

AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

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

23 August 2022

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

RE: Request Site Plan Approval at 161 Deer Street *to be known as* 88 Maplewood Avenue, Mixed Use Site Development

Dear Mr. Stith and TAC Members:

On behalf of Tom Balon and EightKPH, LLC we are pleased to submit the attached plan set for **Site Plan Review** for the above-mentioned project and request that we be placed on the agenda for your **September 6, 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 88 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. This application revises the proposed building and as such will go through HDC review. The property is located in the CD – 5, Downtown Overlay, North End Incentive, and Historic Districts. The design package has been revised from the Conceptual Phase to conform to the required Density and Development Standards. The project therefore will not require an application with the Zoning Board of Adjustment for the site development. The site has been to the Planning Board and completed the Design Review process; thereby vesting to current zoning.

The following plans are included in our submission:

- Cover Sheet – This shows the Development Team, Legend, Site Location, and Site Zoning.
- Plan of Restrictive Covenant – The plan shows a restriction on the railroad property to benefit the locus site.
- Subdivision Plan – This plan show the plan which created the current property boundaries.
- 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 dedicated 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 D4 – These plans show site details.

Trip Generation

Gorrill Palmer, Traffic Engineer, prepared a report based on calculations of trip generation and determined that the currently proposed uses in Lot 5 will generate less traffic than the originally approved uses. 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 complete report. 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 Gorrill Palmer that no additional traffic effort will be required other than submittal of this memo and supporting attachments. This is due to the proposed building being considerably smaller in size than the original approval.

Additional Information Provided:

Site Plan Checklist

Green Building Components

Proposed Bike Rack Specification

Notice of the Completion of Design Review

Drainage Analysis Front End

Copies of previous Plans and Approvals

We look forward to the Technical Advisory Committee review of this submission and look forward to an in-person presentation.

Sincerely,



John R. Chagnon, PE

CC: Tom Balon, Carla Goodknight, Terrance Parker, Randy Dunton



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 | | | |
|-------------------------------------|--|--|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | Complete application form submitted via the City's web-based permitting program (2.5.2.1(2.5.2.3A)) | ONLINE | N/A |
| <input type="checkbox"/> | 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 | | | |
|---|---|---|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page/line or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | Statement that lists and describes "green" building components and systems. (2.5.3.1B) | SUPPLEMENTAL | |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | 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 | | | |
|---|---|---|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page/line or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | Names, addresses and telephone numbers of all professionals involved in the site plan design. (2.5.3.1G) | COVER SHEET | N/A |
| <input type="checkbox"/> | List of reference plans. (2.5.3.1H) | SHEET C1 | N/A |
| <input type="checkbox"/> | 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 | | | |
|-------------------------------------|---|---|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page/line or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. (2.5.4.1E) | N/A | N/A |
| <input type="checkbox"/> | Title (name of development project), north point, scale, legend. (2.5.4.2A) | COVER SHEET | N/A |
| <input type="checkbox"/> | Date plans first submitted, date and explanation of revisions. (2.5.4.2B) | EACH SHEET | N/A |
| <input type="checkbox"/> | Individual plan sheet title that clearly describes the information that is displayed. (2.5.4.2C) | Required on all plan sheets | N/A |
| <input type="checkbox"/> | Source and date of data displayed on the plan. (2.5.4.2D) | SHEET C1 | N/A |

| Site Plan Specifications – Required Exhibits and Data | | | |
|---|---|---|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page/line or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | 1. Existing Conditions: (2.5.4.3A) <ul style="list-style-type: none"> • 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 | |
| <input type="checkbox"/> | 2. Buildings and Structures: (2.5.4.3B) <ul style="list-style-type: none"> • 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 | |
| <input type="checkbox"/> | 3. Access and Circulation: (2.5.4.3C) <ul style="list-style-type: none"> • 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 | |
| <input type="checkbox"/> | 4. Parking and Loading: (2.5.4.3D) <ul style="list-style-type: none"> • Location of off street parking/loading areas, landscaped areas/buffers; • Parking Calculations (# required and the # provided). | SHEET C3 & SHEET C4 | |
| <input type="checkbox"/> | 5. Water Infrastructure: (2.5.4.3E) <ul style="list-style-type: none"> • Size, type and location of water mains, shut-offs, hydrants & Engineering data; • Location of wells and monitoring wells (include protective radii). | SHEET C5 | |
| <input type="checkbox"/> | 6. Sewer Infrastructure: (2.5.4.3F) <ul style="list-style-type: none"> • Size, type and location of sanitary sewage facilities & Engineering data, including any onsite temporary facilities during construction period. | SHEET C5 | |

| | | | |
|--------------------------|--|----------------------|--|
| <input type="checkbox"/> | 7. Utilities: (2.5.4.3G) <ul style="list-style-type: none"> The size, type and location of all above & below ground utilities; Size type and location of generator pads, transformers and other fixtures. | SHEET C5 | |
| <input type="checkbox"/> | 8. Solid Waste Facilities: (2.5.4.3H) <ul style="list-style-type: none"> The size, type and location of solid waste facilities. | SHEET A2.0 | |
| <input type="checkbox"/> | 9. Storm water Management: (2.5.4.3I) <ul style="list-style-type: none"> 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 | |
| <input type="checkbox"/> | 10. Outdoor Lighting: (2.5.4.3J) <ul style="list-style-type: none"> Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and photometric plan. | TBD | |
| <input type="checkbox"/> | 11. Indicate where dark sky friendly lighting measures have been implemented. (10.1) | TBD | |
| <input type="checkbox"/> | 12. Landscaping: (2.5.4.3K) <ul style="list-style-type: none"> 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 | |
| <input type="checkbox"/> | 13. Contours and Elevation: (2.5.4.3L) <ul style="list-style-type: none"> Existing/Proposed contours (2 foot minimum) and finished grade elevations. | SHEET C6 | |
| <input type="checkbox"/> | 14. Open Space: (2.5.4.3M) <ul style="list-style-type: none"> Type, extent and location of all existing/proposed open space. | SHEET C3 | |
| <input type="checkbox"/> | 15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N) | SHEET C1 | |
| <input type="checkbox"/> | 16. Character/Civic District (All following information shall be included): (2.5.4.3P) <ul style="list-style-type: none"> 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 | |
| <input type="checkbox"/> | 17. Special Flood Hazard Areas (2.5.4.3Q) <ul style="list-style-type: none"> 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 | | | |
|-------------------------------------|--|---|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page/line or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | Traffic Impact Study or Trip Generation Report, as required. (3.2.1-2) | ONLINE | |
| <input type="checkbox"/> | Indicate where Low Impact Development Design practices have been incorporated. (7.1) | SHEET C6 | |
| <input type="checkbox"/> | 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 | |
| <input type="checkbox"/> | Stormwater Management and Erosion Control Plan. (7.4) | SHEET D1 | |
| <input type="checkbox"/> | Inspection and Maintenance Plan (7.6.5) | DRAINAGE REPORT | |

| Final Site Plan Approval Required Information | | | |
|---|---|---|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page/line or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | All local approvals, permits, easements and licenses required, including but not limited to: <ul style="list-style-type: none"> • Waivers; • Driveway permits; • Special exceptions; • Variances granted; • Easements; • Licenses. (2.5.3.2A) | ONGOING | |
| <input type="checkbox"/> | Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: <ul style="list-style-type: none"> • 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 | |
| <input type="checkbox"/> | 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 | | | |
|---|--|---|---------------------|
| <input checked="" type="checkbox"/> | Required Items for Submittal | Item Location (e.g. Page/line or Plan Sheet/Note #) | Waiver Requested |
| <input type="checkbox"/> | 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 | |
| <input type="checkbox"/> | 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 |
| <input type="checkbox"/> | 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 | |
| <input type="checkbox"/> | 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.

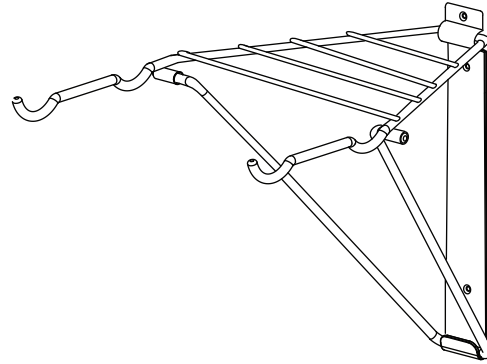
20. Thermal Comfort - Each residential unit will have a dedicated HVAC controlled by the condo owner.

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.

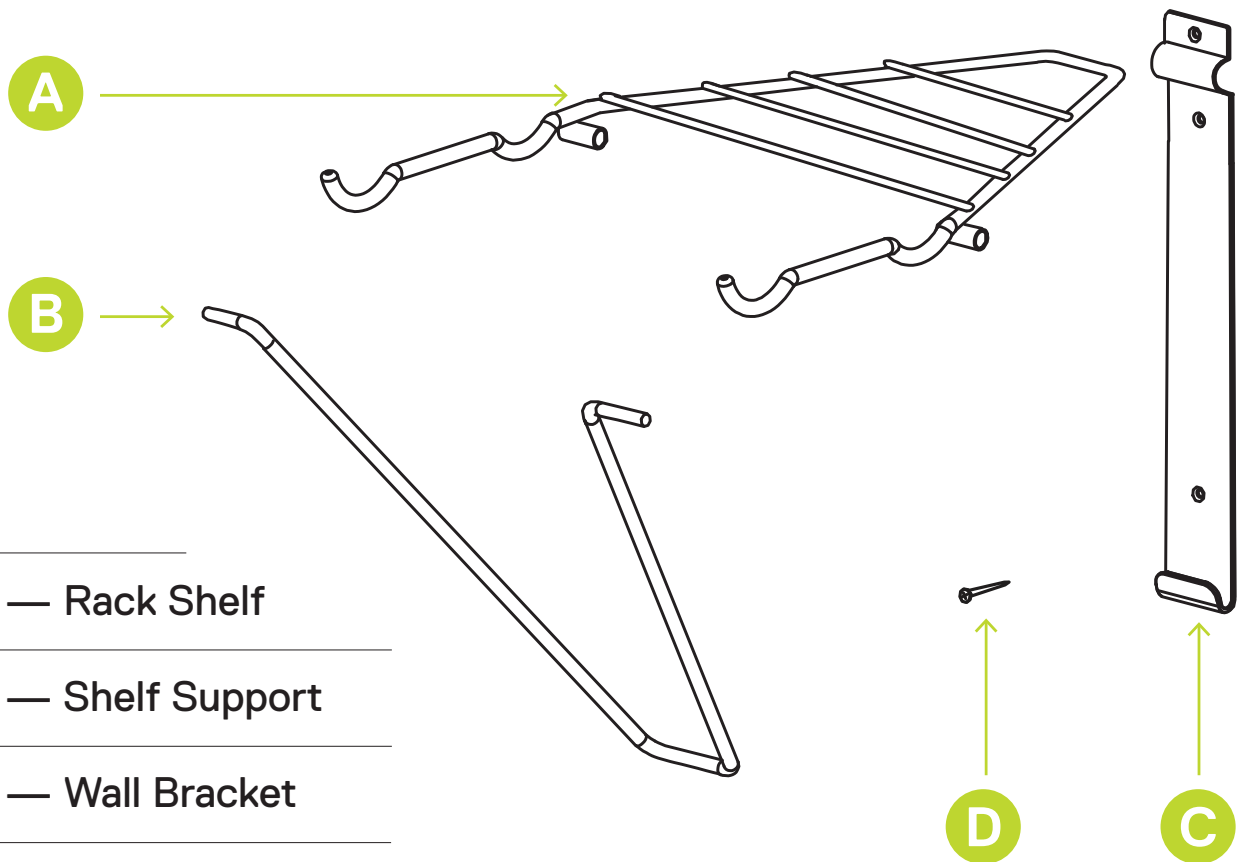
Note: Green building components reflect proposed project features and are subject to feasibility of construction.

delta_▲

Two Bike Wall Mount Rack w/shelf



Assembly instructions RS5103

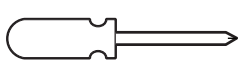


Parts

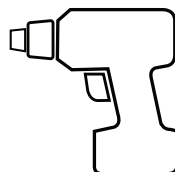
- A** x1 — Rack Shelf
- B** x1 — Shelf Support
- C** x1 — Wall Bracket
- D** x3 — Screws

Tool(s) Required

Phillips Head
Screwdriver



Drill



WARNING

NEVER EXCEED MAXIMUM TOTAL WEIGHT LIMIT OF 65 LBS (30 Kgs)
INCORRECT WALL MOUNTING COULD RESULT IN ITEMS FALLING AND INJURY TO PERSONS.

IMPROPER INSTALLATION OR USE CAN RESULT IN PERSONAL INJURY AND/OR DAMAGE TO
PROPERTY

1

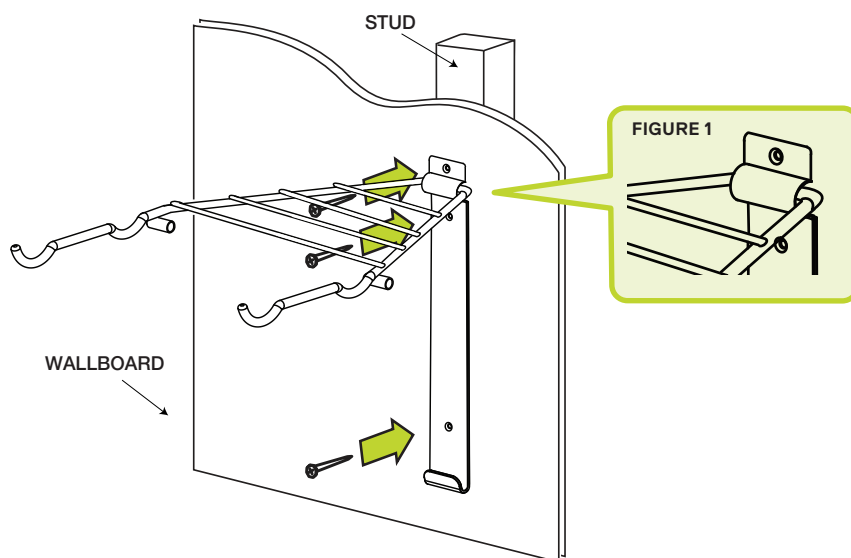
Locate stud beneath wallboard.
Position wall bracket at desired height.

Before mounting wall bracket
position rack shelf behind upper part of bracket.
(Figure 1)
Make sure the rack shelf is level when mounting.
Once in correct position screw into place.
(screws should be in the center of Wall Stud)



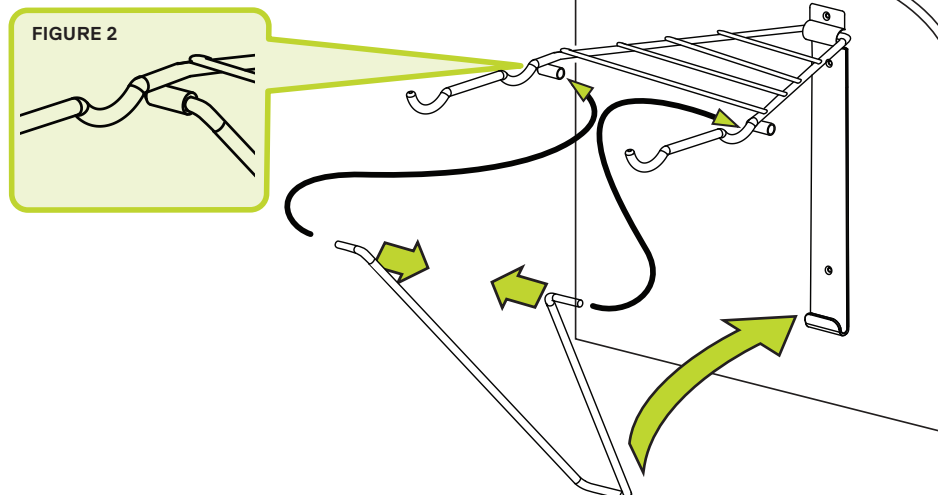
IMPORTANT SAFETY NOTE

Beware of drilling into electrical
wire or pipes within wall!



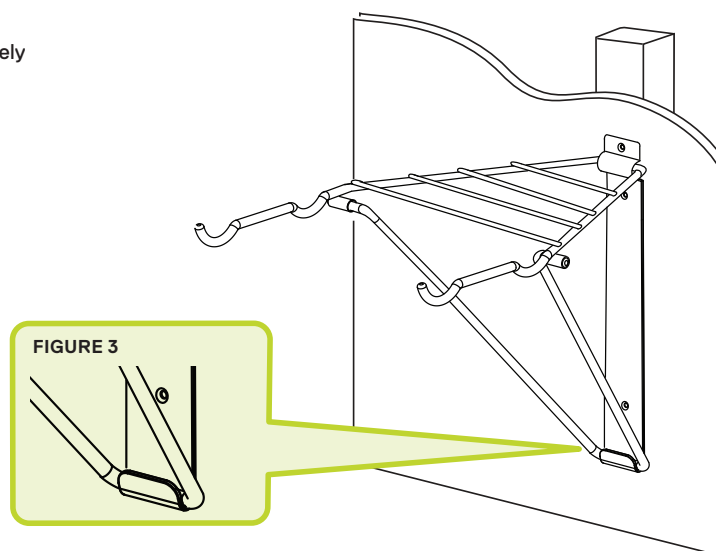
2

Compress shelf support slightly
and release into holes on shelf.
(Figure 2)



3

Make sure that shelf support is securely
placed in bottom of wall bracket.
(Figure 3)



Need help?

Email us at service@designbydelta.com
& we'll help solve your issue.

Assembly video

Visit designbydelta.com/downloads



Preliminary Conceptual Consultation or Design Review Phase Approval
LUPD-22-7

Your Submission

Attachments

Guests (1)

- ✔ Application Completeness Review
- ✔ Planning Department Review and Fee Calculation
- ✔ Application Permit Fee
- ✔ Planning Board Review Complete
- ✔ Postage/Advertising Fees for PB Meeting - 05/19/22
- ✔ Design Review Request Accepted by Planning Board
- ✔ **Design Review Phase Complete**

Design Review Phase Complete

✔ **Complete.** This step was completed on Jun 6, 2022 at 1:08pm.

Message the reviewer

Send Message

City of Portsmouth, NH

Your Profile

Your Records (/dashboard/records)

Resources

[Search for Records \(/search\)](#)

[Claim a Record \(/claimRecord\)](#)

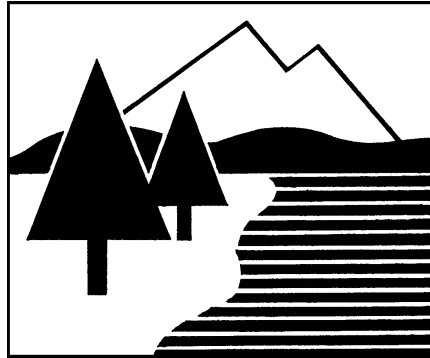
[Employee Login \(https://portsmouthnh.viewpointcloud.io\)](https://portsmouthnh.viewpointcloud.io)

Portal powered by **OpenGov**

DRAINAGE ANALYSIS

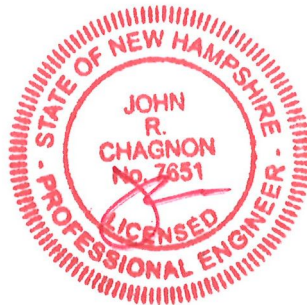
SITE DEVELOPMENT

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)

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ATTACHMENTS

| | |
|----------------------------|--|
| Existing Subcatchment Plan | |
| Proposed Subcatchment Plan | |

APPENDIX

| | |
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| Vicinity (Tax) Map | A |
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| Inspection & Long Term Maintenance Plan | F |

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

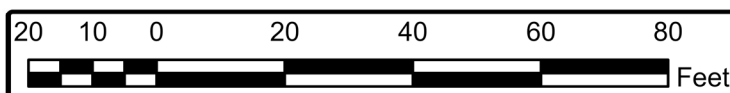
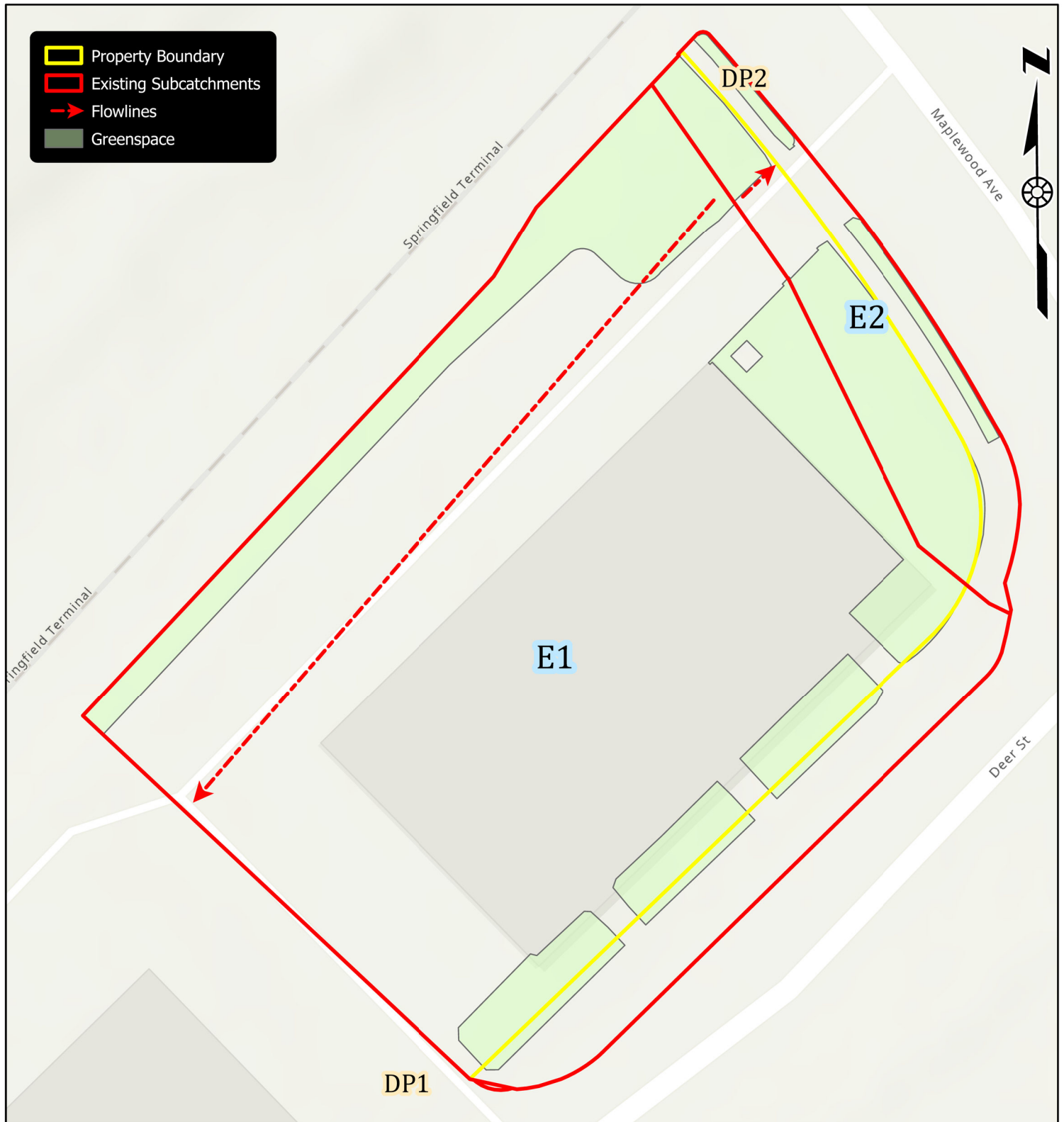
The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the R-Tank system, the post-development runoff rates are reduced to below the pre-development runoff rates. The proposed downspout filter will provide treatment 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.

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

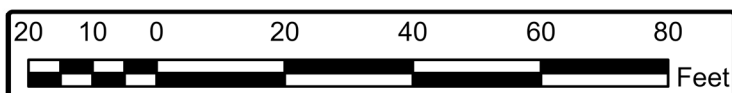
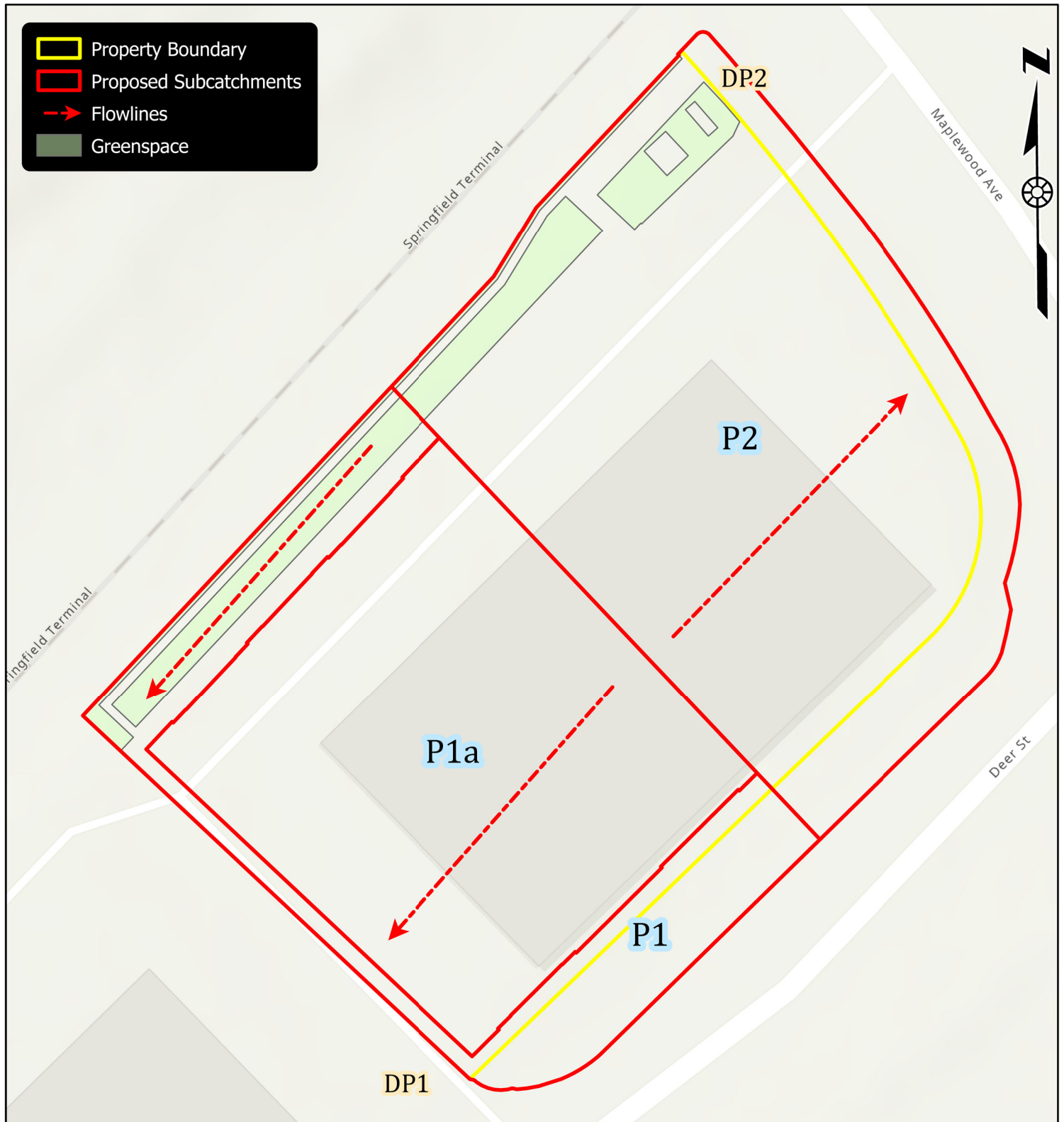
JOB NUMBER: 2271
SCALE: 1" = 30'
SUBMITTED: 08-04-2022



Greenspace = 6367 sf
Net = -3179 sf

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

JOB NUMBER: 2271
SCALE: 1" = 30'
SUBMITTED: 08-18-2022





CITY OF PORTSMOUTH

Community Development Department
(603) 431-2006, ext. 232

Planning Department
(603) 431-2006, ext. 216

PLANNING DEPARTMENT

July 25, 2005

Lucy Gobin
Centrix Bank & Trust
P. O. Box 10454
Bedford, NH 03110

RE: Site Review Approval for Property Located at 165 Deer Street

Dear Ms. Gobin:

The Planning Board, at its regularly scheduled meeting of July 21, 2005 and after due Public Hearing, considered the application wherein site plan approval was requested for the addition of a covered entrance and porte-cochere with a teller window, with related paving, utilities, landscaping, drainage and associated site improvements. As a result of such consideration, the Board voted to **grant** Site Review Approval subject to the following **stipulations**:

- 1) That the Planning Department will work with the applicant to review the parking requirement based on the proposed uses;
- 2) That a sidewalk easement be prepared for review and approval by the City Legal Department;
- 3) That as this building has a sprinkler system, the building must be supervised and provide automatic notification of emergency forces. It would also require that the alarm system also automatically notify emergency forces in the event of an evacuation;
- 4) That the lots shall be consolidated and that the documentation be reviewed by the Planning and Legal Department as to content and form.
- 5) That an additional directional arrow be painted on the pavement at the exit coming out the drive-thru;
- 6) That a work limit line for the sidewalks be added to the plans;
- 7) That an easement for the City waterline be prepared for review and approval by the City Legal Department;
- 8) That the rectangular area under the first two parking spaces, coming off of Maplewood Avenue, be labeled as property of the railroad with an explanatory note that it was not counted for parking and also that the City takes no position as to the ownership of the parcel and is not under review by the Site Review Committee;
- 9) That landscaping to be worked out with Lucy Tillman and DPW following Site Plan approval from the Planning Board;
- 10) That the directional arrow behind the proposed bank building be eliminated replaced with the wording "Do Not Enter"; also, a sign be added to the building that says "Do Not Enter";

Page two.
RE: 165 Deer Street
July 25, 2005

- 11) That the snow storage area off of Bridge Street would be plantings and grass and the pavement would be removed, and the second snow storage area next to Redlon and Johnson would remain in its present condition;
- 12) That the handicapped parking space be moved from the westerly section of the #165 two-story wood building to the other side of the same building;
- 13) That it is recommended that all site lighting shall be Dark Sky Friendly;
- 14) That the existing dumpster be added to the Site Plans; and;
- 15) That a "Do Not Enter" sign be added to the rear of the #165 two-story wood building or on a pole in the same vicinity.

Please submit three sets of the amended plan to the Planning Department for record keeping purposes. **The Site Review process is not complete until a Site Review Agreement has been executed and a bond to cover the proposed site improvements has been posted.**

Site Review approval by the Planning Board shall expire unless used within a period of one year from the date of approval. A request for a one-year extension of the Site Review approval may be submitted in writing prior to the expiration date. Please refer to the *Site Review Regulations* concerning additional extension requests.

In addition, please note that the building/construction plans must be reviewed and approved by the Inspection Department prior to a Building Permit being issued.

The minutes and audio recording of the meeting may be reviewed in the Planning Department.

Very truly yours,

David M. Holden /jms

David M. Holden, Planning Director
for Kenneth Smith, Chairman of the Planning Board
DMH:jms

cc: Richard A. Hopley, Building Inspector
John Chagnon, P.E.
William Tucker, Esq.

Also -
site entrance
sidewalk
update cost
estimate



CITY OF PORTSMOUTH

Community Development Department
(603) 610-7281

Planning Department
(603) 610-7216

PLANNING DEPARTMENT

August 21, 2017

Maxwell P. Rogers
Deer Street Associates, Inc.
P. O. Box 100
York Harbor, ME 03911

RE: Site Plan Application for Property Located at 165 Deer Street

Dear Mr. Rogers:

The Planning Board, at its regularly scheduled meeting of August 17, 2017, considered your Site Plan Review application requesting the creation of a temporary parking lot having 73 standard parking spaces and 3 handicap accessible parking spaces, with related paving, lighting, utilities, landscaping, drainage and associated site improvements. As a result of said consideration, the Board voted as follows:

1. Voted to determine that the application for Site Plan approval is complete according to the Site Plan Regulations and to accept it for consideration.
2. Voted to find that a waiver will not have the effect of nullifying the spirit and intent of the City's Master Plan or the Site Plan Review Regulations, and to waive the following regulations:
 - 1) Section 2.5.3 2(b):
 - 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.

Page two.
RE: 165 Deer Street
August 21, 2017

- 2) Section 2.5.4 3:
 - (i) Stormwater Management
 - (j) Outdoor Lighting
 - (k) Landscaping
3. Voted to grant Site Plan Approval with the following stipulations:
 - 1) The temporary parking lot shall be in operation for no longer than 27 months from the date of the Planning Board approval.
 - 2) The Site Plan (Sheet C2) shall be recorded at the Registry of Deeds by the City or as deemed appropriate by the Planning Department.
 - 3) The applicant shall include existing low spot on the southern corner of the parking lot in the pavement shimming that is being undertaken to create positive drainage.
 - 4) The plan sheet(s) submitted for recording shall include the following notes:
 1. This Site Plan shall be recorded in the Rockingham County Registry of Deeds.
 2. All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director.
 3. The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials.
 4. All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair.
 5. The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director.”

Three complete sets of revised Site Plans must be provided to the Planning Department, along with a pdf version.

The Site Plan Review process is not complete until a Site Review Agreement has been fully executed and a Site Review bond (i.e. Irrevocable Letter of Credit, Surety Bond or cash) has been approved by the City.

As a reminder, digital as-built plans are required in a CAD or ESRI file format prior to the release of your Site Review Bond. Please refer to the Site Plan Review Regulations for special requirements.

The City's Land Use Compliance Agent, Vincent Hayes, will be inspecting the work during construction.

Page three.

RE: 165 Deer Street
August 21, 2017

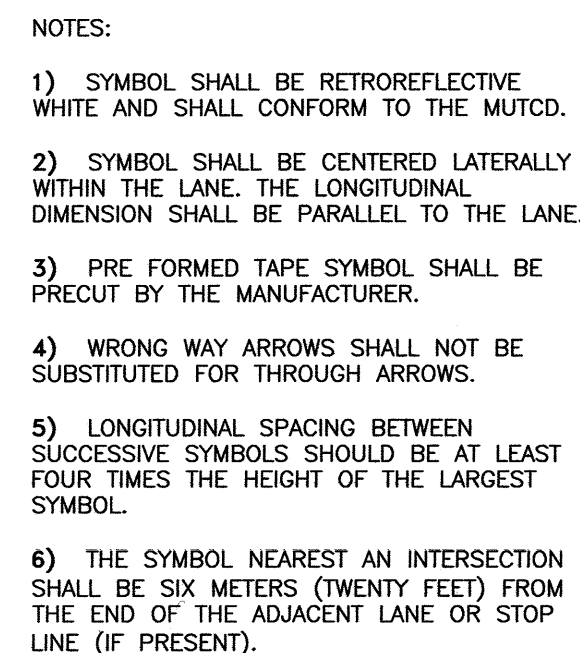
The minutes and audio recording of this meeting are available through the Planning Department.

Very truly yours,

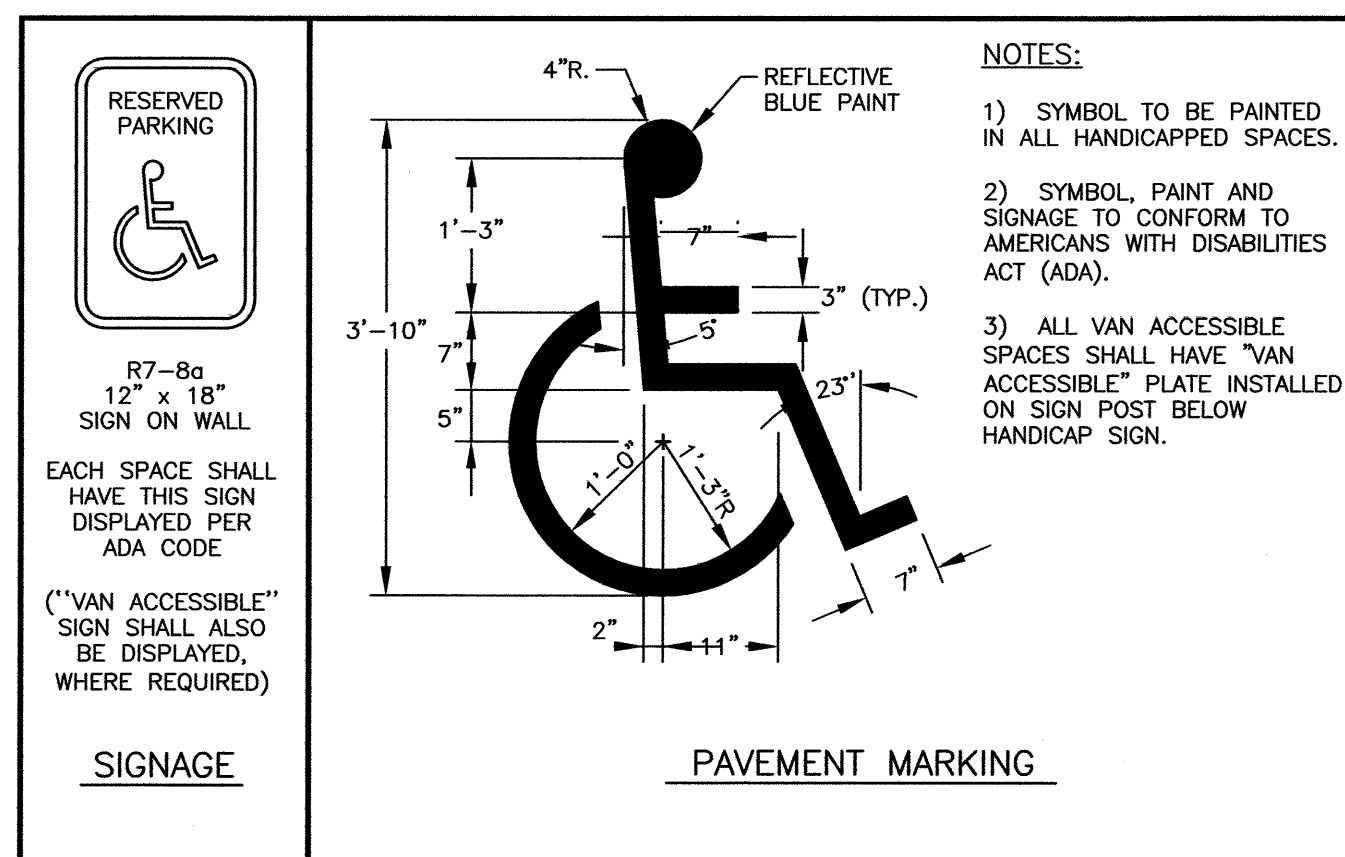
A handwritten signature in black ink, appearing to read "Juliet T.H. Walker". The signature is fluid and cursive, with the first name "Juliet" being the most prominent part.

Juliet T.H. Walker, Planning Director
for Dexter Legg, Chairman of the Planning Board
JTHW:jms

cc: Robert Marsilia, Building Inspector
Rosann Maurice-Lentz, City Assessor
John Chagnon, P. E., Ambit Engineering

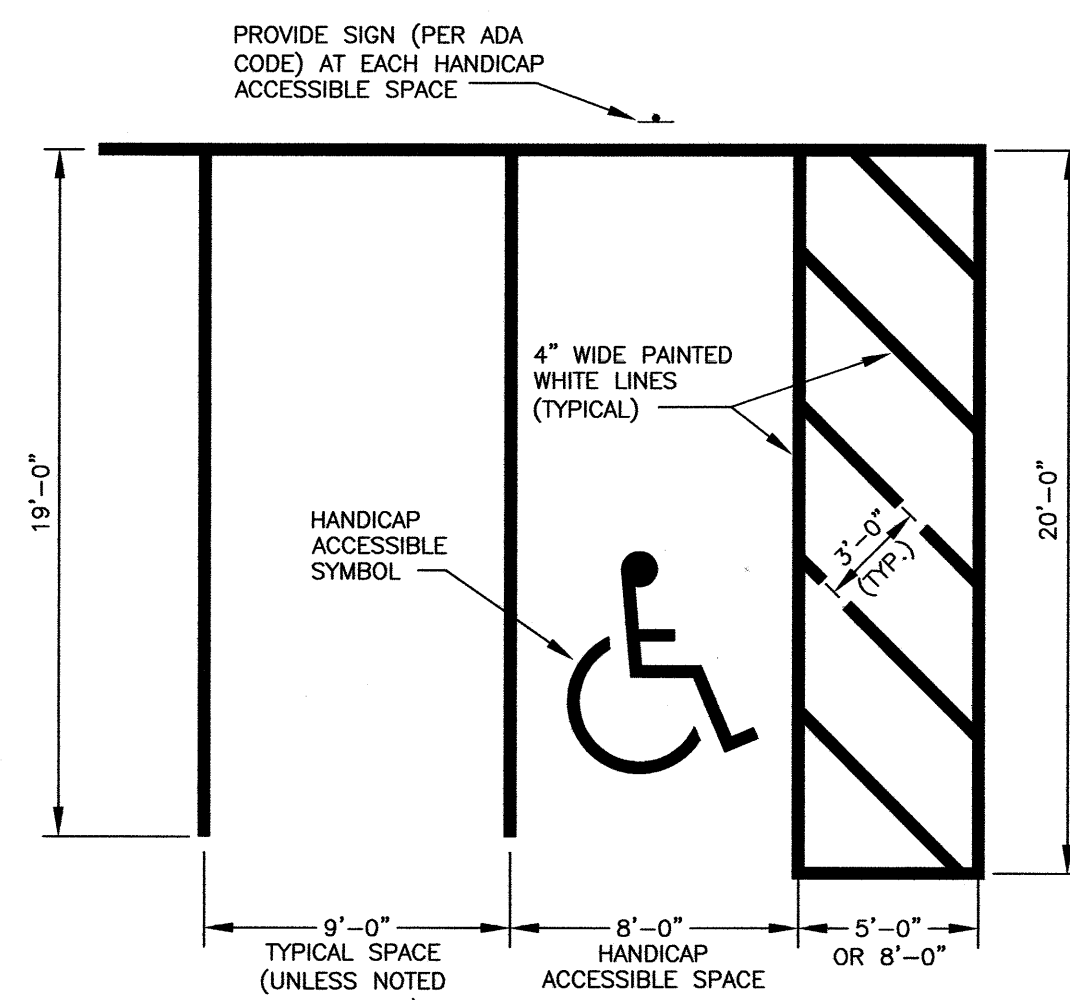


| | |
|-------------------------------------|-----|
| LEFT TURN ARROW | |
| (RIGHT TURN ARROW OPPOSITE IN KIND) | NTS |

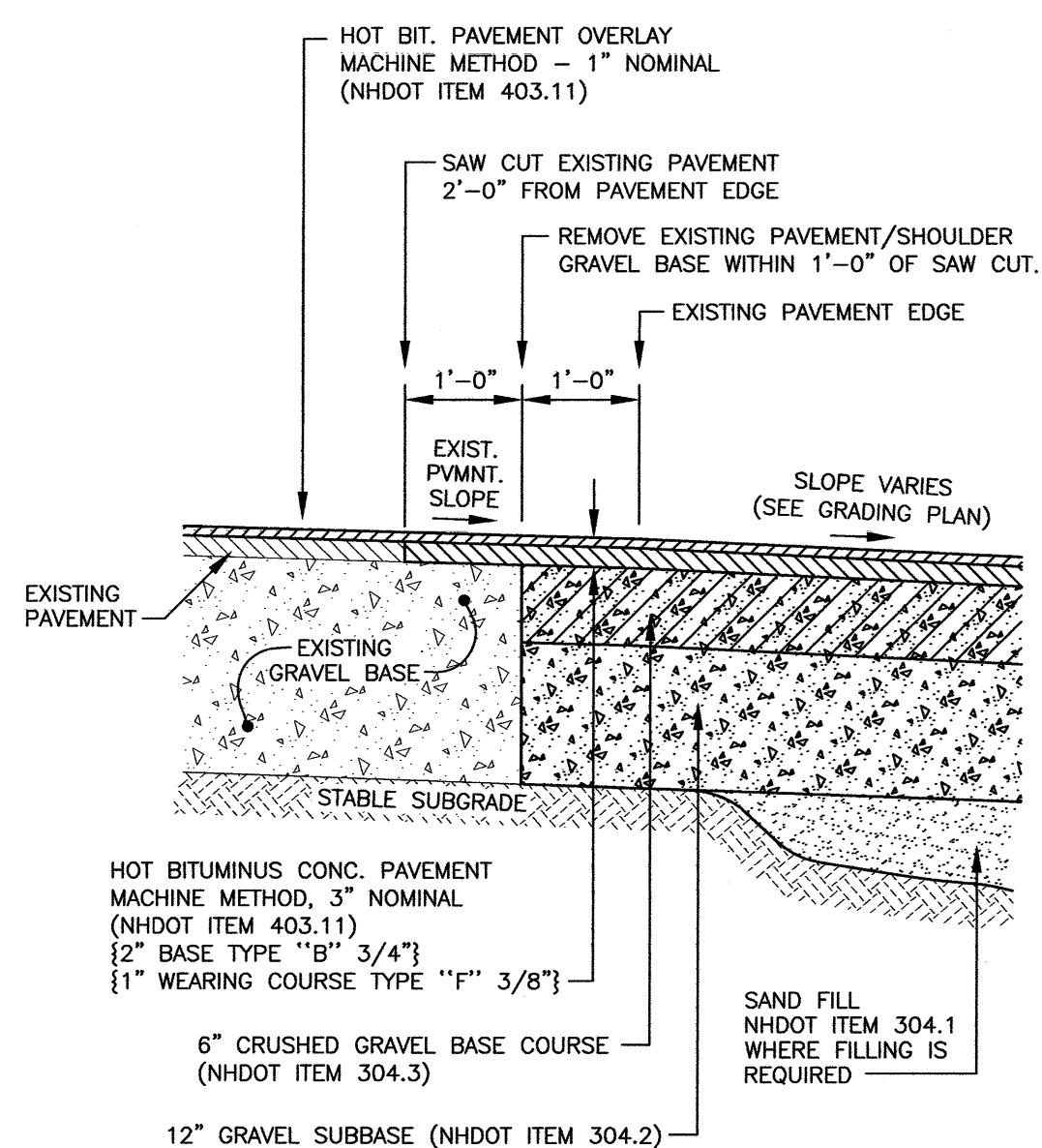


HANDICAP SYMBOL

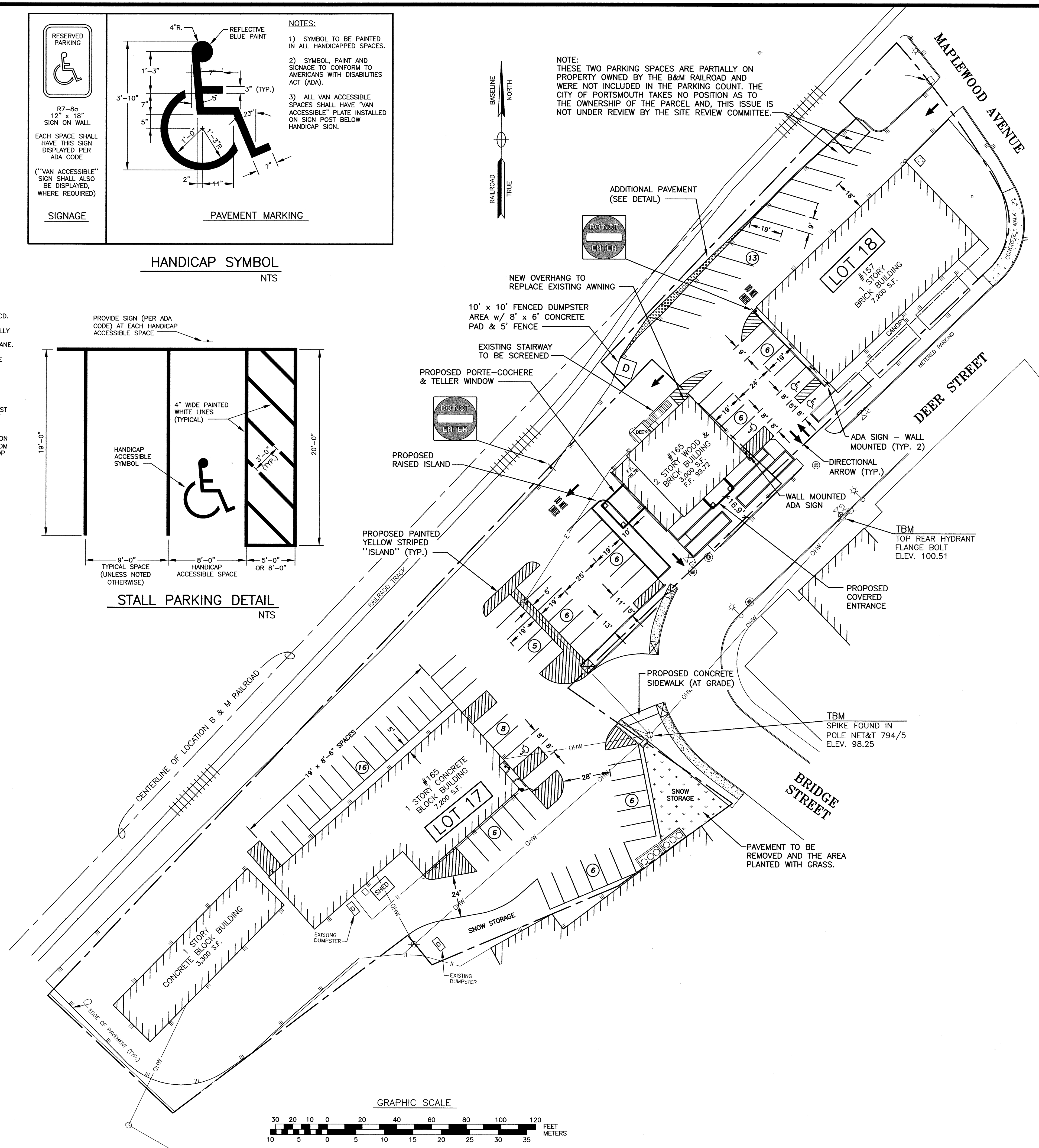
NTS



STALL PARKING DETAIL
NTS



FULL DEPTH PAVEMENT SECTION
AND PAVEMENT JOINT DETAIL



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 "STORM WATER MANAGEMENT & EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE" (RCCD AUGUST 1992) BEST MANAGEMENT PRACTICES, AND "BEST MANAGEMENT PRACTICES FOR URBAN STORM WATER RUNOFF" (NHDES JANUARY 1996).

4) SEE SHEET D1 FOR LANDSCAPING PLAN.

5) NO CHANGES TO SITE UTILITIES ARE PROPOSED.

6) PROPOSED RENOVATIONS FROM PLANS DATED 1 JUNE 2005 BY DeSTEFANO ARCHITECTS.

7) PARKING CALCULATIONS:

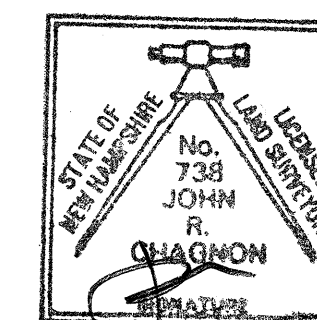
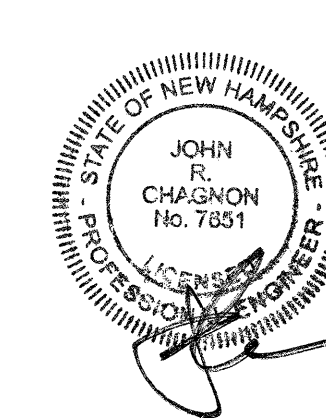
#157-161 3,300 S.F. WELLS FARGO MORTGAGE
BUSINESS OFFICE @ 1/250 = 13.2 SPACES
1,400 S.F. FRAME SHOP
RETAIL @ 1/400 = 3.5 SPACES
2,400 S.F. EYE DOCTOR
PROFESSIONAL OFFICE @ 1/200 = 12 SPACES
50 S.F. VESTIBULE @ 1/400 = 0.1 SPACES
50 S.F. VESTIBULE @ 1/250 = 0.2 SPACES

#165 3,000 S.F. CENTRIX BANK
3,000 S.F. @ 1/400 = 7.5 SPACES
2,200 S.F. YOGA EAST
20 STUDENTS @ 1/4 = 5 SPACES
6,000 S.F. GARY'S BEVERAGE
RETAIL @ 1/400 = 15 SPACES
2,600 S.F. PIZZA RESTAURANT
RESTAURANT @ 1/75 = 34.7 SPACES
600 S.F. RAILROAD OFFICE
OFFICE @ 1/250 = 2.4 SPACES
3,300 S.F. STORAGE BUILDING
STORAGE @ 1/2000 = 1.6 SPACES
TOTAL REQUIRED PARKING = 95.2 SPACES
TOTAL PARKING THRESHOLD: 193.7 SPACES (PER
CALCULATIONS ON FILE AT CITY)
THERE IS NO UNMET PARKING NEED

TOTAL PARKING PROVIDED: 84 (4 HANDICAPPED)

PROPOSED RENOVATIONS
CENTRIX BANK & TRUST
157 & 165 DEER STREET
PORTSMOUTH, N.H.

| | | |
|-----|---|----------|
| 6 | DUMPSTER PAD, PARKING, ENTRANCE | 10/28/05 |
| 5 | PARKING CALCULATIONS | 9/9/05 |
| 4 | ADD SIDEWALK, SIG., RELOCATE HANDICAP SPACE | 8/29/05 |
| 3 | PAVEMENT MARKINGS & NOTES | 7/15/05 |
| 2 | REVISED PARKING LAYOUT | 7/11/05 |
| 1 | ISSUED FOR APPROVAL | 6/20/05 |
| 0 | ISSUED FOR COMMENT | 6/14/05 |
| NO. | DESCRIPTION | DATE |



SCALE: 1" = 30'

MAY 2005

*PROPOSED
SITE PLAN*

C2

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE _____

SIGN DETAILS

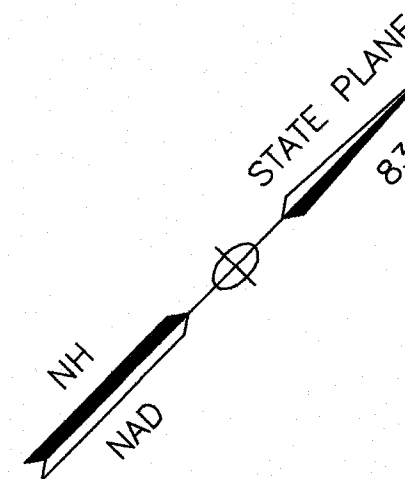
EXTERIOR INFORMATIONAL SIGN
NTSINTERIOR MARKING SIGN
NTS

APPROVAL NOTES:

- 1) THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- 2) ALL IMPROVEMENTS SHOWN ON THIS PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
- 3) THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
- 4) ALL REQUIRED PLANT MATERIALS SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL REQUIRED FENCES AND WALLS SHALL BE MAINTAINED IN GOOD REPAIR.
- 5) THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMOVE AND REPLACE DEAD OR DISEASED PLANT MATERIALS IMMEDIATELY WITH THE SAME TYPE, SIZE AND QUANTITY OF PLANT MATERIALS AS ORIGINALLY INSTALLED, UNLESS ALTERNATIVE PLANTINGS ARE REQUESTED, JUSTIFIED AND APPROVED BY THE PLANNING BOARD OR PLANNING DIRECTOR.

LEGEND:

| | | | |
|------|------------------------------|------|------------------------------|
| N/F | NOW OR FORMERLY | +HYD | HYDRANT |
| RP | RECORD OF PROBATE | ⓂⓈⓈ | METER (GAS, WATER, ELECTRIC) |
| RCRD | ROCKINGHAM COUNTY | Ⓢ | CATCH BASIN |
| | REGISTRY OF DEEDS | Ⓢ | TELEPHONE MANHOLE |
| | MAP 11 / LOT 21 | Ⓢ | SEWER MANHOLE |
| Ⓢ | RAILROAD SPIKE FOUND/SET | Ⓢ | DRAIN MANHOLE |
| Ⓢ | IRON ROD FOUND/SET | Ⓢ | TEST BORING |
| Ⓢ | IRON PIPE FOUND/SET | Ⓢ | AIR CONDITIONER UNIT |
| Ⓢ | DRILL HOLE FOUND/SET | Ⓢ | SIGNS |
| Ⓢ | CONCRETE BOUND w/ DRILL HOLE | Ⓢ | ASBESTOS CEMENT PIPE |
| Ⓢ | STONE BOUND w/ DRILL HOLE | Ⓢ | CAST IRON PIPE |
| Ⓢ | FORCE MAIN | Ⓢ | DUCTILE IRON PIPE |
| Ⓢ | SEWER LINE | Ⓢ | POLYVINYL CHLORIDE PIPE |
| Ⓢ | GAS LINE | Ⓢ | REINFORCED CONCRETE PIPE |
| Ⓢ | STORM DRAIN | Ⓢ | VITRIFIED CLAY PIPE |
| Ⓢ | WATER LINE | Ⓢ | PLASTIC PIPE |
| Ⓢ | UNDERGROUND ELECTRIC | Ⓢ | ELEVATION |
| Ⓢ | OVERHEAD ELECTRIC/WIRES | Ⓢ | EDGE OF PAVEMENT |
| Ⓢ | CHAIN LINK FENCE | Ⓢ | FINISHED FLOOR |
| Ⓢ | CONTOUR | Ⓢ | INVERT |
| Ⓢ | SPOT ELEVATION | Ⓢ | TEMPORARY BENCHMARK |
| Ⓢ | EDGE OF PAVEMENT (EP) | Ⓢ | TYPICAL |
| Ⓢ | UTILITY POLE (w/ GUY) | Ⓢ | VERTICAL/SLOPED GRANITE CURB |
| Ⓢ | SHUT OFF (GAS / WATER) | Ⓢ | CAPE COD BERM |
| Ⓢ | GATE VALVE | Ⓢ | ABOVE GRADE |
| Ⓢ | BOLLARD | | |



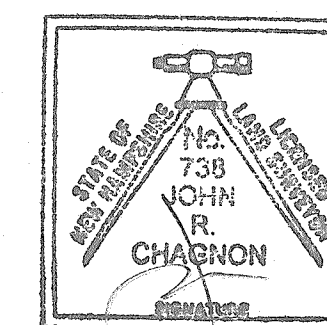
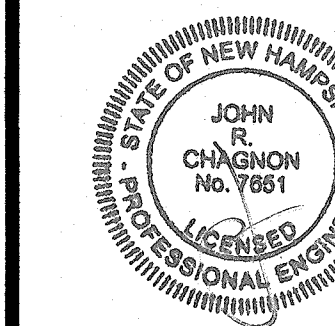
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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) THE PURPOSE OF THIS PLAN IS TO DEPICT A TEMPORARY PRIVATE PARKING LOT TO BE LEASED.

PROPOSED PARKING SPACES: 76

FOR USE BY #163 5
FOR USE BY TEMPORARY OFFICE 2
TO BE LEASED 68
TOTAL PARKING SPACES: 75
- 4) THIS SITE PLAN APPROVAL IS FOR A TEMPORARY PARKING LOT FOR A PERIOD OF 27 MONTHS UNLESS AN EXTENSION IS GRANTED BY THE PORTSMOUTH PLANNING BOARD.
- 5) THE AREA FORMALLY OCCUPIED BY THE BUILDING WILL BE SHIMMED WITH PAVEMENT TO ELIMINATE ANY FLAT SPOTS AND CREATE POSITIVE DRAINAGE. MINIMUM 1/2" SHIM.
- 6) THE EXTENSION OF HOURS OF USE, TO ALLOW FOR PUBLIC PARKING IN THE EVENING, WILL REQUIRE FUTURE APPROVAL BY THE PLANNING BOARD OR PLANNING DEPARTMENT.
- 7) THE PROPOSED LANDSCAPE AREA SHALL INCORPORATE NON-COMBUSTIBLE MULCH.



| NO. | DESCRIPTION | DATE |
|-----|----------------------|---------|
| 1 | ISSUED FOR RECORDING | 2/26/18 |
| 0 | ISSUED FOR COMMENT | 1/2/18 |

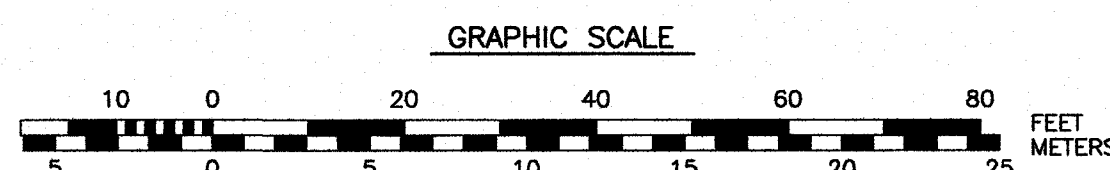
AMENDED SITE PLAN
TEMPORARY PARKING AREA
TAX MAP 125
LOTS 17 & 17-1
FOR
DEER STREET ASSOCIATES
165 DEER STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1" = 20'

JANUARY 2018

FB 230, PG 48

327.01

SEE PREVIOUS SITE PLAN
RECORDED AT RCRD D-40624

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

Deer Street
Associates

Hyatt Place -
Foundry Place

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

CIVIL ENGINEER / LANDSCAPE
ARCHITECT

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, ME 04106
P: 207.772.2515
www.gorrillpalmer.com

STRUCTURAL ENGINEER

IMEG Corp

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

MEP / P. ENGINEER

ADVANCED CONSULTING

300 W Adams Street, Suite 420
Chicago, Illinois 60606
Address Line 2
P: 312.357.1840
www.acgintl.com

INTERIORS

SHEEDY / DELAROA

4045 N. Rockwell Avenue
Chicago, IL 60618
P: 312.286.5246
www.nataliesheedy.com

SURVEYOR

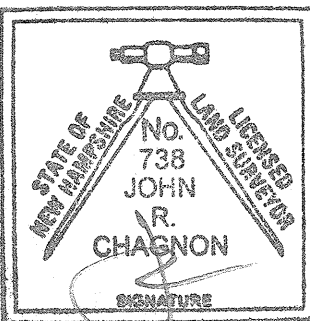
AMBIT ENGINEERING

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

OWNER OF RECORD

FOUNDRY PLACE LLC

157 Deer Street
Portsmouth NH 03801



REVISIONS

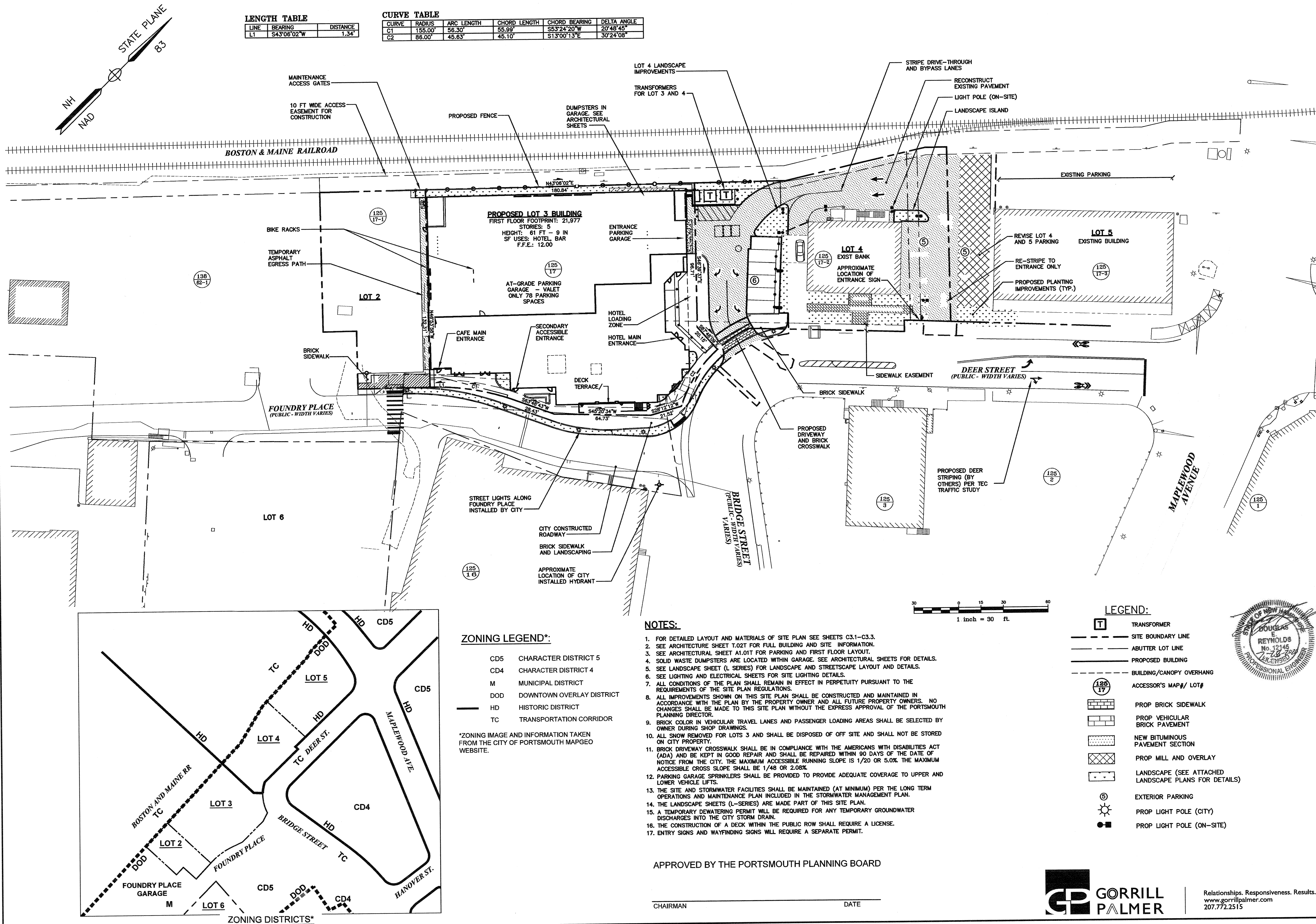
| NO. | DESCRIPTION | DATE |
|-----|-------------------|----------|
| 1 | SCOPE REVISION | 6/21/19 |
| 2 | EXTENSION REQUEST | 11/5/19 |
| 3 | ADDED BIKE RACKS | 12/10/19 |
| 4 | RECORD DRAWING | 2/19/20 |

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

OVERALL SITE
PLAN

C3.0

RECORD DRAWING



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" |

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:

- FOR DETAILED LAYOUT AND MATERIALS OF SITE PLAN SEE SHEETS C3.1-C3.3.
- SEE ARCHITECTURE SHEET T.02T FOR FULL BUILDING AND SITE INFORMATION.
- SEE ARCHITECTURAL SHEET A1.01T FOR PARKING AND FIRST FLOOR LAYOUT.
- SOLID WASTE DUMPSTERS ARE LOCATED WITHIN GARAGE. SEE ARCHITECTURAL SHEETS FOR DETAILS.
- SEE LANDSCAPE SHEET (L SERIES) FOR LANDSCAPE AND STREETScape LAYOUT AND DETAILS.
- SEE LIGHTING AND ELECTRICAL SHEETS FOR SITE LIGHTING DETAILS.
- ALL CONDITIONS OF THE PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REGULATIONS.
- 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.
- BRICK COLOR IN VEHICULAR TRAVEL LANES AND PASSENGER LOADING AREAS SHALL BE SELECTED BY OWNER DURING SHOP DRAWINGS.
- ALL SNOW REMOVED FOR LOTS 3 AND SHALL BE DISPOSED OF OFF SITE AND SHALL NOT BE STORED ON CITY PROPERTY.
- 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%.
- PARKING GARAGE SPRINKLERS SHALL BE PROVIDED TO PROVIDE ADEQUATE COVERAGE TO UPPER AND LOWER VEHICLE LIFTS.
- THE SITE AND STORMWATER FACILITIES SHALL BE MAINTAINED (AT MINIMUM) PER THE LONG TERM OPERATIONS AND MAINTENANCE PLAN INCLUDED IN THE STORMWATER MANAGEMENT PLAN.
- THE LANDSCAPE SHEETS (L-SERIES) ARE MADE PART OF THIS SITE PLAN.
- A TEMPORARY DEWATERING PERMIT WILL BE REQUIRED FOR ANY TEMPORARY GROUNDWATER DISCHARGES INTO THE CITY STORM DRAIN.
- THE CONSTRUCTION OF A DECK WITHIN THE PUBLIC ROW SHALL REQUIRE A LICENSE.
- ENTRY SIGNS AND WAYFINDING SIGNS WILL REQUIRE A SEPARATE PERMIT.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE



GORRILL
PALMER

Relationships. Responsiveness. Results.
www.gorrillpalmer.com
207.772.2515

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

SITE DEVELOPMENT EIGHTKPH, LLC

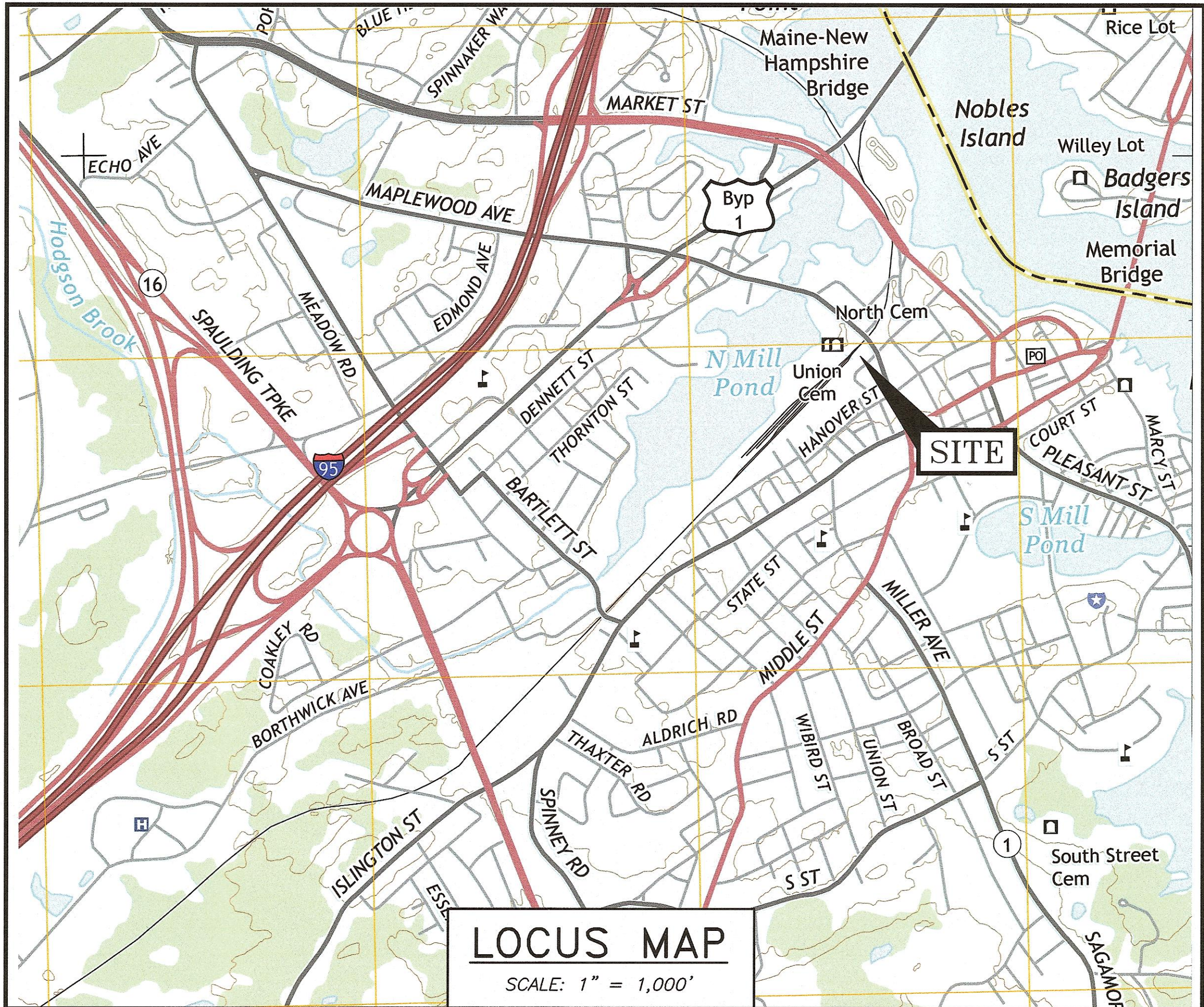
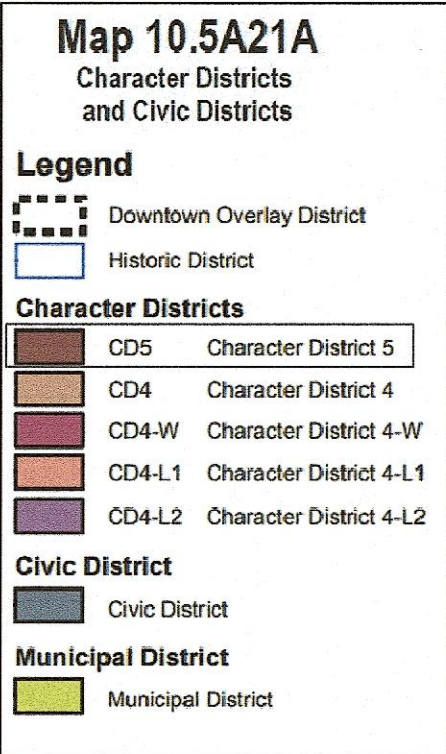
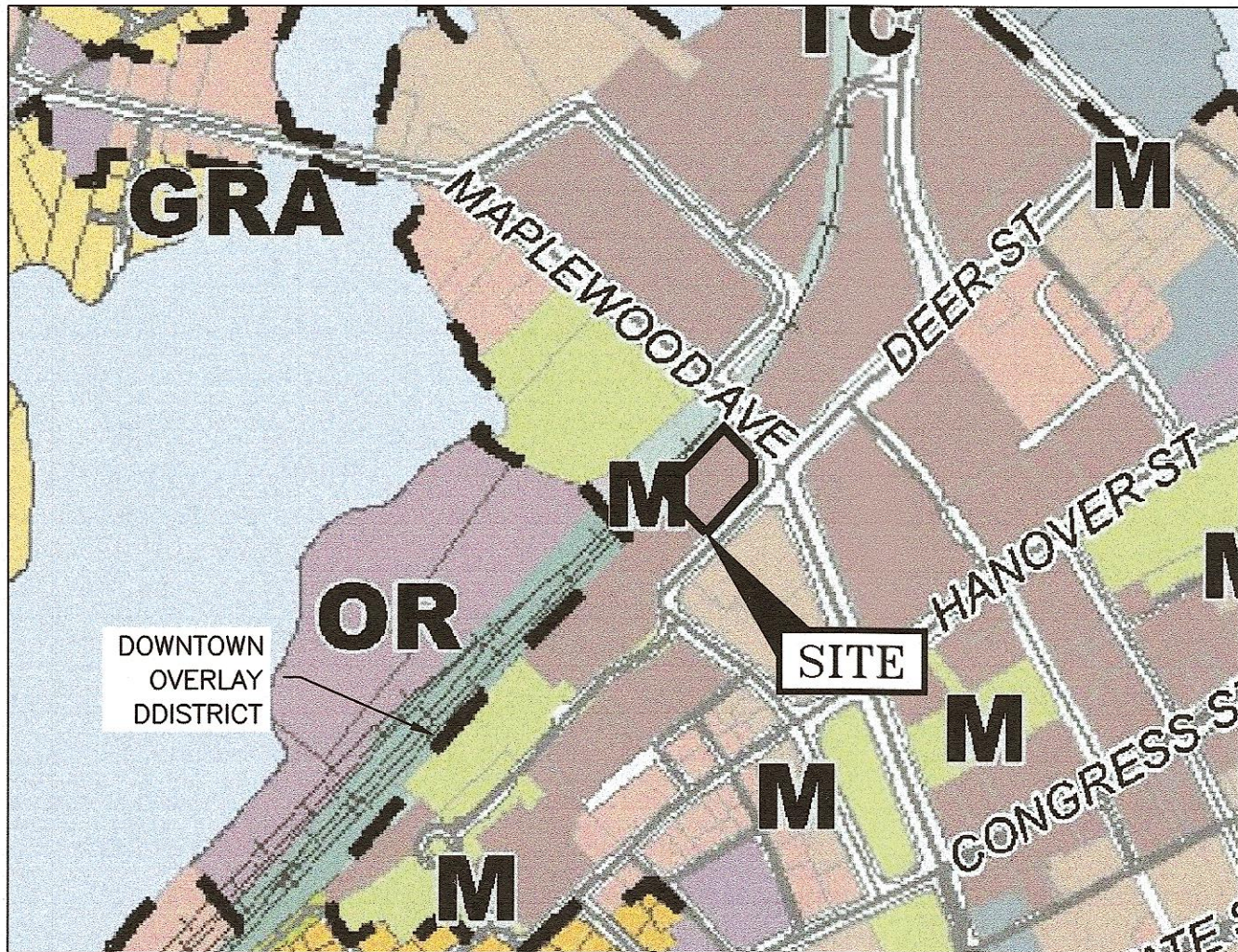
88 MAPLEWOOD AVENUE (FORMERLY 161 DEER STREET)
PORTSMOUTH, NEW HAMPSHIRE
PERMIT PLANS

PERMIT LIST:

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

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) |
| --- | --- | CONTOUR |
| --- | --- | SPOT ELEVATION |
| --- | --- | UTILITY POLE |
| --- | --- | WALL MOUNTED EXTERIOR LIGHTS |
| --- | --- | TRANSFORMER ON CONCRETE PAD |
| --- | --- | ELECTRIC HANDHOLD |
| --- | --- | SHUT OFFS (WATER/GAS) |
| --- | --- | GATE VALVE |
| --- | --- | HYDRANT |
| --- | --- | CATCH BASIN |
| --- | --- | SEWER MANHOLE |
| --- | --- | DRAIN MANHOLE |
| --- | --- | TELEPHONE MANHOLE |
| --- | --- | PARKING SPACE COUNT |
| --- | --- | PARKING METER |
| --- | --- | LANDSCAPED AREA |
| --- | --- | TO BE DETERMINED |
| --- | --- | CAST IRON PIPE |
| --- | --- | COPPER PIPE |
| --- | --- | DUCTILE IRON PIPE |
| --- | --- | POLYVINYL CHLORIDE PIPE |
| --- | --- | REINFORCED CONCRETE PIPE |
| --- | --- | ASBESTOS CEMENT PIPE |
| --- | --- | VITRIFIED CLAY PIPE |
| --- | --- | EDGE OF PAVEMENT |
| --- | --- | ELEVATION |
| --- | --- | FINISHED FLOOR |
| --- | --- | INVERT |
| --- | --- | SLOPE FT/FT |
| --- | --- | TEMPORARY BENCH MARK |
| --- | --- | TYPICAL |



INDEX OF SHEETS

| DWG. NO. | |
|----------|--------------------------|
| --- | SUBDIVISION PLAN |
| C1 | EXISTING CONDITIONS PLAN |
| C2 | DEMOLITION PLAN |
| C3 | SITE PLAN |
| A1-A3 | ARCHITECTURAL PLANS |
| L1-L2 | LANDSCAPE PLANS |
| C4 | PARKING LEVEL PLAN |
| C5 | UTILITY PLAN |
| C6 | GRADING PLAN |
| D1-D4 | DETAILS |

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
88 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: 23 AUGUST 2022

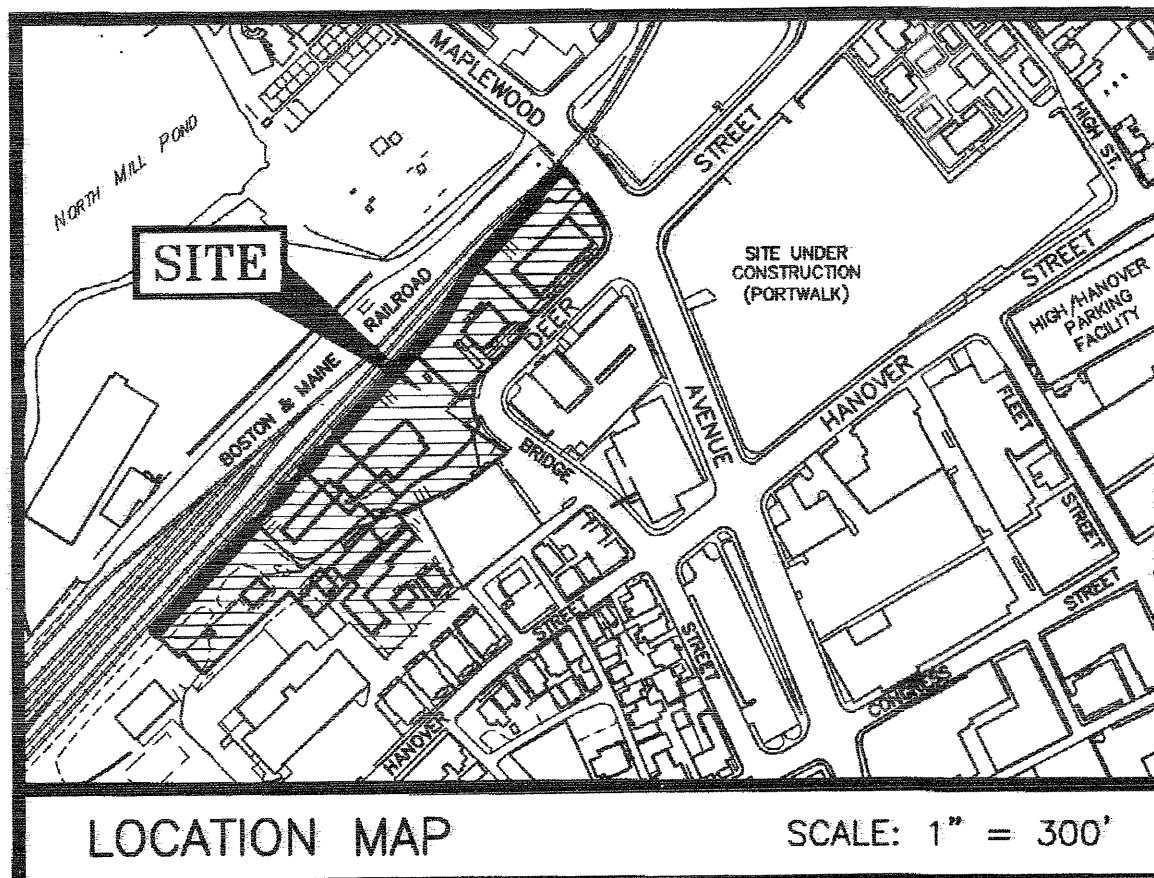
C/H
L-CHIP
ROA355694

PLAN REFERENCE:
1. CONSOLIDATION & SUBDIVISION PLAN,
DEER STREET ASSOCIATES, 1" = 50',
JULY 2015, RCRD D-39699.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-8282
Fax (603) 436-2315

NOTES:

- 1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP AS MAP 164, LOT 4.
- 2) OWNER OF RECORD:
BOSTON & MAINE CORPORATION
c/o PAN AM SYSTEMS, INC.
IRON HORSE PARK
HIGH STREET
NORTH BILLERICA, MA 01862
- 3) THE PURPOSE OF THIS PLAN IS TO SHOW THE LOCATION OF AN AREA ON MAP 164, LOT 4 AS SHOWN ON THIS PLAN WHICH WILL BE ENCUMBERED BY A RESTRICTIVE COVENANT TO BENEFIT THE ADJACENT PARCELS.

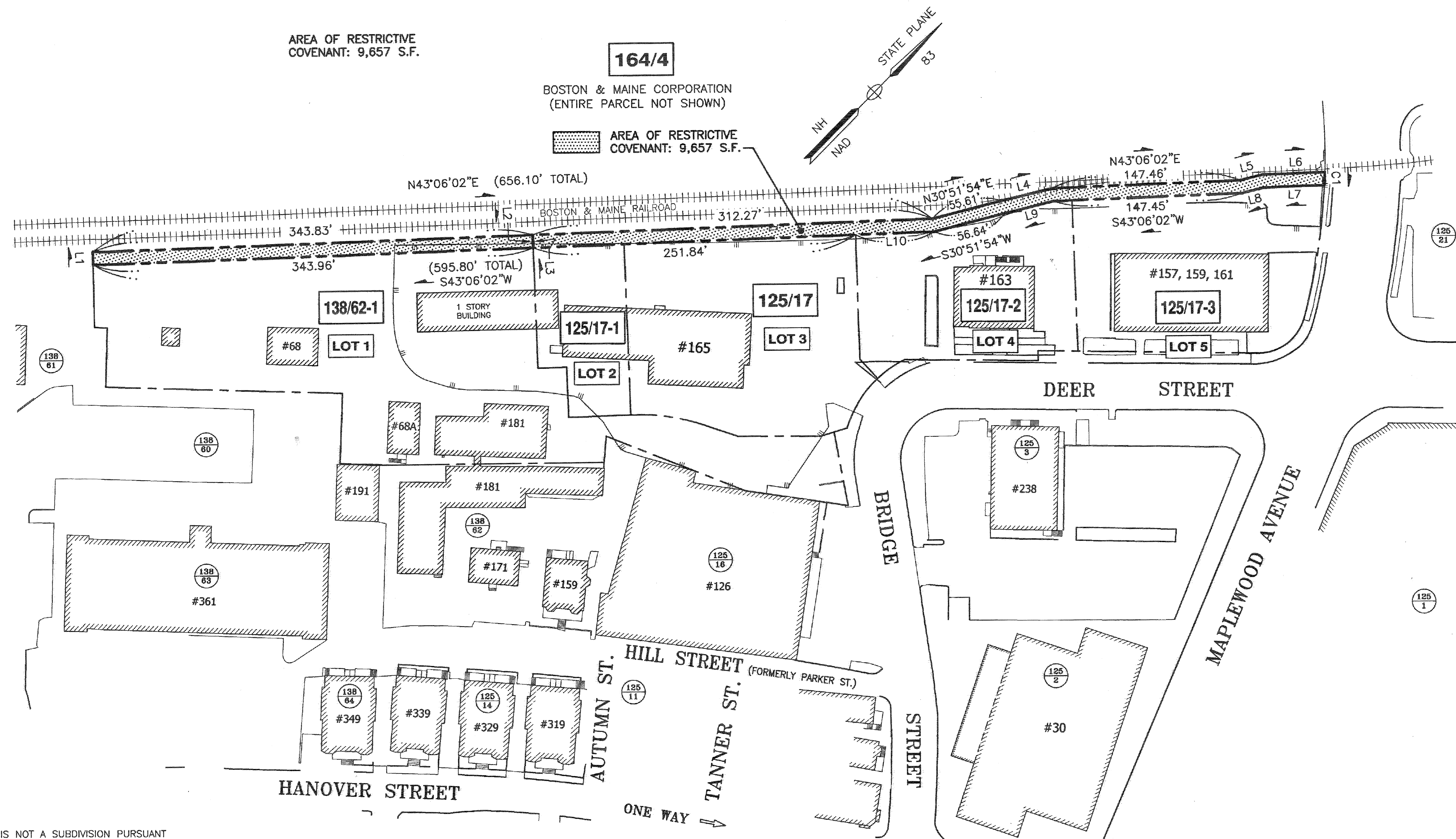


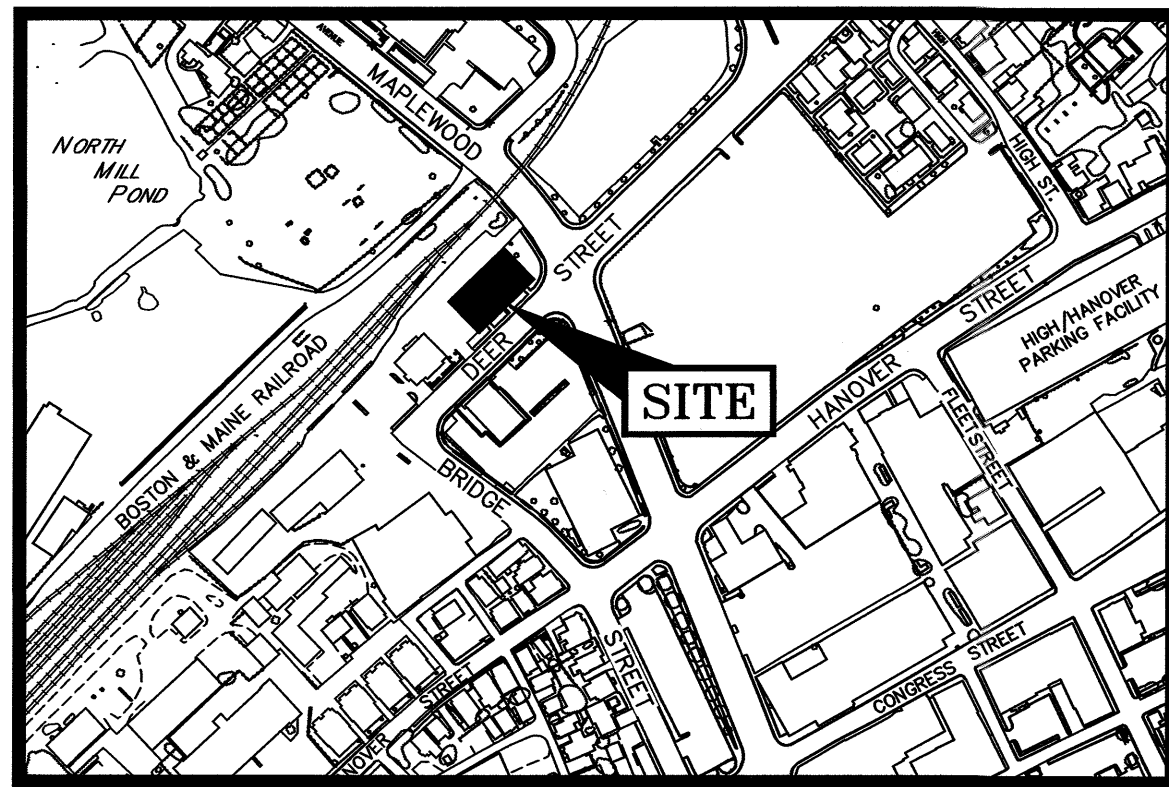
| CURVE TABLE | | | | | |
|-------------|----------|---------|------------|--------------|---------------|
| No. | Delta | Radius | Arc Length | Chord Length | Chord Bearing |
| C1 | 1°10'56" | 486.00' | 10.03' | 10.03' | S42°39'42"E |

| LENGTH TABLE | | |
|--------------|-------------|----------|
| No. | Bearing | Distance |
| L1 | N46°09'30"W | 10.00' |
| L2 | S46°53'58"E | 10.00' |
| L3 | N46°53'58"W | 10.00' |
| L4 | N31°17'20"E | 40.14' |
| L5 | N31°26'32"E | 17.92' |
| L6 | N43°07'25"E | 48.84' |
| L7 | S43°07'25"W | 47.08' |
| L8 | S31°26'32"W | 17.92' |
| L9 | S31°17'20"W | 39.07' |
| L10 | S43°06'02"W | 61.50' |

LEGEND:

- N/F
RP
RCRD
- MAP 11/LOT 21
- IRON ROD FOUND
IRON PIPE FOUND
IRON ROD SET
DRILL HOLE FOUND
DRILL HOLE SET
NHDOT BOUND FOUND
BOUND WITH DRILL HOLE
STONE BOUND WITH DRILL HOLE
RAILROAD SPIKE
- 138/62-1
- ASSESSOR'S MAP 138 LOT, 62-1





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) |
| DMH 3541 | 10.26 | 7.52± 7.52± 2.10 | 1.56 12" RCP (SW) 12" RCP (SE) 36" (S) | 48" RCP (NW) 12" RCP (SW) 12" RCP (SE) 36" (S) |
| DMH 8159 | 15.96 | 12.36 11.81 8.78 5.06 | 4.96 18" RCP (SW) 12" RCP (NNE) 12" RCP (SSE) 18" CPP (ESE) 12" RCP (NW) | 12" RCP (NNE) 12" RCP (SSE) 18" CPP (ESE) 12" RCP (NW) |
| DMH 8160 | 13.50 | 9.5 8.6 5.5 | 5.55 12" RCP (SE) 12" RCP (WSW) 12" RCP (NW) | 12" RCP (SE) 12" RCP (WSW) 12" RCP (NW) |
| DMH 8161 | 13.20 | 9.75 5.72 | 5.68 12" RCP (ENE) | 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

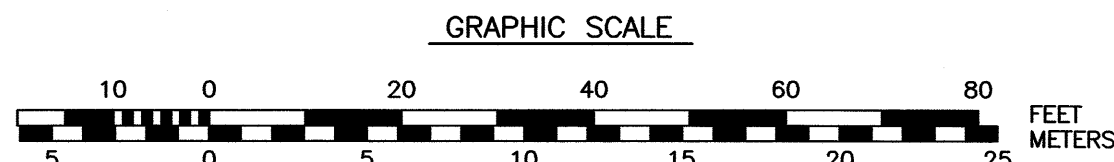
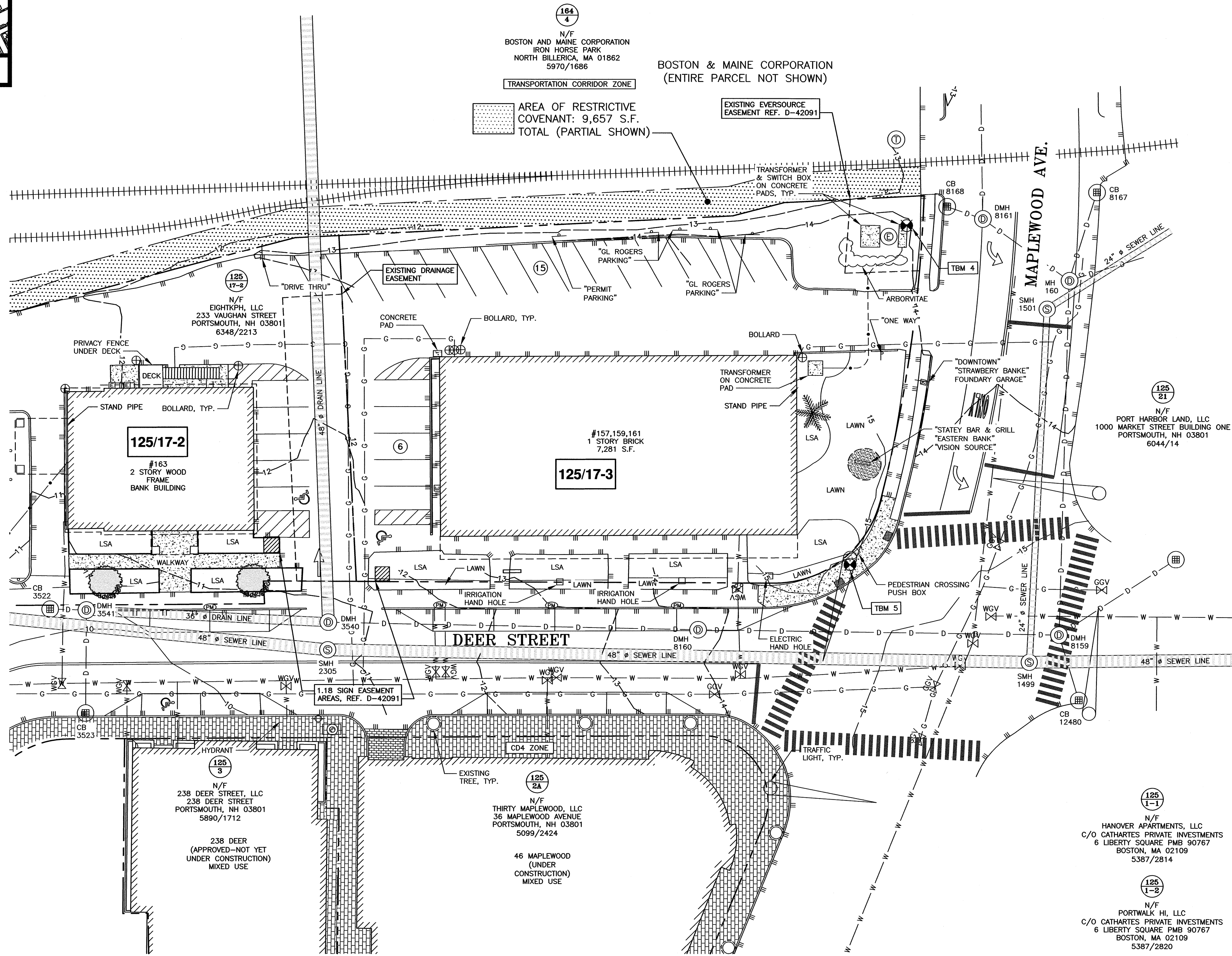
| STRUCTURE | RIM ELEV. | INV. ELEV. IN | INV. ELEV. OUT | PIPE SIZE & TYPE |
|-----------|-----------|---------------|----------------|------------------|
| 1499 | 15.80 | -1.80 | -1.80 | 48" BRICK BOX |
| 1501 | 13.58 | -0.30 | -0.32 | 24" (NNE) |
| 2305 | 10.90 | -1.17 | -1.17 | 48" VC |

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

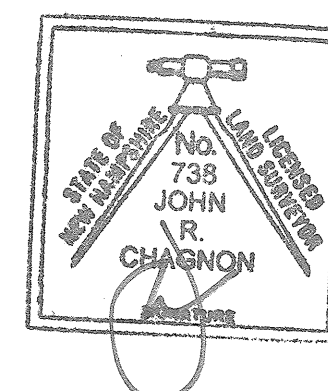
NOTES:

- 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
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

| 0 | ISSUED FOR COMMENT | 8/23/22 |
|-----------|--------------------|---------|
| NO. | DESCRIPTION | DATE |
| REVISIONS | | |



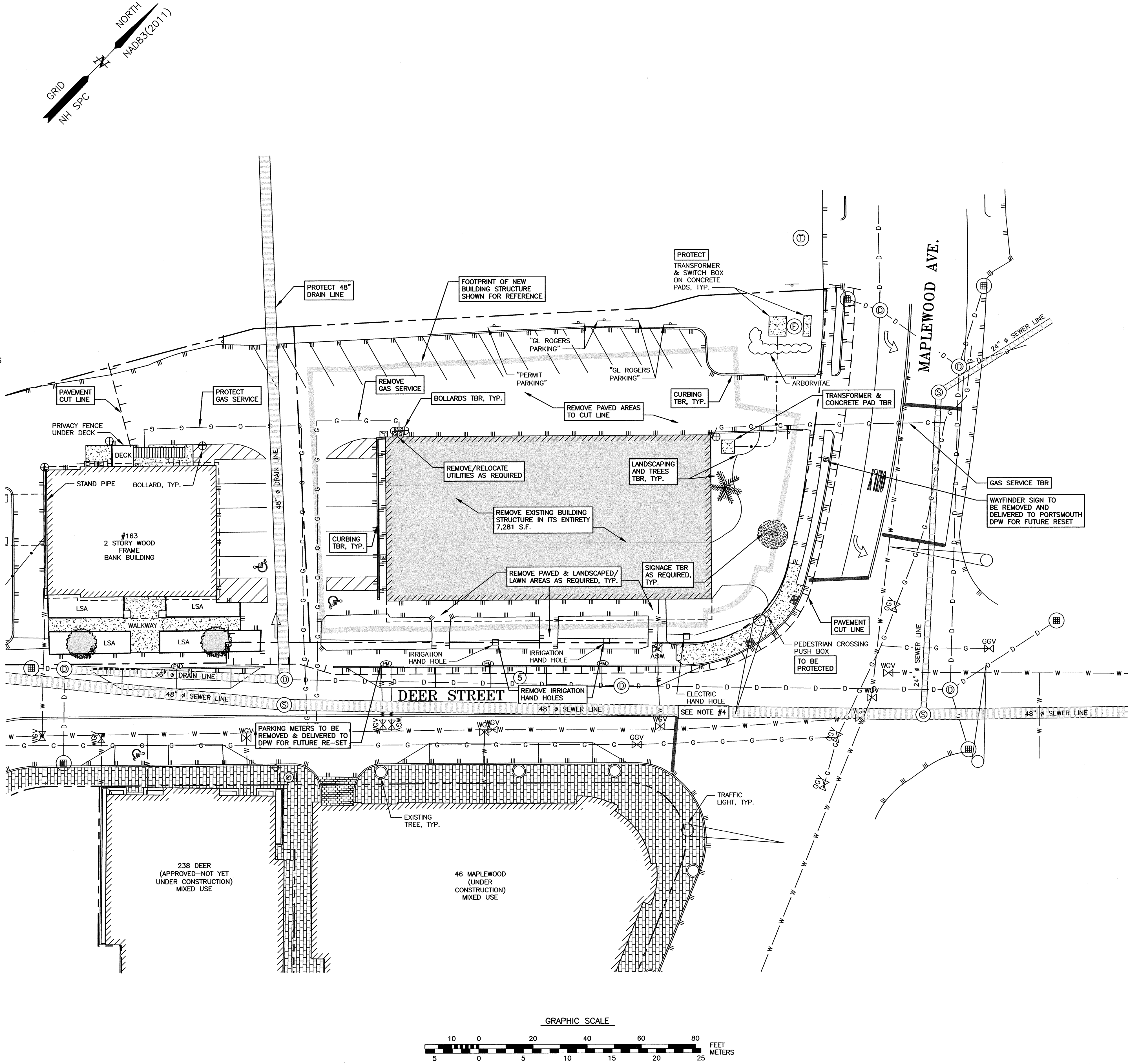
SCALE: 1" = 20' AUGUST 2022

EXISTING CONDITIONS
PLAN

C1

DEMOLITION NOTES

- A) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.
- B) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
- C) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- D) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
- E) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT TRENCH IN AREAS WHERE PAVEMENT IS TO BE REMOVED.
- F) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.
- G) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.
- H) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE.
- I) ALL WORK WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW).
- J) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL SLUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
- K) CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED, THE CONTRACTOR SHALL EMPLOY A NH LICENSED LAND SURVEYOR TO REPLACE THEM.
- L) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
- M) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY 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

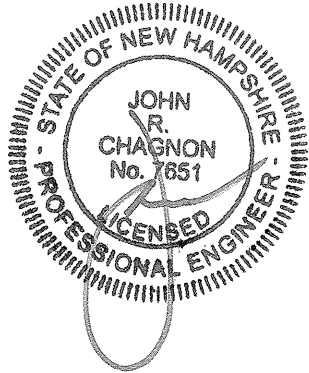


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 430-2315

- 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
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

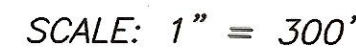
| | | |
|-----------|--------------------|---------|
| 0 | ISSUED FOR COMMENT | 8/23/22 |
| NO. | DESCRIPTION | DATE |
| REVISIONS | | |



SCALE: 1" = 20' AUGUST 2022

DEMOLITION
PLAN

C2





REVISIONS:

EIGHT KPH, LLC
88 MAPLEWOOD AVENUE
PORTSMOUTH, NEW HAMPSHIRE



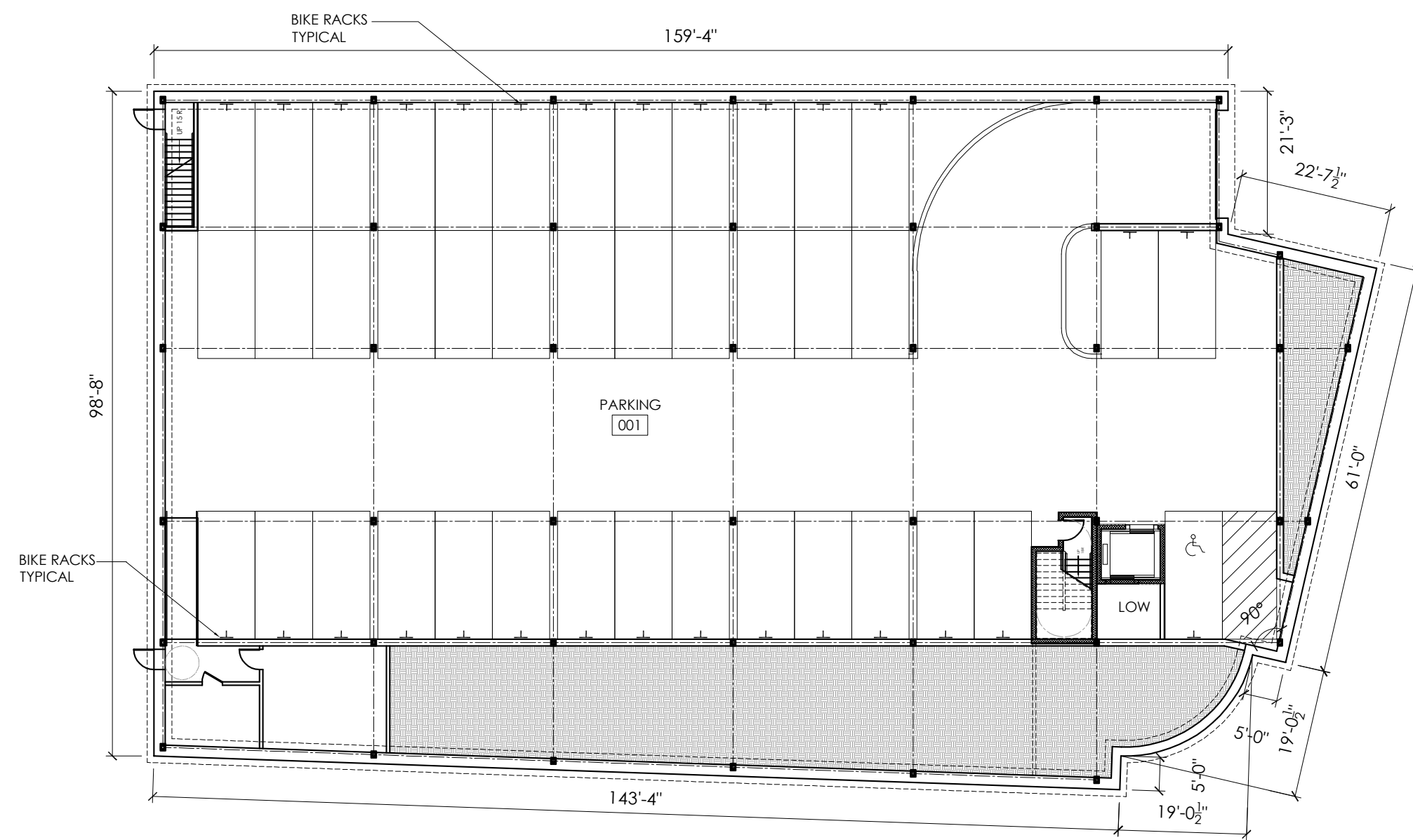
ARCHITECTS

233 VAUGHAN STREET
SUITE 101
PORTSMOUTH, NH 03801
(603) 431-2808
www.cjarchitects.net

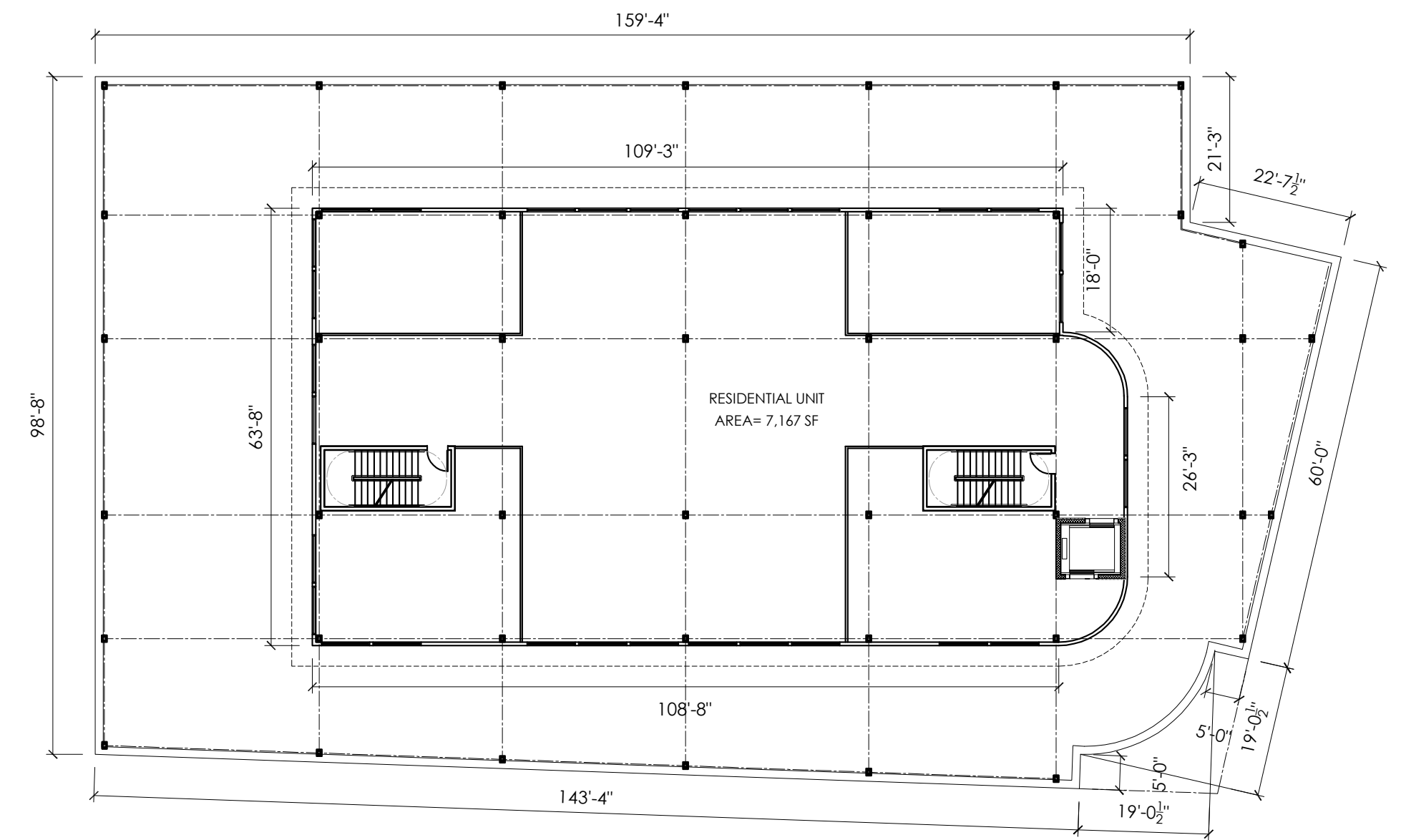
DATE: 09/06/2022
DRAWN BY: SRT
APPROVED BY: CJG
SCALE:
JOB NUMBER: 2201

A1

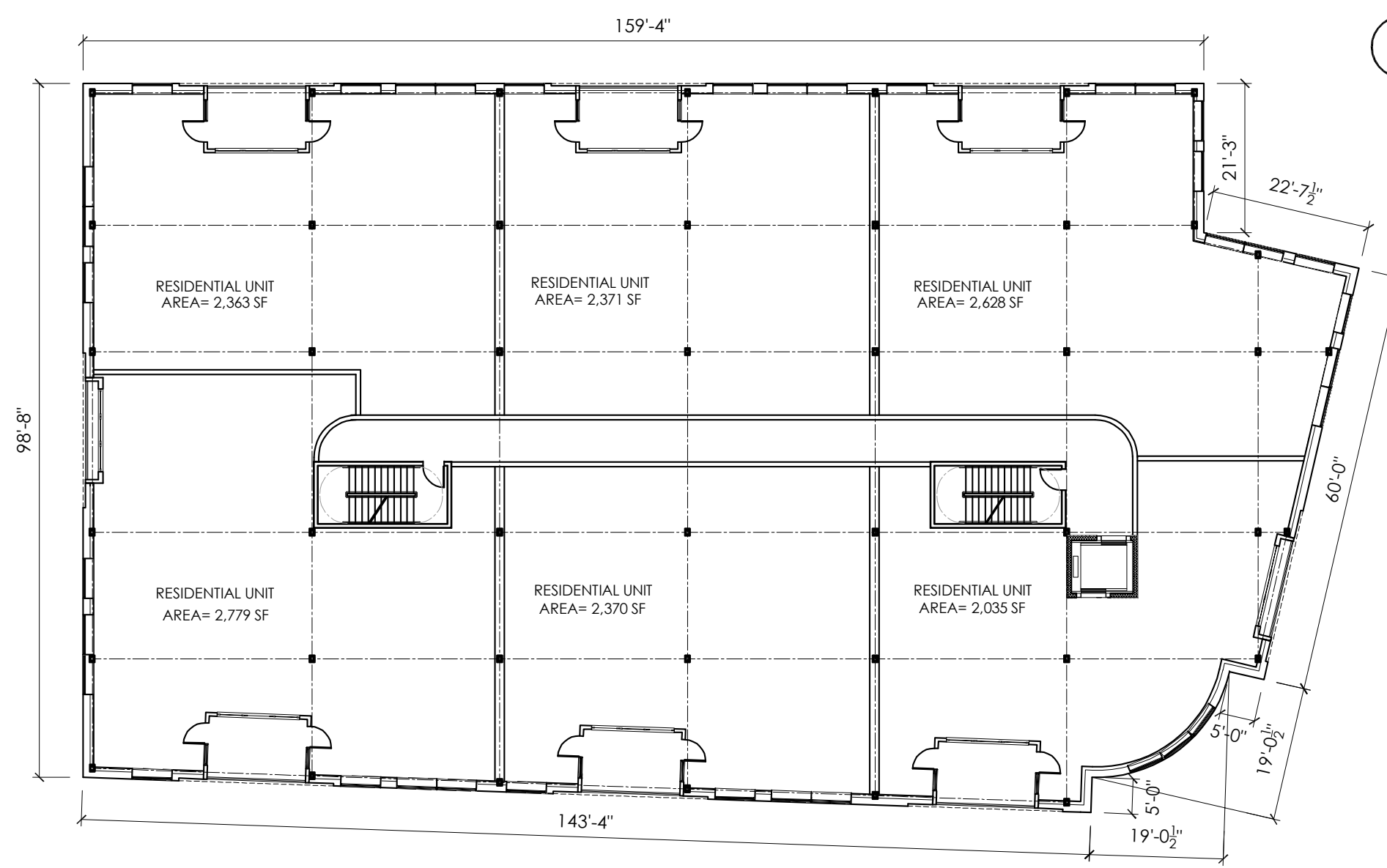
NOT FOR CONSTRUCTION



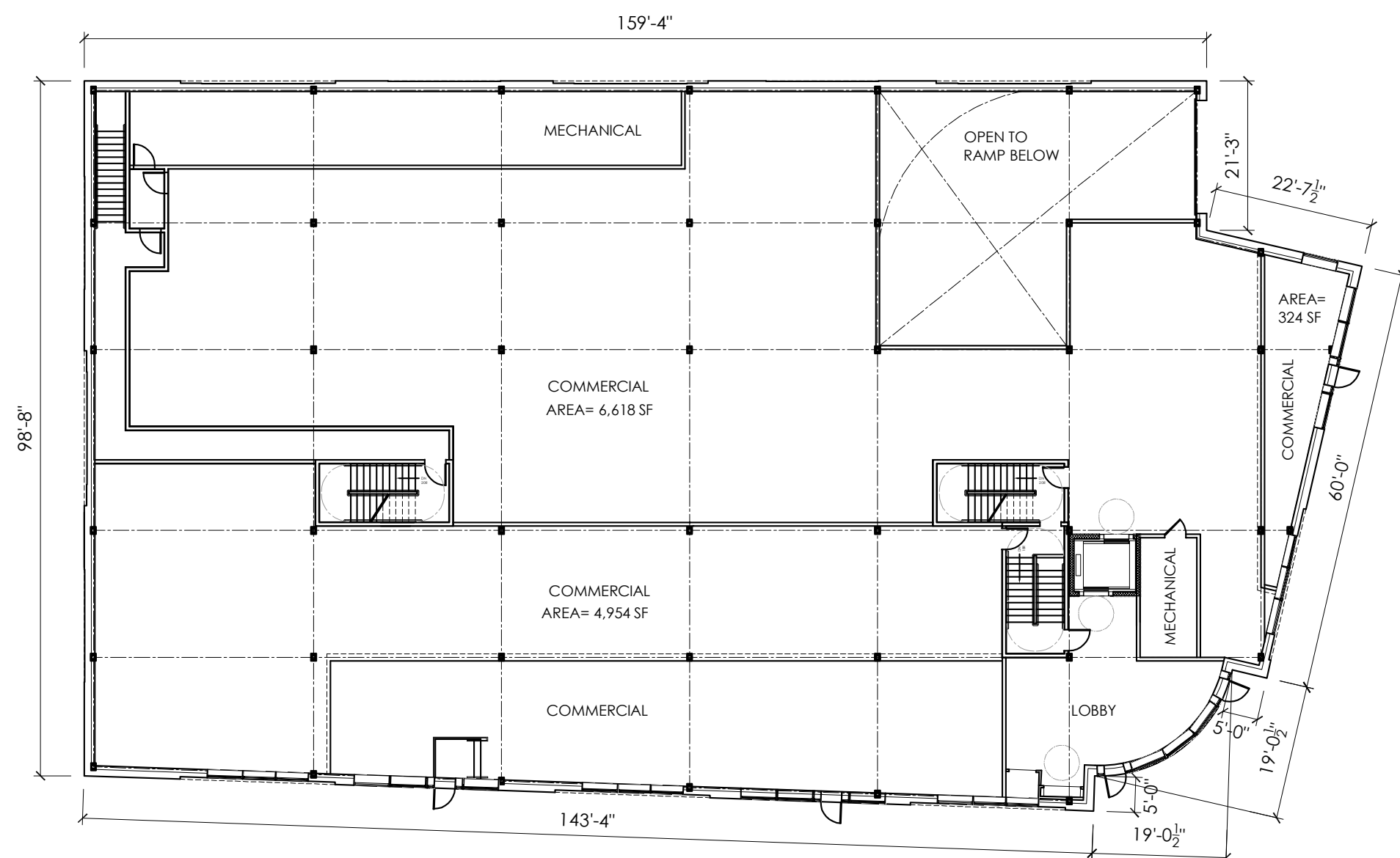
1 LOWER LEVEL PLAN
1" = 20'



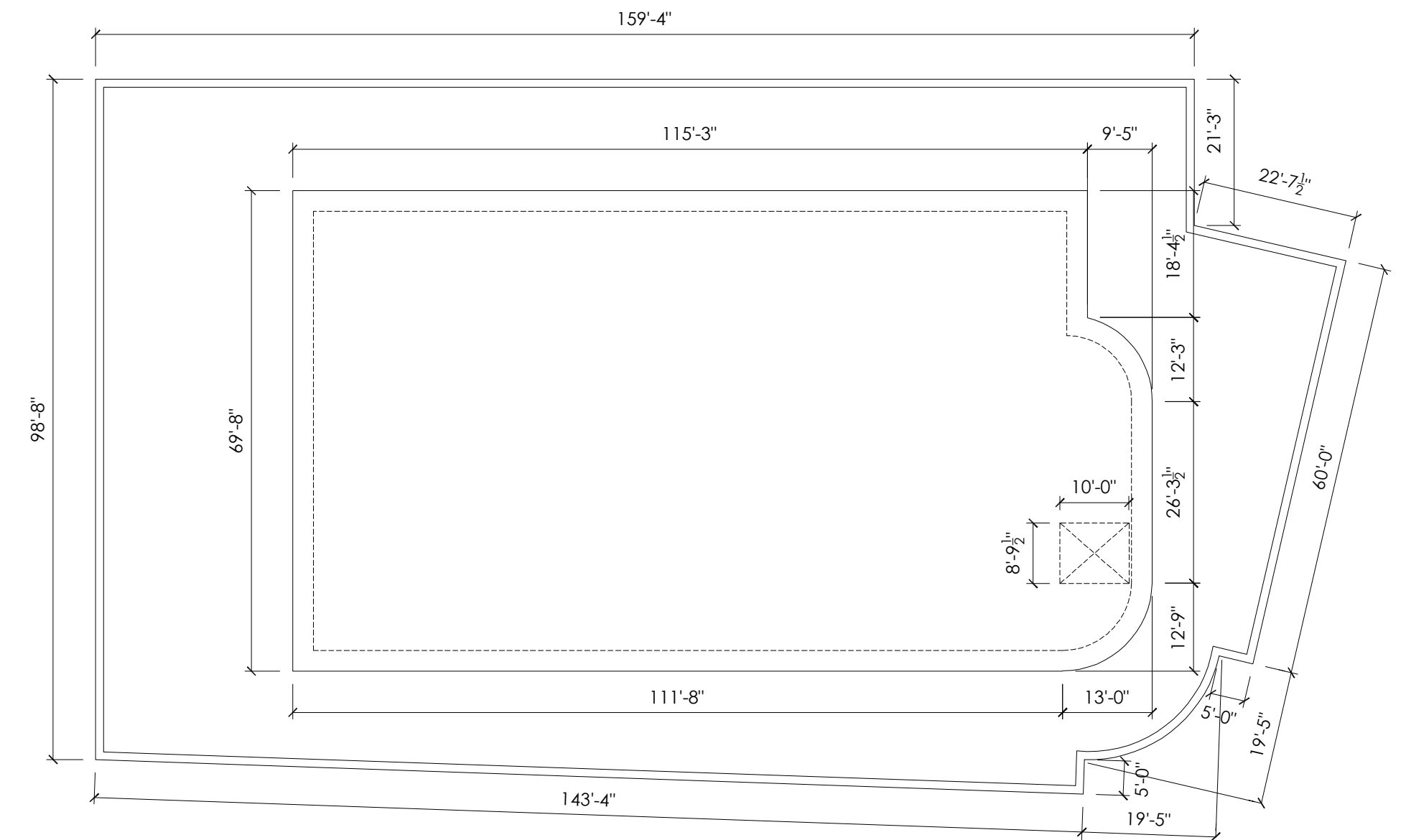
4 PENTHOUSE LEVEL PLAN
1" = 20'



3 SECOND, THIRD, AND FOURTH LEVEL PLAN
1" = 20'



2 FIRST LEVEL PLAN
1" = 20'



5 ROOF PLAN
1" = 20'

NOT FOR CONSTRUCTION

REVISIONS:

EIGHT KPH, LLC
88 MAPLEWOOD AVENUE
PORTSMOUTH, NEW HAMPSHIRE



ARCHITECTS

233 VAUGHAN STREET
SUITE 101
PORTSMOUTH, NH 03801

(603) 431-2808
www.cjarchitects.net

PLANS

DATE: 09/06/2022

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'

REVISIONS:

EIGHT KPH, LLC
88 MAPLEWOOD AVENUE
PORTSMOUTH, NEW HAMPSHIRE



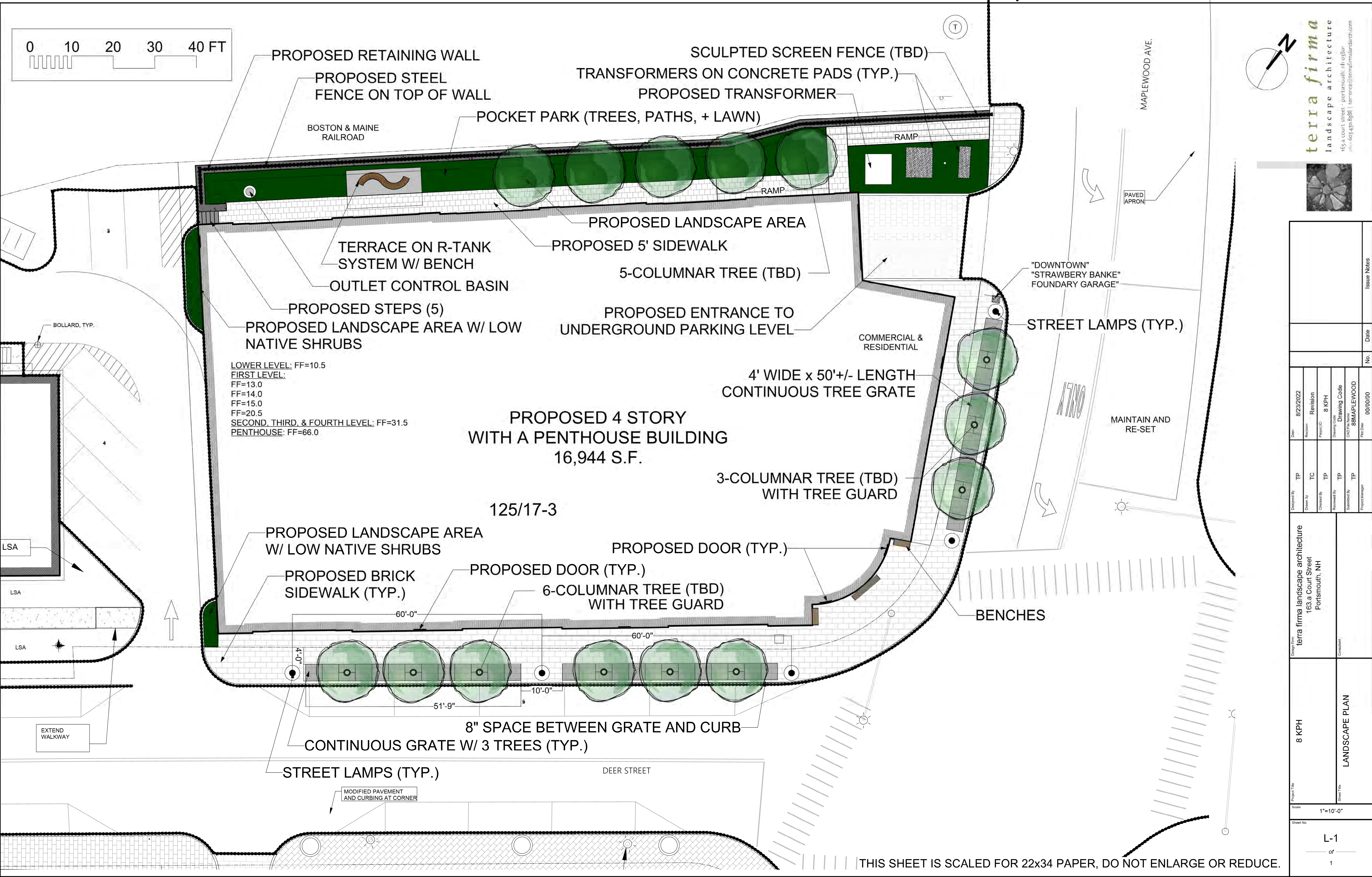
ARCHITECTS
233 VAUGHAN STREET
SUITE 101
PORTSMOUTH, NH 03801
(603) 431-2808
www.cjarchitects.net

ELEVATIONS

DATE: 09/06/2022
DRAWN BY: SRT
APPROVED BY: CJG
SCALE:
JOB NUMBER: 2201

A3

NOT FOR CONSTRUCTION





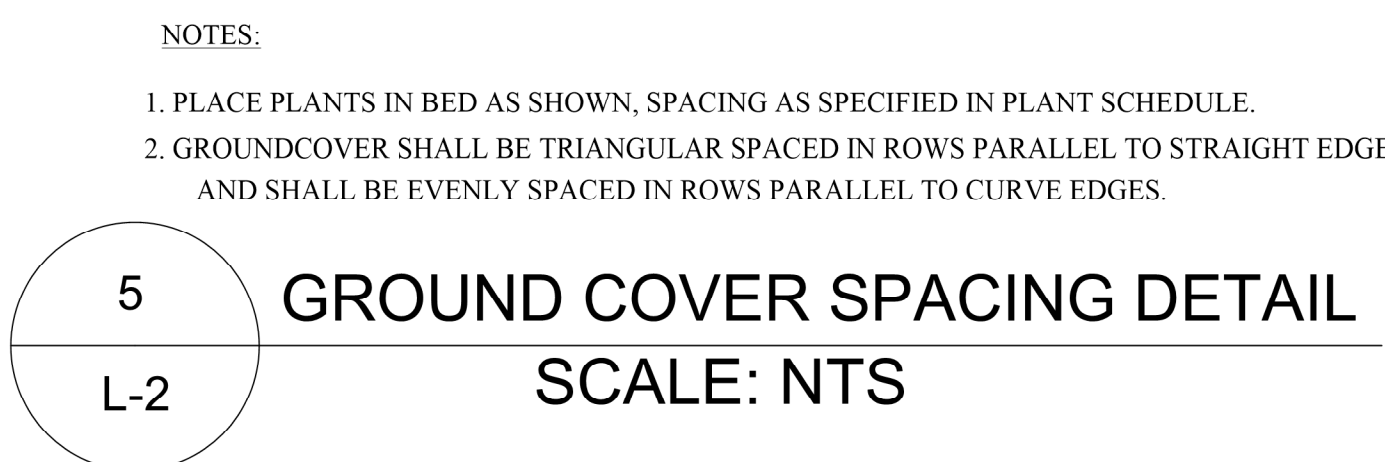
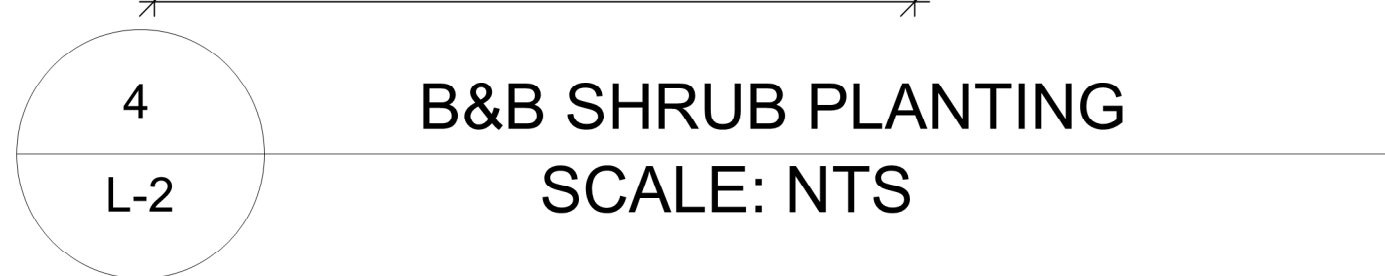
terra firma

landscape architecture

163 a court street - portsmouth, nh 03801
office: 603.430.8388 | terrace@terrafirmalandscape.com



| | | | | | | | | | |
|--|--|---------------|---------------|----------------|--|-----------|--|-------------|--|
| <div>Design Firm</div> <div>terra firma landscape architecture</div> <div>163 a Court Street</div> <div>Portsmouth, NH</div> | | Project Title | | 8 KPH | | Scale | | Sheet No. | |
| | | Sheet Title | | LANDSCAPE PLAN | | 1"=10'-0" | | L-1 | |
| | | | | | | | | — of — | |
| | | | | | | | | 1 | |
| | | | | | | | | | |
| Design By | | TP | Date | 8/23/2022 | | | | | |
| Drawn By | | TC | Revision | Revision | | | | | |
| Checked By | | TP | Project (C) | 8 KPH | | | | | |
| Reviewed By | | TP | Drawing Code | Drawing Code | | | | | |
| Submitted By | | TP | CAD File Name | 88MAPLEWOOD | | | | | |
| Project Manager | | | Plot Date | 00/00/00 | | No. | | Date | |
| | | | | | | | | Issue 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 GROWING SEASON.
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.

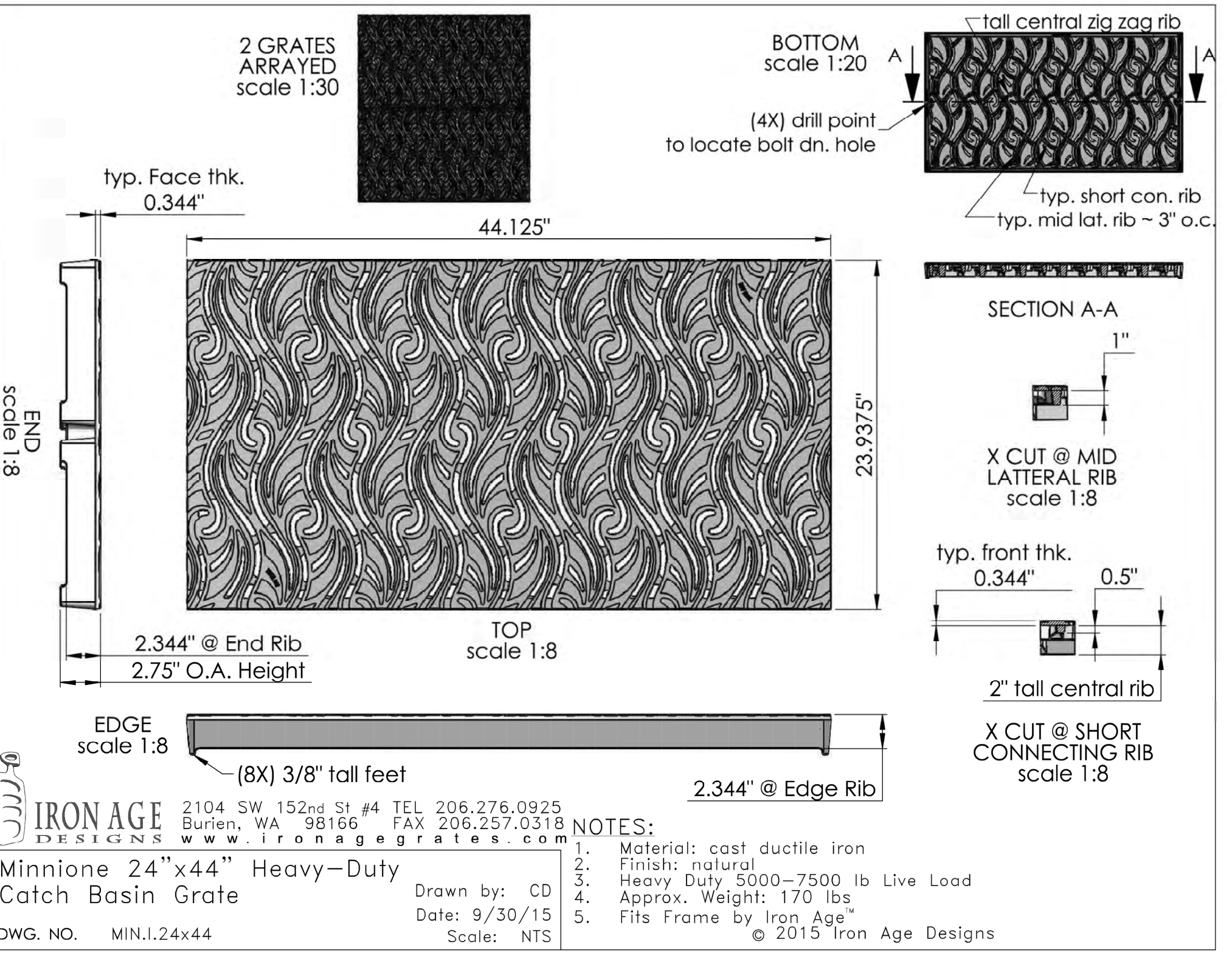
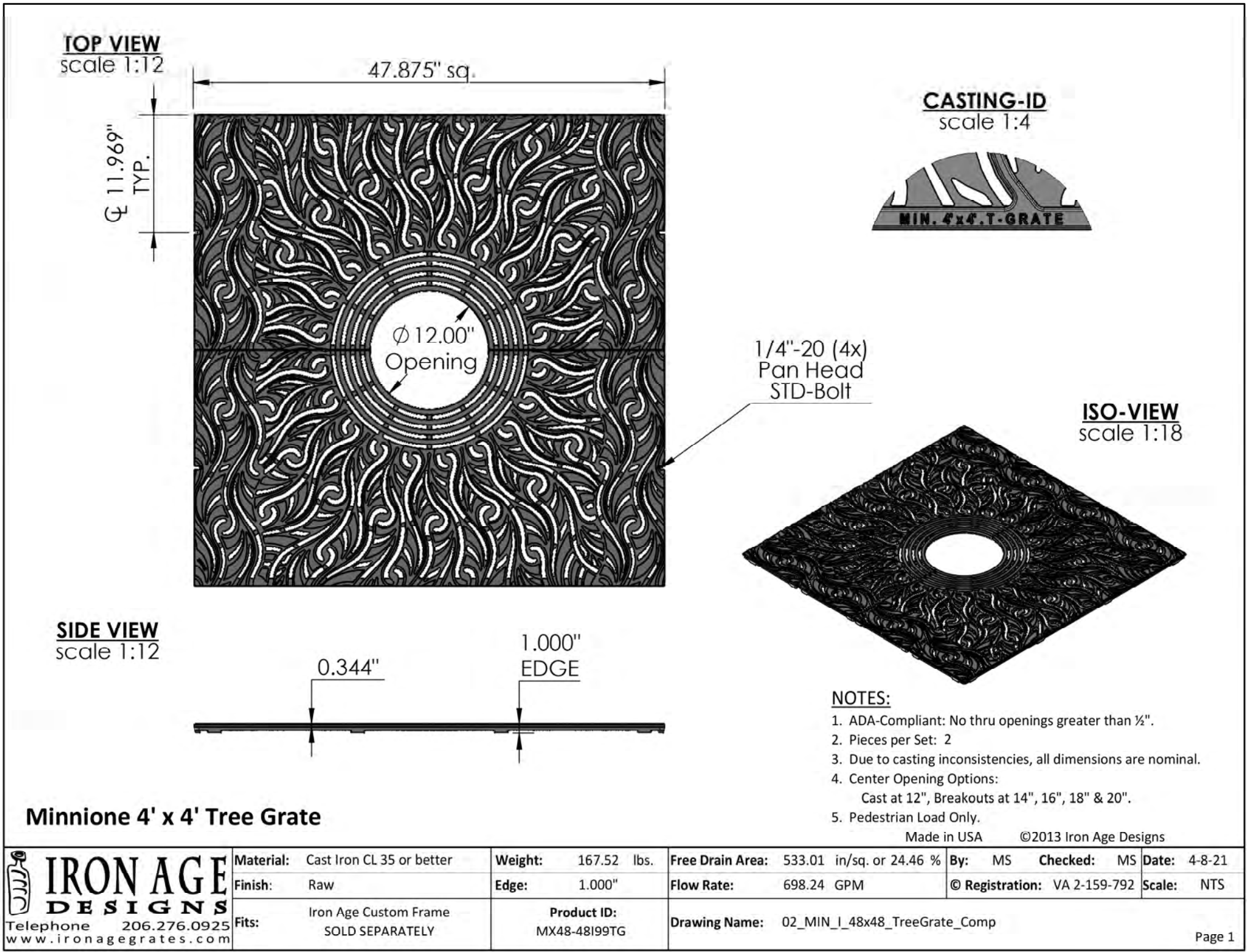


IRON AGE DESIGNS
(877) 418-3568 or (206) 276-0925
2104 SW 152nd St. Suite #4
Burien, WA 98166
info@ironagegrates.com

OR EQUAL

1
L-3

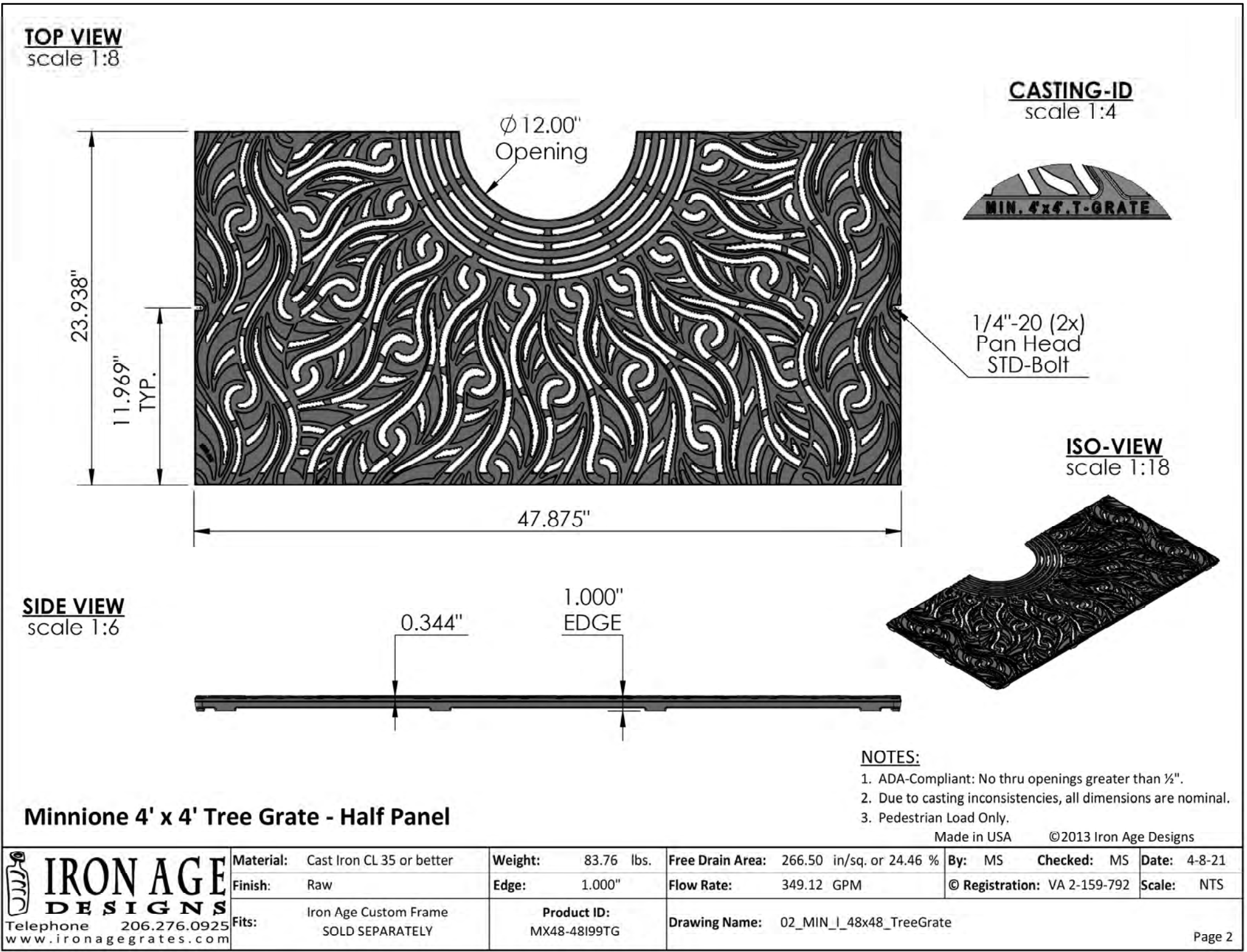
CONTINUOUS TREE GRATE (4' WIDE x 50' LONG)
SCALE: NTS



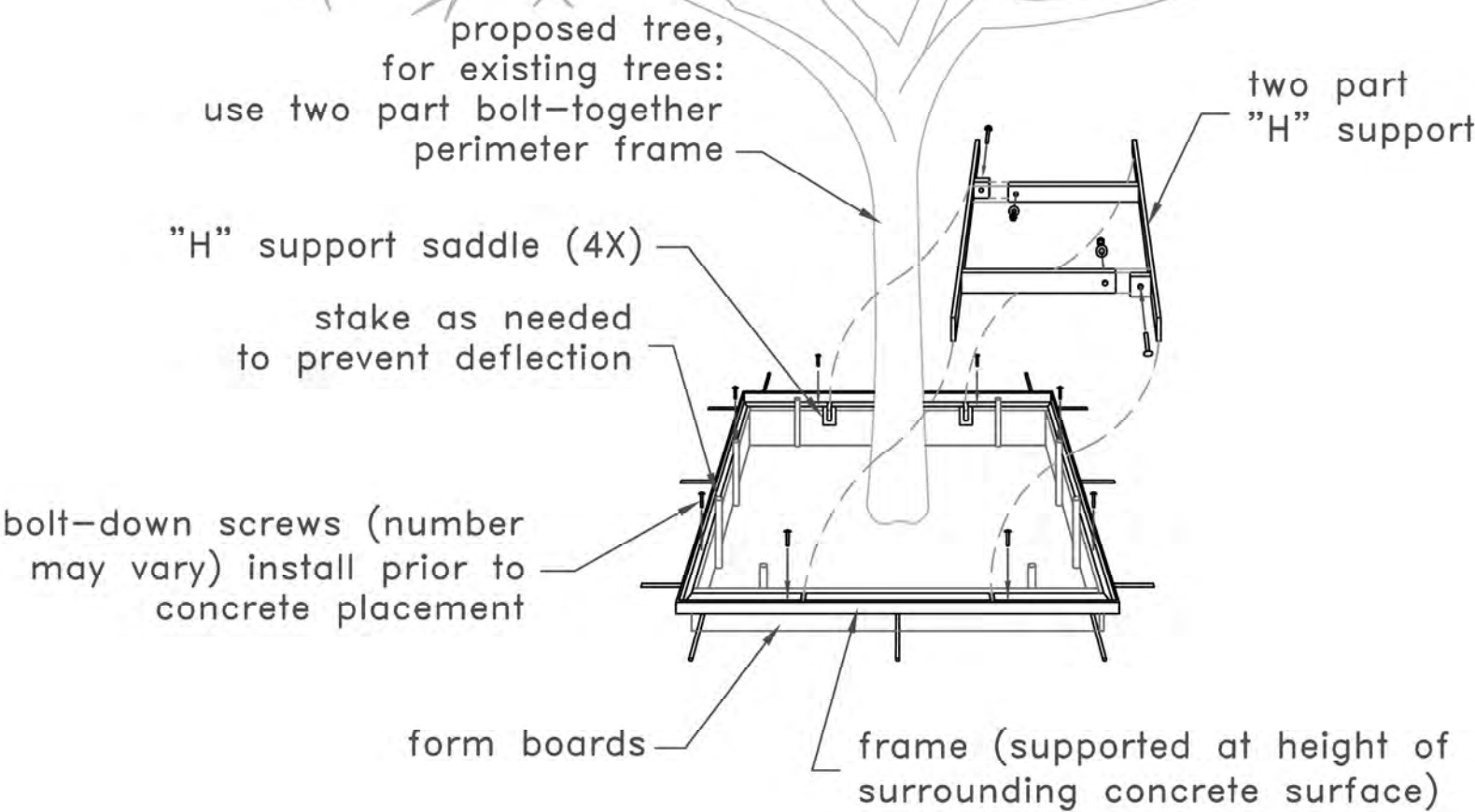
MINNIONE 4' SQ. TREE GRATES ARRAYED WITH 2' x 4' EXTENSION PANELS. OR EQUAL. MANUFACTURERS MID-SUPPORTS TO BE USED AS NEEDED.

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.



Installation of the Iron Age Type "E" Tree Grate Frame



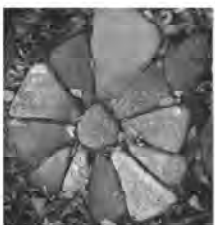

Installation of the Iron Age type "E" Embed tree grate frame.
1. Excavate tree pit to approximate depth of concrete
2. Use interior frame dimensions as guide for form work dimension.
3. Build wooden form for concrete, provide for "H" support at saddle.
4. Support frame (and form) w/ top of frame at height of surrounding concrete surface, using curb stakes - 18" O.C. max.

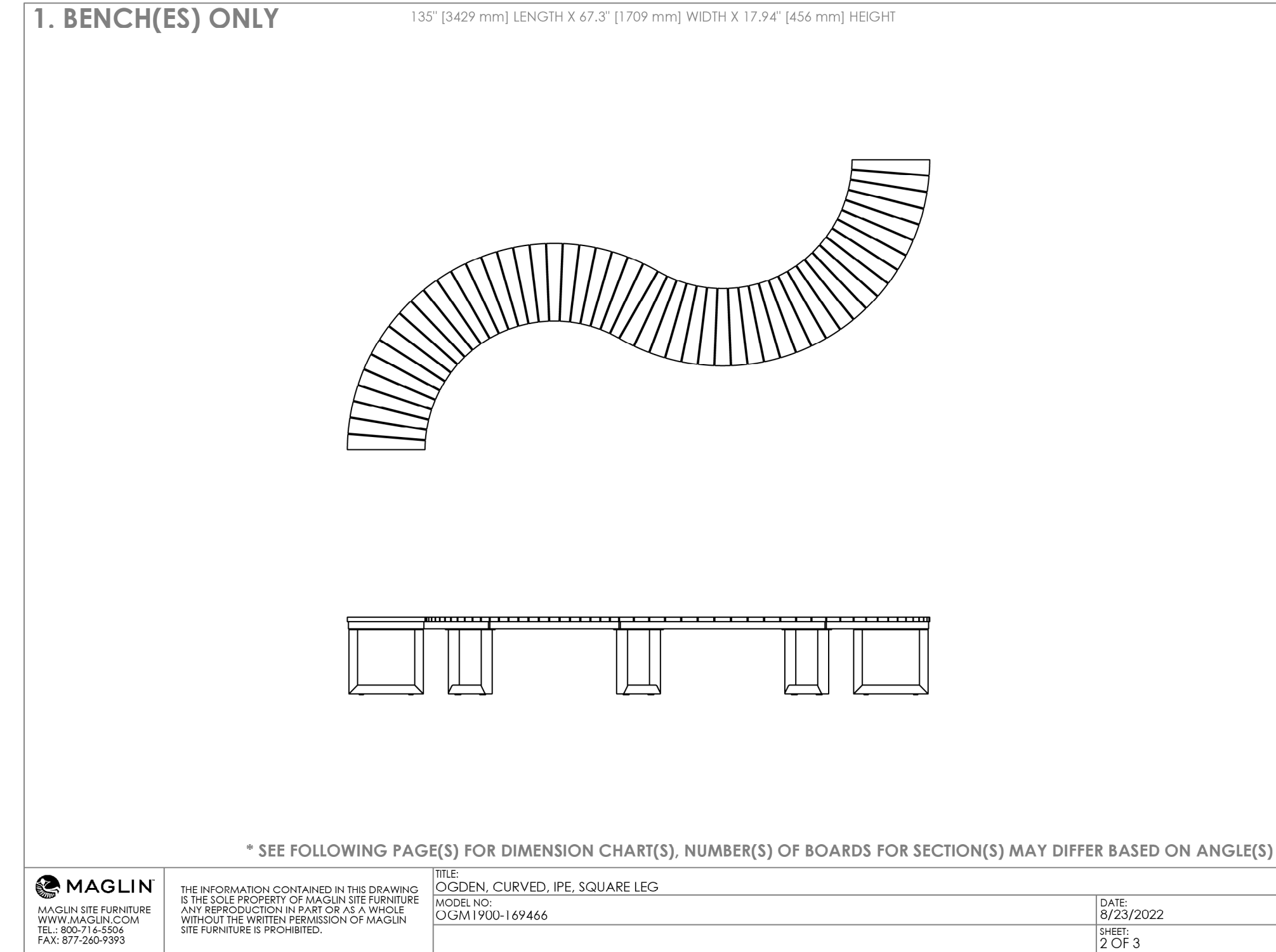
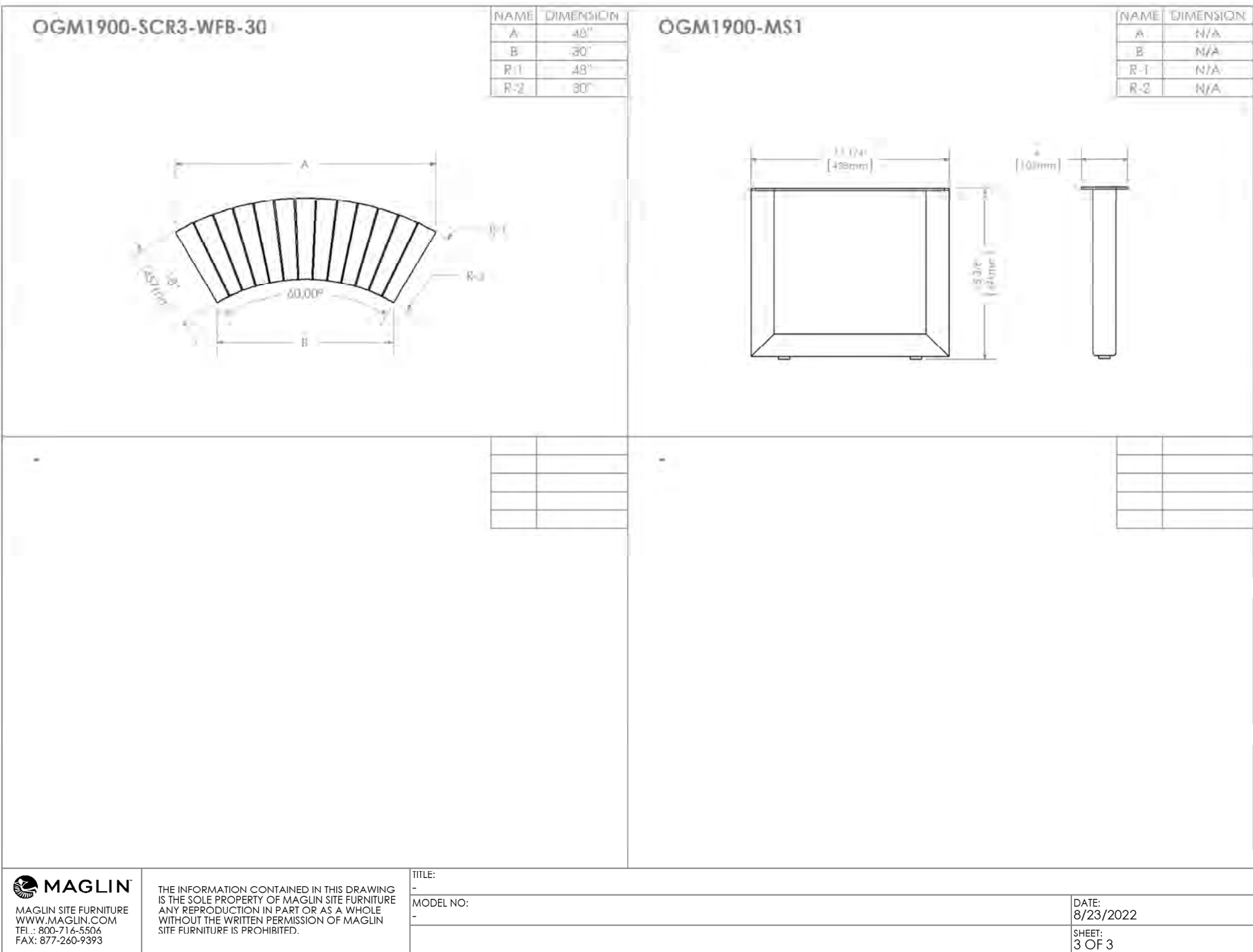
NOTE: Spreaders or adequate staking will be necessary to prevent the frame from deforming during concrete placement. The actual grates or plywood templates can be used to prevent frame deflection. If using the grates, take care to protect during concrete placement.

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 TEL 206.276.0925
Burien, WA 98166 FAX 206.257.0318
www.ironagegrates.com

THIS SHEET IS SCALED FOR 22x34 PAPER, DO NOT ENLARGE OR REDUCE.

| | | | |
|---|--|--|--|
| terra firma landscape architecture | | 163.a Court Street - Portsmouth, NH 03801 phone 603.450.8386 terrace@terrafirmainnh.com | |
|  | |  | |
| Date | | Issue Notes | |
| Revision | | Date | |
| 8/23/2022 | | No. | |
| Revision | | 8 KPH | |
| Project ID | | Drawing Code | |
| 8 KPH | | 88MAPLEWOOD | |
| Checked By | | CAD File Name | |
| TP | | 88MAPLEWOOD | |
| Reviewed By | | Plot Date | |
| TP | | 00/00/00 | |
| Submitted By | | Project Manager | |
| TP | | 8 KPH | |
| Design Firm | | LANDSCAPE PLAN | |
| terra firma landscape architecture | | 163.a Court Street Portsmouth, NH | |
| Project Title | | Scale | |
| 8 KPH | | SEE DETAILS | |
| Sheet No. | | L-3 | |
| | | of | |
| | | 1 | |



1
L-5

TERRACE BENCH ON R-TANK
SCALE: NTS

MAGLIN BACKLESS, 2 SECTION ARC OGDEN BENCHOR EQUAL.

THIS SHEET IS SCALED FOR 22x34 PAPER, DO NOT ENLARGE OR REDUCE.

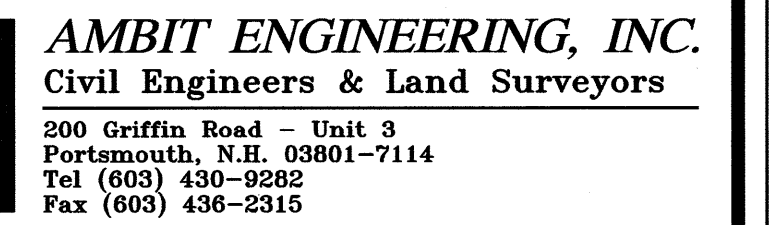
terra firma
landscape architecture

163.a Court Street
Portsmouth, NH

8 KPH

LANDSCAPE PLAN

| | | | |
|-----------------|--|---------------|----------------|
| Design Firm | terra firma landscape architecture 163.a Court Street Portsmouth, NH | Project Title | 8 KPH |
| Consultant | | Sheet Title | LANDSCAPE PLAN |
| 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 |
| No. | | Date | |
| Issue Notes | | | |

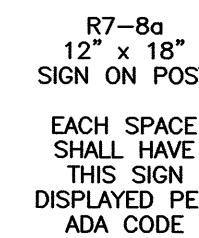
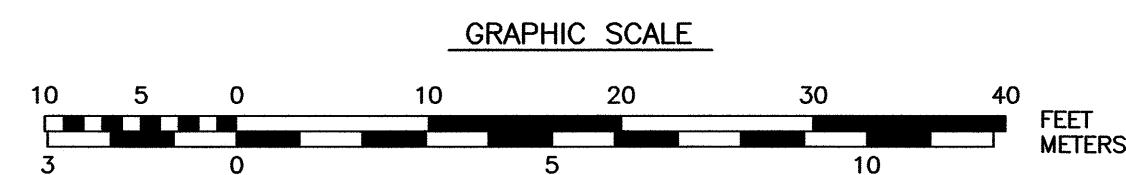
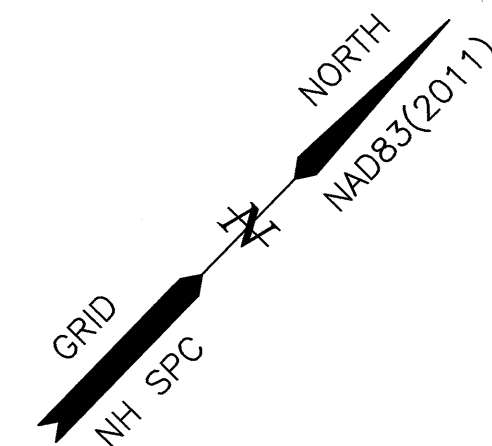


1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSORS MAP 125 AS LOT 17-3.

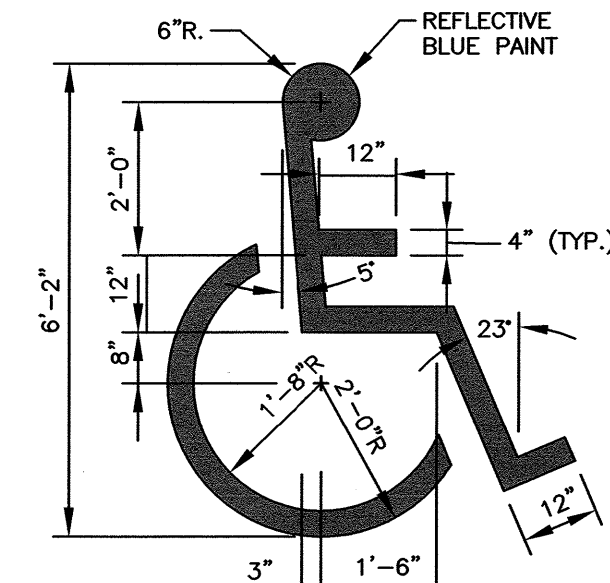
2) OWNER OF RECORD:
EIGHTKPH, LLC
233 VAUGHAN STREET
UNIT 301
PORTSMOUTH, NH 03801
6348/2213

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.

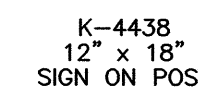
4) REQUIRED PARKING:
FIRST FLOOR: EXEMPT
19 DWELLING UNITS: 1.3/UNIT X 19 UNITS = 25
VISITOR: 19/5 X 1 = 4
TOTAL REQUIRED: 29
TOTAL PROVIDED: 29



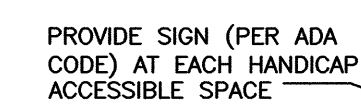
SIGNAGE



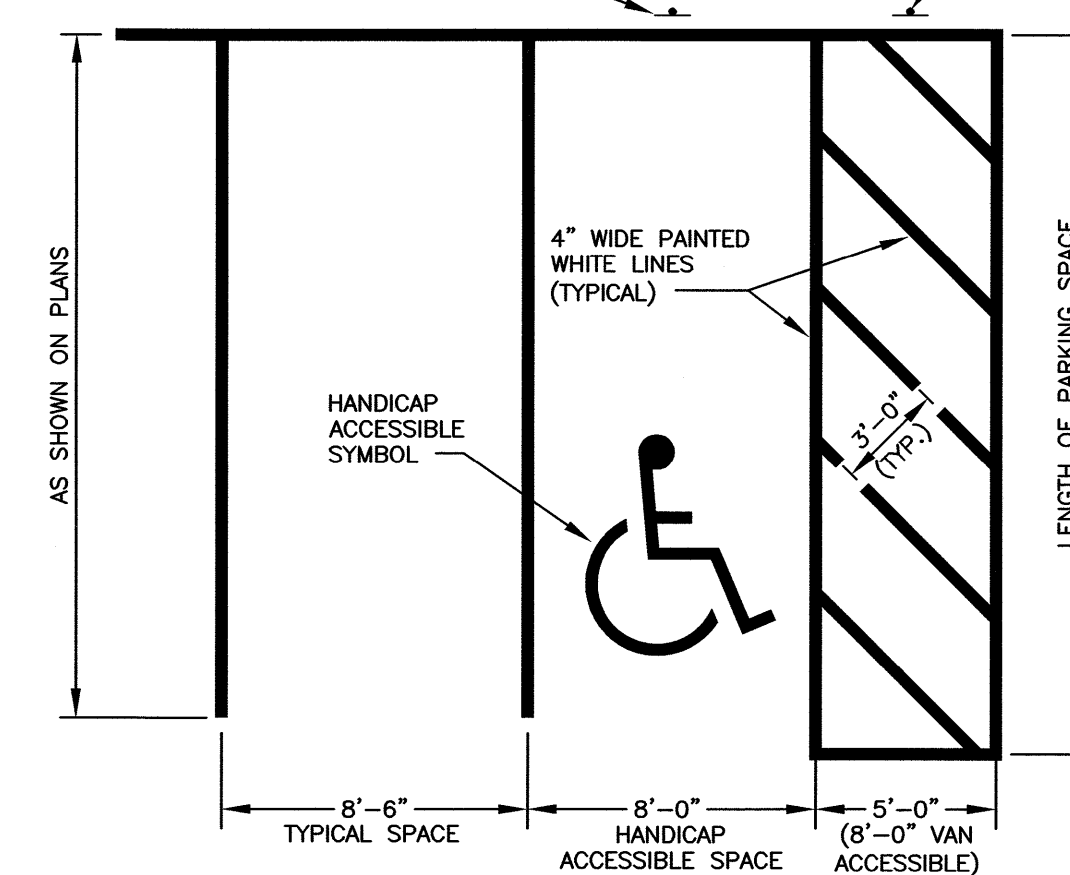
HANDICAP ACCESSIBLE SYMBOL



SIGNAGE



— HANDICAP ACCESS AISLE —
NO PARKING SIGN —



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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE _____

1 HANDICAP PARKING DETAIL
C4 NTS

NTS

SCALE: 1" = 10'

AUGUST 2022

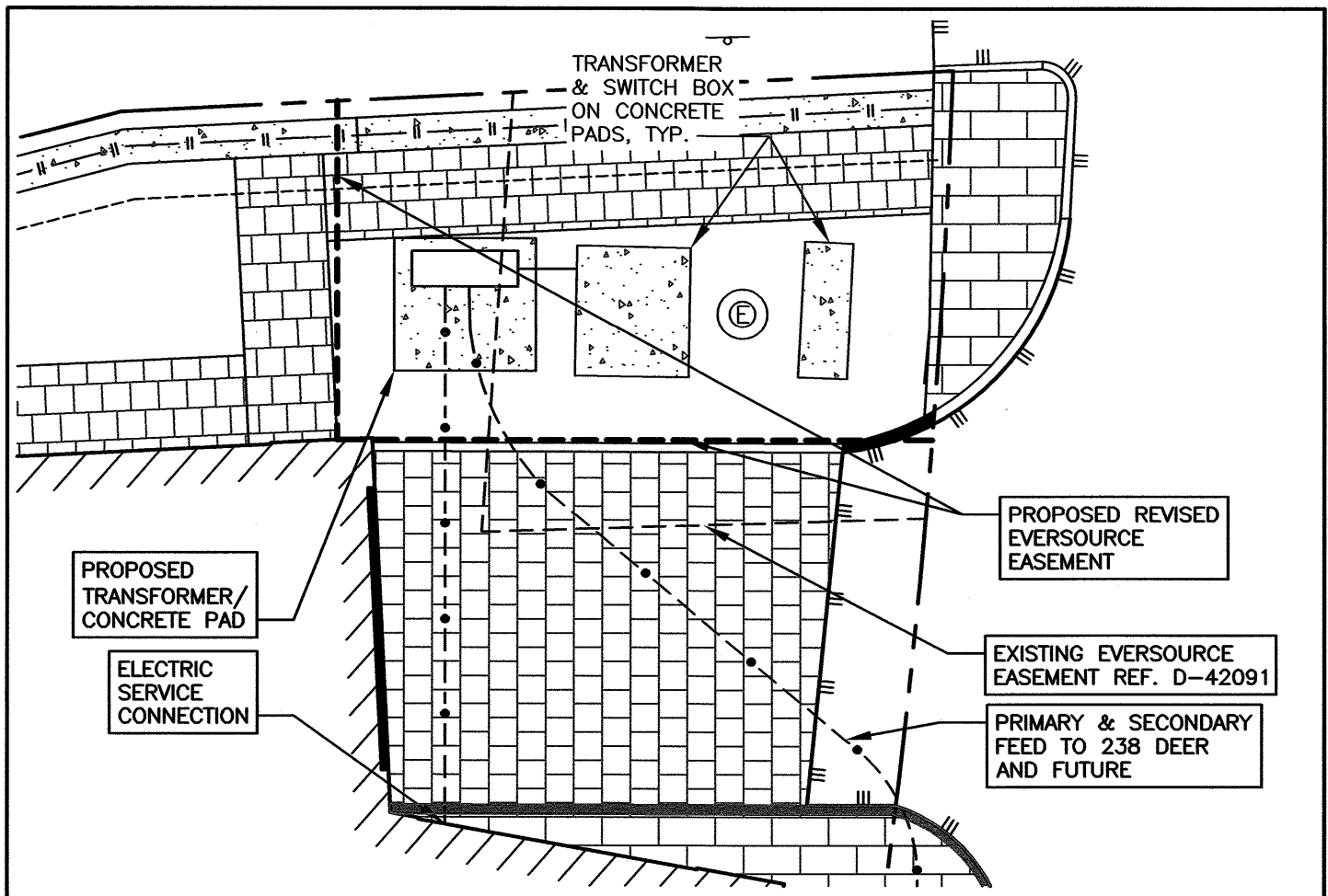
PARKING LEVEL PLAN

C4

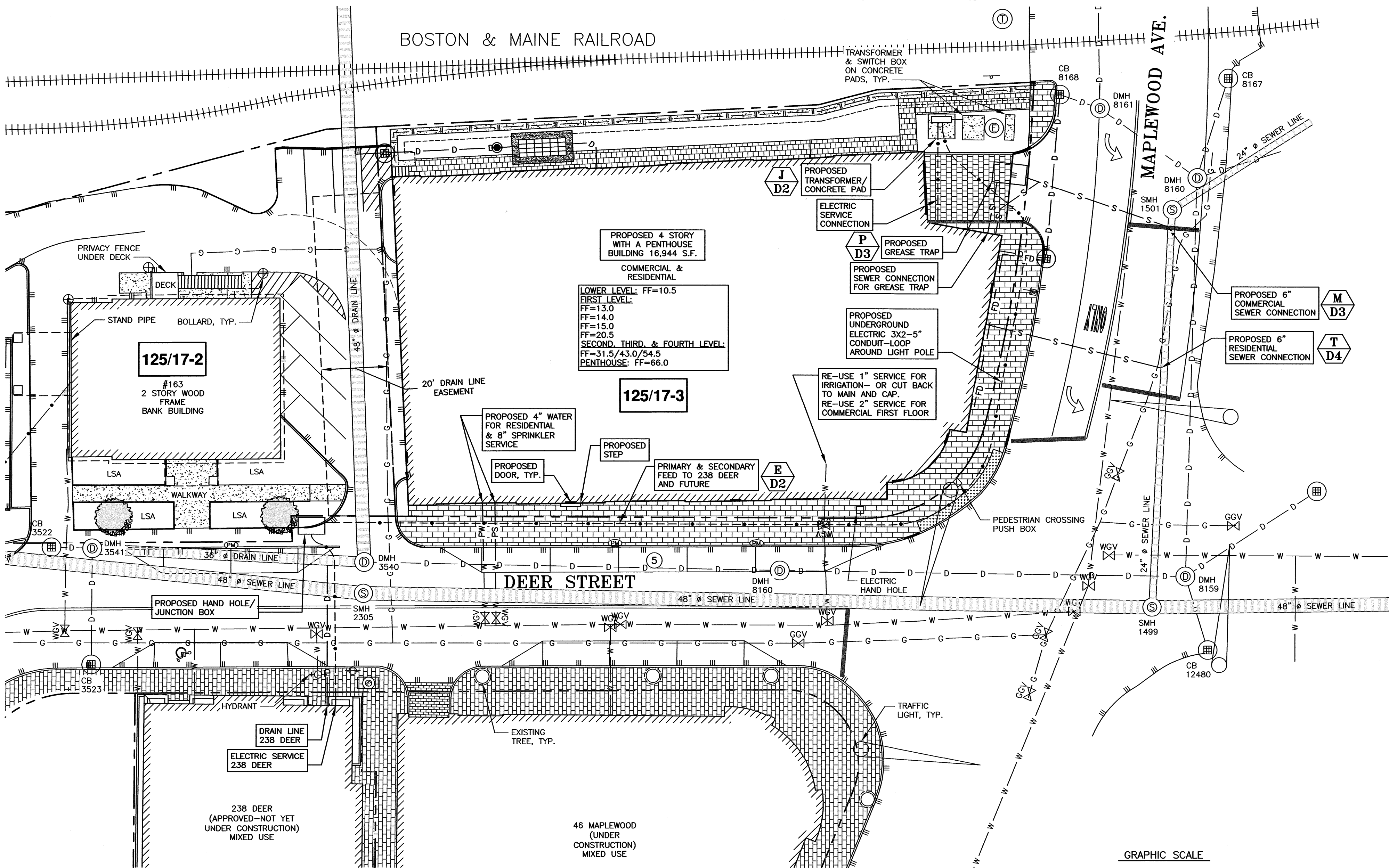
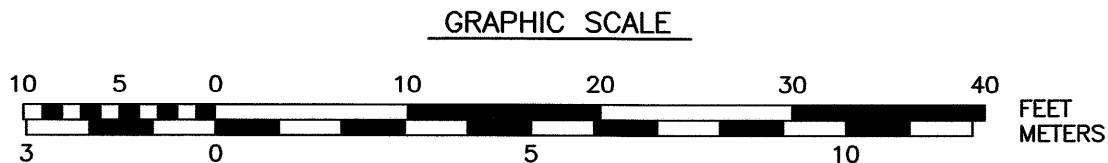
UTILITY NOTES:

- 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 | -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



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE



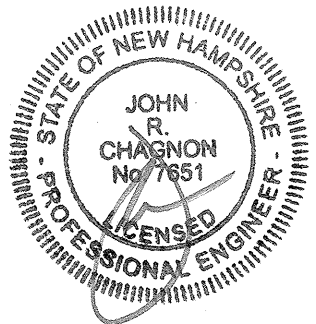
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

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

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

| | | |
|-----|--------------------|---------|
| 0 | ISSUED FOR COMMENT | 8/23/22 |
| NO. | DESCRIPTION | DATE |



SCALE: 1" = 20' AUGUST 2022

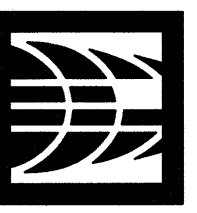
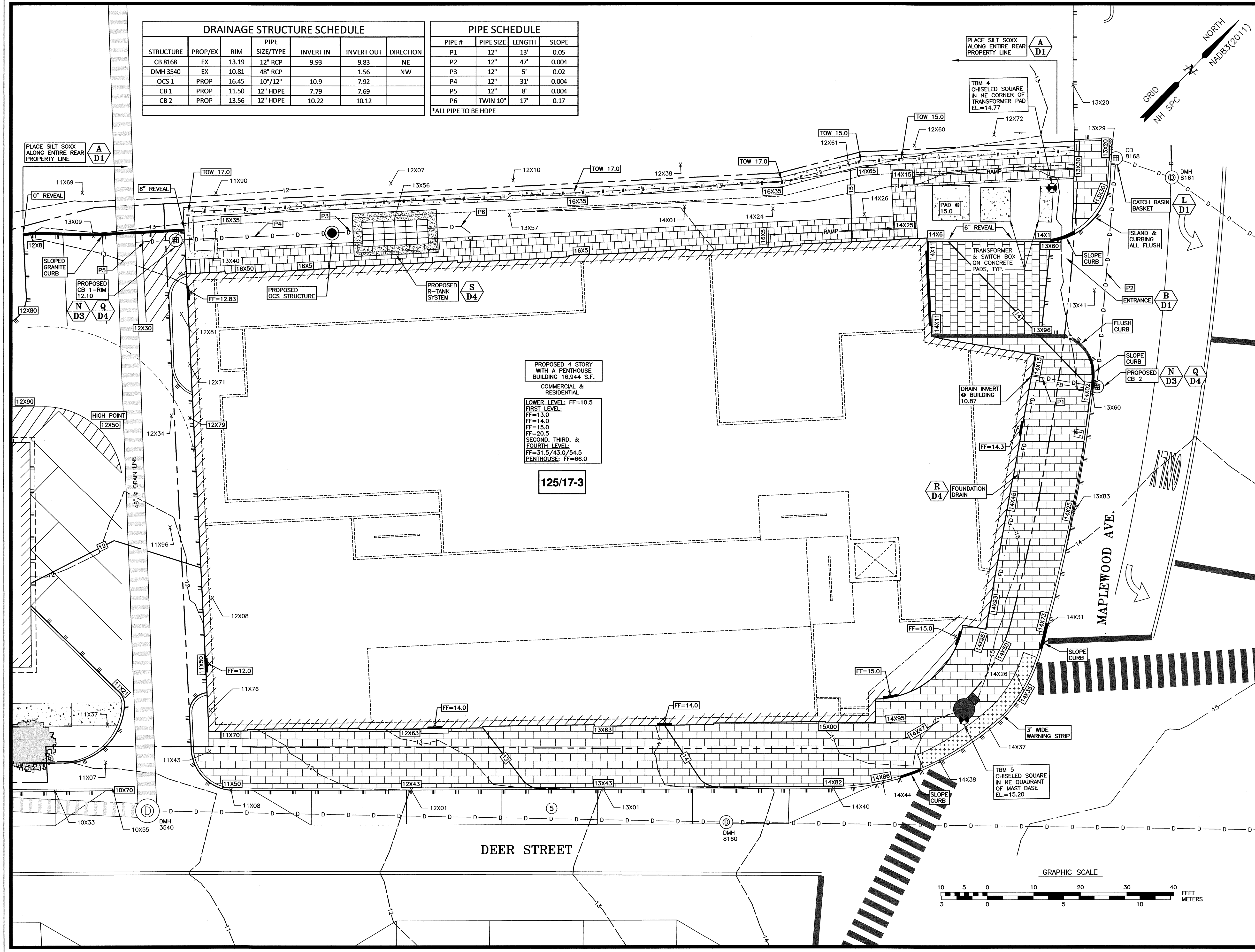
UTILITY
PLAN

C5

| 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 | 16.45 | 10"/12" | 10.9 | 7.92 | |
| CB 1 | PROP | 11.50 | 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 10" | 17' | 0.17 |

*ALL PIPE TO BE HDPE

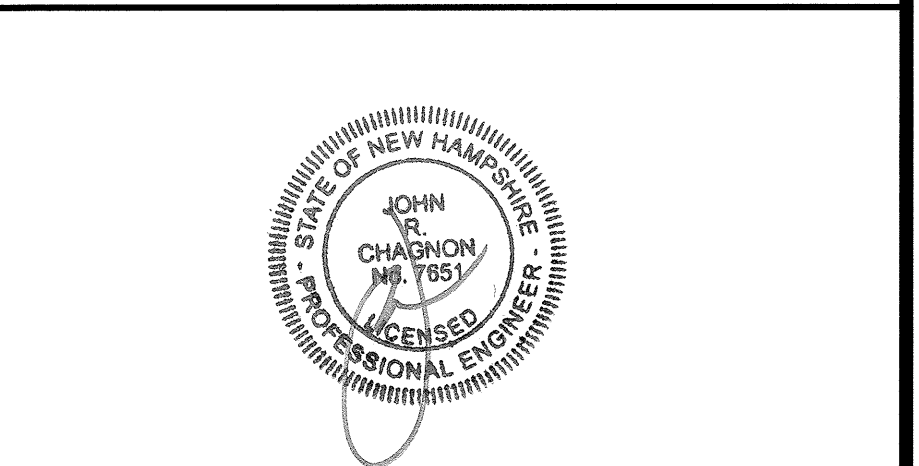


AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
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 - 2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.
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**SITE DEVELOPMENT
EIGHTKPH, LLC
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.**

| | | |
|-----|--------------------|---------|
| 0 | ISSUED FOR COMMENT | 8/23/22 |
| NO. | DESCRIPTION | DATE |



SCALE: 1" = 10' AUGUST 2022

**GRADING & DRAINAGE
PLAN**

C6

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., SILT/SOXX 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 SILT/SOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILT FENCES AND SILT/SOXX 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 SILT/SOXX 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 RESEED, 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 RESEED, 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 RESEED, 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 SILT/SOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

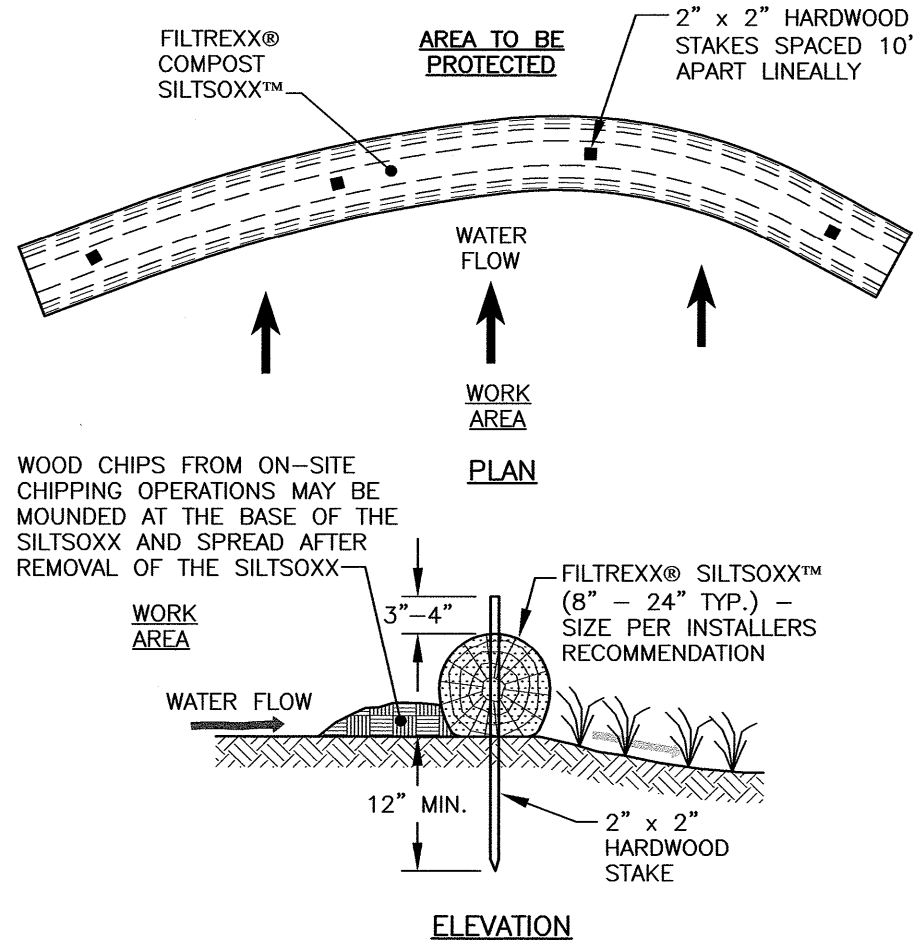
SILT FENCING AND SILT/SOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILT/SOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

WINTER NOTES

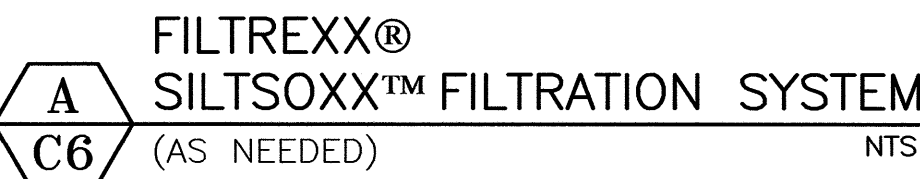
ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE. SECURED 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. FILTREXX 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. SILT/SOXX 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.



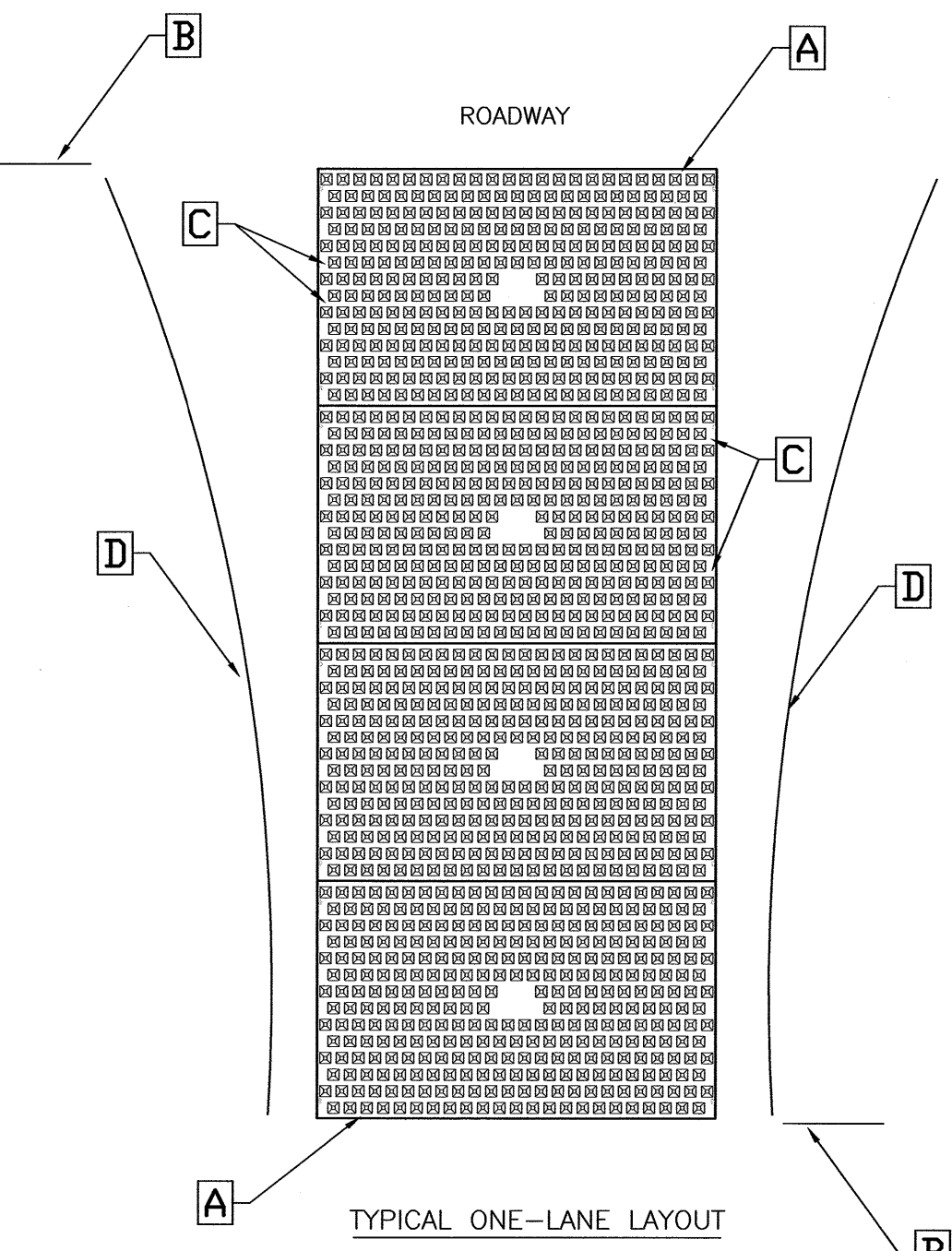
FODS TRACKOUT CONTROL SYSTEM

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.



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.

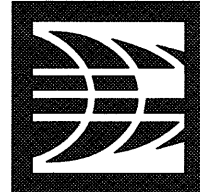
Grassed areas (until established): After each rain event of 0.5" or more during a 24-hour period, inspect grassed areas for signs of disturbance, such as erosion. If damaged areas are discovered, immediately repair the damage. Repairs may include adding new topsoil, lime, seed, fertilizer and mulch.

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.



AMBIT ENGINEERING, INC.

Civil Engineers & Land Surveyors

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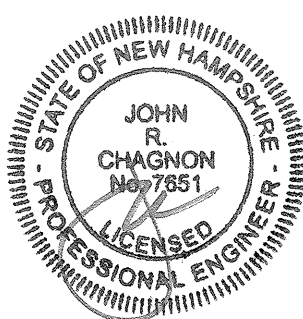
NOTES:

- 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 88 MAPLEWOOD AVENUE PORTSMOUTH, N.H.

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| NO. | DESCRIPTION | DATE |

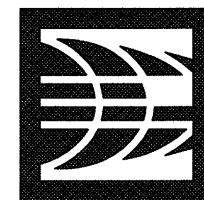
REVISIONS



SCALE: AS SHOWN AUGUST 2022

EROSION PROTECTION NOTES AND DETAILS

D1



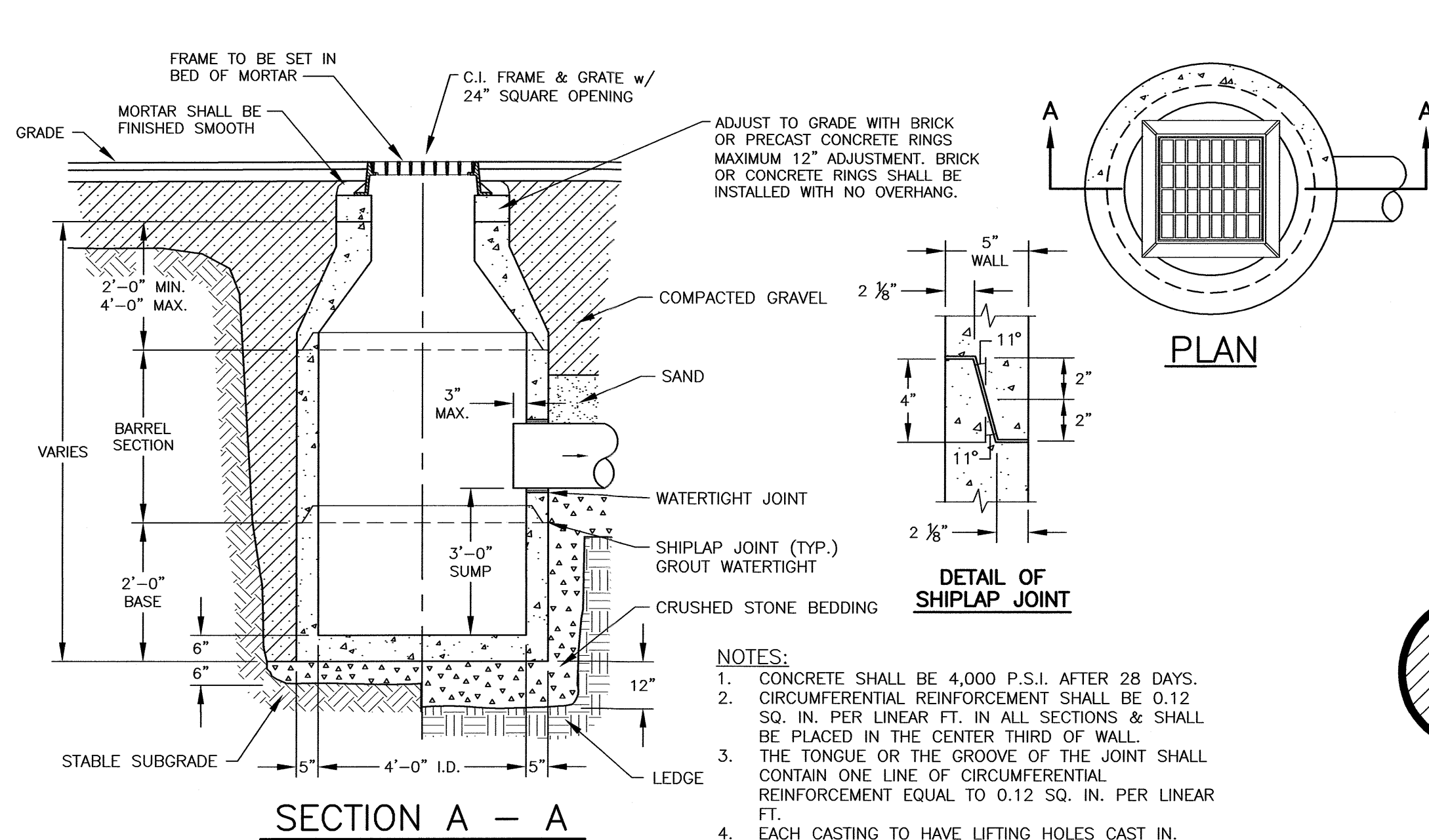
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

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).

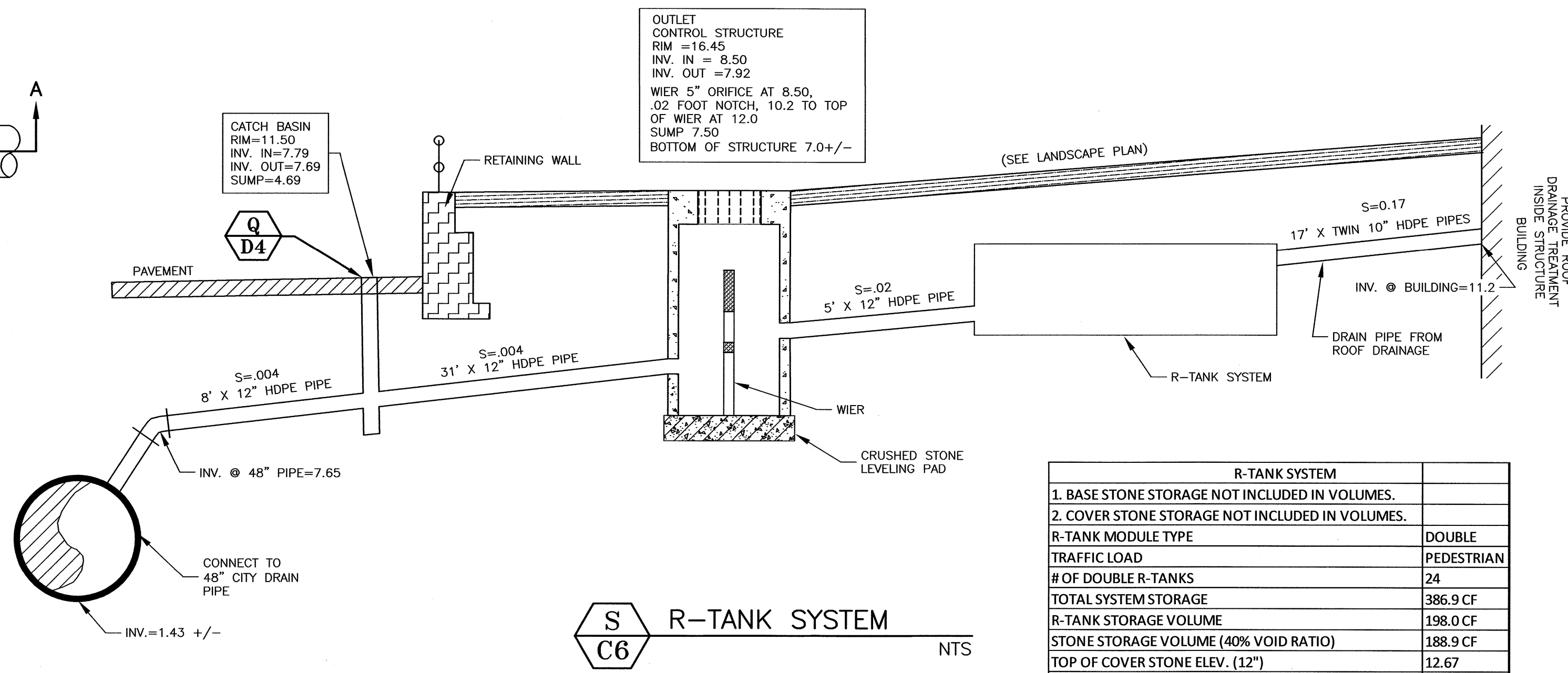


SECTION A - A



CATCH BASIN DETAIL

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 | 24 |
| TOTAL SYSTEM STORAGE | 386.9 CF |
| R-TANK STORAGE VOLUME | 198.0 CF |
| STONE STORAGE VOLUME (40% VOID RATIO) | 188.9 CF |
| TOP OF COVER STONE ELEV. (12") | 12.67 |
| ACF BX-12 GEOGRID ELEV. | 12.67 |
| TOP OF R-TANK ELEV. | 11.67 |
| TANK INVERT IN | 10.9 |
| INVERT OF STONE BASE (3") OUT | 8.6 |
| MIN. STONE PERIMETER WIDTH 2.0 FT | 2.0 FT |
| SYSTEM IS 18.07 FT LONG BY 9.25 FT WIDE | |

GENERAL NOTES:

- MINIMUM PIPE SIZE FOR HOME SERVICES SHALL BE SIX INCHES.
- PIPE AND JOINT MATERIALS:
 - 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
 - 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.
- DUCTILE IRON PIPE, FITTINGS AND JOINTS.
 - DUCTILE IRON PIPE AND FITTINGS FOR SEWERS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE:

| ASTM STANDARDS | GENERIC PIPE MATERIAL | SIZES APPROVED |
|----------------|--|----------------|
| 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 MOLDS OR SAND LINED MOLDS FOR SEWER APPLICATIONS. | |
 - JOINTS SHALL BE OF THE MECHANICAL OR PUSH ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO:

| ASTM STANDARDS | GENERIC PIPE MATERIAL | SIZES APPROVED |
|----------------|--|----------------|
| 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 SHELVE 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.

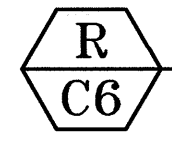
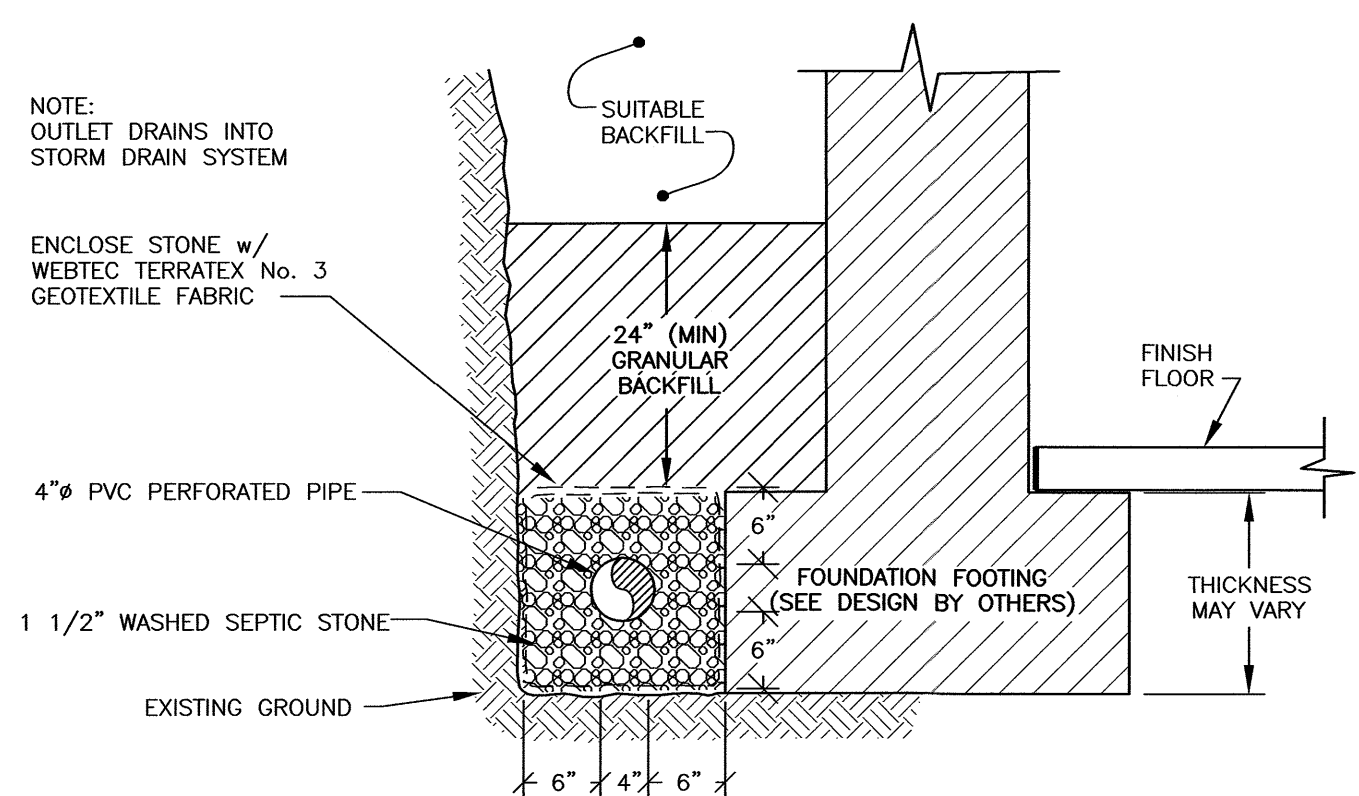
20) IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.

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.

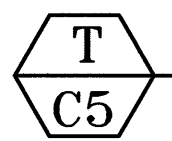
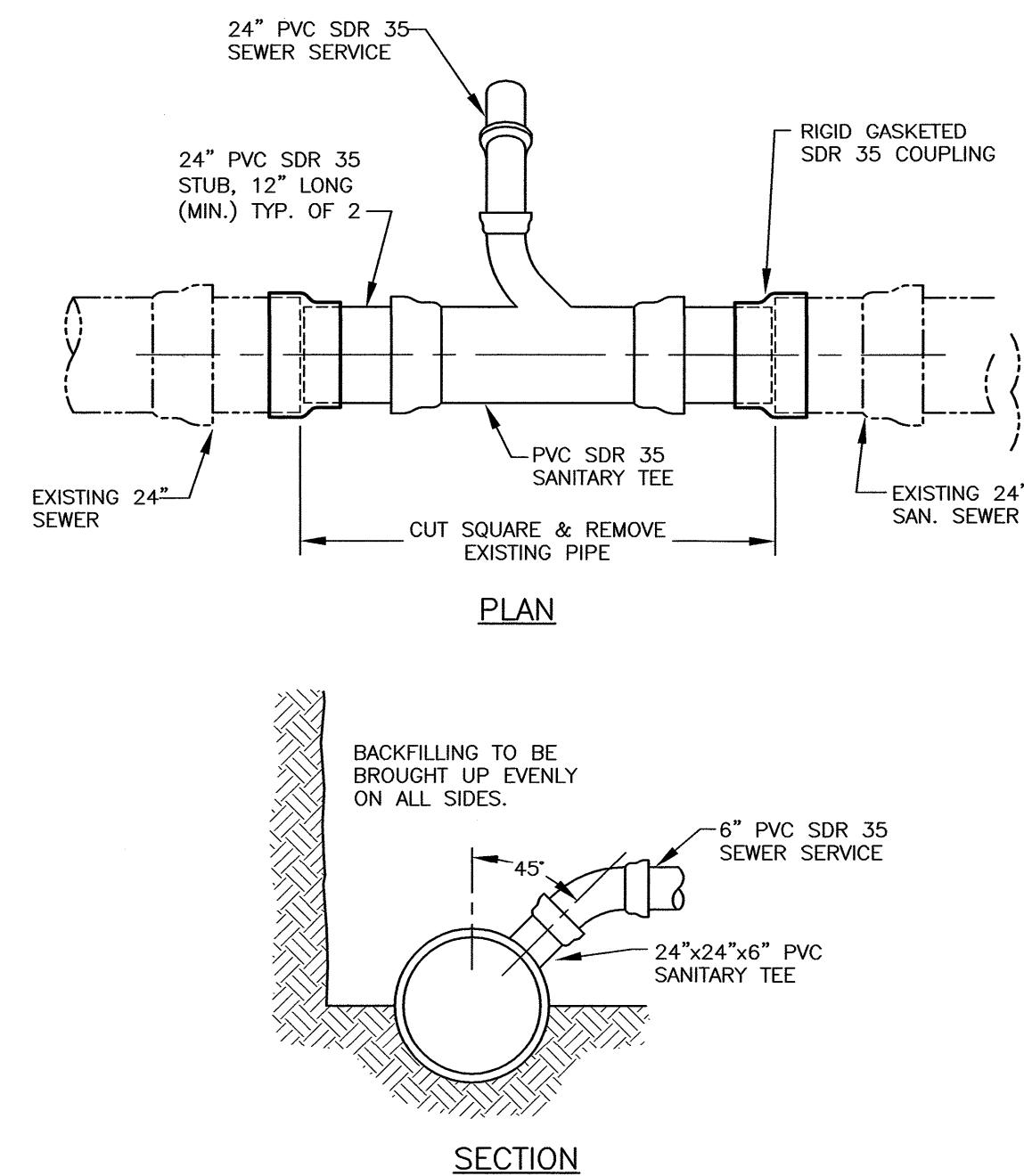
24) ALL WORK SHALL BE IN COMPLIANCE WITH NHDES CODE OF ADMINISTRATIVE RULES PART ENV-WQ 704 DESIGN OF SEWERS.



TYPICAL FOUNDATION DRAIN

WHERE SHOWN ON PLAN

NTS



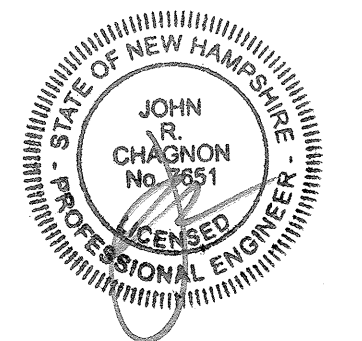
SEWER SERVICE CONNECTION DETAIL

NTS

NOTE: COORDINATE DESIGN OF SEWER CONNECTION WITH CITY OF PORTSMOUTH DPW. PROVIDE SHOP DRAWINGS FOR REVIEW.

SITE DEVELOPMENT EIGHTKPH, LLC 88 MAPLEWOOD AVENUE PORTSMOUTH, N.H.

| NO. | DESCRIPTION | DATE |
|-----------|--------------------|---------|
| 0 | ISSUED FOR COMMENT | 8/23/22 |
| REVISIONS | | |



SCALE: AS SHOWN AUGUST 2022

DETAILS

D4

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



Attachment A

As Submitted Trip Generation Calculations

Lot 5**45-Unit Residential Apartments (ITE LUC 220)**

Units: 45 Units

Residential

| | Total Trips | | Total New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 820)

Units: 13.81 KSF

Retail

| | Total Trips | | Total New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 | | 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 | 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

$T = 6.65 * (X)$
 $T = 6.65 * 45.00$
 $T = \boxed{300}$ vehicle trips
with 50% entering (150 vpd) and with 50% exiting (150 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 6.39 * (X)$
 $T = 6.39 * 45.00$
 $T = \boxed{288}$ vehicle trips
with 50% entering (144 vpd) and with 50% exiting (144 vpd)

SATURDAY MIDDAY PEAK HOUR

$T = 0.52 * (X)$
 $T = 0.52 * 45.00$
 $T = \boxed{24}$ vehicle trips
with 50% entering (12 vpd) and with 50% exiting (12 vpd)

AVERAGE SUNDAY DAILY

$T = 5.86 * (X)$
 $T = 5.86 * 45.00$
 $T = \boxed{264}$ vehicle trips
with 50% entering (132 vpd) and with 50% exiting (132 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.51 * (X)$
 $T = 0.51 * 45.00$
 $T = \boxed{22}$ 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

$T = 11.03 * (X)$
 $T = 11.03 * 17.27$
 $T = \boxed{190}$ vehicle trips
with 50% entering (95 vpd) and with 50% exiting (95 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 2.46 * (X)$
 $T = 2.46 * 17.27$
 $T = \boxed{42}$ vehicle trips
with 50% entering (21 vpd) and with 50% exiting (21 vpd)

SATURDAY MIDDAY PEAK HOUR

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

AVERAGE SUNDAY DAILY

$T = 1.05 * (X)$
 $T = 1.05 * 17.27$
 $T = \boxed{18}$ vehicle trips
with 50% entering (9 vpd) and with 50% exiting (9 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.16 * (X)$
 $T = 0.16 * 17.27$
 $T = \boxed{2}$ 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

$T = 42.70 * (X)$
 $T = 42.70 * 13.81$
 $T = \boxed{590}$ vehicle trips
with 50% entering (295 vpd) and with 50% exiting (295 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 49.97 * (X)$
 $T = 49.97 * 13.81$
 $T = \boxed{690}$ vehicle trips
with 50% entering (345 vpd) and with 50% exiting (345 vpd)

SATURDAY MIDDAY PEAK HOUR

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

AVERAGE SUNDAY DAILY

$T = 25.24 * (X)$
 $T = 25.24 * 13.81$
 $T = \boxed{348}$ vehicle trips
with 50% entering (174 vpd) and with 50% exiting (174 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 3.12 * (X)$
 $T = 3.12 * 13.81$
 $T = \boxed{44}$ 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

$T = 44.32 * (X)$
 $T = 44.32 * 13.81$
 $T = \boxed{612}$ vehicle trips
with 50% entering (306 vpd) and with 50% exiting (306 vpd)

WEEKDAY MORNING PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 13.81$
 $T = \boxed{-}$ vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 42.04 * (X)$
 $T = 42.04 * 13.81$
 $T = \boxed{580}$ vehicle trips
with 50% entering (290 vpd) and with 50% exiting (290 vpd)

SATURDAY MIDDAY PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 13.81$
 $T = \boxed{-}$ vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

AVERAGE SUNDAY DAILY

$T = 20.43 * (X)$
 $T = 20.43 * 13.81$
 $T = \boxed{282}$ vehicle trips
with 50% entering (141 vpd) and with 50% exiting (141 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 13.81$
 $T = \boxed{-}$ 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

$$T = 148.15 * (X)$$

$$T = 148.15 * 2.70$$

$$T = \boxed{400} \text{ vehicle trips}$$

with 50% entering (200 vpd) and with 50% exiting (200 vpd)

WEEKDAY MORNING PEAK HOUR

$$T = 12.08 * (X)$$

$$T = 12.08 * 2.70$$

$$T = \boxed{32} \text{ vehicle trips}$$

with 57% entering (18 vpd) and with 43% exiting (14 vpd)

WEEKDAY EVENING PEAK HOUR

$$T = 24.30 * (X)$$

$$T = 24.30 * 2.70$$

$$T = \boxed{66} \text{ vehicle trips}$$

with 50% entering (33 vpd) and with 50% exiting (33 vpd)

AVERAGE SATURDAY DAILY

$$T = 86.32 * (X)$$

$$T = 86.32 * 2.70$$

$$T = \boxed{234} \text{ vehicle trips}$$

with 50% entering (117 vpd) and with 50% exiting (117 vpd)

SATURDAY MIDDAY PEAK HOUR

$$T = 26.31 * (X)$$

$$T = 26.31 * 2.70$$

$$T = \boxed{72} \text{ vehicle trips}$$

with 51% entering (37 vpd) and with 49% exiting (35 vpd)

AVERAGE SUNDAY DAILY

$$T = 31.90 * (X)$$

$$T = 31.90 * 2.70$$

$$T = \boxed{86} \text{ vehicle trips}$$

with 50% entering (43 vpd) and with 50% exiting (43 vpd)

SUNDAY MIDDAY PEAK HOUR

$$T = 4.78 * (X)$$

$$T = 4.78 * 2.70$$

$$T = \boxed{12} \text{ vehicle trips}$$

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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|--------------|--|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| Avg. Rates | Fitted Curve | | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|--------------|--|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| Avg. Rates | Fitted Curve | | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|--------------|--|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| Avg. Rates | Fitted Curve | | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|--------------|--|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| Avg. Rates | Fitted Curve | | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|--------------|---|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| Avg. Rates | Fitted Curve | | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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

$T = 6.65 * (X)$
 $T = 6.65 * 19.00$
 $T = \boxed{126}$ vehicle trips
with 50% entering (63 vpd) and with 50% exiting (63 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 6.39 * (X)$
 $T = 6.39 * 19.00$
 $T = \boxed{122}$ vehicle trips
with 50% entering (61 vpd) and with 50% exiting (61 vpd)

SATURDAY MIDDAY PEAK HOUR

$T = 0.52 * (X)$
 $T = 0.52 * 19.00$
 $T = \boxed{10}$ vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

AVERAGE SUNDAY DAILY

$T = 5.86 * (X)$
 $T = 5.86 * 19.00$
 $T = \boxed{112}$ vehicle trips
with 50% entering (56 vpd) and with 50% exiting (56 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.51 * (X)$
 $T = 0.51 * 19.00$
 $T = \boxed{10}$ 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

$T = 11.03 * (X)$
 $T = 11.03 * 3.31$
 $T = \boxed{36}$ vehicle trips
with 50% entering (18 vpd) and with 50% exiting (18 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 2.46 * (X)$
 $T = 2.46 * 3.31$
 $T = \boxed{8}$ vehicle trips
with 50% entering (4 vpd) and with 50% exiting (4 vpd)

SATURDAY MIDDAY PEAK HOUR

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

AVERAGE SUNDAY DAILY

$T = 1.05 * (X)$
 $T = 1.05 * 3.31$
 $T = \boxed{4}$ vehicle trips
with 50% entering (2 vpd) and with 50% exiting (2 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.16 * (X)$
 $T = 0.16 * 3.31$
 $T = \boxed{-}$ 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

$T = 42.70 * (X)$
 $T = 42.70 * 3.31$
 $T = \boxed{142}$ vehicle trips
with 50% entering (71 vpd) and with 50% exiting (71 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 49.97 * (X)$
 $T = 49.97 * 3.31$
 $T = \boxed{166}$ vehicle trips
with 50% entering (83 vpd) and with 50% exiting (83 vpd)

SATURDAY MIDDAY PEAK HOUR

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

AVERAGE SUNDAY DAILY

$T = 25.24 * (X)$
 $T = 25.24 * 3.31$
 $T = \boxed{84}$ vehicle trips
with 50% entering (42 vpd) and with 50% exiting (42 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 3.12 * (X)$
 $T = 3.12 * 3.31$
 $T = \boxed{10}$ 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

$T = 44.32 * (X)$
 $T = 44.32 * 3.31$
 $T = \boxed{146}$ vehicle trips
with 50% entering (73 vpd) and with 50% exiting (73 vpd)

WEEKDAY MORNING PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 3.31$
 $T = \boxed{-}$ vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 42.04 * (X)$
 $T = 42.04 * 3.31$
 $T = \boxed{140}$ vehicle trips
with 50% entering (70 vpd) and with 50% exiting (70 vpd)

SATURDAY MIDDAY PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 3.31$
 $T = \boxed{-}$ vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

AVERAGE SUNDAY DAILY

$T = 20.43 * (X)$
 $T = 20.43 * 3.31$
 $T = \boxed{68}$ vehicle trips
with 50% entering (34 vpd) and with 50% exiting (34 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 3.31$
 $T = \boxed{-}$ 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

$$T = 127.15 * (X)$$

$$T = 127.15 * 4.95$$

$$T = \boxed{630} \text{ vehicle trips}$$

with 50% entering (315 vpd) and with 50% exiting (315 vpd)

WEEKDAY MORNING PEAK HOUR

$$T = 10.81 * (X)$$

$$T = 10.81 * 4.95$$

$$T = \boxed{54} \text{ vehicle trips}$$

with 55% entering (30 vpd) and with 45% exiting (24 vpd)

WEEKDAY EVENING PEAK HOUR

$$T = 9.85 * (X)$$

$$T = 9.85 * 4.95$$

$$T = \boxed{48} \text{ vehicle trips}$$

with 60% entering (29 vpd) and with 40% exiting (19 vpd)

AVERAGE SATURDAY DAILY

$$T = 158.37 * (X)$$

$$T = 158.37 * 4.95$$

$$T = \boxed{784} \text{ vehicle trips}$$

with 50% entering (392 vpd) and with 50% exiting (392 vpd)

SATURDAY MIDDAY PEAK HOUR

$$T = 14.07 * (X)$$

$$T = 14.07 * 4.95$$

$$T = \boxed{70} \text{ vehicle trips}$$

with 53% entering (37 vpd) and with 47% exiting (33 vpd)

AVERAGE SUNDAY DAILY

$$T = 131.84 * (X)$$

$$T = 131.84 * 4.95$$

$$T = \boxed{654} \text{ vehicle trips}$$

with 50% entering (327 vpd) and with 50% exiting (327 vpd)

SUNDAY MIDDAY PEAK HOUR

$$T = 18.46 * (X)$$

$$T = 18.46 * 4.95$$

$$T = \boxed{92} \text{ vehicle trips}$$

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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 | | 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 | 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

$T = 6.65 * (X)$
 $T = 6.65 * 19.00$
 $T = \boxed{126}$ vehicle trips
with 50% entering (63 vpd) and with 50% exiting (63 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 6.39 * (X)$
 $T = 6.39 * 19.00$
 $T = \boxed{122}$ vehicle trips
with 50% entering (61 vpd) and with 50% exiting (61 vpd)

SATURDAY MIDDAY PEAK HOUR

$T = 0.52 * (X)$
 $T = 0.52 * 19.00$
 $T = \boxed{10}$ vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

AVERAGE SUNDAY DAILY

$T = 5.86 * (X)$
 $T = 5.86 * 19.00$
 $T = \boxed{112}$ vehicle trips
with 50% entering (56 vpd) and with 50% exiting (56 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.51 * (X)$
 $T = 0.51 * 19.00$
 $T = \boxed{10}$ 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

$T = 11.03 * (X)$
 $T = 11.03 * 6.62$
 $T = \boxed{72}$ vehicle trips
with 50% entering (36 vpd) and with 50% exiting (36 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 2.46 * (X)$
 $T = 2.46 * 6.62$
 $T = \boxed{16}$ vehicle trips
with 50% entering (8 vpd) and with 50% exiting (8 vpd)

SATURDAY MIDDAY PEAK HOUR

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

AVERAGE SUNDAY DAILY

$T = 1.05 * (X)$
 $T = 1.05 * 6.62$
 $T = \boxed{6}$ vehicle trips
with 50% entering (3 vpd) and with 50% exiting (3 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.16 * (X)$
 $T = 0.16 * 6.62$
 $T = \boxed{2}$ 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

$$T = 127.15 * (X)$$

$$T = 127.15 * 4.95$$

$$T = \boxed{630} \text{ vehicle trips}$$

with 50% entering (315 vpd) and with 50% exiting (315 vpd)

WEEKDAY MORNING PEAK HOUR

$$T = 10.81 * (X)$$

$$T = 10.81 * 4.95$$

$$T = \boxed{54} \text{ vehicle trips}$$

with 55% entering (30 vpd) and with 45% exiting (24 vpd)

WEEKDAY EVENING PEAK HOUR

$$T = 9.85 * (X)$$

$$T = 9.85 * 4.95$$

$$T = \boxed{48} \text{ vehicle trips}$$

with 60% entering (29 vpd) and with 40% exiting (19 vpd)

AVERAGE SATURDAY DAILY

$$T = 158.37 * (X)$$

$$T = 158.37 * 4.95$$

$$T = \boxed{784} \text{ vehicle trips}$$

with 50% entering (392 vpd) and with 50% exiting (392 vpd)

SATURDAY MIDDAY PEAK HOUR

$$T = 14.07 * (X)$$

$$T = 14.07 * 4.95$$

$$T = \boxed{70} \text{ vehicle trips}$$

with 53% entering (37 vpd) and with 47% exiting (33 vpd)

AVERAGE SUNDAY DAILY

$$T = 131.84 * (X)$$

$$T = 131.84 * 4.95$$

$$T = \boxed{654} \text{ vehicle trips}$$

with 50% entering (327 vpd) and with 50% exiting (327 vpd)

SUNDAY MIDDAY PEAK HOUR

$$T = 18.46 * (X)$$

$$T = 18.46 * 4.95$$

$$T = \boxed{92} \text{ vehicle trips}$$

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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 New Trips | % Distribution | | # New Trips | | Transit Trips | | Walk / Bicycle Trips | | Autos Only | | Multi-Use | | Total New Pass-by Trips | Total New Primary Trips | # Passby Trips | | # Primary Trips | |
|--------------------|-------------|--------------|--------------------|----------------|-----|-------------|-----|---------------|-----|----------------------|-----|------------|-----|-----------|-----|----------------------------|----------------------------|----------------|-----|-----------------|-----|
| | Avg. Rates | Fitted Curve | | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | IN | OUT | | | 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 |

| | Total Trips | % In | % Out | Total New Trips In | Total New Trips Out | Total Transit Trips In | Total Transit Trips Out | Total Walk / Bicycle Trips In | Total Walk / Bicycle Trips Out | Total Autos Only Trips In | Total Autos Only Trips Out | Total Multi-Use Trips In | Total Multi-Use Trips Out | Total New Pass-by Trips | Total New Primary Trips | Total Pass-by Trips In | Total Pass-by Trips Out | Total Primary Trips In | Total Primary Trips Out |
|------------------------------|-------------|------|-------|-----------------------|------------------------|---------------------------|----------------------------|----------------------------------|-----------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
| Lot 6, Lot 3, Lot 4, & Lot 5 | | | | | | | | | | | | | | | | | | | |
| 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

$T = 6.65 * (X)$
 $T = 6.65 * 19.00$
 $T = \boxed{126}$ vehicle trips
with 50% entering (63 vpd) and with 50% exiting (63 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 6.39 * (X)$
 $T = 6.39 * 19.00$
 $T = \boxed{122}$ vehicle trips
with 50% entering (61 vpd) and with 50% exiting (61 vpd)

SATURDAY MIDDAY PEAK HOUR

$T = 0.52 * (X)$
 $T = 0.52 * 19.00$
 $T = \boxed{10}$ vehicle trips
with 50% entering (5 vpd) and with 50% exiting (5 vpd)

AVERAGE SUNDAY DAILY

$T = 5.86 * (X)$
 $T = 5.86 * 19.00$
 $T = \boxed{112}$ vehicle trips
with 50% entering (56 vpd) and with 50% exiting (56 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.51 * (X)$
 $T = 0.51 * 19.00$
 $T = \boxed{10}$ 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

$T = 42.70 * (X)$
 $T = 42.70 * 6.62$
 $T = \boxed{282}$ vehicle trips
with 50% entering (141 vpd) and with 50% exiting (141 vpd)

WEEKDAY MORNING PEAK HOUR

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

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 49.97 * (X)$
 $T = 49.97 * 6.62$
 $T = \boxed{330}$ vehicle trips
with 50% entering (165 vpd) and with 50% exiting (165 vpd)

SATURDAY MIDDAY PEAK HOUR

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

AVERAGE SUNDAY DAILY

$T = 25.24 * (X)$
 $T = 25.24 * 6.62$
 $T = \boxed{166}$ vehicle trips
with 50% entering (83 vpd) and with 50% exiting (83 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 3.12 * (X)$
 $T = 3.12 * 6.62$
 $T = \boxed{20}$ 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

$T = 44.32 * (X)$
 $T = 44.32 * 6.62$
 $T = \boxed{294}$ vehicle trips
with 50% entering (147 vpd) and with 50% exiting (147 vpd)

WEEKDAY MORNING PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 6.62$
 $T = \boxed{-}$ vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

WEEKDAY EVENING PEAK HOUR

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

AVERAGE SATURDAY DAILY

$T = 42.04 * (X)$
 $T = 42.04 * 6.62$
 $T = \boxed{278}$ vehicle trips
with 50% entering (139 vpd) and with 50% exiting (139 vpd)

SATURDAY MIDDAY PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 6.62$
 $T = \boxed{-}$ vehicle trips
with 50% entering (- vpd) and with 50% exiting (- vpd)

AVERAGE SUNDAY DAILY

$T = 20.43 * (X)$
 $T = 20.43 * 6.62$
 $T = \boxed{136}$ vehicle trips
with 50% entering (68 vpd) and with 50% exiting (68 vpd)

SUNDAY MIDDAY PEAK HOUR

$T = 0.00 * (X)$
 $T = 0.00 * 6.62$
 $T = \boxed{-}$ 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

$$T = 127.15 * (X)$$

$$T = 127.15 * 4.95$$

$$T = \boxed{630} \text{ vehicle trips}$$

with 50% entering (315 vpd) and with 50% exiting (315 vpd)

WEEKDAY MORNING PEAK HOUR

$$T = 10.81 * (X)$$

$$T = 10.81 * 4.95$$

$$T = \boxed{54} \text{ vehicle trips}$$

with 55% entering (30 vpd) and with 45% exiting (24 vpd)

WEEKDAY EVENING PEAK HOUR

$$T = 9.85 * (X)$$

$$T = 9.85 * 4.95$$

$$T = \boxed{48} \text{ vehicle trips}$$

with 60% entering (29 vpd) and with 40% exiting (19 vpd)

AVERAGE SATURDAY DAILY

$$T = 158.37 * (X)$$

$$T = 158.37 * 4.95$$

$$T = \boxed{784} \text{ vehicle trips}$$

with 50% entering (392 vpd) and with 50% exiting (392 vpd)

SATURDAY MIDDAY PEAK HOUR

$$T = 14.07 * (X)$$

$$T = 14.07 * 4.95$$

$$T = \boxed{70} \text{ vehicle trips}$$

with 53% entering (37 vpd) and with 47% exiting (33 vpd)

AVERAGE SUNDAY DAILY

$$T = 131.84 * (X)$$

$$T = 131.84 * 4.95$$

$$T = \boxed{654} \text{ vehicle trips}$$

with 50% entering (327 vpd) and with 50% exiting (327 vpd)

SUNDAY MIDDAY PEAK HOUR

$$T = 18.46 * (X)$$

$$T = 18.46 * 4.95$$

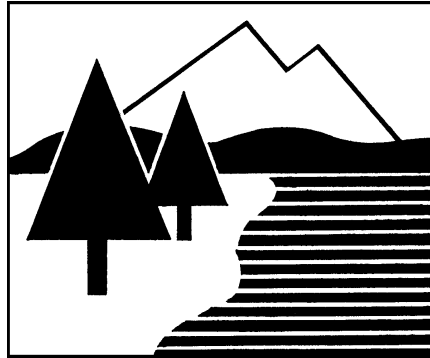
$$T = \boxed{92} \text{ vehicle trips}$$

with 55% entering (51 vpd) and with 45% exiting (41 vpd)

DRAINAGE ANALYSIS

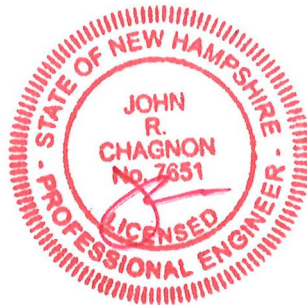
SITE DEVELOPMENT

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

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E-mail: jrc@ambitengineering.com

(Ambit Job Number 2271.04)

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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

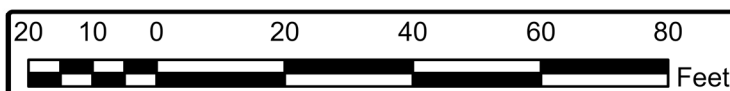
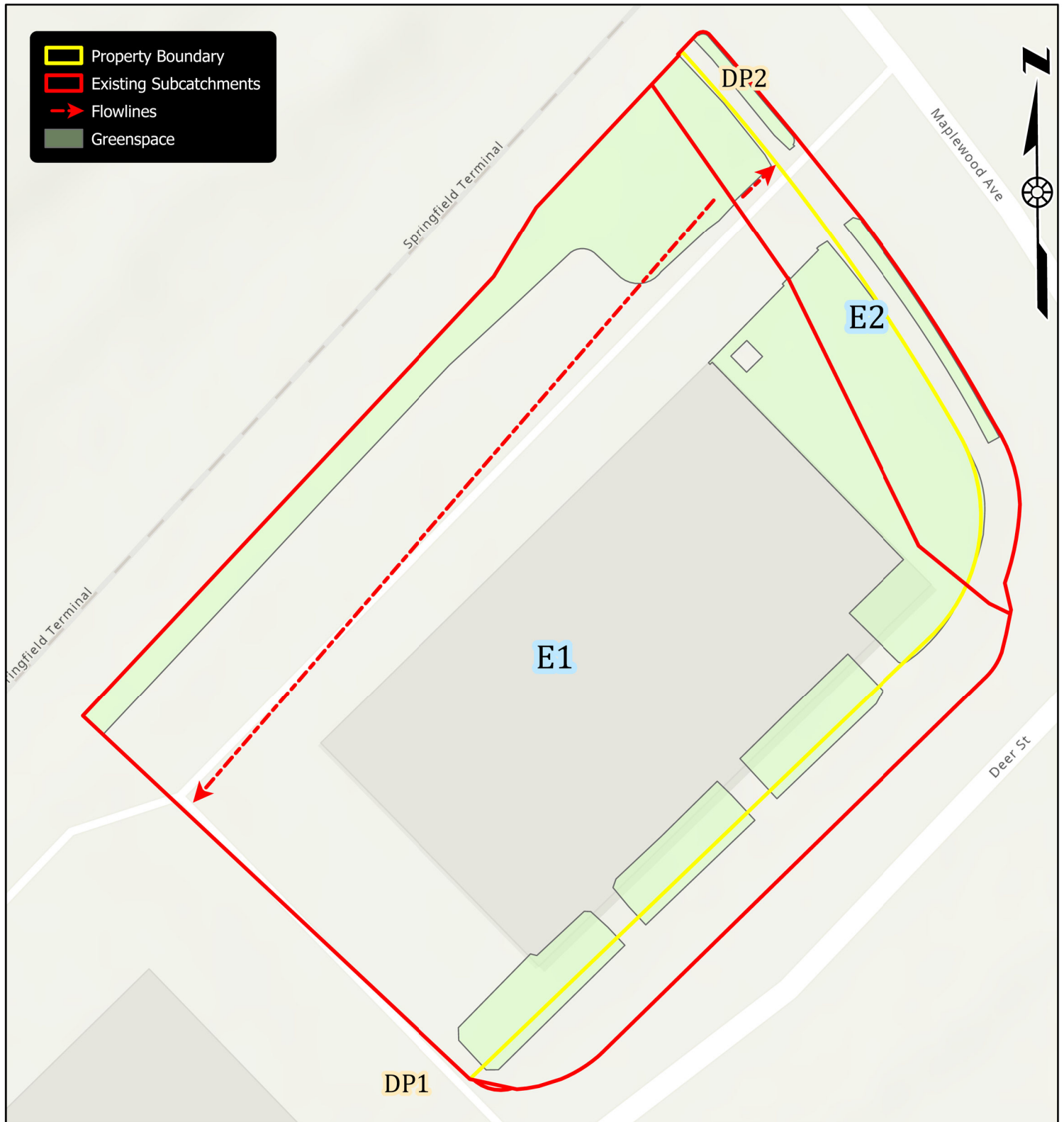
The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. With the design of the R-Tank system, the post-development runoff rates are reduced to below the pre-development runoff rates. The proposed downspout filter will provide treatment 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.

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

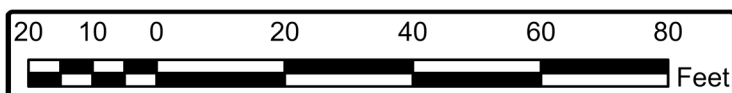
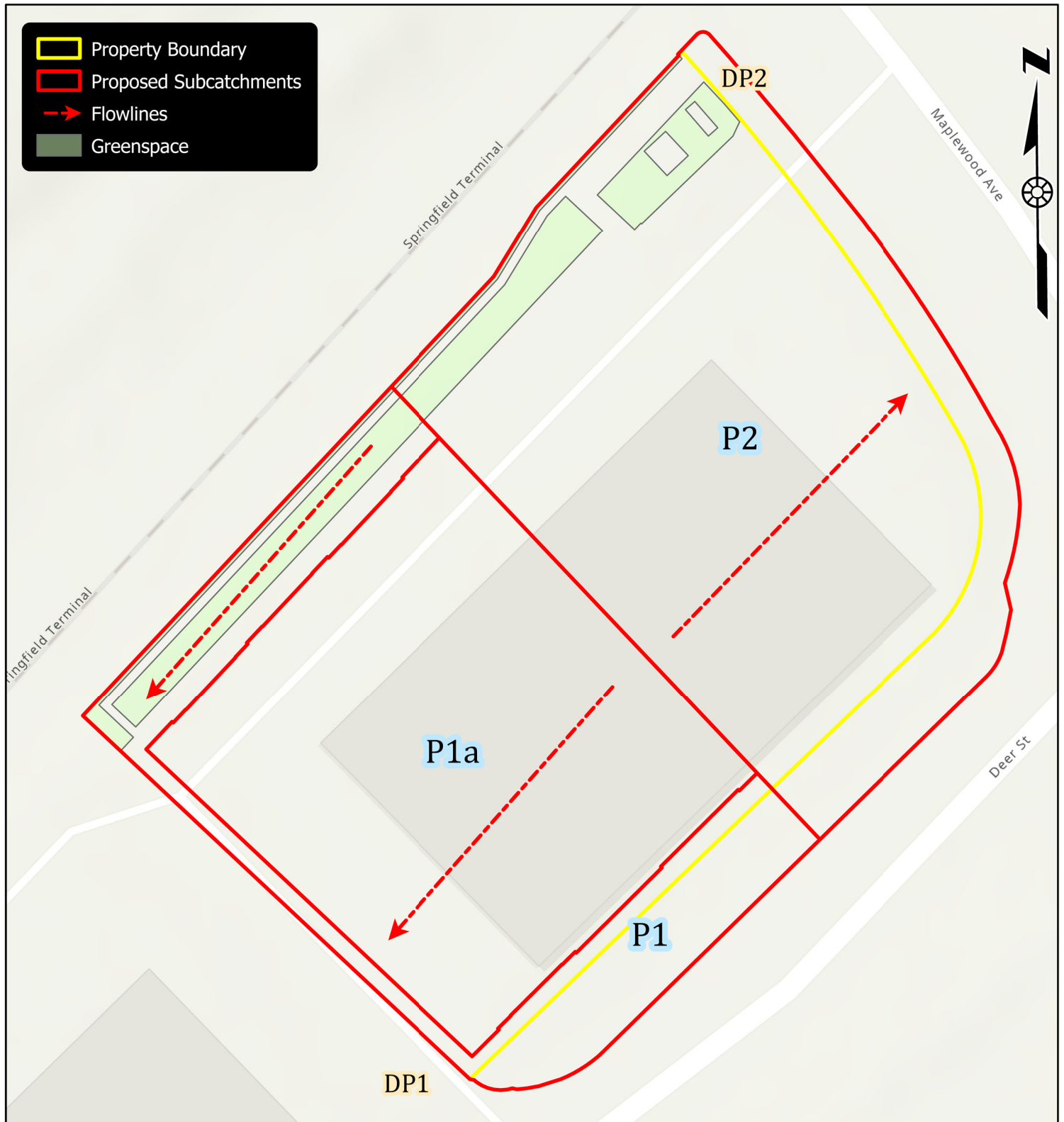
JOB NUMBER: 2271
SCALE: 1" = 30'
SUBMITTED: 08-04-2022



Greenspace = 6367 sf
Net = -3179 sf

SITE DEVELOPMENT
88 MAPLEWOOD AVENUE
PORTSMOUTH, N.H.

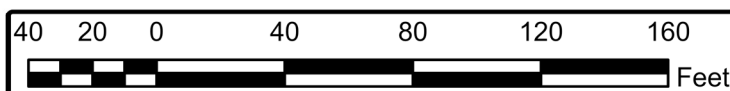
JOB NUMBER: 2271
SCALE: 1" = 30'
SUBMITTED: 08-18-2022



APPENDIX A
VICINITY (TAX) MAP

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 |

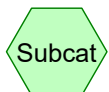
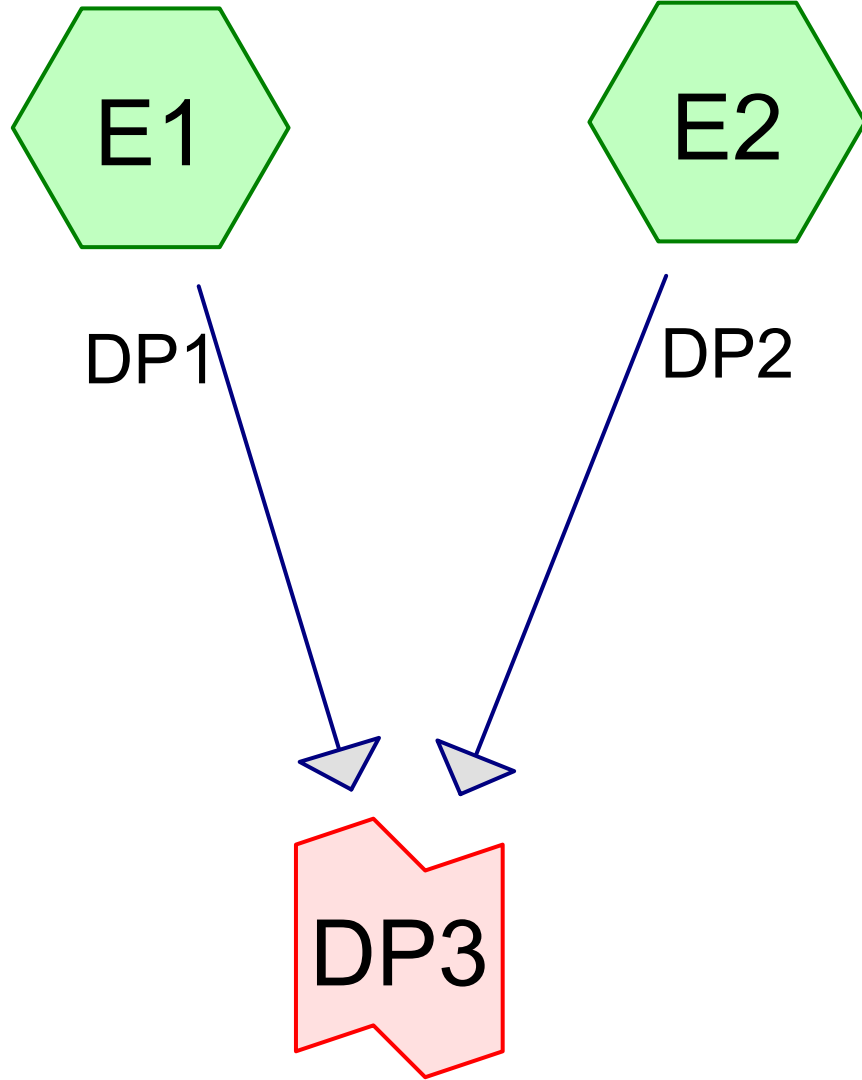
Lower Confidence Limits

| | 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 |

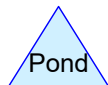
APPENDIX C
HYDROCAD DRAINAGE
ANALYSIS CALCULATIONS



Subcat



Reach



Pond



Link

Routing Diagram for Existing Conditions David T
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Project Notes

Defined 5 rainfall events from output (37) IDF

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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 |

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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 |

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Page 5

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 |

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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 | |

Existing Conditions David T

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Type II 24-hr 2-yr Rainfall=3.68"

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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

SubcatchmentE1: 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

SubcatchmentE2: 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

Existing Conditions David T

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Type II 24-hr 2-yr Rainfall=3.68"

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Summary for Subcatchment E1: DP1[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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

Existing Conditions David T

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Type II 24-hr 10-yr Rainfall=5.59"

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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

SubcatchmentE1: 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

SubcatchmentE2: 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

Existing Conditions David T

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Type II 24-hr 10-yr Rainfall=5.59"

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Summary for Subcatchment E1: DP1[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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

Existing Conditions David T

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Type II 24-hr 25-yr Rainfall=7.08"

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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

Existing Conditions David T

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Type II 24-hr 25-yr Rainfall=7.08"

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Summary for Subcatchment E1: DP1[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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

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Type II 24-hr 50-yr Rainfall=8.48"

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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

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Summary for Subcatchment E1: DP1[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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"

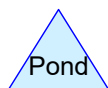
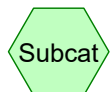
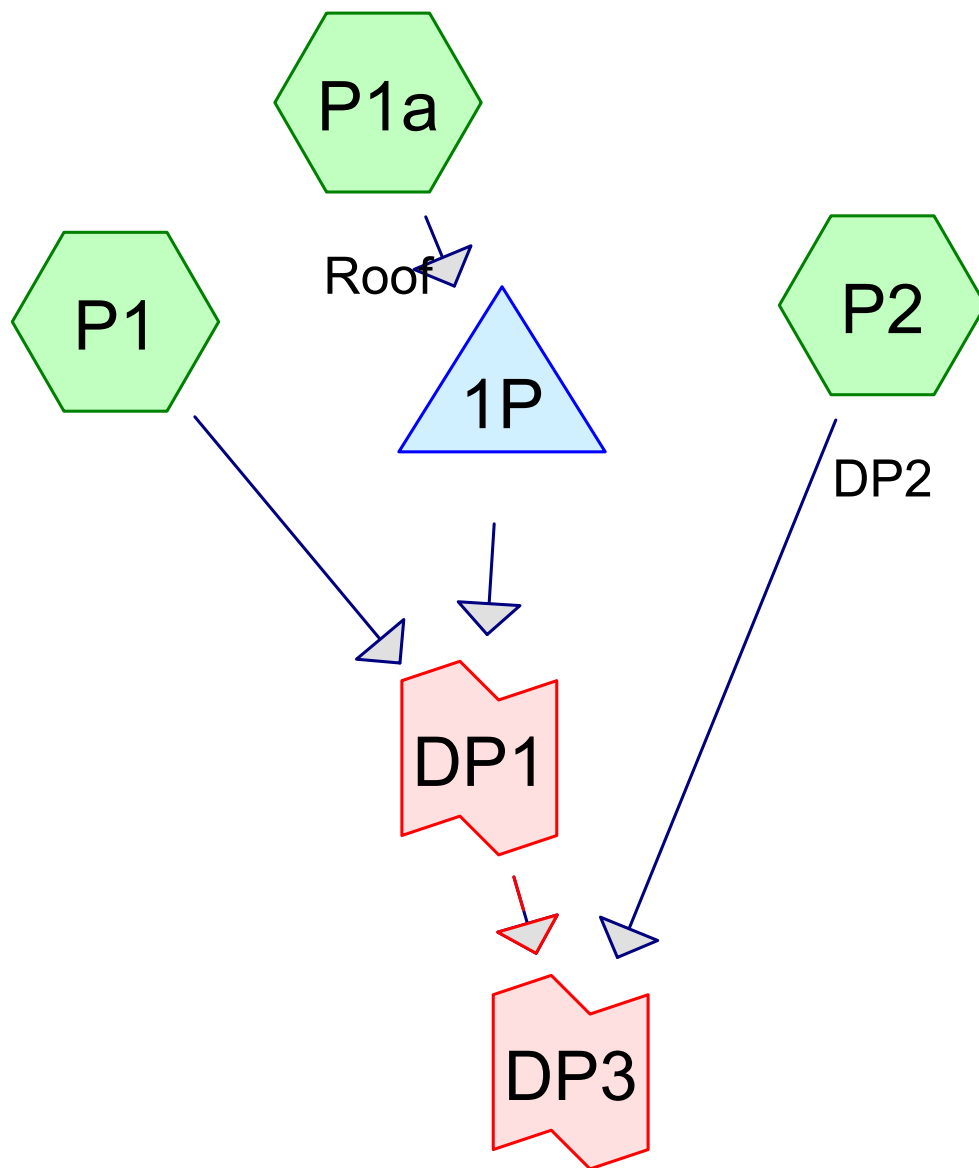
| Area (sf) | CN | Description |
|-----------|----|-------------------------------|
| 1,164 | 98 | Paved parking, HSG D |
| 1,823 | 80 | >75% Grass cover, Good, HSG D |
| 2,987 | 87 | Weighted Average |
| 1,823 | | 61.03% Pervious Area |
| 1,164 | | 38.97% Impervious Area |

| 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



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Project Notes

Defined 5 rainfall events from output (37) IDF

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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 |

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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 |

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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 |

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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 | |

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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 |

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Type II 24-hr 2-yr Rainfall=3.68"

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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

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Type II 24-hr 2-yr Rainfall=3.68"

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Summary for Subcatchment P1:[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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: $T_c < 2dt$ 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"

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Type II 24-hr 2-yr Rainfall=3.68"

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| 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 ' 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 |

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Type II 24-hr 2-yr Rainfall=3.68"

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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

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Type II 24-hr 10-yr Rainfall=5.59"

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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 | |

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Summary for Subcatchment P1:[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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: $T_c < 2dt$ 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"

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Type II 24-hr 10-yr Rainfall=5.59"

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| 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 ' 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 |

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Type II 24-hr 10-yr Rainfall=5.59"

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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

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Type II 24-hr 25-yr Rainfall=7.08"

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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

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Summary for Subcatchment P1:[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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: $T_c < 2dt$ 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"

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Type II 24-hr 25-yr Rainfall=7.08"

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| 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 ' 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 |

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Type II 24-hr 25-yr Rainfall=7.08"

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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

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Type II 24-hr 50-yr Rainfall=8.48"

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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 | |

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Type II 24-hr 50-yr Rainfall=8.48"

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Summary for Subcatchment P1:[49] Hint: $T_c < 2dt$ 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: $T_c < 2dt$ 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: $T_c < 2dt$ 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"

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Type II 24-hr 50-yr Rainfall=8.48"

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| 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 ' 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 |

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Type II 24-hr 50-yr Rainfall=8.48"

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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



Custom Soil Resource Report

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,

Custom Soil Resource Report

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)

Custom Soil Resource Report

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

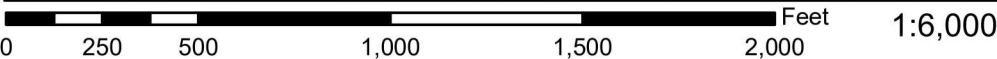
Percent of map unit: 4 percent
Hydric soil rating: No

APPENDIX E
FEMA FIRM MAP

National Flood Hazard Layer FIRMMette



70°46'3"W 43°4'55"N



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 Water Surface Elevation |
| | | 17.5 |
| | | Coastal Transect |
| | | Base Flood Elevation Line (BFE) |

| | | |
|----------------|--|---------------------------|
| OTHER FEATURES | | Limit of Study |
| | | Jurisdiction Boundary |
| | | Coastal Transect Baseline |
| | | Profile Baseline |

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

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.



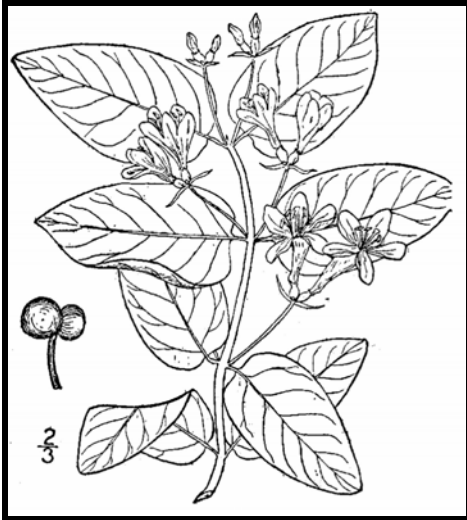
Figure 1: *Lythrum salicaria*, Purple Loosestrife. Photo by Liz West.



Figure 2: *Phragmites australis*. Photo by Le Loup Gris

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.nhinvases.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.

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.






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.

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.

| Woody Plants | Method of Reproducing | Methods of Disposal |
|--|--|--|
| Norway maple <i>(Acer platanoides)</i> European barberry <i>(Berberis vulgaris)</i> Japanese barberry <i>(Berberis thunbergii)</i> autumn olive <i>(Elaeagnus umbellata)</i> burning bush <i>(Euonymus alatus)</i> Morrow's honeysuckle <i>(Lonicera morrowii)</i> Tatarian honeysuckle <i>(Lonicera tatarica)</i> showy bush honeysuckle <i>(Lonicera x bella)</i> common buckthorn <i>(Rhamnus cathartica)</i> glossy buckthorn <i>(Frangula alnus)</i> | Fruit and Seeds  | Prior to fruit/seed ripening Seedlings and small plants <ul style="list-style-type: none"> ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants <ul style="list-style-type: none"> ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn. |
| | | After fruit/seed is ripe Don't remove from site. <ul style="list-style-type: none"> ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor. |
| oriental bittersweet <i>(Celastrus orbiculatus)</i> multiflora rose <i>(Rosa multiflora)</i> | Fruits, Seeds, Plant Fragments  | Prior to fruit/seed ripening Seedlings and small plants <ul style="list-style-type: none"> ▪ Pull or cut and leave on site with roots exposed. No special care needed. Larger plants <ul style="list-style-type: none"> ▪ Make a brush pile. ▪ Burn. |
| | | After fruit/seed is ripe Don't remove from site. <ul style="list-style-type: none"> ▪ 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. |

| Non-Woody Plants | Method of Reproducing | Methods of Disposal |
|--|---|---|
| <p>garlic mustard (<i>Alliaria petiolata</i>)</p> <p>spotted knapweed (<i>Centaurea maculosa</i>)</p> <ul style="list-style-type: none"> ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. <p>black swallow-wort (<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> ▪ May cause skin rash. Wear gloves and long sleeves when handling. <p>pale swallow-wort (<i>Cynanchum rossicum</i>)</p> <p>giant hogweed (<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. <p>dame's rocket (<i>Hesperis matronalis</i>)</p> <p>perennial pepperweed (<i>Lepidium latifolium</i>)</p> <p>purple loosestrife (<i>Lythrum salicaria</i>)</p> <p>Japanese stilt grass (<i>Microstegium vimineum</i>)</p> <p>mile-a-minute weed (<i>Polygonum perfoliatum</i>)</p> | <p>Fruits and Seeds</p>  | <p>Prior to flowering</p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and leave on site with roots exposed. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. <hr/> <p>During and following flowering</p> <p>Do nothing until the following year or remove flowering heads and bag and let rot.</p> <p>Small infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and leave on site with roots exposed. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). ▪ Monitor. Remove any re-sprouting material. |
| <p>common reed (<i>Phragmites australis</i>)</p> <p>Japanese knotweed (<i>Polygonum cuspidatum</i>)</p> <p>Bohemian knotweed (<i>Polygonum x bohemicum</i>)</p> | <p>Fruits, Seeds, Plant Fragments</p> <p>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.</p> | <p>Small infestation</p> <ul style="list-style-type: none"> ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn. <p>Large infestation</p> <ul style="list-style-type: none"> ▪ 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

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CLOSED DRAINAGE STRUCTURE LONG-TERM MAINTENANCE SHEET

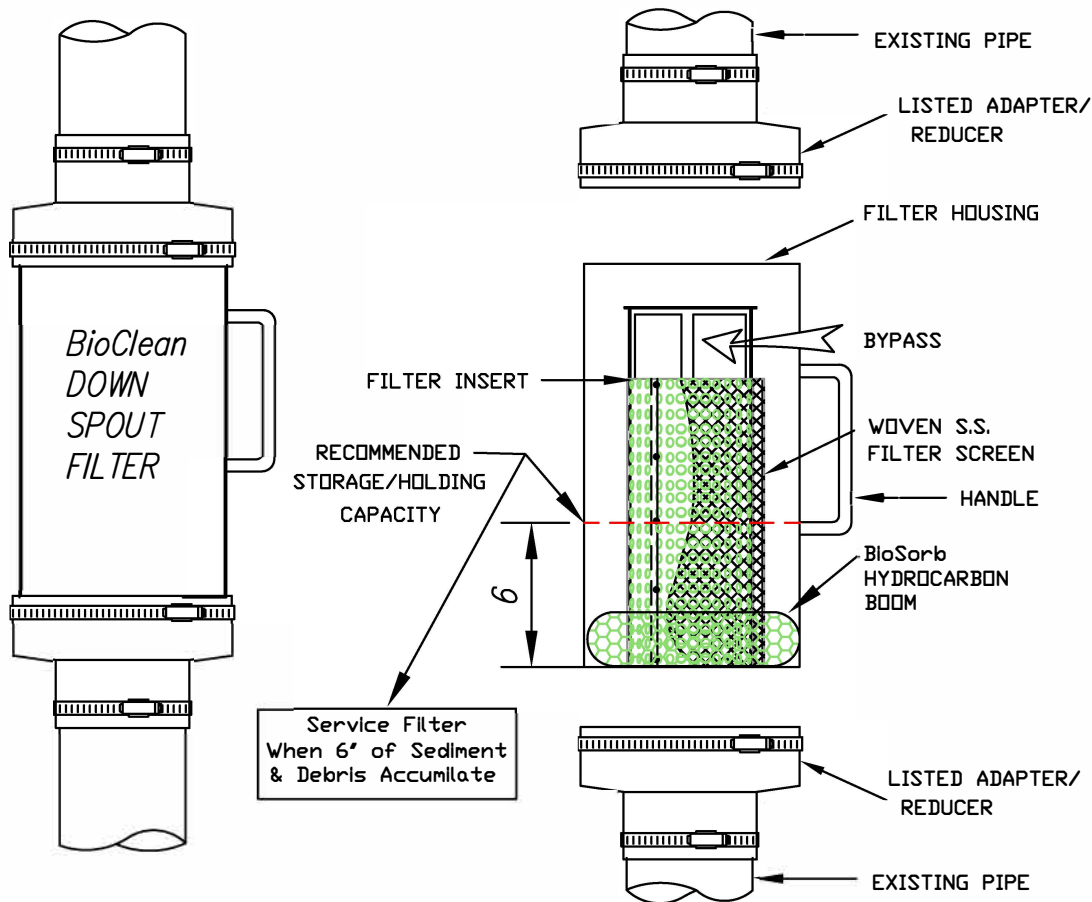
| INSPECTION REQUIREMENTS | | |
|--|--------------------|---|
| ACTION TAKEN | FREQUENCY | MAINTENANCE REQUIREMENTS |
| -Outlet Control Structures -Drain Manholes -Catch Basins | Every other Month | <i>Check for erosion or short-circuiting</i> <i>Check for sediment accumulation</i> <i>Check for floatable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

| MAINTENANCE LOG | |
|--|--|
| PROJECT NAME | |
| INSPECTOR NAME | INSPECTOR CONTACT INFO |
| DATE OF INSPECTION | REASON FOR INSPECTION <input type="checkbox"/> LARGE STORM EVENT <input type="checkbox"/> PERIODIC CHECK-IN |
| IS CORRECTIVE ACTION NEEDED? <input type="checkbox"/> YES <input type="checkbox"/> 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



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.

DETAIL OF PARTS

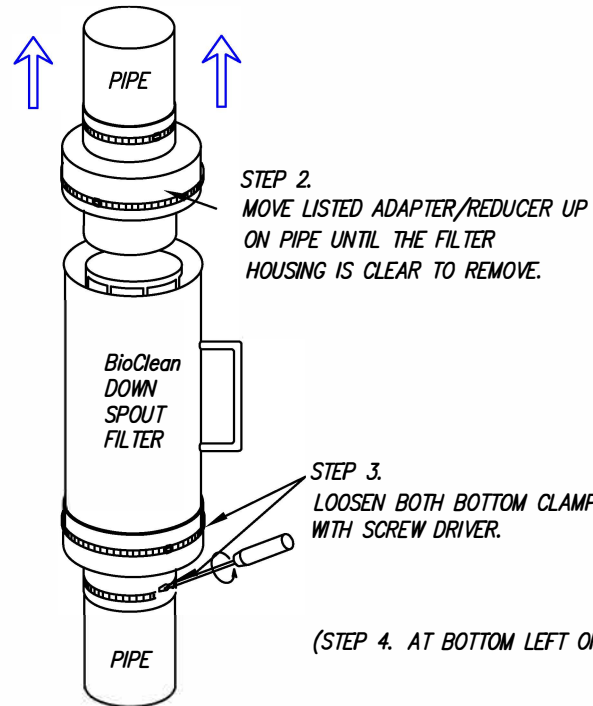
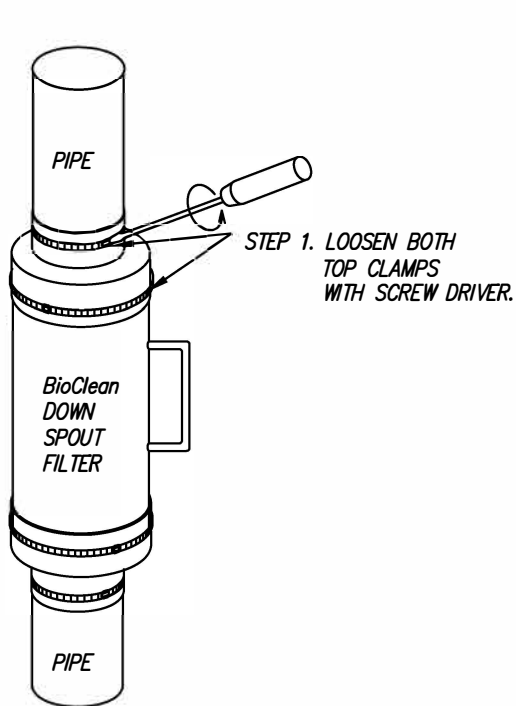


A Forterra Company

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



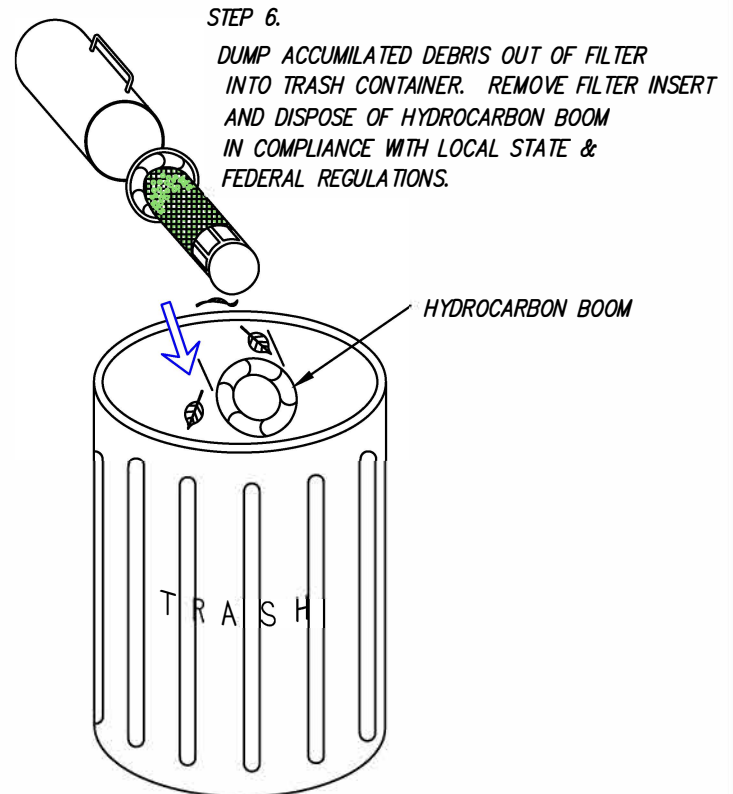
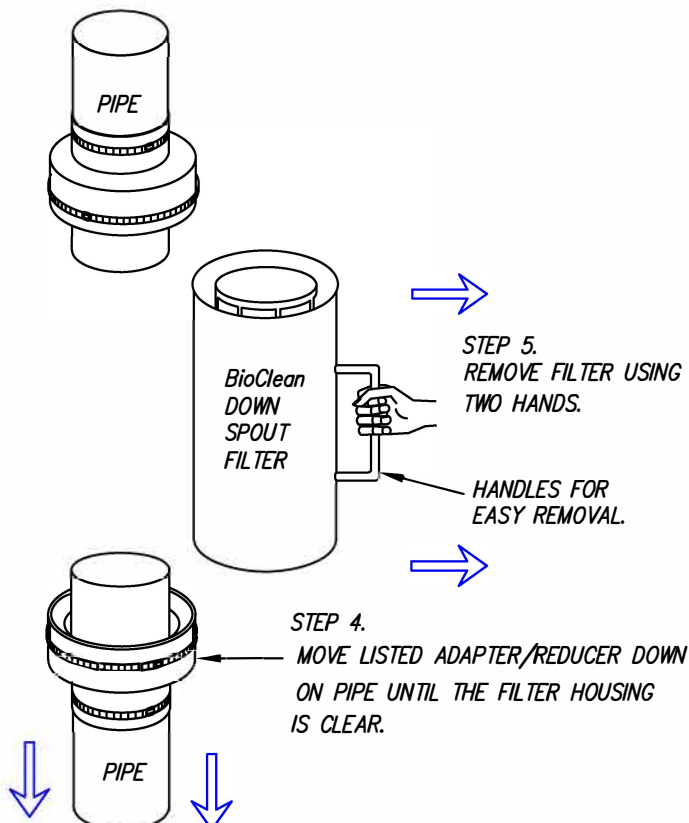
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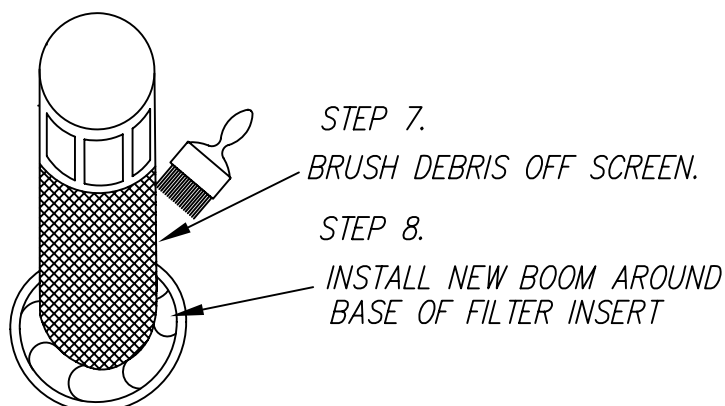


STEP 3. LOOSEN BOTH BOTTOM CLAMPS WITH SCREW DRIVER.

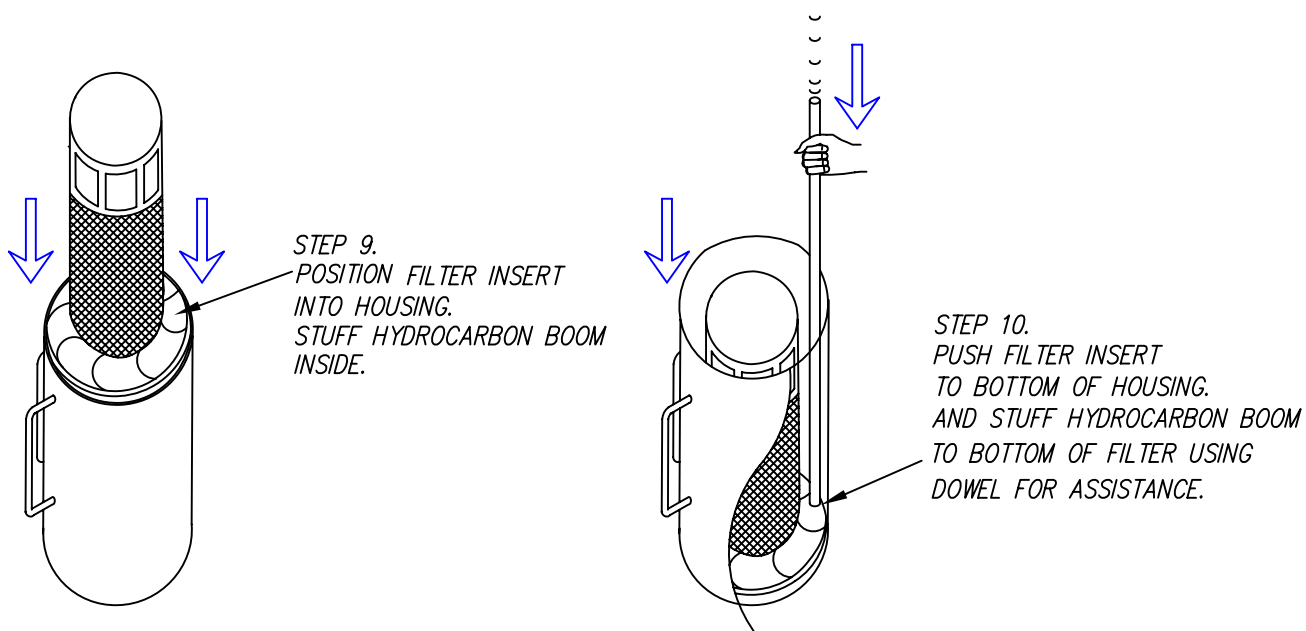
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CLEANING FILTER

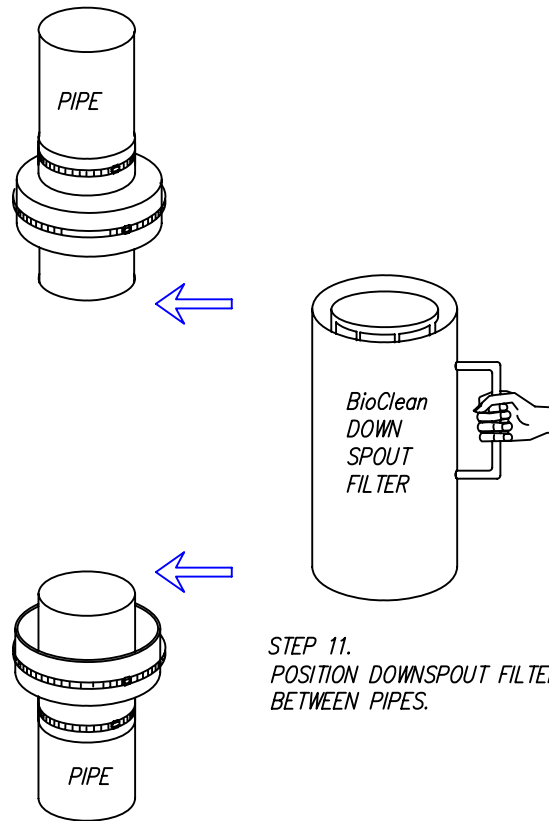




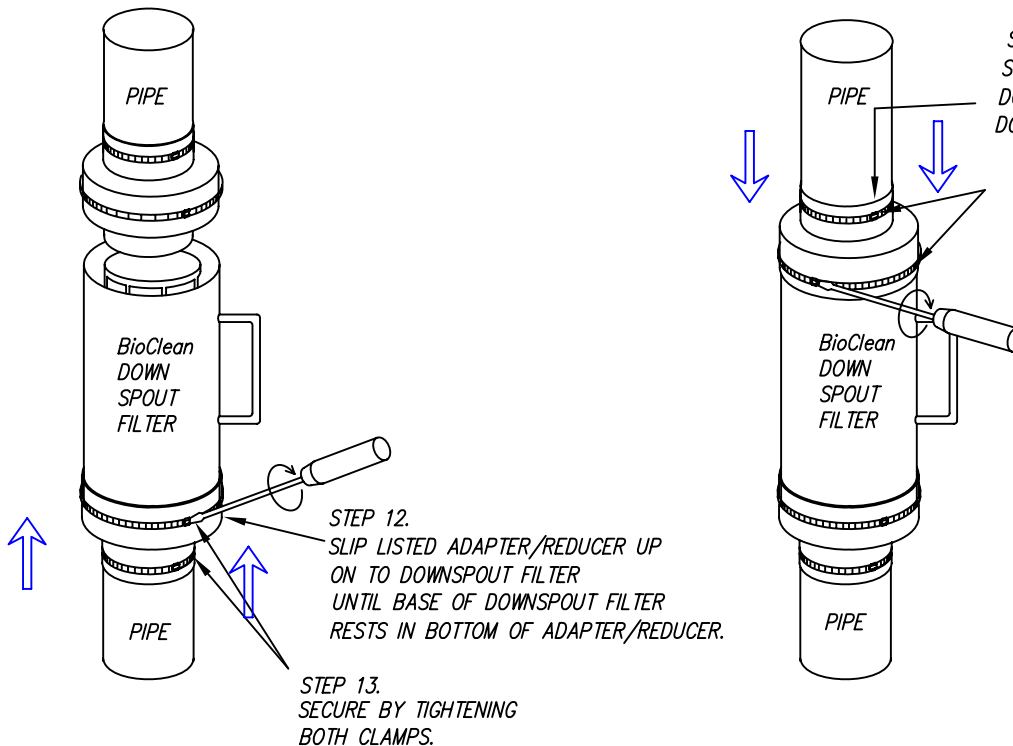
REPLACING FILTER INSERT



REPLACING FILTER

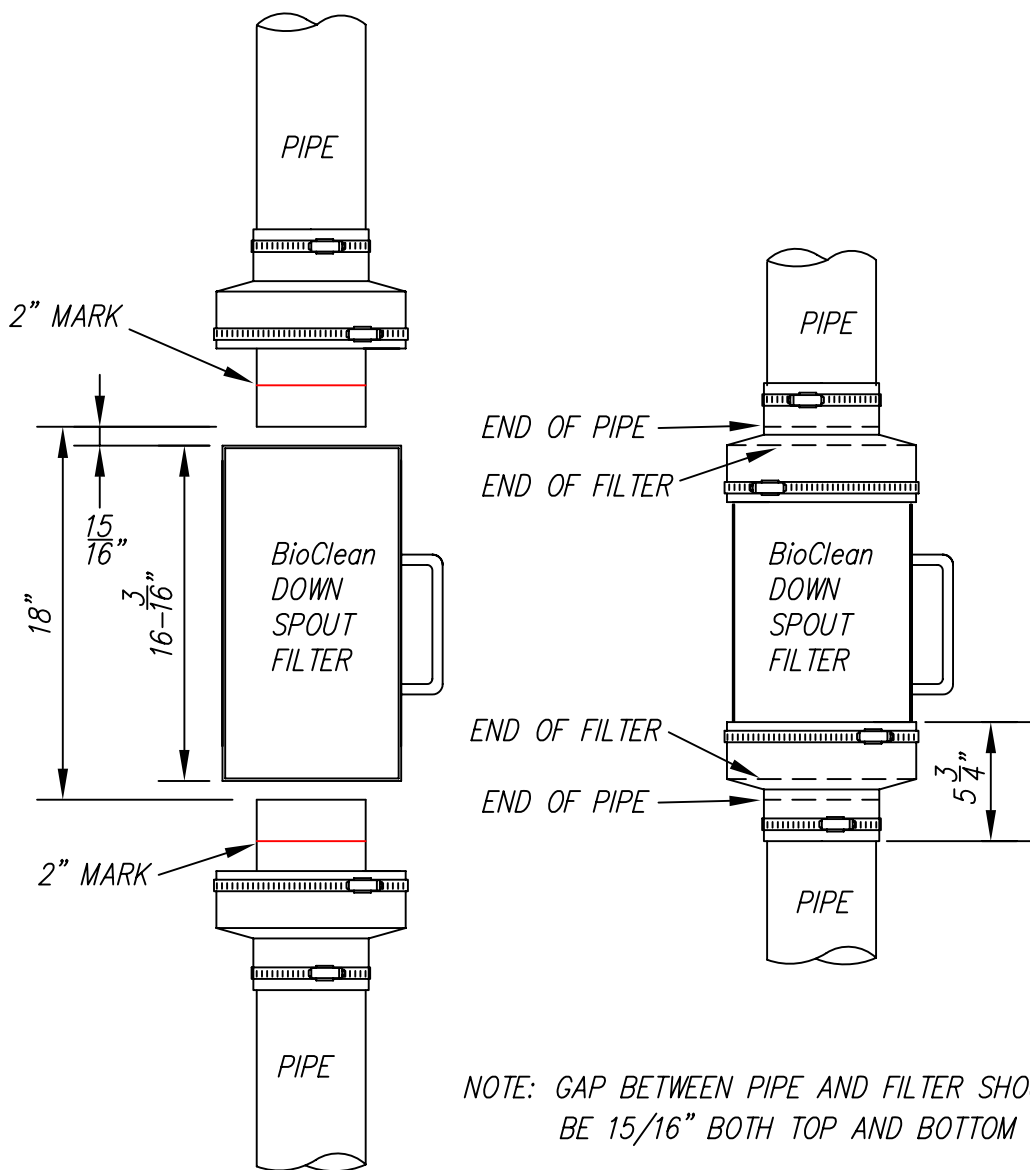


STEP 11.
POSITION DOWNSPOUT FILTER
BETWEEN PIPES.



APPROPRIATE INSTALLATION

FILTER CENTERED BETWEEN PIPES WITH EVEN GAPS ON TOP AND BOTTOM



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 <input type="checkbox"/> LARGE STORM EVENT <input type="checkbox"/> PERIODIC CHECK-IN |
| IS CORRECTIVE ACTION NEEDED? <input type="checkbox"/> YES <input type="checkbox"/> 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



**Company Responsible
for Maintenance:**_____

Contact:_____

Phone Number: _____

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