden. TAC reviewed traffic and safety. Plans show all utility and drainage connections.

	Site Plan Review Regulations Section 2.9 Evaluation Criteria	Finding (Meets Standard/Criteria)	Supporting Information (Provided by applicant)
3	Adequate erosion control and stormwater management practices and other mitigative measures, if needed, to prevent adverse effects on downstream water quality and flooding of the property or that of another.	**Meets** **Does Not Meet**	A complete drainage analysis has been prepared by a professional engineer and reviewed by staff. R-tank storage to minimize storm water peak discharge (Sheet C6 / D4) and – Stormwater Roof Drain treatment (Sheet D5). Erosion controls during construction as necessary (D1). Building has been designed to minimize excavation depth. Footing pilings to bedrock to minimize effects of future City excavation in the Sewer right of way.
4	Adequate protection for the quality of groundwater.	**Meets** **Does Not Meet**	Roof drains are filtered. Other runoff is captured in city collection system. No groundwater withdrawal (water supply is city). No nearby production wells.
5	Adequate and reliable water supply sources.	**Meets** **Does Not Meet**	Water supply is Public -City. Supply confirmed by TAC review. All plumbing fixtures will be low /water conserving.
6	Adequate and reliable sewage disposal facilities, lines, and connections.	**Meets** **Does Not Meet**	Sewer connection is Public - City. Connection(s) reviewed by TAC.
7	Absence of undesirable and preventable elements of pollution such as smoke, soot, particulates, odor, wastewater, stormwater, sedimentation or any other discharge into the environment which might prove harmful to persons, structures, or adjacent properties.	**Meets** **Does Not Meet**	Property will not have any fuel consuming devises. No Natural Gas, No Home Heating Oil. Provisions for electric vehicle charging for all Units, Commercial and Residential. All appliances are Electric (induction cooktops). Hot water is Hybrid Electric. All air exchange via energy recovery ventilators. Filtered dryer vents are the only other exhaust points.
8	Adequate provision for fire safety, prevention and control.	**Meets** **Does Not Meet**	Full wet sprinkler system, Type IIb construction. Battery backup for regenerative traction elevator and parking ventilation with Solar on roof.
9	Adequate protection of natural features such as, but not limited to, wetlands.	**Meets** **Does Not Meet**	Urban site, no wetlands or buffers. All excavation materials will be environmentally tested prior to removal from site.
10	Adequate protection of historical features on the site.	**Meets**	No Historical features present. Existing building is non-contributing.

	Site Plan Review Regulations Section 2.9 Evaluation Criteria	Finding (Meets Standard/Criteria)	Supporting Information (Provided by applicant)
		Does Not Meet	
11	Adequate management of the volume and flow of traffic on the site and adequate traffic controls to protect public safety and prevent traffic congestion.	**Meets** **Does Not Meet**	Underground parking entrance has been placed between lots 4 and 5 giving both stacking and staging capacity off street and minimize traffic congestion on Deer Street. Adequate parking provided for the use.
12	Adequate traffic controls and traffic management measures to prevent an unacceptable increase in safety hazards and traffic congestion off-site.	**Meets** **Does Not Meet**	See traffic report and supplemental examination of reduced impact for this smaller 19-unit building.
13	Adequate insulation from external noise sources.	**Meets** **Does Not Meet**	Steel and concrete building with Brick façade, Commercial Grade Kolby Ultra high STC windows. Sound attenuating, fireproof, rock wool insulation. Additional "Acoustiblock.com" internal rubber wall material on the railroad facing facade.
14	Existing municipal solid waste disposal, police, emergency medical, and other municipal services and facilities adequate to handle any new demands on infrastructure or services created by the project.	**Meets** **Does Not Meet**	Trash collection will be privately contracted. TAC Review included Fire and Police Departments. All concerns addressed in design.
15	Provision of usable and functional open spaces of adequate proportions, including needed recreational facilities that can reasonably be provided on the site	**Meets** **Does Not Meet**	Dedicated Open Space including 12' wide sidewalks to facilitate trees, sidewalk use, and street activation. Pocket-park community space recreational area.
16	Adequate layout and coordination of on-site accessways and sidewalks in relationship to off-site existing or planned streets, accessways, bicycle paths, and sidewalks.	**Meets** **Does Not Meet**	Pocket-park community space connected to both Deer and Maplewood sidewalks. ADA accessibility on both ends. Exterior and interior bike racks. Wide sidewalks.
17	Demonstration that the land indicated on plans submitted with the application shall be of such character that it can be used for building purposes without danger to health.	**Meets** **Does Not Meet**	Land is suitable for the intended purpose, Approved Subdivision Lot. Currently used as an urban building site. Plans follow ordinance and guidelines; see TAC approval.

	Site Plan Review Regulations Section 2.9 Evaluation Criteria	Finding (Meets Standard/Criteria)	Supporting Information (Provided by applicant)
18	Adequate quantities, type or arrangement of landscaping and open space for the provision of visual, noise and air pollution buffers.	**Meets** **Does Not Meet**	Multiple street trees, with expanded root volumes for tree health; vertical visual and noise buffer. Building distance from Rail conforms to code. Wide sidewalks. Conformance to code heights.
19	Compliance with applicable City approved design standards.	**Meets** **Does Not Meet**	See HDC approval. Building apparent height reduced by design of 4-story building w/ Penthouse set back in lieu of a 5-story building allowed. Historic inspiration drawn from the railroad. Providing the parking required by the Ordinance.
	Other Board Findings:		

AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

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

23 November 2022

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

RE: Request for Site Plan Approval at 161 Deer Street *to be known as* 70 Maplewood Avenue, Mixed Use Site Development

Dear Mr. Chellman and Planning Board Members:

On behalf of Tom Balon and EightKPH, LLC we are pleased to submit the attached plan set for **Site Plan Approval** for the above-mentioned project and request that we be placed on the agenda for your **December 15, 2022,** Technical Advisory Committee Meeting. The project consists of the replacement of the existing one-story commercial building at 161 Deer Street with a new 4 story with a Penthouse building with the associated and required site improvements. The new building is intended to be known as 70 Maplewood Avenue. The re-development will include parking below street level.

The site redevelopment consists of replacing the existing structure with a new structure. The site is known as DSA Lot 5; part of the Consolidation and Subdivision Approved by the Planning Board in 2016. The property was a part of the overall planning for development on the 5 lots and had a proposed building designed; however, that building did not go through and complete the permit process entirely. The property is located in the CD – 5, Downtown Overlay, North End Incentive, and Historic Districts. This application revises the previously proposed building, and this design received HDC Certificate of Approval on October 5, 2022.

The design package has been revised to address concerns expressed at the TAC Hearing on November 1, 2022. The project plans have been revised to reflect changes were noted below. The comments are listed below with our response in **bold text**:

1. Applicant will update plan set to reflect proposed 70 Maplewood address. **The plan set has been updated.**
2. Applicant will update landscaping plan to add additional tree to northern corner of the property as presented to TAC at the 11/1 meeting. **The plan set has been updated to show the additional tree along Maplewood Avenue.**
3. Applicant will update the demolition plan to show existing water and sewer service is terminated at the main. Updates to be reviewed by Department of Public Works. **The Sheet C2 of the plan set has been updated.**
4. New proposed location of wayfinding sign (Sheet C-3) will be reviewed and approved by Department of Public Works. **The wayfinding sign location has been updated on Sheet C3.**

5. New layout of the sprinkler room will be reviewed and approved by Department of Public Works. **The Sprinkler Room has been updated on Sheet C4. The entrance will be in an area of low clearance with a 90-degree bend to get to the full height room.**
6. Applicant will update street lighting circuit to originate from a streetlight or streetlight pull box for Department of Public Works review and approval. **The Sheet C5 plan has been updated.**
7. Updated language pertaining to extending existing water stubs to building (call out box in southern corner of proposed building, sheet C-5) will be reviewed and approved by DPW. **The note was revised on the plans for final review.**
8. Applicant will update standard light pole detail to be consistent with the City standard pole detail for Department of Public Works review and approval. **The Detail U / D4 has been updated.**
9. Applicant will work with Eric Eby to determine proper width of parking level entrance. **The building entrance has been set back 2 feet +/- to accommodate a larger specified vehicle, the door expanded, and the vehicle turning plan has been updated.**
10. Applicant will make a $50,000 contribution to the Maplewood Avenue corridor video detection signal system. **Agreed.**
11. Applicant will include all approvals from Trees and Greenery with the updated submission. **The Trees and Greenery Committee motion and approval is included in the submission package.**
12. Applicant will update plans to include revised existing easement and proposed easement(s) with Eversource and will coordinate with the Department of Public Works to create a new easement around the drain line to the west of the building if needed. Applicant will also confirm how access rights are being provided across adjacent lot and provide an access easement if needed. **Access across the adjacent lot has been approved by the city – see the attached Site Plan C 3.0 for the Foundry Place Lot 3 Site Development.** If total number of easements equals 3 or more, applicant will provide an easement plan with unique identifiers and corresponding table. **An Easement Plan has been added to the plan set. The plan shows the following:**
    a. **Adjusted Eversource Easement in the northeast corner of the property.**
    b. **Offsite Eversource Easement to accommodate future electrical circuit looping / connections. The subject lot is also owned by the applicant, EightKPH.**
    c. **Expanded Drainage Easement to the City of Portsmouth at the north end of the existing drainage easement.**
13. Applicant will update plans, related notes, and detail sheets to include a pedestrian and vehicle warning at the garage entrance to be reviewed and approved by Department of public works. **The plan set has been updated and specifications included in the submission.**
14. Applicant will present a redesign of the pocket park entrance at Maplewood Avenue to increase radii of walkway and encourage better pedestrian circulation to Nick Cracknell in the Planning Department. **The plan set has been updated; the team will reach out to Mr. Cracknell.**
15. Applicant will provide a letter with their next submission addressing the changes that have been made to the plan set as a result of the TAC stipulations of approval or further project development. **This letter is intended to address this stipulation.**

Also included in the plans and submission is a DRAFT of the vehicle warning system – see Sheet C4 and the supplemental information. This was discussed at the TAC Meeting and is needed to avoid conflicts as vehicles are entering and exiting the below grade parking level. The applicant and his team would like to work with the city to revise the installation to a simple warning light without audible warning, given the low pedestrian and traffic volumes expected at this location.

The following plans are included in our submission:

- Cover Sheet – This shows the Development Team, Legend, Site Location, and Site Zoning.
- Subdivision Plan – This plan shows the plan which created the current property boundaries.
- Easement Plan – This plan shows proposed easements associated with the development.
- Existing Conditions Plan C1 – This plan shows the existing site conditions in detail.
- Demolition Plan C2 – This plan shows demolition of the existing building and associated site features.
- Site Plan C3 – This plan shows the site development in detail with the associated Zoning Development Standards and Floor Area calculations. Also shown are impervious surface calculations and the areas dedicated to Community Space. The plan proposes to dedicate 20% (Minimum) Community Space to gain building height.
- Architectural Renderings Floor Plans and Building Elevations.
- Landscape Plans – Site landscape features and specifications.
- Parking Level Plan C4 – This plan shows the lower-level parking layout.
- Utility Plan C5 – This plan shows proposed site utilities.
- Grading Plan C6 – This plan shows proposed site grading.
- Detail Sheets D1 to D5 – These plans show site details.

Supplemental Information Provided in the submission package includes:

TAC Approval
Trees and Greenery Approval
HDC Approval
Site Plan Checklist
Green Building Statement
Address Change Letter
Code Review
Drainage Analysis
Traffic Memorandum
Garage Exit Warning Light Specification
Vehicle Turning Movements
Average Grade Plane Calculation and Plan
Previously Approved Adjacent Site Development Plan
Development Plan Set

We look forward to the Planning Board review of this submission and look forward to an in-person presentation. We hereby request your approval of the project.

Sincerely,

John R. Chagnon

John R. Chagnon, PE
CC: Tom Balon, Carla Goodknight, Terrance Parker

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

TECHNICAL ADVISORY COMMITTEE

November 8, 2022

Tom Balon
EIGHTKPH LLC
233 Vaughan Street
Portsmouth , New Hampshire 03801

RE: Site Plan Approval for property located at 161 Deer Street (LU-22-173)

Dear Property Owner:

The Technical Advisory Committee, at its regularly scheduled meeting of Tuesday, November 1, 2022, considered your application for Site Plan Review approval for the construction of a four (4) story building to include a penthouse, commercial space, 19 dwelling units, and associated site improvements. Said property is shown on Assessor Map 125 Lot 17-3 and lies within the Character District 5 (CD5), Downtown Overlay, North End Incentive, and Historic Districts. As a result of said consideration, the Committee voted to recommend **approval** to the Planning Board with the following **conditions**:

Conditions to be satisfied prior to the Planning Board Submittal date:

1. Applicant will update plan set to reflect proposed 70 Maplewood address.

2. Applicant will update landscaping plan to add additional tree to northern corner of the property as presented to TAC at the 11/1 meeting.

3. Applicant will update the demolition plan to show existing water and sewer service is terminated at the main. Updates to be reviewed by Department of Public Works.

4. New proposed location of wayfinding sign (Sheet C-3) will be reviewed and approved by Department of Public Works.

5. New layout of the sprinkler room will be reviewed and approved by Department of Public Works.

6. Applicant will updated street lighting circuit to originate from a streetlight or street light pull box for Department of Public Works review and approval.

7. Updated language pertaining to extending existing water stubs to building (call out box in southern corner of proposed building, sheet C-5) will be reviewed and approved by DPW.

8. Applicant will update standard light pole detail to be consistent with the City standard pole detail for Department of Public Works review and approval.

9. Applicant will work with Eric Eby to determine proper width of parking level entrance.

10. Applicant will make a $50,000 contribution to the Maplewood Avenue corridor video detection signal system.

11. Applicant will include all approvals from Trees and Greenery with the updated submission

12. Applicant will update plans to include revised existing easement and proposed easement(s) with Eversource, and will coordinate with the Department of Public Works to create a new easement around the drain line to the west of the building if needed. Applicant will also confirm how access rights are being provided across adjacent lot and provide an access easement if needed. If total number of easements equals 3 or more, applicant will provide an easement plan with unique identifiers and corresponding table.

13. Applicant will update plans, related notes, and detail sheets to include a pedestrian and vehicle warning at the garage entrance to be reviewed and approved by Department of public works.

14. Applicant will present a redesign of the pocket park entrance at Maplewood Avenue to increase radii of walkway and encourage better pedestrian circulation to Nick Cracknell in the Planning Department.

15. Applicant will provide a letter with their next submission addressing the changes that have been made to the plan set as a result of the TAC stipulations of approval or further project development.

This matter will be placed on the agenda for the Planning Board meeting scheduled for **Thursday, December 15, 2022**. One (1) hard copy of all plans and supporting reports and exhibits as well as an updated electronic file (in a PDF format) must be filed in the Planning Department and uploaded to the online permit system no later than **Wednesday, November 23, 2022**.

Per Section 2.5 of the Site Plan Regulations, a site plan review application to the Planning Board must include all applicable information and supporting materials including but not limited to the following items:

- *Full updated plan set*
- *Draft Easements*
- *Drainage Analysis*
- *Traffic Studies*
- *Etc.*

All comments, corrections, and conditions identified as "Items to be addressed before Planning Board submittal' must be resolved/corrected for the Planning Board application submittal to be deemed complete.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Beverly Mesa-Zendt

Beverly Mesa-Zendt,
Planning Director

cc:

John Chagnon, Ambit Engineering
Carla Goodknight, AIA, CJ Architects

the loss of the trees. Chairman Loughlin said he was contacted by the owner's representatives and that they wanted to donate as compensation; he said he checked with Mr. Baxter, who said it would cost about $1,000 per tree. Mr. Griffin asked if a traffic survey was done as to the volume of trucks. Mr. Coronati said there wasn't a survey done but there were a large number of trucks parked there currently. Mr. Rice said he didn't normally like removing streetscape trees for applications, but for this case he'd allow it to happen so that the business could function.

Mr. Rice moved to **recommend removal** of the trees with the $5,000 stipulated on that offer, seconded by Mr. Souto. The motion passed unanimously.

2. Terrence Parker with Terra Firma Land Architects presenting on the landscape plan for the future development of 88 Maplewood Avenue.

Mr. Parker distributed a handout to the committee and reviewed the landscape plan. He said there would be six street trees on Deer Street, three along Maplewood Avenue, and a series of trees in a green strip at the back of the building that was considered a pocket park. He said the park would have more human amenities but wasn't sure what they would be. He said there would be a handicap access that would go into the parking lot. He discussed the tree grate, noting that it was 50 feet long and four feet wide. He said there would be some vertical tree guards and all the trees would provide wildlife habitat food service.

Mr. Griffin asked if there would be adequate sun exposure on the northern sides. Mr. Parker agreed. He said a fence would separate the railroad and the pocket park. Mr. Rice said the sidewalk would be on the other side of the tracks and would go along the edge. Mr. Parker said there could be a stipulation that the property owner would maintain the sidewalk but it was a City sidewalk. He said there would be no silva cells, just contiguous soil. He said the wayfinding site would be moved. Ms. Bagley asked if the site was originally a DSA property, and Mr. Parker agreed. The grate and the tree species were further discussed. He said each cluster of trees was a different species – three maples, six carpinus, and eight oaks in the back – and had similar profiles in length and width.

Mr. Rice moved to **recommend approval**, seconded by Mr. Griffin. The motion passed unanimously.

3. Randi and Jeff Collins of 77 Meredith Way presenting about their need to remove the tree growth at the end of Meredith Way to extend the road and build their house.

Mr. Baxter explained that a new home was being built and that the road would be extended and that it made sense to remove the trees. He said shade trees would be planted in the future. The residents Randi and Jeff Collins stated that the Planning Board and TAC were also reviewing it.

Mr. Griffin moved to **recommend removal**, seconded by Mr. Souto. The motion passed unanimously.

4. Update from City Arborist Chuck Baxter

CITY OF PORTSMOUTH

Planning Department
1 Junkins Avenue
Portsmouth, New
Hampshire 03801
(603) 610-7216

HISTORIC DISTRICT COMMISSION

October 17, 2022

Tom Balon
EIGHTKPH LLC
233 Vaughan Street
Portsmouth , New Hampshire 03801

RE: **Certificate of Approval for property located at 161 Deer Street (LU-22-173)**

Dear Property Owner:

The Historic District Commission, at its regularly scheduled meeting of **Wednesday, October 05, 2022**, considered your application for the demolition of the existing structure and the new construction of a new mixed-use building as per plans on file in the Planning Department. Said property is shown on Assessor Map 125 Lot 17-3 and lies within the Character District 5 (CD5), Downtown Overlay, North End Incentive, and Historic Districts. As a result of said consideration, the Commission voted to **grant** the Certificate of Approval as presented.

Findings of Fact

A. Purpose and Intent

The proposed application meets the following objective(s) of the Historic District (as provided in Section 10.631.20 of the Zoning Ordinance):

-Conservation and enhancement of property values.

B. Review Criteria

The proposed application also meets the following review criteria of the Historic District (as provided in Section 10.635.70 of the Zoning Ordinance):

-Consistent with special and defining characters of the surrounding properties.

The Commission's decision may be appealed up to thirty (30) days after the vote. Any action taken by the applicant pursuant to the Commission's decision during this appeal period shall be at the applicant's risk. Please contact the Planning Department for more details about the appeals process.

Approvals may also be required from other City Committees or Boards. Once all required approvals have been received, applicant is responsible for applying for and securing a building permit from the Inspection Department prior to starting any project work.

This approval shall expire unless a building permit is issued within a period of one (1) year from the date granted by the Historic District Commission unless an extension is granted by the Commission in accordance with Section 10.636.70 of the Zoning Ordinance.

Please note that any changes or modifications to this application require review and

approval from the Commission prior to implementation and additional fees may apply.

The minutes and audio recording of this meeting are available by contacting the Planning Department.

Very truly yours,

Nicholas J. Cracknell, AICP, Principal Planner
for Jonathan Wyckoff, Chairman of the Historic District Commission

cc: Shanti Wolph, Chief Building Inspector
Rosann Maurice-Lentz, City Assessor

John Chagnon, Ambit Engineering
Carla Goodknight, AIA, CJ Architects

City of Portsmouth, New Hampshire

Site Plan Application Checklist

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

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Applicant: EIGHT KPH Date Submitted: 8-23-2022

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

Site Address: 88 MAPLEWOOD AVENUE Map: 125 Lot: 17-3

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☐	Complete application form submitted via the City's web-based permitting program (2.5.2.1**(2.5.2.3A)**	ONLINE	N/A
☐	All application documents, plans, supporting documentation and other materials uploaded to the application form in viewpoint in digital Portable Document Format (PDF). One hard copy of all plans and materials shall be submitted to the Planning Department by the published deadline. **(2.5.2.8)**	ONLINE & DELIVERY	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Statement that lists and describes "green" building components and systems. **(2.5.3.1B)**	SUPPLEMENTAL	
☐	Existing and proposed gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1C)**	A1.0-3.0	N/A
☐	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1D)**	COVER SHEET	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1E)**	COVER SHEET	N/A
☐	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1F)**	SHEET C1	N/A
☐	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1G)**	COVER SHEET	N/A
☐	List of reference plans. **(2.5.3.1H)**	SHEET C1	N/A
☐	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1I)**	COVER SHEET	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director.. **(2.5.4.1A)**	Required on all plan sheets	N/A
☐	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☐	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	SHEET C1	N/A
☐	Plans shall be drawn to scale and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	Required on all plan sheets	N/A
☐	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	N/A	N/A
☐	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	COVER SHEET	N/A
☐	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	EACH SHEET	N/A
☐	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☐	Source and date of data displayed on the plan. **(2.5.4.2D)**	SHEET C1	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**1. Existing Conditions: (2.5.4.3A)** • Surveyed plan of site showing existing natural and built features; • Existing building footprints and gross floor area; • Existing parking areas and number of parking spaces provided; • Zoning district boundaries; • Existing, required, and proposed dimensional zoning requirements including building and open space coverage, yards and/or setbacks, and dwelling units per acre; • Existing impervious and disturbed areas; • Limits and type of existing vegetation; • Wetland delineation, wetland function and value assessment (including vernal pools); • SFHA, 100-year flood elevation line and BFE data, as required.	SHEET C1	
☐	**2. Buildings and Structures: (2.5.4.3B)** • Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation; • Elevations: Height, massing, placement, materials, lighting, façade treatments; • Total Floor Area; • Number of Usable Floors; • Gross floor area by floor and use.	A1-A3	
☐	**3. Access and Circulation: (2.5.4.3C)** • Location/width of access ways within site; • Location of curbing, right of ways, edge of pavement and sidewalks; • Location, type, size and design of traffic signing (pavement markings); • Names/layout of existing abutting streets; • Driveway curb cuts for abutting prop. and public roads; • If subdivision; Names of all roads, right of way lines and easements noted; • AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	SHEET C3	
☐	**4. Parking and Loading: (2.5.4.3D)** • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided).	SHEET C3 & SHEET C4	
☐	**5. Water Infrastructure: (2.5.4.3E)** • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii).	SHEET C5	
☐	**6. Sewer Infrastructure: (2.5.4.3F)** • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period.	SHEET C5	

☐	**7. Utilities: (2.5.4.3G)** • The size, type and location of all above & below ground utilities; • Size type and location of generator pads, transformers and other fixtures.	SHEET C5	
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
	• The size, type and location of solid waste facilities.	SHEET A2.0	
☐	**9. Storm water Management: (2.5.4.3I)** • The location, elevation and layout of all storm-water drainage. • The location of onsite snow storage areas and/or proposed off-site snow removal provisions. • Location and containment measures for any salt storage facilities • Location of proposed temporary and permanent material storage locations and distance from wetlands, water bodies, and stormwater structures.	SHEET C6	
☐	**10. Outdoor Lighting: (2.5.4.3J)** • Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan.	TBD	
☐	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	TBD	
☐	**12. Landscaping: (2.5.4.3K)** • Identify all undisturbed area, existing vegetation and that which is to be retained; • Location of any irrigation system and water source.	SHEET L1 SHEET C5	
☐	**13. Contours and Elevation: (2.5.4.3L)** • Existing/Proposed contours (2 foot minimum) and finished grade elevations.	SHEET C6	
☐	**14. Open Space: (2.5.4.3M)** • Type, extent and location of all existing/proposed open space.	SHEET C3	
☐	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	SHEET C1	
☐	**16. Character/Civic District (All following information shall be included): (2.5.4.3P)** • Applicable Building Height (10.5A21.20 & 10.5A43.30); • Applicable Special Requirements (10.5A21.30); • Proposed building form/type (10.5A43); • Proposed community space (10.5A46).	SHEET C3	
☐	**17. Special Flood Hazard Areas (2.5.4.3Q)** • The proposed development is consistent with the need to minimize flood damage; • All public utilities and facilities are located and construction to minimize or eliminate flood damage; • Adequate drainage is provided so as to reduce exposure to flood hazards.	NOT IN ZONE	

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Traffic Impact Study or Trip Generation Report, as required. **(3.2.1-2)**	ONLINE	
☐	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	SHEET C6	
☐	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	N/A	
☐	Stormwater Management and Erosion Control Plan. **(7.4)**	SHEET D1	
☐	Inspection and Maintenance Plan **(7.6.5)**	DRAINAGE REPORT	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	All local approvals, permits, easements and licenses required, including but not limited to: • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. **(2.5.3.2A)**	ONGOING	
☐	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: • Calculations relating to stormwater runoff; • Information on composition and quantity of water demand and wastewater generated; • Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; • Estimates of traffic generation and counts pre- and post-construction; • Estimates of noise generation; • A Stormwater Management and Erosion Control Plan; • Endangered species and archaeological / historical studies; • Wetland and water body (coastal and inland) delineations; • Environmental impact studies. **(2.5.3.2B)**	SUBMITTED	
☐	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	TO BE PROVIDED	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	COVER SHEET	
☐	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	COVER SHEET	N/A
☐	For site plans that involve land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) confirmation that all necessary permits have been received from those governmental agencies from which approval is required by Federal or State law, including Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1334. **(2.5.4.2F)**	N/A	
☐	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	SHEET C3	N/A

Applicant's Signature: John Chagnon **Date:** 8-23-2022

PROPOSED GREEN BUILDING COMPONENTS

LOCATION AND TRANSPORTATION

1. Public Transportation – This site is about three blocks from Coast Bus service at the Hanover Garage Location.

2. Walkable Amenities – This site is a short walking distance the Portsmouth downtown core and adjacent to the Foundry garage.

3. Bicycle Storage - Bicycle storage will be provided for building occupants inside the building parking garage with potential for exterior public temporary customer storage. Condo owners will also be able to charge electric bikes in the garage (see parking section also).

4. Increased Density - The project will provide increased residential density in a previously developed commercial location.

SITE

5. Adaptive Reuse – Redevelopment of (demo and replace) an existing single-story commercial building for multi-story infill development.

6. Reduce Impervious Surfaces - Impervious surfaces have been reduced slightly, with increased areas for landscaping and community green space along the rail corridor.

7. Stormwater Design - The stormwater system has been designed using Low Impact Design techniques, such as R-tank stormwater detention and more pervious community space surfaces (i.e. expanded tree boxes).

8. Parking - Parking calculations have been performed using the City's parking requirements and have been exceeded. All garage parking spaces will have a dedicated electrical feed for charging an electric vehicle connected to each individual condo owner's electric service. EV chargers to ultimately provided by condo owners. Goal of 100% EV condo owners to minimize need for garage ventilation.

WATER

9. Plumbing Fixtures - Dual flush or low-flow toilets and other low-flow fixtures will be provided where possible.

10. Domestic Hot Water - Will be designed to exceed code requirements, anticipated to be hybrid-hot water which provides supplemental HVAC cooling capacity in summer.

ENERGY

11. Building Envelope - The building envelope will be designed as a high-performance assembly to exceed minimum Energy Code requirements to minimize heating and cooling expenses. Design elements include inset balcony patios to shade the interiors of lower floor units and a 3' roof overhang on the penthouse for summer shading.

12. HVAC Units - High-efficiency Air Source Heat Pumps controlled by the condo tenant. An Energy Recovery Ventilation (ERV) type system is also anticipated to provide continuous fresh air ventilation.

13. High-Efficiency Lighting - Efficient LED lighting will be used for interior and exterior fixtures, occupancy sensors where required.

14. Energy Star Appliances - Appliances provided by Owner will be Energy Star rated where appropriate. All cooktops will be induction electric and ovens will be electric. The elevator will be electric traction regenerative (not electric-hydraulic) for energy efficiency and transport speed. Emergency power for the elevator is anticipated to be Tesla Power Wall Battery (no gas or diesel generator).

15. Roofing - Flat roofing will be of a light-colored, reflective membrane roofing to reduce the heat island effect. Darker roofing may be used if covered with solar panels. Solar panels will not be visible per code.

MATERIALS AND RESOURCES

16. Minimize Waste - Material waste will be minimized as much as possible during construction.

INDOOR ENVIRONMENTAL QUALITY

17. Low-VOC Materials - Building materials with low volatile organic compound levels will be specified where possible.

18. Indoor Air Quality - Residential dwelling units will have operable windows for access to fresh air and patios will have folding glass doors to open the units to the outdoors. Natural gas will be omitted (no gas stoves or fireplaces) from the building to reduce NOx, CO and methane emissions.

19. Daylight - Habitable spaces will have access to windows for daylight.

20. Thermal Comfort - Each residential unit will have a dedicated HVAC controlled by the condo owner.

21. Acoustic Comfort - Acoustic and vibration separations will be provided between dwelling units at demising walls, rock wool sound insulation in the ceiling assemblies and floors as well as "acoustiblok" within the exterior walls, because of proximity the Rail corridor. Windows will be the highest STC available, again because of proximity the Rail corridor.

Note: Green building components reflect proposed project features and are subject to feasibility of construction.

AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

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

23 November 2022

James McCarty, GIS Manager
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801

RE: Request for New Address; Mixed Use Site Development - Site Plan Proposal
Formerly 161 Deer Street *request to revise to* 70 Maplewood Avenue,

Dear Mr. McCarty:

On behalf of Tom Balon and EightKPH, LLC we hereby request that the property known as **161 Deer Street** (Tax Map 125 Lot 17 – 3) be re-assigned as **70 Maplewood Avenue** as it is re-developed.

Let me know if you have any questions regarding this request.

Sincerely,

John R. Chagnon

John R. Chagnon, PE
CC: Tom Balon

PRELIMINARY CODE STUDY

APPLICABLE CODES

- Basic code and fire rating information per 2015 IBC and 2015 NFPA 101 (with New Hampshire modifications).
- Per New Hampshire law, the more restrictive of NFPA 101 and IBC Means of Egress is to be used.
- Accessibility regulations compliance with IBC Chapter 11 and ANSI NH RSA 155-A:5.

GENERAL PROJECT DESCRIPTION

This project consists of the construction of a new mixed-use building in Portsmouth, New Hampshire.

The building will be four stories in height with a fifth story penthouse and a basement below. The basement will be used for parking and mechanical space, the first floor will be commercial space, and the second, third, fourth, and fifth floors will be residential dwelling units.

The building will be protected throughout by an NFPA-13 automatic sprinkler system.

BUILDING DATA

Zoning District:	CD5 - Character District 5
Overlay Districts:	Downtown Overlay District, North End Incentive Overlay District, Historic District
Occupancies:	R2 Residential S2 Storage (parking garage) M Mercantile (assumed worst case at first floor commercial)
Building height:	62 feet
Number of stories above grade:	Five (note 1)
Number of Residential units:	19 (six per floor at 2nd, 3rd, and 4th plus 1 at penthouse)
Footprint area:	17,190 SF
Construction Type:	Type II-B (noncombustible, unprotected) (note 4)
Sprinkler system:	NFPA-13 automatic sprinkler system
Standby power (note 5):	Required by IBC for elevator as means of egress (5 stories) Required by City of Portsmouth for garage ventilation

HEIGHT AND AREA LIMITATIONS

Construction type:	Type II-B	IBC section 602
Height limitation:	R2: 75 feet (S sprinkler) S2: 75 feet (S sprinkler) M: 75 feet (S sprinkler)	IBC table 504.3
Story limitation	R2: 5 stories (S sprinkler) S2: 4 stories (S sprinkler) M: 3 stories (S sprinkler)	IBC table 504.4
Area limitation:	R2: 48,000 SF (SM sprinkler) S2: 78,000 SF (SM sprinkler M: 37,500 SF (SM sprinkler)	IBC table 506.2
Street frontage increase:	Not required for compliance	IBC table 506.3

FIRE RATINGS

IBC Type II-B Construction

Note: Some structural members in otherwise unrated assemblies may require fire protection when supporting fire rated assemblies above. Requirements are subject to local building officials.

Basic building elements	Fire rating	Code reference
Structural frame:	0 hour	IBC table 601
Exterior bearing walls:	0 hour	IBC table 601
Interior bearing walls (not acting as fire separation):	0 hour	IBC table 601
Interior non-bearing walls (not acting as fire separation):	0 hour	IBC table 601
Floor construction:	0 hour	IBC table 601
Roof construction:	0 hour	IBC table 601

Interior fire separations	Fire rating	Code reference
Separation between S2 and M:	2 hours (first floor assembly)	NFPA 88A
Separation between M and R2:	1 hour (second floor assembly)	IBC section 508.4
Stair (vertical enclosure) walls:	2 hour fire barrier (note 2)	IBC table 1023.2
Exit access corridor walls:	1/2 hour fire partition (note 3)	IBC table 1020.1
Elevator hoistway:	2 hour fire barrier	IBC section 713.4
Elevator machine room enclosure:	2 hour fire barrier	IBC section 3005.4
Dwelling unit separations (walls):	1/2 hour fire partition	IBC section 708.3 ex.2
Dwelling unit separations (floor/ceiling):	1/2 hour	IBC section 711.2.4.3 ex

(continued next page)

Interior fire separations	Fire rating	Code reference
Dwelling unit/corridor separations:	1/2 hour	IBC section 708.3 ex.1
Mechanical shafts:	2 hour fire barrier	IBC section 713.4
Electric room enclosure (>112-1/2 kVA):	1 hour fire barrier (if applicable)	NEC 450.21(B)
Trash collection rooms:	1 hour fire barrier	NFPA 101 30.3.2.1.1
Storage rooms outside of dwellings:	0 hours with sprinkler system	NFPA 101 30.3.2.1.1
Common mechanical rooms:	1 hour fire barrier	NFPA 101 8.7.1
Opening protectives		
Exit access (stair enclosure) doors:	1-1/2 hour (90 minute)	IBC table 716.4
Elevator hoistway doors:	1-1/2 hour (90 minute)	IBC table 716.4
Elevator machine room doors:	1-1/2 hour (90 minute)	IBC table 716.4
Dwelling unit entry & corridor doors:	1/3 hour (20 minute)	IBC table 716.4
Electric room doors:	3/4 hour (45 minute)	IBC table 716.4
Trash room doors:	3/4 hour (45 minute)	IBC table 716.4
Common mechanical room doors:	3/4 hour (45 minute)	IBC table 716.4

ACCESSIBILITY

1. Sixty percent of public building entrances must be accessible. — IBC section 1105.1
2. The main accessible entrance must be at or near the main ambulatory entrance.
3. All public areas of the building must be accessible including the corridor side of dwelling unit entrances. An accessible route must be provided throughout the building except within multi-level dwelling units and within mechanical areas.
4. No Type A accessible dwelling units are required because the site contains less than 20 dwelling units. — IBC section 1107.6.2.2.1
5. All dwelling units must conform to Fair Housing Act requirements due to new construction with more than four dwelling units and elevator access to all floors. All dwelling units must be at least Type B accessible per IBC. — IBC section 1107.6.2.2.2
6. At least one parking space shall be accessible in the lower level garage (2% of total 29 spaces = 0.58 spaces required). — IBC section 1106.2
7. At least one van accessible parking space is required at the lower level garage, since a van space is required for every six accessible parking spaces. The minimum vertical clearance at the van space is 7’-0” (note 6). — IBC section 1106.5 ex.
8. Each public bathroom shall be accessible. Where multiple single-user bathrooms are clustered at a single location, at least 50 percent but not less than one room at each cluster shall be accessible. — IBC section 1109.2

NOTES

1) Basement is not a story above grade per IBC definition (floor above is less than 6' above grade plane).

2) Walls denoted as fire barriers must be continuous from the top of slab below to the underside of roof deck above.

3) Walls denoted as fire partitions must be continuous from the top of slab or deck below to the fire rated membrane above.

4) Combustible materials are permitted in construction Type II-B under specific conditions as listed in IBC Section 603.1. Item 1 of this section permits fire-retardant-treated wood to be used in nonbearing partitions where the required fire rating is 2 hours or less. This means that the exterior wall system of the building must be constructed using either GWB sheathing (such as Densglass) or FRT plywood sheathing. A separate building wrap product (such as Blueskin) or a fluid applied barrier system may then be installed over this sheathing for a complete exterior assembly.
Because it is not fabricated using FRT wood, combined sheathing products such as ZIP sheathing cannot be used in Type II-B construction.

5) Owner has proposed using a battery system for standby power (such as Tesla Powerwall). This will require AHJ approval as a standby power source.

6) IBC Section 1106.5 allows an exception for van accessible parking spaces in private garages serving R2 residential occupancies, allowing the vertical clearance to be reduced to 7'-0" minimum, where the 2010 ADA Standards require 8'-2" clear height at van accessible spaces with no exceptions listed. Since this project is not subject to the requirements of the ADA Standards, and the lower level garage is a private garage serving the R2 residential occupancy, the clear height at the van space may be 7'-0" minimum.

END OF DOCUMENT

TABLE 1106.1
ACCESSIBLE PARKING SPACES

TOTAL PARKING SPACES PROVIDED IN PARKING FACILITIES	REQUIRED MINIMUM NUMBER OF ACCESSIBLE SPACES
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2% of total
1,001 and over	20, plus one for each 100, or fraction thereof, over 1,000

❖ The required number of accessible parking spaces is based on the accessible parking requirements of the 2010 ADA Standard. It does not reflect the demographic statistics on wheelchair usage that were used to scope other requirements in Chapter 11, because the majority of disabled parking permit and license plate holders in most states are ambulatory, mobility-impaired persons. The required ratios are intended to be responsive to the anticipated demand for all facilities, such that accessible parking spaces will be reasonably available on demand. Section 1111.1 states that signage is not required on the one required accessible parking space when the total number of parking spaces provided is four or less. This could be burdensome for the building tenant in that the accessible parking space, which is restricted for use only by authorized vehicles, could constitute anywhere from 25 to 100 percent of the available parking. This may unduly restrict the availability of parking for all other vehicles and patrons of the facility. While not reserved by signage, the space must still be sized in accordance with a van-accessible space.

1106.2 Groups I-1, R-1, R-2, R-3 and R-4. *Accessible* parking spaces shall be provided in Group I-1, R-1, R-2, R-3 and R-4 occupancies in accordance with Items 1 through 4 as applicable.

1. In Group R-2, R-3 and R-4 occupancies that are required to have *Accessible*, *Type A* or *Type B dwelling units* or *sleeping units*, at least 2 percent, but not less than one, of each type of parking space provided shall be *accessible*.
2. In Group I-1 and R-1 occupancies, *accessible* parking shall be provided in accordance with Table 1106.1.
3. Where at least one parking space is provided for each *dwelling unit* or *sleeping unit*, at least one *accessible* parking space shall be provided for each *Accessible* and *Type A unit*.
4. Where parking is provided within or beneath a building, *accessible* parking spaces shall be provided within or beneath the building.

❖ This section provides a separate criterion for the required number of accessible parking spaces for occupancies in Groups I-1, R-1, R-2, R-3 and R-4 that include Accessible, Type A or Type B units.

The 2-percent requirement in Item 1 for R-2, R-3 and R-4 is based on HUD's FHAG. Section 1107.7 identifies buildings where Type A and Type B units may not be required. For example, a townhouse development may not have any Type A or Type B dwelling units required, therefore, no accessible parking spaces are required. Designers should keep in mind that asking for accessible parking spaces is a common accommodation asked for by residents in both townhouse and apartment developments. While not required, it would be good design practice to exceed code and at least have space on the parking lot to add accessible parking when requested.

Per Item 2, assisted living facilities (Group I-1) and hotels and motels (Group R-1) should use Table 1106.1 to determine the number of accessible parking spaces required.

Due to the higher anticipated need, per Item 3, when a residential parking lot provides one or more spaces for each dwelling or sleeping unit, there should be accessible parking spaces for each Accessible or Type A unit in the facility, in addition to the 2 percent required by Items 1 or 2. For example, a 100-unit hotel has 100 parking spaces for the guests. Four Accessible guestrooms are required. Table 1106.1 would require four accessible spaces. Item 3 would require an additional four accessible spaces. Therefore the hotel will have to provide eight accessible parking spaces, two sized for a van.

Per Item 4, where parking is provided within or beneath a building, accessible parking spaces also are to be provided within or beneath the building. If a combination of surface and covered parking is provided, accessible parking may be provided in both locations. This is intended to establish consistency in the type and location of parking spaces available to all people. If parking is provided in individual private parking garages, 2 percent of the parking garages would have to contain accessible parking spaces (see the exception to Section 1106.5).

In a development, typically parking for dwelling units is considered on a site basis rather than a building-by-building basis. Accessible parking should be dispersed throughout the development so as to provide the best access possible. It is not the intent to require accessible parking spaces at the entrance to every building, or within every strip of parking garages. For example, it would not be logical to ask for a surface space and a garage space for each building in developments with multiple four-unit buildings. See Section 1106.5 for a discussion of the distribution of van-accessible spaces.

DRAINAGE ANALYSIS

SITE DEVELOPMENT

88 MAPLEWOOD AVENUE
PORTSMOUTH, NH

PREPARED FOR
EIGHTKPH, LLC.

23 AUGUST 2022
AMENDED: 20 OCTOBER 2022

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 2271.04)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed building at 88 Maplewood Avenue in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 125 as Lot 17-3. The project proposes to replace the current building and associated parking lot. The total size of the lot together is 22,667 square-feet (0.520 acres). The size of the total drainage area is 41,807 square-feet (0.960 acres).

The site plans will provide for the future construction of a new building, with associated landscaping, utilities, and underground parking. The new building 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 125 as Lot 17-3. Bounding the site to north is a railroad and then a cemetery. Bounding the site to east is Maplewood Avenue. Bounding the site to south is Deer Street. Bounding the site to the west is an existing Banking facility with drive-up window. A vicinity map is included in the Appendix to this report. The existing building and associated parking lot will be demolished.

This report includes information about the existing site and the proposed construction 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.

In addition, the City of Portsmouth produced the "Deer Street Outfall Drainage Evaluation," published October 17, 2018. This report was used to evaluate the future impacts of the proposed drainage network.

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 two soil types:

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

Canton complex is well drained with a stated depth to water table and restrictive feature of more than 80 inches. However, due to the primary urban fill component of the soil, as well as the proximity to North Mill Pond, the Hydrologic Soil Group will be assumed to be D.

The physical characteristics of the site consist of flat (0-15%) grades that generally slope from the northeast to the southwest. Elevations on the site range from 12 to 15 feet above sea level. The existing site is developed and includes an existing building located in the center of the lot, with an asphalt parking lot to the north. Vegetation around the developed portion of the lot consists of established grasses and some landscape areas.

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 two watershed basins (E1 and E2) based on localized topography and discharge location. Subcatchment E1 contains the southwesterly part of the lot, as well as part of the western adjacent lot and drains to a catch basin in the southwest. Subcatchment E2 contains a much smaller northeasterly part of the lot and drains to a catch basin to the north. Subcatchments E1 and E2 drain to discharge points DP1 and DP2, respectively. DP1 is located at a catch basin across the street from 'Statey Bar and Grill,' while DP2 is a catch basin near the north corner of the property. The "Deer Street Outfall Drainage Evaluation" raises concerns about the existing pipe to which both discharge points are currently connected. From the report: "Based on the evaluations described above, and in detail in the following report, we have concluded additional drainage capacity is needed now and in the future at the Deer Street Outfall." The report estimates that the pipe nearest the site (from DMH 4980) will flow at capacity during the 10-year storm event, and several of the surrounding pipes in the drainage network will be surcharged. The possibility was raised that part of this flow be diverted through an additional outlet pipe through Maplewood Avenue. However, stormwater design that diverts drainage toward the Maplewood Avenue drainage network is not feasible at this time.

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	38,820	5.0	95	7.03	10.80	DP1
E2	2,987	5.0	87	0.48	0.78	DP2

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 three subcatchment basins, (P1, P1a and P2). Subcatchments P1 and P1a are related to the area of subcatchment E1. Subcatchment P1a contains the roof of the proposed building, and drains through a roof filter and R-Tank storage system before discharging to an outfall pipe downstream from DP1. Subcatchment P2 is related to the area of subcatchment E2. Subcatchments P1 and P2 drain to Discharge Points DP1 and DP2, respectively. Note that Subcatchment P2 drains toward Maplewood Avenue.

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	19,402	5.0	95	3.51	5.40	DP1
P1a	16,944	5.0	98	3.13	4.76	DP1
P2	5,462	5.0	95	0.99	1.52	DP2

The overall impervious coverage of the subcatchment areas analyzed in this report **increases** from 0.759 acres (79.12%) in the pre-development condition to 0.866 acres (90.19%) in the post-development condition. The project proposes the construction of a R-Tank storage system on site, reducing the peak flow discharge from the site, as well as a downspout filter, providing treatment.

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 R-Tank. Note the inclusion of Discharge Point 3 (DP3), representative of the net flows from DP1 and DP2, located at the outfall pipe headed toward North Mill Pond.

Table 3: Pre-Development to Post-Development Comparison

	Q2 (CFS)		Q10 (CFS)		Q50 (CFS)		
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Description**
DP1	4.51	3.97	7.03	6.49	10.80	10.04	Statey Basin
DP2	0.28	0.63	0.48	0.99	0.78	1.52	North Corner
DP3	4.79	4.60	7.51	7.48	11.59	11.56	Combined Flow

Discharge Point 2 experiences a significant increase in peak discharge, however, the city infrastructure to be utilized by both discharge points are connected by the same drainage network, as shown by DP3. The net effect of both discharge points on the drainage network shows peak flows at or below existing levels. Discharge Point 2, if connected to a new drainage network, would lower the peak flow to Discharge Point 3.

The City of Portsmouth classifies any project that disturbs more than 15,000 square feet of area where over 40% of the existing area is already impervious as a redevelopment project. The City requires that such projects treat at least 30% of their existing impervious area and 100% of any additional impervious area using filtration or infiltration practices. This expectation is exceeded with the treatment of the proposed 16,944 sf rooftop.

(100%)(4,626 sf pervious) + (30%)(18,041 sf impervious) = 10,038 sf required treatment

OFFSITE INFRASTRUCTURE CAPACITY

Retention and routing of the stormwater to the City infrastructure is done on-site through the use of the R-Tank storage system, and has been designed as not to increase the peak flow rate to the local drainage system, 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 existing impervious surfaces. 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
- Filter baskets in catch basins
- 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 R-Tank system, the post-development runoff rates are reduced to below the pre-development runoff rates. The proposed downspout filter will provide treatment to part of the runoff. 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. Additionally, the diversion of some flow from Deer Street will be advantageous in the event the City pursues an additional outlet pipe to North Mill Pond through Maplewood Avenue.

REFERENCES

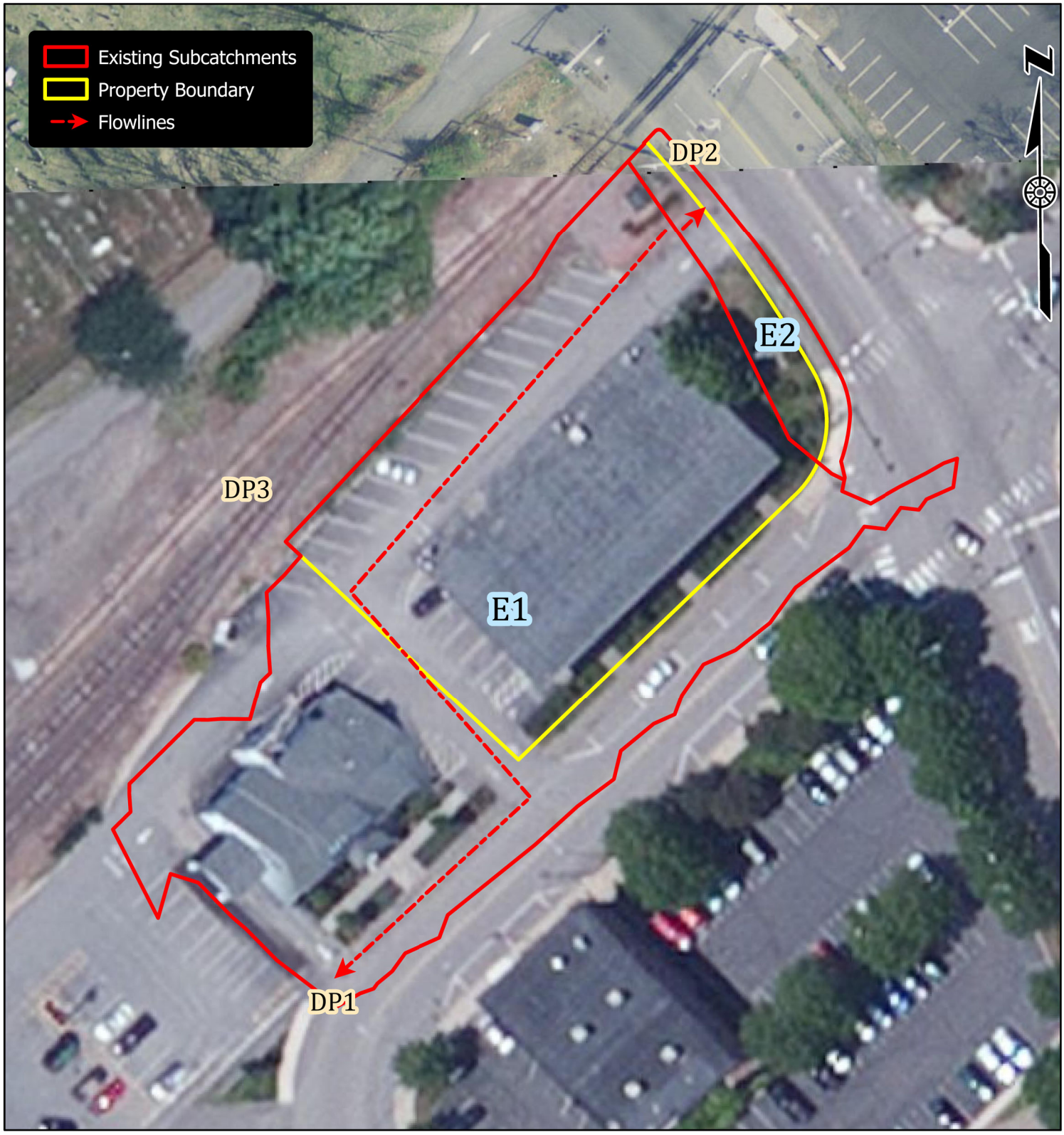
1. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).
2. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing 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.
4. CMA Engineers. *Deer Street Outfall Drainage Evaluation*, October 2018.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Diagram Of Existing Subcatchments

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

JOB NUMBER: 2271
SCALE: 1" = 50'
SUBMITTED: 10-20-2022

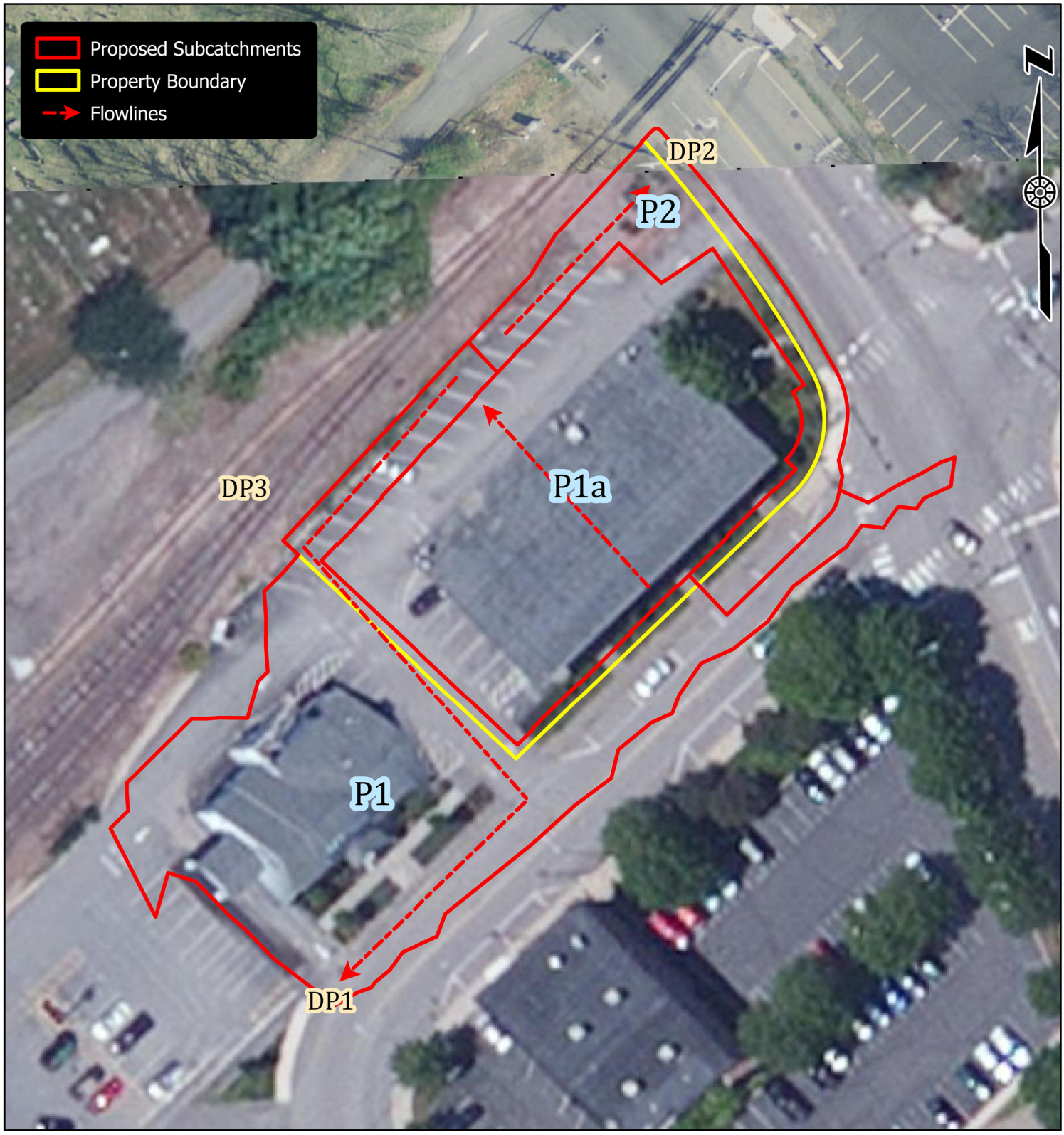


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Diagram Of Proposed Drainage

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

JOB NUMBER: 2271
SCALE: 1" = 50'
SUBMITTED: 10-20-2022



APPENDIX A

VICINITY (TAX) MAP

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Property Boundaries

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

JOB NUMBER: 2271
SCALE: 1" = 60'
SUBMITTED: 08-04-2022

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	70.762 degrees West
Latitude	43.078 degrees North
Elevation	0 feet
Date/Time	Thu, 19 May 2022 11:11:02 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.65	2.92	**1yr**	2.35	2.81	3.22	3.94	4.54	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.48	3.20	3.57	**2yr**	2.84	3.43	3.93	4.67	5.32	**2yr**
5yr	0.37	0.58	0.73	0.97	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.06	4.57	**5yr**	3.59	4.40	5.03	5.93	6.69	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.72	2.23	2.89	3.74	4.86	5.52	**10yr**	4.30	5.31	6.07	7.09	7.96	**10yr**
25yr	0.48	0.76	0.97	1.33	1.77	2.33	**25yr**	1.53	2.14	2.77	3.62	4.73	6.16	7.09	**25yr**	5.45	6.81	7.78	9.00	10.03	**25yr**
50yr	0.53	0.86	1.10	1.53	2.07	2.75	**50yr**	1.78	2.52	3.28	4.31	5.65	7.37	8.57	**50yr**	6.53	8.24	9.40	10.79	11.95	**50yr**
100yr	0.59	0.96	1.24	1.76	2.41	3.25	**100yr**	2.08	2.97	3.90	5.15	6.75	8.83	10.36	**100yr**	7.82	9.96	11.35	12.93	14.24	**100yr**
200yr	0.67	1.10	1.42	2.04	2.82	3.82	**200yr**	2.43	3.51	4.60	6.11	8.06	10.58	12.52	**200yr**	9.37	12.04	13.71	15.50	16.98	**200yr**
500yr	0.80	1.31	1.71	2.48	3.47	4.75	**500yr**	2.99	4.37	5.75	7.68	10.19	13.45	16.11	**500yr**	11.90	15.49	17.61	19.72	21.44	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.88	**1yr**	0.63	0.86	0.92	1.33	1.68	2.23	2.48	**1yr**	1.97	2.39	2.86	3.18	3.88	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.05	3.45	**2yr**	2.70	3.31	3.82	4.54	5.07	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.78	4.18	**5yr**	3.34	4.02	4.71	5.52	6.23	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.80	2.39	3.06	4.36	4.85	**10yr**	3.86	4.66	5.42	6.39	7.17	**10yr**
25yr	0.44	0.67	0.83	1.18	1.56	1.90	**25yr**	1.34	1.86	2.10	2.76	3.54	4.70	5.87	**25yr**	4.16	5.64	6.62	7.76	8.65	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.17	**50yr**	1.52	2.12	2.34	3.07	3.93	5.31	6.77	**50yr**	4.70	6.51	7.68	9.00	9.98	**50yr**
100yr	0.53	0.81	1.01	1.46	2.00	2.47	**100yr**	1.73	2.41	2.62	3.42	4.35	5.96	7.81	**100yr**	5.28	7.51	8.92	10.45	11.52	**100yr**
200yr	0.59	0.89	1.12	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.79	4.79	6.68	9.01	**200yr**	5.91	8.66	10.34	12.15	13.31	**200yr**
500yr	0.68	1.02	1.31	1.90	2.70	3.36	**500yr**	2.33	3.28	3.41	4.32	5.46	7.76	10.87	**500yr**	6.87	10.45	12.58	14.86	16.11	**500yr**

Upper Confidence Limits

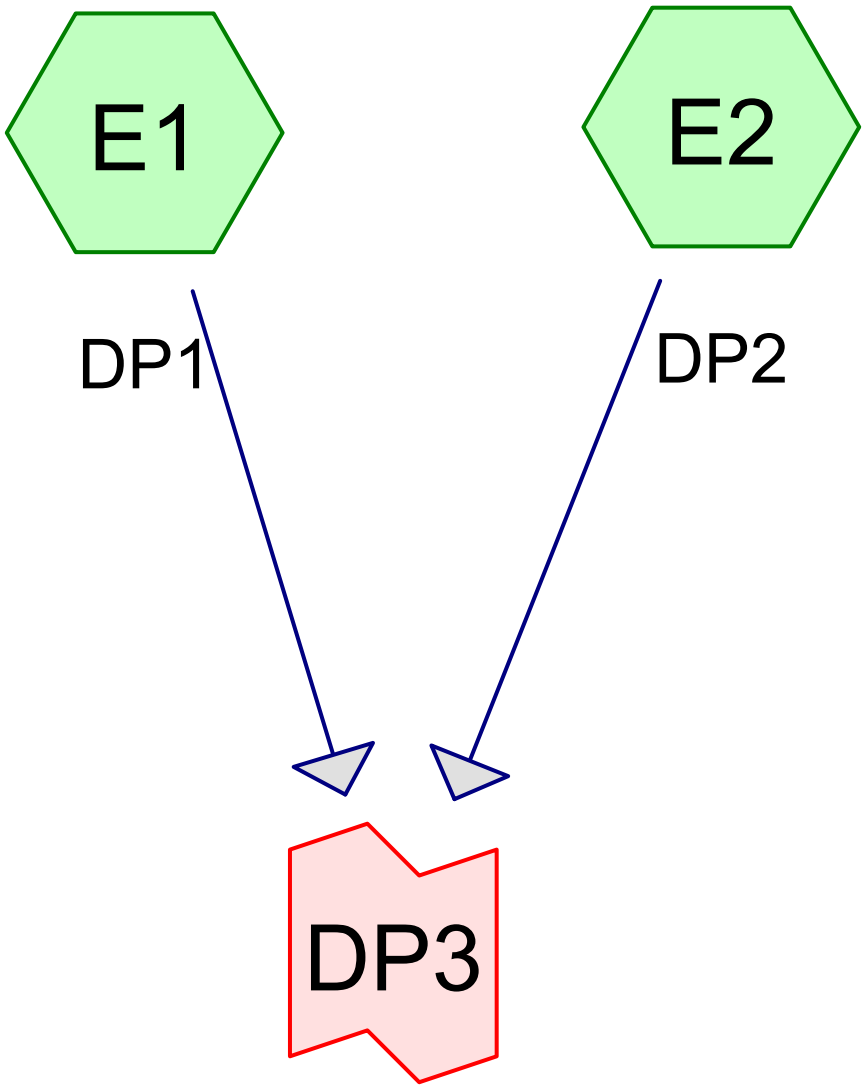
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.98	3.16	**1yr**	2.64	3.04	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.42	3.70	**2yr**	3.03	3.56	4.08	4.83	5.62	**2yr**
5yr	0.40	0.62	0.76	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.33	4.96	**5yr**	3.84	4.77	5.37	6.37	7.15	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.11	3.95	5.33	6.20	**10yr**	4.72	5.96	6.82	7.83	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.57	**25yr**	1.76	2.51	2.95	4.07	5.15	7.77	8.34	**25yr**	6.88	8.02	9.15	10.33	11.40	**25yr**
50yr	0.67	1.02	1.27	1.82	2.46	3.12	**50yr**	2.12	3.05	3.59	5.00	6.32	9.73	10.46	**50yr**	8.62	10.06	11.45	12.71	13.95	**50yr**
100yr	0.79	1.19	1.49	2.15	2.95	3.80	**100yr**	2.55	3.72	4.37	6.15	7.76	12.18	13.11	**100yr**	10.78	12.61	14.32	15.68	17.08	**100yr**
200yr	0.92	1.39	1.76	2.54	3.55	4.64	**200yr**	3.06	4.54	5.33	7.58	9.53	15.29	16.45	**200yr**	13.53	15.82	17.94	19.34	20.91	**200yr**
500yr	1.14	1.70	2.19	3.18	4.52	6.02	**500yr**	3.90	5.89	6.92	10.01	12.54	20.67	22.22	**500yr**	18.29	21.37	24.18	25.50	27.33	**500yr**

Powered by ACIS Northeast Regional Climate Center

APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for Existing Conditions David T
Prepared by Ambit Engineering, Printed 2022-10-20

Project Notes

Defined 5 rainfall events from output (37) IDF

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type II 24-hr		Default	24.00	1	3.68	2
2	10-yr	Type II 24-hr		Default	24.00	1	5.59	2
3	25-yr	Type II 24-hr		Default	24.00	1	7.08	2
4	50-yr	Type II 24-hr		Default	24.00	1	8.48	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.146	80	>75% Grass cover, Good, HSG D (E1, E2)
0.285	98	Paved parking, HSG D (E1, E2)
0.167	98	Roofs, HSG D (E1)
0.361	95	Urban commercial, 85% imp, HSG D (E1)
0.960	**94**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.960	HSG D	E1, E2
0.000	Other	
0.960		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.146	0.000	0.146	>75% Grass cover, Good	E1, E2
0.000	0.000	0.000	0.285	0.000	0.285	Paved parking	E1, E2
0.000	0.000	0.000	0.167	0.000	0.167	Roofs	E1
0.000	0.000	0.000	0.361	0.000	0.361	Urban commercial, 85% imp	E1
0.000	**0.000**	**0.000**	**0.960**	**0.000**	**0.960**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=38,820 sf 82.21% Impervious Runoff Depth>2.92"
Tc=5.0 min CN=95 Runoff=4.51 cfs 0.217 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>2.18"
Tc=5.0 min CN=87 Runoff=0.28 cfs 0.012 af

Link DP3: above 1,000.00 cfs Inflow=4.79 cfs 0.229 af
Primary=0.00 cfs 0.000 af Secondary=4.79 cfs 0.229 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.229 af Average Runoff Depth = 2.86"
20.88% Pervious = 0.200 ac 79.12% Impervious = 0.759 ac

Summary for Subcatchment E1: DP1

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

Runoff = 4.51 cfs @ 11.95 hrs, Volume= 0.217 af, Depth> 2.92"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
38,820	95	Weighted Average
6,904		17.79% Pervious Area
31,916		82.21% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.28 cfs @ 11.95 hrs, Volume= 0.012 af, Depth> 2.18"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.960 ac, 79.12% Impervious, Inflow Depth > 2.86" for 2-yr event
Inflow = 4.79 cfs @ 11.95 hrs, Volume= 0.229 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 4.79 cfs @ 11.95 hrs, Volume= 0.229 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=38,820 sf 82.21% Impervious Runoff Depth>4.66"
Tc=5.0 min CN=95 Runoff=7.03 cfs 0.346 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>3.87"
Tc=5.0 min CN=87 Runoff=0.48 cfs 0.022 af

Link DP3: above 1,000.00 cfs Inflow=7.51 cfs 0.368 af
Primary=0.00 cfs 0.000 af Secondary=7.51 cfs 0.368 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.368 af Average Runoff Depth = 4.60"
20.88% Pervious = 0.200 ac 79.12% Impervious = 0.759 ac

Summary for Subcatchment E1: DP1

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

Runoff = 7.03 cfs @ 11.95 hrs, Volume= 0.346 af, Depth> 4.66"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
38,820	95	Weighted Average
6,904		17.79% Pervious Area
31,916		82.21% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.48 cfs @ 11.95 hrs, Volume= 0.022 af, Depth> 3.87"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.960 ac, 79.12% Impervious, Inflow Depth > 4.60" for 10-yr event
Inflow = 7.51 cfs @ 11.95 hrs, Volume= 0.368 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 7.51 cfs @ 11.95 hrs, Volume= 0.368 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=38,820 sf 82.21% Impervious Runoff Depth>6.02"
Tc=5.0 min CN=95 Runoff=8.98 cfs 0.447 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>5.21"
Tc=5.0 min CN=87 Runoff=0.64 cfs 0.030 af

Link DP3: above 1,000.00 cfs Inflow=9.62 cfs 0.477 af
Primary=0.00 cfs 0.000 af Secondary=9.62 cfs 0.477 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.477 af Average Runoff Depth = 5.96"
20.88% Pervious = 0.200 ac 79.12% Impervious = 0.759 ac

Summary for Subcatchment E1: DP1

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

Runoff = 8.98 cfs @ 11.95 hrs, Volume= 0.447 af, Depth> 6.02"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
38,820	95	Weighted Average
6,904		17.79% Pervious Area
31,916		82.21% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.64 cfs @ 11.95 hrs, Volume= 0.030 af, Depth> 5.21"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.960 ac, 79.12% Impervious, Inflow Depth > 5.96" for 25-yr event
Inflow = 9.62 cfs @ 11.95 hrs, Volume= 0.477 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 9.62 cfs @ 11.95 hrs, Volume= 0.477 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=38,820 sf 82.21% Impervious Runoff Depth>7.29"
Tc=5.0 min CN=95 Runoff=10.80 cfs 0.541 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>6.49"
Tc=5.0 min CN=87 Runoff=0.78 cfs 0.037 af

Link DP3: above 1,000.00 cfs Inflow=11.59 cfs 0.578 af
Primary=0.00 cfs 0.000 af Secondary=11.59 cfs 0.578 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.578 af Average Runoff Depth = 7.23"
20.88% Pervious = 0.200 ac 79.12% Impervious = 0.759 ac

Summary for Subcatchment E1: DP1

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

Runoff = 10.80 cfs @ 11.95 hrs, Volume= 0.541 af, Depth> 7.29"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
38,820	95	Weighted Average
6,904		17.79% Pervious Area
31,916		82.21% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.78 cfs @ 11.95 hrs, Volume= 0.037 af, Depth> 6.49"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

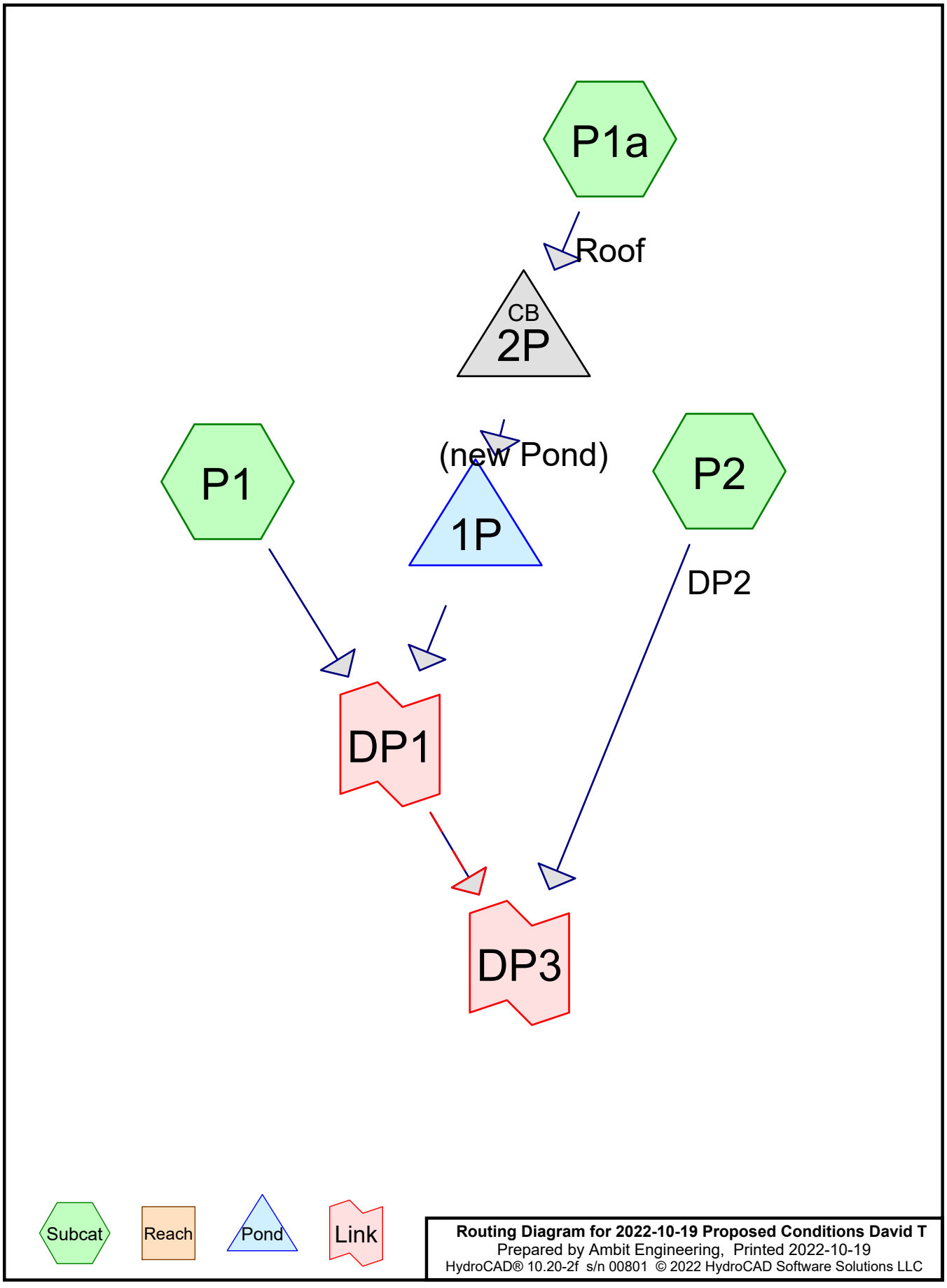
Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.960 ac, 79.12% Impervious, Inflow Depth > 7.23" for 50-yr event
Inflow = 11.59 cfs @ 11.95 hrs, Volume= 0.578 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 11.59 cfs @ 11.95 hrs, Volume= 0.578 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Routing Diagram for 2022-10-19 Proposed Conditions David T
Prepared by Ambit Engineering, Printed 2022-10-19

Project Notes

Defined 5 rainfall events from output (37) IDF

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type II 24-hr		Default	24.00	1	3.68	2
2	10-yr	Type II 24-hr		Default	24.00	1	5.59	2
3	25-yr	Type II 24-hr		Default	24.00	1	7.08	2
4	50-yr	Type II 24-hr		Default	24.00	1	8.48	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.040	80	>75% Grass cover, Good, HSG D (P1, P2)
0.170	98	Paved parking, HSG D (P1, P2)
0.389	98	Roofs, HSG D (P1a)
0.361	95	Urban commercial, 85% imp, HSG D (P1)
0.960	**96**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.960	HSG D	P1, P1a, P2
0.000	Other	
0.960		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.040	0.000	0.040	>75% Grass cover, Good	P1, P2
0.000	0.000	0.000	0.170	0.000	0.170	Paved parking	P1, P2
0.000	0.000	0.000	0.389	0.000	0.389	Roofs	P1a
0.000	0.000	0.000	0.361	0.000	0.361	Urban commercial, 85% imp	P1
0.000	**0.000**	**0.000**	**0.960**	**0.000**	**0.960**	**TOTAL AREA**	

Pipe Listing (all 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	1P	7.18	6.93	44.0	0.0057	0.013	0.0	12.0	0.0
2	2P	12.70	11.00	10.0	0.1700	0.013	0.0	12.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=19,402 sf 83.60% Impervious Runoff Depth>2.92"
Tc=5.0 min CN=95 Runoff=2.25 cfs 0.108 af

Subcatchment P1a: Roof Runoff Area=16,944 sf 100.00% Impervious Runoff Depth>3.18"
Tc=5.0 min CN=98 Runoff=2.05 cfs 0.103 af

Subcatchment P2: DP2 Runoff Area=5,462 sf 83.16% Impervious Runoff Depth>2.92"
Tc=5.0 min CN=95 Runoff=0.63 cfs 0.030 af

Pond 1P: Peak Elev=10.59' Storage=0.010 af Inflow=2.05 cfs 0.103 af
Outflow=1.84 cfs 0.103 af

Pond 2P: (new Pond) Peak Elev=13.22' Inflow=2.05 cfs 0.103 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.1700 '/' Outflow=2.05 cfs 0.103 af

Link DP1: above 1,000.00 cfs Inflow=3.97 cfs 0.211 af
Primary=0.00 cfs 0.000 af Secondary=3.97 cfs 0.211 af

Link DP3: above 1,000.00 cfs Inflow=4.60 cfs 0.242 af
Primary=0.00 cfs 0.000 af Secondary=4.60 cfs 0.242 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.242 af Average Runoff Depth = 3.02"
9.81% Pervious = 0.094 ac 90.19% Impervious = 0.866 ac

Summary for Subcatchment P1:

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

Runoff = 2.25 cfs @ 11.95 hrs, Volume= 0.108 af, Depth> 2.92"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
19,402	95	Weighted Average
3,181		16.40% Pervious Area
16,221		83.60% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 2.05 cfs @ 11.95 hrs, Volume= 0.103 af, Depth> 3.18"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
9,126	98	Roofs, HSG D
7,818	98	Roofs, HSG D
16,944	98	Weighted Average
16,944		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 0.63 cfs @ 11.95 hrs, Volume= 0.030 af, Depth> 2.92"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
5,462	95	Weighted Average
920		16.84% Pervious Area
4,542		83.16% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span
[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 3.18" for 2-yr event
Inflow = 2.05 cfs @ 11.95 hrs, Volume= 0.103 af
Outflow = 1.84 cfs @ 11.99 hrs, Volume= 0.103 af, Atten= 10%, Lag= 2.4 min
Primary = 1.84 cfs @ 11.99 hrs, Volume= 0.103 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 10.59' @ 11.99 hrs Surf.Area= 0.006 ac Storage= 0.010 af

Plug-Flow detention time= 2.9 min calculated for 0.103 af (100% of inflow)
Center-of-Mass det. time= 2.6 min (733.9 - 731.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	7.86'	0.006 af	**9.25'W x 27.46'L x 4.07'H Field A** 0.024 af Overall - 0.008 af Embedded = 0.016 af x 40.0% Voids
#2A	8.11'	0.008 af	**ACF R-Tank LD 2** x 40 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 40 Chambers in 4 Rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.18'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.18' / 6.93' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.46'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	7.76'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.80 cfs @ 11.99 hrs HW=10.55' (Free Discharge)
└**1=Culvert** (Passes 1.80 cfs of 6.01 cfs potential flow)
  └**2=Custom Weir/Orifice** (Weir Controls 0.74 cfs @ 3.41 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.05 cfs @ 7.73 fps)

Summary for Pond 2P: (new Pond)

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 13.22' (Flood elevation advised)

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 3.18" for 2-yr event
Inflow = 2.05 cfs @ 11.95 hrs, Volume= 0.103 af
Outflow = 2.05 cfs @ 11.95 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min
Primary = 2.05 cfs @ 11.95 hrs, Volume= 0.103 af
Routed to Pond 1P :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.22' @ 11.95 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	12.70'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.70' / 11.00' S= 0.1700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.05 cfs @ 11.95 hrs HW=13.22' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.05 cfs @ 2.46 fps)

Summary for Link DP1:

Inflow Area = 0.834 ac, 91.25% Impervious, Inflow Depth > 3.04" for 2-yr event
Inflow = 3.97 cfs @ 11.97 hrs, Volume= 0.211 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 3.97 cfs @ 11.97 hrs, Volume= 0.211 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.960 ac, 90.19% Impervious, Inflow Depth > 3.02" for 2-yr event
Inflow = 4.60 cfs @ 11.96 hrs, Volume= 0.242 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 4.60 cfs @ 11.96 hrs, Volume= 0.242 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=19,402 sf 83.60% Impervious Runoff Depth>4.66"
Tc=5.0 min CN=95 Runoff=3.51 cfs 0.173 af

Subcatchment P1a: Roof Runoff Area=16,944 sf 100.00% Impervious Runoff Depth>4.90"
Tc=5.0 min CN=98 Runoff=3.13 cfs 0.159 af

Subcatchment P2: DP2 Runoff Area=5,462 sf 83.16% Impervious Runoff Depth>4.66"
Tc=5.0 min CN=95 Runoff=0.99 cfs 0.049 af

Pond 1P: Peak Elev=11.36' Storage=0.013 af Inflow=3.13 cfs 0.159 af
Outflow=3.01 cfs 0.159 af

Pond 2P: (new Pond) Peak Elev=13.37' Inflow=3.13 cfs 0.159 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.1700 '/' Outflow=3.13 cfs 0.159 af

Link DP1: above 1,000.00 cfs Inflow=6.49 cfs 0.332 af
Primary=0.00 cfs 0.000 af Secondary=6.49 cfs 0.332 af

Link DP3: above 1,000.00 cfs Inflow=7.48 cfs 0.380 af
Primary=0.00 cfs 0.000 af Secondary=7.48 cfs 0.380 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.381 af Average Runoff Depth = 4.76"
9.81% Pervious = 0.094 ac 90.19% Impervious = 0.866 ac

Summary for Subcatchment P1:

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

Runoff = 3.51 cfs @ 11.95 hrs, Volume= 0.173 af, Depth> 4.66"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
19,402	95	Weighted Average
3,181		16.40% Pervious Area
16,221		83.60% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 3.13 cfs @ 11.95 hrs, Volume= 0.159 af, Depth> 4.90"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
9,126	98	Roofs, HSG D
7,818	98	Roofs, HSG D
16,944	98	Weighted Average
16,944		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 0.99 cfs @ 11.95 hrs, Volume= 0.049 af, Depth> 4.66"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
5,462	95	Weighted Average
920		16.84% Pervious Area
4,542		83.16% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span
[44] Hint: Outlet device #3 is below defined storage
[79] Warning: Submerged Pond 2P Primary device # 1 OUTLET by 0.30'

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 4.90" for 10-yr event
Inflow = 3.13 cfs @ 11.95 hrs, Volume= 0.159 af
Outflow = 3.01 cfs @ 11.97 hrs, Volume= 0.159 af, Atten= 4%, Lag= 1.1 min
Primary = 3.01 cfs @ 11.97 hrs, Volume= 0.159 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 11.36' @ 11.97 hrs Surf.Area= 0.006 ac Storage= 0.013 af

Plug-Flow detention time= 2.8 min calculated for 0.159 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (731.3 - 728.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	7.86'	0.006 af	**9.25'W x 27.46'L x 4.07'H Field A** 0.024 af Overall - 0.008 af Embedded = 0.016 af x 40.0% Voids
#2A	8.11'	0.008 af	**ACF R-Tank LD 2** x 40 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 40 Chambers in 4 Rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.18'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.18' / 6.93' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.46'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	7.76'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.89 cfs @ 11.97 hrs HW=11.29' (Free Discharge)
└**1=Culvert** (Passes 2.89 cfs of 6.81 cfs potential flow)
  └**2=Custom Weir/Orifice** (Weir Controls 1.69 cfs @ 3.49 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.20 cfs @ 8.78 fps)

Summary for Pond 2P: (new Pond)

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 13.37' (Flood elevation advised)

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 4.90" for 10-yr event
Inflow = 3.13 cfs @ 11.95 hrs, Volume= 0.159 af
Outflow = 3.13 cfs @ 11.95 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min
Primary = 3.13 cfs @ 11.95 hrs, Volume= 0.159 af
Routed to Pond 1P :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.37' @ 11.95 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	12.70'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.70' / 11.00' S= 0.1700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.13 cfs @ 11.95 hrs HW=13.37' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.13 cfs @ 2.79 fps)

Summary for Link DP1:

Inflow Area = 0.834 ac, 91.25% Impervious, Inflow Depth > 4.77" for 10-yr event
Inflow = 6.49 cfs @ 11.96 hrs, Volume= 0.332 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 6.49 cfs @ 11.96 hrs, Volume= 0.332 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.960 ac, 90.19% Impervious, Inflow Depth > 4.76" for 10-yr event
Inflow = 7.48 cfs @ 11.96 hrs, Volume= 0.380 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 7.48 cfs @ 11.96 hrs, Volume= 0.380 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=19,402 sf 83.60% Impervious Runoff Depth>6.02"
Tc=5.0 min CN=95 Runoff=4.49 cfs 0.223 af

Subcatchment P1a: Roof Runoff Area=16,944 sf 100.00% Impervious Runoff Depth>6.24"
Tc=5.0 min CN=98 Runoff=3.97 cfs 0.202 af

Subcatchment P2: DP2 Runoff Area=5,462 sf 83.16% Impervious Runoff Depth>6.02"
Tc=5.0 min CN=95 Runoff=1.26 cfs 0.063 af

Pond 1P: Peak Elev=11.46' Storage=0.013 af Inflow=3.97 cfs 0.202 af
Outflow=4.18 cfs 0.202 af

Pond 2P: (new Pond) Peak Elev=13.48' Inflow=3.97 cfs 0.202 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.1700 '/' Outflow=3.97 cfs 0.202 af

Link DP1: above 1,000.00 cfs Inflow=8.66 cfs 0.425 af
Primary=0.00 cfs 0.000 af Secondary=8.66 cfs 0.425 af

Link DP3: above 1,000.00 cfs Inflow=9.93 cfs 0.488 af
Primary=0.00 cfs 0.000 af Secondary=9.93 cfs 0.488 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.488 af Average Runoff Depth = 6.11"
9.81% Pervious = 0.094 ac 90.19% Impervious = 0.866 ac

Summary for Subcatchment P1:

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

Runoff = 4.49 cfs @ 11.95 hrs, Volume= 0.223 af, Depth> 6.02"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
19,402	95	Weighted Average
3,181		16.40% Pervious Area
16,221		83.60% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 3.97 cfs @ 11.95 hrs, Volume= 0.202 af, Depth> 6.24"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
9,126	98	Roofs, HSG D
7,818	98	Roofs, HSG D
16,944	98	Weighted Average
16,944		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 1.26 cfs @ 11.95 hrs, Volume= 0.063 af, Depth> 6.02"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
5,462	95	Weighted Average
920		16.84% Pervious Area
4,542		83.16% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span
[44] Hint: Outlet device #3 is below defined storage
[88] Warning: Qout>Qin may require smaller dt or Finer Routing
[79] Warning: Submerged Pond 2P Primary device # 1 OUTLET by 0.46'

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 6.24" for 25-yr event
Inflow = 3.97 cfs @ 11.95 hrs, Volume= 0.202 af
Outflow = 4.18 cfs @ 11.95 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.2 min
Primary = 4.18 cfs @ 11.95 hrs, Volume= 0.202 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 11.46' @ 11.95 hrs Surf.Area= 0.006 ac Storage= 0.013 af

Plug-Flow detention time= 2.7 min calculated for 0.201 af (100% of inflow)
Center-of-Mass det. time= 2.4 min (730.3 - 727.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	7.86'	0.006 af	**9.25'W x 27.46'L x 4.07'H Field A** 0.024 af Overall - 0.008 af Embedded = 0.016 af x 40.0% Voids
#2A	8.11'	0.008 af	**ACF R-Tank LD 2** x 40 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 40 Chambers in 4 Rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.18'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.18' / 6.93' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.46'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	7.76'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.10 cfs @ 11.95 hrs HW=11.45' (Free Discharge)
└**1=Culvert** (Passes 4.10 cfs of 6.97 cfs potential flow)
  └**2=Custom Weir/Orifice** (Weir Controls 2.87 cfs @ 2.56 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.23 cfs @ 8.98 fps)

Summary for Pond 2P: (new Pond)

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 13.48' (Flood elevation advised)

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 6.24" for 25-yr event
Inflow = 3.97 cfs @ 11.95 hrs, Volume= 0.202 af
Outflow = 3.97 cfs @ 11.95 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Primary = 3.97 cfs @ 11.95 hrs, Volume= 0.202 af
Routed to Pond 1P :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.48' @ 11.95 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	12.70'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.70' / 11.00' S= 0.1700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.97 cfs @ 11.95 hrs HW=13.48' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.97 cfs @ 3.01 fps)

Summary for Link DP1:

Inflow Area = 0.834 ac, 91.25% Impervious, Inflow Depth > 6.12" for 25-yr event
Inflow = 8.66 cfs @ 11.95 hrs, Volume= 0.425 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 8.66 cfs @ 11.95 hrs, Volume= 0.425 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.960 ac, 90.19% Impervious, Inflow Depth > 6.10" for 25-yr event
Inflow = 9.93 cfs @ 11.95 hrs, Volume= 0.488 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 9.93 cfs @ 11.95 hrs, Volume= 0.488 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=19,402 sf 83.60% Impervious Runoff Depth>7.29"
Tc=5.0 min CN=95 Runoff=5.40 cfs 0.270 af

Subcatchment P1a: Roof Runoff Area=16,944 sf 100.00% Impervious Runoff Depth>7.49"
Tc=5.0 min CN=98 Runoff=4.76 cfs 0.243 af

Subcatchment P2: DP2 Runoff Area=5,462 sf 83.16% Impervious Runoff Depth>7.29"
Tc=5.0 min CN=95 Runoff=1.52 cfs 0.076 af

Pond 1P: Peak Elev=11.50' Storage=0.013 af Inflow=4.76 cfs 0.243 af
Outflow=4.64 cfs 0.243 af

Pond 2P: (new Pond) Peak Elev=13.59' Inflow=4.76 cfs 0.243 af
12.0" Round Culvert x 2.00 n=0.013 L=10.0' S=0.1700 '/' Outflow=4.76 cfs 0.243 af

Link DP1: above 1,000.00 cfs Inflow=10.04 cfs 0.513 af
Primary=0.00 cfs 0.000 af Secondary=10.04 cfs 0.513 af

Link DP3: above 1,000.00 cfs Inflow=11.56 cfs 0.589 af
Primary=0.00 cfs 0.000 af Secondary=11.56 cfs 0.589 af

Total Runoff Area = 0.960 ac Runoff Volume = 0.589 af Average Runoff Depth = 7.37"
9.81% Pervious = 0.094 ac 90.19% Impervious = 0.866 ac

Summary for Subcatchment P1:

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

Runoff = 5.40 cfs @ 11.95 hrs, Volume= 0.270 af, Depth> 7.29"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
15,735	95	Urban commercial, 85% imp, HSG D
19,402	95	Weighted Average
3,181		16.40% Pervious Area
16,221		83.60% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 4.76 cfs @ 11.95 hrs, Volume= 0.243 af, Depth> 7.49"
Routed to Pond 2P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

Area (sf)	CN	Description
9,126	98	Roofs, HSG D
7,818	98	Roofs, HSG D
16,944	98	Weighted Average
16,944		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 1.52 cfs @ 11.95 hrs, Volume= 0.076 af, Depth> 7.29"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
5,462	95	Weighted Average
920		16.84% Pervious Area
4,542		83.16% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span
[44] Hint: Outlet device #3 is below defined storage
[79] Warning: Submerged Pond 2P Primary device # 1 OUTLET by 0.50'

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 7.49" for 50-yr event
Inflow = 4.76 cfs @ 11.95 hrs, Volume= 0.243 af
Outflow = 4.64 cfs @ 11.95 hrs, Volume= 0.243 af, Atten= 3%, Lag= 0.2 min
Primary = 4.64 cfs @ 11.95 hrs, Volume= 0.243 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 11.50' @ 11.95 hrs Surf.Area= 0.006 ac Storage= 0.013 af

Plug-Flow detention time= 2.7 min calculated for 0.243 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (729.7 - 727.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	7.86'	0.006 af	**9.25'W x 27.46'L x 4.07'H Field A** 0.024 af Overall - 0.008 af Embedded = 0.016 af x 40.0% Voids
#2A	8.11'	0.008 af	**ACF R-Tank LD 2** x 40 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 40 Chambers in 4 Rows
		0.014 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	7.18'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.18' / 6.93' S= 0.0057 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.46'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	7.76'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.61 cfs @ 11.95 hrs HW=11.50' (Free Discharge)
└**1=Culvert** (Passes 4.61 cfs of 7.02 cfs potential flow)
  └**2=Custom Weir/Orifice** (Weir Controls 3.38 cfs @ 2.55 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.23 cfs @ 9.05 fps)

Summary for Pond 2P: (new Pond)

[82] Warning: Early inflow requires earlier time span
[57] Hint: Peaked at 13.59' (Flood elevation advised)

Inflow Area = 0.389 ac,100.00% Impervious, Inflow Depth > 7.49" for 50-yr event
Inflow = 4.76 cfs @ 11.95 hrs, Volume= 0.243 af
Outflow = 4.76 cfs @ 11.95 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min
Primary = 4.76 cfs @ 11.95 hrs, Volume= 0.243 af
Routed to Pond 1P :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.59' @ 11.95 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	12.70'	**12.0" Round Culvert X 2.00** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 12.70' / 11.00' S= 0.1700 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.76 cfs @ 11.95 hrs HW=13.59' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.76 cfs @ 3.22 fps)

Summary for Link DP1:

Inflow Area = 0.834 ac, 91.25% Impervious, Inflow Depth > 7.38" for 50-yr event
Inflow = 10.04 cfs @ 11.95 hrs, Volume= 0.513 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 10.04 cfs @ 11.95 hrs, Volume= 0.513 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.960 ac, 90.19% Impervious, Inflow Depth > 7.37" for 50-yr event
Inflow = 11.56 cfs @ 11.95 hrs, Volume= 0.589 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 11.56 cfs @ 11.95 hrs, Volume= 0.589 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 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 19, 2022

Custom Soil Resource Report
Soil Map

Map Scale: 1:468 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

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
699	Urban land	0.5	91.5%
799	Urban land-Canton complex, 3 to 15 percent slopes	0.0	8.5%
Totals for Area of Interest		**0.5**	**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

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

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

Map Unit Setting

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

Map Unit Composition

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

Description of Canton

Setting

Parent material: Till

Typical profile

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

Properties and qualities

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

Interpretive groups

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

Minor Components

Udorthents

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

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°46'3"W 43°4'55"N

70°45'26"W 43°4'29"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 Cross Sections with 1% Annual Chance
- 17.5 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 5/19/2022 at 11:08 AM 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
SITE DEVELOPMENT

88 MAPLEWOOD AVE.
PORTSMOUTH, NH

Introduction

The intent of this plan is to provide EightKPH, LLC (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 Bio Clean downspout filter, R-Tank storage units 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 Code Enforcement Officer, 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

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:

- ACF R-Tank stormwater storage system
- Bio Clean Downspout Filter
- 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. **Bio Clean Downspout Filter:** Refer to the manufacturer's Operation and Maintenance manual for guidance, included herewith.
4. **ACF R-Tank stormwater storage system:** 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 outlet pipe. During construction, maintain inlet protection until all roadways and parking areas have 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.

Snow & Ice Management for Standard Asphalt and Walkways

Snow storage will be located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage areas shall be covered and located such that no direct discharges are possible to receiving waters from the storage site. Salt and sand shall be used as minimally as possible.

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

CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

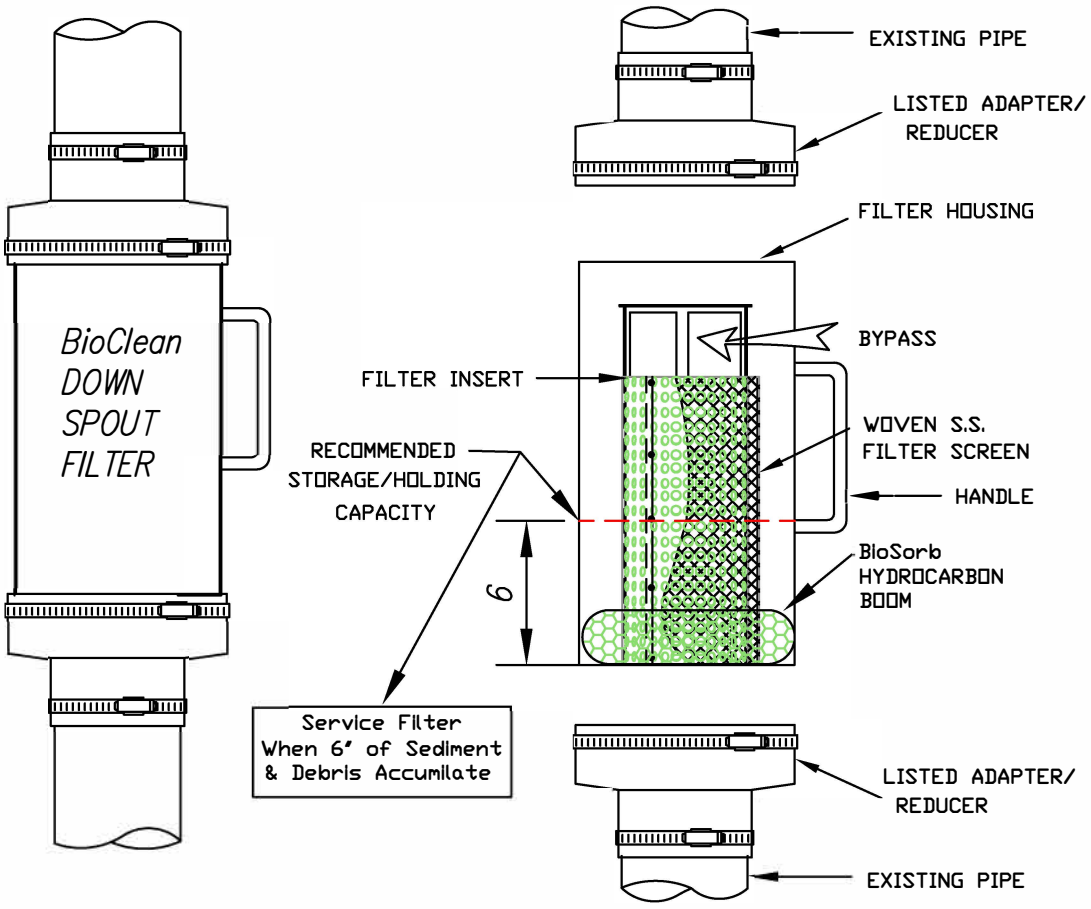
INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Outlet Control Structures *-Drain Manholes* *-Catch Basins*	Every other Month	*Check for erosion or short-circuiting* *Check for sediment accumulation* *Check for floatable contaminants*
-Drainage Pipes	1 time per 2 years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

SERVICE MANUAL

(Cleaning Procedures)

Bio Clean DOWNSPOUT FILTER
Screen Type With Hydrocarbon Boom



DETAIL OF PARTS

TOOLS AND EQUIPMENT NEEDED:

1. Medium size flat scred driver
2. BioSorb hydrocarbon boom. 25-1/2" X 2" dia.
   (Call Bio Clean to order)
3. Trash container or bag
4. Wooden dowel approx. 3' x 1/2' dia.

Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net

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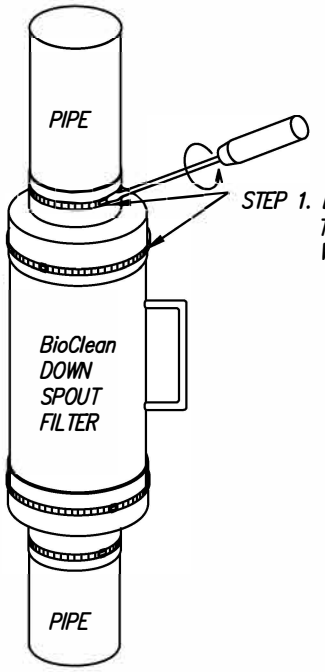
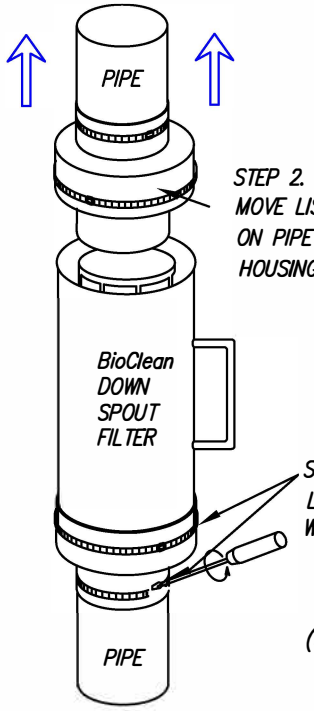
REMOVING FILTER



STEP 1. LOOSEN BOTH TOP CLAMPS WITH SCREW DRIVER.

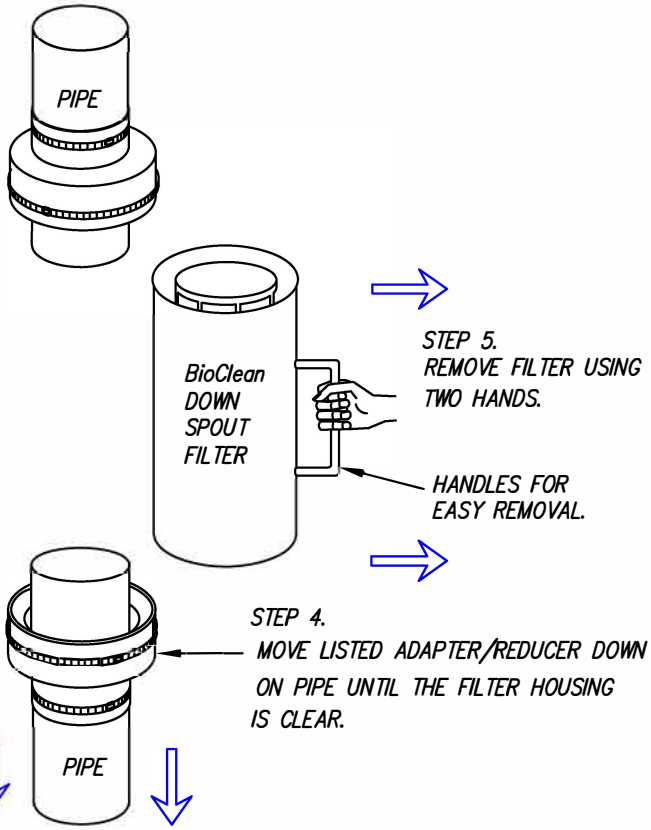


STEP 2.
MOVE LISTED ADAPTER/REDUCER UP ON PIPE UNTIL THE FILTER HOUSING IS CLEAR TO REMOVE.

STEP 3.
LOOSEN BOTH BOTTOM CLAMPS WITH SCREW DRIVER.

(STEP 4. AT BOTTOM LEFT OF PAGE)

CLEANING FILTER

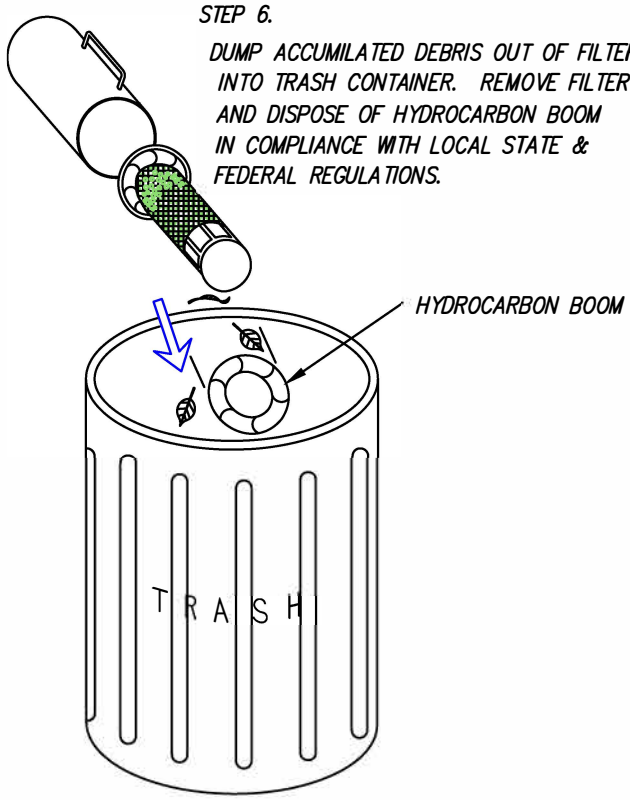


STEP 5.
REMOVE FILTER USING TWO HANDS.

HANDLES FOR EASY REMOVAL.

STEP 4.
MOVE LISTED ADAPTER/REDUCER DOWN ON PIPE UNTIL THE FILTER HOUSING IS CLEAR.

STEP 6.
DUMP ACCUMILATED DEBRIS OUT OF FILTER INTO TRASH CONTAINER. REMOVE FILTER INSERT AND DISPOSE OF HYDROCARBON BOOM IN COMPLIANCE WITH LOCAL STATE & FEDERAL REGULATIONS.



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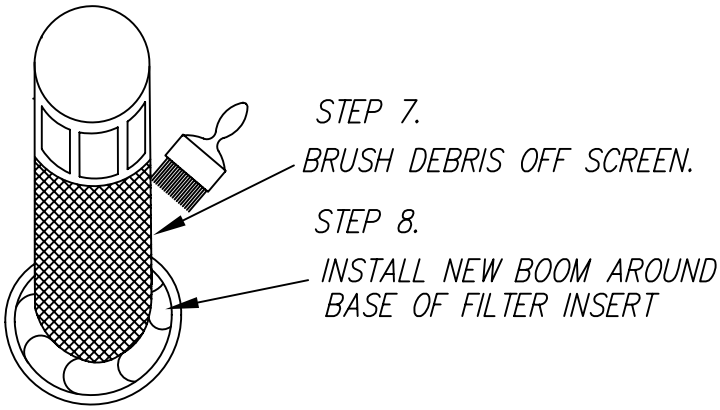
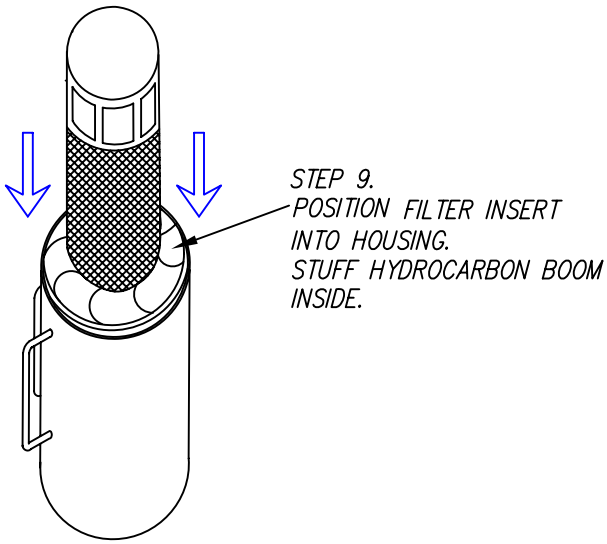
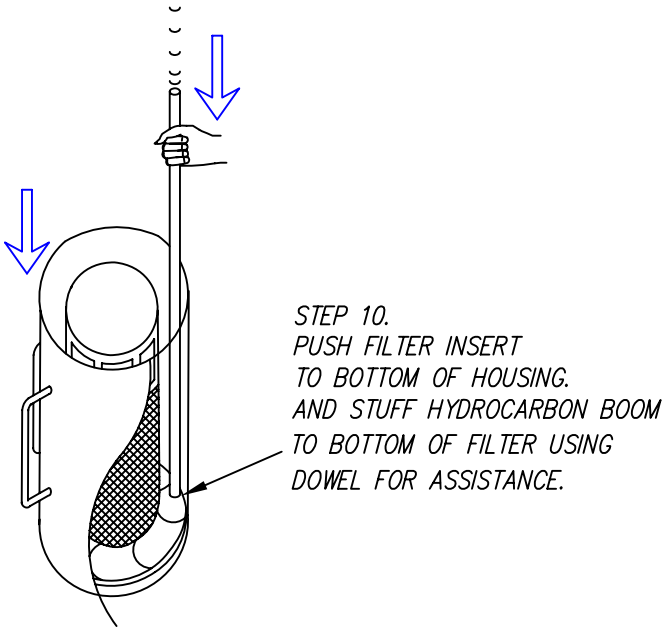


REPLACING FILTER INSERT





REPLACING FILTER

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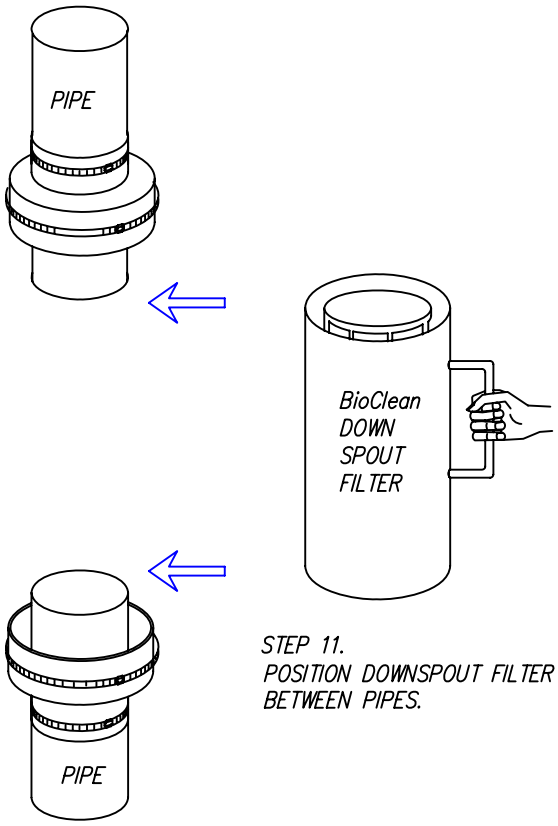
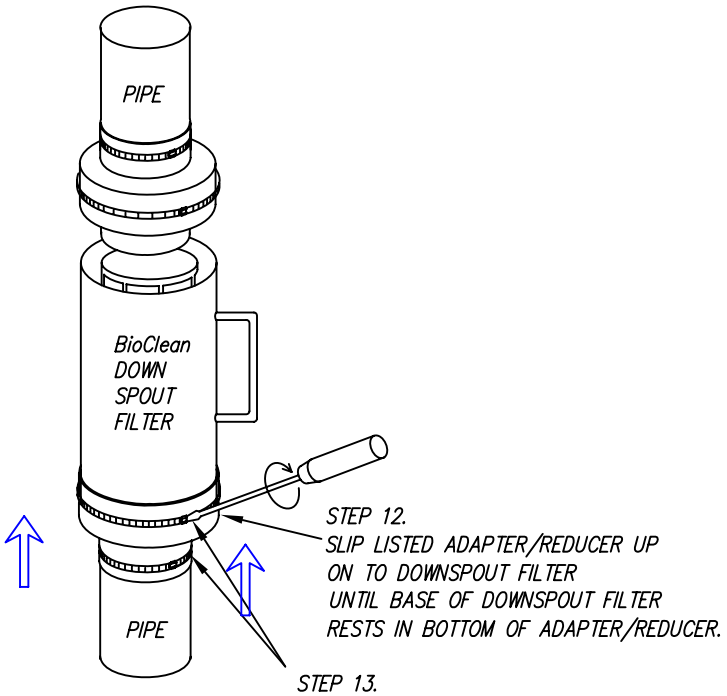
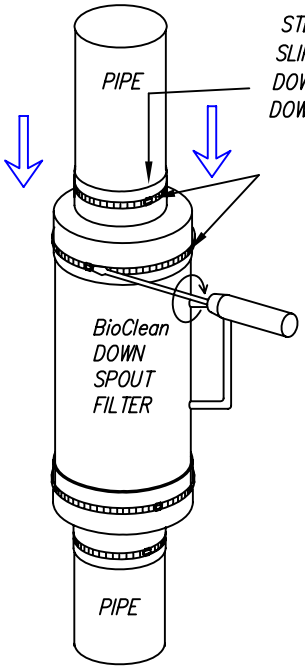


STEP 11.
POSITION DOWNSPOUT FILTER
BETWEEN PIPES.



STEP 12.
SLIP LISTED ADAPTER/REDUCER UP
ON TO DOWNSPOUT FILTER
UNTIL BASE OF DOWNSPOUT FILTER
RESTS IN BOTTOM OF ADAPTER/REDUCER.

STEP 13.
SECURE BY TIGHTENING
BOTH CLAMPS.



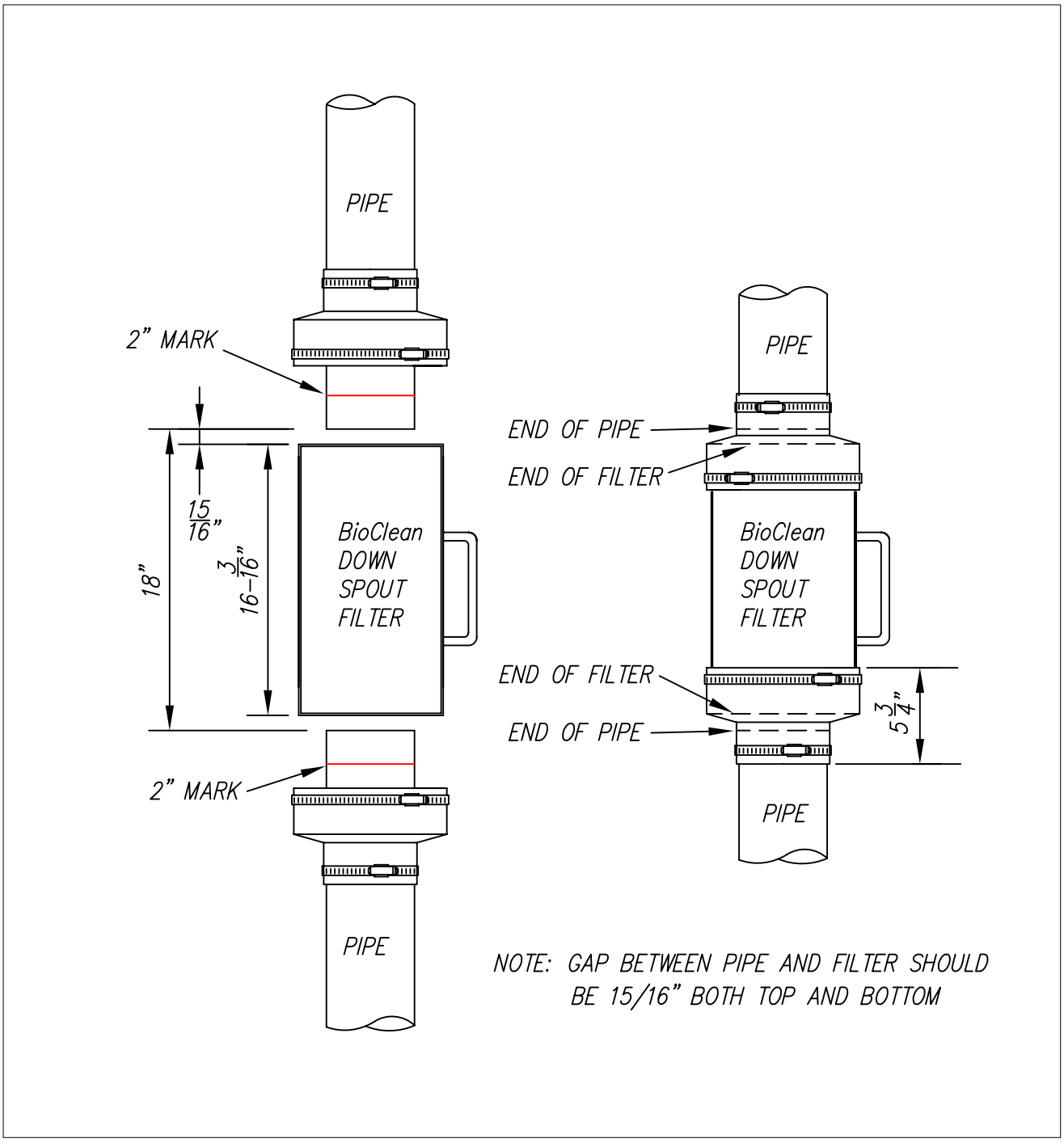
STEP 14.
SLIP LISTED ADAPTER/REDUCER
DOWNWARD ON TO
DOWNSPOUT FILTER.

STEP 15.
SECURE BY TIGHTENING
BOTH CLAMPS
WITH SCREWDRIVER.

ENSURE CLAMPS
ARE PROPERLY TIGHTENED.
SERVICE COMLPLETE.

APPROPRIATE INSTALLATION

FILTER CENTERED BETWEEN PIPES WITH EVEN GAPS ON TOP AND BOTTOM



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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	

R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

Your ACF R-Tank System has been designed to function in conjunction with the engineered drainage system on your site, the existing municipal infrastructure, and/or the existing soils and geography of the receiving watershed. Unless your site included certain unique and rare features, the operation of your R-Tank System will be driven by naturally occurring systems and will function autonomously. However, upholding a proper schedule of Inspection & Maintenance is critical to ensuring continued functionality and optimum performance of the system.

Inspection

Both the R-Tank and all stormwater pre-treatment features incorporated into your site must be inspected regularly. Inspection frequency for your system must be determined based on the contributing drainage area, but should never exceed one year between inspections (six months during the first year of operation).

Inspections may be required more frequently for pre-treatment systems. You should refer to the manufacturer requirements for the proper inspection schedule.

With the right equipment your inspection and measurements can be accomplished from the surface without physically entering any confined spaces. If your inspection does require confined space entry, you MUST follow all local/regional requirements as well as OSHA standards.

R-Tank Systems may incorporate Inspection Ports, Maintenance Ports, and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the cover removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, ALL access points should be examined to complete a thorough inspection.

Inspection Ports
Usually located centrally in the R-Tank System, these perforated columns are designed to give the user a base-line sediment depth across the system floor.

Maintenance Ports
Usually located near the inlet and outlet connections, you'll likely find deeper deposits of heavier sediments when compared to the Inspection Ports.

Manholes
Most systems will include at least two manholes - one at the inlet and another at the outlet. There may be more than one location where stormwater enters the system, which would result in additional manholes to inspect.

Bear in mind that these manholes often include a sump below the invert of the pipe connecting to the R-Tank. These sumps are designed to capture sediment before it reaches the R-Tank, and they should be kept clean to ensure they function properly. However, existence of sediment in the sump does NOT necessarily mean sediment has accumulated in the R-Tank.

After inspecting the bottom of the structure, use a mirror on a pole (or some other device) to check for sediment or debris in the pipe connecting to the R-Tank.

R-TANK OPERATION INSPECTION & MAINTENANCE

If sediment or debris is observed in any of these structures, you should determine the depth of the material. This is typically accomplished with a stadia rod, but you should determine the best way to obtain the measurement.

All observations and measurements should be recorded on an Inspection Log kept on file. We've included a form you can use at the end of this guideline.

Maintenance

The R-Tank System should be back-flushed once sediment accumulation has reached 6" or 15% of the total system height. Use the chart below as a guideline to determine the point at which maintenance is required on your system.

R-Tank Unit	Height	Max Sediment Dept
Mini	9.5"	1.5"
Single	17"	3"
Double	34"	5"
Triple	50"	6"
Quad	67"	6"
Pent	84"	6"

Before any maintenance is performed on your system, be sure to plug the outlet pipe to prevent contamination of the adjacent systems.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. Water should be pumped into ALL Maintenance Ports. The turbulent action of the water moving through the R-Tank will suspend sediments which may then be pumped out.

If your system includes an Outlet Structure, this will be the ideal location to pump contaminated water out of the system. However, removal of back-flush water may be accomplished through the Maintenance Ports, as well.

For systems with large footprints that would require extensive volumes of water to properly flush the system, you should consider performing your maintenance within 24 hours of a rain event. Stormwater entering the system will aid in the suspension of sediments and reduce the volume of water required to properly flush the system.

Once removed, sediment-laden water may be captured for disposal or pumped through a Dirtbag™ (if permitted by the locality).

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Step-By-Step Inspection & Maintenance Routine

1) **Inspection**
    a. Inspection Port
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
    b. Maintenance Port/s
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
        vi. Repeat for ALL Maintenance Ports
    c. Adjacent Manholes
        i. Remove Cover
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod, accounting for depth of sump (if present)
        iv. Inspect pipes connecting to R-Tank
        v. Record results on Maintenance Log
        vi. Replace Cover
        vii. Repeat for ALL Manholes that connect to the R-Tank

2) **Maintenance**
    a. Plug system outlet to prevent discharge of back-flush water
    b. Determine best location to pump out back-flush water
    c. Remove Cap from Maintenance Port
    d. Pump water as rapidly as possible (without over-topping port) into system until at least 1”
    of water covers system bottom
    e. Replace Cap
    f. Repeat at ALL Maintenance Ports
    g. Pump out back-flush water to complete back-flushing
    h. Vacuum all adjacent structures and any other structures or stormwater pre-treatment systems that require attention
    i. Sediment-laden water may be captured for disposal or pumped through a Dirtbag™.
    j. Replace any remaining Caps or Covers
    k. Record the back-flushing event in your Maintenance Log with any relevant specifics

R-Tank Maintenance Log

Site Name:_____

Location:_____

System Owner:_____

Company Responsible for Maintenance:_____

Contact:_____

Phone Number:_____

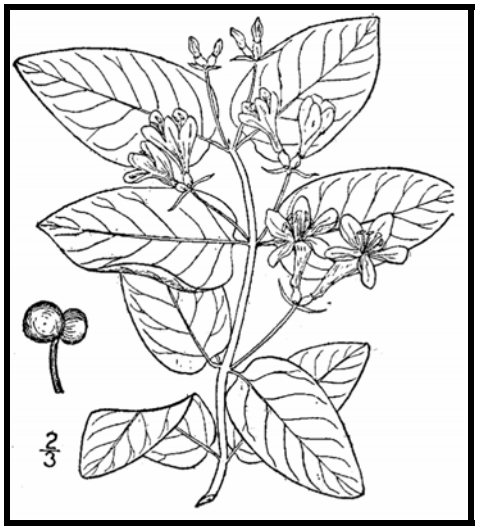
Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

For more information about our products, contact Inside Sales at 800.448.3636 or email at info@acfenv.com

University of New Hampshire Cooperative Extension

Methods for Disposing Non-Native Invasive Plants

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



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

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

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

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

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

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

New Hampshire Regulations

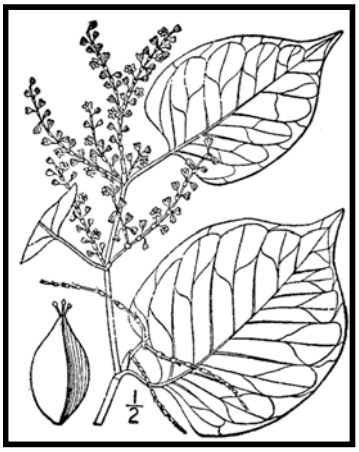
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

How and When to Dispose of Invasives?

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

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



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

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

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

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

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

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

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

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

Suggested Disposal Methods for Non-Native Invasive Plants

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

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

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

GORRILL PALMER

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MEMORANDUM
TRAFFIC DUE DILIGENCE
Lot 5, Deer Street Development
Augusta 22, 2022

INTRODUCTION

Gorrill Palmer (GP) has been retained by Ambit Engineering to compare the approved trip generation for Lot 5 of the Deer Street Development as submitted by TEC, Inc. on December 19, 2016, to the currently proposed development for Lot 5.

It is our understanding from Eric Eby, City Traffic Engineer, that if the trip generation associated with the proposed uses of Lot 5 does not exceed the previously approved trip generation by more than 100 trips during a peak hour or 750 trips for the day, no additional traffic effort would be required other than submittal of that information with supporting memo and calculations. If the 100 hourly or 750 daily thresholds are exceeded, a discussion with the City would be needed at that time and potentially a larger traffic effort would be required.

Upon completion of our review, based on the calculations included in Attachment A, it was determined that the currently proposed uses in Lot 5 will generate less traffic than originally approved. This is primarily due to the decrease in building size. The original building was to include:

- 45 dwelling units
- 13,814 SF of retail space
- 17,274 SF of general office space
- 2,702 SF bank
- Parking for the building

The currently proposed building is to include:

- 19 dwelling units
- 6,615 SF of general office or retail space
- 4,954 SF restaurant
- 324 SF ATM space
- Parking for the building

Although a 4,954 SF restaurant has been added to the building uses, the proposed building has been reduced by 26 dwelling units, 24,473 SF of office or retail space, and the bank has been removed in favor of an ATM. This significant reduction in building size has caused an approximately 40% reduction in the trip generation associated with the building. More information on the trip generation calculations is provided in the following sections.

TRIP GENERATION AS APPROVED

The following excerpt is from GP's Peer Review of the traffic study submitted by TEC, Inc. on December 19, 2016, regarding the methodology used for calculating trip generation in the submittal. The Peer Review was dated March 8, 2017.

- *Lot 5:*
  - *GP concurs with the methodology used to forecast the trip generation for the office space and the residential units.*
  - *The methodology used to forecast the trip generation for the retail space appears to be reasonable. However, the retail space has been identified as a Pharmacy, so in the future LUC 880 – Pharmacy/Drugstore without Drive-Through should be considered.*
  - *Although Eastern Bank in Building 5 will have a drive-through associated with it, the drive-through is not in the same building as the rest of the bank. For this reason, the trip generation may be different than that of a typical bank with a drive-through. An alternative to LUC 912 for the entire bank would be utilizing LUC 911 – Walk-In Bank for the portion of the bank in Building 5 and using information from Eastern Bank for the drive-through ATM trip generation on Lot 4.*

Internal Trip Capture – GP concurs with the use of shared trip reduction for Lots 3-6. The ITE information for mixed-use trips appears to be reasonable and appropriate for this use. An alternative method for calculating an internal trip capture would be the use of the National Cooperative Highway Research Program (NCHRP) 684 Internal Trip Capture spreadsheet for the AM and PM peak hours. The NCHRP 684 spreadsheet is based on ITE information, so similar internal trip capture rates would be expected.

Transit Trips – The 1.5% reduction in trip generation for transit trips appears to be reasonable. It is our understanding that this reduction is based on the entire City of Portsmouth. The reduction may have been higher if data from only Downtown Portsmouth was utilized.

Walking and Bicycling Trips – The 8% reduction in trip generation for walking and bicycling trips appears to be reasonable. Similar to the transit trip reduction, the reduction may have been greater if only data from Downtown Portsmouth was utilized.

Pass-By Trips – GP concurs with the pass-by trips applied to the retail and restaurant uses. Not applying pass-by trips to office, hotel, and residential uses appears to be reasonable.

As identified above, the building as originally approved included:

- 45 dwelling units
- 13,814 SF of retail space
- 17,274 SF of general office space
- 2,702 SF bank
- Parking for the building

The Institute of Transportation Engineers' (ITE's) publication, *Trip Generation Handbook, 9th Edition* was used to calculate the trip generation for the site, as that was the most current edition available at the time of the original submittal. The trip generation calculations produced the following results as approved by the City:

Table 1: Approved Trip Generation for Lot 5

Time Period	Total Trips	Total Primary Trips
Weekday Daily	1502	1034
Weekday AM Peak Hour	94	72
Weekday PM Peak Hour	158	90
Saturday Daily	1144	828
Saturday Midday Peak Hour	170	105

As seen in Table 1 above, the originally approved development was forecast to generate 1034 primary trips on a weekday, 72 and 90 primary trips during weekday AM & PM peak hours respectively and 105 peak hour trips on Saturday. The difference between the "total trips" and "total primary trips" are a result of the the *Internal Trip Capture, Transit Trip, Walking and Bicycle Trip, and Pass-By Trip* reduction calculations discussed previously. The complete Trip generation calculations associated with Lot 5 in the original submittal – including the reduction calculations, are included in Attachment A.

TRIP GENERATION AS CURRENTLY PROPOSED

To be consistent with the trip generation calculations included with the approved submittal, GP used the 9th edition of the *Trip Generation Handbook* to calculate the trips associated with the proposed building. This was done to compare the approved building and the currently proposed building (i.e. "apples to apples"). Therefore, GP also used the same approach when calculating the reductions associated with the *Internal Trip Capture, Transit Trip, Walking and Bicycle Trip, and Pass-By Trip* reduction calculations discussed above. This means that the trip generation calculations associated with the currently proposed development were reduced by the same percentages for the same reductions as discussed in the prior section.

As was mentioned above, the currently proposed building is to include:

- 19 dwelling units
- 6,615 SF of general office or retail space
- 4,954 SF restaurant
- 324 SF ATM space
- Parking for the building

It should be noted that since the developer has not refined the final allotment or breakdown of the "6,615 SF of general office or retail space", the trip generation calculations were completed for three scenarios: 1) assuming that space would all be office space, 2) assuming it would be all retail space, and 3) assuming it would be split 50/50 between office and retail space. It was also assumed that no trips to the building would be made for the ATM space. The ATM space is intended for use by residents and patrons of the building, as well as pedestrians in the vicinity, and the use is not expected to generate significant vehicular traffic. No other bank-related services are being proposed at the updated building.

As identified, the Institute of Transportation Engineers' (ITE's) publication, *Trip Generation Handbook, 9th Edition* was used to calculate the trip generation for the site uses. The following tables present the trip generation for the whole building (all uses) with each of the three office/retail space scenarios outlined in the paragraph above:

Table 2: Updated Trip Generation for Lot 5 (using 50/50 Office/Retail)

Time Period	Total Trips	Total Primary Trips
Weekday Daily	938	542
Weekday AM Peak Hour	74	47
Weekday PM Peak Hour	72	40
Saturday Daily	1054	604
Saturday Midday Peak Hour	98	57

Table 3: Updated Trip Generation for Lot 5 (using all Office)

Time Period	Total Trips	Total Primary Trips
Weekday Daily	828	478
Weekday AM Peak Hour	74	49
Weekday PM Peak Hour	70	40
Saturday Daily	922	520
Saturday Midday Peak Hour	82	47

Table 4: Updated Trip Generation for Lot 5 (using all Retail)

Time Period	Total Trips	Total Primary Trips
Weekday Daily	1050	602
Weekday AM Peak Hour	70	43
Weekday PM Peak Hour	78	41
Saturday Daily	1184	686
Saturday Midday Peak Hour	112	66

As seen in the tables above, depending on the time period (weekday, AM or PM peak hour, or Saturday peak hour), the highest trip generation varies slightly. However, the general overall highest scenario appears to be when the office/retail space is considered all retail. In that scenario, the proposed building is forecast to generate 602 trips on a weekday, 43 and 41 trips ends during the AM & PM peak hours respectively, and 66 trip ends during the Saturday peak hour. It should be noted that the difference between the "total trips" and the "total primary trips" appears greater in the currently proposed building than the approved building because the percentage of the building area dedicated to residential and office space has decreased and trips associated with the residential and office spaces are not reduced in the same way as the restaurant and retail spaces. The complete Trip generation calculations associated with Lot 5 as currently proposed – including the reduction calculations, are included in Attachment B.

NET TRIP GENERATION SUMMARY

The net change in trips between the approved development and the currently proposed development is summarized in the following table:

Table 5: Trip Generation Comparison

Time Period	Total Trips	Total Primary Trips
Weekday Daily	-452	-432
Weekday AM Peak Hour	-24	-29
Weekday PM Peak Hour	-80	-49
Saturday Daily	+40	-142
Saturday Midday Peak Hour	-58	-39

There is an increase in total trips on Saturday, but given the changes in proposed uses, the number of primary trips decreased. The primary trips are the trips that are new to the adjacent roadway network. Because the currently proposed uses in Lot 5 do not exceed the previously approved uses of Lot 5 by more than 100 trips during a peak hour or 750 trips for the day, it is the understanding of GP that no additional traffic effort will be required other than submittal of this memo and supporting attachments.

CONCLUSION

Upon completion of our review, based on the calculations included in Attachments A & B, it was determined that the currently proposed uses in Lot 5 will generate less traffic than originally approved. This is primarily due to the proposed building being considerably smaller in size than the original approval.

ATTACHMENTS

A – As Submitted Trip Generation Spreadsheets
B – Currently Proposed Trip Generation Spreadsheets

u:\4012_deer street lot 5_portsmouth_nh\n traffic\draft traffic memo 08-22-22.doc

Attachment A

As Submitted Trip Generation Calculations

Lot 5

45-Unit Residential Apartments (ITE LUC 220)

Units: 45 Units — Residential

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	300		300	50%	50%	150	150	2	2	12	12	136	136	20	20	0	256	0	0	128	128
Weekday AM PH	22		22	20%	80%	4	18	0	0	0	1	4	17	0	2	0	20	0	0	4	16
Weekday PM PH	28		28	65%	35%	18	10	0	0	1	1	17	9	4	2	0	22	0	0	14	8
Saturday Daily	288		288	50%	50%	144	144	2	2	12	12	130	130	14	14	0	256	0	0	128	128
Saturday Midday PH	24		24	50%	50%	12	12	0	0	1	1	11	11	2	2	0	20	0	0	10	10

17,274 SF Office (ITE LUC 710)

Units: 17.27 KSF — Office

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	190		190	50%	50%	95	95	1	1	8	8	86	86	12	12	0	164	0	0	82	82
Weekday AM PH	26		26	88%	12%	23	3	0	0	2	0	21	3	2	0	0	24	0	0	21	3
Weekday PM PH	26		26	17%	83%	4	22	0	0	0	2	4	20	0	4	0	22	0	0	4	18
Saturday Daily	42		42	50%	50%	21	21	0	0	2	2	19	19	2	2	0	38	0	0	19	19
Saturday Midday PH	8		8	54%	46%	4	4	0	0	0	0	4	4	0	0	0	8	0	0	4	4

13,814 SF Retail (ITE LUC 826)

Units: 13.81 KSF — Retail

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	612		612	50%	50%	306	306	5	5	24	24	277	277	58	58	126	360	63	63	180	180
Weekday AM PH	14		14	62%	38%	9	5	0	0	1	0	8	5	2	4	2	6	1	1	6	0
Weekday PM PH	38		38	44%	56%	17	21	0	0	1	2	16	19	12	10	6	10	3	3	2	8
Saturday Daily	580		580	50%	50%	290	290	4	4	23	23	263	263	28	28	134	382	67	67	191	191
Saturday Midday PH	66		66	52%	48%	34	32	1	0	3	3	30	29	6	6	14	39	7	7	20	19

Trip generation rates for Weekday AM PH and Saturday Midday PH sourced from ITE LUC 820
Pass-by rate of 34% for Weekday PM PH, 26% for all other periods.

2,702 SF Drive-In Bank (ITE LUC 912)

Units: 2.70 KSF — Retail

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	400		400	50%	50%	200	200	3	3	16	16	181	181	26	26	88	254	44	44	127	127
Weekday AM PH	32		32	57%	43%	18	14	0	0	1	1	17	13	2	0	8	22	4	4	12	10
Weekday PM PH	66		66	50%	50%	33	33	0	0	3	3	30	30	6	6	18	36	9	9	18	18
Saturday Daily	234		234	50%	50%	117	117	2	2	9	9	106	106	12	12	54	152	27	27	76	76
Saturday Midday PH	72		72	51%	49%	37	35	1	1	3	3	33	31	4	4	24	38	12	12	20	18

Pass-by rate of 29% for Weekday AM PH, 35% for Weekday PM PH, and 38% for Saturday Midday PH. 26% pass-by rate assumed for Weekday Daily and Saturday Daily

LOT 5 TOTALS

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	1502	0	1502			751	751	11	11	60	60	680	680	116	116	214	**1034**	107	107	517	517
Weekday AM PH	94	0	94			54	40	0	0	4	2	50	38	6	6	10	**72**	5	5	43	29
Weekday PM PH	158	0	158			72	86	0	0	5	8	67	78	22	22	24	**90**	12	12	38	52
Saturday Daily	1144	0	1144			572	572	8	8	46	46	518	518	56	56	188	**828**	94	94	414	414
Saturday Midday PH	170	0	170			87	83	2	1	7	7	78	75	12	12	38	**105**	19	19	54	51

Lot 6, Lot 3, Lot 4, & Lot 5	Total Trips	% In	% Out	Total New Trips		Total Transit Trips		tal Walk / Bicycle Tri		Total Autos Only Trip		Total Multi-Use Trips		Total New Pass-by Trips	Total New Primary Trips	Total Pass-by Trips		Total Primary Trips	
				In	Out	In	Out	In	Out	In	Out	In	Out			In	Out	In	Out
Weekday Daily	4706	50%	50%	2353	2353	34	34	189	189	2130	2130	296	296	998	3048	499	499	1524	1524
Weekday AM Peak Hour	320	58%	42%	185	135	2	1	14	9	169	125	8	8	58	243	29	29	146	97
Weekday PM Peak Hour	444	50%	50%	223	221	2	0	17	18	204	203	48	48	82	264	41	41	132	132
Saturday Daily	4726	50%	50%	2363	2363	36	36	189	189	2138	2138	196	196	1172	3090	586	586	1545	1545
Saturday Midday Peak Hour	510	53%	47%	268	242	5	3	21	19	242	220	26	26	126	324	63	63	174	150

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	November 17, 2016
Analyst:	Eric R. Paquette, E.I.T.
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 220 Apartment

Average Vehicle Trips Ends vs:	Dwelling Units
Independent Variable (X):	45
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 6.65 * (X)
T = 6.65 * 45.00
T = **300** vehicle trips
with 50% entering (150 vpd) and with 50% exiting (150 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 45.00
T = **22** vehicle trips
with 20% entering (4 vpd) and with 80% exiting (18 vpd)

WEEKDAY EVENING PEAK HOUR

T = 0.62 * (X)
T = 0.62 * 45.00
T = **28** vehicle trips
with 65% entering (18 vpd) and with 35% exiting (10 vpd)

AVERAGE SATURDAY DAILY

T = 6.39 * (X)
T = 6.39 * 45.00
T = **288** vehicle trips
with 50% entering (144 vpd) and with 50% exiting (144 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.52 * (X)
T = 0.52 * 45.00
T = **24** vehicle trips
with 50% entering (12 vpd) and with 50% exiting (12 vpd)

AVERAGE SUNDAY DAILY

T = 5.86 * (X)
T = 5.86 * 45.00
T = **264** vehicle trips
with 50% entering (132 vpd) and with 50% exiting (132 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 45.00
T = **22** vehicle trips
with 50% entering (11 vpd) and with 50% exiting (11 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	November 17, 2016
Analyst:	Eric R. Paquette, E.I.T.
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 710 General Office Building

Average Vehicle Trips Ends vs:	1000 SF Gross Floor Area
Independent Variable (X):	17.274
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 11.03 * (X)
T = 11.03 * 17.27
T = **190** vehicle trips
with 50% entering (95 vpd) and with 50% exiting (95 vpd)

WEEKDAY MORNING PEAK HOUR

T = 1.56 * (X)
T = 1.56 * 17.27
T = **26** vehicle trips
with 88% entering (23 vpd) and with 12% exiting (3 vpd)

WEEKDAY EVENING PEAK HOUR

T = 1.49 * (X)
T = 1.49 * 17.27
T = **26** vehicle trips
with 17% entering (4 vpd) and with 83% exiting (22 vpd)

AVERAGE SATURDAY DAILY

T = 2.46 * (X)
T = 2.46 * 17.27
T = **42** vehicle trips
with 50% entering (21 vpd) and with 50% exiting (21 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.43 * (X)
T = 0.43 * 17.27
T = **8** vehicle trips
with 54% entering (4 vpd) and with 46% exiting (4 vpd)

AVERAGE SUNDAY DAILY

T = 1.05 * (X)
T = 1.05 * 17.27
T = **18** vehicle trips
with 50% entering (9 vpd) and with 50% exiting (9 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.16 * (X)
T = 0.16 * 17.27
T = **2** vehicle trips
with 58% entering (1 vpd) and with 42% exiting (1 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	November 17, 2016
Analyst:	Eric R. Paquette, E.I.T.
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 820 Shopping Center

Average Vehicle Trips Ends vs: 1000 SF Gross Leasable Area
Independent Variable (X): 13.814
Curve Method: Average

AVERAGE WEEKDAY DAILY

T = 42.70 * (X)
T = 42.70 * 13.81
T = **590** vehicle trips
with 50% entering (295 vpd) and with 50% exiting (295 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.96 * (X)
T = 0.96 * 13.81
T = **14** vehicle trips
with 62% entering (9 vpd) and with 38% exiting (5 vpd)

WEEKDAY EVENING PEAK HOUR

T = 3.71 * (X)
T = 3.71 * 13.81
T = **52** vehicle trips
with 48% entering (25 vpd) and with 52% exiting (27 vpd)

AVERAGE SATURDAY DAILY

T = 49.97 * (X)
T = 49.97 * 13.81
T = **690** vehicle trips
with 50% entering (345 vpd) and with 50% exiting (345 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 4.82 * (X)
T = 4.82 * 13.81
T = **66** vehicle trips
with 52% entering (34 vpd) and with 48% exiting (32 vpd)

AVERAGE SUNDAY DAILY

T = 25.24 * (X)
T = 25.24 * 13.81
T = **348** vehicle trips
with 50% entering (174 vpd) and with 50% exiting (174 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 3.12 * (X)
T = 3.12 * 13.81
T = **44** vehicle trips
with 49% entering (22 vpd) and with 51% exiting (22 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	November 17, 2016
Analyst:	Eric R. Paquette, E.I.T.
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 826 Specialty Retail Center

Average Vehicle Trips Ends vs: 1000 SF Gross Leasable Area
Independent Variable (X): 13.814
Curve Method: Average

AVERAGE WEEKDAY DAILY

T = 44.32 * (X)
T = 44.32 * 13.81
T = **612** vehicle trips
with 50% entering (306 vpd) and with 50% exiting (306 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 13.81
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

WEEKDAY EVENING PEAK HOUR

T = 2.71 * (X)
T = 2.71 * 13.81
T = **38** vehicle trips
with 44% entering (17 vpd) and with 56% exiting (21 vpd)

AVERAGE SATURDAY DAILY

T = 42.04 * (X)
T = 42.04 * 13.81
T = **580** vehicle trips
with 50% entering (290 vpd) and with 50% exiting (290 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 13.81
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

AVERAGE SUNDAY DAILY

T = 20.43 * (X)
T = 20.43 * 13.81
T = **282** vehicle trips
with 50% entering (141 vpd) and with 50% exiting (141 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 13.81
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	November 17, 2016
Analyst:	Eric R. Paquette, E.I.T.
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 912 Drive-In Bank

Average Vehicle Trips Ends vs:	1000 SF Gross Floor Area
Independent Variable (X):	2.702
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 148.15 * (X)
T = 148.15 * 2.70
T = **400** vehicle trips
with 50% entering (200 vpd) and with 50% exiting (200 vpd)

WEEKDAY MORNING PEAK HOUR

T = 12.08 * (X)
T = 12.08 * 2.70
T = **32** vehicle trips
with 57% entering (18 vpd) and with 43% exiting (14 vpd)

WEEKDAY EVENING PEAK HOUR

T = 24.30 * (X)
T = 24.30 * 2.70
T = **66** vehicle trips
with 50% entering (33 vpd) and with 50% exiting (33 vpd)

AVERAGE SATURDAY DAILY

T = 86.32 * (X)
T = 86.32 * 2.70
T = **234** vehicle trips
with 50% entering (117 vpd) and with 50% exiting (117 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 26.31 * (X)
T = 26.31 * 2.70
T = **72** vehicle trips
with 51% entering (37 vpd) and with 49% exiting (35 vpd)

AVERAGE SUNDAY DAILY

T = 31.90 * (X)
T = 31.90 * 2.70
T = **86** vehicle trips
with 50% entering (43 vpd) and with 50% exiting (43 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 4.78 * (X)
T = 4.78 * 2.70
T = **12** vehicle trips
with 50% entering (6 vpd) and with 50% exiting (6 vpd)

Attachment B

Currently Proposed Trip Generation Calculations

Lot 5 (Half Office / Half Retail)

19-Unit Residential Apartments (ITE LUC 220)

Units: 19 Units — Residential

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	126		126	50%	50%	63	63	1	1	5	5	57	57	8	8	0	108	0	0	54	54
Weekday AM PH	10		10	20%	80%	2	8	0	0	0	1	2	7	0	0	0	10	0	0	2	8
Weekday PM PH	12		12	65%	35%	8	4	0	0	1	0	7	4	2	0	0	10	0	0	6	4
Saturday Daily	122		122	50%	50%	61	61	1	1	5	5	55	55	6	6	0	108	0	0	54	54
Saturday Midday PH	10		10	50%	50%	5	5	0	0	0	0	5	5	0	0	0	10	0	0	5	5

3,308 SF Office (ITE LUC 710)

Units: 3.31 KSF — Office

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	36		36	50%	50%	18	18	0	0	1	1	17	17	2	2	0	32	0	0	16	16
Weekday AM PH	6		6	88%	12%	5	1	0	0	0	0	5	1	0	0	0	6	0	0	5	1
Weekday PM PH	4		4	17%	83%	1	3	0	0	0	0	1	3	0	0	0	4	0	0	1	3
Saturday Daily	8		8	50%	50%	4	4	0	0	0	0	4	4	0	0	0	8	0	0	4	4
Saturday Midday PH	2		2	54%	46%	1	1	0	0	0	0	1	1	0	0	0	2	0	0	1	1

3,308 SF Retail (ITE LUC 826)

Units: 3.31 KSF — Retail

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	146		146	50%	50%	73	73	1	1	6	6	66	66	9	9	32	94	16	16	47	47
Weekday AM PH	4		4	62%	38%	2	2	0	0	0	0	2	2	0	0	2	2	1	1	1	1
Weekday PM PH	8		8	44%	56%	4	4	0	0	0	0	4	4	1	1	2	4	1	1	2	2
Saturday Daily	140		140	50%	50%	70	70	1	1	6	6	63	63	7	7	32	92	16	16	46	46
Saturday Midday PH	16		16	52%	48%	8	8	0	0	1	1	7	7	1	1	4	10	2	2	5	5

Trip generation rates

Pass-by rate of 34% for Weekday PM PH, 26% for all other periods.

4,954 SF Restaurant (ITE LUC 932)

Units: 4.95 KSF — Restaurant

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	630		630	50%	50%	315	315	5	5	25	25	285	285	40	40	232	308	116	116	154	154
Weekday AM PH	54		54	55%	45%	30	24	0	0	2	2	28	22	2	1	22	29	11	11	17	12
Weekday PM PH	48		48	60%	40%	29	19	0	0	2	2	27	17	6	4	16	22	8	8	15	7
Saturday Daily	784		784	50%	50%	392	392	6	6	31	31	355	355	39	39	298	396	149	149	198	198
Saturday Midday PH	70		70	53%	47%	37	33	1	0	3	3	33	30	3	3	28	35	14	14	19	16

Trip generation rates for Weekday AM PH and Saturday Midday PH sourced from ITE LUC 820.

Pass-by rate of 43% for all periods.

LOT 5 TOTALS

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	938	0	938			469	469	7	7	37	37	425	425	59	59	264	**542**	132	132	271	271
Weekday AM PH	74	0	74			39	35	0	0	2	3	37	32	2	1	24	**47**	12	12	25	22
Weekday PM PH	72	0	72			42	30	0	0	3	2	39	28	9	5	18	**40**	9	9	24	16
Saturday Daily	1054	0	1054			527	527	8	8	42	42	477	477	52	52	330	**604**	165	165	302	302
Saturday Midday PH	98	0	98			51	47	1	0	4	4	46	43	4	4	32	**57**	16	16	30	27

Lot 6, Lot 3, Lot 4, & Lot 5	*Total Trips*	*% In*	*% Out*	*Total New Trips*		*Total Transit Trips*		*Total Walk / Bicycle Trips*		*Total Autos Only Trips*		*Total Multi-Use Trips*		*Total New Pass-by Trips*	*Total New Primary Trips*	*Total Pass-by Trips*		*Total Primary Trips*	
				In	*Out*	*In*	*Out*	*In*	*Out*	*In*	*Out*	*In*	*Out*			*In*	*Out*	*In*	*Out*
Weekday Daily	4142	50%	50%	2071	2071	30	30	166	166	1875	1875	239	239	1048	2556	524	524	1278	1278
Weekday AM Peak Hour	300	57%	43%	170	130	2	1	12	10	156	119	4	3	72	218	36	36	128	90
Weekday PM Peak Hour	358	54%	46%	193	165	2	0	15	12	176	153	35	31	76	214	38	38	118	96
Saturday Daily	4636	50%	50%	2318	2318	36	36	185	185	2097	2097	192	192	1314	2866	657	657	1433	1433
Saturday Midday Peak Hour	438	53%	47%	232	206	4	2	18	16	210	188	18	18	120	276	60	60	150	126

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 220 Apartment

Average Vehicle Trips Ends vs:	Dwelling Units
Independent Variable (X):	19
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 6.65 * (X)
T = 6.65 * 19.00
T = **126** vehicle trips
with 50% entering (63 vpd) and with 50% exiting (63 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 19.00
T = **10** vehicle trips
with 20% entering (2 vpd) and with 80% exiting (8 vpd)

WEEKDAY EVENING PEAK HOUR

T = 0.62 * (X)
T = 0.62 * 19.00
T = **12** vehicle trips
with 65% entering (8 vpd) and with 35% exiting (4 vpd)

AVERAGE SATURDAY DAILY

T = 6.39 * (X)
T = 6.39 * 19.00
T = **122** vehicle trips
with 50% entering (61 vpd) and with 50% exiting (61 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.52 * (X)
T = 0.52 * 19.00
T = **10** vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

AVERAGE SUNDAY DAILY

T = 5.86 * (X)
T = 5.86 * 19.00
T = **112** vehicle trips
with 50% entering (56 vpd) and with 50% exiting (56 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 19.00
T = **10** vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 710 General Office Building

Average Vehicle Trips Ends vs:	1000 SF Gross Floor Area
Independent Variable (X):	3.308
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 11.03 * (X)
T = 11.03 * 3.31
T = **36** vehicle trips
with 50% entering (18 vpd) and with 50% exiting (18 vpd)

WEEKDAY MORNING PEAK HOUR

T = 1.56 * (X)
T = 1.56 * 3.31
T = **6** vehicle trips
with 88% entering (5 vpd) and with 12% exiting (1 vpd)

WEEKDAY EVENING PEAK HOUR

T = 1.49 * (X)
T = 1.49 * 3.31
T = **4** vehicle trips
with 17% entering (1 vpd) and with 83% exiting (3 vpd)

AVERAGE SATURDAY DAILY

T = 2.46 * (X)
T = 2.46 * 3.31
T = **8** vehicle trips
with 50% entering (4 vpd) and with 50% exiting (4 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.43 * (X)
T = 0.43 * 3.31
T = **2** vehicle trips
with 54% entering (1 vpd) and with 46% exiting (1 vpd)

AVERAGE SUNDAY DAILY

T = 1.05 * (X)
T = 1.05 * 3.31
T = **4** vehicle trips
with 50% entering (2 vpd) and with 50% exiting (2 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.16 * (X)
T = 0.16 * 3.31
T = **-** vehicle trips
with 58% entering (- vpd) and with 42% exiting (- vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 820 Shopping Center

Average Vehicle Trips Ends vs:	1000 SF Gross Leasable Area
Independent Variable (X):	3.308
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 42.70 * (X)
T = 42.70 * 3.31
T = **142** vehicle trips
with 50% entering (71 vpd) and with 50% exiting (71 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.96 * (X)
T = 0.96 * 3.31
T = **4** vehicle trips
with 62% entering (2 vpd) and with 38% exiting (2 vpd)

WEEKDAY EVENING PEAK HOUR

T = 3.71 * (X)
T = 3.71 * 3.31
T = **12** vehicle trips
with 48% entering (6 vpd) and with 52% exiting (6 vpd)

AVERAGE SATURDAY DAILY

T = 49.97 * (X)
T = 49.97 * 3.31
T = **166** vehicle trips
with 50% entering (83 vpd) and with 50% exiting (83 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 4.82 * (X)
T = 4.82 * 3.31
T = **16** vehicle trips
with 52% entering (8 vpd) and with 48% exiting (8 vpd)

AVERAGE SUNDAY DAILY

T = 25.24 * (X)
T = 25.24 * 3.31
T = **84** vehicle trips
with 50% entering (42 vpd) and with 50% exiting (42 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 3.12 * (X)
T = 3.12 * 3.31
T = **10** vehicle trips
with 49% entering (5 vpd) and with 51% exiting (5 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 826 Specialty Retail Center

Average Vehicle Trips Ends vs:	1000 SF Gross Leasable Area
Independent Variable (X):	3.308
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 44.32 * (X)
T = 44.32 * 3.31
T = **146** vehicle trips
with 50% entering (73 vpd) and with 50% exiting (73 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 3.31
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

WEEKDAY EVENING PEAK HOUR

T = 2.71 * (X)
T = 2.71 * 3.31
T = **8** vehicle trips
with 44% entering (4 vpd) and with 56% exiting (4 vpd)

AVERAGE SATURDAY DAILY

T = 42.04 * (X)
T = 42.04 * 3.31
T = **140** vehicle trips
with 50% entering (70 vpd) and with 50% exiting (70 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 3.31
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

AVERAGE SUNDAY DAILY

T = 20.43 * (X)
T = 20.43 * 3.31
T = **68** vehicle trips
with 50% entering (34 vpd) and with 50% exiting (34 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 3.31
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 932 High-Turnover (Sit-Down) Restaurant

Average Vehicle Trips Ends vs:	1000 SF Gross Floor Area
Independent Variable (X):	4.954
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 127.15 * (X)
T = 127.15 * 4.95
T = **630** vehicle trips
with 50% entering (315 vpd) and with 50% exiting (315 vpd)

WEEKDAY MORNING PEAK HOUR

T = 10.81 * (X)
T = 10.81 * 4.95
T = **54** vehicle trips
with 55% entering (30 vpd) and with 45% exiting (24 vpd)

WEEKDAY EVENING PEAK HOUR

T = 9.85 * (X)
T = 9.85 * 4.95
T = **48** vehicle trips
with 60% entering (29 vpd) and with 40% exiting (19 vpd)

AVERAGE SATURDAY DAILY

T = 158.37 * (X)
T = 158.37 * 4.95
T = **784** vehicle trips
with 50% entering (392 vpd) and with 50% exiting (392 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 14.07 * (X)
T = 14.07 * 4.95
T = **70** vehicle trips
with 53% entering (37 vpd) and with 47% exiting (33 vpd)

AVERAGE SUNDAY DAILY

T = 131.84 * (X)
T = 131.84 * 4.95
T = **654** vehicle trips
with 50% entering (327 vpd) and with 50% exiting (327 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 18.46 * (X)
T = 18.46 * 4.95
T = **92** vehicle trips
with 55% entering (51 vpd) and with 45% exiting (41 vpd)

Lot 5 All Office

19-Unit Residential Apartments (ITE LUC 220)

Units: 19 Units — Residential

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	126		126	50%	50%	63	63	1	1	5	5	57	57	8	8	0	108	0	0	54	54
Weekday AM PH	10		10	20%	80%	2	8	0	0	0	1	2	7	0	0	0	10	0	0	2	8
Weekday PM PH	12		12	65%	35%	8	4	0	0	1	0	7	4	2	0	0	10	0	0	6	4
Saturday Daily	122		122	50%	50%	61	61	1	1	5	5	55	55	6	6	0	108	0	0	54	54
Saturday Midday PH	10		10	50%	50%	5	5	0	0	0	0	5	5	0	0	0	10	0	0	5	5

6.615 SF Office (ITE LUC 710)

Units: 6.62 KSF — Office

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	72		72	50%	50%	36	36	1	1	3	3	32	32	4	4	0	62	0	0	31	31
Weekday AM PH	10		10	88%	12%	9	1	0	0	1	0	8	1	0	0	0	10	0	0	9	1
Weekday PM PH	10		10	17%	83%	2	8	0	0	0	1	2	7	0	2	0	8	0	0	2	6
Saturday Daily	16		16	50%	50%	8	8	0	0	1	1	7	7	0	0	0	16	0	0	8	8
Saturday Midday PH	2		2	54%	46%	1	1	0	0	0	0	1	1	0	0	0	2	0	0	1	1

0SF Retail (ITE LUC 826)

Units: 0.00 KSF — Retail

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	0		0	50%	50%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday AM PH	0		0	62%	38%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday PM PH	0		0	44%	56%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday Daily	0		0	50%	50%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday Midday PH	0		0	52%	48%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Trip generation rates for Weekday AM PH and Saturday Midday PH sourced from ITE LUC 820.
Pass-by rate of 34% for Weekday PM PH, 26% for all other periods.

4.954 SF Restaurant (ITE LUC 932)

Units: 4.95 KSF — Restaurant

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	630		630	50%	50%	315	315	5	5	25	25	285	285	40	40	232	308	116	116	154	154
Weekday AM PH	54		54	55%	45%	30	24	0	0	2	2	28	22	2	1	22	29	11	11	17	12
Weekday PM PH	48		48	60%	40%	29	19	0	0	2	2	27	17	6	4	16	22	8	8	15	7
Saturday Daily	784		784	50%	50%	392	392	6	6	31	31	355	355	39	39	298	396	149	149	198	198
Saturday Midday PH	70		70	53%	47%	37	33	1	0	3	3	33	30	3	3	28	35	14	14	19	16

Trip generation rates for Weekday AM PH and Saturday Midday PH sourced from ITE LUC 820.
Pass-by rate of 43% for all periods.

LOT 5 TOTALS

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	828	0	828			414	414	7	7	33	33	374	374	52	52	232	**478**	116	116	239	239
Weekday AM PH	74	0	74			41	33	0	0	3	3	38	30	2	1	22	**49**	11	11	28	21
Weekday PM PH	70	0	70			39	31	0	0	3	3	36	28	8	6	16	**40**	8	8	23	17
Saturday Daily	922	0	922			461	461	7	7	37	37	417	417	45	45	298	**520**	149	149	260	260
Saturday Midday PH	82	0	82			43	39	1	0	3	3	39	36	3	3	28	**47**	14	14	25	22

Lot 6, Lot 3, Lot 4, & Lot 5	Total Trips	% In	% Out	Total New Trips		Total Transit Trips		tal Walk / Bicycle Trip		Total Autos Only Trip		Total Multi-Use Trips		Total New Pass-by Trips	Total New Primary Trips	Total Pass-by Trips		Total Primary Trips	
				In	Out	In	Out	In	Out	In	Out	In	Out			In	Out	In	Out
Weekday Daily	4032	50%	50%	2016	2016	30	30	162	162	1824	1824	232	232	1016	2492	508	508	1246	1246
Weekday AM Peak Hour	300	57%	43%	172	128	2	1	13	10	157	117	4	3	70	220	35	35	131	89
Weekday PM Peak Hour	356	53%	47%	190	166	2	0	15	13	173	153	34	32	74	214	37	37	117	97
Saturday Daily	4504	50%	50%	2252	2252	35	35	180	180	2037	2037	185	185	1282	2782	641	641	1391	1391
Saturday Midday Peak Hour	422	53%	47%	224	198	4	2	17	15	203	181	17	17	116	266	58	58	145	121

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 220 Apartment

Average Vehicle Trips Ends vs:	Dwelling Units
Independent Variable (X):	19
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 6.65 * (X)
T = 6.65 * 19.00
T = **126** vehicle trips
with 50% entering (63 vpd) and with 50% exiting (63 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 19.00
T = **10** vehicle trips
with 20% entering (2 vpd) and with 80% exiting (8 vpd)

WEEKDAY EVENING PEAK HOUR

T = 0.62 * (X)
T = 0.62 * 19.00
T = **12** vehicle trips
with 65% entering (8 vpd) and with 35% exiting (4 vpd)

AVERAGE SATURDAY DAILY

T = 6.39 * (X)
T = 6.39 * 19.00
T = **122** vehicle trips
with 50% entering (61 vpd) and with 50% exiting (61 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.52 * (X)
T = 0.52 * 19.00
T = **10** vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

AVERAGE SUNDAY DAILY

T = 5.86 * (X)
T = 5.86 * 19.00
T = **112** vehicle trips
with 50% entering (56 vpd) and with 50% exiting (56 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 19.00
T = **10** vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 710 General Office Building

Average Vehicle Trips Ends vs:	1000 SF Gross Floor Area
Independent Variable (X):	6.615
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 11.03 * (X)
T = 11.03 * 6.62
T = **72** vehicle trips
with 50% entering (36 vpd) and with 50% exiting (36 vpd)

WEEKDAY MORNING PEAK HOUR

T = 1.56 * (X)
T = 1.56 * 6.62
T = **10** vehicle trips
with 88% entering (9 vpd) and with 12% exiting (1 vpd)

WEEKDAY EVENING PEAK HOUR

T = 1.49 * (X)
T = 1.49 * 6.62
T = **10** vehicle trips
with 17% entering (2 vpd) and with 83% exiting (8 vpd)

AVERAGE SATURDAY DAILY

T = 2.46 * (X)
T = 2.46 * 6.62
T = **16** vehicle trips
with 50% entering (8 vpd) and with 50% exiting (8 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.43 * (X)
T = 0.43 * 6.62
T = **2** vehicle trips
with 54% entering (1 vpd) and with 46% exiting (1 vpd)

AVERAGE SUNDAY DAILY

T = 1.05 * (X)
T = 1.05 * 6.62
T = **6** vehicle trips
with 50% entering (3 vpd) and with 50% exiting (3 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.16 * (X)
T = 0.16 * 6.62
T = **2** vehicle trips
with 58% entering (1 vpd) and with 42% exiting (1 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 932 High-Turnover (Sit-Down) Restaurant

Average Vehicle Trips Ends vs:	1000 SF Gross Floor Area
Independent Variable (X):	4.954
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 127.15 * (X)
T = 127.15 * 4.95
T = **630** vehicle trips
with 50% entering (315 vpd) and with 50% exiting (315 vpd)

WEEKDAY MORNING PEAK HOUR

T = 10.81 * (X)
T = 10.81 * 4.95
T = **54** vehicle trips
with 55% entering (30 vpd) and with 45% exiting (24 vpd)

WEEKDAY EVENING PEAK HOUR

T = 9.85 * (X)
T = 9.85 * 4.95
T = **48** vehicle trips
with 60% entering (29 vpd) and with 40% exiting (19 vpd)

AVERAGE SATURDAY DAILY

T = 158.37 * (X)
T = 158.37 * 4.95
T = **784** vehicle trips
with 50% entering (392 vpd) and with 50% exiting (392 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 14.07 * (X)
T = 14.07 * 4.95
T = **70** vehicle trips
with 53% entering (37 vpd) and with 47% exiting (33 vpd)

AVERAGE SUNDAY DAILY

T = 131.84 * (X)
T = 131.84 * 4.95
T = **654** vehicle trips
with 50% entering (327 vpd) and with 50% exiting (327 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 18.46 * (X)
T = 18.46 * 4.95
T = **92** vehicle trips
with 55% entering (51 vpd) and with 45% exiting (41 vpd)

Lot 5 All Retail

19-Unit Residential Apartments (ITE LUC 220)

Units: 19 Units — Residential

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	126		126	50%	50%	63	63	1	1	5	5	57	57	8	8	0	108	0	0	54	54
Weekday AM PH	10		10	20%	80%	2	8	0	0	0	1	2	7	0	0	0	10	0	0	2	8
Weekday PM PH	12		12	65%	35%	8	4	0	0	1	0	7	4	2	0	0	10	0	0	6	4
Saturday Daily	122		122	50%	50%	61	61	1	1	5	5	55	55	6	6	0	108	0	0	54	54
Saturday Midday PH	10		10	50%	50%	5	5	0	0	0	0	5	5	0	0	0	10	0	0	5	5

0 SF Office (ITE LUC 710)

Units: 0.00 KSF — Office

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	0		0	50%	50%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday AM PH	0		0	88%	12%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weekday PM PH	0		0	17%	83%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday Daily	0		0	50%	50%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday Midday PH	0		0	54%	46%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

6,615SF Retail (ITE LUC 826)

Units: 6.62 KSF — Retail

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	294		294	50%	50%	147	147	2	2	12	12	133	133	19	19	66	186	33	33	93	93
Weekday AM PH	6		6	62%	38%	4	2	0	0	0	0	4	2	0	0	2	4	1	1	3	1
Weekday PM PH	18		18	44%	56%	8	10	0	0	1	1	7	9	1	2	6	9	3	3	4	5
Saturday Daily	278		278	50%	50%	139	139	2	2	11	11	126	126	14	14	64	182	32	32	91	91
Saturday Midday PH	32		32	52%	48%	17	15	0	0	1	1	16	14	2	1	8	21	4	4	11	10

Trip generation rates for Weekday AM PH and Saturday Midday PH sourced from ITE LUC 820.
Pass-by rate of 34% for Weekday PM PH, 26% for all other periods.

4,954 SF Restaurant (ITE LUC 932)

Units: 4.95 KSF — Restaurant

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	630		630	50%	50%	315	315	5	5	25	25	285	285	40	40	232	308	116	116	154	154
Weekday AM PH	54		54	55%	45%	30	24	0	0	2	2	28	22	2	1	22	29	11	11	17	12
Weekday PM PH	48		48	60%	40%	29	19	0	0	2	2	27	17	6	4	16	22	8	8	15	7
Saturday Daily	784		784	50%	50%	392	392	6	6	31	31	355	355	39	39	298	396	149	149	198	198
Saturday Midday PH	70		70	53%	47%	37	33	1	0	3	3	33	30	3	3	28	35	14	14	19	16

Trip generation rates for Weekday AM PH and Saturday Midday PH sourced from ITE LUC 820.
Pass-by rate of 43% for all periods.

LOT 5 TOTALS

	Total Trips		Total	% Distribution		# New Trips		Transit Trips		Walk / Bicycle Trips		Autos Only		Multi-Use		Total New	Total New	# Passby Trips		# Primary Trips	
	Avg. Rates	Fitted Curve	New Trips	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	Pass-by Trips	Primary Trips	IN	OUT	IN	OUT
Weekday Daily	1050	0	1050			525	525	8	8	42	42	475	475	67	67	298	**602**	149	149	301	301
Weekday AM PH	70	0	70			36	34	0	0	2	3	34	31	2	1	24	**43**	12	12	22	21
Weekday PM PH	78	0	78			45	33	0	0	4	3	41	30	9	6	22	**41**	11	11	25	16
Saturday Daily	1184	0	1184			592	592	9	9	47	47	536	536	59	59	362	**686**	181	181	343	343
Saturday Midday PH	112	0	112			59	53	1	0	4	4	54	49	5	4	36	**66**	18	18	35	31

Lot 6, Lot 3, Lot 4, & Lot 5	Total Trips	% In	% Out	Total New Trips		Total Transit Trips		tal Walk / Bicycle Tri		otal Autos Only Trip		Total Multi-Use Trips		Total New Pass-by Trips	Total New Primary Trips	Total Pass-by Trips		Total Primary Trips	
				In	Out	In	Out	In	Out	In	Out	In	Out			In	Out	In	Out
Weekday Daily	4254	50%	50%	2127	2127	31	30	171	171	1925	1925	247	247	1082	2616	541	541	1308	1308
Weekday AM Peak Hour	296	56%	44%	167	129	2	1	12	10	153	118	4	3	72	214	36	36	125	89
Weekday PM Peak Hour	364	54%	46%	196	168	2	0	16	13	178	155	35	32	80	215	40	40	119	96
Saturday Daily	4766	50%	50%	2383	2383	37	37	190	190	2156	2156	199	199	1346	2948	673	673	1474	1474
Saturday Midday Peak Hour	452	53%	47%	240	212	4	2	18	16	218	194	19	18	124	285	62	62	155	130

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 220 Apartment

Average Vehicle Trips Ends vs:	Dwelling Units
Independent Variable (X):	19
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 6.65 * (X)
T = 6.65 * 19.00
T = **126** vehicle trips
with 50% entering (63 vpd) and with 50% exiting (63 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 19.00
T = **10** vehicle trips
with 20% entering (2 vpd) and with 80% exiting (8 vpd)

WEEKDAY EVENING PEAK HOUR

T = 0.62 * (X)
T = 0.62 * 19.00
T = **12** vehicle trips
with 65% entering (8 vpd) and with 35% exiting (4 vpd)

AVERAGE SATURDAY DAILY

T = 6.39 * (X)
T = 6.39 * 19.00
T = **122** vehicle trips
with 50% entering (61 vpd) and with 50% exiting (61 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.52 * (X)
T = 0.52 * 19.00
T = **10** vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

AVERAGE SUNDAY DAILY

T = 5.86 * (X)
T = 5.86 * 19.00
T = **112** vehicle trips
with 50% entering (56 vpd) and with 50% exiting (56 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.51 * (X)
T = 0.51 * 19.00
T = **10** vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 820 Shopping Center

Average Vehicle Trips Ends vs:	1000 SF Gross Leasable Area
Independent Variable (X):	6.615
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 42.70 * (X)
T = 42.70 * 6.62
T = **282** vehicle trips
with 50% entering (141 vpd) and with 50% exiting (141 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.96 * (X)
T = 0.96 * 6.62
T = **6** vehicle trips
with 62% entering (4 vpd) and with 38% exiting (2 vpd)

WEEKDAY EVENING PEAK HOUR

T = 3.71 * (X)
T = 3.71 * 6.62
T = **24** vehicle trips
with 48% entering (12 vpd) and with 52% exiting (12 vpd)

AVERAGE SATURDAY DAILY

T = 49.97 * (X)
T = 49.97 * 6.62
T = **330** vehicle trips
with 50% entering (165 vpd) and with 50% exiting (165 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 4.82 * (X)
T = 4.82 * 6.62
T = **32** vehicle trips
with 52% entering (17 vpd) and with 48% exiting (15 vpd)

AVERAGE SUNDAY DAILY

T = 25.24 * (X)
T = 25.24 * 6.62
T = **166** vehicle trips
with 50% entering (83 vpd) and with 50% exiting (83 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 3.12 * (X)
T = 3.12 * 6.62
T = **20** vehicle trips
with 49% entering (10 vpd) and with 51% exiting (10 vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 826 Specialty Retail Center

Average Vehicle Trips Ends vs:	1000 SF Gross Leasable Area
Independent Variable (X):	6.615
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 44.32 * (X)
T = 44.32 * 6.62
T = **294** vehicle trips
with 50% entering (147 vpd) and with 50% exiting (147 vpd)

WEEKDAY MORNING PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 6.62
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

WEEKDAY EVENING PEAK HOUR

T = 2.71 * (X)
T = 2.71 * 6.62
T = **18** vehicle trips
with 44% entering (8 vpd) and with 56% exiting (10 vpd)

AVERAGE SATURDAY DAILY

T = 42.04 * (X)
T = 42.04 * 6.62
T = **278** vehicle trips
with 50% entering (139 vpd) and with 50% exiting (139 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 6.62
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

AVERAGE SUNDAY DAILY

T = 20.43 * (X)
T = 20.43 * 6.62
T = **136** vehicle trips
with 50% entering (68 vpd) and with 50% exiting (68 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 0.00 * (X)
T = 0.00 * 6.62
T = **-** vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

Trip Generation Estimate

Project:	Deer Street Garage and Deer Street Associates
Date:	11/17/2016 - Revised By GP 8/19/2022
Analyst:	Eric R. Paquette, E.I.T. Revised By Brad Pineau, EI
Source:	Institute of Transportation Engineers - Trip Generation, 9th Edition

ITE Land Use Code (LUC): 932 High-Turnover (Sit-Down) Restaurant

Average Vehicle Trips Ends vs:	1000 SF Gross Floor Area
Independent Variable (X):	4.954
Curve Method:	Average

AVERAGE WEEKDAY DAILY

T = 127.15 * (X)
T = 127.15 * 4.95
T = **630** vehicle trips
with 50% entering (315 vpd) and with 50% exiting (315 vpd)

WEEKDAY MORNING PEAK HOUR

T = 10.81 * (X)
T = 10.81 * 4.95
T = **54** vehicle trips
with 55% entering (30 vpd) and with 45% exiting (24 vpd)

WEEKDAY EVENING PEAK HOUR

T = 9.85 * (X)
T = 9.85 * 4.95
T = **48** vehicle trips
with 60% entering (29 vpd) and with 40% exiting (19 vpd)

AVERAGE SATURDAY DAILY

T = 158.37 * (X)
T = 158.37 * 4.95
T = **784** vehicle trips
with 50% entering (392 vpd) and with 50% exiting (392 vpd)

SATURDAY MIDDAY PEAK HOUR

T = 14.07 * (X)
T = 14.07 * 4.95
T = **70** vehicle trips
with 53% entering (37 vpd) and with 47% exiting (33 vpd)

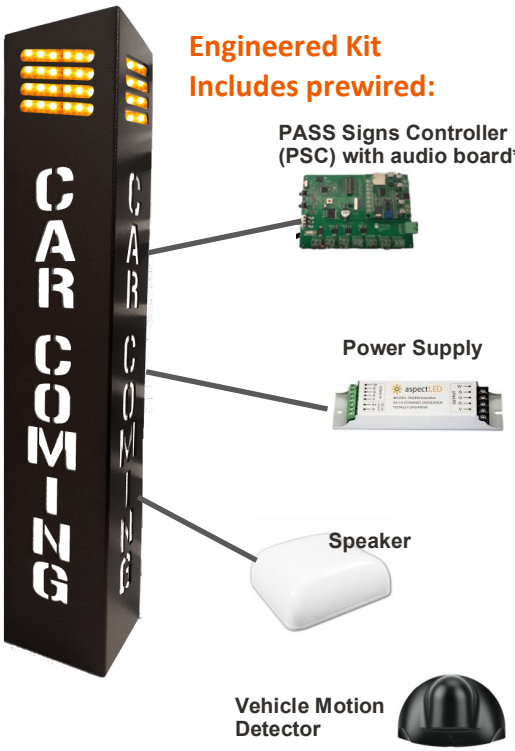
AVERAGE SUNDAY DAILY

T = 131.84 * (X)
T = 131.84 * 4.95
T = **654** vehicle trips
with 50% entering (327 vpd) and with 50% exiting (327 vpd)

SUNDAY MIDDAY PEAK HOUR

T = 18.46 * (X)
T = 18.46 * 4.95
T = **92** vehicle trips
with 55% entering (51 vpd) and with 45% exiting (41 vpd)

Minimize Your Liability!



Part name: Car Coming Wall Mounted 40x08
Part numbers: CCV4008W or CCV4008W-Kit
Mounting: Wall or Post, outdoor rated
Purpose: Provides pedestrians a visual and voice alert when vehicles exit a parking facility. Two sides flash "CAR COMING".
Engineered Kit Includes:
PASS Controller w/ Voice Module
Power supply
Speaker
Vehicle motion detector
Dimensions: 40"H x 10"W x 8" faces
Finish: Hammered copper powder coating

Solution

Warns pedestrians of a vehicle exiting a parking facility with Voice Alert and Flashing CAR COMING

CAR COMING Exit Warning Sign

INCLUDES EVERYTHING YOU NEED FOR A WORKING SYSTEM*

Parking Alert Signs
Engineered safety systems for you parking facilities

Have questions?
We make it easy for you.
480-689-1993
support@passsigns.com

PassSigns.com

Operations

How the System Operates

A TRIGGERING SENSOR detects a vehicle exiting a parking facility. It sends a signal to the PASS Controller (PSC) inside the System.

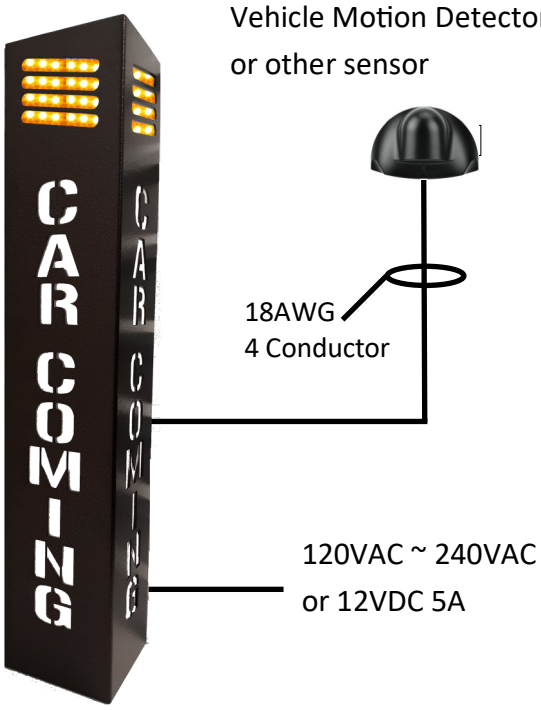
The PASS Controller (PSC) activates the system:

- Voice Alert—"Attention! Vehicles exiting watch for vehicles."
- Flashing text (2 sides) - CAR COMING
- Flashing amber signal

PASS Controller continues to activate the sign for 10 seconds (adjustable) or if a second vehicle activates the system it resets the 10 second timer.

NOTE— 40" CLEARANCE REQUIRED UNDER UNIT TO ALLOW FRONT COVER TO SLIDE DOWN

Typical Wiring



Triggering Sensors

- Vehicle motion detector (INCLUDED with Kit)
- Vehicle loop detector
- Parking gate open circuit
- Rollup door gate open circuit
- Beam detector
- Push button
- Any NORMALLY OPEN output

Options

- Audio cut off timer board. Turns off voice alert at designated times for nearby residential.
- Mounting post 72" x 4" x 4"
- 2nd Sign for exits wider than 2 lanes — Car Coming Sign Basic CCV4008-Basic

Detailed specifications

Part name: Car Coming Warning Sign 40x08
Part#: CCV4008W or CCV4008-Kit
Mounting: Wall or Post mounted
Dimensions: 48" x 10" x 8" face, Wall mounted
Material: 14AWG Steel
Finish: Hammered copper powder coating
Power In: 120VAC 1A or 12VDC 5A(Low voltage)

PASS Signs Controller (PSC)

12VDC Input Power
12VDC Output Power (for Trigger Sensor)
(2)Trigger Inputs - Normally open dry inputs only
(2) Test buttons
Output 1: Steady Output 12VDC
Output 2: Flashing 1 sec On/Off Output—12VDC
Activation Timer (5—35 seconds) - Dip switches

Voice Module

Volume control 0-90dB
15 Watt Speaker
Audio Message can be changed easily onsite with laptop and USB to Micro USB cable (android cable)

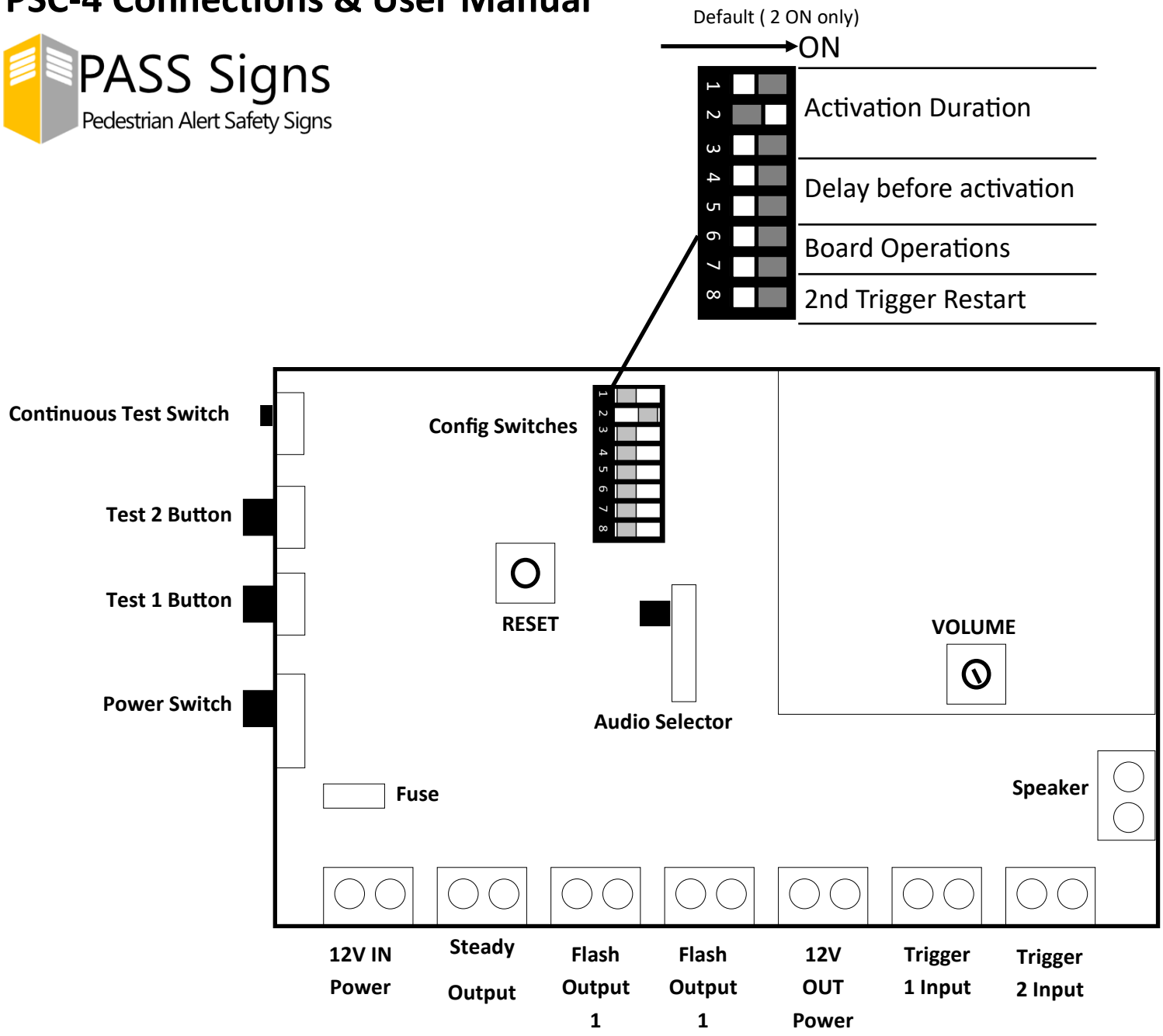
Vehicle Motion Detector with Kit

10'x10' detection zone
Power In: 12VDC from PASS Controller

**system does not include field wiring or mounting bolts*

PSC-4 Connections & User Manual

PASS Signs
Pedestrian Alert Safety Signs



Config Switches

Activation Duration - How long the sign activates when triggered. Typical is 10 seconds.

Switch	On	Switch	ON
1	5 secs	1, 3	25 secs
2	10 secs	2,3	30 secs
1,2	15 secs	1,2,3	35 secs
3	20 secs		

Delay Duration - Delay time before the Activation Duration starts. Default is 0 , SW 4&5 off

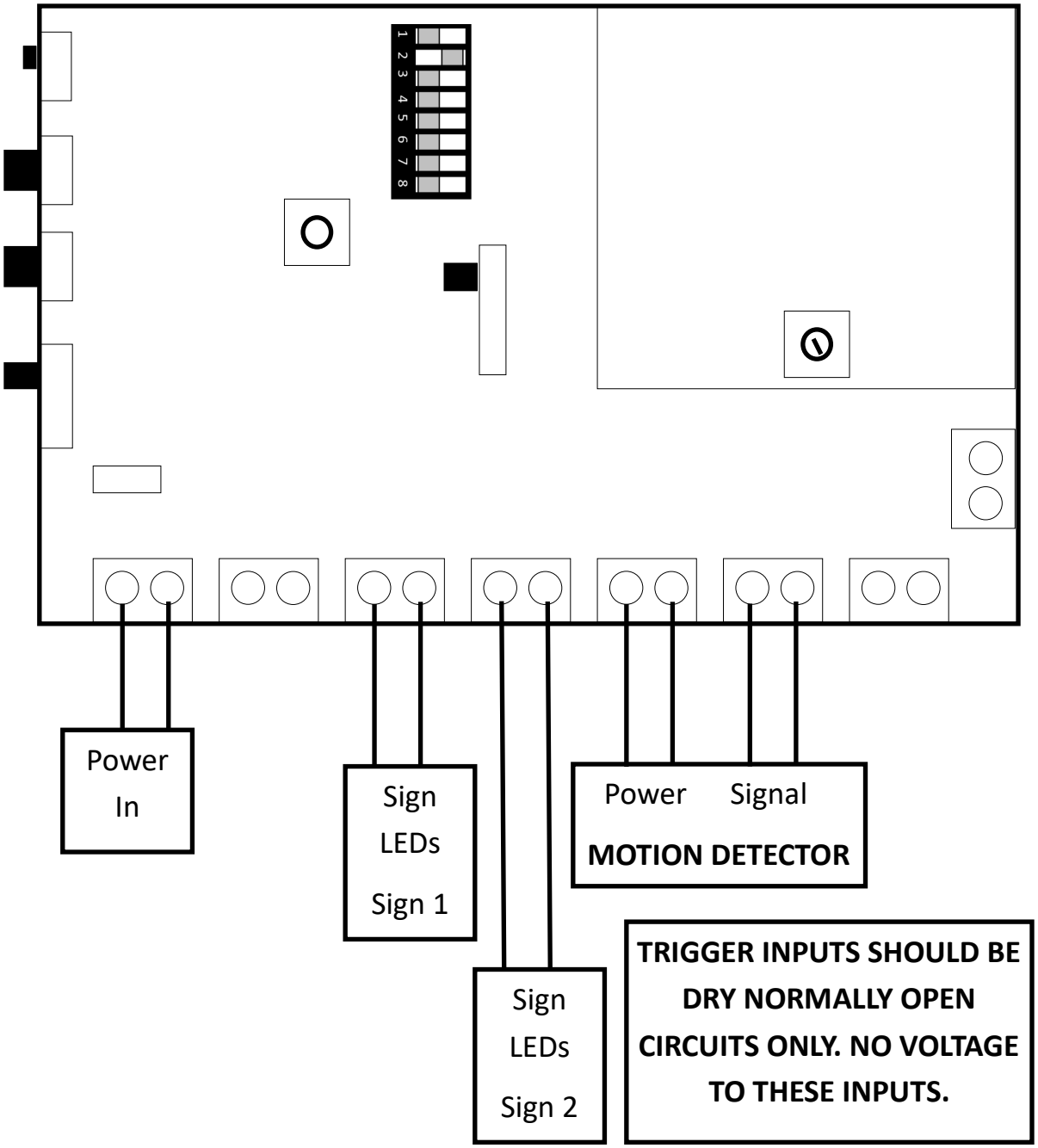
Switch	On	Switch	ON
	0 secs	5	10 secs
4	10 secs	4,5	15 secs

Board Operations - How the board functions. Default is Normal Operations, SW 6&7 off

Switch	On
	Normal Operations
6	Directional Logic Operations
7	2 Inputs - 2 Outputs
6,7	2-Way Traffic Controller

2nd Trigger Restart - How the board functions.

Switch	On
	Normal Operations
8	2nd Trigger will reset Activation Timer



PASS Signs
Pedestrian Alert Safety Signs

Parking Alert Signs
Engineered safety systems for you parking facilities

Manuals for 40x08 Prism Wall/Post Mounted Sign covering:

CAR COMING Sign

VEHICLE EXITING Sign

Custom Message 40x08 Sign

Dual - Sign Installations

Contents

Last updated – Feb 2021
ParkingAlertSigns.com
PASSsigns.com
support@PassSigns.com

Description

The CAR COMING Sign is a self-contained system that warns pedestrians of vehicles exiting parking garages or other blind spots. When a vehicle is detected, the CAR COMING SIGN activates a Visual Flashing Alert and a Voice Message stating “Attention, vehicles exiting. Watch for vehicles!”

How it works

The CAR COMING Sign has an internal PASS Controller Board, Speaker, and Power Supply pre-wired inside the sign.

THE ENGINEERING IS DONE

A sensor, outside the sign, such as a vehicle motion detector is connected to the sign. Once a vehicle is detected leaving the facility, the sensor sends a signal to the PASS Controller inside the sign. The PASS Controller activates the flashing lights, flashing text, and a voice or audio alert for 10 seconds (or desired other time). The activation can restart if the

The **PASS Controller** controls the following features: (see Installation Documents)

- Activation Timer – set by dip switches 5, 10, 15, 20, 25, 30, 35 seconds
- Delay before activation – set by dip switches 0, 5, 10, 15
    - Allows a timed delay after the car is detected, and before the sign activates
- Volume control of the Audio/Voice output
- Selected voice or audio output with 4 position selector switch
- (2) Flashing outputs when sign is activated
- (1) Steady output when sign activated
- 12VDC output power for activation trigger sensors
- Test buttons

Types of Sensors that can trigger activation of the system

- Any Normally Open (NO) Dry output closure – no voltage outputs
- Motion sensor or Vehicle motion sensor
- Vehicle loop detectors
- Beam detectors
- Push buttons.
- Gate or Roll up door outputs.

Applications

Primary Application

Vehicle Exiting Warning System – The CAR COMING Sign and VEHICLE EXITING signs are used to warn pedestrians and street traffic of cars exiting parking garages and blind spots.

Dual Tandem Signs - Wide Parking Garage Exit

For parking garage exits that are 2 lanes or wider, than it is recommended to place a sign on either side of the exit, if possible, if the area is noisy or if the exit and sidewalk areas are busy with traffic.

Secondary Application

Two-way ramps systems – The CAR COMING Sign can be used on two-way ramp systems to warn vehicles of cross-traffic dangers.

Specifications

Part Numbers of complete kits and Triggering Devices.

CC4008V-Kit	CAR COMING Sign – with Control board, Power supply, Speaker
CC4008-Kit-MO	CAR COMING Sign – Kit above and with Motion Detector
CC4008-Kit-DL	CAR COMING Sign – Kit above and with Direction Logic motion detector
CC4008-Kit-LD	CAR COMING Sign – Kit above and with Vehicle Loop Detector
CC4008-Tandem	CAR COMING Sign – Used as second sign in dual sign setup of a CC4008V – no Control Board or Power supply and must be use

VE4008V-Kit	VEHICLE EXITING Sign – with Control board, Power supply, Speaker
VE4008-Kit-MO	VEHICLE EXITING Sign – Kit above and with Motion Detector
VE4008-Kit-DL	VEHICLE EXITING Sign – Kit above and with Direction Logic motion detector
VE4008-Kit-LD	VEHICLE EXITING Sign – Kit above and with Vehicle Loop Detector
VE4008-Tandem	VEHICLE EXITING Sign – Used as second sign in dual sign setup of a VE4008V – no Control Board or Power supply

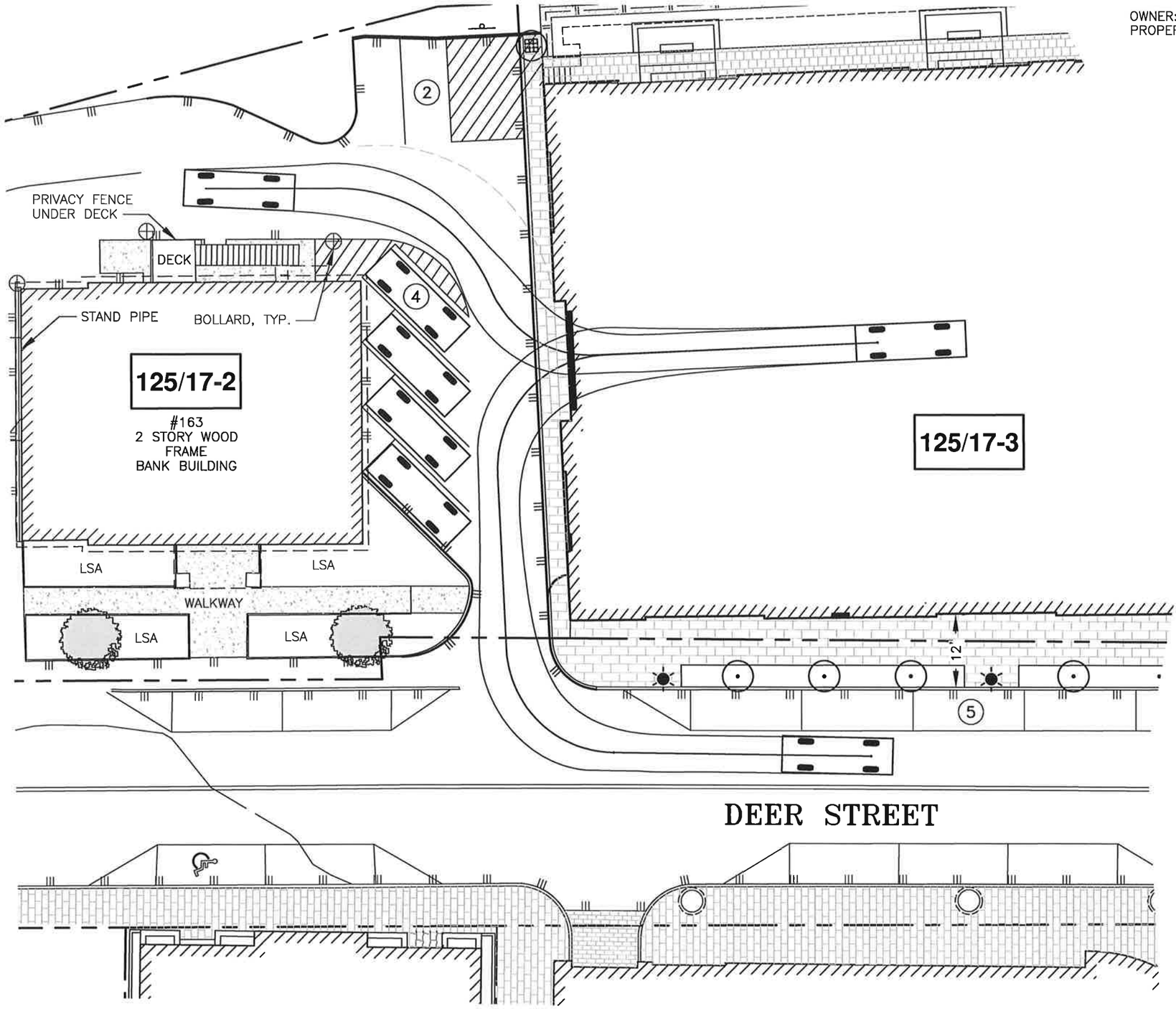
Specifications

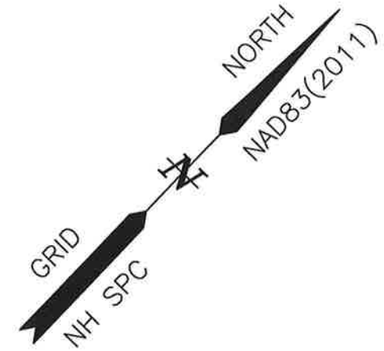
- Mounting: Wall or Post
- Mounting height – minimum bottom from ground is 42” UNLESS special adapters to mount lower
- Dimensions: 40” x 10”W back plate x 8” each face
- Weight: 37lbs
- Material: 14AWG Steel – hurricane wind strength
- Finish: Powder coating – Hammered copper textured or Black textured
- Power in: 100VAC to 277VAC or 12VDC 5Amps
- Backlight letters white LEDs – CAR COMING
- Flashing alert – Amber LEDs
- PASS Signs Controller Board
    - (2) Inputs – Trigger 1 & Trigger 2
    - (2) Outputs – *Flashing Output* – *Steady Continuous Output*
- Audio – 4 Channels selectable – Can be customized with any MP3 file
    - Voice audio - “Attention vehicles exiting. Watch for vehicles.”
    - Voice audio - “Watch for moving vehicles.”
    - Voice audio - “Vehicles moving.”
    - Audio only – *Ding ding*
- .

Finish – Hammered copper textured

VEHICLE TURNING TEMPLATE

OWNER: EIGHTKPH, LLC
PROPERTY LOCATION: 70 MAPLEWOOD AVENUE
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE





VEHICLE NOTES:

F-150 CREW CAB
WHEEL BASE: 144 IN.
OVERALL LENGTH: 244 IN.
WHEEL LOCK ANGLE: 33°

GRAPHIC SCALE

10 0 10 20 30 40 50 FEET
3 0 5 10 15 METERS

SCALE: 1"=20'

11/7/2022

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

FB 265 PG 18 2271.04

J:\JOBS2\JN2200s\JN2270s\JN2271\2022 Site Plan\Plans & Specs\Site\2271.04 TURNING TEMPLATE 2022.dwg, Tue Nov 8 08:22:37 2022, SHARP MX-3071 (0300380X00)

Average Grade WorkSheet						
Project	Foundry Place Lot 5				Calculated	
Address:	70 Maplewood Avenue, Portsmouth, NH				11/22/2022	
6' offset from Building; Prop Grades 10' OC						
SECTION	Elev	Elev	Elev	Elev	Total	
SOUTH	11.42	11.65	11.88	12.11	47.06	
	12.33	12.61	12.81	13.06	50.81	
	13.30	13.55	13.82	14.01	54.68	
	14.37	14.65	14.92	14.55	58.49	
	14.50				14.50	AVG PER SECTION
			#	17.0	225.54	13.27
WEST		11.60	11.74	11.89	35.23	
	12.03	12.27	12.51	12.75	49.56	
	12.60	12.44	12.29		37.33	
						AVG PER SECTION
			#	10.0	122.12	12.21
NORTH	12.10	13.03	13.65	13.81	52.59	
	13.96	14.08	14.20	14.33	56.57	
	14.46	14.46	14.46	14.46	57.84	
	14.46	14.20	14.08	13.92	56.66	
	13.80	13.68			27.48	AVG PER SECTION
			#	18.0	251.14	13.95
EAST	14.48	14.41	14.65	14.55	58.09	
	14.45	14.35	14.23	14.10	57.13	
	14.00	14.10	13.83	13.57	55.50	
	13.98				13.98	
						AVG PER SECTION
			#	13	184.70	14.21
Total	783.50	>	AVERAGE GRADE			
#	58		13.51			

DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	PROP/EX	RIM	PIPE SIZE/TYPE	INVERT IN	INVERT OUT	DIRECTION
CB 8168	EX	13.19	12" RCP	9.93	9.83	NE
DMH 3540	EX	10.81	48" RCP		1.56	NW
OCS 1	PROP	13.95	12"	10.9	7.92	
CB 1	PROP	12.10	12" HDPE	7.79	7.69	
CB 2	PROP	13.56	12" HDPE	10.22	10.12	

PIPE SCHEDULE

PIPE #	PIPE SIZE	LENGTH	SLOPE
P1	12"	13'	0.05
P2	12"	47'	0.004
P3	12"	5'	0.02
P4	12"	31'	0.004
P5	12"	8'	0.004
P6	TWIN 12"	17'	0.17

*ALL PIPE TO BE HDPE

PLACE SILT SOXX ALONG ENTIRE REAR PROPERTY LINE (A D1)

TBM 4 CHISELED SQUARE IN NE CORNER OF TRANSFORMER PAD EL.=14.77

TRANSFORMER & SWITCH BOX ON CONCRETE PADS, TYP.

TOW 12.7 | TOW 13.7 | TOW 13.8 | TOW 14.4 | TOW 14.4 | TOW 14.4

0" REVEAL | 6" REVEAL | 6" REVEAL TYP.

SLOPED GRANITE CURB

PROPOSED CB 1–RIM 12.10 (N D3, Q D4)

PROPOSED OCS STRUCTURE

PROPOSED R-TANK SYSTEM (S D4)

FF=12.30

CB 8168 | DMH 8161

CATCH BASIN BASKET (L D1)

P2 ENTRANCE (B D1)

PROPOSED CB 2 (N D3, Q D4)

POTENTIAL FOUNDATION DRAIN LOCATION– ADDITIONAL APPROVALS REQUIRED

HIGH POINT

48" ø DRAIN LINE

#70

PROPOSED 4 STORY WITH A PENTHOUSE BUILDING 17,093 S.F.

COMMERCIAL & RESIDENTIAL

LOWER LEVEL: FF=10.5
FIRST LEVEL:
FF=13.0
FF=14.0
FF=15.0
FF=19.5
SECOND, THIRD, & FOURTH LEVEL:
FF=30.5/42.0/53.5
PENTHOUSE: FF=65.0

125/17-3

FF=11.83 | FF=12.82 | FF=14.0 | FF=14.67 | FF=14.67 | FF=14.35

ADA

SLOPE CURB | SLOPE CURB

2' WIDE WARNING STRIP

FLUSH CURB

TBM 5 CHISELED SQUARE IN NE QUADRANT OF MAST BASE EL.=15.20

DMH 3540 | DMH 8160

DEER STREET

MAPLEWOOD AVE.

NORTH NAD83(2011) — GRID — NH SPC

GRAPHIC SCALE
10 5 0 10 20 30 40 FEET
3 0 5 10 METERS

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

NOTES:

1) 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).

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	GRADING–REAR	11/17/22
2	BUILDING FOOTPRINT	10/20/22
1	DRAIN PIPE SIZE	9/6/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

AVERAGE GRADE PLANE

SCALE: 1" = 10' AUGUST 2022

GRADING & DRAINAGE PLAN

C6

FB 265 PG 18

2271.04

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S43°06'02"W	1.34'

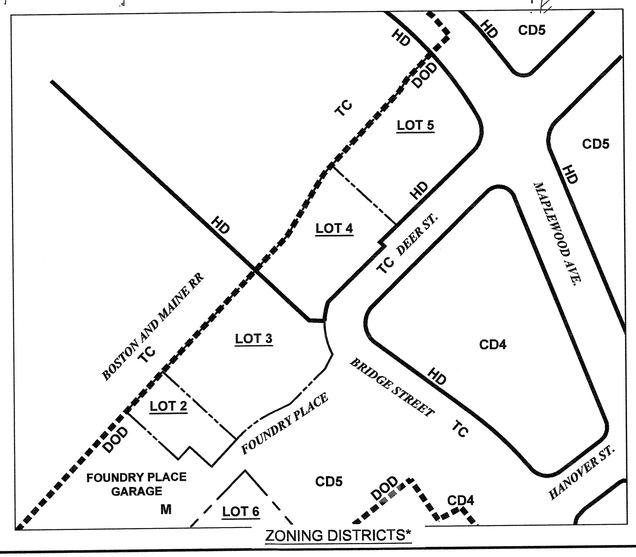
CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	155.00'	56.30'	55.99'	S53°24'20"W	20°48'45"
C2	86.00'	45.63'	45.10'	S13°00'13"E	30°24'08"

STATE PLANE 83 NH NAD

MAINTENANCE ACCESS GATES
10 FT WIDE ACCESS EASEMENT FOR CONSTRUCTION
PROPOSED FENCE
DUMPSTERS IN GARAGE. SEE ARCHITECTURAL SHEETS
LOT 4 LANDSCAPE IMPROVEMENTS
TRANSFORMERS FOR LOT 3 AND 4
STRIPE DRIVE-THROUGH AND BYPASS LANES
RECONSTRUCT EXISTING PAVEMENT
LIGHT POLE (ON-SITE)
LANDSCAPE ISLAND
BOSTON & MAINE RAILROAD
N43°06'02"E 180.84'
EXISTING PARKING
PROPOSED LOT 3 BUILDING
FIRST FLOOR FOOTPRINT: 21,977
STORIES: 5
HEIGHT: 61 FT - 9 IN
SF USES: HOTEL, BAR
F.F.E.: 12.00
ENTRANCE PARKING GARAGE
BIKE RACKS
TEMPORARY ASPHALT EGRESS PATH
AT-GRADE PARKING GARAGE - VALET ONLY 78 PARKING SPACES
LOT 2
LOT 4
EXIST BANK
APPROXIMATE LOCATION OF ENTRANCE SIGN
LOT 5
EXISTING BUILDING
REVISE LOT 4 AND 5 PARKING
RE-STRIPE TO ENTRANCE ONLY
PROPOSED PLANTING IMPROVEMENTS (TYP.)
HOTEL LOADING ZONE
HOTEL MAIN ENTRANCE
CAFE MAIN ENTRANCE
SECONDARY ACCESSIBLE ENTRANCE
BRICK SIDEWALK
DECK TERRACE
SIDEWALK EASEMENT
DEER STREET (PUBLIC - WIDTH VARIES)
BRICK SIDEWALK
FOUNDRY PLACE (PUBLIC - WIDTH VARIES)
PROPOSED DRIVEWAY AND BRICK CROSSWALK
PROPOSED DEER STRIPING (BY OTHERS) PER TEC TRAFFIC STUDY
LOT 6
STREET LIGHTS ALONG FOUNDRY PLACE INSTALLED BY CITY
CITY CONSTRUCTED ROADWAY
BRICK SIDEWALK AND LANDSCAPING
APPROXIMATE LOCATION OF CITY INSTALLED HYDRANT
BRIDGE STREET (PUBLIC - WIDTH VARIES)
MAPLEWOOD AVENUE

1 inch = 30 ft.



ZONING DISTRICTS*

ZONING LEGEND*:

CD5	CHARACTER DISTRICT 5
CD4	CHARACTER DISTRICT 4
M	MUNICIPAL DISTRICT
DOD	DOWNTOWN OVERLAY DISTRICT
HD	HISTORIC DISTRICT
TC	TRANSPORTATION CORRIDOR

*ZONING IMAGE AND INFORMATION TAKEN FROM THE CITY OF PORTSMOUTH MAPGEO WEBSITE.

NOTES:

1. FOR DETAILED LAYOUT AND MATERIALS OF SITE PLAN SEE SHEETS C3.1-C3.3.
2. SEE ARCHITECTURE SHEET T.02T FOR FULL BUILDING AND SITE INFORMATION.
3. SEE ARCHITECTURAL SHEET A1.01T FOR PARKING AND FIRST FLOOR LAYOUT.
4. SOLID WASTE DUMPSTERS ARE LOCATED WITHIN GARAGE. SEE ARCHITECTURAL SHEETS FOR DETAILS.
5. SEE LANDSCAPE SHEET (L SERIES) FOR LANDSCAPE AND STREETSCAPE LAYOUT AND DETAILS.
6. SEE LIGHTING AND ELECTRICAL SHEETS FOR SITE LIGHTING DETAILS.
7. ALL CONDITIONS OF THE PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REGULATIONS.
8. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
9. BRICK COLOR IN VEHICULAR TRAVEL LANES AND PASSENGER LOADING AREAS SHALL BE SELECTED BY OWNER DURING SHOP DRAWINGS.
10. ALL SNOW REMOVED FOR LOTS 3 AND SHALL BE DISPOSED OF OFF SITE AND SHALL NOT BE STORED ON CITY PROPERTY.
11. BRICK DRIVEWAY CROSSWALK SHALL BE IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND BE KEPT IN GOOD REPAIR AND SHALL BE REPAIRED WITHIN 90 DAYS OF THE DATE OF NOTICE FROM THE CITY. THE MAXIMUM ACCESSIBLE RUNNING SLOPE IS 1/20 OR 5.0% THE MAXIMUM ACCESSIBLE CROSS SLOPE SHALL BE 1/48 OR 2.08%
12. PARKING GARAGE SPRINKLERS SHALL BE PROVIDED TO PROVIDE ADEQUATE COVERAGE TO UPPER AND LOWER VEHICLE LIFTS.
13. THE SITE AND STORMWATER FACILITIES SHALL BE MAINTAINED (AT MINIMUM) PER THE LONG TERM OPERATIONS AND MAINTENANCE PLAN INCLUDED IN THE STORMWATER MANAGEMENT PLAN.
14. THE LANDSCAPE SHEETS (L-SERIES) ARE MADE PART OF THIS SITE PLAN.
15. A TEMPORARY DEWATERING PERMIT WILL BE REQUIRED FOR ANY TEMPORARY GROUNDWATER DISCHARGES INTO THE CITY STORM DRAIN.
16. THE CONSTRUCTION OF A DECK WITHIN THE PUBLIC ROW SHALL REQUIRE A LICENSE.
17. ENTRY SIGNS AND WAYFINDING SIGNS WILL REQUIRE A SEPARATE PERMIT.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

LEGEND:

- T — TRANSFORMER
- SITE BOUNDARY LINE
- ABUTTER LOT LINE
- PROPOSED BUILDING
- BUILDING/CANOPY OVERHANG
- 125/17 — ACCESSOR'S MAP#/ LOT#
- PROP BRICK SIDEWALK
- PROP VEHICULAR BRICK PAVEMENT
- NEW BITUMINOUS PAVEMENT SECTION
- PROP MILL AND OVERLAY
- LANDSCAPE (SEE ATTACHED LANDSCAPE PLANS FOR DETAILS)
- ⑤ — EXTERIOR PARKING
- PROP LIGHT POLE (CITY)
- PROP LIGHT POLE (ON-SITE)

STATE OF NEW HAMPSHIRE — DOUGLAS E. REYNOLDS — No. 12145 — 7-28-2020 — LICENSED PROFESSIONAL ENGINEER

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165 Deer Street
Portsmouth, NH 03801

ARCHITECT
Legat Architects
2015 Spring Road, Suite 175
Oak Brook, Illinois 60523
P: 630.990.3535
F: 630.990.3541
www.legat.com

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707 Sable Oaks Drive, Suite 30
South Portland, ME 04106
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www.gorrillpalmer.com

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IMEG Corp
623 26th Avenue
Rock Island, Illinois 61201
P: 312.294.0501
F: 312.294.0003
www.imegcorp.com

MEP/FP ENGINEER
ADVANCED CONSULTING
300 W Adams Street, Suite 420
Chicago, Illinois 60606
Address Line 2
P: 312.557.1840
www.acgintl.com

INTERIORS
SHEEDY/ DELAROA
4045 N. Rockwell Avenue
Chicago, IL 60618
P: 312.286.5246
www.natalliesheedy.com

SURVEYOR
AMBIT ENGINEERING
200 Griffin Road, Unit 3
Portsmouth, NH 03801
P: 603.430.9282

OWNER OF RECORD
FOUNDRY PLACE LLC
157 Deer Street
Portsmouth NH 03801

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

REVISIONS

NO.	DESCRIPTION	DATE
1	SCOPE REVISION	6/21/19
2	EXTENSION REQUEST	11/5/19
3	ADDED BIKE RACKS	12/10/19
4	RECORD DRAWING	2/19/20

PROJECT NUMBER	3256.13
DATE OF ISSUE	11.30.2018
DRAWN BY	CG
CHECKED BY	DER

OVERALL SITE PLAN

C3.0

RECORD DRAWING

2271

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE (FORMERLY 161 DEER STREET)
PORTSMOUTH, NEW HAMPSHIRE
PERMIT PLANS

OWNER/APPLICANT:

EIGHTKPH, LLC
233 VAUGHAN STREET, UNIT 301
PORTSMOUTH, N.H. 03801
Tel. (617) 901–7993

CIVIL ENGINEER & LAND SURVEYOR:

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

ARCHITECT:

CJ ARCHITECTS
233 VAUGHAN STREET, SUITE 101
PORTSMOUTH, N.H. 03801
TEL. (603) 431–2808

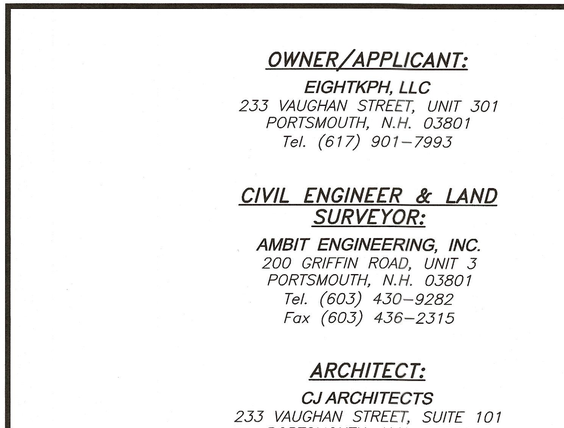
LANDSCAPE ARCHITECT:

TERRA FIRMA LANDSCAPE ARCHITECTURE
163A COURT STREET
PORTSMOUTH, NH 03801
TEL. (603) 430–8388

TRAFFIC ENGINEER:

GORRILL PALMER
707 SABLE OAKS DRIVE, SUITE 30
SOUTH PORTLAND, ME 04106
TEL. (207) 772–2515

PERMIT LIST:
NHDES SEWER DISCHARGE PERMIT:
PORTSMOUTH HDC:
PORTSMOUTH SITE PLAN:



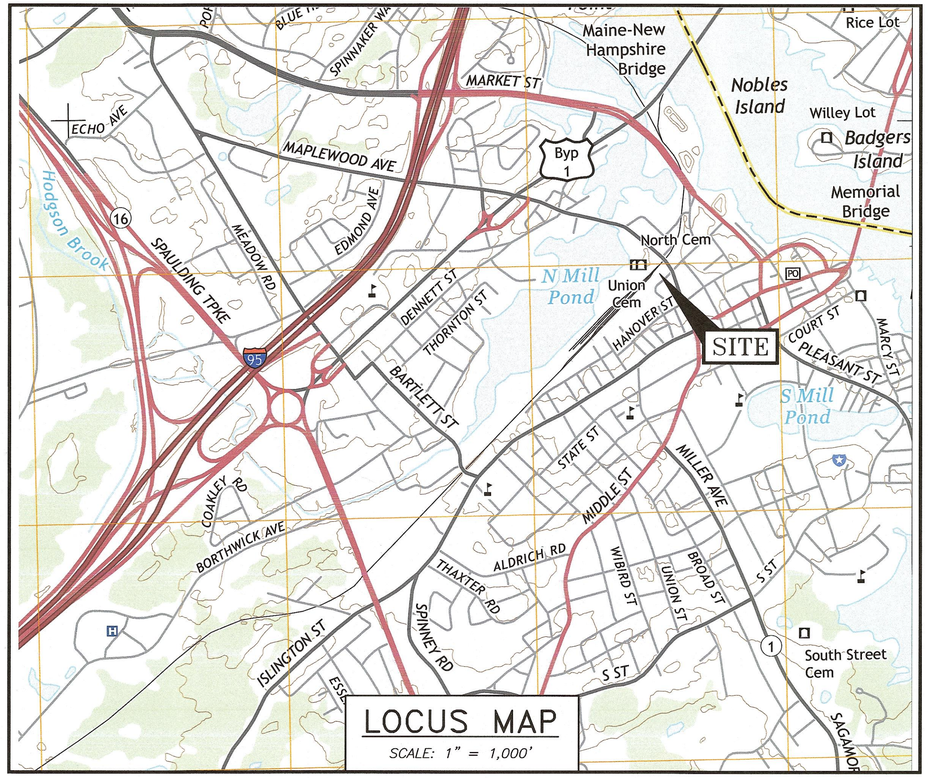
Map 10.5A21A
Character Districts and Civic Districts

Legend
- Downtown Overlay District
- Historic District

Character Districts
- CD5 Character District 5
- CD4 Character District 4
- CD4-W Character District 4-W
- CD4-L1 Character District 4-L1
- CD4-L2 Character District 4-L2

Civic District
- Civic District

Municipal District
- Municipal District



LOCUS MAP
SCALE: 1" = 1,000'

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

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1-888-344-7233
CALL TOLL FREE

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

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 _____

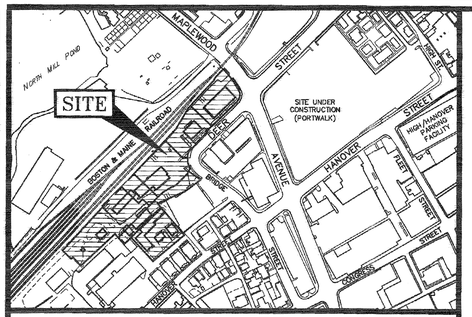
SITE PERMIT PLANS
SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
FORMERLY 161 DEER STREET
PORTSMOUTH, N.H.

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

PLAN SET SUBMITTAL DATE: 17 NOVEMBER 2022

C/H
L-CHIP
ROA338649

2016 SEP -9 PM 3:48 040324



LOCATION MAP SCALE: 1" = 300'

ABUTTERS LIST

(125/1) N/F HANOVER APARTMENTS, LLC
c/o CATHARTES PRIVATE INVESTMENTS
11 BEACON STREET, SUITE 1120
BOSTON, MA 02108
5387/2814

(125/16) N/F JOHN W. GRAY REVOCABLE TRUST
BRADFORD A. GRAY REVOCABLE TRUST
7 PATRIOTS WAY
RYE, N.H. 03870
3895/643

(138/61) N/F PETER HAPPNY
66 ROCK STREET
PORTSMOUTH, N.H. 03801
2302/1079
D-31107

(125/2) N/F THIRTY MAPLEWOOD, LLC
117 BOW STREET
PORTSMOUTH, N.H. 03801
5099/2424

(125/21) N/F NORTH END
MASTER DEVELOPMENT L.P.
501 DANFORTH STREET
PORTLAND, ME 04102
5569/2553

(138/62) N/F DEER STREET ASSOCIATES
P.O. BOX 100
YORK HARBOR, ME. 03911
5518/2744

(125/3) N/F EMERSON HOVEY
POST 168 VFW
238 DEER STREET
PORTSMOUTH, N.H. 03801

(126/29) N/F GOWEN G. EDWARD, Jr.
REVOCABLE LIVING TRUST
GOWEN G. EDWARD, Jr., TRUSTEE
355 GREAT BAY ROAD
GREENLAND, N.H. 03840
4327/2531

(138/63) N/F KEARSARGE MILL
CONDOMINIUM ASSOCIATION
191 HILL STREET
PORTSMOUTH, N.H. 03801
2596/1585
D-14855

(125/11) N/F 136 HILL STREET
CONDOMINIUM ASSOCIATION
136 HILL STREET
PORTSMOUTH, N.H. 03801
4823/873
C-34853

(138/60) N/F CITY OF PORTSMOUTH
P.O. BOX 628
PORTSMOUTH, N.H. 03802

(138/64) N/F HANOVER PLACE
CONDOMINIUM ASSOCIATION
349 HANOVER STREET
PORTSMOUTH, N.H. 03801
4807/16
D-33379

(125/14) N/F HILL HANOVER GROUP, LLC
c/o JPK PROPERTIES, LLC
1 NEW HAMPSHIRE AVENUE, #125
PORTSMOUTH, N.H. 03801
4356/10

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	486.00'	104.20'	104.00'	S35°55'41"E	12°17'05"
C2	37.00'	48.72'	45.28'	S07°56'11"W	75°26'43"
C3	155.00'	56.30'	55.99'	N53°24'20"E	20°48'45"
C4	86.00'	71.12'	69.11'	S04°30'52"E	47°22'49"
C5	86.00'	45.63'	45.10'	S13°00'13"E	30°24'08"
C6	86.00'	25.48'	25.39'	S10°41'12"W	16°58'41"

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	N31°17'20"E	39.07'
L2	N31°26'32"E	17.92'
L3	N43°07'25"E	47.08'
L4	S46°46'25"E	7.89'
L5	S40°13'28"E	24.63'
L6	S47°00'33"W	38.74'
L7	N42°48'33"W	54.65'
L8	N43°03'00"W	46.10'
L9	S46°48'04"W	10.00'
L10	N48°09'30"W	48.26'
L11	N43°06'02"E	61.50'
L12	N30°51'54"E	56.64'
L13	N43°06'02"E	22.52'
L14	S46°53'58"E	38.87
L15	N43°06'02"E	49.82'
L16	N63°48'43"E	28.42'
L17	N45°20'34"E	64.73'
L18	N28°12'12"E	10.82'
L19	N28°12'12"E	10.70
L20	N55°38'43"W	57.54'
L21	N45°47'00"E	31.08'
L22	S87°48'09"E	20.15'
L23	N45°47'00"E	34.67'
L24	S40°13'28"E	20.31'
L25	S40°13'28"E	4.32'
L26	N39°12'52"E	42.20'
L27	S43°06'02"W	48.48'

PLAN REFERENCES:

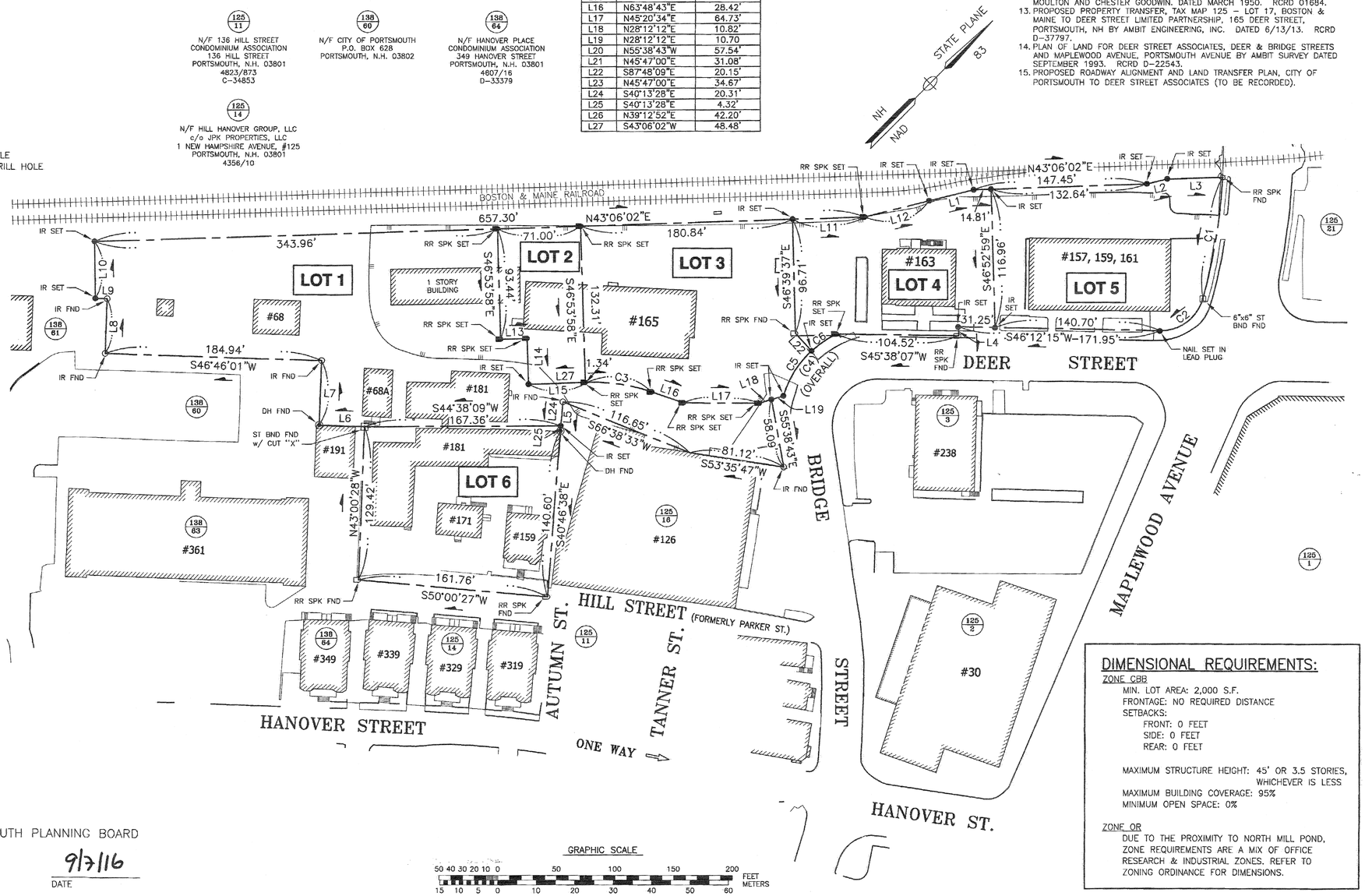
1. PLAN OF LAND FOR NETTY AND GERALD TAUBE, AUGUST 2004 BY MILLETTE, SPRAGUE & COLWELL. RCRD D-32051.
2. CONDOMINIUM SITE PLAN FOR HANOVER PLACE CONDOMINIUM, 349 HANOVER STREET, PORTSMOUTH NH. BY MILLETTE, SPRAGUE AND COLWELL, INC. DATED 12/20/05. RCRD D-33379.
3. KEARSARGE MILL CONDOMINIUMS, HANOVER STREET, PORTSMOUTH, NH. BY KIMBALL CHASE DATED 2/16/17. RCRD D-34716.
4. BOUNDARY LINE AGREEMENT PLAN, KEARSARGE MILL CONDOMINIUMS, PORTSMOUTH, NH. BY JONES & BEACH ENGINEERS, INC. DATED 4/10/97. RCRD D-25421.
5. KEARSARGE MILLS CONDOMINIUM PLANS FOR MAYFAIR REALTY TRUST, CAMBRIDGE PORT TRUST, PORTSMOUTH, NH. BY KIMBALL CHASE. RCRD D-14855.
6. EASEMENT PLAN, TAX MAP 164 – LOT 4, BOSTON & MAINE CORPORATION TO THE CITY OF PORTSMOUTH OFF BREWSTER STREET, PORTSMOUTH, NH. BY AMBIT ENGINEERING, INC. DATED 4/19/03. RCRD D-37720.
7. SUBDIVISION OF LAND OF PORTSMOUTH MFG. AND POWER CO., PORTSMOUTH, NH BY JOHN W. DURGIN DATED NOV. 1925. RCRD #0368.
8. LAND IN PORTSMOUTH, NH PORTS. MFG. & POWER CO. TO HAROLD S. WOODS. BY JOHN W. DURGIN DATED NOV. 1926. RCRD #00389.
9. TAX MAP 125 LOT 14 & MAP 138 LOT 62, PROPERTY OF HILL HANOVER GROUP, LLC, HILL, HANOVER & AUTUMN STREETS, PORTSMOUTH , NH. BY MSC, INC. DATED 10/10/2008. NOT RECORDED.
10. PLAN OF LAND IN PORTSMOUTH, NH, PORTSMOUTH MFG. & POWER CO. TO FRANK E. BROOKS BY JOHN W. DURGIN DATED FEB. 1918. RCRD #078.
11. CONDOMINIUM SITE PLAN, 136 HILL STREET CONDOMINIUM, PORTSMOUTH, NH, TAX MAP 125 LOT 11. BY ANDOVER CONSULTANTS, INC. DATED JULY 12, 2007. RCRD C-34853.
12. LAND IN PORTSMOUTH, NH, BOSTON & MAINE RAILROAD TO ROGER E. MOULTON AND CHESTER GOODWIN. DATED MARCH 1950. RCRD 01684.
13. PROPOSED PROPERTY TRANSFER, TAX MAP 125 – LOT 17, BOSTON & MAINE TO DEER STREET LIMITED PARTNERSHIP, 165 DEER STREET, PORTSMOUTH, NH BY AMBIT ENGINEERING, INC. DATED 6/13/13. RCRD D-37797.
14. PLAN OF LAND FOR DEER STREET ASSOCIATES, DEER & BRIDGE STREETS AND MAPLEWOOD AVENUE, PORTSMOUTH AVENUE BY AMBIT SURVEY DATED SEPTEMBER 1993. RCRD D-22543.
15. PROPOSED ROADWAY ALIGNMENT AND LAND TRANSFER PLAN, CITY OF PORTSMOUTH TO DEER STREET ASSOCIATES (TO BE RECORDED).

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
(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
⊡ BND w/DH	BOUND WITH DRILL HOLE
⊡ ST BND w/DH	STONE BOUND WITH DRILL HOLE
⊐RR SPK	RAILROAD SPIKE
138-62-1	ASSESSOR'S MAP 138 LOT 62-1

ASSESSOR'S MAP/LOT NUMBER ASSIGNMENT

LOT 1	138-62-1
LOT 2	125-17-1
LOT 3	125-17
LOT 4	125-17-2
LOT 5	125-17-3
LOT 6	138-62



GRAPHIC SCALE
50 40 30 20 10 0 50 100 150 200 FEET
15 10 5 0 10 20 30 40 50 60 METERS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE 9/7/16

DIMENSIONAL REQUIREMENTS:

ZONE CBB
- MIN. LOT AREA: 2,000 S.F.
- FRONTAGE: NO REQUIRED DISTANCE
- SETBACKS:
  - FRONT: 0 FEET
  - SIDE: 0 FEET
  - REAR: 0 FEET
- MAXIMUM STRUCTURE HEIGHT: 45' OR 3.5 STORIES, WHICHEVER IS LESS
- MAXIMUM BUILDING COVERAGE: 95%
- MINIMUM OPEN SPACE: 0%

ZONE OR
- DUE TO THE PROXIMITY TO NORTH MILL POND, ZONE REQUIREMENTS ARE A MIX OF OFFICE RESEARCH & INDUSTRIAL ZONES. REFER TO ZONING ORDINANCE FOR DIMENSIONS.

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

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAPS AS MAP 125, LOT 17 & MAP 138, LOT 62.

2) OWNERS OF RECORD:
MAP 125, LOT 17
DEER STREET ASSOCIATES
P.O. BOX 100
YORK HARBOR, ME 03911
3395/2669, 5534/2077, 5453/138

MAP 138, LOT 62
DEER STREET ASSOCIATES
P.O. BOX 100
YORK HARBOR, ME 03911
5518/2744

3) PARCELS ARE NOT IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0259E. MAY 17, 2005.

4) EXISTING LOT AREA:

LOT 17	LOT 62
109,987 S.F.	42,604 S.F.
2.5250 ACRES	0.9781 AC

PROPOSED LOT AREAS:

LOT 1	LOT 2	LOT 3
54,017 S.F.	8,519 S.F.	26,503 S.F.
1.2401 AC.	0.1956 AC.	0.6084 AC.
LOT 4	**LOT 5**	**LOT 6**
18,347 S.F.	22,667 S.F.	22,538 S.F.
0.4212 AC.	0.5204 AC.	0.5174 AC.

5) ZONING DISTRICTS:
CENTRAL BUSINESS B (CBB), HISTORIC OVERLAY DISTRICT (PARTIAL), & OFFICE RESEARCH (OR)

6) THE PURPOSE OF THIS PLAN IS TO SHOW THE CONSOLIDATION OF TAX MAP 125 LOT 17 AND TAX MAP 138 LOT 62 AND THE SUBDIVISION OF THAT LOT INTO 6 LOTS.

7) LOT 2 TO BE A NON-BUILDABLE LOT UNTIL SUCH TIME AS FRONTAGE IS CREATED OR LOT 2 IS MERGED WITH AN ADJACENT PARCEL.

8) THE EXISTING SITE IMPROVEMENTS SHALL BE ALLOWED TO REMAIN. AT SUCH TIME AS THE LOTS ARE NOT UNDER COMMON OWNERSHIP, EASEMENTS SHALL BE CREATED TO ALLOW THE BUILDINGS ACROSS BOUNDARY LINES TO REMAIN OR THE BUILDINGS SHALL BE REMOVED. ANY EASEMENTS CREATED SHALL BE REVIEWED AND APPROVED BY THE CITY OF PORTSMOUTH.

9) FOR SITE EASEMENT RESTRICTIONS AND LOCATIONS SEE "PROPERTY EASEMENTS" PLAN DATED 12/15/14 BY AMBIT ENGINEERING.

NO.	DESCRIPTION	DATE
4	TAX MAP/LOT NUMBERS	5/18/16
3	ISSUED FOR RECORDING; MONUMENTS	3/24/16
2	REVISED LOTS 1, 2, AND 3	8/6/15
1	ISSUED FOR APPROVAL	7/31/15
0	ISSUED FOR COMMENT	7/28/15

REVISIONS

CONSOLIDATION & SUBDIVISION PLAN
TAX MAP 125, LOT 17
&
TAX MAP 138, LOT 62

DEER STREET ASSOCIATES

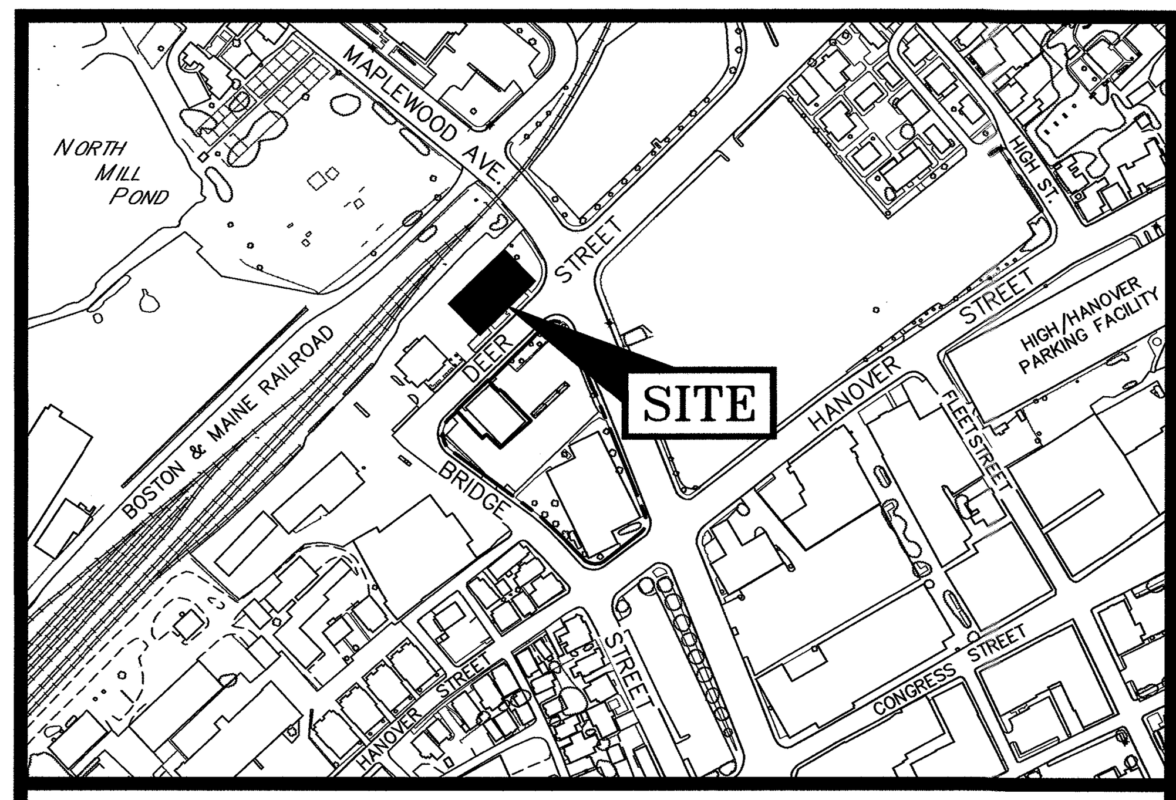
BRIDGE, DEER, & HILL STREETS
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 50' JULY 2015

FB 302, PG 1 2271.01

J:\JOBS2\JN2200s\JN2270s\JN2271\2015 Subdivision\Plans & Specs\Site\2271Subdivision Papersposs.DWG, CONSOLD_SUBDIV

D-39699



LOCATION MAP SCALE: 1" = 300'

LEGEND:

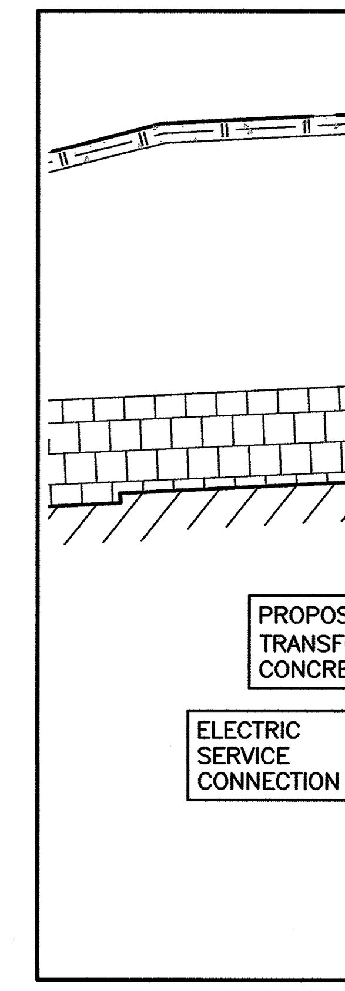
N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
(11/21)	MAP 11/LOT 21
IR FND	IRON ROD FOUND
IP FND	IRON PIPE FOUND
IR SET	IRON ROD SET
DH FND	DRILL HOLE FOUND
DH SET	DRILL HOLE SET
NHHB	NHDOT BOUND FOUND
TB	TOWN BOUND
BND w/DH	BOUND WITH DRILL HOLE
ST BND w/DH	STONE BOUND WITH DRILL HOLE

PLAN REFERENCES:

1) CONSOLIDATION & SUBDIVISION PLAN TAX MAP 125, LOT 17 & TAX MAP 138, LOT 62 DEER STREET ASSOCIATES, BRIDGE, DEER, AND HILL STREETS. PREPARED BY AMBIT ENGINEERING, INC. DATED JULY 2015. SCALE: 1"=50'. RCRD D-39699.

2) PLAN OF RESTRICTIVE COVENANT TAX MAP 164, LOT 4 BOSTON AND MAINE CORPORATION TO DEER STREET ASSOCIATES. PREPARED BY AMBIT ENGINEERING, INC. DATED DECEMBER 2016. SCALE: 1"=50'.

3) EASEMENT PLAN TAX MAP 125- LOT 17, FOR FOUNDRY PLACE, LLC. PREPARED BY AMBIT ENGINEERING, INC. DATED NOVEMBER 2018. LATEST REVISION #3 DATED 4/16/20. SCALE: 1" = 20'.



TRANSFORMER & SWITCH BOX ON CONCRETE PADS, TYP.
PROPOSED EVERSOURCE EASEMENT (SHADED)
PROPOSED TRANSFORMER/ CONCRETE PAD
EXISTING EVERSOURCE EASEMENT REF. D-42091 (DASHED LINE)
ELECTRIC SERVICE CONNECTION
PRIMARY & SECONDARY FEED FOR FUTURE CONNECTIONS

EVERSOURCE EASEMENT REVISION

GRAPHIC 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) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 125 AS LOTS 17-2 AND 17-3.

2) OWNER OF RECORD:
EIGHTKPH, LLC
233 VAUGHAN STREET
UNIT 301
PORTSMOUTH, NH 03801
6348/2213

3) PARCEL IS LOCATED IN CHARACTER DISTRICT 5 ZONE; DOWNTOWN OVERLAY, NORTH END INCENTIVE OVERLAY & HISTORIC DISTRICTS.

4) DIMENSIONAL REQUIREMENTS (ALSO SEE ORDINANCE):
CHARACTER DISTRICT 5:

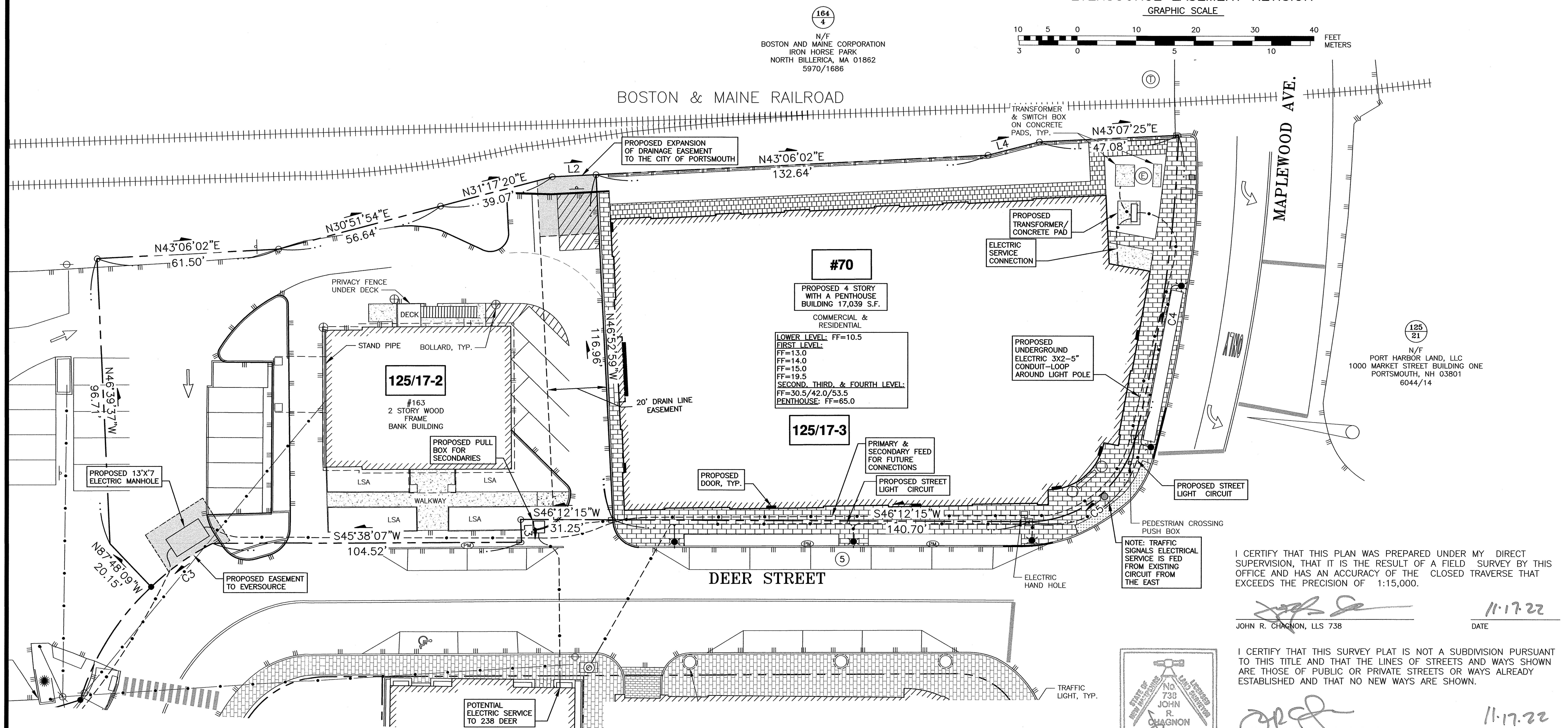
MIN. LOT AREA:	NO REQUIREMENT
FRONTAGE:	NO REQUIREMENT
SETBACKS:	
FRONT (MAX.)	5 FEET (PRIMARY)
FRONT (MAX.)	5 FEET (SECONDARY)
SIDE	NO REQUIREMENT
REAR	GREATER OF 5 FEET FROM REAR LOT LINE OR 10 FEET FROM CENTER OF ALLEY
MAXIMUM STRUCTURE HEIGHT:	SEE CITY PLAN
MAXIMUM STRUCTURE COVERAGE:	90%
MAXIMUM BUILDING FOOTPRINT:	20,000 S.F.
MINIMUM OPEN SPACE:	5%
MINIMUM FRONT LOT LINE BUILDOUT:	80%

5) LOT AREAS: 125/17-2
18,347 S.F.
0.4212 ACRES

125/17-3
22,667 S.F.
0.5204 ACRES

6) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED EASEMENTS ON TAX MAP 125, LOTS 17-2 AND 17-3 IN PORTSMOUTH, NH.



164/4
N/F
BOSTON AND MAINE CORPORATION
IRON HORSE PARK
NORTH BILLERICA, MA 01862
5970/1686
BOSTON & MAINE RAILROAD
MAPLEWOOD AVE.
PROPOSED EXPANSION OF DRAINAGE EASEMENT TO THE CITY OF PORTSMOUTH
N43°06'02"E 132.64'
N43°07'25"E 47.08'
N31°17'20"E 39.07'
N30°51'54"E 56.64'
N43°06'02"E 61.50'
N46°39'37"W 96.71'
N46°52'59"W 116.96'
N87°48'09"W 20.15'
S45°38'07"W 104.52'
S46°12'15"W 31.25'
S46°12'15"W 140.70'
TRANSFORMER & SWITCH BOX ON CONCRETE PADS, TYP.
PROPOSED TRANSFORMER/ CONCRETE PAD
ELECTRIC SERVICE CONNECTION
#70
PROPOSED 4 STORY WITH A PENTHOUSE BUILDING 17,039 S.F.
COMMERCIAL & RESIDENTIAL
LOWER LEVEL: FF=10.5
FIRST LEVEL:
FF=13.0
FF=14.0
FF=15.0
FF=19.5
SECOND, THIRD, & FOURTH LEVEL:
FF=30.5/42.0/53.5
PENTHOUSE: FF=65.0
125/17-3
PROPOSED UNDERGROUND ELECTRIC 3X2-5" CONDUIT-LOOP AROUND LIGHT POLE
125/21
N/F
PORT HARBOR LAND, LLC
1000 MARKET STREET BUILDING ONE
PORTSMOUTH, NH 03801
6044/14
PRIVACY FENCE UNDER DECK
DECK
STAND PIPE
BOLLARD, TYP.
125/17-2
#163
2 STORY WOOD FRAME BANK BUILDING
20' DRAIN LINE EASEMENT
PROPOSED PULL BOX FOR SECONDARIES
PRIMARY & SECONDARY FEED FOR FUTURE CONNECTIONS
PROPOSED DOOR, TYP.
PROPOSED STREET LIGHT CIRCUIT
PROPOSED 13'X7' ELECTRIC MANHOLE
LSA
WALKWAY
PEDESTRIAN CROSSING PUSH BOX
NOTE: TRAFFIC SIGNALS ELECTRICAL SERVICE IS FED FROM EXISTING CIRCUIT FROM THE EAST
PROPOSED EASEMENT TO EVERSOURCE
DEER STREET
ELECTRIC HAND HOLE
POTENTIAL ELECTRIC SERVICE TO 238 DEER
TRAFFIC LIGHT, TYP.
L2
L3
L4
C3
C4
C5

LENGTH TABLE-LOT 17-2

LINE	BEARING	DISTANCE
L2	N43°06'02"E	14.81'
L3	S46°46'25"E	7.69'

CURVE TABLE-LOT 17-2

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C3	86.00'	25.48'	25.39'	S10°41'12"W	16°58'41"

LENGTH TABLE-LOT 17-3

LINE	BEARING	DISTANCE
L4	N31°26'32"E	17.92'

CURVE TABLE-LOT 17-3

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C4	486.00'	104.20'	104.00'	S35°55'41"E	12°17'05"
C5	37.00'	48.72'	45.28'	S07°56'11"W	75°26'43"

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

JOHN R. CHAGNON, LLS 738 — DATE 11·17·22

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

JOHN R. CHAGNON, LLS 738 — DATE 11·17·22

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

GRAPHIC SCALE

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	11/17/22

REVISIONS

ELECTRICAL UTILITY & DRAINAGE EASEMENT PLAN
TAX MAP 125
LOTS 17-2 & 17-3

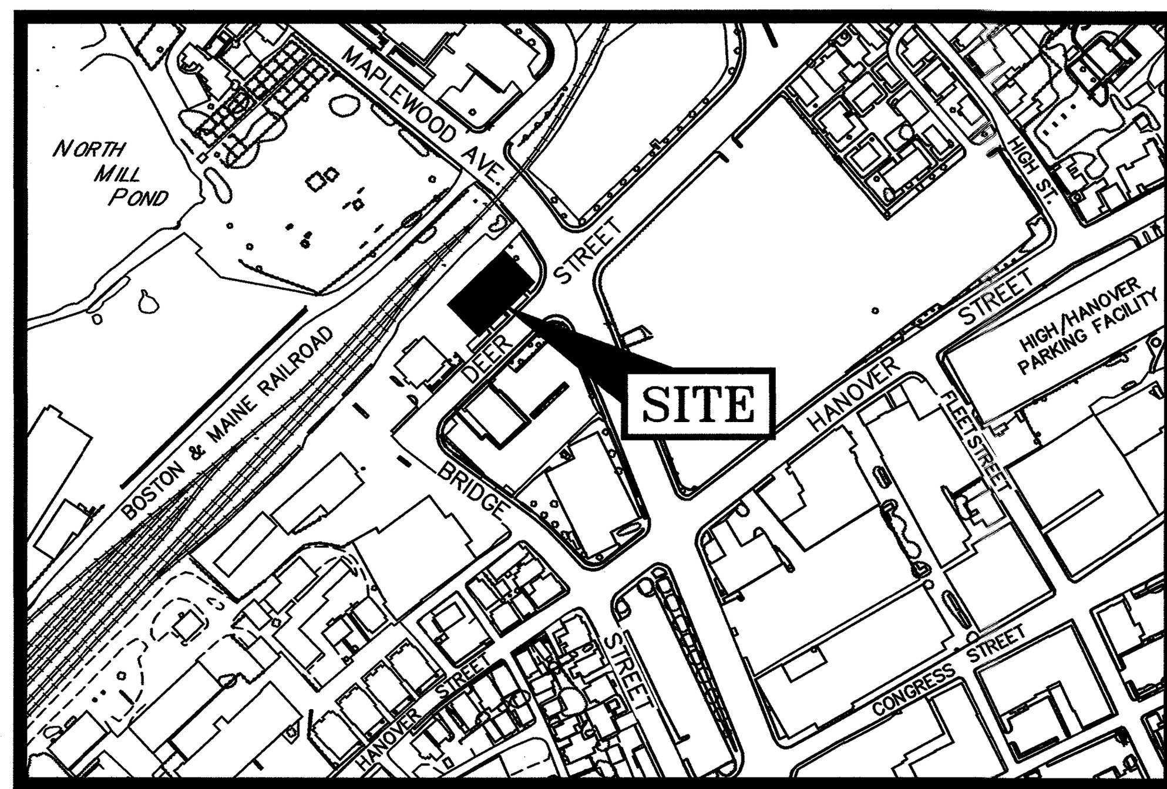
OWNER:

EIGHTKPH, LLC
TO BENEFIT: EVERSOURCE AND THE CITY OF PORTSMOUTH

PROPERTY LOCATED AT:
70 MAPLEWOOD AVENUE & 163 DEER STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1"=20' NOVEMBER 2022

FB 265 PG 18 2271.04



LOCATION MAP SCALE: 1" = 300'

LEGEND (SEE COVER SHEET)

DRAIN STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE
CB 3522	10.12	–	–
		7.52±	12" RCP (NE)
CB 3523	9.52	–	–
		6.32	12" (NW)
DMH 3540	10.81	NA	18" RCP (NE) 36" (SW)
		1.56	48" RCP (NW)
DMH 3541	10.26	7.52± 7.52± 2.10	12" RCP (SW) 12" RCP (SE) 36" (S)
		1.96	36" (NE)
DMH 8159	15.96	12.36 11.81 8.78 5.06	12" RCP (NNE) 12" RCP (SSE) 18" CPP (ESE) 12" RCP (NW)
		4.96	18" RCP (SW)
DMH 8160	13.50	9.5 8.6 5.5	12" PVC (NNE) 12" RCP (NNW) 12" RCP (W)
		5.55	12" RCP (SE)
DMH 8161	13.20	9.75 5.72	12" RCP (WSW) 12" RCP (NW)
		5.68	12" RCP (ENE)
CB 8167	13.45	–	–
		8.95	12" RCP (SSE)
CB 8168	13.19	–	–
		9.83±	12" RCP (ENE)
CB 12480	15.46	–	–
		11.11	18" CPP (WNW)

SEWER STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE
1499	15.80	–1.80	48" BRICK BOX
		–1.80	48" BRICK BOX
1501	13.58	–0.30	24" (NNE)
		–.032	24" (SE)
2305	10.90	–1.17	48" VC

PLAN REFERENCES:

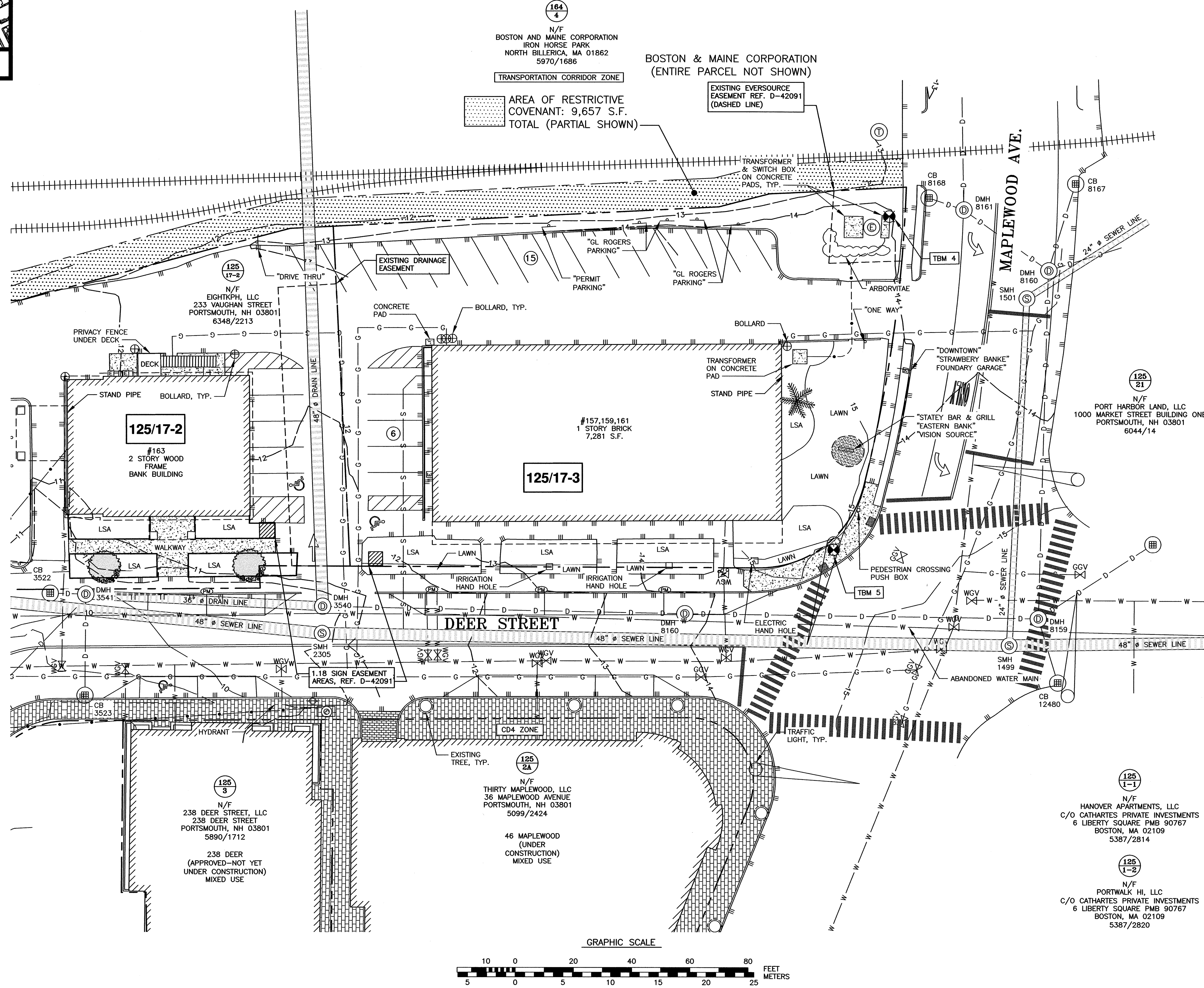
1) CONSOLIDATION & SUBDIVISION PLAN TAX MAP 125, LOT 17 & TAX MAP 138, LOT 62 DEER STREET ASSOCIATES, BRIDGE, DEER, AND HILL STREETS. PREPARED BY AMBIT ENGINEERING, INC. DATED JULY 2015. SCALE: 1"=50'. RCRD D-39699.

2) PLAN OF RESTRICTIVE COVENANT TAX MAP 164, LOT 4 BOSTON AND MAINE CORPORATION TO DEER STREET ASSOCIATES. PREPARED BY AMBIT ENGINEERING, INC. DATED DECEMBER 2016. SCALE: 1"=50'.

3) EASEMENT PLAN TAX MAP 125– LOT 17, FOR FOUNDRY PLACE, LLC. PREPARED BY AMBIT ENGINEERING, INC. DATED NOVEMBER 2018. LATEST REVISION #3 DATED 4/16/20. SCALE: 1" = 20'.

TBM 4
CHISELED SQUARE IN NE CORNER OF TRANSFORMER PAD
EL.=14.77

TBM 5
CHISELED SQUARE IN NE QUADRANT OF MAST BASE
EL.=15.20



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 ASSESSORS MAP 125 AS LOT 17–3.

2) OWNER OF RECORD:
EIGHTKPH, LLC
233 VAUGHAN STREET
UNIT 301
PORTSMOUTH, NH 03801
6348/2213

3) PARCEL IS LOCATED IN CHARACTER DISTRICT 5 ZONE; DOWNTOWN OVERLAY, NORTH END INCENTIVE OVERLAY & HISTORIC DISTRICTS.

4) DIMENSIONAL REQUIREMENTS (ALSO SEE ORDINANCE):
CHARACTER DISTRICT 5:

MIN. LOT AREA:	NO REQUIREMENT
FRONTAGE:	NO REQUIREMENT
SETBACKS:	
FRONT (MAX.)	5 FEET (PRIMARY)
FRONT (MAX.)	5 FEET (SECONDARY)
SIDE	NO REQUIREMENT
REAR	GREATER OF 5 FEET FROM REAR LOT LINE OR 10 FEET FROM CENTER OF ALLEY
MAXIMUM STRUCTURE HEIGHT:	SEE CITY PLAN
MAXIMUM STRUCTURE COVERAGE:	90%
MAXIMUM BUILDING FOOTPRINT:	20,000 S.F.
MINIMUM OPEN SPACE:	5%
MINIMUM FRONT LOT LINE BUILDOUT:	80%

5) LOT AREA: 22,667 S.F.
0.5204 ACRES

6) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON TAX MAP 125, LOT 17–3 IN PORTSMOUTH, NH.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

9) PARCEL MAY BE SUBJECT TO TEMPORARY CONSTRUCTION EASEMENTS AS SHOWN ON RCRD D–42091 SHEET 2.

10) PARCEL IS SUBJECT TO AGREEMENT REGARDING RELOCATION OF UNDERGROUND FACILITIES 5751/1504.

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	STREET NUMBERS	11/17/22
1	SEWER CONNECTION	10/20/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

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

SCALE: 1" = 20' AUGUST 2022

EXISTING CONDITIONS PLAN

C1

FB 265 PG 18

2271.04

DEMOLITION NOTES

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

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

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

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

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

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

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

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

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

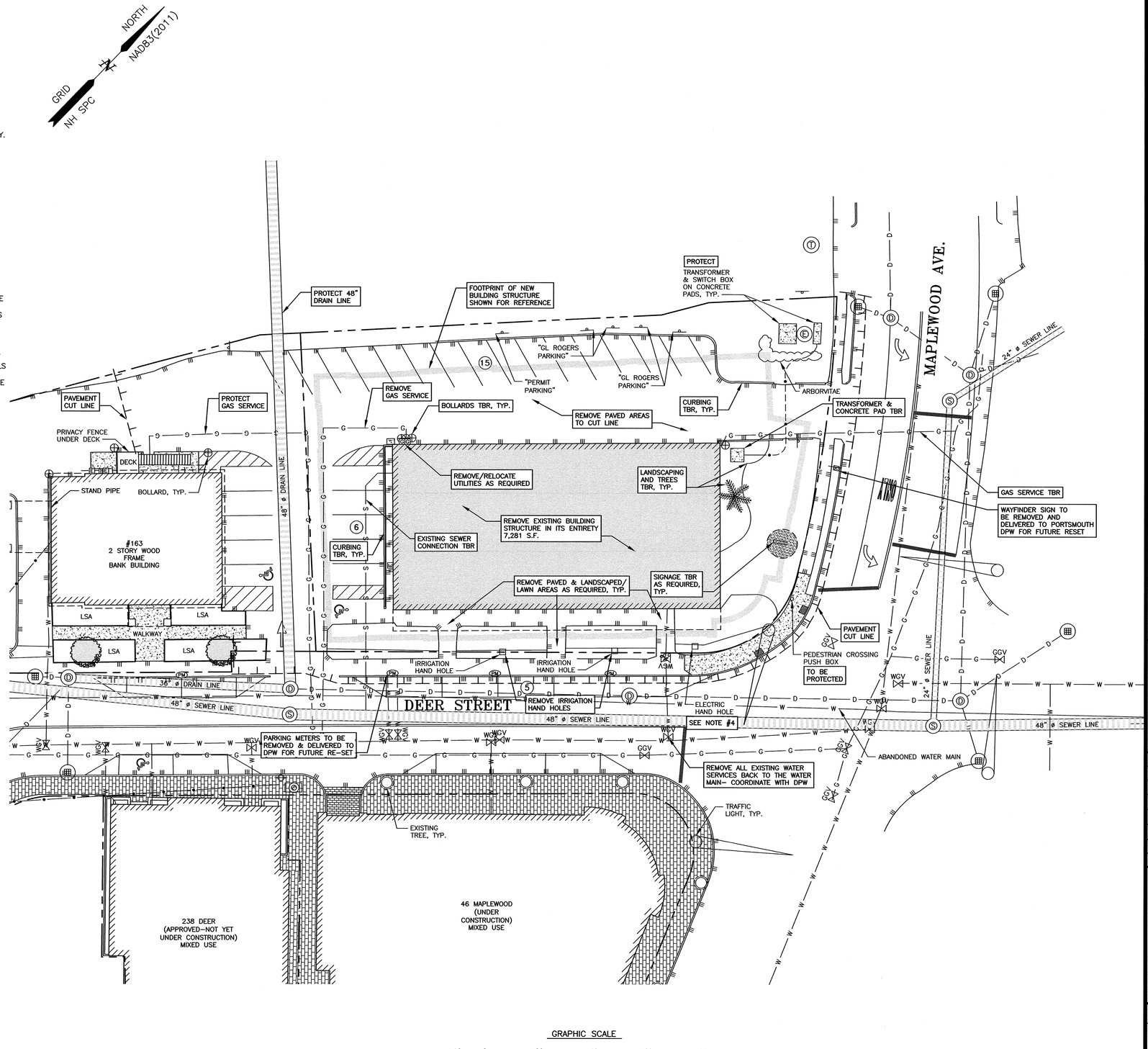
J) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

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

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

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

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



GRAPHIC SCALE

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

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) CITY STREET LIGHTING CIRCUIT TO BE REVIEWED PRIOR TO CONSTRUCTION AND REPLACEMENT POWER SOURCE IDENTIFIED.

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	WATER SERVICE REMOVAL	11/17/22
2	WATER SERVICE REMOVAL NOTE	10/31/22
1	SEWER CONNECTION	10/22/20
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

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

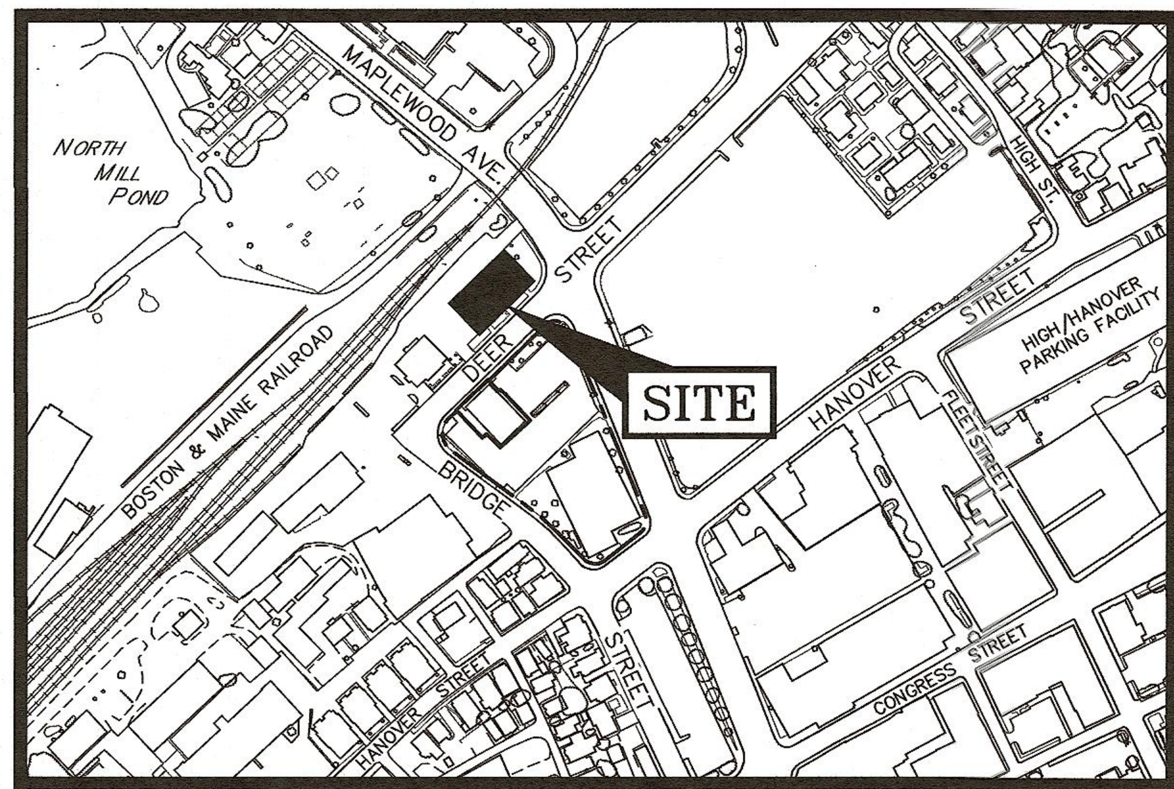
SCALE: 1" = 20' AUGUST 2022

DEMOLITION PLAN

C2

FB 265 PG 18

2271.04



LOCATION MAP SCALE: 1" = 300'

PLAN REFERENCES:

1) CONSOLIDATION & SUBDIVISION PLAN TAX MAP 125, LOT 17 & TAX MAP 138, LOT 62 DEER STREET ASSOCIATES, BRIDGE, DEER, AND HILL STREETS. PREPARED BY AMBIT ENGINEERING, INC. DATED JULY 2015. SCALE: 1"=50'. RCRD D-39699.

2) PLAN OF RESTRICTIVE COVENANT TAX MAP 164, LOT 4 BOSTON AND MAINE CORPORATION TO DEER STREET ASSOCIATES. PREPARED BY AMBIT ENGINEERING, INC. DATED DECEMBER 2016. SCALE: 1"=50'.

3) EASEMENT PLAN TAX MAP 125- LOT 17, FOR FOUNDRY PLACE, LLC. PREPARED BY AMBIT ENGINEERING, INC. DATED NOVEMBER 2018. LATEST REVISION #3 DATED 4/16/20. SCALE: 1" = 20'.

COMMUNITY SPACE:

TOTAL LOT AREA: 22,667 S.F.

PROPOSED COMMUNITY SPACE: 4,982 S.F. (22.0%)

12' WIDE PEDESTRIAN SIDEWALK: 1,730 S.F.

POCKET PARK: 3,252 S.F.

GFA	
Basement	17,189 SF
First Floor	17,189 SF
Second Floor	17,189 SF
Third Floor	17,189 SF
Fourth Floor	17,189 SF
Penthouse	7,344 SF

BUILDING DATA:

PROPOSED BUILDING:
17,093 S.F. FOOTPRINT

HEIGHT DATA:

LOT	REQUIRED HEIGHT & STORIES	PROPOSED HEIGHT & STORIES
17-3	4 STORIES AND PENTHOUSE	*62'

*SEE COMMUNITY SPACE

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	EXISTING IMPERVIOUS (S.F.)	PROPOSED IMPERVIOUS (S.F.)
MAIN STRUCTURE	7281	17093
SIDEWALKS	0	3,332
PAVEMENT	9465	0
CONCRETE	98	216
RETAINING WALL	0	193
CURBING	123	56
STEPS	0	6
TOTAL	16,967	20,896
LOT SIZE	22,667	22,667
% LOT COVERAGE	74.9%	92.2%

ZONING DEVELOPMENT STANDARD

CD5: CHARACTER DISTRICT 5

BUILDING PLACEMENT (PRINCIPAL):

	REQUIRED	157-161 DEER EXISTING	88 MAPLEWOOD PROPOSED
MAX. PRINCIPLE FRONT YARD:	5 FEET	15'	5.0'
MAX. SECONDARY FRONT YARD:	5 FEET	24'	5.7'*
MIN. SIDE YARD:	NR	29'	4.0'
MIN. REAR YARD:	5 FEET	42'	15.2'
FRONT LOT LINE BUILDOUT:	80% MIN	75%	83%
ABUT RAILROAD:	15'	42'	15.2'

BUILDING TYPES:

PERMITTED BUILDING TYPES: LIVE/WORK BUILDING*, SMALL COMMERCIAL BUILDING, LARGE COMMERCIAL BUILDING, MIXED-USE BUILDING*, FLEX SPACE BUILDING, COMMUNITY BUILDING PROPOSED: MIXED-USE BUILDING

*RESIDENTIAL USES ARE NOT PERMITTED ON THE GROUND FLOOR IN THE DOWNTOWN OVERLAY DISTRICT.

PERMITTED FACADE TYPES: STOOP, STEP, SHOPFRONT, OFFICEFRONT, RECESSED ENTRY, GALLERY, ARCADE

BUILDING FORM:

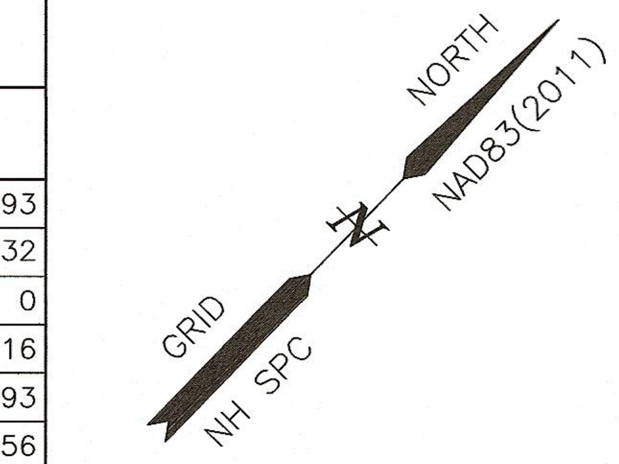
	REQUIRED	EXISTING	PROPOSED
MAX STRUCTURE HEIGHT:	62* FEET	<35'	62'
MAX. FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE:	36 INCHES	4"	18"
MIN. GROUND STORY HEIGHT:	12 FEET	–	17'
MIN. SECOND STORY HEIGHT:	10 FEET	–	11.5'
FACADE GLAZING (WINDOW/PERIMETER):	70% SHOP 20-50% OTHER	–	COMPLIES

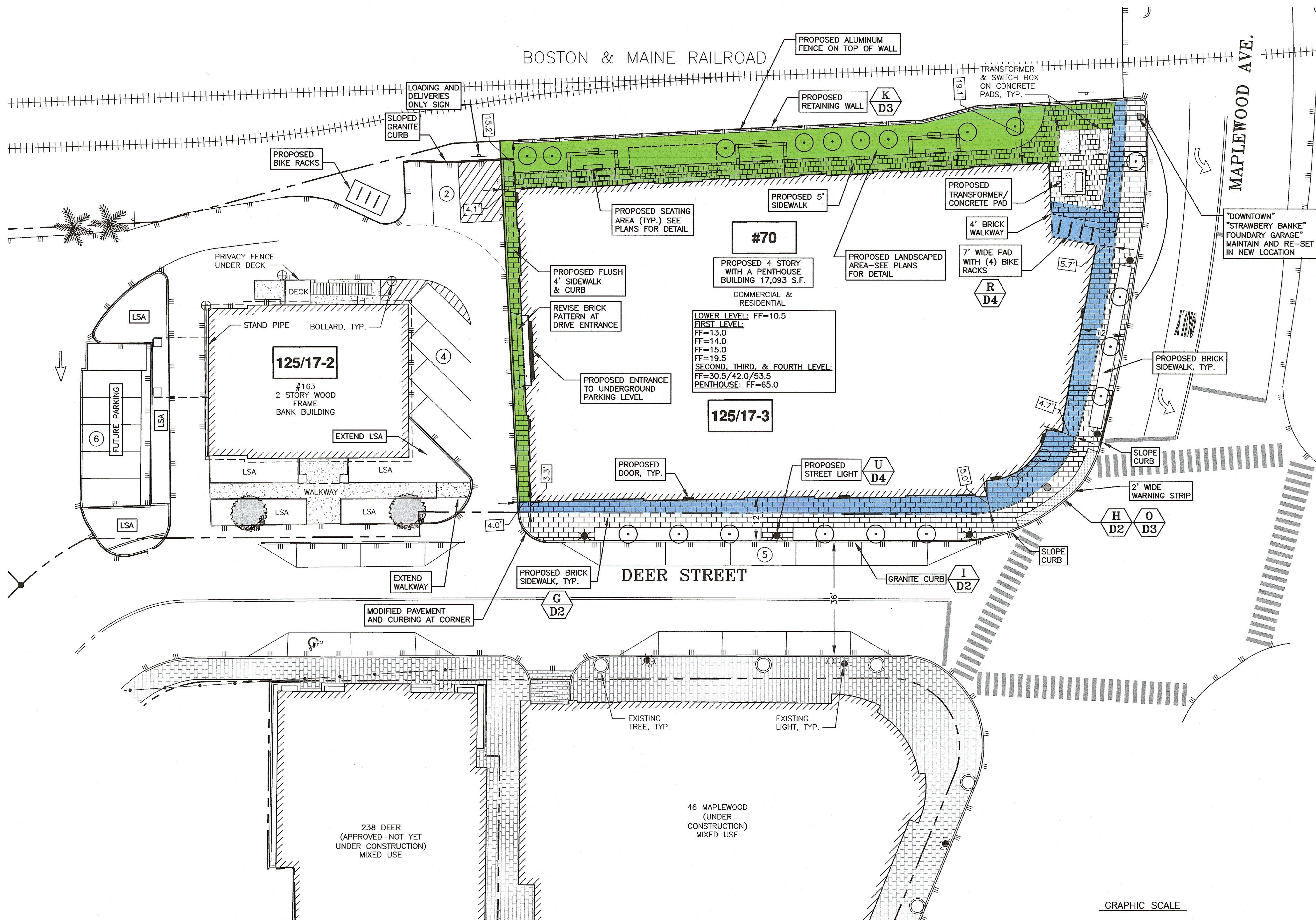
ROOF TYPE ALLOWED: FLAT, GABLE, HIP

LOT OCCUPATION:

	REQUIRED	EXISTING	PROPOSED
MAX BUILDING BLOCK:	225 FEET	120'	180'
MAX FACADE MOD. LENGTH:	100 FEET	120'	60'
MIN. ENTRANCE SPACING:	50 FEET	40'+/–	50'
MAX BUILDING COVERAGE:	90%	32%	75.4%
MAX BUILDING FOOTPRINT:	20,000 SF	7,281 S.F.	17,093 S.F.
MIN. LOT AREA:	NR	22,667 S.F.	22,667 S.F.
MIN. LOT AREA/DWELLING (LOT AREA/# OF UNITS):	NR	–	–
MIN. OPEN SPACE :	5%	68%	24.6%

*WITH COMMUNITY SPACE AND PENTHOUSE





THIS SITE SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE ON THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.

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) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 125 AS LOT 17-3.

2) OWNER OF RECORD:
EIGHTKPH, LLC
233 VAUGHAN STREET
UNIT 301
PORTSMOUTH, NH 03801
6348/2213

3) PARCEL IS LOCATED IN CHARACTER DISTRICT 5 ZONE; DOWNTOWN OVERLAY, NORTH END INCENTIVE OVERLAY & HISTORIC DISTRICTS.

4) DIMENSIONAL REQUIREMENTS: SEE ZONING TABLE.

5) LOT AREA: 22,667 S.F.
0.5204 ACRES

6) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED DEVELOPMENT ON TAX MAP 125, LOT 17-3 IN PORTSMOUTH, NH. PROPOSED USE: FIRST FLOOR COMMERCIAL AND 19 RESIDENTIAL UNITS ON UPPER FLOORS.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBS.

9) PARCEL IS BENEFITTED BY A RESTRICTIVE COVENANT (NO BUILD EASEMENT) ON THE ADJACENT BOSTON AND MAINE PROPERTY.

10) REQUIRED PARKING:
125-17-2
COMMERCIAL BANKING: 4,500 S.F.
4,500 S.F. X 1/400 S.F. =12 SPACES REQUIRED
12 SPACES PROVIDED
125-17-3
FIRST FLOOR: EXEMPT
19 DWELLING UNITS: 1.3/UNIT X 19 UNITS = 25
VISITOR: 19/5 X 1 = 4
29 SPACES REQUIRED
29 SPACES PROVIDED

11) ALL WORK IN THE CITY R.O.W. SHALL MEET CITY STANDARDS. CITY WILL NEED TO REVIEW AND APPROVE FINAL DETAILS AND CUT SHEETS. CONSTRUCTION INSPECTION WILL BE REQUIRED.

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
4	BUILDING FOOTPRINT	11/17/22
3	WAYFINDING SIGN	10/31/22
2	DRIVEWAY LOCATION, BUILDING FOOTPRINT	10/20/22
1	LOADING AREA, NOTE 11	9/6/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

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

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 733 JOHN R. CHAGNON

SCALE: 1" = 20' AUGUST 2022

SITE PLAN C3

FB 265 PG 18 2271.04

NOT FOR CONSTRUCTION

REVISIONS:

EIGHT KPH, LLC

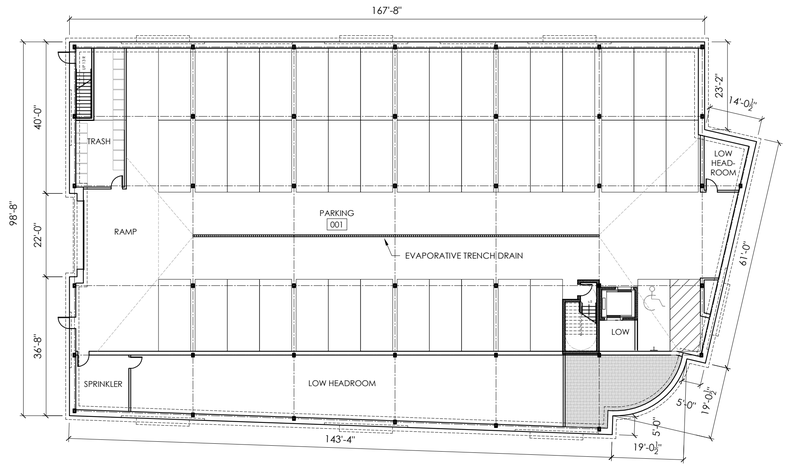
70 MAPLEWOOD AVENUE
PORTSMOUTH, NEW HAMPSHIRE

CJ ARCHITECTS
233 VAUGHAN STREET
SUITE 101
PORTSMOUTH, NH 03801
(603) 431-2808
www.cjarchitects.net

RENDERING

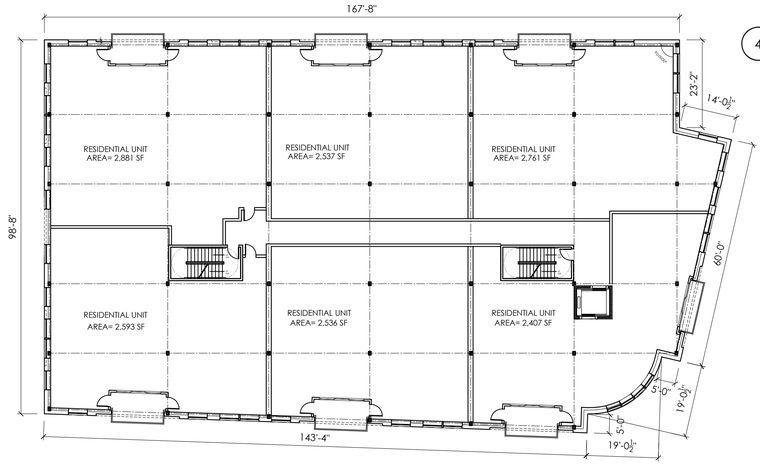
DATE:	11/17/2022
DRAWN BY:	SRT
APPROVED BY:	CJG
SCALE:	
JOB NUMBER:	2201

A1



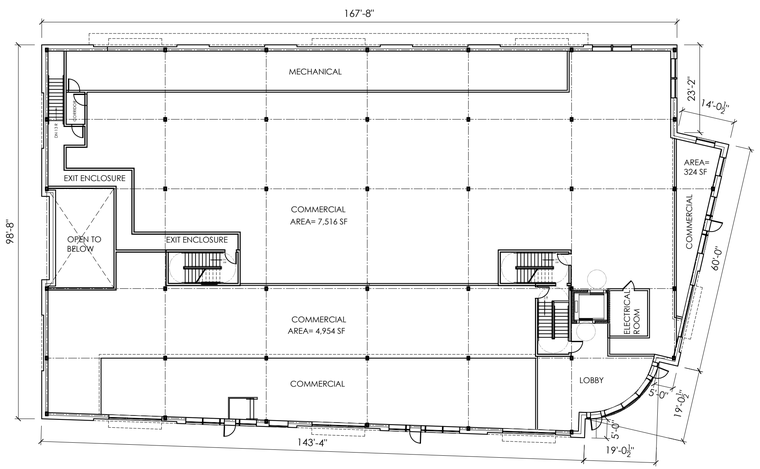
1 LOWER LEVEL PLAN

1"= 20'



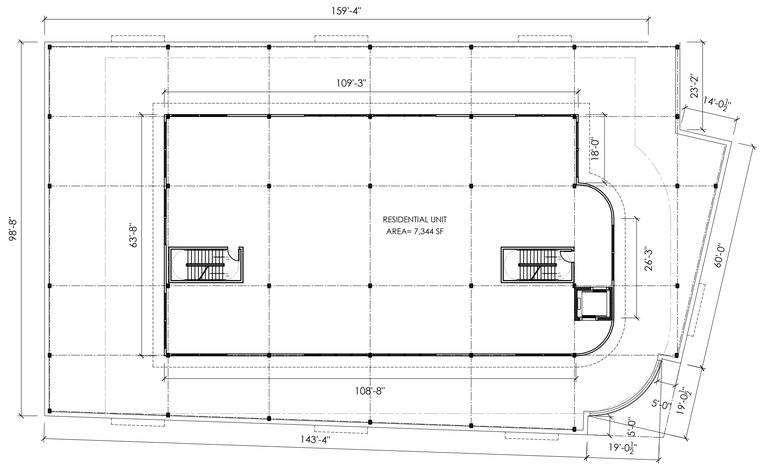
3 SECOND, THIRD, AND FOURTH LEVEL PLAN

1"= 20'



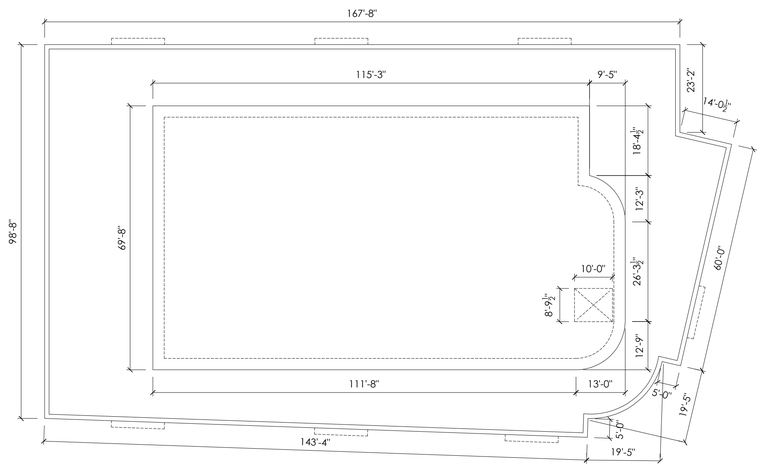
2 FIRST LEVEL PLAN

1"= 20'



4 PENTHOUSE LEVEL PLAN

1"= 20'



5 ROOF PLAN

1"= 20'

NOT FOR CONSTRUCTION

REVISIONS:

EIGHT KPH, LLC

70 MAPLEWOOD AVENUE

PORTSMOUTH, NEW HAMPSHIRE

CJ ARCHITECTS

233 VAUGHAN STREET
SUITE 101
PORTSMOUTH, NH 03801

(603) 431-2808
www.cjarchitects.net

PLANS

DATE:	11/17/2022
DRAWN BY:	SRT
APPROVED BY:	CJG
SCALE:	1" = 20'
JOB NUMBER:	2201

A2

1 DEER STREET ELEVATION
1" = 10'

2 MAPLEWOOD AVENUE ELEVATION
1" = 10'

3 RAILROAD ELEVATION
1" = 10'

4 SIDE ELEVATION
1" = 10'

NOT FOR CONSTRUCTION

REVISIONS:

EIGHT KPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, NEW HAMPSHIRE

CJ ARCHITECTS
233 VAUGHAN STREET
SUITE 101
PORTSMOUTH, NH 03801
(603) 431-2808
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ELEVATIONS

DATE:	11/17/2022
DRAWN BY:	SRT
APPROVED BY:	CJG
SCALE:	
JOB NUMBER:	2201

A3

BOSTON & MAINE RAILROAD

0 10 20 30 40 FT

PROPOSED RETAINING WALL

PROPOSED ALUMINUM FENCE ON TOP OF WALL

OUTLET CONTROL BASIN

TRANSFORMERS ON CONCRETE PADS (TYP.)

"DOWNTOWN" "STRAWBERY BANKE" FOUNDARY GARAGE

MAPLEWOOD AVE.

ONE WAY

8'-3"

7'-0"

4' BENCH (TYP.)

6' BENCH (TYP.)

10' BENCH (TYP.)

BOLLARD LIGHT (TYP.)

GRANITE PAVING (TYP.)

12" W. CRUSHED STONE (TYP.)

5' BRICK SIDEWALK

NATIVE GROUNDCOVER ON R-TANK SYSTEM

3' W. ARCHITECTURAL AWNING (CONTINUOUS)

(4) BIKE RACKS ON CONCRETE PAD (SEE CIVIL DOCUMENTS)

4' WIDE x 50'+/- LENGTH CONTINUOUS TREE GRATE

COLUMNAR TREE W/ TREE GUARD

PLANTED URNS TO RECEIVE DRIP WATER FROM BALCONIES (TYP.)

PROPOSED 4 STORY WITH A PENTHOUSE BUILDING 17,093 S.F.

125/17-3

PROPOSED DOOR (TYP.)

PROPOSED DOOR (TYP.)

PROPOSED BRICK SIDEWALK (TYP.)

COLUMNAR TREE W/ TREE GUARD

ADA TIP-DOWN

BACKLESS BENCH

TRAFFIC POLE

4'-0"

10'-0"

51'-9"

8" SPACE BETWEEN GRATE AND CURB

CONTINUOUS GRATE W/ 3 TREES (TYP.)

STREET LAMPS (TYP.)

DEER STREET

THIS SHEET IS SCALED FOR 22x34 PAPER, DO NOT ENLARGE OR REDUCE.

terra firma
landscape architecture
163 a court street | portsmouth, nh 03801
office: 603.430.8588 | terrence@terrafirmalandarch.com

No.	Date	Issue Notes
D	11/21/2022	UPDATED ARCH
C	11/13/2022	ADD. TREE + FENCE ADJUSTMENT
B	10/20/2022	TAC SUBMISSION
A	8/28/2022	ENTRY + DETAIL UPDATES

Date 8/23/2022
Revision Revision
Project ID 8 KPH
Drawing Code Drawing Code
CAD File 88MAPLEWOOD
Plot Date 00/00/00

Designed By TP
Drawn By TC
Checked By TP
Reviewed By TP
Submitted By TP
Project Manager

Design Firm terra firma landscape architecture
163 a Court Street
Portsmouth, NH

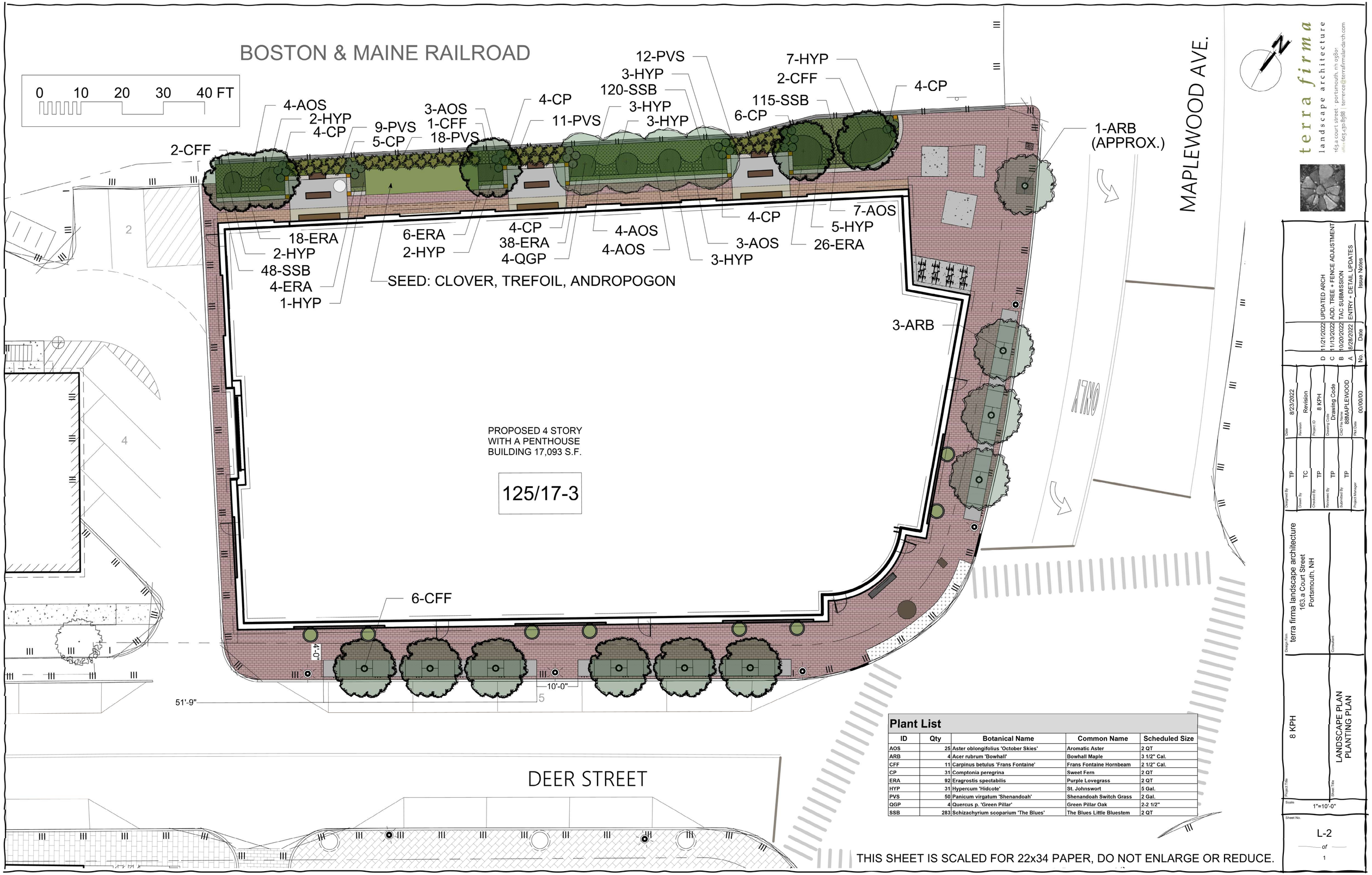
Consultant

Project Title 8 KPH

Sheet Title LANDSCAPE PLAN

Scale 1"=10'-0"

Sheet No. L-1 of 1



Plant List

ID	Qty	Botanical Name	Common Name	Scheduled Size
AOS	25	Aster oblongifolius 'October Skies'	Aromatic Aster	2 QT
ARB	4	Acer rubrum 'Bowhall'	Bowhall Maple	3 1/2" Cal.
CFF	11	Carpinus betulus 'Frans Fontaine'	Frans Fontaine Hornbeam	2 1/2" Cal.
CP	31	Comptonia peregrina	Sweet Fern	2 QT
ERA	92	Eragrostis spectabilis	Purple Lovegrass	2 QT
HYP	31	Hypercum 'Hidcote'	St. Johnswort	5 Gal.
PVS	50	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	2 Gal.
QGP	4	Quercus p. 'Green Pillar'	Green Pillar Oak	2-2 1/2"
SSB	283	Schizachyrium scoparium 'The Blues'	The Blues Little Bluestem	2 QT

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No.	Date	Issue Notes
D	11/21/2022	UPDATED ARCH
C	11/13/2022	ADD. TREE + FENCE ADJUSTMENT
B	10/20/2022	TAC SUBMISSION
A	8/28/2022	ENTRY - DETAIL UPDATES

Date 8/23/2022
Revision Revision
Project ID 8 KPH
Drawing Code Drawing Code
CAD File 88MAPLEWOOD
Tax Code 00/00/00

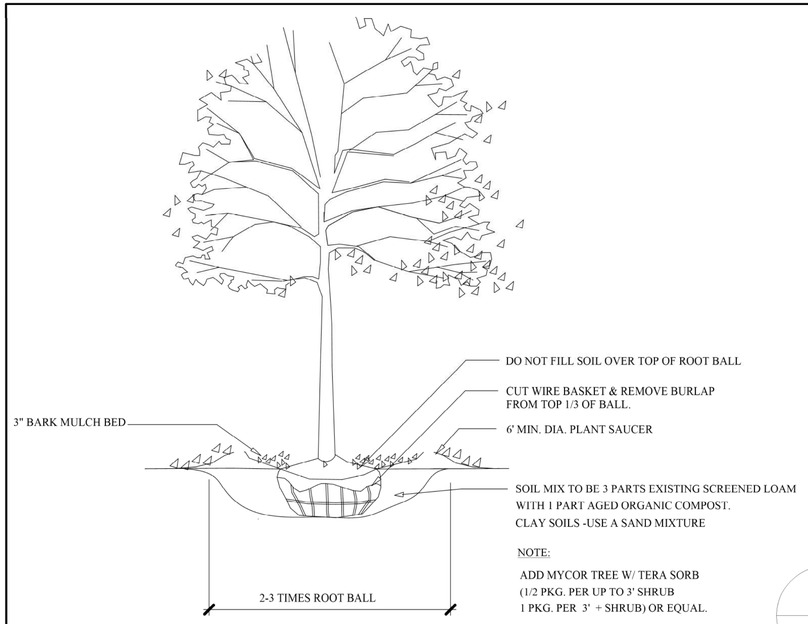
Designed By TP
Drawn By TC
Checked By TP
Reviewed By TP
Submitted By TP
Project Manager

Design Firm terra firma landscape architecture
163.a Court Street
Portsmouth, NH
Consultant

Project Title 8 KPH
Sheet Title LANDSCAPE PLAN
PLANTING PLAN

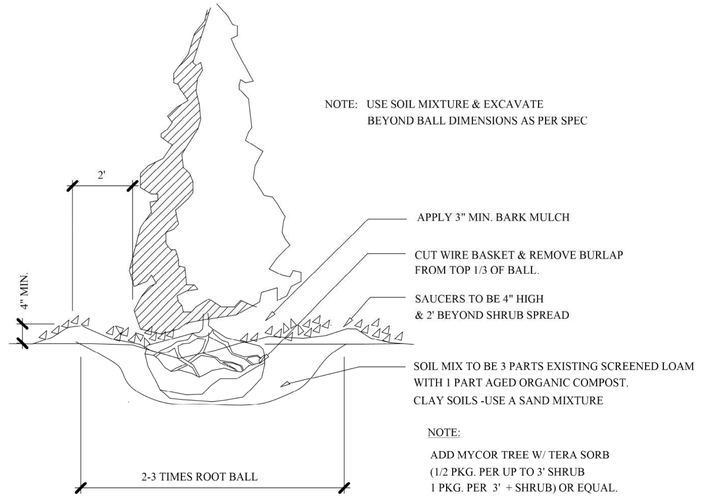
Scale 1"=10'-0"

Sheet No. L-2 of 1



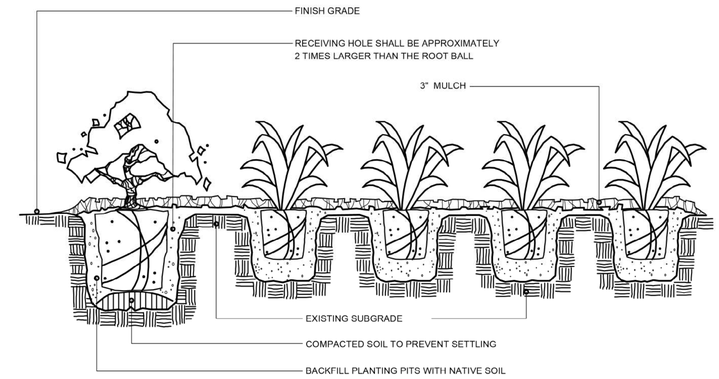
1 L-3

TREE PLANTING - 2"+ CAL.
SCALE: NTS



2 L-3

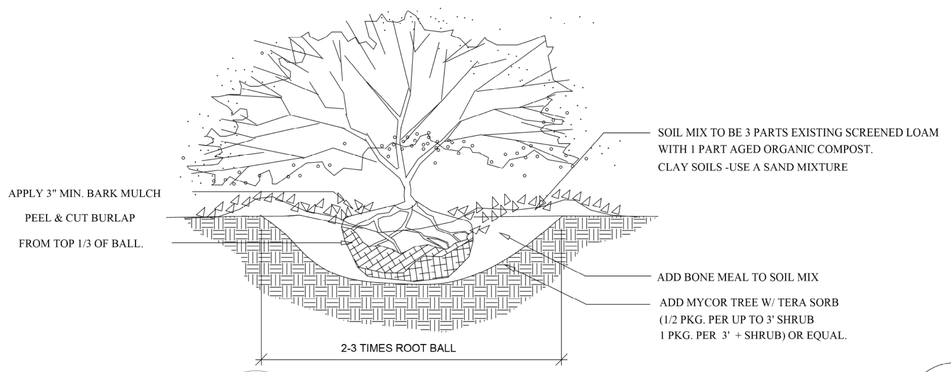
PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS



NOTE: SHRUBS SHALL BE PLANTED A MINIMUM OF 1" & NO MORE THAN 2" ABOVE FINISH GRADE, DEPENDING UPON SITE CONDITIONS.

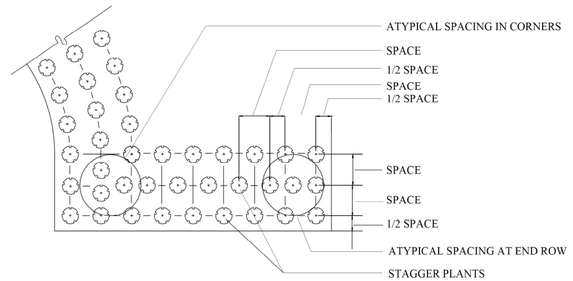
3 L-3

SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS



4 L-3

B&B SHRUB PLANTING
SCALE: NTS



NOTES:

1. PLACE PLANTS IN BED AS SHOWN, SPACING AS SPECIFIED IN PLANT SCHEDULE.
2. GROUNDCOVER SHALL BE TRIANGULAR SPACED IN ROWS PARALLEL TO STRAIGHT EDGES AND SHALL BE EVENLY SPACED IN ROWS PARALLEL TO CURVE EDGES.

5 L-3

GROUND COVER SPACING DETAIL
SCALE: NTS

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT DELIVERED TO THE SITE FOR AESTHETIC REASONS BEFORE PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE QUALITY FOR ALL THE PLANTS.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL PLANTS SHALL BE INSTALLED AND DETAILED PER PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST TWOGROWING SEASONS.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM. LANDSCAPE CONTRACTOR SHALL PRUNE PLANTINGS OF DEAD LIMBS OR TWIGS DURING THE FIRST YEAR OF GROWTH.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. LANDSCAPE CONTRACTOR SHOULD REPLACE DEAD PLANTINGS IMMEDIATELY UPON OWNER DIRECTION WITHIN THE WARRANTY PERIOD AND AGAIN AT THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAVE DIED, THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS CALLED FOR.
15. ALL TREES AND SHRUBS TO BE PLANTED IN MULCH BEDS WITH DEFINED AND CUT EDGES TO SEPARATE TURF GRASS AREAS.
16. FOR ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE, REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC., THEN APPLY GRASS SEED OR PINE BARK MULCH AS DEPICTED ON PLANS.
17. LANDSCAPE CONTRACTOR SHALL FEED AND PRUNE EX. TREES, ON OR JUST OFF SITE, THAT HAVE EXPERIENCED ROOT BASE INTRUSION OR DAMAGE DURING CONSTRUCTION IMMEDIATELY AND FOR THE DURATION OF THE WARRANTY PERIOD AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE EDGE OF THE EX. TREE CANOPY THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. ALL MULCH AREAS SHALL RECEIVE A 2" LAYER OF SHREDDED PINE BARK MULCH.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.

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Revision	Revision
Project ID	8 KPH
Drawing Code	Drawing Code
CAD File	88MAPLEWOOD
Plot Date	00/00/00
Designed By	TP
Drawn By	TC
Checked By	TP
Reviewed By	TP
Submitted By	TP
Project Manager	

Design Firm: terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant:

Project Title: 8 KPH

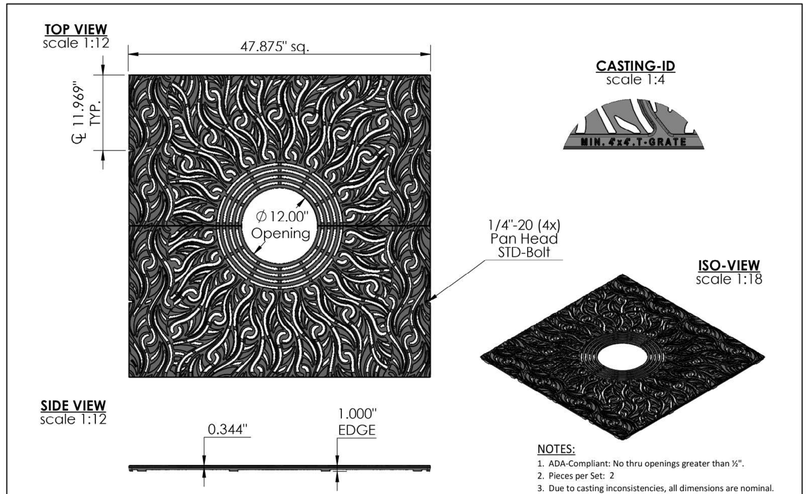
Sheet Title: PLANTING DETAILS

Scale: SEE DETAILS

Sheet No.: L-3 of 1

IRON AGE DESIGNS
(877) 418-3568 or (206) 276-0925
2104 SW 152nd St. Suite #4
Burien, WA 98166
info@ironagegrates.com

OR EQUAL



NOTES:
1. ADA-Compliant: No thru openings greater than ½".
2. Pieces per Set: 2
3. Due to casting inconsistencies, all dimensions are nominal.
4. Center Opening Options:
   Cast at 12", Breakouts at 14", 16", 18" & 20".
5. Pedestrian Load Only.

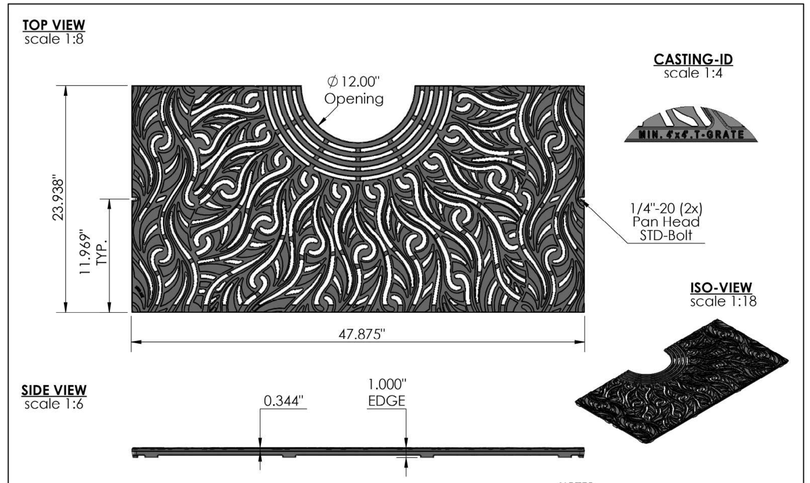
Made in USA ©2013 Iron Age Designs

Minnione 4' x 4' Tree Grate

IRON AGE DESIGNS
Telephone 206.276.0925
www.ironagegrates.com

Material:	Cast Iron CL 35 or better	**Weight:**	167.52 lbs.	**Free Drain Area:**	533.01 in/sq. or 24.46 %	**By:** MS **Checked:** MS	**Date:** 4-8-21
Finish:	Raw	**Edge:**	1.000"	**Flow Rate:**	698.24 GPM	**© Registration:** VA 2-159-792	**Scale:** NTS
Fits:	Iron Age Custom Frame SOLD SEPARATELY	**Product ID:**	MX48-48I99TG	**Drawing Name:**	02_MIN_I_48x48_TreeGrate_Comp		

Page 1



NOTES:
1. ADA-Compliant: No thru openings greater than ½".
2. Due to casting inconsistencies, all dimensions are nominal.
3. Pedestrian Load Only.

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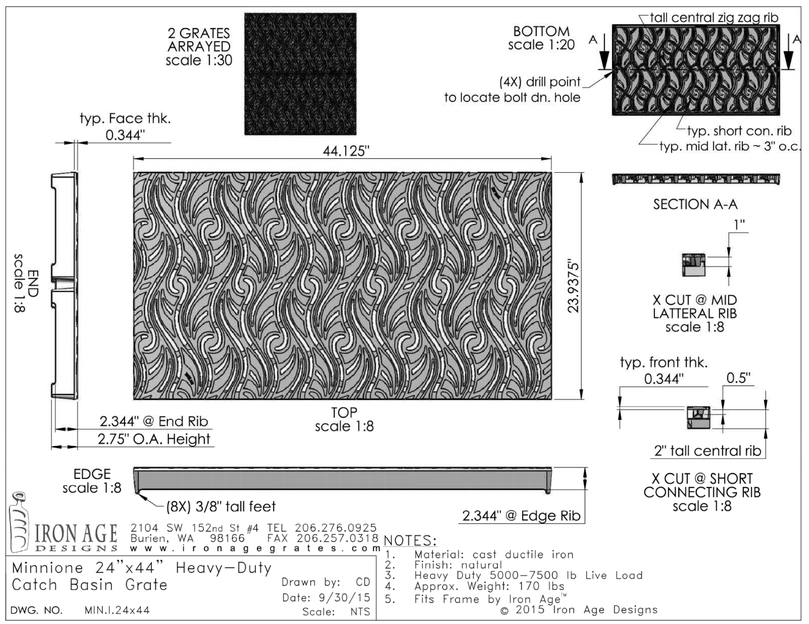
Minnione 4' x 4' Tree Grate - Half Panel

IRON AGE DESIGNS
Telephone 206.276.0925
www.ironagegrates.com

Material:	Cast Iron CL 35 or better	**Weight:**	83.76 lbs.	**Free Drain Area:**	266.50 in/sq. or 24.46 %	**By:** MS **Checked:** MS	**Date:** 4-8-21
Finish:	Raw	**Edge:**	1.000"	**Flow Rate:**	349.12 GPM	**© Registration:** VA 2-159-792	**Scale:** NTS
Fits:	Iron Age Custom Frame SOLD SEPARATELY	**Product ID:**	MX48-48I99TG	**Drawing Name:**	02_MIN_I_48x48_TreeGrate		

Page 2



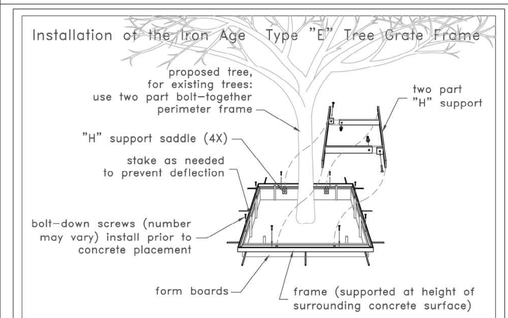
IRON AGE DESIGNS 2104 SW 152nd St #4 Burien, WA 98166 TEL 206.276.0925 FAX 206.257.0318 www.ironagegrates.com

Minnione 24"x44" Heavy-Duty Catch Basin Grate

Drawn by: CD
Date: 9/30/15
Scale: NTS

DWG. NO. MIN.I.24x44

NOTES:
1. Material: cast ductile iron
2. Finish: natural
3. Heavy Duty 5000-7500 lb Live Load
4. Approx. Weight: 170 lbs
5. Fits Frame by Iron Age™

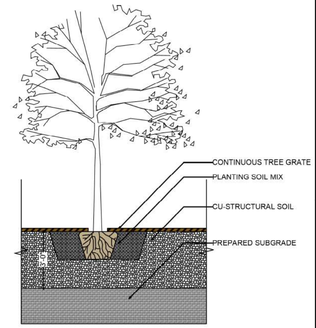


Installation of the Iron Age type "E" Embed tree grate frame.
1. Excavate tree pit to approximate depth of concrete
2. Use interior frame dimensions as guide for form work dimension.
3. Build wooden form for concrete, provide for "H" support at saddle.
4. Support frame (and form) w/ top of frame at height of surrounding concrete surface, using curb stakes – 18" O.C. max.

NOTE: Spreaders or adequate staking will be necessary to prevent the frame from deforming during concrete placement. The actual grates or plywood templates can be used to prevent frame deflection. If using the grates, take care to protect during concrete placement.

5. IMPORTANT: in all situations, be sure to use the bolt-down screws provided to protect the receiving threads from fouling. Bolting down the grates or templates will help hold the frame rigid during concrete placement.
6. Allow concrete to cure before removing forms or preparing tree pit for planting

IRON AGE DESIGNS 2104 SW 152nd st #4 Burien, WA 98166 TEL 206.276.0925 FAX 206.257.0318 www.ironagegrates.com



STRUCTURAL SOIL DETAIL

1 / L-4 CONTINUOUS TREE GRATE (4' WIDE x 50' LONG)
SCALE: NTS

MINNIONE 4' SQ. TREE GRATES ARRAYED WITH 2' x 4' EXTENSION PANELS. OR EQUAL.

MID-SUPPORTS TO BE SUPPLIED BY MANUFACTURER TO BE USED AS NEEDED.

CAST IRON WITH A BAKED-ON-OIL FINISH.

TREES PLANTED IN TREE GRATE SYSTEM TO BE PLANTED IN "CU-STRUCTURAL SOIL" TO 36" DEPTH, "CU-STRUCTURAL SOIL" OR EQUAL TO BE UNDER EXTENSION PANELS TO 36" DEEP. BACKFILL TREE PIT WITH TOPSOIL.

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Submitted By TP
Project Manager

Design Firm terra firma landscape architecture
163.a Court Street
Portsmouth, NH

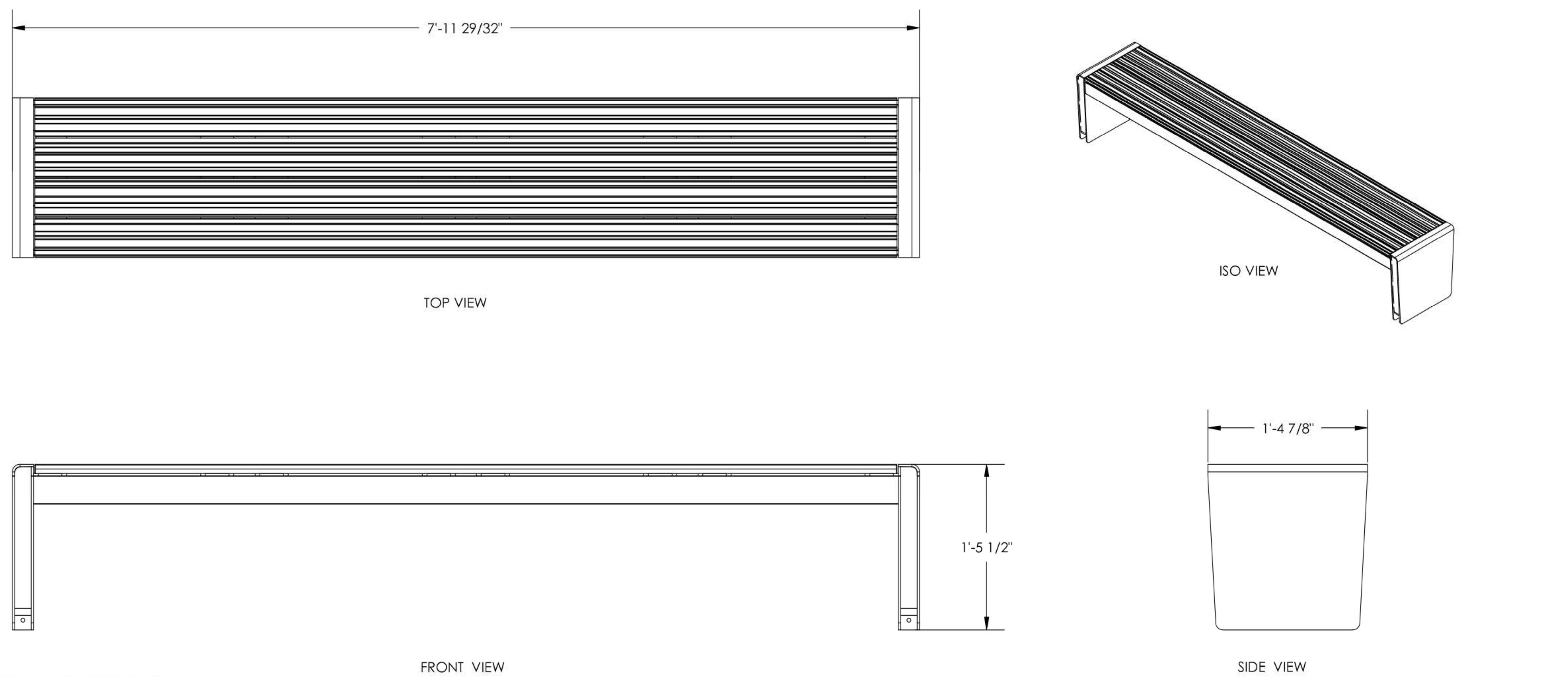
Consultant

Project Title 8 KPH

Sheet Title LANDSCAPE DETAILS

Scale SEE DETAILS

Sheet No. L-4 of 1



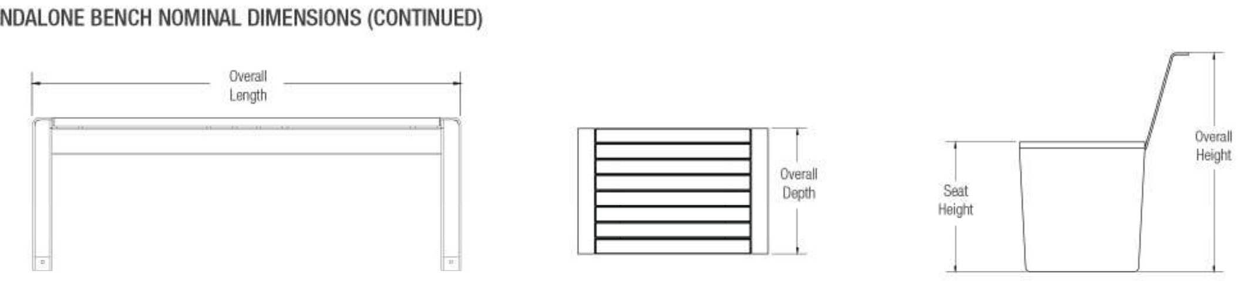
DARK GREY METALLIC TEXTURE

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES TOLERANCES (UNLESS OTHERWISE SPECIFIED): FRACTIONAL: ±1/32 ANGULAR/BEND: ±1° TWO PLACE DECIMAL ±.030 THREE PLACE DECIMAL ±.020	FORMS+SURFACES 30 Pine Street, Pittsburgh, PA 15223 Tel (412) 781-9003 Fax (412) 781-7840			
APPROVAL APPROVED BY : ____ COMPANY : ____ DATE : ____		NAME	DATE	DESCRIPTION:
MATERIAL: - _MATERIAL	DWN	DWN_BY	DWN_DATE	8 FT, STANDALONE , AL, NO BACK RESTS
FINISH: - _FINISH	CHK	CHK_BY	CHK_DATE	3 ANGLED ARMRESTS
WEIGHT: - _WEIGHT	DO NOT SCALE DRAWING			
SOURCE: -	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF FORMS + SURFACES . ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION IS PROHIBITED.	SIZE: B	DWG. NO.: DWG_FILE_NAME	REV: REV_NO / SHEET: SHEET_OF_X
SCALE: N.T.S				

VECTOR™ SEATING SYSTEM

PRODUCT DATA

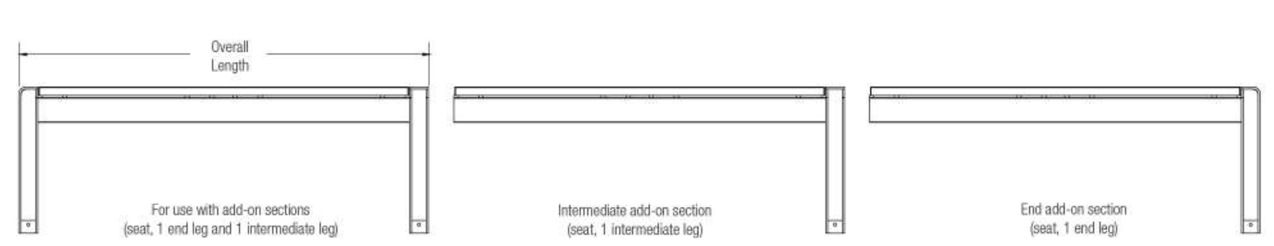
STANDALONE BENCH NOMINAL DIMENSIONS (CONTINUED)



MODEL	OVERALL LENGTH	OVERALL DEPTH	OVERALL HEIGHT*	SEAT HEIGHT	OVERALL WEIGHT**	
					WITHOUT SIDE PANELS	TWO STAINLESS STEEL SIDE PANELS
SBVTR-96C-2E-0B	95.9" (2436 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	111 lbs (50 kg)	169 lbs (77 kg)
SBVTR-96C-2E-4B	95.9" (2436 mm)	16.9" (429 mm)	29.5" (749 mm)	17.5" (445 mm)	171 lbs (78 kg)	229 lbs (104 kg)
SBVTR-96A-2E-0B	95.9" (2436 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	124 lbs (56 kg)	182 lbs (83 kg)
SBVTR-96A-2E-4B	95.9" (2436 mm)	16.9" (429 mm)	29.5" (749 mm)	17.5" (445 mm)	184 lbs (83 kg)	242 lbs (110 kg)

*Add 12" (305 mm) for optional seat back.
*Add 2.5" (64 mm) for optional end or intermediate seat divider.
**Add 15 lbs (7 kg) for each additional optional seat back.
**Add 2 lbs (1 kg) for each additional optional end or intermediate seat divider.

ADD-ON BENCH NOMINAL DIMENSIONS



MODEL	OVERALL LENGTH	OVERALL DEPTH	OVERALL HEIGHT*	SEAT HEIGHT	OVERALL WEIGHT**	
					WITHOUT SIDE PANELS	TWO STAINLESS STEEL SIDE PANELS
SBVTR-24C-1E1M-0B	25.7" (653 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	53 lbs (24 kg)	73 lbs (33 kg)
SBVTR-24C-1M-0B	23.4" (594 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	36 lbs (16 kg)	56 lbs (25 kg)
SBVTR-24C-1E-0B	23.4" (594 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	36 lbs (16 kg)	56 lbs (25 kg)
SBVTR-24A-1E1M-0B	25.7" (653 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	56 lbs (25 kg)	76 lbs (34 kg)
SBVTR-24A-1M-0B	23.4" (594 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	39 lbs (18 kg)	59 lbs (27 kg)
SBVTR-24A-1E-0B	23.4" (594 mm)	16.9" (429 mm)	17.5" (445 mm)	17.5" (445 mm)	39 lbs (18 kg)	59 lbs (27 kg)

*Add 12" (305 mm) for optional seat back.
*Add 2.5" (64 mm) for optional end or intermediate seat divider.
**Add 15 lbs (7 kg) for each additional optional seat back.
**Add 2 lbs (1 kg) for each additional optional end or intermediate seat divider.

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1 / L-5 ENTRY BENCH
SCALE: NTS

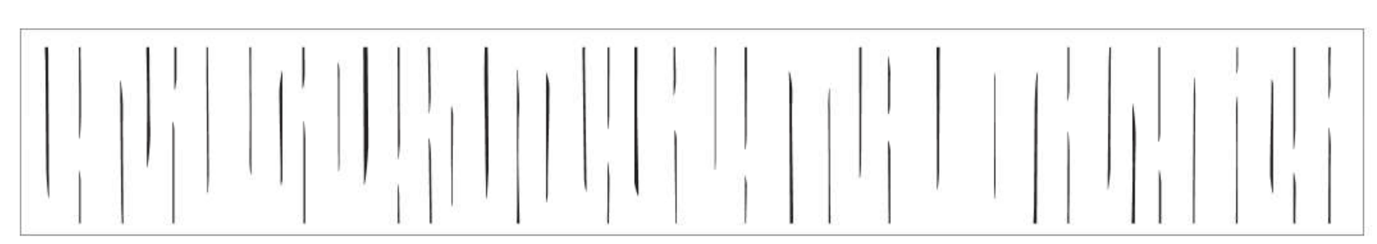
VECTOR™ SEATING SYSTEM

PRODUCT DATA

OPTIONAL STAINLESS STEEL SIDE PANELS

Seating components are available with or without side panels. Side panels can be specified with or without Rainfall Perforation and in one of three stainless steel finishes - Diamond, Sandstone, or Satin.

SIDE PANEL PERFORATION PATTERN: RAINFALL



VECTOR™ SEATING SYSTEM

PRODUCT DATA

The **Vector Seating System** is a modern, modular design that goes in whatever direction your seating needs take. This highly customizable line invites you to mix interchangeable bench and planter modules, choose materials and finishes to suit your design scheme, and personalize your layouts with optional seat backs and seat dividers, LED accent lighting below bench seats, and/or side panels in stainless steel. Coordinating Vector Table Ensembles expand the line's reach.

MATERIAL & CONSTRUCTION DETAILS

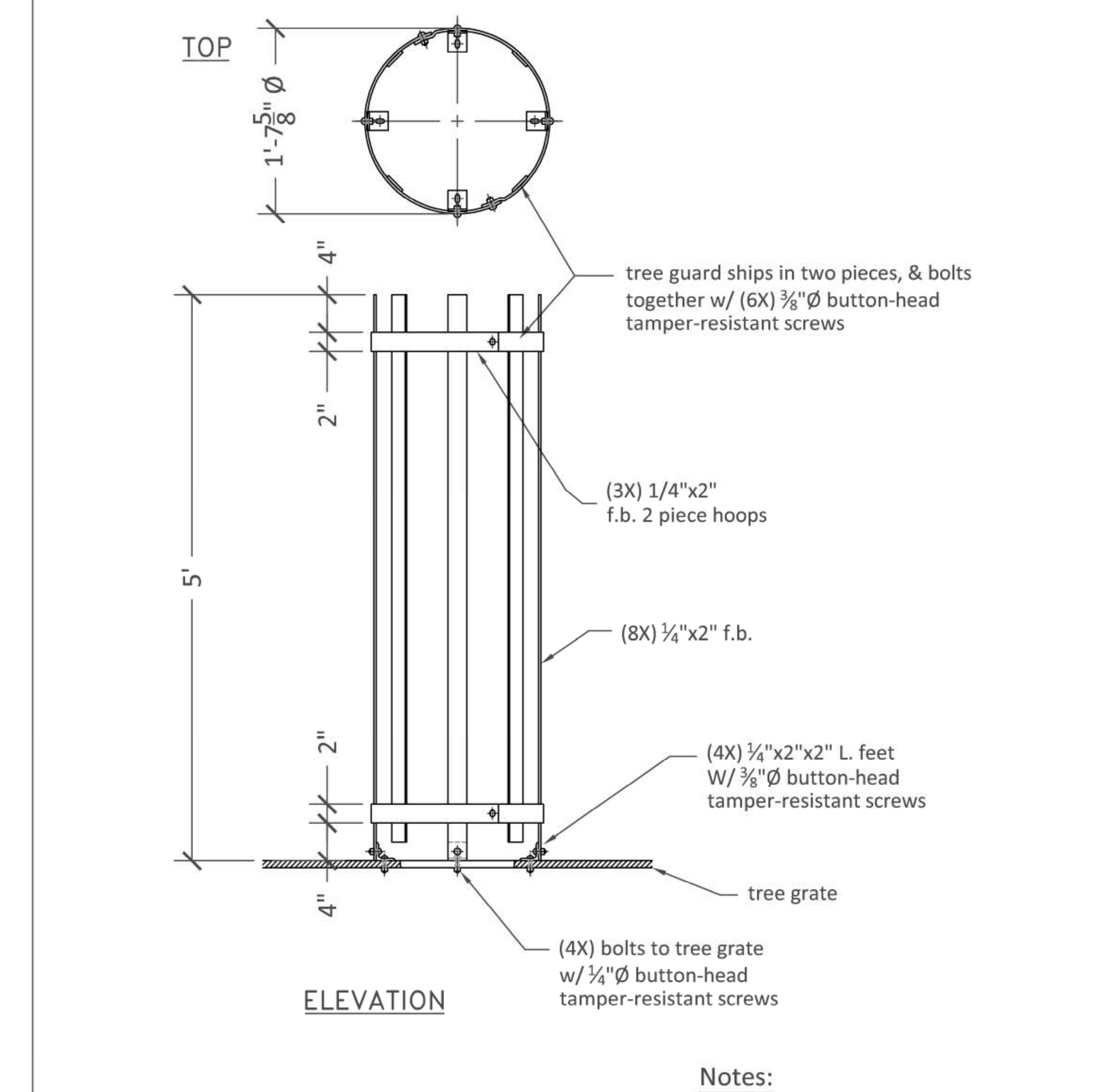
CONFIGURATIONS	SIDE PANEL OPTIONS	PLANTER MODULE
• There are seven basic components to the Vector Seating System: four linear benches (2-, 4-, 6-, and 8-foot lengths), a 2' planter module, and two 120° angle benches. The components can be specified to connect to each other in a linear fashion and/or branch off of the sides. • In addition to linear benches, standard configurations include Tri-Hub and Oblique. See page 7 for details. • All seating components are available with or without seat backs. Seat backs are not available at some connection points. • Wall-top configurations are also available. Please contact us to discuss your project's specific requirements.	• All seating components are available with or without side panels on one or both sides. • Stainless steel side panels are available in three stainless steel finishes or can be powdercoated. Side panels can be specified with Rainfall perforation or no pattern. See page 2 for details.	• Planter frame is aluminum with a powdercoat finish. • Planter capacity is 14 gallons. • Planter liner is molded polyethylene. Drainage holes are optional. • Stainless steel side panels are available in the same finishes and pattern as bench components. See page 2 for details.
FRAME AND SEAT OPTIONS	**OPTIONAL SEAT DIVIDERS**	**LED ACCENT LIGHTING**
• Frame is aluminum with a powdercoat finish. • Seats are available in two material options. • FSC® 100% Cumaru hardwood seat slats (8 slats per bench) have a natural oiled finish that enhances the wood's rich color (FSC License Code: FSC-C004453). • Extruded aluminum seat slats (4 slats per bench) feature a lightly grooved surface for enhanced appearance and a non-slip feel. Aluminum slats are powdercoated. See the Forms+Surfaces Powdercoat Chart for details. • Optional aluminum seat backs are powdercoated to match the bench frame.	• Cast aluminum end and intermediate seat dividers are available for all of the seating components. • Seat dividers are powdercoated to match the frame. • Due to the inherent nature of metal castings, gloss powdercoats are not offered for cast components.	• Optional LED accent lighting is available for all seating components. • Accent lighting attaches to the underside of the seating components. • Accent lighting is offered in 3000K warm white and 4000K cool white LEDs.

INSTALLATION & MAINTENANCE

INSTALLATION	MAINTENANCE
• The Vector Seating System can be freestanding or surface mounted. • Configurations with seat backs must be surface mounted. • Stainless steel anchors and mounting bolts are sold separately. • Wall-top mounting is customized per project. • Can be shipped flat packed.	• Metal surfaces can be cleaned as needed using a soft cloth or brush with warm water and a mild detergent. Avoid abrasive cleaners. • Cumaru hardwood slats can be maintained by re-oiling as needed with Penofin® hardwood finish or similar products.

SBVTR-96A-2E-0B | Vector Seating System, 8-foot, aluminum slats, standalone, no seat backs

FORMS + SURFACES BACKLESS ALUMINUM SLAT 8' STAND-ALONE VECTOR BENCH OR EQUAL
DARK GREY METALLIC TEXTURE POWDER COAT ON FRAME AND SEAT.
ADD-ON OF 2 SEAT DIVIDERS.



Notes:
1. Ships in 6 pieces; 2 fabricated pieces & 4 adjustable tabs
2. Fits Tree grates manufactured by: Iron Age™

Iron Age Approved PDF
Jonathan 12/05/2018

Basic 60" Tree Guard

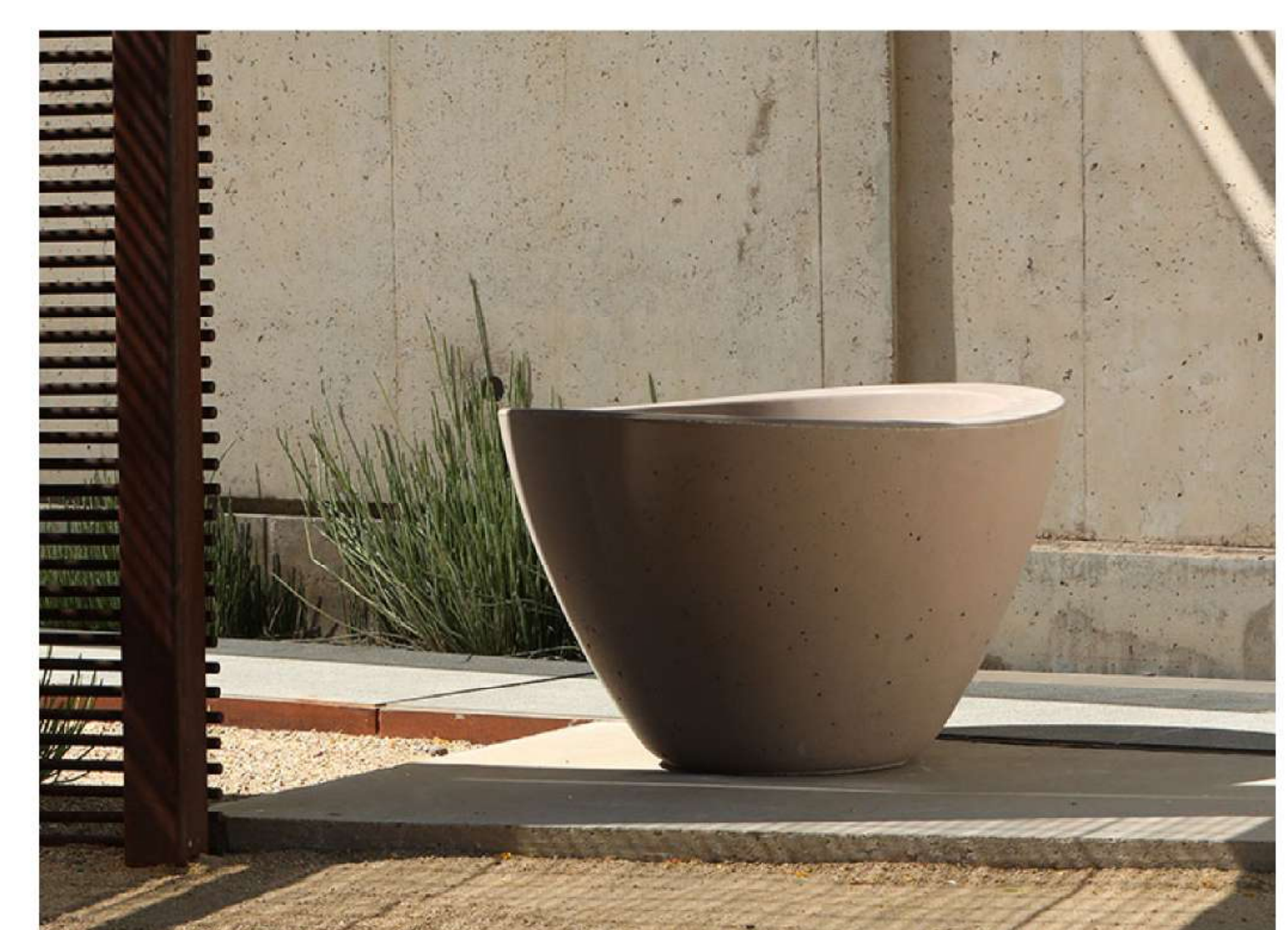
Made in USA ©2009 Iron Age Designs

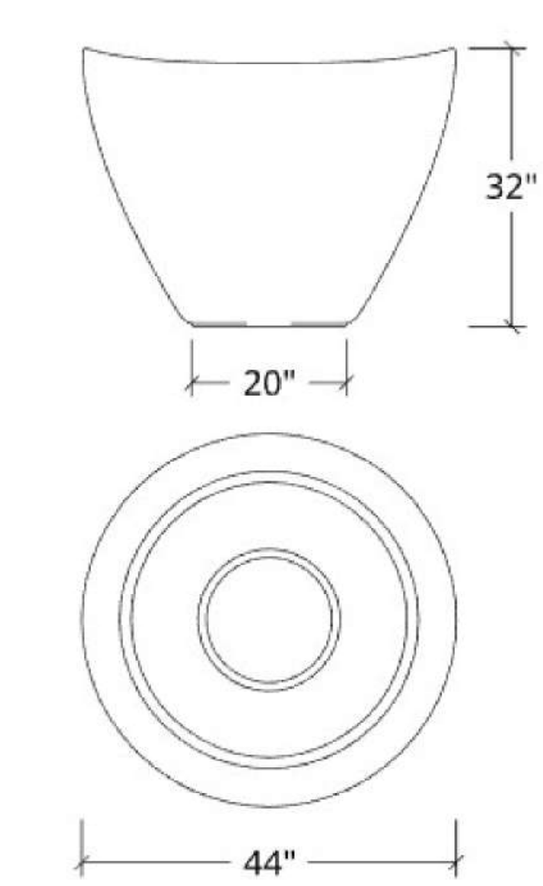
IRON AGE DESIGNS
Telephone 206.276.0925
www.ironagegrates.com

Material: Mild Steel
By: JH Date: 12/5/18
Scale: 1:15
Standard Options: Powdercoat/Galvanized
Finish: 'Cardinal Powdercoating Colors'
Fits: Iron Age™ Tree Grates w/ Typical Breakout Rings
Job No:
Drawing Name: STD_TGUARD_60_Boulevard
©Registration: ...

2 / L-5 TREE GUARD
SCALE: NTS

IRON AGE DESIGNS
(877) 418-3568 or (206) 276-0925
2104 SW 152nd St. Suite #4
Burien, WA 98166
info@ironagegrates.com
OR EQUAL





PRODUCT ID	HEIGHT	DIAMETER	BASE	WEIGHT
DS-32	32 "	44 "	20 "	1,020 lbs.

3 / L-5 URNS AT ENTRY
SCALE: NTS

Kornegay Design
Dune Planter, 44" Diam, 32" Height.
IN GRAPHITE (IRON OXIDE).

Kornegay Design, A Landscape Forms Company
212 South 18th Street
Phoenix, Arizona 85034
p: 800.430.6209
f: 269.381.3455
https://kornegaydesign.com/

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terra firma
landscape architecture
163.a court street - portsmouth, nh 03801
office 603.430.8388 | terrence@terrafirmalandarch.com

No.	Date	Issue Notes
D	11/21/2022	UPDATED ARCH
C	11/13/2022	ADD. TREE + FENCE ADJUSTMENT
B	10/20/2022	TAC SUBMISSION
A	8/28/2022	ENTRY + DETAIL UPDATES

Designed By	TP	Date	8/23/2022
Drawn By	TC	Revision	Revision
Checked By	TP	Project ID	8 KPH
Reviewed By	TP	Drawing Code	Drawing Code
Submitted By	TP	CAD File Name	88MAPLEWOOD
Project Manager		Plot Date	00/00/00

Design Firm: terra firma landscape architecture
163.a Court Street
Portsmouth, NH

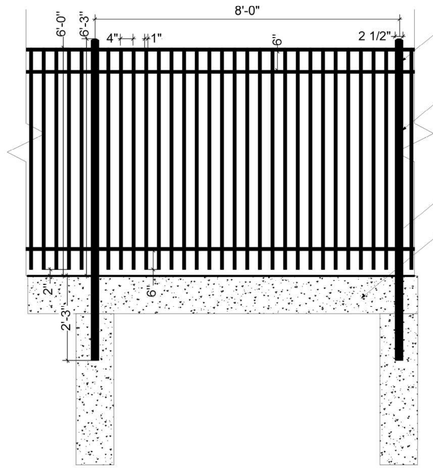
Consultant

Project Title: 8 KPH

Sheet Title: LANDSCAPE DETAILS

Scale: SEE DETAILS

Sheet No. L-5
of
1



CAST SAVANNAH DECK LIGHT OR EQUAL MOUNTED ON POSTS (8' OC)

POSTS SET IN CONCRETE FOOTING/RETAINING WALL BASE

ALUMINUM FENCE

CONCRETE WALL (SEE ENG. DETAILS)

WALPOLE THREE-RAIL ECHELON PLUS STYLE ALUMINUM FENCE OR EQUAL

Walpole Outdoors OR EQUAL
100 River Ridge Drive, Suite 302
Norwood, MA 02062
(866) 253-3108
https://walpoleoutdoors.com/

1 / L-6 FENCE WITH MOUNTED LIGHTS
SCALE: 1/2"=1'-0"

CAST LANDSCAPE® Old world craftsmanship. . .tomorrow's technology®

CAST Savannah Deck Light (CDL2CB) Product Information

CAST Solid Bronze Savannah Deck Light - Rugged and Stylish

Description:
This compact and stylish solid bronze deck light is a durable and reliable fixture for wall and post mounting.

Features:
- Solid bronze hood and base
- Glare-free illumination
- Pre-wired with 25′ tin-coated No-Ox® marine grade wire
- High-temp socket
- Spider Splice® ready

Uses:
Suitable for downlighting when mounted on retaining walls, structure surfaces, posts and pilings.

Construction:
Solid bronze hood and base; 25′ tin-coated #18-2 No-Ox® marine-grade wire.

Dimensions:
3.2″ wide x 3″ tall x 1.5″ deep

Specifications:
Lamp: Includes 2.5W, 9-15 volt operating range, T5 LED Lamp (SL921T5200L).
Halogen Option: 12 volt, 10W, T3 wedge-based - 18W max. (CWB1210X).

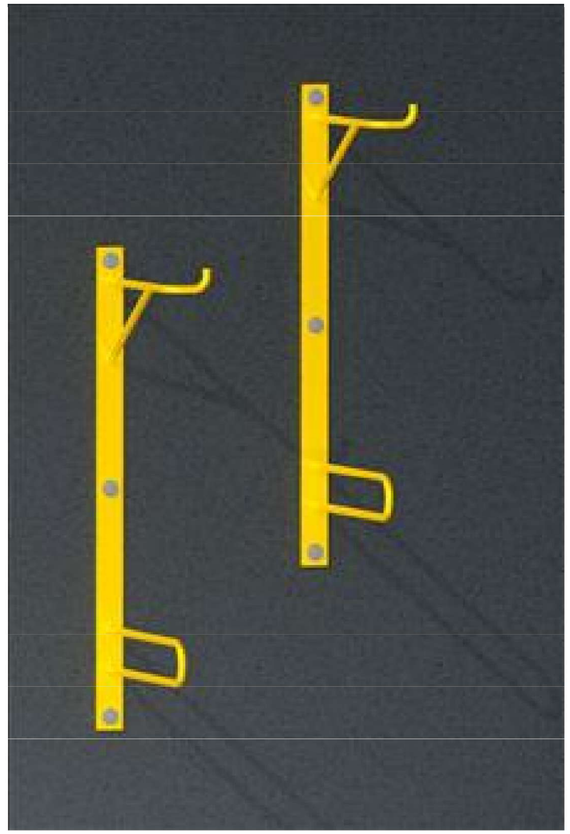
Listing:
U.L 1838 Listed Low Voltage Luminaire for wet locations

CDL2CB

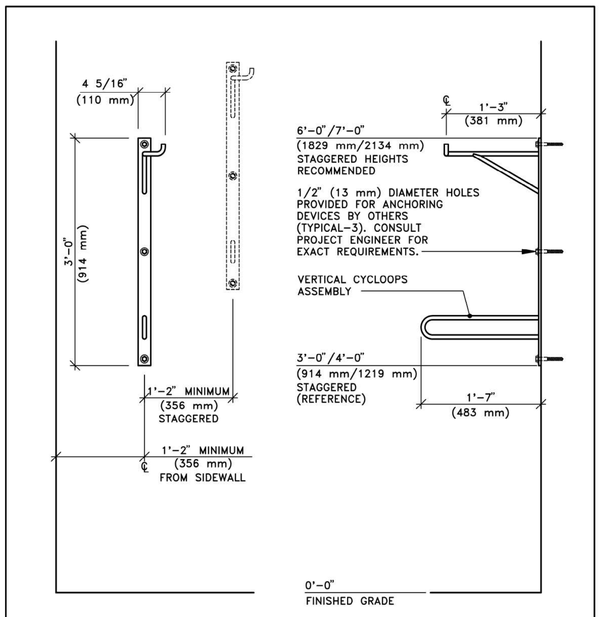
www.cast-lighting.com 800.914.CAST

Revised December 2019

2 / L-6 DECK LIGHTS FOR FENCE
SCALE: NTS



No. 2174 Wall *CycLoops* Bicycle Rack



ELEVATION – FRONT VIEW

ELEVATION – END VIEW

Scale 1"=1'-0" Drawn by: AT Ck'd by: 07-04-10

COLUMBIA CASCADE COMPANY
Makers of TimberForm®, PipeLine®, ReplayTimberForm®-2, InterPlay® CycLoops® and CycLocker® Products.
1300 S.W. Sixth Avenue, Suite 310 Telephone 503/223-1157 Portland, Oregon 97201-3464 Facsimile 503/223-4530 U.S.A.
WWW.TIMBERFORM.COM

File: TIMBERFORM CYCLOOPS MODEL NO. 2174-01 VERTICAL CYCLOOPS
Drawing No. W-2174-01 Sheet 1 of 1

TimberForm® WALL CYCLOOPS 2174-01 VERTICAL HANGING BIKE RACK OR EQUAL

3 / L-6 GARAGE VERTICAL BIKE RACK DETAIL
SCALE: NTS

Bicycle Rack shall be TimberForm® Wall *CycLoops*™ model No. 2174, to accommodate one bicycle, in color or finish selected by the owner's representative and in the quantity shown on the bill of materials or the project drawings. Manufacturer, Columbia Cascade Company, 1300 SW Sixth Avenue, Suite 310, Portland OR 97201-3464 U.S.A.

1. Materials

Bicycle Rack shall be single loop of 1 inch i.d. schedule 40 mild steel seamless pipe with a minimum wall thickness of .133 inch. *Easily vandalized thin wall tubing is not allowed.* Loop shall include a pre-drilled flange permanently welded to ends which will accommodate two half inch diameter wall anchor bolts (contractor supplied).

2. Construction

Bicycle Rack shall be a single unit. Bicycle Rack shall be deburred and ground smooth after fabrication.

3. Finishes

Steel and cast iron parts shall be coated with CASPAX-7, a tough, opaque, UV resistant exterior grade polyester powder coating applied to a minimum thickness of 6 mils. *Liquid, epoxy or lead-containing powder coatings are not acceptable.*

Preparation of the mild steel substrate shall incorporate the phosphate system. Substrate preparation shall consist first of mechanical cleaning to remove heavy mill scale, rust, varnish, grease, etc., with surfaces uniformly abraded to promote quality of finish coating. Chemical cleaning in accordance with TT-C-490C, Methods I and III shall remove impurities from the surfaces.

After the two-step cleaning process, the metal substrate shall receive a corrosion-inhibiting iron phosphate pre-coating in accordance with TT-C-490C, Type II, prior to the application of the powder color coat. The color coating shall be applied by the electrostatic method and then oven-cured at 400 degrees Fahrenheit to chemically bond the coating to the substrate and to render the coated metal resistant to abrasion, impact, chipping, weathering, and rusting.

-or-

Mild steel (-G) bicycle rack shall be hot-dipped galvanized per ASTM 123 after complete fabrication.

-or-

Stainless steel (-S) bicycle rack shall have No. 4 polish finish.

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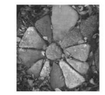

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Date	8/23/2022	
Revision	Revision	
Project ID	8 KPH	
Drawing Code	Drawing Code	
CAD File	88MAPLEWOOD	
Plot Date	00/00/00	
Designed By	TP	
Drawn By	TC	
Checked By	TP	
Reviewed By	TP	
Submitted By	TP	
Project Manager	TP	

Design Firm: terra firma landscape architecture
163 a Court Street
Portsmouth, NH

Consultant

Project Title: 8 KPH

Sheet Title: LANDSCAPE DETAILS

Scale: SEE DETAILS

Sheet No.: L-6 of 1

HELIO™ BOLLARD, SERIES 600

PRODUCT DATA

FORMS+SURFACES®

HELIO™ BOLLARD, SERIES 600

PRODUCT DATA

Helio Bollards, Series 600 bring an elegant simplicity to public spaces of all kinds. Constructed of stainless steel, fixtures 6" in diameter are available in illuminated and non-illuminated variations with or without a security core option. Illuminated bollards feature a frosted acrylic lens, 180˚ or 360˚ light distribution, and Cree® LEDs in 3000K warm white and 4000K neutral white. Helio Bollards with 3000K LEDs are approved by the International Dark-Sky Association to minimize light pollution. For expanded performance, the Helio family also includes Helio M40/K8 and M50/K12 Security Bollards 11.5" in diameter (Series 1200) and Helio M30/K4 Security Bollards 9.25" in diameter (Series 900), all in illuminated and non-illuminated designs.

MATERIAL & CONSTRUCTION DETAILS

CONFIGURATIONS	LED LAMPS & DRIVER	INSTALLATION
• Series 600 Helio Bollards are 40" high x 6" in diameter. • Illuminated bollards are available with 180° and 360° light distribution options. • Non-illuminated versions are also available. • Series 600 Helio Bollards are available with an optional S10-P1 rated security core (illuminated or non-illuminated).	• Custom LED light engine with Cree® LEDs. • 3000K warm white and 4000K neutural white color temperatures. • 424 lumen output. • Less than 5% upward lumen output. • LED driver input voltage is 120-277VAC, -30˚C minimum starting temperature. • Driver has reverse-phase, forward-phase, and 0-10V dimming capabilities. • LED driver certifications include: IP66 (waterproof) enclosure, and Class 2 rated output (UL8750).	• Standard mounting is surface mount. • Security bollards have an embedded security core. • Installation of a surge protector as part of each unit's wiring is recommended. • Stainless steel mounting hardware sold separately. Templates are available upon request.
MATERIALS & FINISHES		MAINTENANCE
• Illuminated bollards have a tubular stainless steel column, frosted acrylic lens, and a stainless steel head cap. • Non-Illuminated bollards are tubular stainless steel with welded stainless steel cap. • Stainless steel is standardwith a Satin finish and Ceramiloc treatment. See below for details. • For optional powdercoat colors see the Forms+Surfaces Powdercoat Chart. Custom RAL colors are available for an upcharge.		• Metal surfaces can be cleaned as needed using a soft cloth or brush with warm water and a mild detergent. Avoid abrasive cleaners.

CERAMILOC TREATMENT

Ceramiloc is an invisible surface treatment that offers significantly enhanced protection from weather and graffiti and increases the maintenance ease of stainless steel. Ceramiloc combines ceramic durability with an unparalleled ability to lock out water spots, fingerprints, graffiti and more. Patented technology bonds nano-silica particles to the surface of the stainless steel. The treatment minimally alters the surface appearance of the stainless and offers numerous benefits:

- Easily Cleaned: The Ceramiloc treatment creates a surface that simultaneously resists fingerprints and is easy to clean. Water spots, grease marks and more can be quickly wiped away. It also creates an "anti-graffiti" surface – even permanent marker is easily removed with a clean microfiber towel and water.
- Durable: Ceramiloc-treated materials are corrosion- abrasion- and scratch-resistant. The treatment is permanent, UV stable, and will not degrade or discolor over time. Salt spray testing per ASTM B117 showed no change after 240 hours.
- Environmentally Sound: The Ceramiloc treatment is a no-VOC, water-based process. Because Ceramiloc surfaces are so easily maintained, cleaning solutions and maintenance are kept to a minimum.

LIGHT ENGINE DESCRIPTIONS

LED ENGINE	LIGHT DISTRIBUTION	DRIVER	LUMINAIRE LUMENS*	B.U.G. RATINGS
3000K LED	360°	40W	424	B0-U1-G0
4000K LED	360°	40W	424	B0-U1-G0
3000K LED	180°	20W	158	B0-U1-G0
4000K LED	180°	20W	158	B0-U1-G0

*Luminaire lumens represents the absolute photometry for the luminaire, and indicates the lumens out of the entire fixture.

NOTE: Polar candela and isofootcandle plots can be found on the Helio Bollard, Series 600 product page on our website.

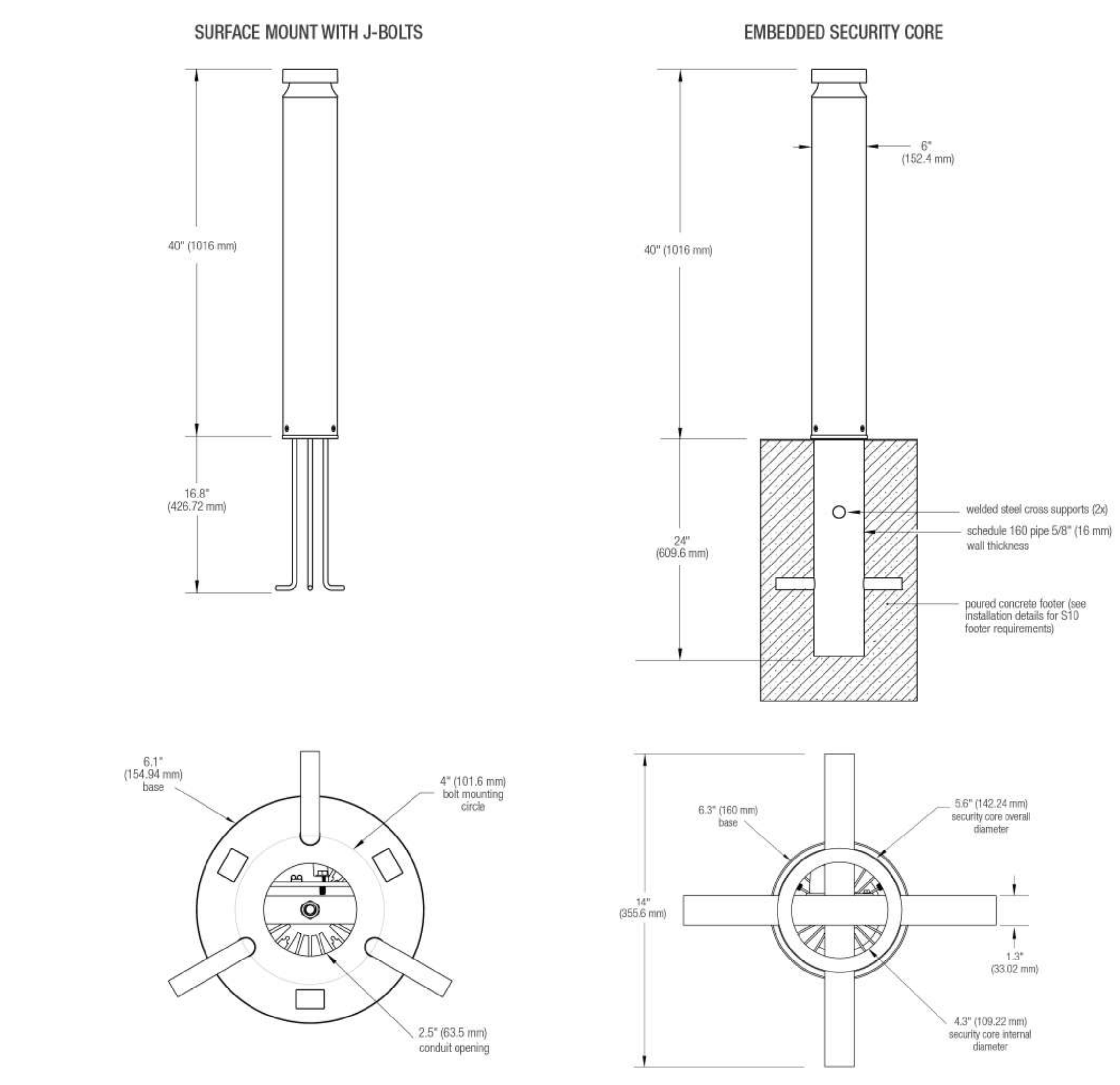
T 800.451.0410 | www.forms-surfaces.com FORMS+SURFACES®

HELIO™ BOLLARD, SERIES 600

PRODUCT DATA

ILLUMINATED BOLLARDS

NOMINAL DIMENSIONS



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1
L-7

LIGHT BOLLARD
SCALE: NTS

HELIO™ BOLLARD, SERIES 600

PRODUCT DATA

OPTIONAL SECURITY CORE

Site security is a major concern in today's unpredictable world. Public and private buildings, government facilities, campuses and public parks are all susceptible to accidental, as well as deliberate, vehicle infringement. Design professionals, city planners, facilities managers and engineers must now be increasingly sensitive to the safety and security requirements of public and private spaces. Security bollards placed at ingress points are an excellent way to guard against vehicle infringement while allowing pedestrian access.

Most security bollards have taken the form of generic pipes and cylinders that offered little in the way of design or lighting functionality. An integral security solution is available as an optional enhancement to Forms+Surfaces' Helio lighting bollards. By adding a pre-engineered and fully-tested security core to the existing Helio design, we can offer a beautiful and efficient lighting bollard that also meets the stringent hi-impact crash requirements normally attained only with unattractive pipe barriers.

Helio S10-P1 security bollards have been tested using a Finite Element Analysis (FEA) by a professional engineering consultant. FEA is a software-based tool commonly used in the automotive industry and used extensively for crash test simulations. Tests were performed using our bollard set in permanent concrete footings and struck by a vehicle at a 90 degree impact. The impact simulation found the bollards to be successful in stopping a 5,000 lb. small passenger vehicle going 10 mph with less than one meter penetration.

Our permanently embedded security cores are available for both illuminated and non-illuminated bollards. Please contact us to discuss design and installation considerations for Helio bollards with security cores.

CERTIFICATION

- ETL and C-ETL listed for wet locations.
- Helio Bollard 3000K is International DarkSky Approved

ENVIRONMENTAL CONSIDERATIONS

- Please refer to the Helio Bollard, Series 600 Environmental Data Sheets for detailed environmental impact information.
- Metal components have a long life cycle and are 100% recyclable.
- Standard powdercoat finishes are no-VOC; non-standard powdercoat finishes are no- or low-VOC, depending on color.
- Low maintenance.

MODEL NUMBERS AND DESCRIPTIONS

MODEL	DESCRIPTION
LBHLO-603	Helio Bollard, Series 600, illuminated
LBHLO-603-N	Helio Bollard, Series 600, non-illuminated

PRODUCT OPTIONS

The following options are available for an upcharge

Add powdercoat color from Forms+Surfaces Powdercoat Chart	Upgrade to embedded security core
Custom RAL powdercoat color	Add stainless steel mounting hardware

T 800.451.0410 | www.forms-surfaces.com FORMS+SURFACES®

POWDERCOAT CHART

PRODUCT DATA

All Forms+Surfaces powdercoat colors have been formulated to be ultra-durable for improved long-term wear and resistance to weathering. Our powdercoat colors are also anti-graffiti, allowing marks from paint, permanent markers, and dirt to be easily removed. All standard powdercoat finishes are no-VOC.

DARK BRONZE METALLIC TEXTURE

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landscape architecture
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office 603.430.8388 | terrence@terrafirmalandarch.com

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Designed By	TP	Date	8/23/2022
Drawn By	TC	Revision	Revision
Checked By	TP	Project ID	8 KPH
Reviewed By	TP	Drawing Code	Drawing Code
Submitted By	TP	CAD File Name	88MAPLEWOOD
Project Manager		Plot Date	00/00/00

Design Firm: terra firma landscape architecture
163.a Court Street
Portsmouth, NH

Consultant

Project Title: 8 KPH

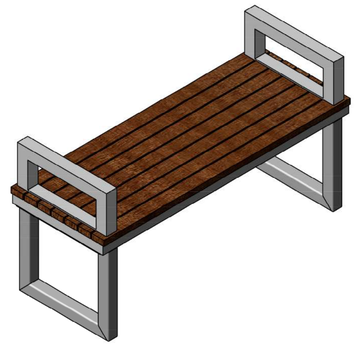
Sheet Title: LANDSCAPE DETAILS

Scale: SEE DETAILS

Sheet No.: L-7 of 1

ITEM	QTY	DESCRIPTION	MODELNUMBER
1	1	OGDEN, STRAIGHT, WLRLR-48 IN	OGM1900-SS4-WLR
2	2	OGDEN, SQUARE LEG	OGM1900-MS1
3	2	OGDEN, CENTER ARM, STYLE 1	OGM1900-CA1

APPROVED BY:
DATE:



MAGLIN
MAGLIN SITE FURNITURE
WWW.MAGLIN.COM
TEL.: 800-716-5506
FAX: 877-260-9393

TITLE: OGDEN, STRAIGHT, IPE, SQUARE LEG
MODEL NO: OGM1900-190667
DATE: 10/20/2022
SHEET: 1 OF 3

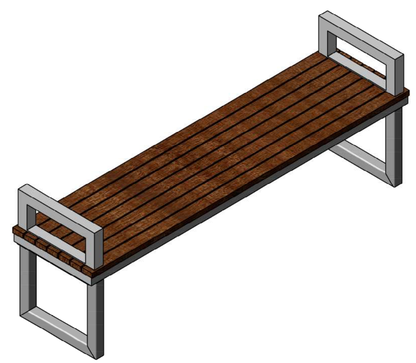
MAGLIN BACKLESS, 4' STRAIGHT OGDEN BENCH OR EQUAL.

1
L-8

POCKET PARK 4' BENCH
SCALE: NTS

ITEM	QTY	DESCRIPTION	MODELNUMBER
1	1	OGDEN, STRAIGHT, WLRLR-72 IN	OGM1900-SS6-WLR
2	2	OGDEN, SQUARE LEG	OGM1900-MS1
3	2	OGDEN, CENTER ARM, STYLE 1	OGM1900-CA1

APPROVED BY:
DATE:



MAGLIN
MAGLIN SITE FURNITURE
WWW.MAGLIN.COM
TEL.: 800-716-5506
FAX: 877-260-9393

TITLE: OGDEN, STRAIGHT, IPE, SQUARE LEG
MODEL NO: OGM1900-190668
DATE: 10/20/2022
SHEET: 1 OF 3

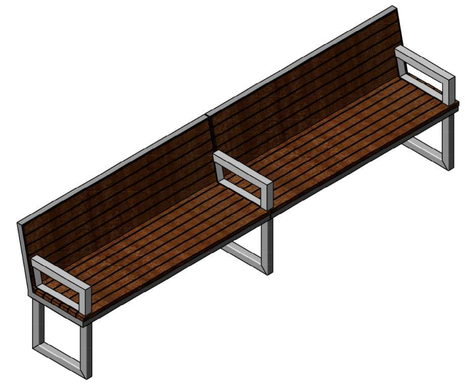
MAGLIN BACKLESS, 6' STRAIGHT OGDEN BENCH OR EQUAL.

2
L-8

POCKET PARK 6' BENCH
SCALE: NTS

ITEM	QTY	DESCRIPTION	MODELNUMBER
1	2	BACKED OGDEN, STRAIGHT, WLRLR-60 IN	OGM1900-B1-SS5-WLRLR
2	3	OGDEN, SQUARE LEG	OGM1900-MS1
3	3	BACKED OGDEN, CENTER ARM, STYLE 1	OGM1900-BCA1

APPROVED BY:
DATE:



MAGLIN
MAGLIN SITE FURNITURE
WWW.MAGLIN.COM
TEL.: 800-716-5506
FAX: 877-260-9393

TITLE: BACKED OGDEN, STRAIGHT, IPE, SQUARE LEG
MODEL NO: OGM1900-190665
DATE: 10/20/2022
SHEET: 1 OF 3

MAGLIN BACKED, 10' STRAIGHT OGDEN BENCH OR EQUAL.

3
L-8

POCKET PARK 10' BENCH
SCALE: NTS

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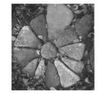

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Project Manager:

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Revision: Revision
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Plot Date: 00/00/00

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163.a Court Street
Portsmouth, NH

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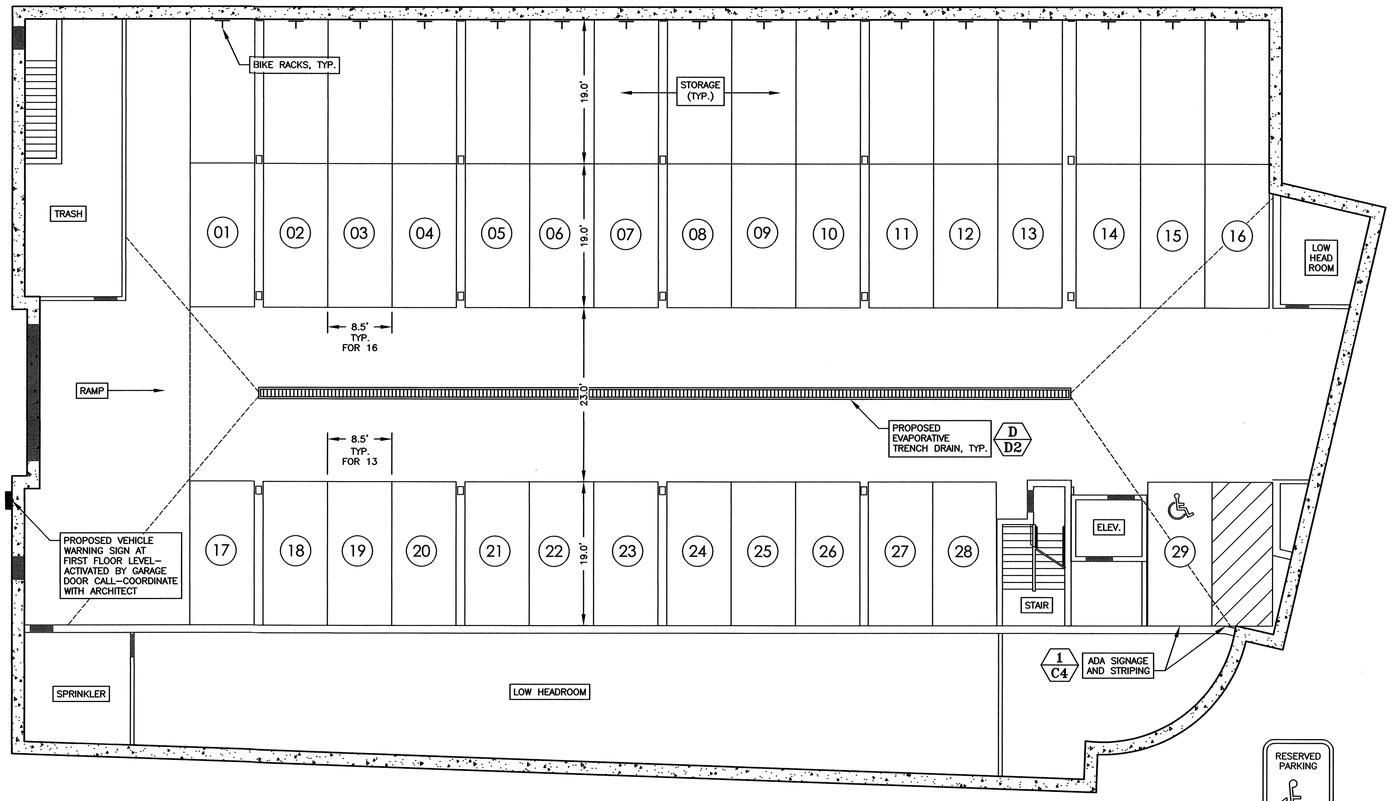


GRAPHIC SCALE

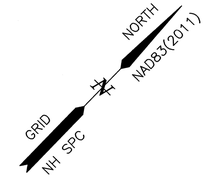
10 5 0 10 20 30 40 FEET

3 0 5 10 METERS

Residential Units Area	
Unit 201	2,407 SF
Unit 202	2,761 SF
Unit 203	2,536 SF
Unit 204	2,537 SF
Unit 205	2,593 SF
Unit 206	2,881 SF
Unit 301	2,407 SF
Unit 302	2,761 SF
Unit 303	2,536 SF
Unit 304	2,537 SF
Unit 305	2,593 SF
Unit 306	2,881 SF
Unit 401	2,407 SF
Unit 402	2,761 SF
Unit 403	2,536 SF
Unit 404	2,537 SF
Unit 405	2,593 SF
Unit 406	2,881 SF
Penthouse Unit	7,344 SF

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

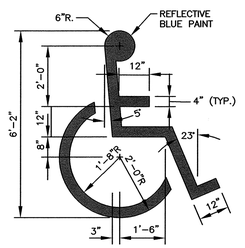


R7-8a
12" x 18"
SIGN ON POST

EACH SPACE SHALL HAVE THIS SIGN DISPLAYED PER ADA CODE

SIGNAGE

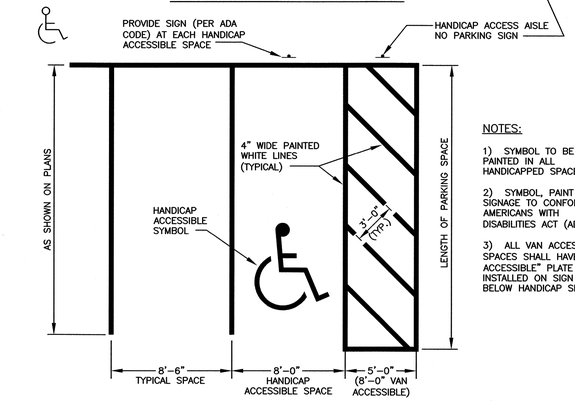
LEGEND SYMBOL



HANDICAP ACCESSIBLE SYMBOL

K-4438
12" x 18"
SIGN ON POST

SIGNAGE



NOTES:

1) SYMBOL TO BE PAINTED IN ALL HANDICAPPED SPACES.

2) SYMBOL, PAINT AND SIGNAGE TO CONFORM TO AMERICANS WITH DISABILITIES ACT (ADA).

3) ALL VAN ACCESSIBLE SPACES SHALL HAVE "VAN ACCESSIBLE" PLATE INSTALLED ON SIGN POST BELOW HANDICAP SIGN.

1/C4 HANDICAP PARKING 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) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 125 AS LOT 17-3.

2) OWNER OF RECORD:
EIGHTKPH, LLC
233 VAUGHAN STREET
UNIT 301
PORTSMOUTH, NH 03801
6348/2213

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE PARKING FOR THE PROPOSED SITE DEVELOPMENT ON ASSESSOR'S MAP 125 LOT 17-3 IN THE CITY OF PORTSMOUTH.

4) REQUIRED PARKING:
FIRST FLOOR: EXEMPT
19 DWELLING UNITS: 1.3/UNIT X 19 UNITS = 25
VISITOR: 19/5 X 1 = 4
TOTAL REQUIRED: 29
TOTAL PROVIDED: 29

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	INTERIOR LAYOUT	11/17/22
2	SPRINKLER ROOM	10/31/22
1	BUILDING FOOTPRINT	10/20/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

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

SCALE: 1" = 10' AUGUST 2022

PARKING LEVEL PLAN

C4

FB 265 PG 18

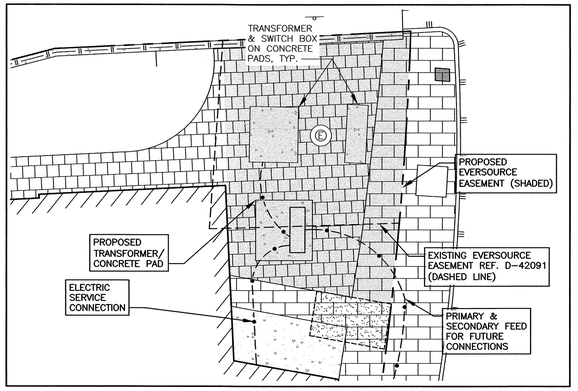
2271.04

UTILITY NOTES:

1) SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
2) COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY.
3) SEE GRADING AND DRAINAGE PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
4) ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, POLYWRAPPED, CEMENT LINED DUCTILE IRON PIPE.
5) ALL WATERMAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION AND BEFORE ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH.
6) ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
7) ALL WORK WITHIN CITY R.O.W. SHALL BE COORDINATED WITH CITY OF PORTSMOUTH
8) CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
9) ANY CONNECTION TO EXISTING WATERMAIN SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.
10) EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
11) ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
12) THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH BUILDING DRAWINGS AND UTILITY COMPANIES.
13) ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
14) ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
15) THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATED TO THE OWNER PRIOR TO THE COMPLETION OF PROJECT.
16) THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED IN THESE DRAWING TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
17) CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
18) A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS WATER ABOVE SEWER.
19) SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
20) GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
21) COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
22) ALL SEWER PIPES WITH LESS THAN 6' COVER SHALL BE INSULATED.
23) CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
24) CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH UTILITY COMPANY AND AFFECTED ABUTTER.

SEWER STRUCTURE SCHEDULE

STRUCTURE	PROP/EX	RIM	PIPE SIZE/TYPE	INVERT IN	INVERT OUT	DIRECTION
SMH 1499	EX	15.80	48" BRICK BOX	-1.80	-1.80	
SMH 1501	EX	13.58	24"	-0.30	-0.32	
SMH 2305	EX	10.90	48" VC	-1.17		
6" COMM.	PROP		6"	-0.35 @ PIPE	12.0 @ BLDG.	
6" RES.	PROP		6"	-0.64 @ PIPE	12.0 @BLDG.	

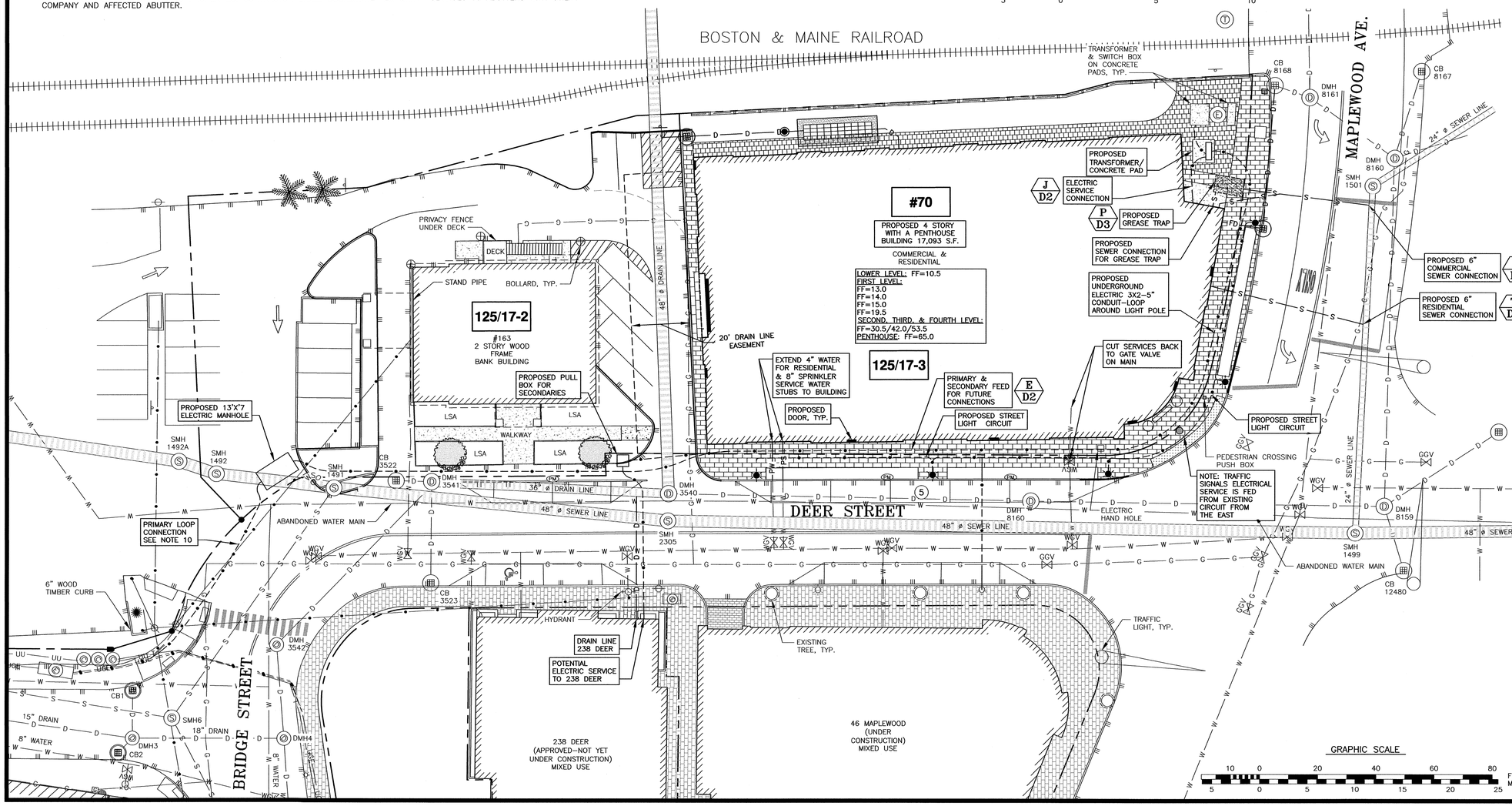


EVERSOURCE EASEMENT REVISION

GRAPHIC SCALE

10 5 0 10 20 30 40 FEET
3 0 5 10 METERS

NORTH NAD83(2011)
GRID NH SPC



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) INSTALL CATCH BASIN INLET PROTECTION ON ALL EXISTING AND PROPOSED CATCH BASINS UNTIL CONSTRUCTION IS COMPLETED AND THE SITE IS STABILIZED.

5) ALL WATER MAIN AND SANITARY SEWER WORK SHALL MEET THE STANDARDS OF THE NEW HAMPSHIRE STATE PLUMBING CODE AND CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.

6) UTILITY AS-BUILTS SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS UPON COMPLETION OF THE PROJECT.

7) EVERSOURCE WORK ORDER #10272179.

8) PROPOSED SEWER FLOW:
15,263 S.F. COMMERCIAL
15,263 X (2.5 GPD/100 S.F.)=382 GALLONS PER DAY.
(POSSIBLE RESTAURANT) (4,000 GPD)
19 UNITS X 210 GPD=3,990 GPD
TOTAL FLOW: 4,372 GPD TO 7,990 GPD

9) CUT AND CAP THE EXISTING BUILDING SEWER CONNECTIONS AT THE SEWER MAINS.

10) THIS PROJECT WILL PROVIDE PRIMARY & SECONDARY CONDUIT TO THE PROPOSED PULL BOX. PRIMARY LOOP CONNECTION FROM PULL BOX TO 13X17 MANHOLE WILL BE BY OTHERS. EASEMENT ON LOT 17-2 TO BE PROVIDED. ALL CONDUIT FROM TRANSFORMER TO PULL BOX AND TO 238 DEER STREET WILL BE BY AND FOR 238 DEER STREET AND NOT COMPLETED UNLESS FUNDED BY 238 DEER STREET.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
5	WATER & SPRINKLER SERVICE	11/17/22
4	WATER SERVICE NOTE	10/31/22
3	ELECTRIC MANHOLE ON LOT 17-2	10/28/22
2	EVERSOURCE EASEMENT LAYOUT	10/20/22
1	COMMUNITY SPACE ELECTRICAL CIRCUITS, NOTE 9	9/6/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

JOHN R. CRIGNON, NO. 7857 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: 1" = 20' AUGUST 2022

UTILITY PLAN

C5

FB 265 PG 18

2271.04

J:\JOBS\2271\2022\2271DWG\2271-2022 Site Plan\Plans & Sheets\Dwg\2271_C5 Site 2022.dwg, C5 UTILITY, 11/22/2022 1:04:53 PM

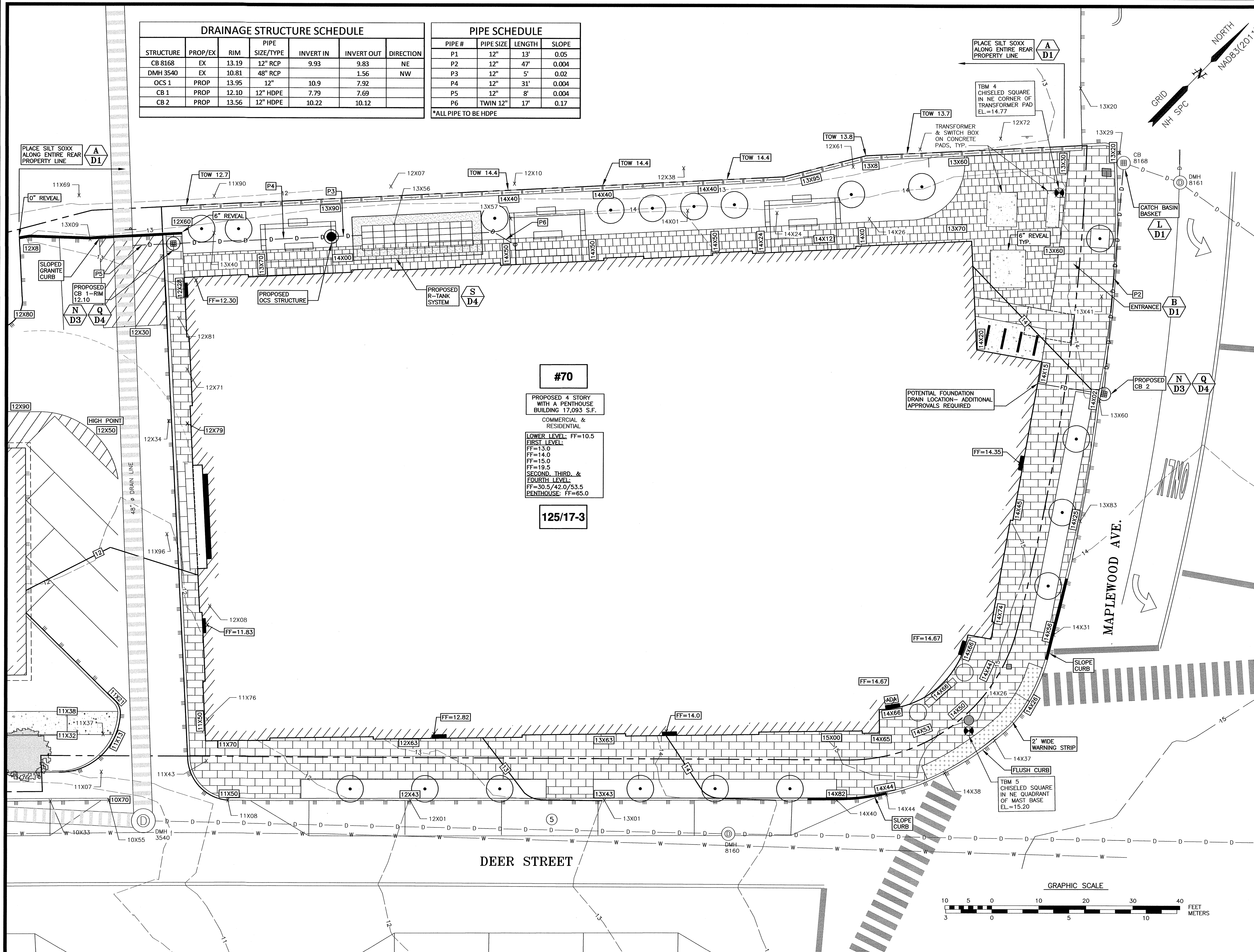
DRAINAGE STRUCTURE SCHEDULE

STRUCTURE	PROP/EX	RIM	PIPE SIZE/TYPE	INVERT IN	INVERT OUT	DIRECTION
CB 8168	EX	13.19	12" RCP	9.93	9.83	NE
DMH 3540	EX	10.81	48" RCP		1.56	NW
OCS 1	PROP	13.95	12"	10.9	7.92	
CB 1	PROP	12.10	12" HDPE	7.79	7.69	
CB 2	PROP	13.56	12" HDPE	10.22	10.12	

PIPE SCHEDULE

PIPE #	PIPE SIZE	LENGTH	SLOPE
P1	12"	13'	0.05
P2	12"	47'	0.004
P3	12"	5'	0.02
P4	12"	31'	0.004
P5	12"	8'	0.004
P6	TWIN 12"	17'	0.17

*ALL PIPE TO BE HDPE



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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).

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	GRADING-REAR	11/17/22
2	BUILDING FOOTPRINT	10/20/22
1	DRAIN PIPE SIZE	9/6/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

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

SCALE: 1" = 10'   AUGUST 2022

GRADING & DRAINAGE PLAN

C6

FB 265 PG 18   2271.04

EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

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

IF REQUIRED THE CONTRACTOR SHALL OBTAIN AN **NPDES** PHASE II STORMWATER PERMIT AND SUBMIT A NOTICE OF INTENT (N.O.I) BEFORE BEGINNING CONSTRUCTION AND SHALL HAVE ON SITE A STORMWATER POLLUTION PREVENTION PLAN (**S.W.P.P.P.**) AVAILABLE FOR INSPECTION BY THE PERMITTING AUTHORITY DURING THE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THE **S.W.P.P.P.** AND INSPECTING AND MAINTAINING ALL BMP'S CALLED FOR BY THE PLAN. THE CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (**N.O.T.**) FORM TO THE REGIONAL EPA OFFICE WITHIN 30 DAYS OF FINAL STABILIZATION OF THE ENTIRE SITE OR TURNING OVER CONTROL OF THE SITE TO ANOTHER OPERATOR.

INSTALL PERIMETER CONTROLS, i.e., SILTSOXX AND CATCH BASIN PROTECTION AROUND THE LIMITS OF DISTURBANCE AND OFF SITE AREAS AS NEEDED BEFORE ANY EARTH MOVING OPERATIONS. THE USE OF HAYBALES IS NOT ALLOWED.

PLACE FODS OR OTHER SITE ENTRANCE AS NEEDED.

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

ROUGH GRADE SITE: CONSTRUCT RETAINING WALL

CONSTRUCT BUILDING FOUNDATION.

LAYOUT AND INSTALL ALL BURIED UTILITIES AND SERVICES UP TO 10' OF THE PROPOSED BUILDING FOUNDATIONS. CAP AND MARK TERMINATIONS OR LOG SWING TIES.

COMPLETE BUILDING.

CONNECT UTILITIES.

PLACE BINDER LAYER OF PAVEMENT FOR SIDEWALKS.

PLANT LANDSCAPING IN AREAS OUT OF WAY OF BUILDING CONSTRUCTION. PREPARE AND STABILIZE FINAL SITE GRADING BY ADDING TOPSOIL, SEED, MULCH AND FERTILIZER.

AFTER BUILDINGS ARE COMPLETED, FINISH ALL REMAINING LANDSCAPED WORK.

CONSTRUCT SIDEWALKS.

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

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 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.

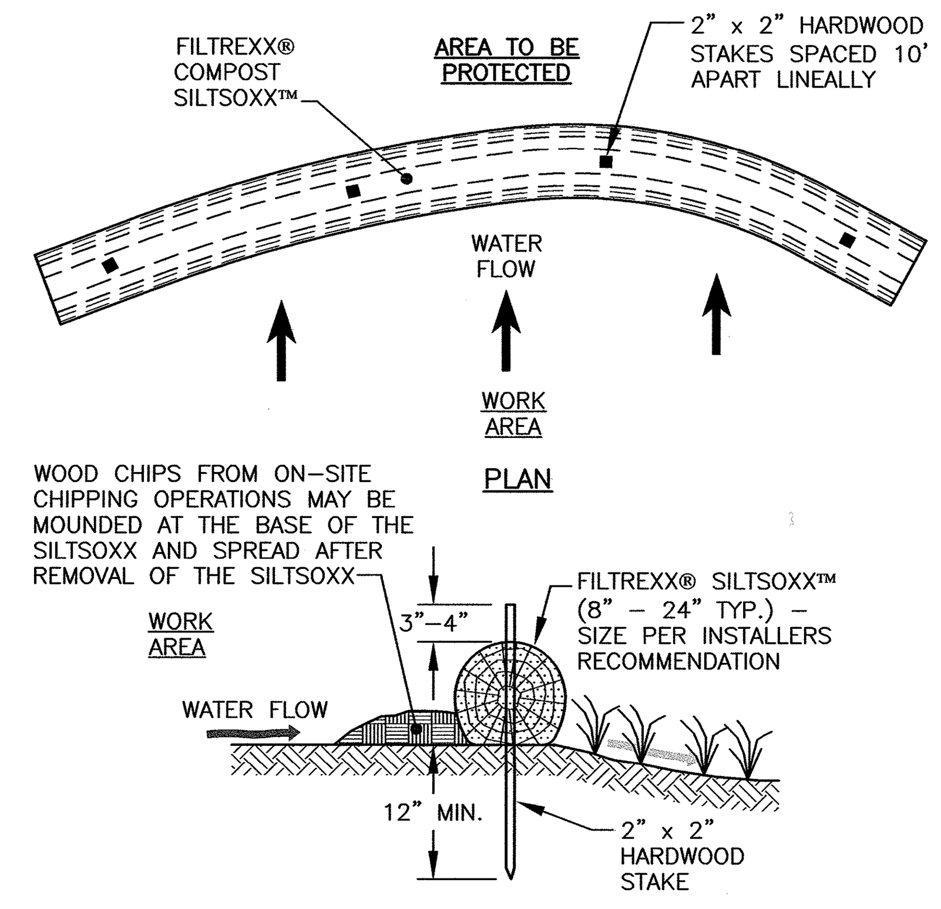
SILT FENCING AND SILTSOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

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.



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

A / C6 — FILTREXX® SILTSOXX™ FILTRATION SYSTEM (AS NEEDED) — NTS

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 and grass cover
- Trees, Shrubs and ground covers and landscape plantings
- Dust control
- Sediment barriers; Catch basin bags
- Stabilized construction entrance

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:
- ACF R-Tank stormwater storage system
- Bio Clean Downspout Filter
- 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.

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.

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.

Bio Clean Downspout Filter: Refer to the manufacturer's Operation and Maintenance manual for guidance, included herewith.

ACF R-Tank stormwater storage system: Reference the attached operations and maintenance manual for proper maintenance of the system.

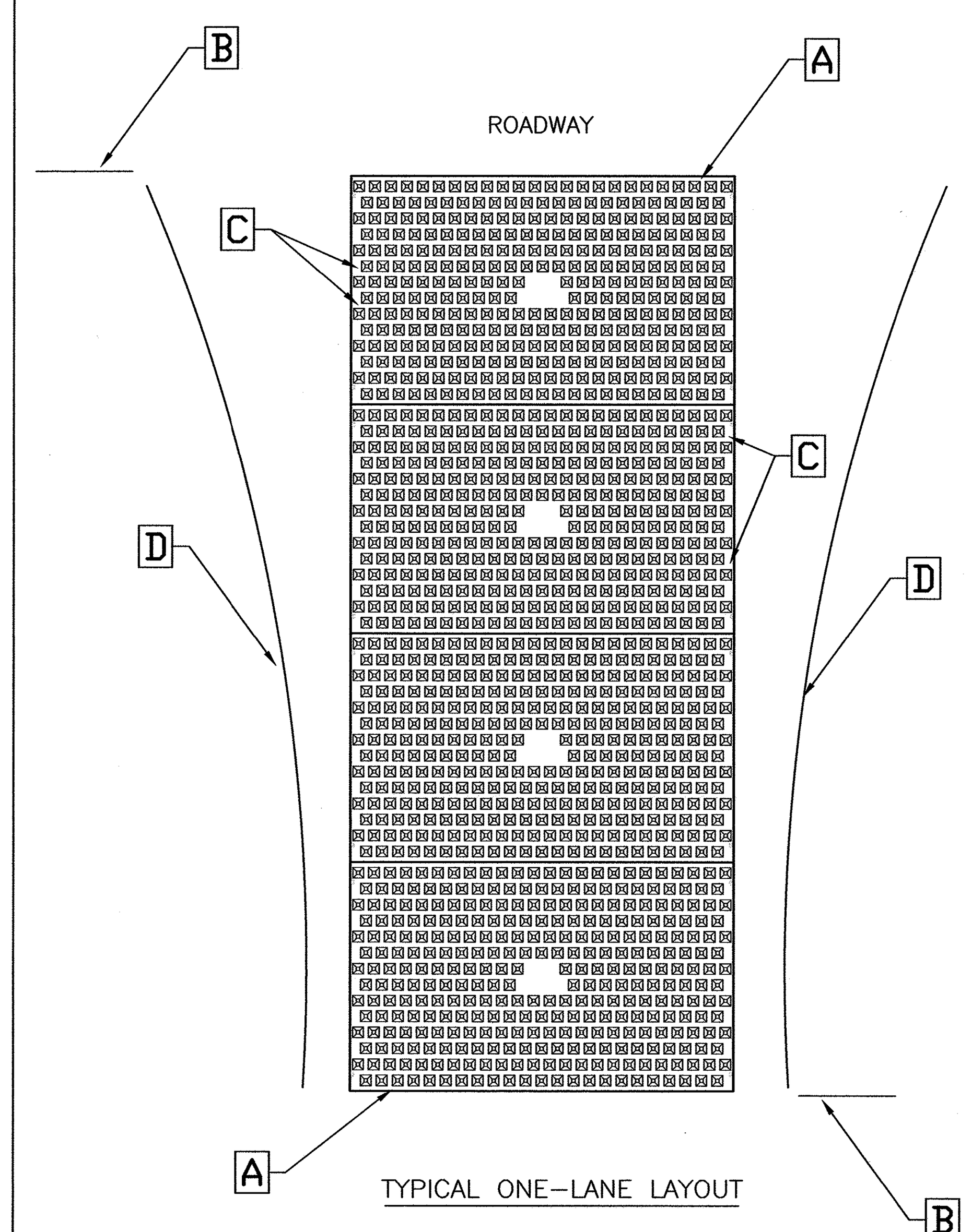
Outlet Control Structures and Storm Drains: Monitor accumulation of debris in outlet control structures monthly or after significant rain events. Remove sediments when they accumulate within the outlet pipe. During construction, maintain inlet protection until all roadways and parking areas have been stabilized. Prior to the end of construction, inspect the drains and basins for accumulations and remove and clean by jet-vacuuming.

FODS TRACKOUT CONTROL SYSTEM

INSTALLATION:

THE PURPOSE AND DESIGN OF THE FODS TRACKOUT CONTROL SYSTEM IS TO EFFECTIVELY REMOVE MOST SEDIMENT FROM VEHICLE TIRES AS THEY EXIT A DISTURBED LAND AREA ONTO A PAVED STREET. THIS MANUAL IS A PLATFORM FROM WHICH TO INSTALL A FODS TRACKOUT CONTROL SYSTEM. (NOTE: THIS IS NOT A ONE SIZE FITS ALL GUIDE.) THE INSTALLATION MAY NEED TO BE MODIFIED TO MEET THE EXISTING CONDITIONS, EXPECTATIONS, OR DEMANDS OF A PARTICULAR SITE. THIS IS A GUIDELINE. ULTIMATELY THE FODS TRACKOUT CONTROL SYSTEM SHOULD BE INSTALLED SAFELY WITH PROPER ANCHORING AND SIGNS PLACED AT THE ENTRANCE AND EXIT TO CAUTION USERS AND OTHERS.

KEY NOTES:
A. FODS TRACKOUT CONTROL SYSTEM MAT.
B. FODS SAFETY SIGN.
C. ANCHOR POINT.
D. SILT OR ORANGE CONSTRUCTION FENCE.



INSTALLATION:
1. THE SITE WHERE THE FODS TRACKOUT CONTROL SYSTEM IS TO BE PLACED SHOULD CORRESPOND TO BEST MANAGEMENT PRACTICES AS MUCH AS POSSIBLE. THE SITE WHERE FODS TRACKOUT CONTROL SYSTEM IS PLACED SHOULD ALSO MEET OR EXCEED THE LOCAL JURISDICTION OR STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.
2. CALL FOR UTILITY LOCATES 3 BUSINESS DAYS IN ADVANCE OF THE OF FODS TRACKOUT CONTROL SYSTEM INSTALLATION FOR THE MARKING OF UNDERGROUND UTILITIES. CALL THE UTILITY NOTIFICATION CENTER AT 811.
3. ONCE THE SITE IS ESTABLISHED WHERE FODS TRACKOUT CONTROL SYSTEM IS TO BE PLACED, ANY EXCESSIVE UNEVEN TERRAIN SHOULD BE LEVELED OUT OR REMOVED SUCH AS LARGE ROCKS, LANDSCAPING MATERIALS, OR SUDDEN ABRUPT CHANGES IN ELEVATION.
4. THE INDIVIDUAL MATS CAN START TO BE PLACED INTO POSITION. THE FIRST MAT SHOULD BE PLACED NEXT TO THE CLOSEST POINT OF EGRESS. THIS WILL ENSURE THAT THE VEHICLE WILL EXIT STRAIGHT FROM THE SITE ONTO THE PAVED SURFACE.
8. AFTER THE FIRST MAT IS PLACED DOWN IN THE PROPER LOCATION, MATS SHOULD BE ANCHORED TO PREVENT THE POTENTIAL MOVEMENT WHILE THE ADJOINING MATS ARE INSTALLED. ANCHORS SHOULD BE PLACED AT EVERY ANCHOR POINT (IF FEASIBLE) TO HELP MAINTAIN THE MAT IN ITS CURRENT POSITION.
9. AFTER THE FIRST MAT IS ANCHORED IN ITS PROPER PLACE, AN H BRACKET SHOULD BE PLACED AT THE END OF THE FIRST MAT BEFORE ANOTHER MAT IS PLACED ADJACENT TO THE FIRST MAT.
10. ONCE THE SECOND MAT IS PLACED ADJACENT TO THE FIRST MAT, MAKE SURE THE H BRACKET IS CORRECTLY SITUATED BETWEEN THE TWO MATS, AND SLIDE MATS TOGETHER.
11. NEXT THE CONNECTOR STRAPS SHOULD BE INSTALLED TO CONNECT THE TWO MATS TOGETHER.
12. UPON PLACEMENT OF EACH NEW MAT IN THE SYSTEM, THAT MAT SHOULD BE ANCHORED AT EVERY ANCHOR POINT TO HELP STABILIZE THE MAT AND ENSURE THE SYSTEM IS CONTINUOUS WITH NO GAPS IN BETWEEN THE MATS.
13. SUCCESSIVE MATS CAN THEN BE PLACED TO CREATE THE FODS TRACKOUT CONTROL SYSTEM REPEATING THE ABOVE STEPS.

USE AND MAINTENANCE
1. VEHICLES SHOULD TRAVEL DOWN THE LENGTH OF THE TRACKOUT CONTROL SYSTEM AND NOT CUT ACROSS THE MATS.
2. DRIVERS SHOULD TURN THE WHEEL OF THEIR VEHICLES SUCH THAT THE VEHICLE WILL MAKE A SHALLOW S-TURN ROUTE DOWN THE LENGTH OF THE FODS TRACKOUT CONTROL SYSTEM.
3. MATS SHOULD BE CLEANED ONCE THE VOIDS BETWEEN THE PYRAMIDS BECOME FULL OF SEDIMENT. TYPICALLY THIS WILL NEED TO BE PERFORMED WITHIN TWO WEEKS AFTER A STORM EVENT. BRUSHING IS THE PREFERRED METHOD OF CLEANING, EITHER MANUALLY OR MECHANICALLY.
4. THE USE OF ICE MELT, ROCK SALT, SNOW MELT, DE-ICER, ETC. SHOULD BE UTILIZED AS NECESSARY DURING THE WINTER MONTHS AND AFTER A SNOW EVENT TO PREVENT ICE BUILDUP.

REMOVAL
1. REMOVAL OF FODS TRACKOUT CONTROL SYSTEM IS REVERSE ORDER OF INSTALLATION.
2. STARTING WITH THE LAST MAT, THE MAT THAT IS PLACED AT THE INNERMOST POINT OF THE SITE OR THE MAT FURTHEST FROM THE EXIT OR PAVED SURFACE SHOULD BE REMOVED FIRST.
3. THE ANCHORS SHOULD BE REMOVED.
4. THE CONNECTOR STRAPS SHOULD BE UNBOLTED AT ALL LOCATIONS IN THE FODS TRACKOUT CONTROL SYSTEM.
5. STARTING WITH THE LAST MAT IN THE SYSTEM, EACH SUCCESSIVE MAT SHOULD THEN BE MOVED AND STACKED FOR LOADING BY FORKLIFT OR EXCAVATOR ONTO A TRUCK FOR REMOVAL FROM THE SITE.

B / C6 — FODS (USE AS REQUIRED) — MAY SUBSTITUTE ROCK CONSTRUCTION ENTRANCE — 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) DEER STREET SHALL BE SWEEPED DAILY DURING THE ENTIRE CONSTRUCTION DURATION.

5) PROJECT CMMP WILL BE REQUIRED. CONSTRUCTION TEAM TO COORDINATE WITH CITY OF PORTSMOUTH.

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

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

SCALE: AS SHOWN | AUGUST 2022

EROSION PROTECTION NOTES AND DETAILS

D1

FB 265 PG 18

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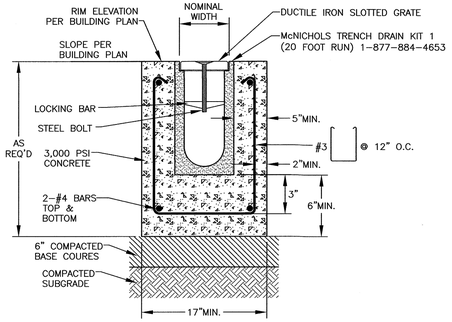


D / C4 TRENCH DRAIN DETAIL
EVAPORATIVE NTS

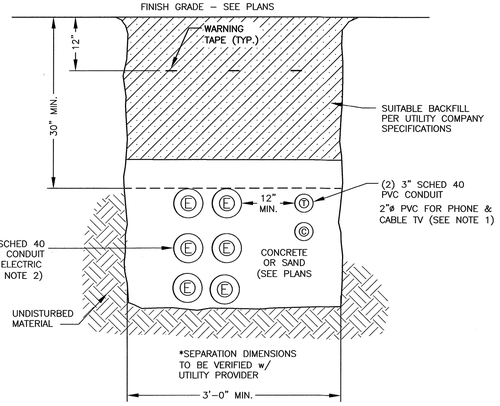
NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCHED. 40 FOR THE REMAINDER.

2) NORMAL CONDUIT SIZES FOR PSNH ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.

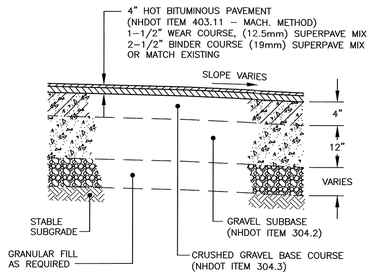
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)

4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT

5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANY'S PRIOR TO ANY CONSTRUCTION.

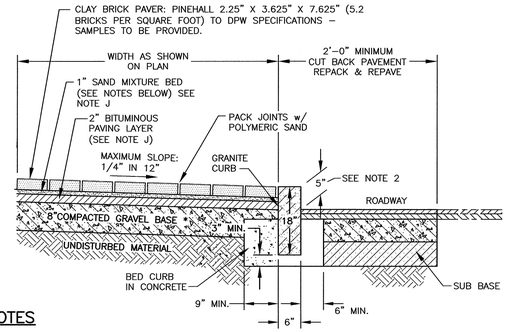


E / C5 BURIED ELEC/COMM CABLE
(MAY NOT BE IN SAME TRENCH SEE PLANS) NTS



F / C3 TYPICAL PAVEMENT CROSS-SECTION
ON SITE PROPERTY ONLY NTS

CONSTRUCTION NOTE:
EXISTING GRANITE CURB DISTURBED BY CONSTRUCTION SHALL BE REUSED AND ANY MISSING CURB SHALL BE REPLACED WITH NEW CURB MATCHING EXISTING CURB SIZE. NO CURB LESS THAN 3' IN LENGTH WILL BE ALLOWED.



BRICK PAVEMENT NOTES

SCOPE OF WORK:

1) THE WORK SHALL CONSIST OF CONSTRUCTING/RECONSTRUCTING THE SUB-BASE AND CONSTRUCTING A NEW BRICK SIDEWALK AS DIRECTED IN THE FIELD BY THE ENGINEER.
2) REVEAL SHALL BE 5" (COORDINATE WITH PORTSMOUTH DPW).

METHODS OF CONSTRUCTION:

A) ALL LABOR AND MATERIALS SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 608, AND CITY OF PORTSMOUTH SPECIFICATIONS FOR NEW BRICK SIDEWALK, SECTION 6.

B) ALL BRICKS SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD SPECIFICATIONS FOR BUILDING BRICKS: CLASS SX, TYPE 1, APPLICATION PX. THE BRICKS SHALL BE NO. 1, WIRE CUT TYPE FOR PAVING, WITH A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 POUNDS PER SQUARE INCH. THE BRICKS SHALL NOT BE CORED OR HAVE FROGS AND SHALL BE OF A STANDARD SIZE (2.25" X 4 X 8").

C) EXCAVATION FOR SIDEWALKS SHALL BE AT A DEPTH OF 10 INCHES BELOW FINISH GRADE. IN AREAS NOT BUTTING CURBING OR BUILDINGS, THE EXCAVATION SHALL BE 6 INCHES WIDER THAN THE FINISHED SIDEWALK WIDTH. AT ALL DRIVE CROSSINGS, THE DEPTH OF EXCAVATION SHALL BE INCREASED ACCORDINGLY. THE CONTRACTOR SHALL PROVIDE NEAT AND SQUARE CUTTING OF EXISTING ASPHALT ROAD SURFACE AS NEEDED. ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF-SITE AT THE CONTRACTOR'S OWN EXPENSE.

D) THE BASE MATERIAL SHALL CONSIST OF A MIXTURE OF STONES OR ROCK FRAGMENTS AND PARTICLES WITH 100% PASSING THE 3 INCH SIEVE, 95% TO 100% PASSING THE 2 INCH SIEVE, 55% TO 85% PASSING THE 1 INCH SIEVE, AND 27% TO 52% PASSING THE NO. 4 SIEVE. AT LEAST 50% OF THE MATERIALS RETAINED ON THE 1 INCH SIEVE SHALL HAVE A FRACTURED FACE. THE BASE MATERIAL SHALL BE THOROUGHLY COMPACTED TO THE DEPTH SPECIFIED OR DIRECTED. IN THE WAY OF ALL DRIVE CROSSINGS THE BASE WILL BE INCREASED TO A COMPACTED DEPTH OF 12 INCHES. GRAVEL REQUIREMENTS FOR RECONSTRUCTION WILL BE AS DIRECTED, BASED ON SITE CONDITIONS. THE WORK INCLUDES BACKING UP ANY AND ALL CURB BEING INSTALLED BY OTHERS ON BOTH SIDES.

E) THE CLAY BRICK PAVERS SHALL BE LAID IN A 1 INCH BED OF A SAND MIXTURE COMPRISED OF: 3 PARTS SAND MIXED WITH 1 PART PORTLAND CEMENT.

F) THE CONTRACTOR SHALL LAY THE BRICKS SO THAT APPROXIMATELY 5.2 BRICKS SHALL COVER ONE SQUARE FOOT.

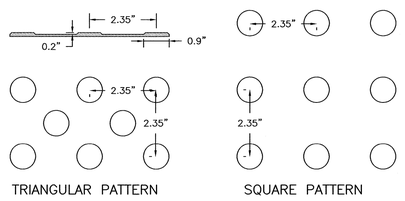
G) THE SIDEWALK SHALL PITCH TOWARDS THE STREET AS SHOWN ON THE GRADING PLAN.

H) IN AREAS WHERE THE FRONT OF THE BRICK SIDEWALK IS NOT ADJACENT TO GRANITE CURBING, THE CONTRACTOR SHALL INSTALL EDGING TO HOLD THE BRICKS IN PLACE. SUCH EDGING SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

I) THE CONTRACTOR SHALL SUBMIT A SAMPLE OF THE BRICKS FOR APPROVAL BY THE CITY BEFORE BRICKS ARE INSTALLED.

J) 2" BITUMINOUS PAVING LAYER MAY BE SUBSTITUTED WITH 2" COMPACTED GRAVEL ON SITE AREAS THAT ARE PRIVATE PROPERTY AND NOT IN PUBLIC EASEMENT AREAS INCLUDING COMMUNITY SPACE.

G / C3 BRICK SIDEWALK w/ VERTICAL GRANITE CURB
(STONE DUST BEDDING OVER BITUMINOUS PAVING) NTS



TRIANGULAR PATTERN SQUARE PATTERN

EITHER PATTERN IS ACCEPTABLE

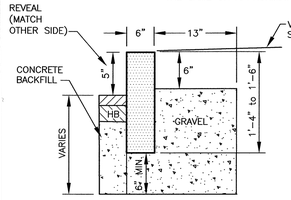
NOTE:
1. CURB RAMPS MUST HAVE A DETECTABLE WARNING FEATURE EXTENDING THE FULL WIDTH OF THE RAMP, A HEIGHT OF NOMINAL 0.2", THE DETECTABLE SURFACE MUST CONSIST OF RAISED TRUNCATED SPACING OF NOMINAL 2.35". THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST VISUALLY WITH THE SURROUNDING SURFACES (LIGHT-ON-DARK OR DARK-ON-LIGHT).
2. DETECTABLE WARNING SURFACE SHALL BE IRON PANEL TO FILL THE SPACE SHOWN ON THE SITE PLAN.

H / C3 DETECTABLE WARNING SURFACE
24" WIDE NTS

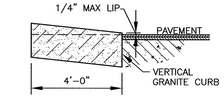
MIN. LENGTH OF CURB STONES 3FT.
MAX. LENGTH OF CURB STONES 10FT.
MAX. LENGTH OF STRAIGHT CURB STONES LAID ON CURVES SEE CHART

NOTE: ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATE LENGTH.

Radius	Max. length
21'	3'
22' - 28'	4'
29' - 35'	5'
36' - 42'	6'
43' - 49'	7'
50' - 56'	8'
57' - 60'	9'
over 60'	10'

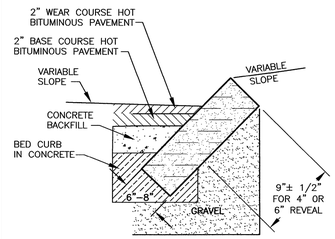


VERTICAL GRANITE CURB



NOTE: JOINTS BETWEEN STONES TO BE MORTARED

GRANITE CURB END

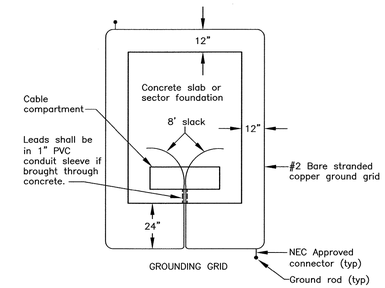


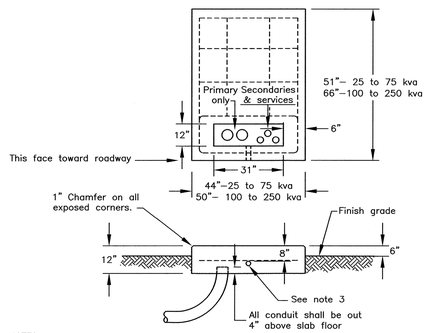
TIP GRANITE CURB

MIN. LENGTH OF STRAIGHT CURB STONES: 18"
MAX. LENGTH OF STRAIGHT STRAIGHT CURB STONES LAID ON CURVE: SEE CHART

Radius for stones with square joints	Maximum length
16' - 28'	6" - 1'
29' - 41'	2'
42' - 55'	3'
56' - 68'	4'
69' - 82'	5'
83' - 96'	6'
97' - 110'	7'
over 110'	8'

I / C3 GRANITE CURBING DETAILS
WHERE AND IF SPECIFIED 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.

J / C5 TRANSFORMER PAD
EVERSOURCE NTS

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

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SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	DETAIL G	9/6/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

SCALE: AS SHOWN AUGUST 2022

DETAILS D2

FB 265 PG 18

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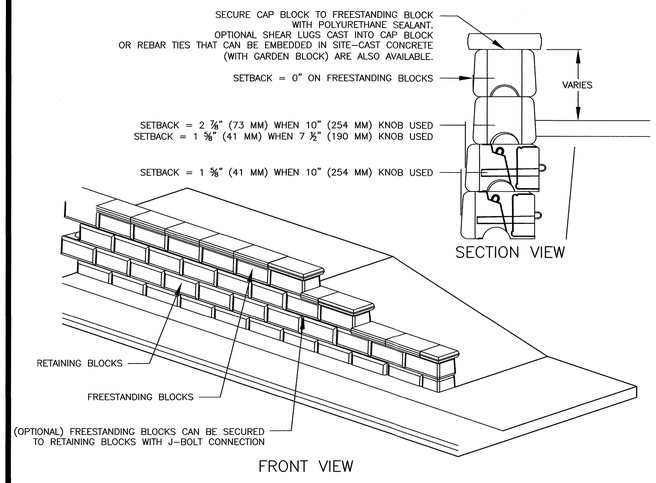
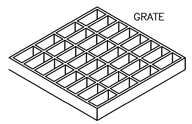
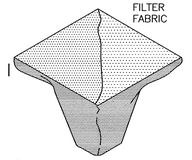


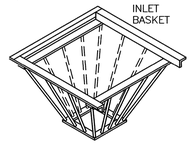
K / C3 SMALL BLOCK RETAINING WALL

GENEST – BRUSSELS – UNILOCK WALL
COORDINATE COLOR WITH OWNER

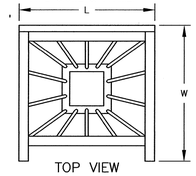
NTS



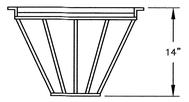




LENGTH (L) & WIDTH (W) AS REQUIRED TO FIT NHDOT TYPE GRATE & FRAME.



TOP VIEW



SIDE VIEW

1) INLET BASKETS SHALL BE INSTALLED IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION IS COMPLETE AND SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

2) FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND, SHALL EXTEND AT LEAST 6" PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.

3) THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE, OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
- –RAB STRENGTH: 45 LB. MIN. IN ANY PRINCIPAL DIRECTION (ASTM D1682)
- –MULLEN BURST STRENGTH: MIN. 60 psi (ASTM D774)

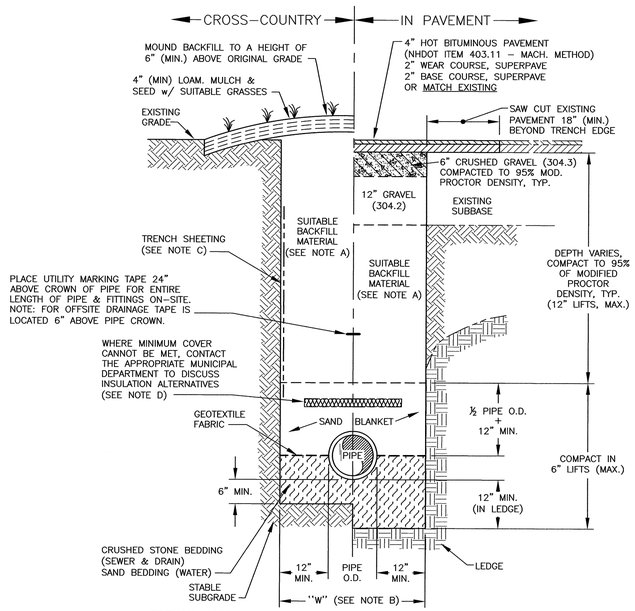
4) THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 gpm/s.f. (MULTIPLY THE PERMITTIVITY IN SEC.–1 FROM ASTM 54491–85 CONSTANT HEAD TEST USING THE CONVERSION FACTOR OF 74.)

5) THE INLET BASKET SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.

6) SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

L / C6 CATCH BASIN INLET BASKET

NTS



TRENCH NOTES:

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

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

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

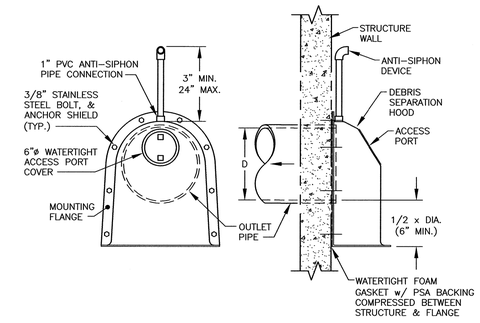
C) TRENCH SHEETING:
THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFE EXCAVATION PRACTICES.

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

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

M / C5 TYPICAL PIPE TRENCH

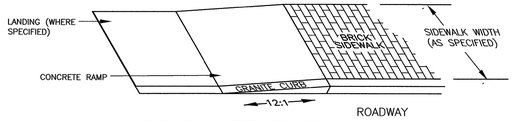
NTS



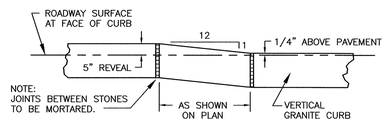
N / C6 CATCH BASIN OUTLET HOOD

THE "SNOUT"

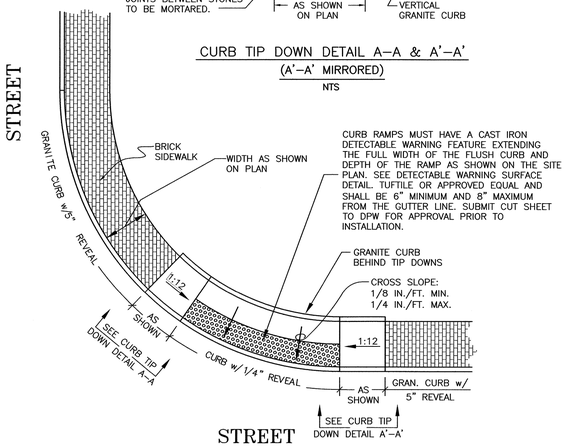
NTS



SIDEWALK TIP DOWN
(NON INTERSECTION) NTS

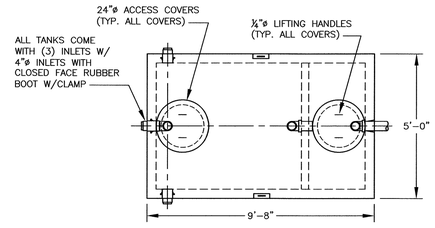


CURB TIP DOWN DETAIL A–A & A'–A'
(A'–A' MIRRORED)
NTS



STREET
SIDEWALK TIP DOWN AT INTERSECTION
NTS

0 / C3 TYPICAL SIDEWALK TIP DOWNS

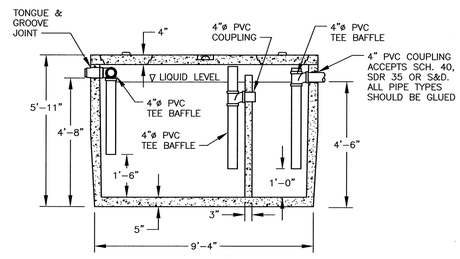


PLAN

GENERAL NOTES:

CONCRETE SPECIFICATIONS:
1) 4000 PSI @ 28 DAYS.
2) 4%–6% ENTRAINED AIR.
3) TANK PENETRATIONS ARE INTEGRALLY CAST.
4) ALL JOINTS SEALED WITH BUTYL RESIN.
5) EXTERIOR TO BE COATED.

GREASE TRAP INFORMATION:
1) TANKS SHOULD BE PUMPED AS NEEDED.
2) ACCESS COVERS SHOULD HAVE RISERS TO BRING COVER ACCESS TO GRADE.
3) TANKS CAN BE VACUUM TESTED AT AN ADDITIONAL COST.



SECTION

P / C5 SHEA CONCRETE
1000 GALLON 2 COMP. GREASE TRAP
14,825 Lbs
ITEM # M1000H
H20 LOAD RATED

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).

SITE DEVELOPMENT EIGHTKPH, LLC 70 MAPLEWOOD AVENUE PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	DETAIL K	10/20/22
1	DETAIL O & P	9/6/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

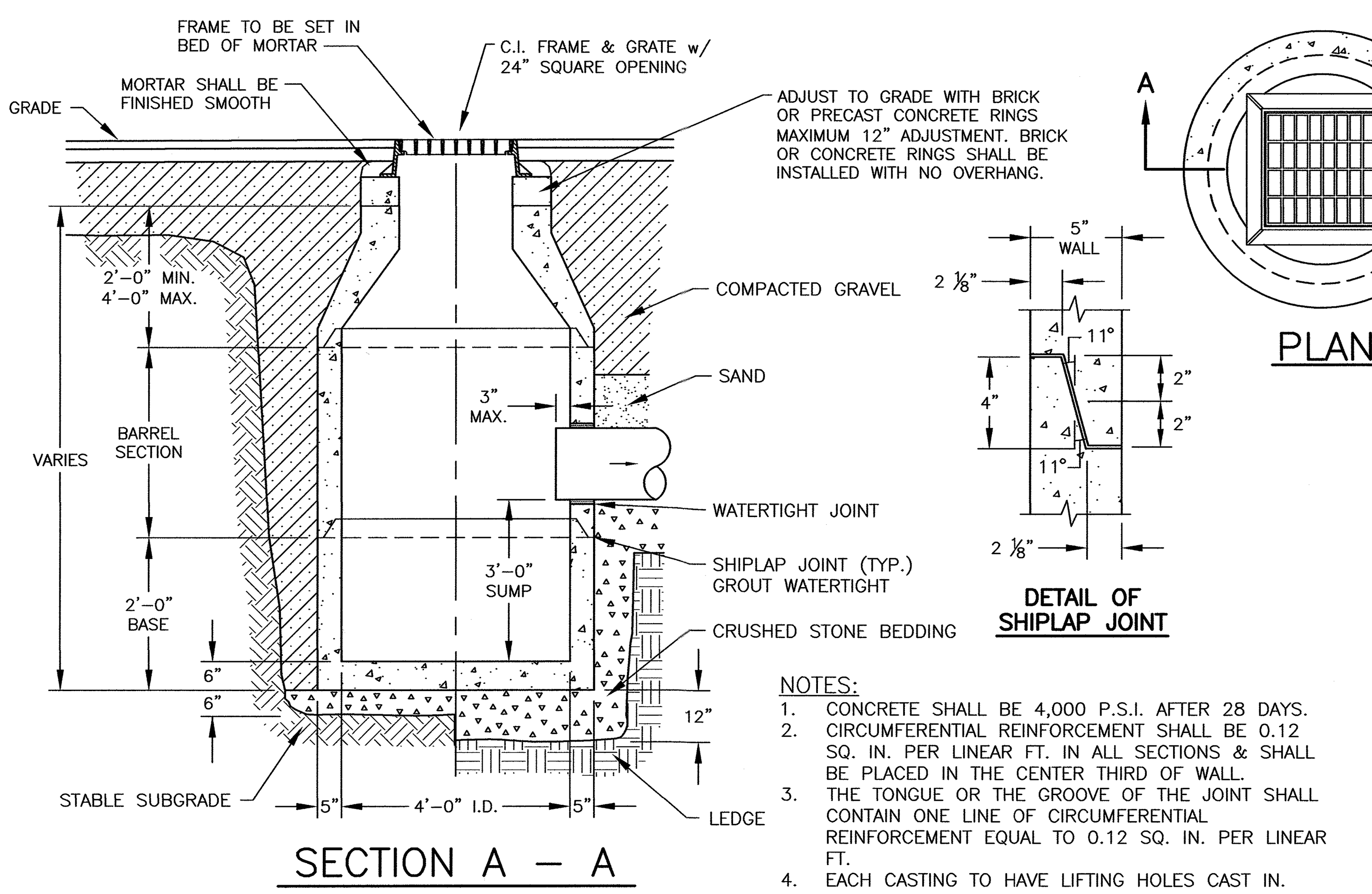
SCALE: AS SHOWN AUGUST 2022

DETAILS D3

FB 265 PG 18

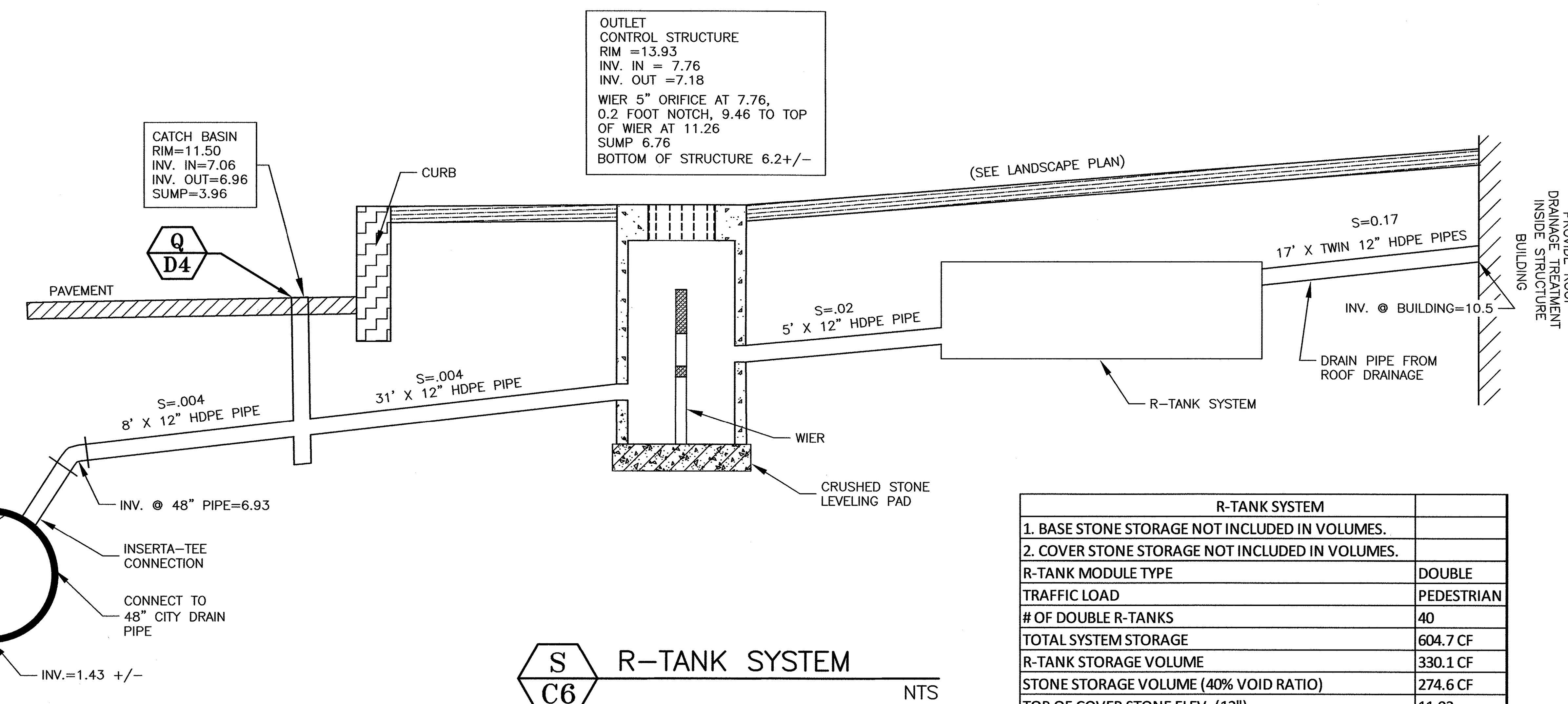
2271.04

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. CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS & SHALL BE PLACED IN THE CENTER THIRD OF WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.

Q / C6 CATCH BASIN DETAIL
NTS



S / C6 R-TANK SYSTEM
NTS

R-TANK SYSTEM	
1. BASE STONE STORAGE NOT INCLUDED IN VOLUMES.	
2. COVER STONE STORAGE NOT INCLUDED IN VOLUMES.	
R-TANK MODULE TYPE	DOUBLE
TRAFFIC LOAD	PEDESTRIAN
# OF DOUBLE R-TANKS	40
TOTAL SYSTEM STORAGE	604.7 CF
R-TANK STORAGE VOLUME	330.1 CF
STONE STORAGE VOLUME (40% VOID RATIO)	274.6 CF
TOP OF COVER STONE ELEV. (12")	11.93
ACF BX-12 GEOGRID ELEV.	11.93
TOP OF R-TANK ELEV.	10.93
TANK INVERT IN	10.16
INVERT OF STONE BASE (3") OUT	7.86
MIN. STONE PERIMETER WIDTH 2.0 FT	2.0 FT
SYSTEM IS 27.46 FT LONG BY 9.25 FT WIDE, INCLUDING APRON	

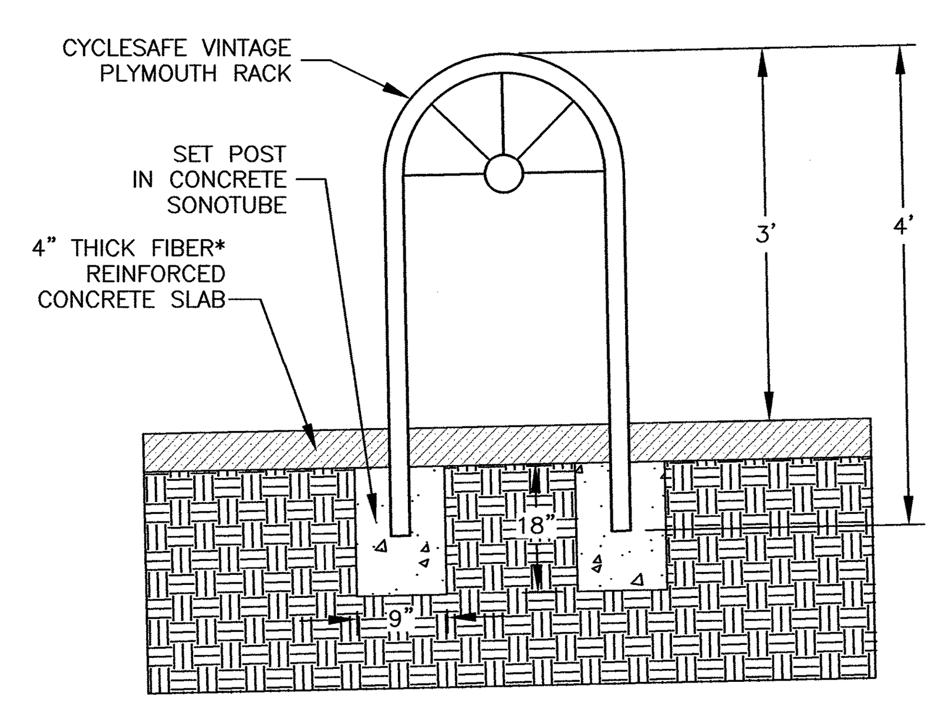
NOTES:

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 CONTRACTOR IS RESPONSIBLE TO MAINTAIN MARKS. DIG SAFE TICKETS EXPIRE IN THIRTY DAYS.

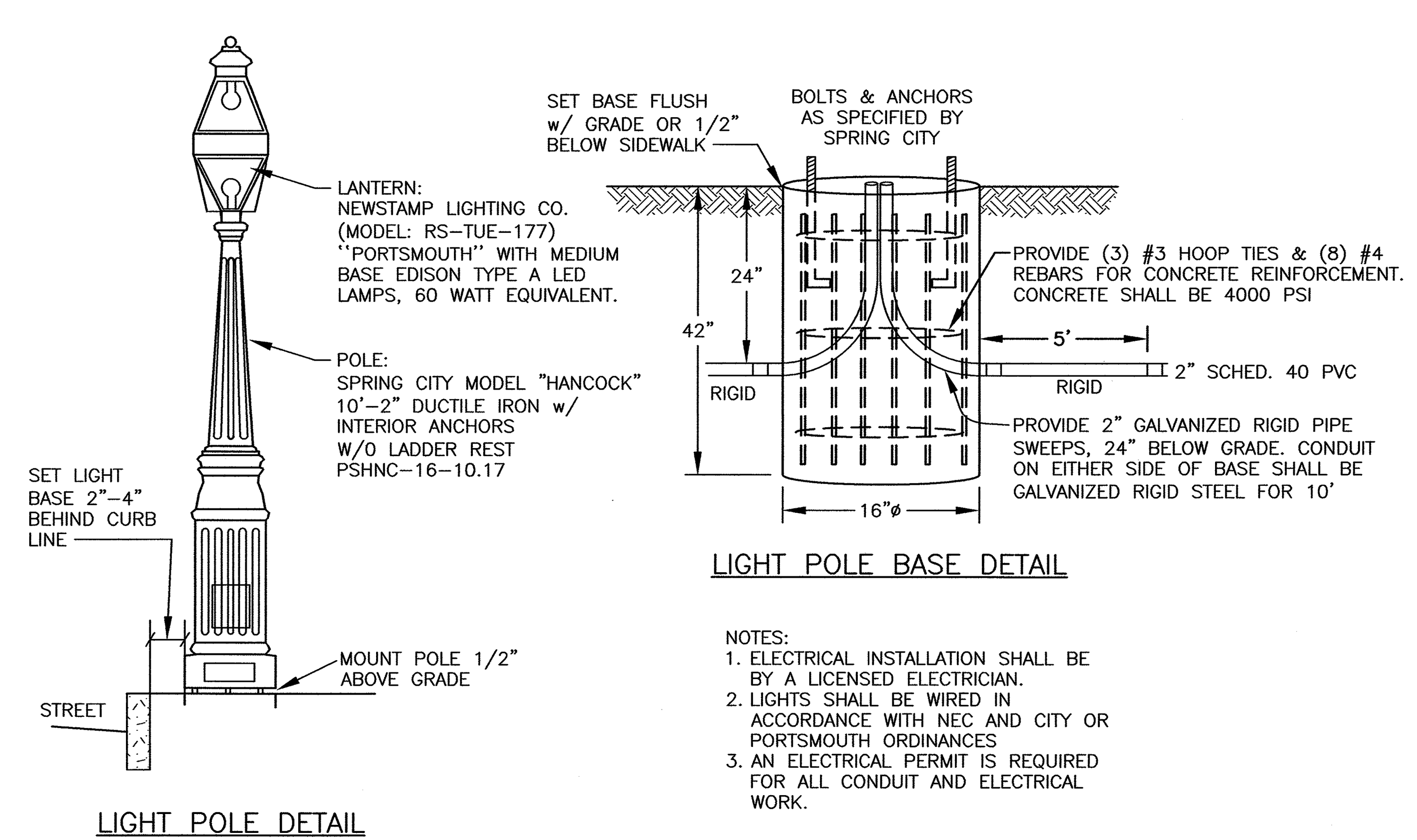
2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

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).

*FIBER: 100% VIRGIN POLYPROPYLENE SUCH AS GRACE MICROFIBER, ASTM C1116, TYPE 111, PAR.4.1.3 OR EQUAL. APPLIED @ 1 LB. PER C.Y.

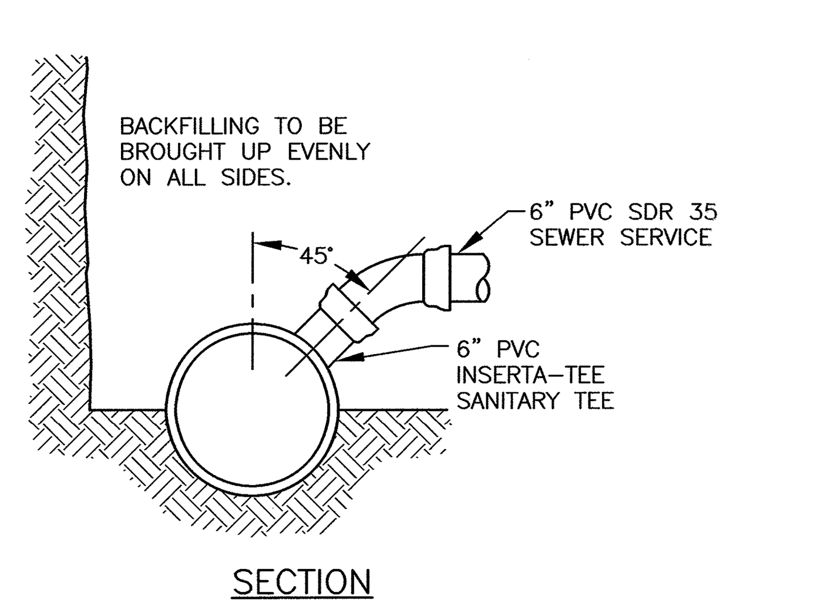


R / C3 BIKE RACK
NTS



NOTES:
1. ELECTRICAL INSTALLATION SHALL BE BY A LICENSED ELECTRICIAN.
2. LIGHTS SHALL BE WIRED IN ACCORDANCE WITH NEC AND CITY OR PORTSMOUTH ORDINANCES
3. AN ELECTRICAL PERMIT IS REQUIRED FOR ALL CONDUIT AND ELECTRICAL WORK.

U / C3 LIGHT POLE & BASE DETAILS
CITY STANDARD
NTS



T / C5 SEWER SERVICE CONNECTION DETAIL
NTS

NOTE: COORDINATE DESIGN OF SEWER CONNECTION WITH CITY OF PORTSMOUTH DPW. PROVIDE SHOP DRAWINGS FOR REVIEW.

GENERAL NOTES:

1) MINIMUM PIPE SIZE FOR HOME SERVICES SHALL BE SIX 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)
F789	PVC (SOLID WALL)	4" THROUGH 18" (T-1 To T-3)
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.

B. DUCTILE IRON PIPE, FITTINGS AND JOINTS.
1. DUCTILE IRON PIPE AND FITTINGS FOR SEWERS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE:
A21.50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536 DUCTILE IRON CASTINGS.
A21.51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOULDS OR SAND LINED MOULDS FOR SEWER APPLICATIONS.
2. JOINTS SHALL BE OF THE MECHANICAL OR PUSH ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO:
A21.11 RUBBER GASKET JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS.

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) TEES AND WYES: WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE DEPENDING ON THE PIPE ENCOUNTERED, FOR PVC PIPE, USE PVC SADDLES OR INSERT-A-TEE, OR CUT IN A SANITARY TEE. FOR CLAY PIPE, USE INSERT-A-TEE OR CUT IN A SANITARY TEE. ALL WORK TO BE APPROVED BY GOVERNING BODY.

6) 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.
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 704.07.

8) ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM DWELLING 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) WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE, UNLESS IT IS ON A SHELF 12" HIGHER, AND 18" APART.

GENERAL NOTES- CONT'D:

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 TO STABILIZE THE TRENCH BASE, GRADED SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.

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) CHIMNEYS: IF VERTICAL DROP INTO SEWER IS GREATER THAN 4 FEET, A CHIMNEY SHALL BE CONSTRUCTED FOR THE HOUSE CONNECTION OR MAIN. CHIMNEY INSTALLATION AS RECOMMENDED BY THE PIPE MANUFACTURER MAY BE USED IF APPROVED BY THE ENGINEER.

14) 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.

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

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

17) 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.

18) 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.

19) FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

20) 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.

21) 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).

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

23) THE PURPOSE OF THESE NOTES IS TO DETAIL STANDARDS FOR SEWER CONSTRUCTION.

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

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	DETAIL U	11/17/22
2	DETAIL R & S	10/20/22
1	PIPE SIZES; DETAIL T	9/6/22
0	ISSUED FOR COMMENT	8/23/22

REVISIONS

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

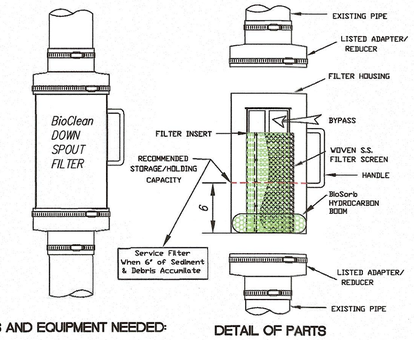
SCALE: AS SHOWN
AUGUST 2022

DETAILS
D4

FB 265 PG 18
2271.04

SERVICE MANUAL
(Cleaning Procedures)

Bio Clean DOWNSPOUT FILTER
Screen Type With Hydrocarbon Boom



TOOLS AND EQUIPMENT NEEDED:

DETAIL OF PARTS

1. Medium size flat scred driver
2. BioSorb hydrocarbon boom. 25-1/2" X 2" dia. (Call Bio Clean to order)
3. Trash container or bag
4. Wooden dowel approx. 3' x 1/2' dia.

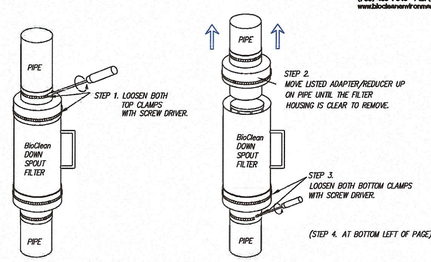
Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net

REMOVING FILTER

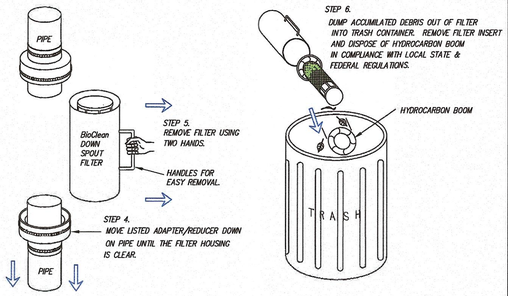
Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net



(STEP 4. AT BOTTOM LEFT OF PAGE)

CLEANING FILTER



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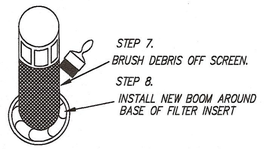
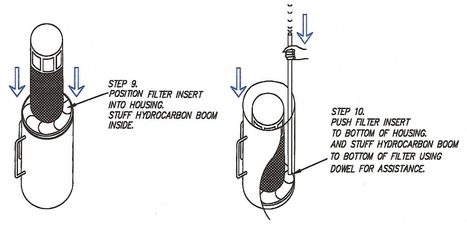


REPLACING FILTER INSERT



REPLACING FILTER

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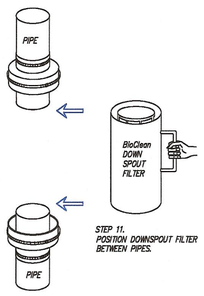
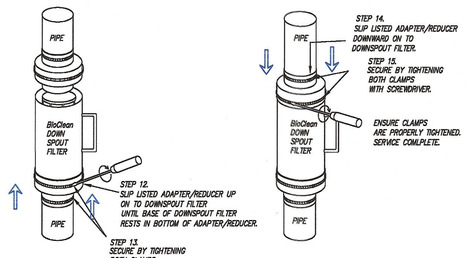
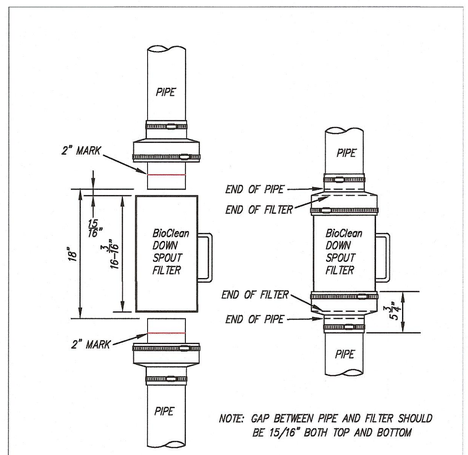




APPROPRIATE INSTALLATION

FILTER CENTERED BETWEEN PIPES WITH EVEN GAPS ON TOP AND BOTTOM



NOTE: GAP BETWEEN PIPE AND FILTER SHOULD BE 15/16" BOTH TOP AND BOTTOM

Bio Clean
A Forterra Company

P.O. BOX 869, Oceanside, Ca. 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net

R-TANK SYSTEM

STEP-BY-STEP INSPECTION & MAINTENANCE ROUTINE

1) INSPECTION
   - A. INSPECTION PORT
     1. REMOVE CAP
     2. USE FLASHLIGHT TO DETECT SEDIMENT DEPOSITS
     3. IF PRESENT, MEASURE SEDIMENT DEPTH WITH STADIA ROD
     4. RECORD RESULTS ON MAINTENANCE LOG
     5. REPLACE CAP
   - B. MAINTENANCE PORT/S
     1. REMOVE CAP
     2. USE FLASHLIGHT TO DETECT SEDIMENT DEPOSITS
     3. IF PRESENT, MEASURE SEDIMENT DEPTH WITH STADIA ROD
     4. RECORD RESULTS ON MAINTENANCE LOG
     5. REPLACE CAP
     6. REPEAT FOR ALL MAINTENANCE PORTS
   - C. ADJACENT MANHOLES
     1. REMOVE COVER
     2. USE FLASHLIGHT TO DETECT SEDIMENT DEPOSITS
     3. IF PRESENT, MEASURE SEDIMENT DEPTH WITH STADIA ROD, ACCOUNTING FOR DEPTH OF SUMP (IF PRESENT)
     4. INSPECT PIPES CONNECTING TO R-TANK
     5. RECORD RESULTS ON MAINTENANCE LOG
     6. REPLACE COVER
     7. REPEAT FOR ALL MANHOLES THAT CONNECT TO THE R-TANK
2) MAINTENANCE
   - A. PLUG SYSTEM OUTLET TO PREVENT DISCHARGE OF BACK-FLUSH WATER
   - B. DETERMINE BEST LOCATION TO PUMP OUT BACK-FLUSH WATER
   - C. REMOVE CAP FROM MAINTENANCE PORT
   - D. PUMP WATER AS RAPIDLY AS POSSIBLE (WITHOUT OVER-TOPPING PORT) INTO SYSTEM UNTIL AT LEAST 1" OF WATER COVERS SYSTEM BOTTOM.
   - E. REPLACE CAP
   - F. REPEAT AT ALL MAINTENANCE PORTS
   - G. PUMP OUT BACK-FLUSH WATER TO COMPLETE BACK-FLUSHING
   - H. VACUUM ALL ADJACENT STRUCTURES AND ANY OTHER STRUCTURES OR STORMWATER PRE-TREATMENT SYSTEMS THAT REQUIRE ATTENTION.
   - I. SEDIMENT-LADEN WATER MAY BE CAPTURED FOR DISPOSAL OR PUMPED THROUGH A DIRTBAG™.
   - J. REPLACE ANY REMAINING CAPS OR COVERS
   - K. RECORD THE BACK-FLUSHING EVENT IN YOUR MAINTENANCE LOG WITH ANY RELEVANT SPECIFICS

STORMWATER SYSTEM MAINTENANCE

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) INSPECTION AND MAINTENANCE REQUIREMENTS

THE FOLLOWING SUMMARIZES THE INSPECTION AND MAINTENANCE REQUIREMENTS FOR THE VARIOUS BMPS THAT MAY BE FOUND ON THIS PROJECT.

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.

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.

BIO CLEAN DOWNSPOUT FILTER: REFER TO THE MANUFACTURER'S OPERATION AND MAINTENANCE MANUAL FOR GUIDANCE, INCLUDED HEREWITH.

ACF R-TANK STORMWATER STORAGE SYSTEM: REFERENCE THE ATTACHED OPERATIONS AND MAINTENANCE MANUAL FOR PROPER MAINTENANCE OF THE SYSTEM.

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 OUTLET PIPE. DURING CONSTRUCTION, MAINTAIN INLET PROTECTION UNTIL ALL ROADWAYS AND PARKING AREAS HAVE BEEN STABILIZED. PRIOR TO THE END OF CONSTRUCTION, INSPECT THE DRAINS AND BASINS FOR ACCUMULATIONS AND REMOVE AND CLEAN BY JET-VACUUMING.

SITE DEVELOPMENT
EIGHTKPH, LLC
70 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	10/20/22

REVISIONS

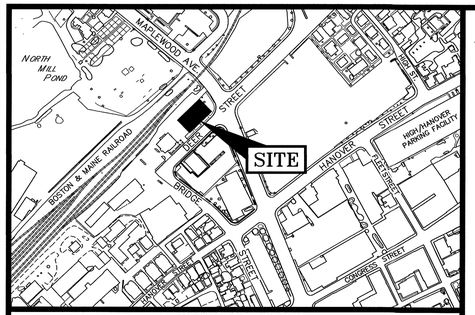
STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON No. 7551 LICENSED PROFESSIONAL ENGINEER

SCALE: AS SHOWN AUGUST 2022

DETAILS D5

FB 265 PG 18

2271.04



LOCATION MAP SCALE: 1" = 300'

LEGEND:

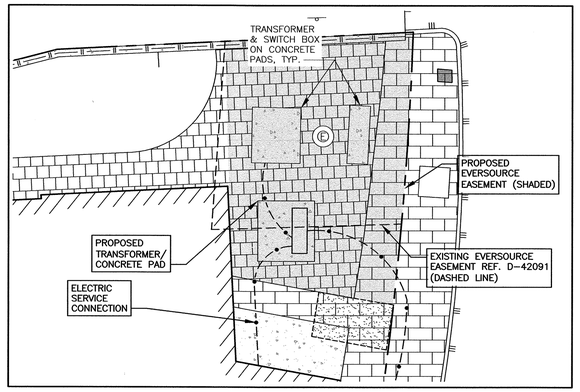
N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
(11/21)	MAP 11/LOT 21
○ IR FND	IRON ROD FOUND
○ IP FND	IRON PIPE FOUND
● IR SET	IRON ROD SET
◉ DH FND	DRILL HOLE FOUND
⭘ DH SET	DRILL HOLE SET
▣ NHHB	NHDOT BOUND FOUND
▣ TB	TOWN BOUND
▣ BND w/DH	BOUND WITH DRILL HOLE
▣ ST BND w/DH	STONE BOUND WITH DRILL HOLE

PLAN REFERENCES:

1) CONSOLIDATION & SUBDIVISION PLAN TAX MAP 125, LOT 17 & TAX MAP 138, LOT 62 DEER STREET ASSOCIATES, BRIDGE, DEER, AND HILL STREETS. PREPARED BY AMBIT ENGINEERING, INC. DATED JULY 2015. SCALE: 1"=50'. RCRD D-39699.

2) PLAN OF RESTRICTIVE COVENANT TAX MAP 164, LOT 4 BOSTON AND MAINE CORPORATION TO DEER STREET ASSOCIATES. PREPARED BY AMBIT ENGINEERING, INC. DATED DECEMBER 2016. SCALE: 1"=50'.

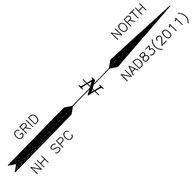
3) EASEMENT PLAN TAX MAP 125– LOT 17, FOR FOUNDRY PLACE, LLC. PREPARED BY AMBIT ENGINEERING, INC. DATED NOVEMBER 2018. LATEST REVISION #3 DATED 4/16/20. SCALE: 1" = 20'.



EVERSOURCE EASEMENT REVISION

GRAPHIC SCALE

10 5 0 10 20 30 40 FEET
3 0 5 10 METERS



(164/4) N/F BOSTON AND MAINE CORPORATION IRON HORSE PARK NORTH BILLERICA, MA 01862 5970/1686

BOSTON & MAINE RAILROAD

MAPLEWOOD AVE.

ACCESS EASEMENT RCRD D-42091 6348/2213 (18&19) 6347/1862 (1.20)

PROPOSED EXPANSION OF DRAINAGE EASEMENT TO THE CITY OF PORTSMOUTH

N43°06'02"E 132.64'

N31°17'20"E 39.07'

N30°51'54"E 56.64'

N43°06'02"E 61.50'

L2

L4

N43°07'25"E 47.08'

TRANSFORMER & SWITCH BOX ON CONCRETE PADS, TYP.

PROPOSED TRANSFORMER/ CONCRETE PAD

ELECTRIC SERVICE CONNECTION

PRIVACY FENCE UNDER DECK

DECK

STAND PIPE

BOLLARD, TYP.

125/17-2

#163
2 STORY WOOD FRAME BANK BUILDING

#70

PROPOSED 4 STORY WITH A PENTHOUSE BUILDING 17,093 S.F.

COMMERCIAL & RESIDENTIAL

LOWER LEVEL: FF=10.5
FIRST LEVEL:
FF=13.0
FF=14.0
FF=15.0
FF=19.5
SECOND, THIRD, & FOURTH LEVEL:
FF=30.5/42.0/53.5
PENTHOUSE: FF=65.0

125/17-3

PROPOSED UNDERGROUND ELECTRIC 3X2-5" CONDUIT-LOOP AROUND LIGHT POLE

N46°52'59"W 116.96'

20' DRAIN LINE EASEMENT

N46°39'37"W 96.71'

PROPOSED 13'X7' ELECTRIC MANHOLE

PROPOSED PULL BOX FOR SECONDARIES

LSA LSA LSA LSA

WALKWAY

PROPOSED DOOR, TYP.

PRIMARY & SECONDARY FEED FOR FUTURE CONNECTIONS

PROPOSED STREET LIGHT CIRCUIT

PROPOSED STREET LIGHT CIRCUIT

S46°12'15"W 31.25'

S46°12'15"W 140.70'

S45°38'07"W 104.52'

N87°45'09"W 20.15'

C3

C4

C5

PROPOSED EASEMENT TO EVERSOURCE

PEDESTRIAN CROSSING PUSH BOX

NOTE: TRAFFIC SIGNALS ELECTRICAL SERVICE IS FED FROM EXISTING CIRCUIT FROM THE EAST

ELECTRIC HAND HOLE

DEER STREET

(125/21) N/F PORT HARBOR LAND, LLC 1000 MARKET STREET BUILDING ONE PORTSMOUTH, NH 03801 6044/14

POTENTIAL ELECTRIC SERVICE TO 238 DEER

TRAFFIC LIGHT, TYP.

LENGTH TABLE–LOT 17–2

LINE	BEARING	DISTANCE
L2	N43°06'02"E	14.81'
L3	S46°46'25"E	7.69'

CURVE TABLE–LOT 17–2

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C3	86.00'	25.48'	25.39'	S10°41'12"W	16°58'41"

LENGTH TABLE–LOT 17–3

LINE	BEARING	DISTANCE
L4	N31°26'32"E	17.92'

CURVE TABLE–LOT 17–3

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C4	486.00'	104.20'	104.00'	S35°55'41"E	12°17'05"
C5	37.00'	48.72'	45.28'	S07°56'11"W	75°26'43"

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

JOHN R. CHAGNON, LLS 738 — DATE 12.1.22

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

JOHN R. CHAGNON, LLS #738 — DATE 12.1.22

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

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) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 125 AS LOTS 17–2 AND 17–3.

2) OWNER OF RECORD:
EIGHTKPH, LLC
233 VAUGHAN STREET
UNIT 301
PORTSMOUTH, NH 03801
6348/2213

3) PARCEL IS LOCATED IN CHARACTER DISTRICT 5 ZONE; DOWNTOWN OVERLAY, NORTH END INCENTIVE OVERLAY & HISTORIC DISTRICTS.

4) DIMENSIONAL REQUIREMENTS (ALSO SEE ORDINANCE):
CHARACTER DISTRICT 5:

MIN. LOT AREA:	NO REQUIREMENT
FRONTAGE:	NO REQUIREMENT
SETBACKS:	
FRONT (MAX.)	5 FEET (PRIMARY)
FRONT (MAX.)	5 FEET (SECONDARY)
SIDE	NO REQUIREMENT
REAR	GREATER OF 5 FEET FROM REAR LOT LINE OR 10 FEET FROM CENTER OF ALLEY
MAXIMUM STRUCTURE HEIGHT:	SEE CITY PLAN
MAXIMUM STRUCTURE COVERAGE:	90%
MAXIMUM BUILDING FOOTPRINT:	20,000 S.F.
MINIMUM OPEN SPACE:	5%
MINIMUM FRONT LOT LINE BUILDOUT:	80%

5) LOT AREAS: 125/17–2
18,347 S.F.
0.4212 ACRES

125/17–3
22,667 S.F.
0.5204 ACRES

6) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259F, EFFECTIVE JANUARY 29, 2021

7) THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED EASEMENTS ON TAX MAP 125, LOTS 17–2 AND 17–3 IN PORTSMOUTH, NH.

NO.	DESCRIPTION	DATE
1	ADD ACCESS EASEMENT	12/1/22
0	ISSUED FOR COMMENT	11/17/22

REVISIONS

ELECTRICAL UTILITY & DRAINAGE EASEMENT PLAN
TAX MAP 125
LOTS 17–2 & 17–3

OWNER:

EIGHTKPH, LLC

TO BENEFIT: EVERSOURCE AND THE CITY OF PORTSMOUTH

PROPERTY LOCATED AT:
70 MAPLEWOOD AVENUE & 163 DEER STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1"=20' NOVEMBER 2022

FB 265 PG 18 — 2271.04

DRAINAGE ANALYSIS

SITE DEVELOPMENT

88 MAPLEWOOD AVE.
PORTSMOUTH, NH

PREPARED FOR
EIGHTKPH, LLC.

23 AUGUST 2022

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 2271.04)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed building at 88 Maplewood Ave in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 125 as Lot 17-3. The project proposes to replace the current building and associated parking lot. The total size of the lot together is 22,667 square-feet (0.520 acres). The size of the total drainage area is 26,073 square-feet (0.599 acres).

The site plans will provide for the future construction of a new building, with associated landscaping, utilities, and underground parking. The new building 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 125 as Lot 17-3. Bounding the site to north is a railroad and then a cemetery. Bounding the site to east is Maplewood Ave. Bounding the site to south is Deer Street. Bounding the site to the west is an existing Banking facility with drive-up window. A vicinity map is included in the Appendix to this report. The existing building and associated parking lot will be demolished.

This report includes information about the existing site and the proposed construction 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 two soil types:

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

Canton complex is well drained with a stated depth to water table and restrictive feature of more than 80 inches. However, due to the primary urban fill component of the soil, as well as the proximity to North Mill Pond, the Hydrologic Soil Group will be assumed to be D.

The physical characteristics of the site consist of flat (0-15%) grades that generally slope from the northeast to the southwest. Elevations on the site range from 12 to 15 feet above sea level. The existing site is developed and includes an existing building located in the center of the lot, with an asphalt parking lot to the north. Vegetation around the developed portion of the lot consists of established grasses.

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 two watershed basins (E1 and E2) based on localized topography and discharge location. Subcatchment E1 contains the southwesterly part of the lot and drains to the southwest. Subcatchment E2 contains a much smaller northeasterly part of the lot and drains north. Subcatchments E1 and E2 drain to discharge points DP1 and DP2, respectively.

The "Deer Street Outfall Drainage Evaluation" published October 17, 2018, raises concerns about the existing pipe to which both discharge points are currently connected. From the report: "Based on the evaluations described above, and in detail in the following report, we have concluded additional drainage capacity is needed now and in the future at the Deer Street Outfall." The report estimates that the pipe nearest the site (from DMH 4980) will flow at capacity during the 10-year storm event, and several of the surrounding pipes in the drainage network will be surcharged. The possibility was raised that part of this flow be diverted through an additional outlet pipe through Maplewood Ave. Therefore, a stormwater design that diverts drainage toward the Maplewood Ave. drainage network would be advantageous toward such an outlet pipe, by easing the peak flow off of the existing infrastructure.

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	23,085	5.0	94	4.14	6.39	DP1
E2	2,987	5.0	87	0.48	0.78	DP2

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 three subcatchment basins, (P1, P1a and P2). Subcatchments P1 and P1a are related to the area of subcatchment E1, but are much smaller. Subcatchment P1a contains half the roof of the proposed building. Subcatchment P2 is related to the area of subcatchment E2, but now takes up about half the drainage area. Subcatchments P1 and P2 drain to Discharge Points DP1 and DP2, respectively. Note that Subcatchment P2 drains toward Maplewood Ave., allowing for the easing of peak flow on the existing outlet pipe in the event of a new outlet pipe development, as discussed in the previous section.

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	3,667	5.0	94	0.66	1.02	DP1
P1a	9,126	5.0	98	1.69	2.56	DP1
P2	13,280	5.0	97	2.44	3.72	DP2

The overall impervious coverage of the subcatchment areas analyzed in this report **increases** from 0.452 acres (75.58%) in the pre-development condition to 0.525 acres (87.77%) in the post-development condition. The project proposes the construction of a R-Tank storage system on site, reducing the peak flow discharge from the site, as well as a downspout filter, providing treatment.

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 R-Tank. Note the inclusion of Discharge Point 3 (DP3), representative of the net flows from DP1 and DP2.

Table 3: Pre-Development to Post-Development Comparison

	Q2 (CFS)		Q10 (CFS)		Q50 (CFS)		
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Description**
DP1	2.63	1.30	4.14	2.20	6.39	3.44	West lot
DP2	0.28	1.59	0.48	2.44	0.78	3.72	East lot
DP3	2.91	2.82	4.62	4.62	7.18	7.15	Combined Flow

Discharge Point 2 experiences a significant increase in peak discharge, however, the city infrastructure to be utilized by both discharge points are connected by the same drainage network, as shown by DP3. The net effect of both discharge points on the drainage network shows peak flows at or below existing levels.

OFFSITE INFRASTRUCTURE CAPACITY

Retention and routing of the stormwater to the City infrastructure is done on-site through the use of the R-Tank storage system, and has been designed as not to increase the peak flow rate to the local drainage system, therefore no impact to city infrastructure is anticipated.

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is high due to the presence of loam 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
- Filter baskets in catch basins

- 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 R-Tank system, the post-development runoff rates are reduced to below the pre-development runoff rates. The proposed downspout filter will provide treatment to part of the runoff. 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. Additionally, the separation of flows from the site will be advantageous in the event the City pursues an additional outlet pipe to North Mill Pond through Maplewood Ave.

REFERENCES

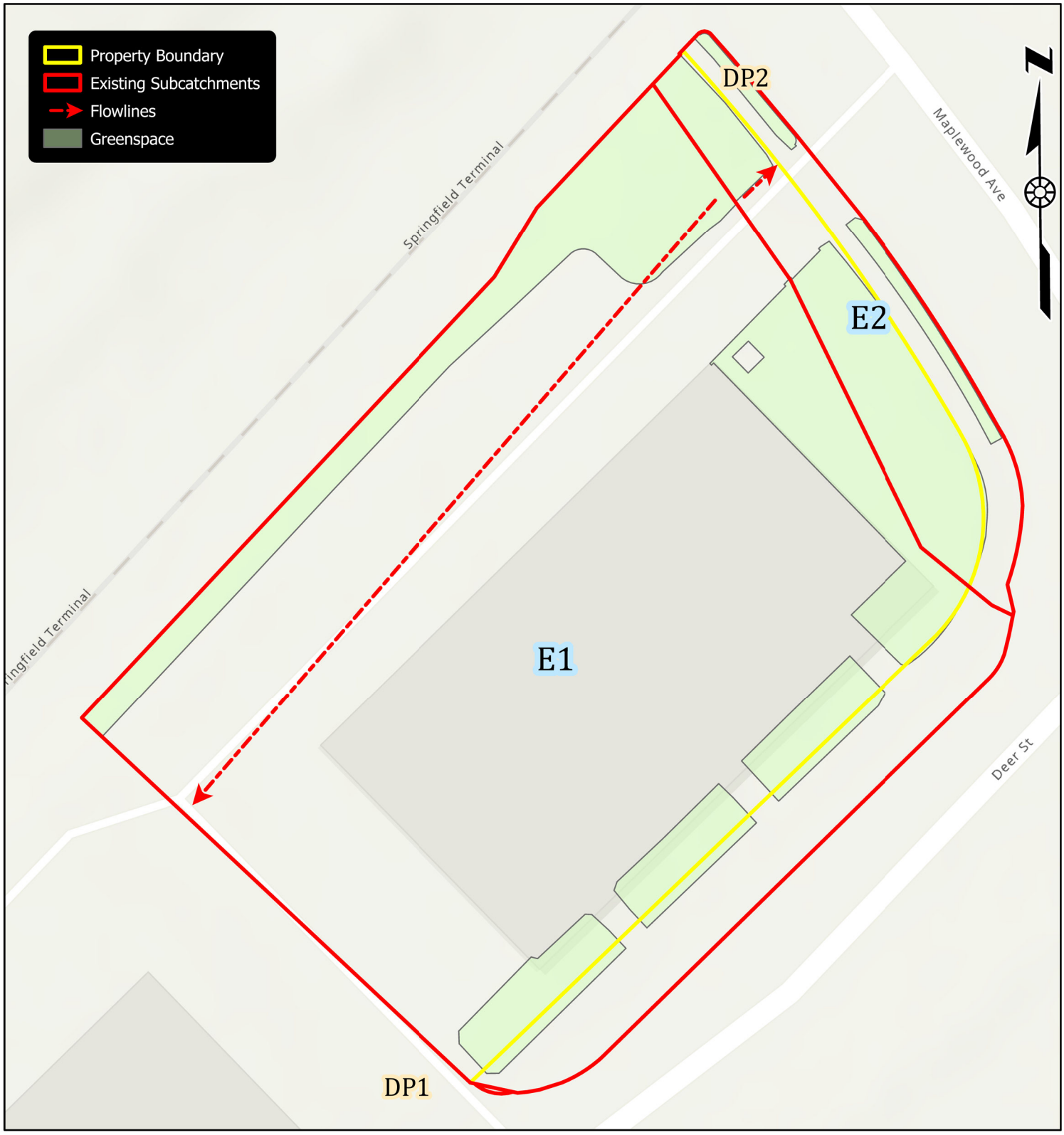
1. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).
2. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing 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.
4. CMA Engineers. *Deer Street Outfall Drainage Evaluation*, October 2018.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Diagram Of Existing Subcatchments

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

JOB NUMBER: 2271
SCALE: 1" = 30'
SUBMITTED: 08-04-2022



20 10 0 20 40 60 80 Feet

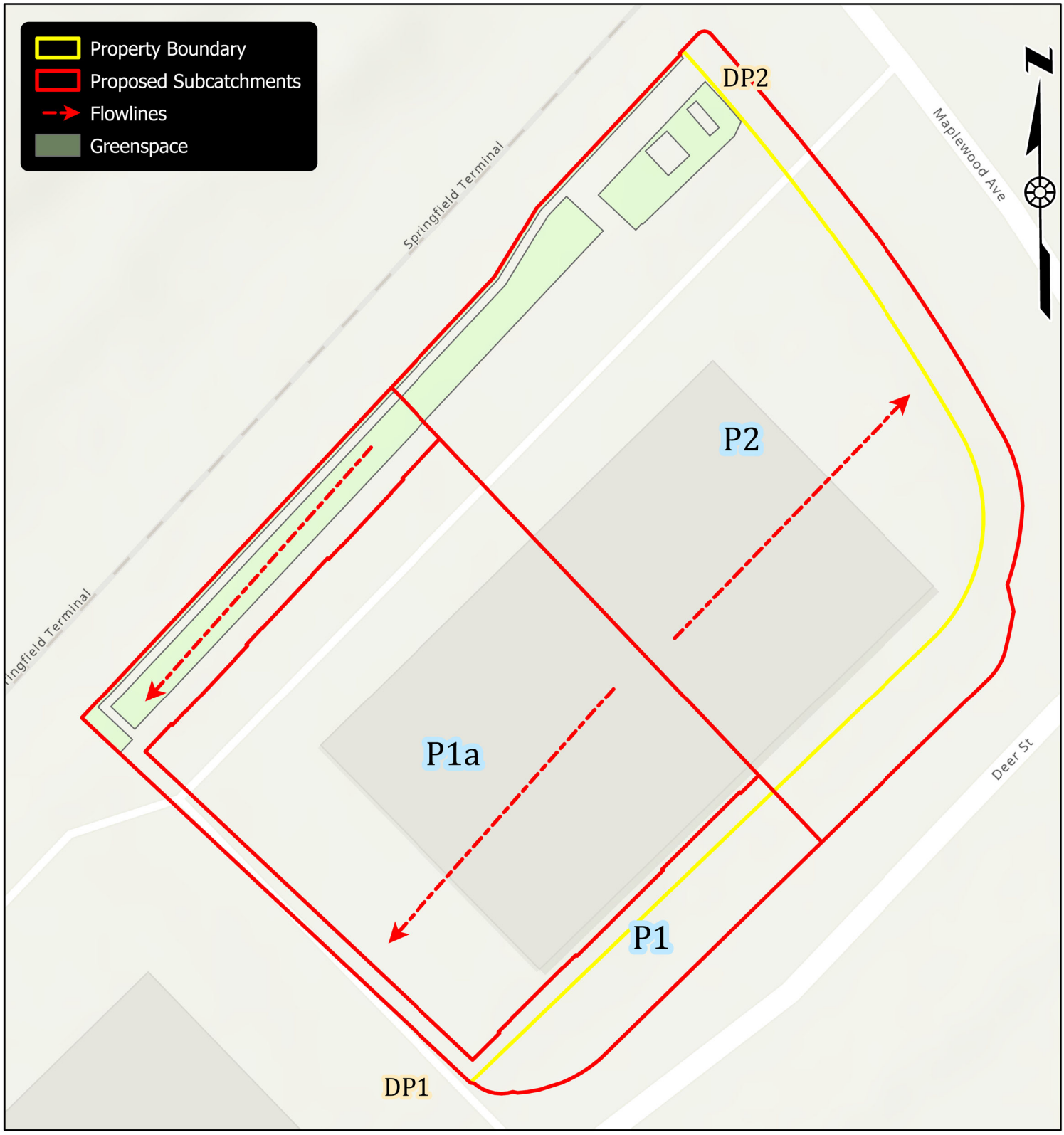
Greenspace = 6367 sf
Net = -3179 sf

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Diagram Of Proposed Subcatchments

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

JOB NUMBER: 2271
SCALE: 1" = 30'
SUBMITTED: 08-18-2022



APPENDIX A

VICINITY (TAX) MAP

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors

Property Boundaries

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

JOB NUMBER: 2271
SCALE: 1" = 60'
SUBMITTED: 08-04-2022

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	70.762 degrees West
Latitude	43.078 degrees North
Elevation	0 feet
Date/Time	Thu, 19 May 2022 11:11:02 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.65	2.92	**1yr**	2.35	2.81	3.22	3.94	4.54	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.48	3.20	3.57	**2yr**	2.84	3.43	3.93	4.67	5.32	**2yr**
5yr	0.37	0.58	0.73	0.97	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.06	4.57	**5yr**	3.59	4.40	5.03	5.93	6.69	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.72	2.23	2.89	3.74	4.86	5.52	**10yr**	4.30	5.31	6.07	7.09	7.96	**10yr**
25yr	0.48	0.76	0.97	1.33	1.77	2.33	**25yr**	1.53	2.14	2.77	3.62	4.73	6.16	7.09	**25yr**	5.45	6.81	7.78	9.00	10.03	**25yr**
50yr	0.53	0.86	1.10	1.53	2.07	2.75	**50yr**	1.78	2.52	3.28	4.31	5.65	7.37	8.57	**50yr**	6.53	8.24	9.40	10.79	11.95	**50yr**
100yr	0.59	0.96	1.24	1.76	2.41	3.25	**100yr**	2.08	2.97	3.90	5.15	6.75	8.83	10.36	**100yr**	7.82	9.96	11.35	12.93	14.24	**100yr**
200yr	0.67	1.10	1.42	2.04	2.82	3.82	**200yr**	2.43	3.51	4.60	6.11	8.06	10.58	12.52	**200yr**	9.37	12.04	13.71	15.50	16.98	**200yr**
500yr	0.80	1.31	1.71	2.48	3.47	4.75	**500yr**	2.99	4.37	5.75	7.68	10.19	13.45	16.11	**500yr**	11.90	15.49	17.61	19.72	21.44	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.88	**1yr**	0.63	0.86	0.92	1.33	1.68	2.23	2.48	**1yr**	1.97	2.39	2.86	3.18	3.88	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.05	3.45	**2yr**	2.70	3.31	3.82	4.54	5.07	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.78	4.18	**5yr**	3.34	4.02	4.71	5.52	6.23	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.80	2.39	3.06	4.36	4.85	**10yr**	3.86	4.66	5.42	6.39	7.17	**10yr**
25yr	0.44	0.67	0.83	1.18	1.56	1.90	**25yr**	1.34	1.86	2.10	2.76	3.54	4.70	5.87	**25yr**	4.16	5.64	6.62	7.76	8.65	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.17	**50yr**	1.52	2.12	2.34	3.07	3.93	5.31	6.77	**50yr**	4.70	6.51	7.68	9.00	9.98	**50yr**
100yr	0.53	0.81	1.01	1.46	2.00	2.47	**100yr**	1.73	2.41	2.62	3.42	4.35	5.96	7.81	**100yr**	5.28	7.51	8.92	10.45	11.52	**100yr**
200yr	0.59	0.89	1.12	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.79	4.79	6.68	9.01	**200yr**	5.91	8.66	10.34	12.15	13.31	**200yr**
500yr	0.68	1.02	1.31	1.90	2.70	3.36	**500yr**	2.33	3.28	3.41	4.32	5.46	7.76	10.87	**500yr**	6.87	10.45	12.58	14.86	16.11	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	2.98	3.16	**1yr**	2.64	3.04	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.42	3.70	**2yr**	3.03	3.56	4.08	4.83	5.62	**2yr**
5yr	0.40	0.62	0.76	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.33	4.96	**5yr**	3.84	4.77	5.37	6.37	7.15	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.11	3.95	5.33	6.20	**10yr**	4.72	5.96	6.82	7.83	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.57	**25yr**	1.76	2.51	2.95	4.07	5.15	7.77	8.34	**25yr**	6.88	8.02	9.15	10.33	11.40	**25yr**
50yr	0.67	1.02	1.27	1.82	2.46	3.12	**50yr**	2.12	3.05	3.59	5.00	6.32	9.73	10.46	**50yr**	8.62	10.06	11.45	12.71	13.95	**50yr**
100yr	0.79	1.19	1.49	2.15	2.95	3.80	**100yr**	2.55	3.72	4.37	6.15	7.76	12.18	13.11	**100yr**	10.78	12.61	14.32	15.68	17.08	**100yr**
200yr	0.92	1.39	1.76	2.54	3.55	4.64	**200yr**	3.06	4.54	5.33	7.58	9.53	15.29	16.45	**200yr**	13.53	15.82	17.94	19.34	20.91	**200yr**
500yr	1.14	1.70	2.19	3.18	4.52	6.02	**500yr**	3.90	5.89	6.92	10.01	12.54	20.67	22.22	**500yr**	18.29	21.37	24.18	25.50	27.33	**500yr**

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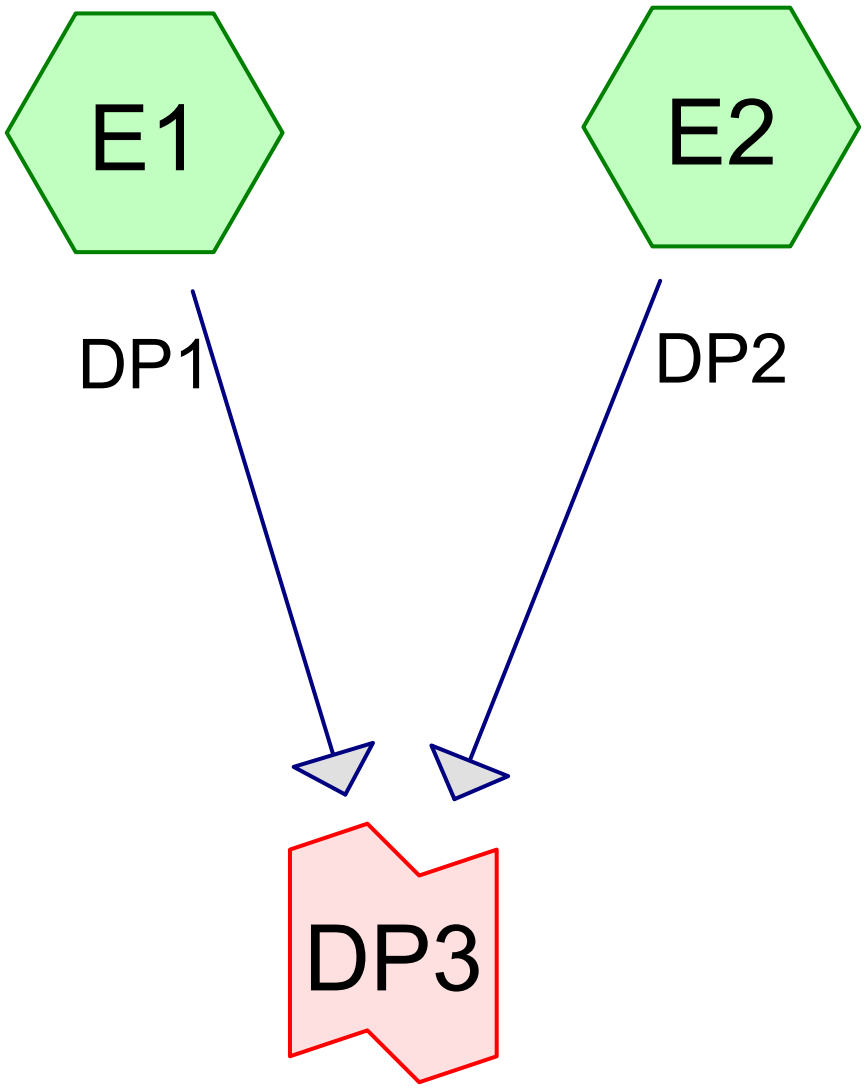
APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for Existing Conditions David T
Prepared by Ambit Engineering, Printed 2022-08-18

Project Notes

Defined 5 rainfall events from output (37) IDF

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type II 24-hr		Default	24.00	1	3.68	2
2	10-yr	Type II 24-hr		Default	24.00	1	5.59	2
3	25-yr	Type II 24-hr		Default	24.00	1	7.08	2
4	50-yr	Type II 24-hr		Default	24.00	1	8.48	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.146	80	>75% Grass cover, Good, HSG D (E1, E2)
0.285	98	Paved parking, HSG D (E1, E2)
0.167	98	Roofs, HSG D (E1)
0.599	**94**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.599	HSG D	E1, E2
0.000	Other	
0.599		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.146	0.000	0.146	>75% Grass cover, Good	E1, E2
0.000	0.000	0.000	0.285	0.000	0.285	Paved parking	E1, E2
0.000	0.000	0.000	0.167	0.000	0.167	Roofs	E1
0.000	**0.000**	**0.000**	**0.599**	**0.000**	**0.599**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=23,085 sf 80.32% Impervious Runoff Depth>2.82"
Tc=5.0 min CN=94 Runoff=2.63 cfs 0.125 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>2.18"
Tc=5.0 min CN=87 Runoff=0.28 cfs 0.012 af

Link DP3: above 1,000.00 cfs Inflow=2.91 cfs 0.137 af
Primary=0.00 cfs 0.000 af Secondary=2.91 cfs 0.137 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.137 af Average Runoff Depth = 2.75"
24.42% Pervious = 0.146 ac 75.58% Impervious = 0.452 ac

Summary for Subcatchment E1: DP1

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

Runoff = 2.63 cfs @ 11.95 hrs, Volume= 0.125 af, Depth> 2.82"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
23,085	94	Weighted Average
4,544		19.68% Pervious Area
18,541		80.32% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.28 cfs @ 11.95 hrs, Volume= 0.012 af, Depth> 2.18"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.599 ac, 75.58% Impervious, Inflow Depth > 2.75" for 2-yr event
Inflow = 2.91 cfs @ 11.95 hrs, Volume= 0.137 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 2.91 cfs @ 11.95 hrs, Volume= 0.137 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=23,085 sf 80.32% Impervious Runoff Depth>4.57"
Tc=5.0 min CN=94 Runoff=4.14 cfs 0.202 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>3.87"
Tc=5.0 min CN=87 Runoff=0.48 cfs 0.022 af

Link DP3: above 1,000.00 cfs Inflow=4.62 cfs 0.224 af
Primary=0.00 cfs 0.000 af Secondary=4.62 cfs 0.224 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.224 af Average Runoff Depth = 4.49"
24.42% Pervious = 0.146 ac 75.58% Impervious = 0.452 ac

Summary for Subcatchment E1: DP1

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

Runoff = 4.14 cfs @ 11.95 hrs, Volume= 0.202 af, Depth> 4.57"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
23,085	94	Weighted Average
4,544		19.68% Pervious Area
18,541		80.32% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.48 cfs @ 11.95 hrs, Volume= 0.022 af, Depth> 3.87"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.599 ac, 75.58% Impervious, Inflow Depth > 4.49" for 10-yr event
Inflow = 4.62 cfs @ 11.95 hrs, Volume= 0.224 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 4.62 cfs @ 11.95 hrs, Volume= 0.224 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=23,085 sf 80.32% Impervious Runoff Depth>5.93"
Tc=5.0 min CN=94 Runoff=5.30 cfs 0.262 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>5.21"
Tc=5.0 min CN=87 Runoff=0.64 cfs 0.030 af

Link DP3: above 1,000.00 cfs Inflow=5.94 cfs 0.291 af
Primary=0.00 cfs 0.000 af Secondary=5.94 cfs 0.291 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.291 af Average Runoff Depth = 5.84"
24.42% Pervious = 0.146 ac 75.58% Impervious = 0.452 ac

Summary for Subcatchment E1: DP1

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

Runoff = 5.30 cfs @ 11.95 hrs, Volume= 0.262 af, Depth> 5.93"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
23,085	94	Weighted Average
4,544		19.68% Pervious Area
18,541		80.32% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.64 cfs @ 11.95 hrs, Volume= 0.030 af, Depth> 5.21"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.599 ac, 75.58% Impervious, Inflow Depth > 5.84" for 25-yr event
Inflow = 5.94 cfs @ 11.95 hrs, Volume= 0.291 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 5.94 cfs @ 11.95 hrs, Volume= 0.291 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=23,085 sf 80.32% Impervious Runoff Depth>7.20"
Tc=5.0 min CN=94 Runoff=6.39 cfs 0.318 af

Subcatchment E2: DP2 Runoff Area=2,987 sf 38.97% Impervious Runoff Depth>6.49"
Tc=5.0 min CN=87 Runoff=0.78 cfs 0.037 af

Link DP3: above 1,000.00 cfs Inflow=7.18 cfs 0.355 af
Primary=0.00 cfs 0.000 af Secondary=7.18 cfs 0.355 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.355 af Average Runoff Depth = 7.12"
24.42% Pervious = 0.146 ac 75.58% Impervious = 0.452 ac

Summary for Subcatchment E1: DP1

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

Runoff = 6.39 cfs @ 11.95 hrs, Volume= 0.318 af, Depth> 7.20"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

Area (sf)	CN	Description
11,260	98	Paved parking, HSG D
7,281	98	Roofs, HSG D
4,544	80	>75% Grass cover, Good, HSG D
23,085	94	Weighted Average
4,544		19.68% Pervious Area
18,541		80.32% Impervious Area

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

Summary for Subcatchment E2: DP2

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

Runoff = 0.78 cfs @ 11.95 hrs, Volume= 0.037 af, Depth> 6.49"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

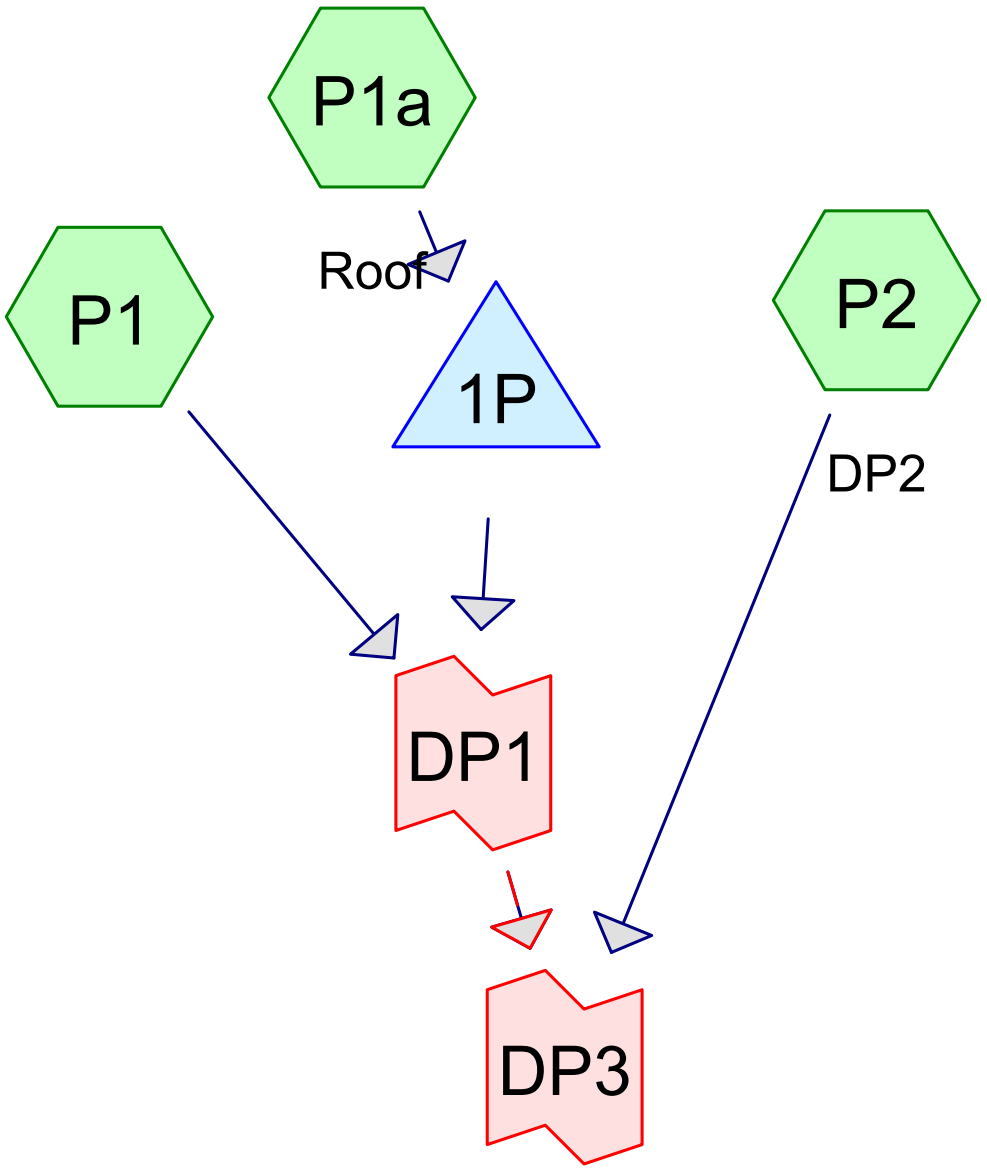
Area (sf)	CN	Description
1,164	98	Paved parking, HSG D
1,823	80	>75% Grass cover, Good, HSG D
2,987	87	Weighted Average
1,823		61.03% Pervious Area
1,164		38.97% Impervious Area

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

Summary for Link DP3:

Inflow Area = 0.599 ac, 75.58% Impervious, Inflow Depth > 7.12" for 50-yr event
Inflow = 7.18 cfs @ 11.95 hrs, Volume= 0.355 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 7.18 cfs @ 11.95 hrs, Volume= 0.355 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for Proposed Conditions David T
Prepared by Ambit Engineering, Printed 2022-08-18

Project Notes

Defined 5 rainfall events from output (37) IDF

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type II 24-hr		Default	24.00	1	3.68	2
2	10-yr	Type II 24-hr		Default	24.00	1	5.59	2
3	25-yr	Type II 24-hr		Default	24.00	1	7.08	2
4	50-yr	Type II 24-hr		Default	24.00	1	8.48	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.210	98	(P1a)
0.040	80	>75% Grass cover, Good, HSG D (P1, P2)
0.170	98	Paved parking, HSG D (P1, P2)
0.179	98	Roofs, HSG D (P2)
0.599	**97**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.389	HSG D	P1, P2
0.210	Other	P1a
0.599		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.210	0.210		P1a
0.000	0.000	0.000	0.040	0.000	0.040	>75% Grass cover, Good	P1, P2
0.000	0.000	0.000	0.170	0.000	0.170	Paved parking	P1, P2
0.000	0.000	0.000	0.179	0.000	0.179	Roofs	P2
0.000	**0.000**	**0.000**	**0.389**	**0.210**	**0.599**	**TOTAL AREA**	

Pipe Listing (all 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	1P	0.00	-0.17	44.0	0.0039	0.013	0.0	12.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=3,667 sf 77.61% Impervious Runoff Depth>2.82"
Tc=5.0 min CN=94 Runoff=0.42 cfs 0.020 af

Subcatchment P1a: Roof Runoff Area=9,126 sf 100.00% Impervious Runoff Depth>3.18"
Tc=5.0 min CN=98 Runoff=1.10 cfs 0.056 af

Subcatchment P2: DP2 Runoff Area=13,280 sf 93.07% Impervious Runoff Depth>3.10"
Tc=5.0 min CN=97 Runoff=1.59 cfs 0.079 af

Pond 1P: Peak Elev=1.93' Storage=0.005 af Inflow=1.10 cfs 0.056 af
Outflow=0.93 cfs 0.055 af

Link DP1: above 1,000.00 cfs Inflow=1.30 cfs 0.075 af
Primary=0.00 cfs 0.000 af Secondary=1.30 cfs 0.075 af

Link DP3: above 1,000.00 cfs Inflow=2.82 cfs 0.154 af
Primary=0.00 cfs 0.000 af Secondary=2.82 cfs 0.154 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.154 af Average Runoff Depth = 3.09"
6.68% Pervious = 0.040 ac 93.32% Impervious = 0.559 ac

Summary for Subcatchment P1:

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

Runoff = 0.42 cfs @ 11.95 hrs, Volume= 0.020 af, Depth> 2.82"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
3,667	94	Weighted Average
821		22.39% Pervious Area
2,846		77.61% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 1.10 cfs @ 11.95 hrs, Volume= 0.056 af, Depth> 3.18"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

	Area (sf)	CN	Description
*	9,126	98	
	9,126		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 1.59 cfs @ 11.95 hrs, Volume= 0.079 af, Depth> 3.10"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.68"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
7,818	98	Roofs, HSG D
13,280	97	Weighted Average
920		6.93% Pervious Area
12,360		93.07% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.210 ac,100.00% Impervious, Inflow Depth > 3.18" for 2-yr event
Inflow = 1.10 cfs @ 11.95 hrs, Volume= 0.056 af
Outflow = 0.93 cfs @ 12.00 hrs, Volume= 0.055 af, Atten= 16%, Lag= 3.0 min
Primary = 0.93 cfs @ 12.00 hrs, Volume= 0.055 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 1.93' @ 12.00 hrs Surf.Area= 0.004 ac Storage= 0.005 af

Plug-Flow detention time= 3.8 min calculated for 0.055 af (100% of inflow)
Center-of-Mass det. time= 2.7 min (734.1 - 731.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.004 af	**9.25'W x 18.07'L x 4.07'H Field A** 0.016 af Overall - 0.005 af Embedded = 0.011 af x 40.0% Voids
#2A	0.25'	0.005 af	**ACF R-Tank LD 2** x 24 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 24 Chambers in 4 Rows
		0.009 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.17' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1.70'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	0.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.93 cfs @ 12.00 hrs HW=1.92' (Free Discharge)
└**1=Culvert** (Passes 0.93 cfs of 3.88 cfs potential flow)
└**2=Custom Weir/Orifice** (Weir Controls 0.07 cfs @ 1.55 fps)
└**3=Orifice/Grate** (Orifice Controls 0.86 cfs @ 6.31 fps)

Summary for Link DP1:

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.17'

Inflow Area = 0.294 ac, 93.58% Impervious, Inflow Depth > 3.07" for 2-yr event
Inflow = 1.30 cfs @ 11.98 hrs, Volume= 0.075 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 1.30 cfs @ 11.98 hrs, Volume= 0.075 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.599 ac, 93.32% Impervious, Inflow Depth > 3.09" for 2-yr event
Inflow = 2.82 cfs @ 11.96 hrs, Volume= 0.154 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 2.82 cfs @ 11.96 hrs, Volume= 0.154 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=3,667 sf 77.61% Impervious Runoff Depth>4.57"
Tc=5.0 min CN=94 Runoff=0.66 cfs 0.032 af

Subcatchment P1a: Roof Runoff Area=9,126 sf 100.00% Impervious Runoff Depth>4.90"
Tc=5.0 min CN=98 Runoff=1.69 cfs 0.086 af

Subcatchment P2: DP2 Runoff Area=13,280 sf 93.07% Impervious Runoff Depth>4.83"
Tc=5.0 min CN=97 Runoff=2.44 cfs 0.123 af

Pond 1P: Peak Elev=2.61' Storage=0.006 af Inflow=1.69 cfs 0.086 af
Outflow=1.58 cfs 0.085 af

Link DP1: above 1,000.00 cfs Inflow=2.20 cfs 0.117 af
Primary=0.00 cfs 0.000 af Secondary=2.20 cfs 0.117 af

Link DP3: above 1,000.00 cfs Inflow=4.62 cfs 0.240 af
Primary=0.00 cfs 0.000 af Secondary=4.62 cfs 0.240 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.240 af Average Runoff Depth = 4.82"
6.68% Pervious = 0.040 ac 93.32% Impervious = 0.559 ac

Summary for Subcatchment P1:

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

Runoff = 0.66 cfs @ 11.95 hrs, Volume= 0.032 af, Depth> 4.57"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
3,667	94	Weighted Average
821		22.39% Pervious Area
2,846		77.61% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 1.69 cfs @ 11.95 hrs, Volume= 0.086 af, Depth> 4.90"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

	Area (sf)	CN	Description
*	9,126	98	
	9,126		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 2.44 cfs @ 11.95 hrs, Volume= 0.123 af, Depth> 4.83"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.59"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
7,818	98	Roofs, HSG D
13,280	97	Weighted Average
920		6.93% Pervious Area
12,360		93.07% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.210 ac,100.00% Impervious, Inflow Depth > 4.90" for 10-yr event
Inflow = 1.69 cfs @ 11.95 hrs, Volume= 0.086 af
Outflow = 1.58 cfs @ 11.98 hrs, Volume= 0.085 af, Atten= 6%, Lag= 1.8 min
Primary = 1.58 cfs @ 11.98 hrs, Volume= 0.085 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.61' @ 11.98 hrs Surf.Area= 0.004 ac Storage= 0.006 af

Plug-Flow detention time= 3.4 min calculated for 0.085 af (99% of inflow)
Center-of-Mass det. time= 2.5 min (731.3 - 728.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.004 af	**9.25'W x 18.07'L x 4.07'H Field A** 0.016 af Overall - 0.005 af Embedded = 0.011 af x 40.0% Voids
#2A	0.25'	0.005 af	**ACF R-Tank LD 2** x 24 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 24 Chambers in 4 Rows
		0.009 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.17' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1.70'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	0.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.52 cfs @ 11.98 hrs HW=2.55' (Free Discharge)
└**1=Culvert** (Passes 1.52 cfs of 4.88 cfs potential flow)
  └**2=Custom Weir/Orifice** (Weir Controls 0.52 cfs @ 3.03 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.01 cfs @ 7.38 fps)

Summary for Link DP1:

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.17'

Inflow Area = 0.294 ac, 93.58% Impervious, Inflow Depth > 4.80" for 10-yr event
Inflow = 2.20 cfs @ 11.97 hrs, Volume= 0.117 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 2.20 cfs @ 11.97 hrs, Volume= 0.117 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.599 ac, 93.32% Impervious, Inflow Depth > 4.82" for 10-yr event
Inflow = 4.62 cfs @ 11.96 hrs, Volume= 0.240 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 4.62 cfs @ 11.96 hrs, Volume= 0.240 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=3,667 sf 77.61% Impervious Runoff Depth>5.93"
Tc=5.0 min CN=94 Runoff=0.84 cfs 0.042 af

Subcatchment P1a: Roof Runoff Area=9,126 sf 100.00% Impervious Runoff Depth>6.24"
Tc=5.0 min CN=98 Runoff=2.14 cfs 0.109 af

Subcatchment P2: DP2 Runoff Area=13,280 sf 93.07% Impervious Runoff Depth>6.17"
Tc=5.0 min CN=97 Runoff=3.10 cfs 0.157 af

Pond 1P: Peak Elev=2.97' Storage=0.007 af Inflow=2.14 cfs 0.109 af
Outflow=2.02 cfs 0.109 af

Link DP1: above 1,000.00 cfs Inflow=2.84 cfs 0.150 af
Primary=0.00 cfs 0.000 af Secondary=2.84 cfs 0.150 af

Link DP3: above 1,000.00 cfs Inflow=5.92 cfs 0.307 af
Primary=0.00 cfs 0.000 af Secondary=5.92 cfs 0.307 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.307 af Average Runoff Depth = 6.16"
6.68% Pervious = 0.040 ac 93.32% Impervious = 0.559 ac

Summary for Subcatchment P1:

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

Runoff = 0.84 cfs @ 11.95 hrs, Volume= 0.042 af, Depth> 5.93"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
3,667	94	Weighted Average
821		22.39% Pervious Area
2,846		77.61% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 2.14 cfs @ 11.95 hrs, Volume= 0.109 af, Depth> 6.24"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

	Area (sf)	CN	Description
*	9,126	98	
	9,126		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 3.10 cfs @ 11.95 hrs, Volume= 0.157 af, Depth> 6.17"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=7.08"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
7,818	98	Roofs, HSG D
13,280	97	Weighted Average
920		6.93% Pervious Area
12,360		93.07% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.210 ac,100.00% Impervious, Inflow Depth > 6.24" for 25-yr event
Inflow = 2.14 cfs @ 11.95 hrs, Volume= 0.109 af
Outflow = 2.02 cfs @ 11.97 hrs, Volume= 0.109 af, Atten= 6%, Lag= 1.5 min
Primary = 2.02 cfs @ 11.97 hrs, Volume= 0.109 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 2.97' @ 11.97 hrs Surf.Area= 0.004 ac Storage= 0.007 af

Plug-Flow detention time= 3.2 min calculated for 0.109 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (730.2 - 727.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.004 af	**9.25'W x 18.07'L x 4.07'H Field A** 0.016 af Overall - 0.005 af Embedded = 0.011 af x 40.0% Voids
#2A	0.25'	0.005 af	**ACF R-Tank LD 2** x 24 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 24 Chambers in 4 Rows
		0.009 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.17' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1.70'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	0.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.96 cfs @ 11.97 hrs HW=2.92' (Free Discharge)
└**1=Culvert** (Passes 1.96 cfs of 5.37 cfs potential flow)
  └**2=Custom Weir/Orifice** (Weir Controls 0.88 cfs @ 3.61 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.08 cfs @ 7.93 fps)

Summary for Link DP1:

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.17'

Inflow Area = 0.294 ac, 93.58% Impervious, Inflow Depth > 6.14" for 25-yr event
Inflow = 2.84 cfs @ 11.97 hrs, Volume= 0.150 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 2.84 cfs @ 11.97 hrs, Volume= 0.150 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.599 ac, 93.32% Impervious, Inflow Depth > 6.16" for 25-yr event
Inflow = 5.92 cfs @ 11.96 hrs, Volume= 0.307 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 5.92 cfs @ 11.96 hrs, Volume= 0.307 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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: Runoff Area=3,667 sf 77.61% Impervious Runoff Depth>7.20"
Tc=5.0 min CN=94 Runoff=1.02 cfs 0.051 af

Subcatchment P1a: Roof Runoff Area=9,126 sf 100.00% Impervious Runoff Depth>7.49"
Tc=5.0 min CN=98 Runoff=2.56 cfs 0.131 af

Subcatchment P2: DP2 Runoff Area=13,280 sf 93.07% Impervious Runoff Depth>7.43"
Tc=5.0 min CN=97 Runoff=3.72 cfs 0.189 af

Pond 1P: Peak Elev=3.29' Storage=0.008 af Inflow=2.56 cfs 0.131 af
Outflow=2.47 cfs 0.131 af

Link DP1: above 1,000.00 cfs Inflow=3.47 cfs 0.181 af
Primary=0.00 cfs 0.000 af Secondary=3.47 cfs 0.181 af

Link DP3: above 1,000.00 cfs Inflow=7.18 cfs 0.370 af
Primary=0.00 cfs 0.000 af Secondary=7.18 cfs 0.370 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.370 af Average Runoff Depth = 7.42"
6.68% Pervious = 0.040 ac 93.32% Impervious = 0.559 ac

Summary for Subcatchment P1:

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

Runoff = 1.02 cfs @ 11.95 hrs, Volume= 0.051 af, Depth> 7.20"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

Area (sf)	CN	Description
821	80	>75% Grass cover, Good, HSG D
2,846	98	Paved parking, HSG D
3,667	94	Weighted Average
821		22.39% Pervious Area
2,846		77.61% Impervious Area

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

Summary for Subcatchment P1a: Roof

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

Runoff = 2.56 cfs @ 11.95 hrs, Volume= 0.131 af, Depth> 7.49"
Routed to Pond 1P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

	Area (sf)	CN	Description
*	9,126	98	
	9,126		100.00% Impervious Area

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

Summary for Subcatchment P2: DP2

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

Runoff = 3.72 cfs @ 11.95 hrs, Volume= 0.189 af, Depth> 7.43"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-yr Rainfall=8.48"

Area (sf)	CN	Description
920	80	>75% Grass cover, Good, HSG D
4,542	98	Paved parking, HSG D
7,818	98	Roofs, HSG D
13,280	97	Weighted Average
920		6.93% Pervious Area
12,360		93.07% Impervious Area

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

Summary for Pond 1P:

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.210 ac,100.00% Impervious, Inflow Depth > 7.49" for 50-yr event
Inflow = 2.56 cfs @ 11.95 hrs, Volume= 0.131 af
Outflow = 2.47 cfs @ 11.97 hrs, Volume= 0.131 af, Atten= 4%, Lag= 1.1 min
Primary = 2.47 cfs @ 11.97 hrs, Volume= 0.131 af
Routed to Link DP1 :

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 3.29' @ 11.97 hrs Surf.Area= 0.004 ac Storage= 0.008 af

Plug-Flow detention time= 3.1 min calculated for 0.130 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (729.6 - 727.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.004 af	**9.25'W x 18.07'L x 4.07'H Field A** 0.016 af Overall - 0.005 af Embedded = 0.011 af x 40.0% Voids
#2A	0.25'	0.005 af	**ACF R-Tank LD 2** x 24 Inside #1 Inside= 15.7"W x 33.9"H => 3.52 sf x 2.35'L = 8.3 cf Outside= 15.7"W x 33.9"H => 3.70 sf x 2.35'L = 8.7 cf 24 Chambers in 4 Rows
		0.009 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	**12.0" Round Culvert** L= 44.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 0.00' / -0.17' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	1.70'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Elev. (feet) 1.70 3.50 3.50 4.00 Width (feet) 0.20 0.20 4.00 4.00
#3	Device 1	0.00'	**5.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.39 cfs @ 11.97 hrs HW=3.24' (Free Discharge)
└**1=Culvert** (Passes 2.39 cfs of 5.76 cfs potential flow)
└**2=Custom Weir/Orifice** (Weir Controls 1.25 cfs @ 4.06 fps)
└**3=Orifice/Grate** (Orifice Controls 1.14 cfs @ 8.38 fps)

Summary for Link DP1:

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 0.17'

Inflow Area = 0.294 ac, 93.58% Impervious, Inflow Depth > 7.40" for 50-yr event
Inflow = 3.47 cfs @ 11.96 hrs, Volume= 0.181 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Routed to Link DP3 :
Secondary = 3.47 cfs @ 11.96 hrs, Volume= 0.181 af
Routed to Link DP3 :

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link DP3:

Inflow Area = 0.599 ac, 93.32% Impervious, Inflow Depth > 7.42" for 50-yr event
Inflow = 7.18 cfs @ 11.96 hrs, Volume= 0.370 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Secondary = 7.18 cfs @ 11.96 hrs, Volume= 0.370 af

Primary outflow = Inflow above 1,000.00 cfs, Time Span= 5.00-20.00 hrs, dt= 0.05 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 19, 2022

Custom Soil Resource Report
Soil Map

Map Scale: 1:468 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 20 40 80 120

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
699	Urban land	0.5	91.5%
799	Urban land-Canton complex, 3 to 15 percent slopes	0.0	8.5%
Totals for Area of Interest		**0.5**	**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

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

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

Map Unit Setting

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

Map Unit Composition

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

Description of Canton

Setting

Parent material: Till

Typical profile

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

Properties and qualities

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

Interpretive groups

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

Minor Components

Udorthents

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

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°46'3"W 43°4'55"N

70°45'26"W 43°4'29"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 Cross Sections with 1% Annual Chance
- 17.5 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 5/19/2022 at 11:08 AM 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
SITE DEVELOPMENT

88 MAPLEWOOD AVE.
PORTSMOUTH, NH

Introduction

The intent of this plan is to provide EightKPH, LLC (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 Bio Clean downspout filter, R-Tank storage units 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 Code Enforcement Officer, 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

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:

- ACF R-Tank stormwater storage system
- Bio Clean Downspout Filter
- 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. **Bio Clean Downspout Filter:** Refer to the manufacturer's Operation and Maintenance manual for guidance, included herewith.
4. **ACF R-Tank stormwater storage system:** 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 outlet pipe. During construction, maintain inlet protection until all roadways and parking areas have 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.

Snow & Ice Management for Standard Asphalt and Walkways

Snow storage will be located such that no direct untreated discharges are possible to receiving waters from the storage site. Salt storage areas shall be covered and located such that no direct discharges are possible to receiving waters from the storage site. Salt and sand shall be used as minimally as possible.

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.

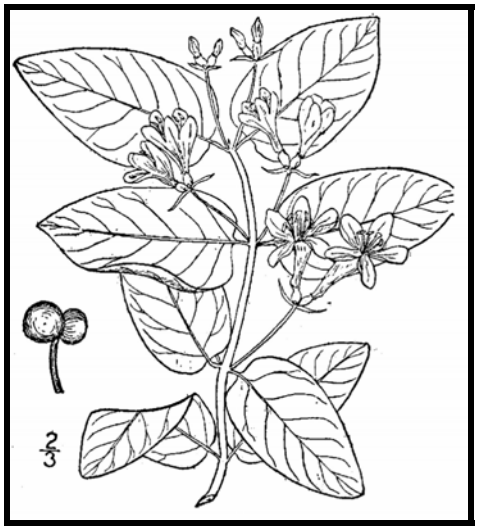
Figure 1: Lythrum salicaria, Purple Loosestrife. Photo by Liz West.

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

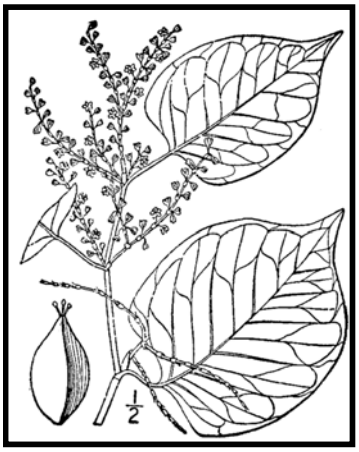
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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>

Non-Woody Plants	Method of Reproducing	Methods of Disposal
garlic mustard *(Alliaria petiolata)* spotted knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort *(Cynanchum rossicum)* giant hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket *(Hesperis matronalis)* perennial pepperweed *(Lepidium latifolium)* purple loosestrife *(Lythrum salicaria)* Japanese stilt grass *(Microstegium vimineum)* mile-a-minute weed *(Polygonum perfoliatum)*	**Fruits and Seeds** 	**Prior to flowering** Depends on scale of infestation Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. **During and following flowering** Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation ▪ Pull or cut plant and leave on site with roots exposed. Large infestation ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material.
common reed (*Phragmites australis*) Japanese knotweed *(Polygonum cuspidatum)* Bohemian knotweed *(Polygonum x bohemicum)*	**Fruits, Seeds, Plant Fragments** Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	**Small infestation** ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. **Large infestation** ▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. ▪ Monitor and remove any sprouting material. ▪ Pile, let dry, and burn.

January 2010

CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

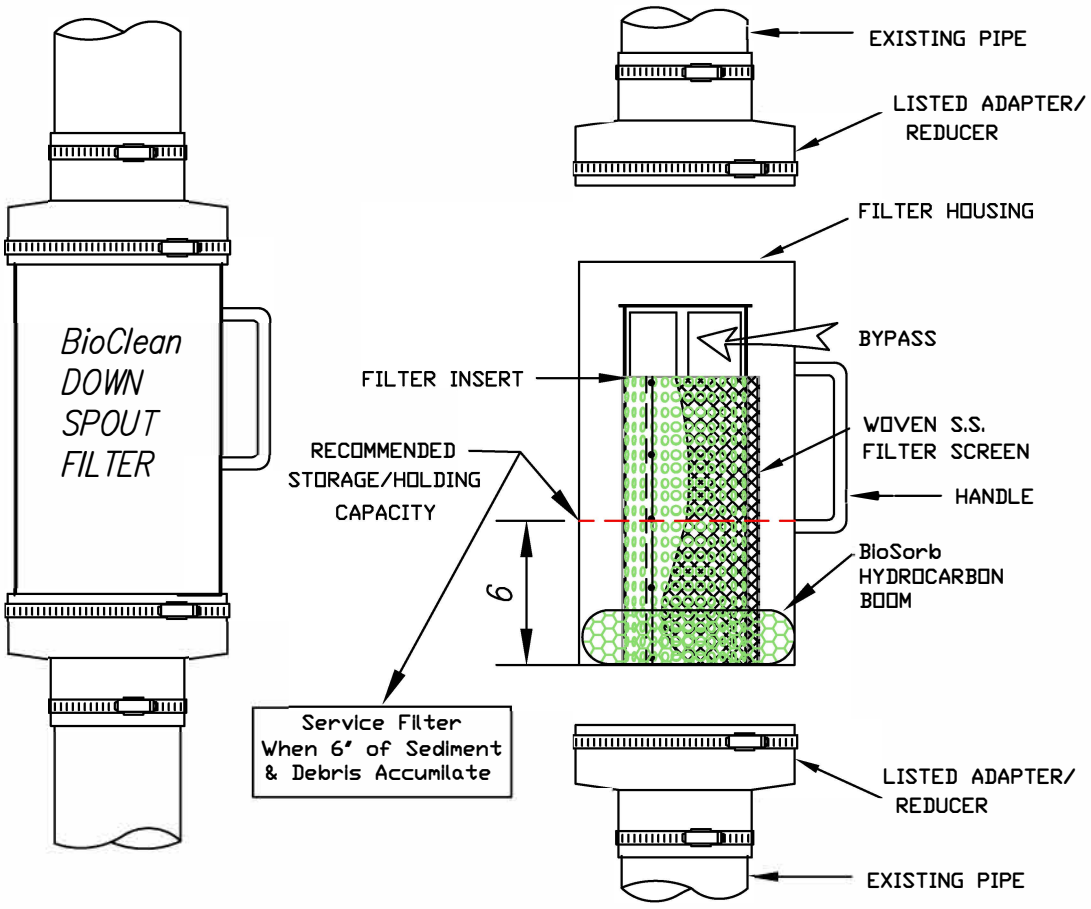
INSPECTION REQUIREMENTS		
ACTION TAKEN	**FREQUENCY**	**MAINTENANCE REQUIREMENTS**
-Outlet Control Structures *-Drain Manholes* *-Catch Basins*	Every other Month	*Check for erosion or short-circuiting* *Check for sediment accumulation* *Check for floatable contaminants*
-Drainage Pipes	1 time per 2 years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

SERVICE MANUAL

(Cleaning Procedures)

Bio Clean DOWNSPOUT FILTER
Screen Type With Hydrocarbon Boom



DETAIL OF PARTS

TOOLS AND EQUIPMENT NEEDED:

1. Medium size flat scred driver
2. BioSorb hydrocarbon boom. 25-1/2" X 2" dia.
   (Call Bio Clean to order)
3. Trash container or bag
4. Wooden dowel approx. 3' x 1/2' dia.

Bio Clean
A Forterra Company

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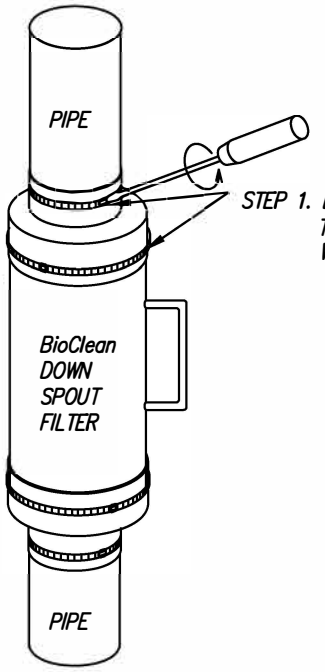
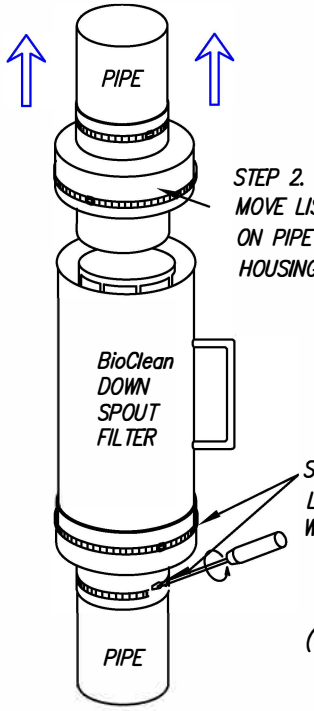
REMOVING FILTER



STEP 1. LOOSEN BOTH TOP CLAMPS WITH SCREW DRIVER.

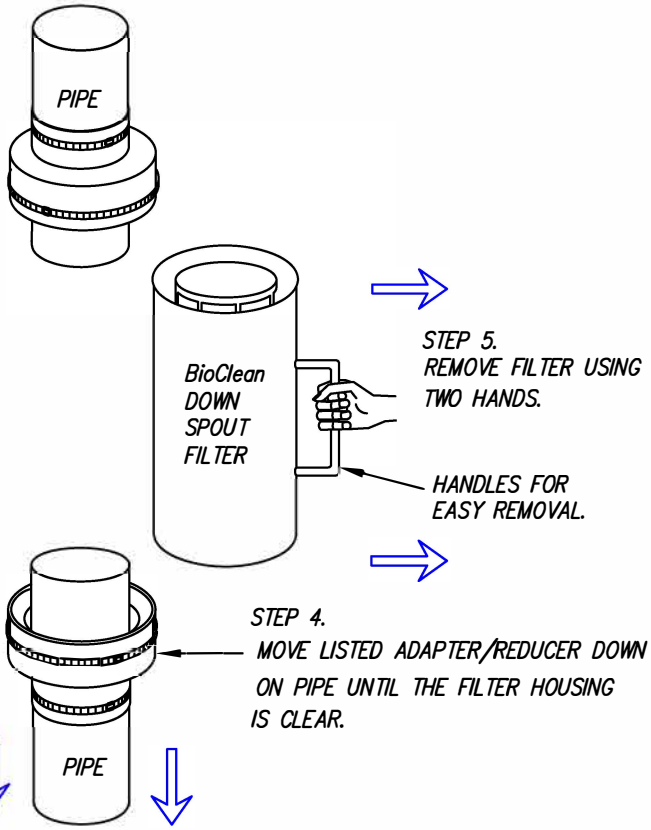


STEP 2.
MOVE LISTED ADAPTER/REDUCER UP ON PIPE UNTIL THE FILTER HOUSING IS CLEAR TO REMOVE.

STEP 3.
LOOSEN BOTH BOTTOM CLAMPS WITH SCREW DRIVER.

(STEP 4. AT BOTTOM LEFT OF PAGE)

CLEANING FILTER

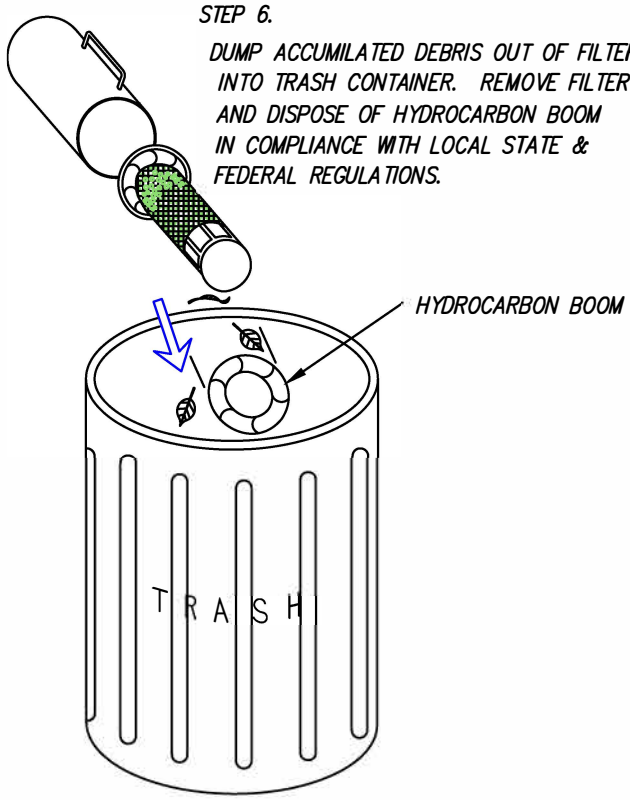


STEP 5.
REMOVE FILTER USING TWO HANDS.

HANDLES FOR EASY REMOVAL.

STEP 4.
MOVE LISTED ADAPTER/REDUCER DOWN ON PIPE UNTIL THE FILTER HOUSING IS CLEAR.

STEP 6.
DUMP ACCUMILATED DEBRIS OUT OF FILTER INTO TRASH CONTAINER. REMOVE FILTER INSERT AND DISPOSE OF HYDROCARBON BOOM IN COMPLIANCE WITH LOCAL STATE & FEDERAL REGULATIONS.



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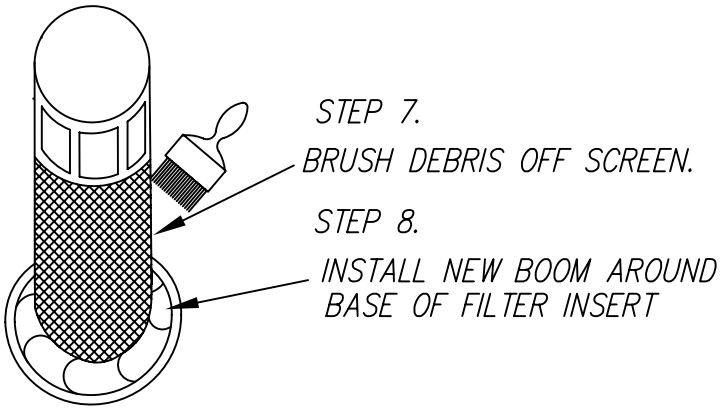
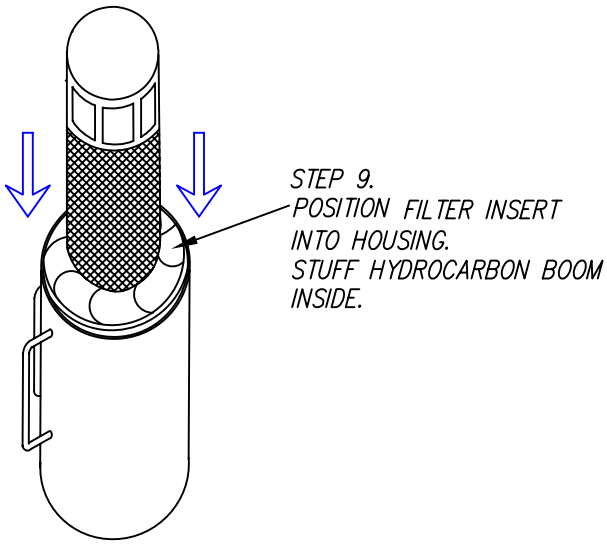
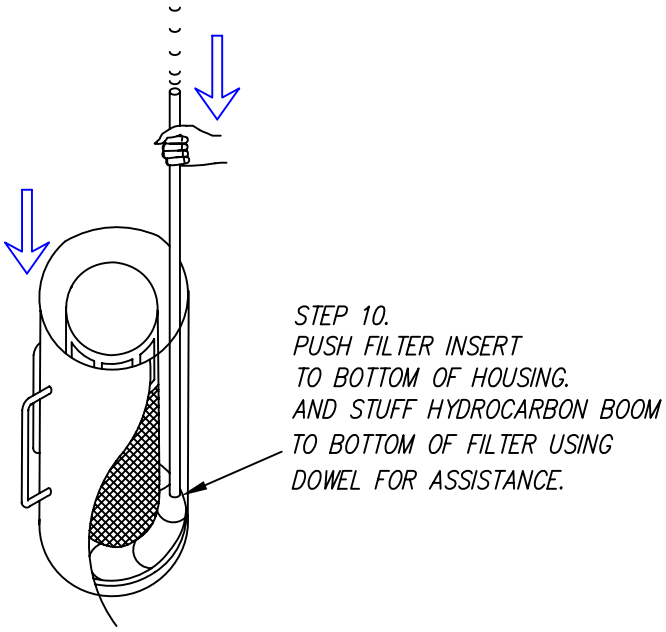


REPLACING FILTER INSERT





REPLACING FILTER

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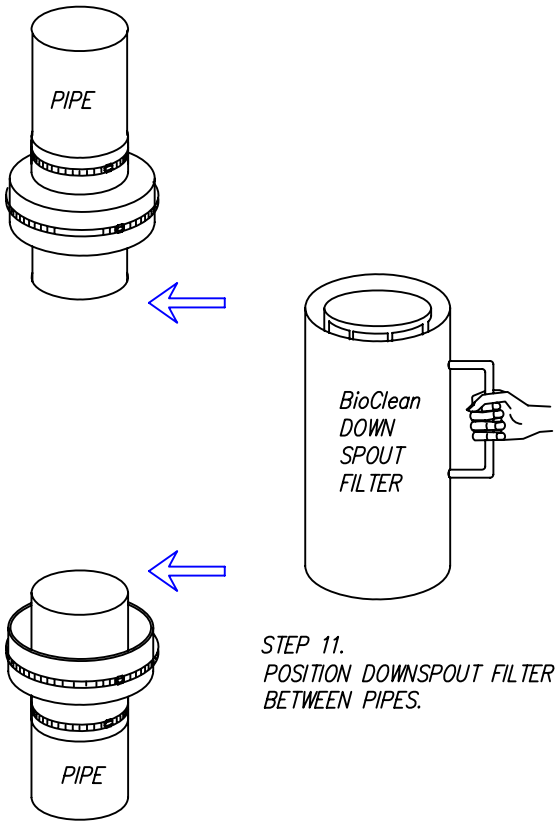
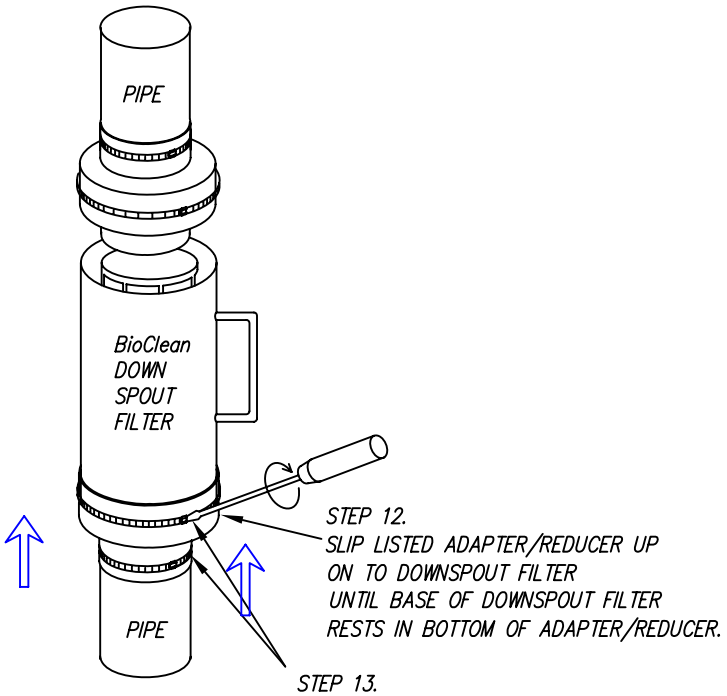
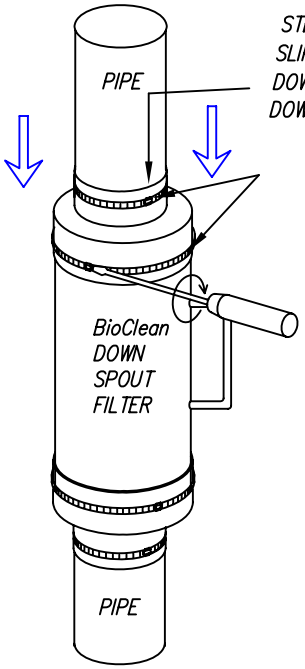


STEP 11.
POSITION DOWNSPOUT FILTER
BETWEEN PIPES.



STEP 12.
SLIP LISTED ADAPTER/REDUCER UP
ON TO DOWNSPOUT FILTER
UNTIL BASE OF DOWNSPOUT FILTER
RESTS IN BOTTOM OF ADAPTER/REDUCER.

STEP 13.
SECURE BY TIGHTENING
BOTH CLAMPS.



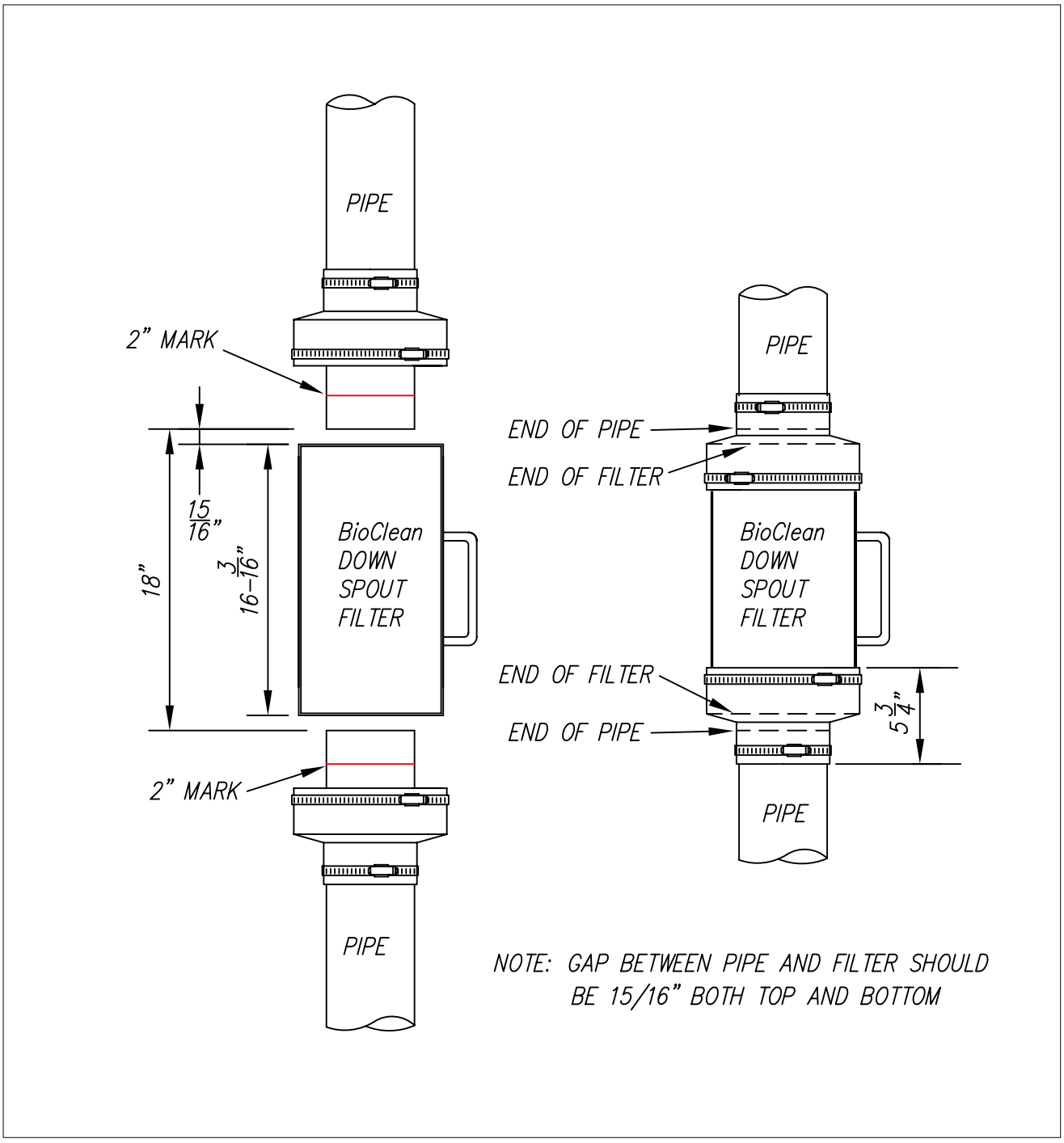
STEP 14.
SLIP LISTED ADAPTER/REDUCER
DOWNWARD ON TO
DOWNSPOUT FILTER.

STEP 15.
SECURE BY TIGHTENING
BOTH CLAMPS
WITH SCREWDRIVER.

ENSURE CLAMPS
ARE PROPERLY TIGHTENED.
SERVICE COMLPLETE.

APPROPRIATE INSTALLATION

FILTER CENTERED BETWEEN PIPES WITH EVEN GAPS ON TOP AND BOTTOM



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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	

R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

Your ACF R-Tank System has been designed to function in conjunction with the engineered drainage system on your site, the existing municipal infrastructure, and/or the existing soils and geography of the receiving watershed. Unless your site included certain unique and rare features, the operation of your R-Tank System will be driven by naturally occurring systems and will function autonomously. However, upholding a proper schedule of Inspection & Maintenance is critical to ensuring continued functionality and optimum performance of the system.

Inspection

Both the R-Tank and all stormwater pre-treatment features incorporated into your site must be inspected regularly. Inspection frequency for your system must be determined based on the contributing drainage area, but should never exceed one year between inspections (six months during the first year of operation).

Inspections may be required more frequently for pre-treatment systems. You should refer to the manufacturer requirements for the proper inspection schedule.

With the right equipment your inspection and measurements can be accomplished from the surface without physically entering any confined spaces. If your inspection does require confined space entry, you MUST follow all local/regional requirements as well as OSHA standards.

R-Tank Systems may incorporate Inspection Ports, Maintenance Ports, and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the cover removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, ALL access points should be examined to complete a thorough inspection.

Inspection Ports
Usually located centrally in the R-Tank System, these perforated columns are designed to give the user a base-line sediment depth across the system floor.

Maintenance Ports
Usually located near the inlet and outlet connections, you'll likely find deeper deposits of heavier sediments when compared to the Inspection Ports.

Manholes
Most systems will include at least two manholes - one at the inlet and another at the outlet. There may be more than one location where stormwater enters the system, which would result in additional manholes to inspect.

Bear in mind that these manholes often include a sump below the invert of the pipe connecting to the R-Tank. These sumps are designed to capture sediment before it reaches the R-Tank, and they should be kept clean to ensure they function properly. However, existence of sediment in the sump does NOT necessarily mean sediment has accumulated in the R-Tank.

After inspecting the bottom of the structure, use a mirror on a pole (or some other device) to check for sediment or debris in the pipe connecting to the R-Tank.

R-TANK OPERATION INSPECTION & MAINTENANCE

If sediment or debris is observed in any of these structures, you should determine the depth of the material. This is typically accomplished with a stadia rod, but you should determine the best way to obtain the measurement.

All observations and measurements should be recorded on an Inspection Log kept on file. We've included a form you can use at the end of this guideline.

Maintenance

The R-Tank System should be back-flushed once sediment accumulation has reached 6" or 15% of the total system height. Use the chart below as a guideline to determine the point at which maintenance is required on your system.

R-Tank Unit	Height	Max Sediment Dept
Mini	9.5"	1.5"
Single	17"	3"
Double	34"	5"
Triple	50"	6"
Quad	67"	6"
Pent	84"	6"

Before any maintenance is performed on your system, be sure to plug the outlet pipe to prevent contamination of the adjacent systems.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. Water should be pumped into ALL Maintenance Ports. The turbulent action of the water moving through the R-Tank will suspend sediments which may then be pumped out.

If your system includes an Outlet Structure, this will be the ideal location to pump contaminated water out of the system. However, removal of back-flush water may be accomplished through the Maintenance Ports, as well.

For systems with large footprints that would require extensive volumes of water to properly flush the system, you should consider performing your maintenance within 24 hours of a rain event. Stormwater entering the system will aid in the suspension of sediments and reduce the volume of water required to properly flush the system.

Once removed, sediment-laden water may be captured for disposal or pumped through a Dirtbag™ (if permitted by the locality).

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Step-By-Step Inspection & Maintenance Routine

1) **Inspection**
    a. Inspection Port
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
    b. Maintenance Port/s
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
        vi. Repeat for ALL Maintenance Ports
    c. Adjacent Manholes
        i. Remove Cover
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod, accounting for depth of sump (if present)
        iv. Inspect pipes connecting to R-Tank
        v. Record results on Maintenance Log
        vi. Replace Cover
        vii. Repeat for ALL Manholes that connect to the R-Tank

2) **Maintenance**
    a. Plug system outlet to prevent discharge of back-flush water
    b. Determine best location to pump out back-flush water
    c. Remove Cap from Maintenance Port
    d. Pump water as rapidly as possible (without over-topping port) into system until at least 1”
    of water covers system bottom
    e. Replace Cap
    f. Repeat at ALL Maintenance Ports
    g. Pump out back-flush water to complete back-flushing
    h. Vacuum all adjacent structures and any other structures or stormwater pre-treatment systems that require attention
    i. Sediment-laden water may be captured for disposal or pumped through a Dirtbag™.
    j. Replace any remaining Caps or Covers
    k. Record the back-flushing event in your Maintenance Log with any relevant specifics

R-Tank Maintenance Log

Site Name:_____

Location:_____

System Owner:_____

Company Responsible for Maintenance:_____

Contact:_____

Phone Number:_____

Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

For more information about our products, contact Inside Sales at 800.448.3636 or email at info@acfenv.com