

# JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885  
603.772.4746 - JonesandBeach.com

May 14, 2021

Portsmouth Planning Board  
Attn: Dexter Legg  
1 Junkins Avenue, Suite 3<sup>rd</sup> Floor  
Portsmouth, NH 03801

**RE: Site Plan & Conditional Use Application  
3400 Lafayette Road, Portsmouth, NH  
Tax Map 297, Lot 11  
JBE Project No. 20737**

Dear Mr. Legg,

Jones & Beach Engineers, Inc., respectfully submits a Site Plan & Conditional Use Application on behalf of the applicant, Green & Company. The intent of this application is to construct a 50-unit multi-family residential development on Tax Map 297, Lot 11.

The following items are provided in support of this Application:

1. Completed Site Plan (submitted online).
2. Letter of Authorization.
3. Current Deed.
4. Test Pits.
5. Abutters List and Three (3) Mailing Labels each.
6. Tax Map.
7. Architectural Plans.
8. Two (2) Full Size Plan Sets Folded.
9. One (1) Half Size Plan Sets Folded.
10. Two (2) Drainage Analysis.

If you have any questions or need any additional information, please feel free to contact our office. Thank you very much for your time.

Very truly yours,  
**JONES & BEACH ENGINEERS, INC.**



Joseph A. Coronati  
Vice President

cc: Michael Green, Green & Company (via email)



# JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885  
603.772.4746 - JonesandBeach.com

August 24, 2021

Portsmouth Planning Board  
Attn: Dexter Legg  
1 Junkins Avenue, Suite 3<sup>rd</sup> Floor  
Portsmouth, NH 03801

**RE: TAC & Conservation Commission Comments  
3400 Lafayette Road, Portsmouth, NH  
Tax Map 297, Lot 11  
JBE Project No. 20737**

Dear Mr. Legg,

We have received approval from the Conservation Commission and TAC with certain conditions. We have revised the plans accordingly for the items we could modify and others may have to be conditions of approval. Original review comments are italicized, and we offer the following responses below:

TAC Approval Comments:

1. *Applicant will update community space area terminology to be consistent with Ordinance terminology.*  
**RESPONSE: Community space area terminology has been updated.**
2. *Trailhead connections and wayfinding signs will be included for residents on the eastern side of the development to access the recreational trails.*  
**RESPONSE: Trailhead signage has been added to the Sheet C2 at the two trail access locations.**
3. *Deeded public access will be provided to the proposed open space and undeveloped portion of the property that abuts city owned parcels.*  
**RESPONSE: Agreed**
4. *Water main sizes will be labeled.*  
**RESPONSE: Water main sizes have been labeled.**
5. *Applicant will provide written statement that demonstrates conformance with Article 7 of the City's Site Plan Review regulations.*  
**RESPONSE: Written statement from applicant that demonstrates conformance with Article 7 is provided with this submission.**



6. *Applicant will hire a 3<sup>rd</sup> party company to identify areas of ground water infiltration that can be eliminated from the local municipal sewer collection system. After agreement from the City on the targeted areas, the developer will need to permit and construct via whatever means are approved (repair/replace/recline) areas of the sewer successfully in order to create capacity for this development in the sewer system. The amount of infiltration to be removed must be a value equal or greater to two times the amount of water predicted from the development.*

**RESPONSE:** A third party company has been hired to identify areas of ground water infiltration that can be eliminated from the local municipal sewer collection system. We are working with DPW on this issue along with our site contractor. We understand that this may need to be a condition of any approval.

7. *Applicant will hire a third party to inspect all utilities and stormwater systems.*

**RESPONSE:** A third party will be hired to inspect all utilities and stormwater systems during construction.

8. *Applicant will provide a fire hydrant flow rate plan that shows acceptable pressure as determined by city DPW and Fire Department.*

**RESPONSE:** We have performed a hydrant flow test, which is attached, for water pressure determination. After doing the test, we are in the need of a booster pump.

Conservation Commission Approval Comments:

1. *The applicant will plant trees and other tall vegetation in the wetland buffer across from units 20-24 at the end of the proposed development to protect the wetland from light spillover.*

**RESPONSE:** The Landcape Plan has been revised to include the above request.

2. *The applicant shall folloe NOFA standards for the landscaping on the site.*

**RESPONSE:** Agreed.

3. *The Condominium docs should include maintenance for the landscaping and plants proposed for the wetland buffer.*

**RESPONSE:** The Condominium docs will include the above and this should be a condition of any approval.

4. *The applicant shall provide signage for the wetland buffer designating its location and requiring all dogs to be leashed.*

**RESPONSE:** Signs stating the above have been added at the two trail access locations on the site.

5. *The applicant shall provide a three bar split rail fense at the wetland side of the proposed trail behind the buildings in the wetland buffer.*

**RESPONSE:** The split rail fence along the trail behind the units has been relocated to be on the wetland side of the trail.



6. *The applicant shall have the snow removal company staff attend the Green Snow Pro Trainings.*

**RESPONSE: The above note is already on the plans as Note #20 on Sheet C2.**

7. *The applicant shall include language in the condominium docs prohibiting the use of salt.*

**RESPONSE: The Condominium docs will include the above.**

8. *Drainage plan TR1 shall be corrected to accurately depict the contributing area for storm water.*

**RESPONSE: The TR1 plan has been revised to show the revised drainage areas.**

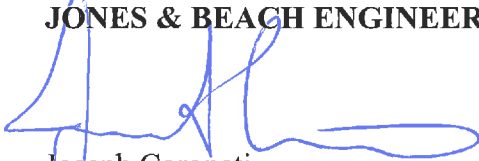
The following is provided in support of this letter:

1. Two (2) Full Size Plan Sets.
2. One (1) Half-Size Plan Set.
3. Fire Flow Test Results.
4. Building Renderings.
5. Color Site Plan.
6. Two (2) Revised Drainage Analysis.

Thank you very much for your time. If you have any questions, or need further assistance, please contact our office.

Very truly yours,

**JONES & BEACH ENGINEERS, INC.**



Joseph Coronati  
Vice President

cc: Michael Green, Green & Company (via email)  
John Kuzinivich, Esq (via email)  
John Bosen, Esq (via email)  
Gregg Mikolaities, consultant (via email)  
Jamie Long, GZA (via email)  
Lindsay White, GZA (via email)  
Tom Severino (via email)  
Dave Desfosses, Portsmouth DPW (via email)  
Peter Britz, Portsmouth Con Comm (via email)



# WATER FLOW TEST REPORT

HYDRANT & LOCATION: 3400 Lafayette Road, Portsmouth, NH

DATE: 6/24/2021

TEST BY: DM Burns Security & Portsmouth Water

TIME OF DAY: 2:45PM

MIN. OF FLOW:           

WATER SUPPLIED BY: Portsmouth Water

PURPOSE OF TEST: Sprinkler System Design Criteria

## DATA

FLOW HYDRANT(S)

A1

A2

A3

SIZE OPENING:

2.5

COEFFICIENT:

0.9

PITOT READING:

17

GPM:

700

0

0

TOTAL FLOW DURING TEST:

700

GPM

STATIC READING:

42

PSI

RESIDUAL:

22

PSI

RESULTS: AT 20 PSI RESIDUAL

737

GPM

AT 0 PSI

1045

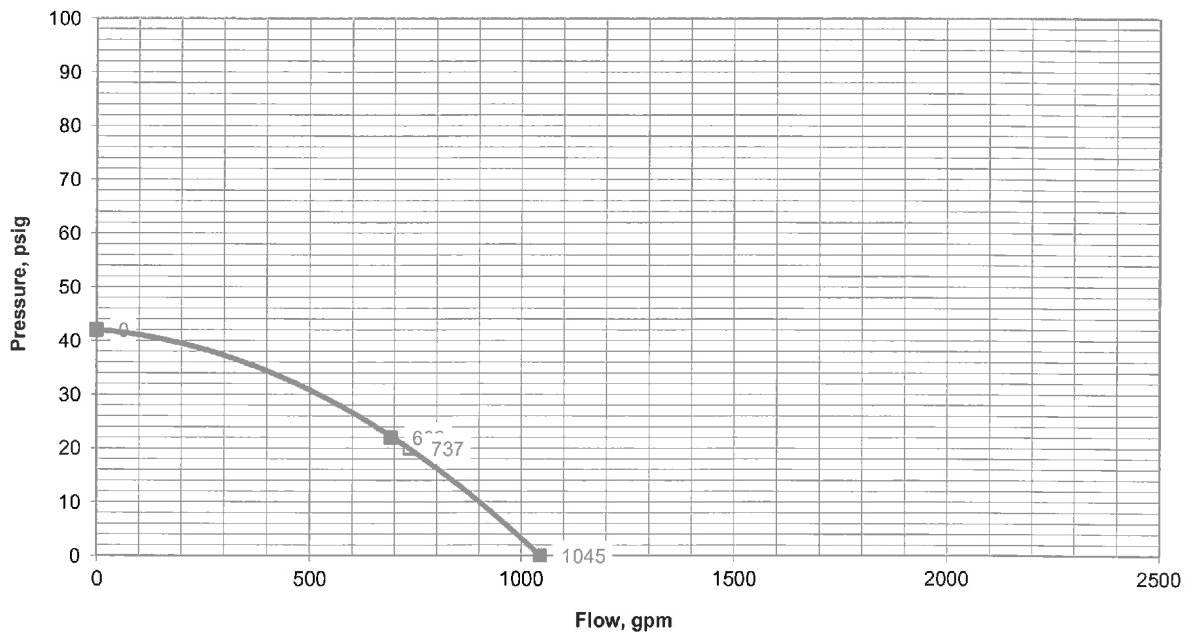
GPM

ESTIMATED CONSUMPTION:

GAL.

REMARKS:





# **Stormwater Management Regulations Review**

**Residential Condominiums  
Tax Map 297, Lot 11  
3400 LaFayette Road  
Portsmouth, NH 03801**

**Prepared for:**

**Green & Company  
11 Lafayette Road  
PO Box 1297  
North Hampton, NH 03862**

**Prepared by:  
Jones & Beach Engineers, Inc.  
85 Portsmouth Avenue  
P.O. Box 219  
Stratham, NH 03885  
(603) 772-4746  
August 25, 2021  
JBE Project No. 20737**



Green and Company proposes to construct a 50-unit multi-family residential development on a  $\pm 45.25$ -acre parcel of land located on the west side of Lafayette Road (Route 1) in Portsmouth, NH. The existing site is currently used for logging operations and has a gravel access drive and cleared areas along with multiple small storage sheds. The existing sheds are to be removed so the new development can occur. The intent of this document is to demonstrate that the proposed Stormwater Management and Erosion Control Plan (SMECP) meets the requirements of Article 7 of the City of Portsmouth's Site Plan Review Regulations. Each regulation of Article 7 is listed below with the way that we are conforming to it in bold.

7.1 Low Impact Development (LID): Applicants shall incorporate Low Impact Development (LID) site planning and design practices to the maximum extent practical (MEP) to reduce stormwater runoff volumes, maintain predevelopment site hydrology, and protect water quality in receiving waters. LID practices may include site design techniques (e.g., maintenance of vegetated buffers, minimizing of disturbance footprint) and structural measures to promote infiltration such as porous pavement, rain gardens or the capture / reuse of stormwater to reduce the stormwater volume discharged from the site. If LID practices are not proposed, the applicant shall fully demonstrate in writing why these practices are not feasible.

**A wet pond, a rain garden (bioretention area) as well as roof drip edges will be used for stormwater treatment. Infiltration will be achieved within the bioretention system and the roof drip edges to reduce the stormwater volume to the maximum extent possible.**

7.2.1 Water bodies, watercourses, and wetlands shall be preserved in their existing condition whenever possible.

**There is an existing 40,185 square foot disturbance that is proposed to be removed from the 100' Wetland Buffer which will improve the overall functioning of the buffer. All proposed disturbance within the 100' Wetland Buffer will be temporary.**

7.2.2 All regulated substances shall be stored, transported, disposed or transferred in accordance with the rules for Best Management Practices for Groundwater Protection of the New Hampshire Department of Environmental Services (NH DES).

**This is understood and regular inspection will occur throughout the construction process to ensure that such regulations are adhered to.**

7.2.3 The proposed site development and use shall not adversely impact either the quality or quantity of groundwater available to surrounding properties or to public water supply systems or adjacent or downstream surface waters used for aquatic habitat support, aesthetic and/or recreational purposes.

**Groundwater recharge will be accomplished through the use of a bioretention area and house roof drip edges.**

7.2.4 For any on-site water system supplying 20,000 gallons per day (gpd) or more, evidence presented by a qualified hydrologist shall be sufficient to reasonably conclude that there will be no adverse effect on other public or private groundwater sources.



**This is not applicable as the proposed water will be accessed from the existing watermain within Lafayette Road.**

7.2.5 The development shall meet all applicable federal, state, and City regulations, statutes, ordinances, and standards regarding protection of water quality and stormwater management.

**This project will be subject to NHDES AOT permitting and regulation and will require an EPA SWPPP and thus construction will proceed in accordance with NHDES and EPA regulations.**

7.2.6 Stormwater treatment BMPs shall be designed to optimize nitrogen removal based on currently approved design standards and removal efficiencies listed in either the NH Stormwater Manual, as amended, Appendix F of the EPA NH MS4 Permit or as published by the UNH Stormwater Center.

**The bioretention system is a high-efficiency, planted system which is optimized for nitrogen and TSS removal.**

7.2.7 Projects that involve replacement or adding new conveyance infrastructure that will connect to City infrastructure and/or are located on City property with a design life beyond 2050 (e.g. closed drainage pipes, bridges, culverts, etc.), shall incorporate applicable recommended flood protection measures and sizing design guidance contained in the NH Coastal Flood Risk Summary: Part II: Guidance for Using Scientific Projections 2020 (as amended). The determination of applicability for such measures and design considerations shall be based on review by the City Engineer.

**As specified, rainfall estimates used for design have been increased by 15% as the project is located in the coastal / Great Bay region.**

### Section 7.3 Wellhead Protection Areas

- 1) The application for Site Plan Review shall indicate whether the proposed development is located in a wellhead protection or aquifer protection area, and such determination shall be approved by the Director of the Department of Public Works.

**The project is not located in a Wellhead Protection Area.**

7.4 Stormwater Management and Erosion Control Plan (SMECP): The applicant shall submit a Stormwater Management and Erosion Control Plan. The Planning Board shall approve the Stormwater Management and Erosion Control Plan if it complies with the requirements and objectives of these Site Plan Review Regulations 44 November 2020 regulations. Such approval shall be a component of the overall subdivision or site plan approval. If disapproved, the Planning Board shall furnish the applicant with a list of plan deficiencies and procedures for filing a revised plan. The Planning Board may require a third-party review by a qualified professional consultant of any Stormwater Management and Erosion Control Plan prepared under these regulations at the applicant's expense.

**An SMECP has been submitted.**

7.4.1 Narrative that describes the proposed development activity, the proposed changes in land use, land cover and impervious areas, the anticipated construction period and timing, project start and completion dates, sequence and duration of grading and construction activities, sequence and timing of



installation and/or application of soil erosion and sediment control measures as well as sequence for final stabilization of the project site.

**This is included except that project start and completion dates are unknown on this time. A detailed construction sequence is included on Sheet E1 of the plan set.**

7.4.2 Description of onsite and adjacent wetlands, streams and other water bodies or natural resources and the methods used to identify these resources.

**Such descriptions are included on sheet C1 – Existing Conditions Plan.**

7.4.3 Description of Low Impact Development (LID) practices and other protective measures to limit impacts to adjacent natural resources and water bodies.

**As previously mentioned, low impact solutions including a wet pond and bioretention area will be utilized.**

7.4.4 Description of any applicable buffer setbacks, steep slopes, existing mature vegetation, unique habitat conditions, 100-year floodplain limits, manmade and natural drainage conveyances and constraints and known water quality concerns based on local data or the NHDES 303(d) list.

**This project is subject to the 100' Wetland Buffer per the City of Portsmouth. A wildlife habitat assessment was undertaken as required for the AOT Permit and was submitted to the NH Department of Fish & Game for review. The subject parcel is not located within the 100-year floodplain. The drainage study accounted for manmade and natural conveyances and constraints. No known water quality concerns exist.**

7.4.5 Description of existing drainage patterns, receiving waterbodies or drainage infrastructure and soil types for recharge potential.

**The drainage study incorporated analysis of this information, which was used for the design and this information is listed in the SMECP.**

7.4.6 Methods and assumptions used to calculate pre-and post-development runoff volume, peak discharge, and discharge velocity for the specified design storms.

**The analysis was performed using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System. Extreme precipitation estimates were developed by the Northeast Regional Climate Center (NRCC) and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.**

7.4.7 Description of the procedures that will be used to store and/or dispose of solid waste during construction such as demolition materials, concrete washout material litter, hazardous liquids such as equipment fuel, as well as sanitary waste that have the potential to cause adverse impacts to water quality.

**These items will be spelled out in the Stormwater Pollution Prevention Plan (SWPPP) that will be developed for EPA before construction begins.**



7.4.8 Where proposed changes are anticipated within mapped limits of the 100- year floodplain, provide hydrologic and hydraulic analysis to show no net increase in flood elevations for the 100-year flood.

**This project is not located within the 100-Year floodplain.**

7.4.9 Description of the proposed erosion control and stormwater treatment measures, dewatering methods, including calculations of stormwater runoff rates and volumes and BMP sizing, a demonstration of no downstream impacts, inspection and maintenance procedures including discussion of roles and responsibilities and contingency measures for extreme precipitation events during construction.

**The specified information is included in the SMECP.**

7.4.10 Calculations for any proposed infiltration measures, including estimated infiltration rates based on test pit information and an estimate of the seasonal high-water table elevation. The calculations should account for frozen ground conditions, or when the devices may not function at their optimal design.

**The specified information is included in the SMECP.**

7.4.11 Any other specific study, calculation, or investigation as requested by the Planning Board (e.g. sea level rise estimates per other Regulations).

**The SMECP includes the calculations and studies that are required per applicable Town and State regulations.**

7.4.12 The SMECP and drainage plans shall be certified by a licensed professional engineer, registered in the State of New Hampshire.

**The SMECP and drainage plans are certified by a licensed professional engineer, registered in the State of New Hampshire.**

7.4.13 Description of the proposed erosion control inspection and maintenance procedures including planned frequency, reporting, roles and responsibilities, contact information and contingency plans for extreme weather events.

**This information is included in the Operations and Maintenance Manual.**

7.4.14 A long-term post-construction stormwater BMP maintenance plan that describes inspection and maintenance procedures for all post-construction stormwater control measures including a description of the responsible party that will perform the long-term maintenance, reporting procedures and process for corrective actions.

**This information is included in the Operations and Maintenance Manual.**



7.4.15 Description of the procedures for removing temporary erosion control measures and removal of accumulated sediment captured by such measures.

**This information is included on Sheet E1 of the plan set.**

7.4.16 For projects draining to inland wetlands and water bodies, the SMECP shall include a description of winter maintenance practices including any onsite salt storage and handling practices, snow storage and Best Management Practices that will be deployed to minimize the use of road salt.

**Snow storage locations are shown on Sheet C2 and will drain toward stormwater treatment practices. SnowPro certified personnel will be utilized – see Note #20 on Sheet C2. Additionally, the site owner and future owners and assigns shall adhere to the Salt Minimization Plan developed as a requirement for issuance of the AOT Permit.**

Section 7.5 Construction Erosion Control Design Standards: The following standards shall be applied in selecting and designing appropriate stormwater management and erosion control measures during the construction phase. If a Stormwater Pollution Prevention Plan (SWPPP) has been prepared to comply with the EPA Construction General Permit (CGP), relevant portions of the SWPPP can also be utilized to satisfy the required SMECP contents, provided the listed required elements are included in the SWPPP.

**A SWPPP will be required and this enumerates some required erosion control measures.**

7.5.1 The selection, sizing, installation and maintenance of all erosion and sediment control measures shall be consistent with the design guidance set forth in the NH Stormwater Manual, Volume 3 (as amended).

**Mulch berms in lieu of silt fence as well as rip rap, erosion control blankets on slopes, plantings, and a stabilized construction entrance as well as a schedule as specified on Sheet E1 are specified.**

7.5.2 Whenever practical, natural vegetation (not included invasive species) shall be retained, protected and/or supplemented. Clearing of any vegetation shall be done in a manner that minimizes soil erosion. Vegetated areas to be retained should be clearly marked and protected using construction fencing or similar means.

**Only the areas that must be cleared in order for the site development and associated grading, drainage, and utility construction to take place will be cleared. The instructions on Sheet E1 are intended to reduce the potential for erosion during site clearing and grading. Mulch berm will be used around the limits of site disturbance to protect existing vegetated areas.**

7.5.3 Soil disturbance shall be avoided within established buffer setbacks as established by the City Wetland Protection section of the Zoning Ordinance.

**Disturbance within the 100' Wetland Buffer will be avoided to the extent practicable. A large swath of existing disturbance within the buffer will be removed. Additional disturbance will be for the installation of vegetated swales for the stormwater treatment systems, however these are temporary impacts.**



7.5.4 The area of disturbance shall be kept to a minimum through innovative site design and treatment methods that preserve and protect existing onsite and adjacent natural resources to the greatest extent practical.

**An approach to stormwater management is being taken that will keep the area of disturbance to the minimum practicable.**

7.5.5 Construction site disturbance should be phased to disturb only the amount of area needed to accommodate each phase of development and limit the amount of exposed soil area especially during winter months.

**See Note #1 under “Temporary Erosion Control Notes” on Sheet E1. Although this type of project cannot truly be phased, the lowest smallest practical area of land will be exposed at any one time.**

7.5.6 Adequate temporary solid waste and sanitary waste disposal facilities shall be maintained onsite during the construction period.

**These items will be among those checked during the bi-weekly EPA SWPPP inspections throughout the construction process.**

7.5.7 Adequate construction stone access pads shall be installed and maintained at the site entrance and exit locations to prevent mud and sediment from being tracked on to pavement.

**A 50' long stone construction entrance is shown on Sheet C3.**

7.5.8 An onsite pre-construction meeting shall be held with the City Engineer or designated representative prior to initiating earth moving activities and after perimeter erosion control measures, protective fencing, waste disposal and construction access pads have been installed.

**See Note #1 under “Construction Sequence” on Sheet E1.**

7.5.9 Disturbed areas shall be either temporarily or permanently stabilized by measures consistent with the guidelines included in the NH Stormwater Manual. In areas where final grading has not occurred, temporary stabilization measures shall be implemented as soon as practicable but no later than (7) calendar days from the initial disturbance or as requested by the City Engineer. Disturbed soil areas that have achieved final grading shall be permanently stabilized within (3) calendar days after final grading.

**See Note #6 under “Temporary Erosion Control Notes”, and Notes #19 and #20 under “Construction Sequence” on Sheet E1.**

7.5.10 Upgradient surface runoff from undisturbed areas shall be diverted away from disturbed areas where feasible or carried non-erosively through the project area. Integrity of downstream drainage systems shall be maintained.

**The site grading as well as the use of erosion control blankets and rip rap helps to achieve this.**



7.5.11 Natural drainage patterns and conveyances, including intermittent streams, swales, and drainage ditches shall be maintained to the extent practical to convey runoff from the project area. Perimeter controls shall not be placed within wetland buffer areas or intermittent and perennial stream channels.

**Natural drainage patterns are being maintained. The restoration of the wetland buffer will allow natural drainage patterns to occur better than in the existing condition. Perimeter controls are located outside of the wetland buffer areas, except around the wetland buffer temporary disturbance areas.**

7.5.12 Winter stabilization measures shall be deployed on disturbed areas that will remain idle over the winter period as described in the NH Stormwater Manual, as amended.

**See Notes #7, #8, and #9 under “Temporary Erosion Control Notes” on Sheet E1.**

7.5.13 All erosion and sediment control measures shall be designed and installed in accordance with guidelines including in the NH Stormwater Manual, as amended.

**Erosion and sediment control measures have been designed and will be installed in accordance with the NH Stormwater Manual guidelines.**

7.5.14 All erosion control measures and related drainage ways shall be routinely inspected and maintained by a qualified professional to ensure measures remain in functioning condition until final site stabilization is accomplished.

**The inspection schedule required per the EPA CGP will be adhered to.**

7.5.15 All temporary erosion and sediment control measures shall be removed after final site stabilization.

**All temporary erosion and sediment control measures will be removed after final site stabilization. See Note #21 under “Construction Sequence” on Sheet E1.**

7.6.1.1 Adequate provisions shall be made to retain natural and existing flow patterns and maintain existing groundwater recharge volumes to the maximum extent feasible, where appropriate, and/or retain, treat and/or potentially reuse the stormwater generated on the site.

**All stormwater runoff from proposed impervious surfaces is proposed to be treated through the use of a wet pond, a bioretention area, and roof drip edges that are designed per NHDES standards to be able to treat the runoff directed toward it. The bioretention area and roof drip edges will infiltrate the water for groundwater recharge.**

7.6.1.2 Efforts shall be made to utilize methods that disconnect and/or reduce the amount of effective impervious area including, but not limited to, infiltration trenches, dry wells, bioretention areas, filter strips, permeable pavement, and cisterns.

**The wet pond, bioretention area, and roof drip edges have been used to disconnect and/or reduce the amount of effective impervious area. These low impact solutions are proposed in order to treat stormwater to a manner acceptable by both the NH DES AoT Bureau and the City of Portsmouth.**



7.6.1.3 Applicants shall demonstrate why on-site infiltration approaches are not possible or adequate before proposing the use of conventional systems that rely on collection and conveyance to remove runoff from the site.

**Infiltration practices are proposed for this site.**

7.6.1.4 All proposed stormwater treatment practices shall be adequately sized to treat the Water Quality Volume (WQV) or Water Quality Flow (WQF) in order to minimize pollutant discharges and be properly maintained in accordance with NH Administrative Code PART Env-Wq 1507.03 “Pollutant Discharge Minimization Requirements” and PART Env-Wq 1707.03, respectively (or as revised / renumbered).

**All proposed stormwater treatment practices are be adequately sized to treat the Water Quality Volume (WQV) or Water Quality Flow (WQF).**

7.6.1.5 Where vegetated areas are used to control and treat stormwater, such areas shall be planted with appropriate non-invasive groundcover, shrubs and/or other plantings sufficient to prevent soil erosion and to promote proper treatment of stormwater.

**The Landscape Plans contain the descriptions and locations of the proposed plantings.**

7.6.1.6 Measures shall be taken to control the post-development peak rate of runoff so that it does not exceed pre-development runoff for the 2, 10, 25, and 50- year, 24-hour storm event. Rainfall amounts for these events shall be based on local rainfall data using the extreme precipitation table provided by the Northeast Regional Climate Center or as otherwise required by the NHDES Alteration of Terrain requirements, if applicable. Where stormwater will discharge directly to tidal waters, the Planning Board may waive peak flow control requirements provided the Applicant can demonstrate minimal risk of flooding or increased erosion as result of the discharge, adequate onsite stormwater treatment is provided for water quality purposes and the City Engineer concurs with the waiver request.

**As demonstrated in the drainage report, the post-development peak rate of runoff is decreased from the pre-development peak rate of runoff in the specified storms. Rainfall estimates are based on the Northeast Regional Climate Center and amounts were increased by 15% in accordance with Alteration of Terrain requirements for coastal and Great Bay region communities.**

7.6.1.7 Site development shall comply with the requirements of the Flood Plain District as regulated by the Zoning Ordinance.

**The subject parcel is not located in the 100-Year Flood Plain.**

7.6.1.8 BMP designs shall include appropriate separation distances from the seasonal high-water table elevations, where appropriate, and as specified in the New Hampshire Stormwater Manual (as amended).

**Appropriate separation to the seasonal high-water table has been accomplished.**



7.6.1.9 Salt storage areas shall be covered using permanent or semi-permanent measures and loading/offloading areas shall be located and designed to not drain directly to receiving waters and be maintained with good housekeeping measures in accordance with NHDES guidance documents.

**Salt storage areas are not proposed on site at this time.**

7.6.1.10 Snow storage areas shall be located such that no direct discharges to receiving waters are possible from the storage site. Runoff from snow storage areas shall enter treatment areas to remove suspended solids and other contaminants before being discharged to receiving waters or preferably be allowed to infiltrate into the groundwater.

**The proposed snow storage shown on Sheet C2 will all drain toward stormwater treatment practices where it will be treated.**

7.6.1.11 The applicant shall demonstrate that there is sufficient on- and off-site downstream channel or system capacity to carry the stormwater run-off volume and flow without adverse effects, such as flooding and erosion of stream banks and shoreland areas.

**We are decreasing the peak rate of runoff in all analyzed storms and rip rap outlet protection will be specified at all outfalls. The potential for flooding or erosion will be reduced compared to the existing condition.**

7.6.1.12 Stormwater treatment BMPs involving excavation or other site alterations shall be located outside of protected wetland buffer areas as defined in the City's Zoning Ordinance Article 10 -- Environmental Protection Standards unless approved under a Conditional Use Permit as outlined Article 10, as amended.

**All the stormwater BMP's are located outside the protected wetland buffer.**

7.6.1.13 In addition to the requirements of this Article, all developments subject to Site Plan Review shall comply with the City's Regulation of Discharges into the Stormwater Drainage System Ordinance.

**We are not proposing any direct connection to the City's stormwater drainage system.**

7.6.1.14 The applicant shall submit documentation demonstrating how and who will maintain stormwater treatment devices post-development.

**This is clarified in the Stormwater Operations and Maintenance Manual.**

7.6.1.15 Property owners of new development projects that will add new paved areas shall minimize their salt use through appropriate measures including hiring Green SnowPro certified operators for winter maintenance.

**Green SnowPro personnel will be utilized. See Note #19 on Sheet C2 and also within C.2(a) of the O & M Manual..**

7.6.2.1(a) Retain or treat stormwater runoff before discharged to a surface water or the MS4 system by one of the following: i. Adequately size and install BMPs that are designed to retain the Water Quality Volume from the total post-construction impervious area calculated in accordance with N.H. Code



Administrative Rules Part Env-Wq 1504.10, OR ii. Include BMPs designed to remove 80% of the average annual Total Suspended Solids (TSS) load and 50% of the average annual Total Nitrogen (TN) load generated from the total post-construction impervious area.

**The BMP's are designed and sized to treat the Water Quality Volume.**

7.6.2.1(b) Applicants shall provide details on the proposed BMPs in the SMECP including type, location, sizing and related calculations that demonstrate both the Basic and Enhanced Stormwater treatment standards will be met and the export of TSS and nutrients from the site have been minimized to the maximum extent practical given the proposed use and the characteristics of the site.

**Construction details are included in the plan set and within the SMECP and are designed to meet applicable stormwater treatment standards per the approved sizing parameters accepted by NH DES.**

7.6.2.1(c) Runoff from new development shall meet the anti-degradation provisions of the state water quality standards (Env-Wq 1700) that require that no additional pollutant loads shall contribute to existing water body impairments.

**There are no existing impaired water bodies within the vicinity of the site.**

7.6.2.1(d) Proposed projects that will drain to inland wetlands and water bodies and will create additional roadway or ten (10) or more additional parking spaces, the Applicant shall develop a winter maintenance plan that describes any onsite storage and handling of road salt, anticipated snow storage areas, and efficient deicing practices that will limit the amount of road salt used including the use of Green SnowPro Certified Operators

**Green SnowPro Certified Operators will be used, snow storage areas are shown on the plan, and a Salt Minimization Plan was developed as required for the Alteration of Terrain Permit.**

7.6.2.2 Redevelopment Projects: Redevelopment refers to any proposed development activity subject to Site Plan Review on an existing parcel where 40% or more of its developable land is comprised of impervious surfaces. Stormwater from the disturbed portion of the redevelopment site shall be treated by one of the following techniques, listed in order of preference: (a) Implement LID or stormwater treatment BMPs that will disconnect and/or treat at least 30% of the existing impervious cover and 100% of any additional proposed impervious surfaces or paved areas preferably using filtration and/or infiltration practices; or (b) Implement LID or stormwater treatment measures to disconnect or treat at least 60% of the entire developed area.

**This does not apply as less than 40% of the parcel is covered by impervious surface in both the existing and proposed conditions.**

7.6.3 Additional Pollutant Tracking and Accounting Program (PTAP) Submittal Requirements

**The required information will be submitted to the PTAP database before final approval.**

7.6.4 Responsibility for Installation and Construction



**This section was reviewed and the required information is provided in the Stormwater Operations and Maintenance Manual.**

7.6.5 Inspection and Maintenance Plans: The applicant shall develop and execute an enforceable inspection and maintenance plan for both erosion control measures and permanent stormwater treatment measures to maintain their effectiveness for the duration of their useful life. The I&M Plan shall contain relevant protective covenants or land preservation commitments with a long-term agreement that specifies who will be responsible for inspecting and maintaining the long-term integrity and the stormwater BMP functions and protected area. The I&M Plan shall be provided to the Planning Board as part of the application review process prior to issuance of any local permits for land disturbance and construction activities. The Plan shall include the following items at a minimum:

a) This agreement will identify the Owner/ Operator and their successor that will be responsible for perform the inspections and maintenance and the ability to access these BMPs including all maintenance easements required to access and inspect the stormwater treatment practices, and to perform routine maintenance as necessary to ensure proper functioning of the stormwater system.

**This information is included in the Inspections and Maintenance Manual.**

b) During the construction period, inspections shall be conducted at least once every seven (7) calendar days or once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inch or greater.

**This is a standard requirement of the EPA SWPPP and will be adhered to during construction.**

c) Permanent Stormwater BMPs shall be inspected annually following post-construction.

**Instructions for inspections of permanent stormwater BMPs are included in the Inspections and Maintenance Manual.**

d) The operations and maintenance plan shall specify the parties responsible for the proper maintenance of all stormwater treatment practices.

**This information is included in the O&M Manual.**

e) The approved plan shall be incorporated into the agreement of the property on which such measures are located and recorded at the Rockingham County Registry of Deeds. The narrative shall be in the form of a typical Development agreement, or as otherwise set forth by the Planning Board.

**The required documents will be recorded after approval.**

7.6.5.2) Inspection reports are to be filed on-site in a location easily accessible to a City Engineer.

**Inspection reports will be filed on-site in a location easily accessible to a City Engineer.**

7.6.5.3) If the Applicant is unable to adequately provide the required inspection and maintenance activities during construction, the City may require additional escrow funding to be used by either the Applicant or the City solely to repair, replace and/or maintain the required measures.

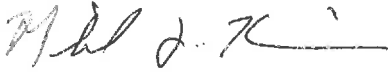


**Understood.**

7.6.5.4) As a condition of Planning Board approval, the owner, their successor and assigns shall consent to inspections by the Planning Board or its designee for compliance with these regulations.

**Understood.**

Respectfully Submitted,  
**JONES & BEACH ENGINEERS, INC.**

A handwritten signature in black ink, appearing to read "Michael J. Kerivan", written over a horizontal line.

Michael J. Kerivan, P.E.  
Project Engineer



# JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885  
603.772.4746 - JonesandBeach.com

## **DRAINAGE ANALYSIS**

### **SEDIMENT AND EROSION CONTROL PLAN**

**Prepared for:**

**Residential Condominiums  
Tax Map 297, Lot 11  
3400 LaFayette Road  
Portsmouth, NH 03801**



**May 14, 2021  
Revised May 27, 2021  
Revised August 25, 2021  
JBE Project No. 20737**



## 1. EXECUTIVE SUMMARY

Green and Company proposes to construct a 50-unit multi-family residential development on a ±45.25-acre parcel of land located on the west side of Lafayette Road (Route 1) in Portsmouth, NH. A drainage analysis of the entire site and its offsite contributing watershed areas was conducted for the purpose of estimating the peak rate of stormwater runoff and to subsequently design adequate drainage structures. Two models were compiled, one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. A summary of the existing and proposed conditions peak rates of runoff is as follows:

COMPONENT	PEAK DISCHARGE COMPARISON							
	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	0.00	0.00	0.00	0.76	0.00	0.00	0.00	0.00
Analysis Point #2	2.04	0.72	7.53	4.14	13.00	8.43	18.65	13.18

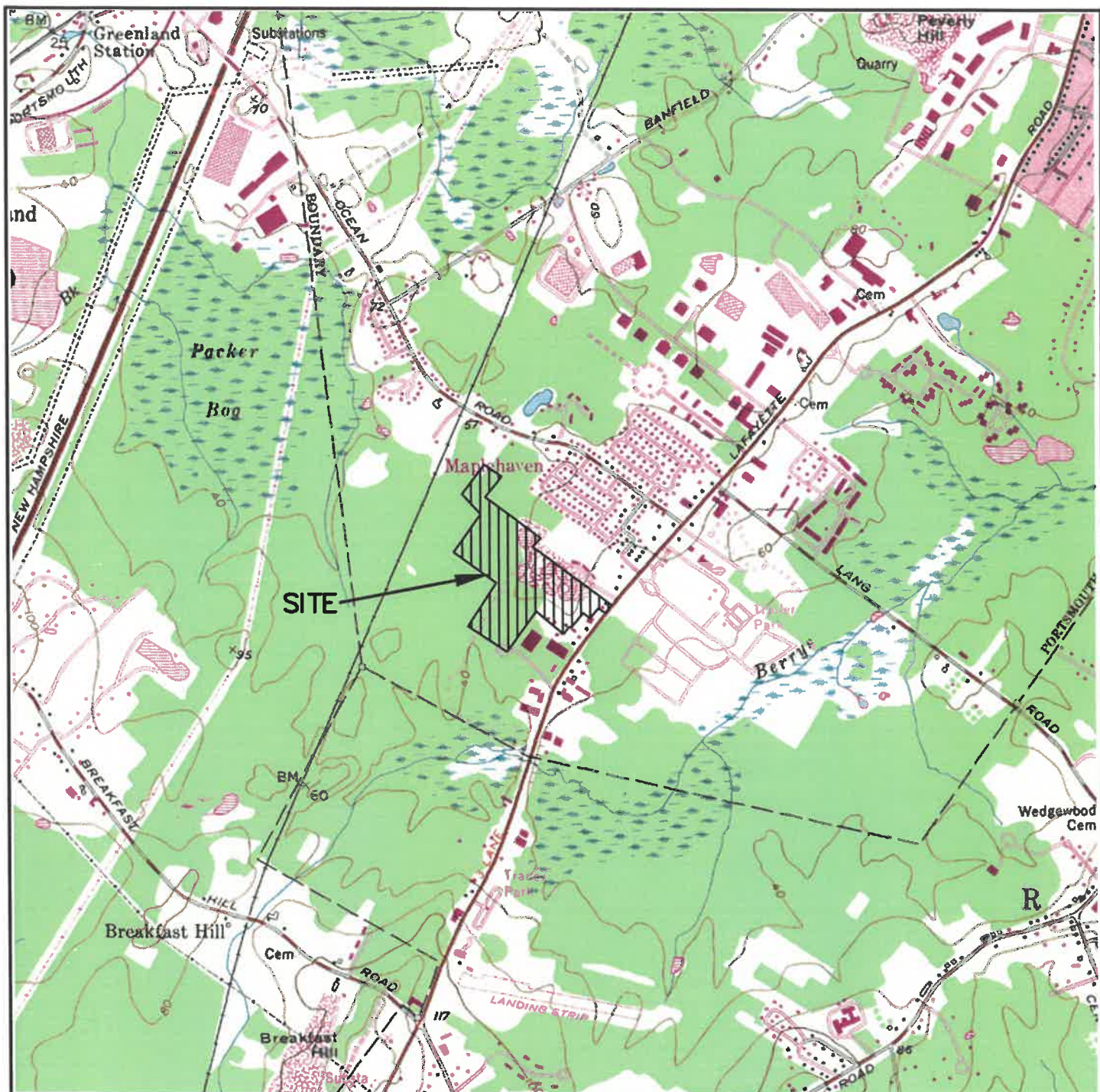
The drainage design intent for this site is to maintain the post-development peak flow to the pre-development peak flow conditions to the extent practicable and to effectively treat stormwater from the development of this site. This has been accomplished through the use of a wet pond with a forebay, a bioretention area and roof drip edges to maintain the peak discharge and effectively treat stormwater exiting the site.



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5. Soils Report
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  - 6.2. Proposed Conditions Watershed Plan - W2





SITE COORDINATES: 43° 01' 22" N, 70° 47' 57" W

GRAPHIC SCALE



( IN FEET )

1 inch = 2000ft.

**J/B** Designed and Produced in NH  
**Jones & Beach Engineers, Inc.**  
 Civil Engineering Services

85 Portsmouth Ave.  
 PO Box 219  
 Stratham, NH 03885

603-772-4746  
 FAX: 603-772-0227  
 E-Mail: JBE@jonesandbeach.com

Drawing Name:

**USGS**

Project: **RESIDENTIAL CONDOMINIUMS**

Owner of Record: 225 BANFIELD ROAD, PORTSMOUTH, NH  
 RICCI CONSTRUCTION CO., INC.

DRAWING No.

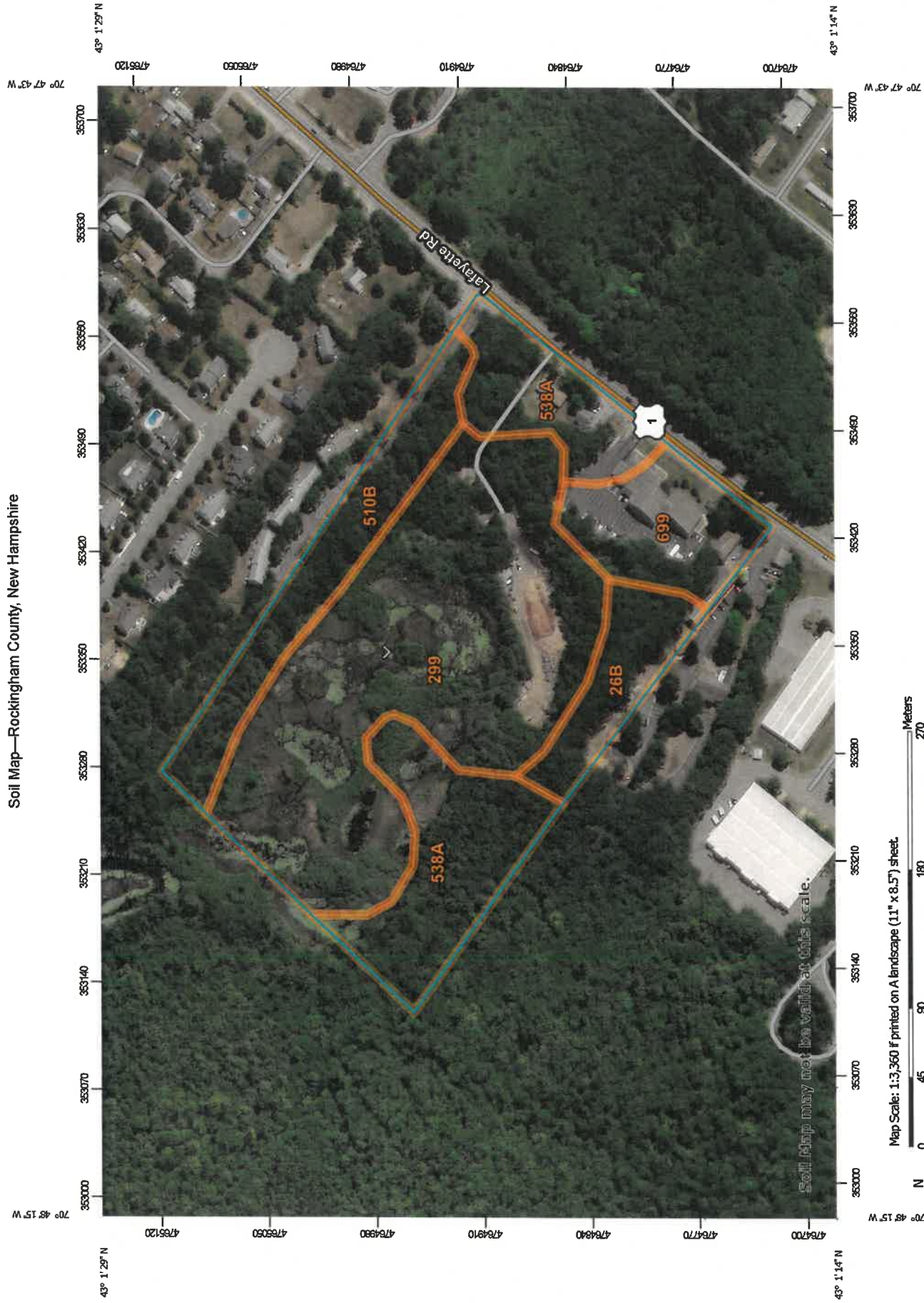
**USGS1**

SHEET 1 OF 1

JBE PROJECT  
 No. **20737**



# Soil Map—Rockingham County, New Hampshire



Map Scale: 1:3,360 Printed on A landscape (11" x 8.5") sheet

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



## MAP LEGEND

- Area of Interest (AOI)
  - Area of Interest (AOI)
- Soils
  - Soil Map Unit Polygons
  - Soil Map Unit Lines
  - Soil Map Unit Points
- Special Point Features
  - Blowout
  - Borrow Pit
  - Clay Spot
  - Closed Depression
  - Gravel Pit
  - Gravelly Spot
  - Landfill
  - Lava Flow
  - Marsh or swamp
  - Mine or Quarry
  - Miscellaneous Water
  - Perennial Water
  - Rock Outcrop
  - Saline Spot
  - Sandy Spot
  - Severely Eroded Spot
  - Sinkhole
  - Slide or Slip
  - Sodic Spot
- Water Features
  - Streams and Canals
- Transportation
  - Rails
  - Interstate Highways
  - US Routes
  - Major Roads
  - Local Roads
- Background
  - Aerial Photography
- Soil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

## 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 22, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Jun 14, 2017

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
26B	Windsor loamy sand, 3 to 8 percent slopes	1.6	7.1%
299	Udorthents, smoothed	10.7	48.3%
510B	Hoosic gravelly fine sandy loam, 3 to 8 percent slopes	2.7	12.2%
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	5.0	22.8%
699	Urban land	2.1	9.7%
<b>Totals for Area of Interest</b>		<b>22.1</b>	<b>100.0%</b>



## **4. DRAINAGE ANALYSIS**

### **4.1 METHODOLOGY**

This drainage report includes an existing conditions analysis of the area involved in the proposed development, as well as a proposed condition, or post-construction analysis, of the same location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2 Year – 24 Hour (3.74"), 10 Year – 24 Hour (5.67"), 25 Year – 24 Hour (7.19") and 50 Year – 24 Hour (8.61"). This data was taken from the Extreme Precipitation Tables developed by the Northeast Regional Climate Center (NRCC), and the values have been increased by 15% due to the project being within the Coastal/Great Bay Region.

### **4.2 EXISTING CONDITIONS ANALYSIS**

The study area consists of the subject property and upstream contributing area. The study area contains 8.387 acres including offsite contributing areas. The existing site is currently used for logging operations and has a gravel access drive and cleared areas. The existing site is fairly flat with a small portion in the northeast corner draining to a low spot near Lafayette Road and the remainder draining to the rear of the property into a large wetland complex, resulting in two (2) Analysis Points.

The majority of the soils for this site are described as Hydrological Soils "A" and "B", with a smaller section of "C", and an even smaller section of "D" soil.

Two (2) Analysis Points (AP's) were defined for this project.

Analysis Point #1 is defined as an existing catch basin (CB 2177) located to the southwest adjacent to Lafayette Road. Runoff drains to a low point in the northeast corner of the property near Lafayette Road. This low point then drains to AP #1 once the water level reaches the height of the catch basin rim. Due to the existing area available for detention at the low point coupled with the relatively small drainage area, runoff from the site does not reach AP #1 under all analyzed storm events.

Analysis Point #2 is defined as a large wetland complex located in the western portion of the site. Flow from portions of the existing abutter buildings located between this site and Lafayette Road along with the site runoff makes its way across the site and into the large wetland complex.

### **4.3 PROPOSED CONDITIONS ANALYSIS**

The proposed site includes the construction of a 50-unit multi-family residential development with associated parking, utilities, and drainage.

Drainage from the first 30' of the entrance drive will drain to Analysis Point 1, along with a portion of the area draining to this point in the existing conditions. As in the existing condition, due to the large existing area available for detention at the low point coupled with the relatively small drainage area, runoff from the site does not reach AP #1 under all analyzed storm events.

Drainage along the entrance drive, from station 0+30 to station 4+50, sheet flows to a curb break at the low point station 1+45 which discharges to a proposed wet pond (20P). Drainage along the entrance



drive, from station 4+50 to station 7+50, is collected in a closed drainage system, including deep sump hooded catch basins, is directed to the same wet pond (20P). Discharge from the proposed wet pond enters the existing wetland system (AP 2).

Drainage along the entrance drive, from Station 7+50 to Sta 8+00, including a portion of the proposed loop road, to deep sump hooded catch basins located at loop road Sta. 2+30.5, and main road Sta. 9+00. This catch basin discharges to a proposed bioretention area located behind the units that are at the end of the roadway. This bioretention area drains to Analysis Point 2.

The rear half of all roof areas will be directed to drip edges located adjacent to the units. The proposed drip edges will be 3' wide by 4' deep.

#### **4.4 CONCLUSION**

This proposed site development will have minimal effect on abutting infrastructures or properties by way of stormwater runoff or siltation. Peak runoff rate from the proposed site has been maintained to the existing conditions peak rate to the extent practicable. Treatment is obtained through the use of deep sump hooded catch basins, a wet basin with forebay, and a bioretention pond with forebay as described above.

The area of disturbance is greater than 100,000 square feet and will require an NHDES Alteration of Terrain Permit.

Respectfully Submitted,  
**JONES & BEACH ENGINEERS, INC.**



Michael Kerivan, P.E.  
Project Engineer

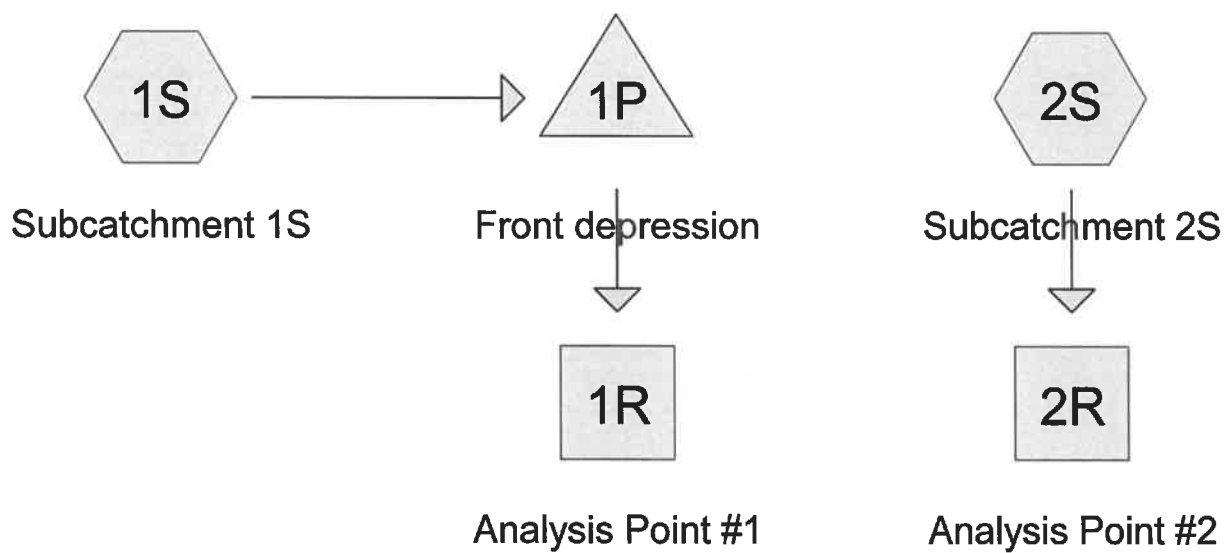


## 4.5 EXISTING CONDITIONS ANALYSIS

### APPENDIX I

2 Year - 24 Hour Summary  
10 Year - 24 Hour Complete  
25 Year - 24 Hour Summary  
50 Year - 24 Hour Summary







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Page 2

**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.112	39	>75% Grass cover, Good, HSG A (1S, 2S)
0.644	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.095	74	>75% Grass cover, Good, HSG C (2S)
0.026	80	>75% Grass cover, Good, HSG D (2S)
0.113	96	Gravel surface, HSG A (2S)
0.421	96	Gravel surface, HSG B (1S, 2S)
0.003	96	Gravel surface, HSG D (2S)
0.639	98	Paved roads w/curbs & sewers, HSG B (1S, 2S)
0.004	98	Roofs, HSG A (2S)
0.222	98	Roofs, HSG B (1S, 2S)
1.673	30	Woods, Good, HSG A (1S, 2S)
2.656	55	Woods, Good, HSG B (1S, 2S)
0.663	70	Woods, Good, HSG C (2S)
0.115	77	Woods, Good, HSG D (2S)
<b>8.387</b>	<b>57</b>	<b>TOTAL AREA</b>



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**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
2.903	HSG A	1S, 2S
4.582	HSG B	1S, 2S
0.758	HSG C	2S
0.144	HSG D	2S
0.000	Other	
<b>8.387</b>		<b>TOTAL AREA</b>



**20737\_EX CONDITION***Type III 24-hr 2-YR STORM Rainfall=3.74"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Subcatchment 1S**Runoff Area=49,203 sf 3.67% Impervious Runoff Depth>0.35"  
Flow Length=340' Tc=21.1 min CN=53 Runoff=0.16 cfs 0.033 af**Subcatchment 2S: Subcatchment 2S**Runoff Area=316,130 sf 11.36% Impervious Runoff Depth>0.55"  
Flow Length=565' Slope=0.0200 ' / Tc=23.5 min CN=58 Runoff=2.04 cfs 0.330 af**Reach 1R: Analysis Point #1**Inflow=0.00 cfs 0.000 af  
Outflow=0.00 cfs 0.000 af**Reach 2R: Analysis Point #2**Inflow=2.04 cfs 0.330 af  
Outflow=2.04 cfs 0.330 af**Pond 1P: Front depression**Peak Elev=52.23' Storage=1,449 cf Inflow=0.16 cfs 0.033 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 8.387 ac Runoff Volume = 0.364 af Average Runoff Depth = 0.52"**  
**89.68% Pervious = 7.521 ac 10.32% Impervious = 0.866 ac**



**20737\_EX CONDITION**

Type III 24-hr 10-YR STORM Rainfall=5.67"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Subcatchment 1S**Runoff Area=49,203 sf 3.67% Impervious Runoff Depth>1.18"  
Flow Length=340' Tc=21.1 min CN=53 Runoff=0.85 cfs 0.111 af**Subcatchment 2S: Subcatchment 2S**Runoff Area=316,130 sf 11.36% Impervious Runoff Depth>1.54"  
Flow Length=565' Slope=0.0200 '/' Tc=23.5 min CN=58 Runoff=7.53 cfs 0.934 af**Reach 1R: Analysis Point #1**Inflow=0.00 cfs 0.000 af  
Outflow=0.00 cfs 0.000 af**Reach 2R: Analysis Point #2**Inflow=7.53 cfs 0.934 af  
Outflow=7.53 cfs 0.934 af**Pond 1P: Front depression**Peak Elev=52.64' Storage=4,843 cf Inflow=0.85 cfs 0.111 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 8.387 ac Runoff Volume = 1.045 af Average Runoff Depth = 1.50"**  
**89.68% Pervious = 7.521 ac 10.32% Impervious = 0.866 ac**



**Summary for Subcatchment 1S: Subcatchment 1S**

Runoff = 0.85 cfs @ 12.35 hrs, Volume= 0.111 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
1,053	98	Paved roads w/curbs & sewers, HSG B
752	98	Roofs, HSG B
2,461	96	Gravel surface, HSG B
1,348	39	>75% Grass cover, Good, HSG A
6,824	61	>75% Grass cover, Good, HSG B
12,179	30	Woods, Good, HSG A
24,586	55	Woods, Good, HSG B
49,203	53	Weighted Average
47,398		96.33% Pervious Area
1,805		3.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0200	0.07		<b>Sheet Flow,</b>
					Woods: Light underbrush n= 0.400 P2= 3.74"
9.7	290	0.0100	0.50		<b>Shallow Concentrated Flow,</b>
					Woodland Kv= 5.0 fps
21.1	340	Total			

**Summary for Subcatchment 2S: Subcatchment 2S**

Runoff = 7.53 cfs @ 12.37 hrs, Volume= 0.934 af, Depth> 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"



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Type III 24-hr 10-YR STORM Rainfall=5.67"

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Area (sf)	CN	Description
26,803	98	Paved roads w/curbs & sewers, HSG B
4,917	96	Gravel surface, HSG A
15,867	96	Gravel surface, HSG B
134	96	Gravel surface, HSG D
191	98	Roofs, HSG A
8,903	98	Roofs, HSG B
47,092	39	>75% Grass cover, Good, HSG A
21,243	61	>75% Grass cover, Good, HSG B
4,130	74	>75% Grass cover, Good, HSG C
1,130	80	>75% Grass cover, Good, HSG D
60,710	30	Woods, Good, HSG A
91,089	55	Woods, Good, HSG B
28,895	70	Woods, Good, HSG C
5,026	77	Woods, Good, HSG D
316,130	58	Weighted Average
280,233		88.64% Pervious Area
35,897		11.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	50	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.74"
12.1	515	0.0200	0.71		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
23.5	565	Total			

**Summary for Reach 1R: Analysis Point #1**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.130 ac, 3.67% Impervious, Inflow Depth = 0.00" for 10-YR STORM event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

**Summary for Reach 2R: Analysis Point #2**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.257 ac, 11.36% Impervious, Inflow Depth > 1.54" for 10-YR STORM event  
 Inflow = 7.53 cfs @ 12.37 hrs, Volume= 0.934 af  
 Outflow = 7.53 cfs @ 12.37 hrs, Volume= 0.934 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs



**20737\_EX CONDITION**

Type III 24-hr 10-YR STORM Rainfall=5.67"

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**Summary for Pond 1P: Front depression**

Inflow Area = 1.130 ac, 3.67% Impervious, Inflow Depth > 1.18" for 10-YR STORM event  
 Inflow = 0.85 cfs @ 12.35 hrs, Volume= 0.111 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 52.64' @ 24.00 hrs Surf.Area= 9,431 sf Storage= 4,843 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description		
#1	52.00'	34,350 cf	<b>Custom Stage Data (Irregular) Listed below (Recalc)</b>		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
52.00	5,815	434.1	0	0	5,815
54.00	19,963	845.8	24,368	24,368	47,767
54.50	19,963	845.8	9,982	34,350	48,190

Device	Routing	Invert	Outlet Devices				
#1	Primary	54.00'	<b>40.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b>				
			Head (feet) 0.20 0.40 0.60 0.80 1.00				
			Coef. (English) 2.80 2.92 3.08 3.30 3.32				

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=52.00' TW=0.00' (Dynamic Tailwater)  
 ↳ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)



**20737\_EX CONDITION***Type III 24-hr 25-YR STORM Rainfall=7.19"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Subcatchment 1S**Runoff Area=49,203 sf 3.67% Impervious Runoff Depth>2.04"  
Flow Length=340' Tc=21.1 min CN=53 Runoff=1.64 cfs 0.192 af**Subcatchment 2S: Subcatchment 2S**Runoff Area=316,130 sf 11.36% Impervious Runoff Depth>2.52"  
Flow Length=565' Slope=0.0200 '/' Tc=23.5 min CN=58 Runoff=13.00 cfs 1.527 af**Reach 1R: Analysis Point #1**Inflow=0.00 cfs 0.000 af  
Outflow=0.00 cfs 0.000 af**Reach 2R: Analysis Point #2**Inflow=13.00 cfs 1.527 af  
Outflow=13.00 cfs 1.527 af**Pond 1P: Front depression**Peak Elev=52.98' Storage=8,370 cf Inflow=1.64 cfs 0.192 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 8.387 ac Runoff Volume = 1.719 af Average Runoff Depth = 2.46"**  
**89.68% Pervious = 7.521 ac 10.32% Impervious = 0.866 ac**



**20737\_EX CONDITION***Type III 24-hr 50-YR STORM Rainfall=8.61"*

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: Subcatchment 1S**Runoff Area=49,203 sf 3.67% Impervious Runoff Depth>2.96"  
Flow Length=340' Tc=21.1 min CN=53 Runoff=2.47 cfs 0.279 af**Subcatchment 2S: Subcatchment 2S**Runoff Area=316,130 sf 11.36% Impervious Runoff Depth>3.54"  
Flow Length=565' Slope=0.0200 '/ Tc=23.5 min CN=58 Runoff=18.65 cfs 2.142 af**Reach 1R: Analysis Point #1**Inflow=0.00 cfs 0.000 af  
Outflow=0.00 cfs 0.000 af**Reach 2R: Analysis Point #2**Inflow=18.65 cfs 2.142 af  
Outflow=18.65 cfs 2.142 af**Pond 1P: Front depression**Peak Elev=53.27' Storage=12,134 cf Inflow=2.47 cfs 0.279 af  
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 8.387 ac Runoff Volume = 2.421 af Average Runoff Depth = 3.46"**  
**89.68% Pervious = 7.521 ac 10.32% Impervious = 0.866 ac**

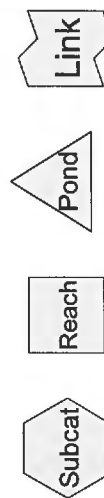


## 4.6 PROPOSED CONDITIONS ANALYSIS

### APPENDIX II

2 Year - 24 Hour Summary  
10 Year - 24 Hour Complete  
25 Year - 24 Hour Summary  
50 Year - 24 Hour Summary





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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.715	39	>75% Grass cover, Good, HSG A (10S, 22S, 24S, 25S, 26S, 27S)
1.553	61	>75% Grass cover, Good, HSG B (10S, 20S, 21S, 22S, 24S, 27S)
0.317	74	>75% Grass cover, Good, HSG C (21S, 25S, 26S, 27S)
0.024	80	>75% Grass cover, Good, HSG D (22S, 27S)
0.309	98	Paved roads w/curbs & sewers, HSG A (22S, 24S, 25S, 26S, 27S)
1.461	98	Paved roads w/curbs & sewers, HSG B (10S, 20S, 21S, 22S, 23S, 24S, 25S)
0.320	98	Paved roads w/curbs & sewers, HSG C (24S, 25S, 26S)
0.003	98	Paved roads w/curbs & sewers, HSG D (27S)
0.181	98	Roofs, HSG A (1_2S, 3_5S, 12_15S, 16_19S, 20_22S, 22S, 24S, 25S, 26S)
0.767	98	Roofs, HSG B (6_11S, 10S, 12_15S, 20S, 21S, 22S, 23S, 24S, 25S, 27_30S, 31_35S, 36_38S, 39_44S, 45_50S)
0.112	98	Roofs, HSG C (20_22S, 23_26S, 24S, 25S, 26S)
0.008	98	Roofs, HSG D (3_5S, 22S)
0.068	98	Water Surface, HSG A (1_2S, 3_5S, 12_15S, 16_19S, 20_22S, 22S)
0.050	98	Water Surface, HSG B (6_11S, 12_15S, 22S, 27_30S, 31_35S, 36_38S, 39_44S, 45_50S)
0.009	98	Water Surface, HSG C (20_22S, 23_26S)
0.001	98	Water Surface, HSG D (3_5S)
0.630	30	Woods, Good, HSG A (10S, 22S, 27S)
0.751	55	Woods, Good, HSG B (10S, 27S)
0.108	77	Woods, Good, HSG D (21S, 27S)
<b>8.387</b>	<b>69</b>	<b>TOTAL AREA</b>



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**Soil Listing (all nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
2.903	HSG A	1_2S, 3_5S, 10S, 12_15S, 16_19S, 20_22S, 22S, 24S, 25S, 26S, 27S
4.582	HSG B	6_11S, 10S, 12_15S, 20S, 21S, 22S, 23S, 24S, 25S, 27S, 27_30S, 31_35S, 36_38S, 39_44S, 45_50S
0.758	HSG C	20_22S, 21S, 23_26S, 24S, 25S, 26S, 27S
0.144	HSG D	3_5S, 21S, 22S, 27S
0.000	Other	
<b>8.387</b>		<b>TOTAL AREA</b>



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 1_2S: Roof 1_2</b>	Runoff Area=776 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.06 cfs 0.005 af
<b>Subcatchment 3_5S: Roof 3_5</b>	Runoff Area=1,224 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af
<b>Subcatchment 6_11S: Roof 6_11</b>	Runoff Area=2,904 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.24 cfs 0.019 af
<b>Subcatchment 10S: Subcatchment 10S</b> Flow Length=280'	Runoff Area=29,654 sf 6.99% Impervious Runoff Depth=0.59" Slope=0.0100 '/' Tc=22.8 min CN=59 Runoff=0.22 cfs 0.034 af
<b>Subcatchment 12_15S: Roof 12_15</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
<b>Subcatchment 16_19S: Roof 16_18</b>	Runoff Area=2,040 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af
<b>Subcatchment 20S: Subcatchment 20S</b>	Runoff Area=18,078 sf 20.06% Impervious Runoff Depth=1.04" Tc=6.0 min CN=68 Runoff=0.46 cfs 0.036 af
<b>Subcatchment 20_22S: Roof 20_22</b>	Runoff Area=1,440 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af
<b>Subcatchment 21S: Subcatchment 21S</b>	Runoff Area=61,821 sf 49.16% Impervious Runoff Depth=1.90" Tc=6.0 min CN=81 Runoff=3.17 cfs 0.225 af
<b>Subcatchment 22S: Subcatchment 22S</b>	Runoff Area=42,220 sf 50.92% Impervious Runoff Depth=1.34" Tc=6.0 min CN=73 Runoff=1.47 cfs 0.109 af
<b>Subcatchment 23S: Subcatchment 23S</b>	Runoff Area=12,524 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=1.05 cfs 0.084 af
<b>Subcatchment 23_26S: Roof 23_26</b>	Runoff Area=1,920 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
<b>Subcatchment 24S: Subcatchment 24S</b>	Runoff Area=31,941 sf 82.12% Impervious Runoff Depth=2.67" Tc=6.0 min CN=90 Runoff=2.26 cfs 0.163 af
<b>Subcatchment 25S: Subcatchment 26S</b>	Runoff Area=15,080 sf 71.23% Impervious Runoff Depth=2.67" Tc=6.0 min CN=90 Runoff=1.07 cfs 0.077 af
<b>Subcatchment 26S: Subcatchment 26S</b>	Runoff Area=14,100 sf 88.87% Impervious Runoff Depth=3.07" Tc=6.0 min CN=94 Runoff=1.10 cfs 0.083 af
<b>Subcatchment 27S: Subcatchment 27S</b>	Runoff Area=117,023 sf 0.62% Impervious Runoff Depth=0.08" Tc=6.0 min CN=43 Runoff=0.03 cfs 0.019 af



<b>Subcatchment 27_30S: Roof 27_30</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
<b>Subcatchment 31_35S: Roof 31_35</b>	Runoff Area=2,424 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.20 cfs 0.016 af
<b>Subcatchment 36_38S: Roof 36_38</b>	Runoff Area=1,464 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.12 cfs 0.010 af
<b>Subcatchment 39_44S: Roof 39_44</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.20 cfs 0.016 af
<b>Subcatchment 45_50S: Roof 45_50</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=3.51" Tc=6.0 min CN=98 Runoff=0.20 cfs 0.016 af
<b>Reach 1R: Analysis Point #1</b>	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
<b>Reach 2R: Analysis Point #2</b>	Inflow=0.72 cfs 0.405 af Outflow=0.72 cfs 0.405 af
<b>Reach 10R: HW 1</b>	Avg. Flow Depth=0.29' Max Vel=2.45 fps Inflow=0.46 cfs 0.036 af 12.0" Round Pipe n=0.013 L=40.0' S=0.0050 ' Capacity=2.52 cfs Outflow=0.46 cfs 0.036 af
<b>Pond 1P: DMH 1</b>	Peak Elev=55.03' Inflow=2.71 cfs 0.199 af 12.0" Round Culvert n=0.013 L=60.0' S=0.0272 ' Outflow=2.71 cfs 0.199 af
<b>Pond 1_2P: Roof 1_2</b>	Peak Elev=53.44' Storage=56 cf Inflow=0.06 cfs 0.005 af Discarded=0.02 cfs 0.005 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.005 af
<b>Pond 2P: BIORETENTION 1</b>	Peak Elev=49.94' Storage=1,680 cf Inflow=2.17 cfs 0.160 af Discarded=0.78 cfs 0.170 af Primary=0.00 cfs 0.000 af Outflow=0.78 cfs 0.170 af
<b>Pond 3P: Front depression</b>	Peak Elev=52.23' Storage=1,468 cf Inflow=0.22 cfs 0.034 af Outflow=0.00 cfs 0.000 af
<b>Pond 3_5P: Roof 3_5</b>	Peak Elev=52.96' Storage=79 cf Inflow=0.10 cfs 0.008 af Discarded=0.03 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.008 af
<b>Pond 4P: DMH 4</b>	Peak Elev=52.33' Inflow=1.05 cfs 0.084 af 12.0" Round Culvert n=0.013 L=142.0' S=0.0050 ' Outflow=1.05 cfs 0.084 af
<b>Pond 5P: DMH 5</b>	Peak Elev=51.99' Inflow=2.71 cfs 0.199 af 15.0" Round Culvert n=0.013 L=40.0' S=0.0050 ' Outflow=2.71 cfs 0.199 af
<b>Pond 6_11P: Roof 6_11</b>	Peak Elev=54.16' Storage=213 cf Inflow=0.24 cfs 0.019 af Discarded=0.05 cfs 0.019 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.019 af
<b>Pond 11P: CB 2</b>	Peak Elev=52.76' Inflow=1.05 cfs 0.084 af 12.0" Round Culvert n=0.013 L=58.0' S=0.0050 ' Outflow=1.05 cfs 0.084 af



**Pond 12P: CB 3**

Peak Elev=55.34' Inflow=2.26 cfs 0.163 af  
 15.0" Round Culvert n=0.013 L=176.0' S=0.0050 ' /' Outflow=2.26 cfs 0.163 af

**Pond 12\_15P: Roof 27\_30**

Peak Elev=57.29' Storage=156 cf Inflow=0.16 cfs 0.013 af  
 Discarded=0.03 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.013 af

**Pond 13P: CB 4**

Peak Elev=52.77' Inflow=2.71 cfs 0.199 af  
 15.0" Round Culvert n=0.013 L=136.0' S=0.0050 ' /' Outflow=2.71 cfs 0.199 af

**Pond 16\_19P: Roof 16\_19**

Peak Elev=57.32' Storage=166 cf Inflow=0.17 cfs 0.014 af  
 Discarded=0.03 cfs 0.014 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.014 af

**Pond 20P: WET POND 1**

Peak Elev=51.88' Storage=16,759 cf Inflow=5.23 cfs 0.392 af  
 Outflow=0.71 cfs 0.387 af

**Pond 20\_22P: Roof 20\_22**

Peak Elev=57.35' Storage=118 cf Inflow=0.12 cfs 0.010 af  
 Discarded=0.02 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.010 af

**Pond 23\_26P: Roof 23\_26**

Peak Elev=57.36' Storage=158 cf Inflow=0.16 cfs 0.013 af  
 Discarded=0.03 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.013 af

**Pond 27\_30P: Roof 27\_30**

Peak Elev=57.29' Storage=156 cf Inflow=0.16 cfs 0.013 af  
 Discarded=0.03 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.013 af

**Pond 31\_35P: Roof 31\_35**

Peak Elev=58.27' Storage=197 cf Inflow=0.20 cfs 0.016 af  
 Discarded=0.03 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.016 af

**Pond 36\_38P: Roof 36\_38**

Peak Elev=56.88' Storage=105 cf Inflow=0.12 cfs 0.010 af  
 Discarded=0.02 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.010 af

**Pond 39\_44P: Roof 39\_44**

Peak Elev=55.70' Storage=205 cf Inflow=0.20 cfs 0.016 af  
 Discarded=0.03 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.016 af

**Pond 40P: LOW POINT**

Peak Elev=53.45' Storage=9,813 cf Inflow=3.17 cfs 0.225 af  
 15.0" Round Culvert n=0.013 L=93.0' S=0.0049 ' /' Outflow=0.00 cfs 0.000 af

**Pond 45\_50P: Roof 45\_50**

Peak Elev=55.70' Storage=205 cf Inflow=0.20 cfs 0.016 af  
 Discarded=0.03 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.016 af

**Pond CB 1: CB 1**

Peak Elev=52.84' Inflow=2.17 cfs 0.160 af  
 15.0" Round Culvert n=0.013 L=22.0' S=0.0050 ' /' Outflow=2.17 cfs 0.160 af

**Pond CB1A: CB 1A**

Peak Elev=54.07' Inflow=1.07 cfs 0.077 af  
 15.0" Round Culvert n=0.013 L=110.0' S=0.0050 ' /' Outflow=1.07 cfs 0.077 af

**Pond CB1B: CB 1B**

Peak Elev=53.46' Inflow=1.07 cfs 0.077 af  
 15.0" Round Culvert n=0.013 L=165.0' S=0.0050 ' /' Outflow=1.07 cfs 0.077 af

**Pond DMH2: DMH 2**

Peak Elev=54.04' Inflow=0.00 cfs 0.000 af  
 15.0" Round Culvert n=0.013 L=94.0' S=0.0050 ' /' Outflow=0.00 cfs 0.000 af



**20737\_PR CONDITION\_8-25-2021**

*Type III 24-hr 2-YR STORM Rainfall=3.74"*

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**Total Runoff Area = 8.387 ac   Runoff Volume = 0.983 af   Average Runoff Depth = 1.41"**  
**60.80% Pervious = 5.099 ac   39.20% Impervious = 3.288 ac**



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 1_2S: Roof 1_2</b>	Runoff Area=776 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.10 cfs 0.008 af
<b>Subcatchment 3_5S: Roof 3_5</b>	Runoff Area=1,224 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.16 cfs 0.013 af
<b>Subcatchment 6_11S: Roof 6_11</b>	Runoff Area=2,904 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.37 cfs 0.030 af
<b>Subcatchment 10S: Subcatchment 10S</b> Flow Length=280'	Runoff Area=29,654 sf 6.99% Impervious Runoff Depth=1.63" Slope=0.0100 '/' Tc=22.8 min CN=59 Runoff=0.76 cfs 0.093 af
<b>Subcatchment 12_15S: Roof 12_15</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.25 cfs 0.020 af
<b>Subcatchment 16_19S: Roof 16_18</b>	Runoff Area=2,040 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af
<b>Subcatchment 20S: Subcatchment 20S</b>	Runoff Area=18,078 sf 20.06% Impervious Runoff Depth=2.37" Tc=6.0 min CN=68 Runoff=1.14 cfs 0.082 af
<b>Subcatchment 20_22S: Roof 20_22</b>	Runoff Area=1,440 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.18 cfs 0.015 af
<b>Subcatchment 21S: Subcatchment 21S</b>	Runoff Area=61,821 sf 49.16% Impervious Runoff Depth=3.58" Tc=6.0 min CN=81 Runoff=5.94 cfs 0.424 af
<b>Subcatchment 22S: Subcatchment 22S</b>	Runoff Area=42,220 sf 50.92% Impervious Runoff Depth=2.82" Tc=6.0 min CN=73 Runoff=3.20 cfs 0.228 af
<b>Subcatchment 23S: Subcatchment 23S</b>	Runoff Area=12,524 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=1.60 cfs 0.130 af
<b>Subcatchment 23_26S: Roof 23_26</b>	Runoff Area=1,920 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af
<b>Subcatchment 24S: Subcatchment 24S</b>	Runoff Area=31,941 sf 82.12% Impervious Runoff Depth=4.52" Tc=6.0 min CN=90 Runoff=3.72 cfs 0.276 af
<b>Subcatchment 25S: Subcatchment 26S</b>	Runoff Area=15,080 sf 71.23% Impervious Runoff Depth=4.52" Tc=6.0 min CN=90 Runoff=1.76 cfs 0.131 af
<b>Subcatchment 26S: Subcatchment 26S</b>	Runoff Area=14,100 sf 88.87% Impervious Runoff Depth=4.97" Tc=6.0 min CN=94 Runoff=1.74 cfs 0.134 af
<b>Subcatchment 27S: Subcatchment 27S</b>	Runoff Area=117,023 sf 0.62% Impervious Runoff Depth=0.56" Tc=6.0 min CN=43 Runoff=0.72 cfs 0.125 af



<b>Subcatchment 27_30S: Roof 27_30</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.25 cfs 0.020 af
<b>Subcatchment 31_35S: Roof 31_35</b>	Runoff Area=2,424 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.025 af
<b>Subcatchment 36_38S: Roof 36_38</b>	Runoff Area=1,464 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.19 cfs 0.015 af
<b>Subcatchment 39_44S: Roof 39_44</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.025 af
<b>Subcatchment 45_50S: Roof 45_50</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=5.43" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.025 af
<b>Reach 1R: Analysis Point #1</b>	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
<b>Reach 2R: Analysis Point #2</b>	Inflow=4.14 cfs 0.836 af Outflow=4.14 cfs 0.836 af
<b>Reach 10R: HW 1</b>	Avg. Flow Depth=0.47' Max Vel=3.12 fps Inflow=1.14 cfs 0.082 af 12.0" Round Pipe n=0.013 L=40.0' S=0.0050 ' Capacity=2.52 cfs Outflow=1.14 cfs 0.082 af
<b>Pond 1P: DMH 1</b>	Peak Elev=56.91' Inflow=4.85 cfs 0.358 af 12.0" Round Culvert n=0.013 L=60.0' S=0.0272 ' Outflow=4.85 cfs 0.358 af
<b>Pond 1_2P: Roof 1_2</b>	Peak Elev=54.48' Storage=96 cf Inflow=0.10 cfs 0.008 af Discarded=0.02 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.008 af
<b>Pond 2P: BIORETENTION 1</b>	Peak Elev=51.28' Storage=2,761 cf Inflow=3.50 cfs 0.265 af Discarded=1.22 cfs 0.274 af Primary=0.00 cfs 0.000 af Outflow=1.22 cfs 0.274 af
<b>Pond 3P: Front depression</b>	Peak Elev=52.55' Storage=4,032 cf Inflow=0.76 cfs 0.093 af Outflow=0.00 cfs 0.000 af
<b>Pond 3_5P: Roof 3_5</b>	Peak Elev=53.70' Storage=139 cf Inflow=0.16 cfs 0.013 af Discarded=0.04 cfs 0.013 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.013 af
<b>Pond 4P: DMH 4</b>	Peak Elev=52.65' Inflow=1.60 cfs 0.130 af 12.0" Round Culvert n=0.013 L=142.0' S=0.0050 ' Outflow=1.60 cfs 0.130 af
<b>Pond 5P: DMH 5</b>	Peak Elev=53.11' Inflow=4.85 cfs 0.358 af 15.0" Round Culvert n=0.013 L=40.0' S=0.0050 ' Outflow=4.85 cfs 0.358 af
<b>Pond 6_11P: Roof 6_11</b>	Peak Elev=55.07' Storage=379 cf Inflow=0.37 cfs 0.030 af Discarded=0.07 cfs 0.030 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.030 af
<b>Pond 11P: CB 2</b>	Peak Elev=53.03' Inflow=1.60 cfs 0.130 af 12.0" Round Culvert n=0.013 L=58.0' S=0.0050 ' Outflow=1.60 cfs 0.130 af



**Pond 12P: CB 3**

Peak Elev=57.75' Inflow=3.72 cfs 0.276 af  
 15.0" Round Culvert n=0.013 L=176.0' S=0.0050 ' Outflow=3.72 cfs 0.276 af

**Pond 12\_15P: Roof 27\_30**

Peak Elev=58.32' Storage=280 cf Inflow=0.25 cfs 0.020 af  
 Discarded=0.03 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.020 af

**Pond 13P: CB 4**

Peak Elev=54.32' Inflow=4.85 cfs 0.358 af  
 15.0" Round Culvert n=0.013 L=136.0' S=0.0050 ' Outflow=4.85 cfs 0.358 af

**Pond 16\_19P: Roof 16\_19**

Peak Elev=58.37' Storage=297 cf Inflow=0.26 cfs 0.021 af  
 Discarded=0.03 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.021 af

**Pond 20P: WET POND 1**

Peak Elev=52.42' Storage=20,632 cf Inflow=9.64 cfs 0.716 af  
 Outflow=3.45 cfs 0.710 af

**Pond 20\_22P: Roof 20\_22**

Peak Elev=58.42' Storage=211 cf Inflow=0.18 cfs 0.015 af  
 Discarded=0.02 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.015 af

**Pond 23\_26P: Roof 23\_26**

Peak Elev=58.44' Storage=282 cf Inflow=0.24 cfs 0.020 af  
 Discarded=0.03 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.020 af

**Pond 27\_30P: Roof 27\_30**

Peak Elev=58.32' Storage=280 cf Inflow=0.25 cfs 0.020 af  
 Discarded=0.03 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.020 af

**Pond 31\_35P: Roof 31\_35**

Peak Elev=59.30' Storage=355 cf Inflow=0.31 cfs 0.025 af  
 Discarded=0.04 cfs 0.025 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.025 af

**Pond 36\_38P: Roof 36\_38**

Peak Elev=57.64' Storage=194 cf Inflow=0.19 cfs 0.015 af  
 Discarded=0.03 cfs 0.015 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.015 af

**Pond 39\_44P: Roof 39\_44**

Peak Elev=56.98' Storage=359 cf Inflow=0.31 cfs 0.025 af  
 Discarded=0.04 cfs 0.025 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.025 af

**Pond 40P: LOW POINT**

Peak Elev=53.94' Storage=18,465 cf Inflow=5.94 cfs 0.424 af  
 15.0" Round Culvert n=0.013 L=93.0' S=0.0049 ' Outflow=0.00 cfs 0.000 af

**Pond 45\_50P: Roof 45\_50**

Peak Elev=56.98' Storage=359 cf Inflow=0.31 cfs 0.025 af  
 Discarded=0.04 cfs 0.025 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.025 af

**Pond CB 1: CB 1**

Peak Elev=53.18' Inflow=3.50 cfs 0.265 af  
 15.0" Round Culvert n=0.013 L=22.0' S=0.0050 ' Outflow=3.50 cfs 0.265 af

**Pond CB1A: CB 1A**

Peak Elev=54.30' Inflow=1.76 cfs 0.131 af  
 15.0" Round Culvert n=0.013 L=110.0' S=0.0050 ' Outflow=1.76 cfs 0.131 af

**Pond CB1B: CB 1B**

Peak Elev=53.73' Inflow=1.76 cfs 0.131 af  
 15.0" Round Culvert n=0.013 L=165.0' S=0.0050 ' Outflow=1.76 cfs 0.131 af

**Pond DMH2: DMH 2**

Peak Elev=54.28' Inflow=0.00 cfs 0.000 af  
 15.0" Round Culvert n=0.013 L=94.0' S=0.0050 ' Outflow=0.00 cfs 0.000 af



**Total Runoff Area = 8.387 ac   Runoff Volume = 1.860 af   Average Runoff Depth = 2.66"**  
**60.80% Pervious = 5.099 ac   39.20% Impervious = 3.288 ac**



**Summary for Subcatchment 1\_2S: Roof 1\_2**

Runoff = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
680	98	Roofs, HSG A
96	98	Water Surface, HSG A
776	98	Weighted Average
776		100.00% Impervious Area

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

**Summary for Subcatchment 3\_5S: Roof 3\_5**

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
745	98	Roofs, HSG A
139	98	Water Surface, HSG A
275	98	Roofs, HSG D
65	98	Water Surface, HSG D
1,224	98	Weighted Average
1,224		100.00% Impervious Area

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

**Summary for Subcatchment 6\_11S: Roof 6\_11**

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
2,448	98	Roofs, HSG B
456	98	Water Surface, HSG B
2,904	98	Weighted Average
2,904		100.00% Impervious Area



Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry,</b>

**Summary for Subcatchment 10S: Subcatchment 10S**

Runoff = 0.76 cfs @ 12.34 hrs, Volume= 0.093 af, Depth= 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
1,320	98	Paved roads w/curbs & sewers, HSG B
752	98	Roofs, HSG B
133	39	>75% Grass cover, Good, HSG A
8,795	61	>75% Grass cover, Good, HSG B
685	30	Woods, Good, HSG A
17,969	55	Woods, Good, HSG B
29,654	59	Weighted Average
27,582		93.01% Pervious Area
2,072		6.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0100	0.06		<b>Sheet Flow,</b>
					Woods: Light underbrush n= 0.400 P2= 3.74"
7.7	230	0.0100	0.50		<b>Shallow Concentrated Flow,</b>
					Woodland Kv= 5.0 fps
22.8	280	Total			

**Summary for Subcatchment 12\_15S: Roof 12\_15**

Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.020 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
429	98	Roofs, HSG A
87	98	Water Surface, HSG A
1,203	98	Roofs, HSG B
213	98	Water Surface, HSG B
1,932	98	Weighted Average
1,932		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry,</b>



**Summary for Subcatchment 16\_19S: Roof 16\_18**

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
1,728	98	Roofs, HSG A
312	98	Water Surface, HSG A
2,040	98	Weighted Average
2,040		100.00% Impervious Area

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

**Summary for Subcatchment 20S: Subcatchment 20S**

Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.082 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
1,853	98	Paved roads w/curbs & sewers, HSG B
1,774	98	Roofs, HSG B
14,451	61	>75% Grass cover, Good, HSG B
18,078	68	Weighted Average
14,451		79.94% Pervious Area
3,627		20.06% Impervious Area

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

**Summary for Subcatchment 20\_22S: Roof 20\_22**

Runoff = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"



Area (sf)	CN	Description
553	98	Roofs, HSG A
130	98	Water Surface, HSG A
670	98	Roofs, HSG C
87	98	Water Surface, HSG C
1,440	98	Weighted Average
1,440		100.00% Impervious Area

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

### Summary for Subcatchment 21S: Subcatchment 21S

Runoff = 5.94 cfs @ 12.09 hrs, Volume= 0.424 af, Depth= 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
24,950	98	Paved roads w/curbs & sewers, HSG B
5,442	98	Roofs, HSG B
23,567	61	>75% Grass cover, Good, HSG B
3,353	74	>75% Grass cover, Good, HSG C
4,509	77	Woods, Good, HSG D
61,821	81	Weighted Average
31,429		50.84% Pervious Area
30,392		49.16% Impervious Area

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

### Summary for Subcatchment 22S: Subcatchment 22S

Runoff = 3.20 cfs @ 12.09 hrs, Volume= 0.228 af, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"



Area (sf)	CN	Description
4,066	98	Paved roads w/curbs & sewers, HSG A
12,645	98	Paved roads w/curbs & sewers, HSG B
1,423	98	Roofs, HSG A
1,019	98	Roofs, HSG B
74	98	Roofs, HSG D
2,188	98	Water Surface, HSG A
84	98	Water Surface, HSG B
11,927	39	>75% Grass cover, Good, HSG A
8,357	61	>75% Grass cover, Good, HSG B
69	80	>75% Grass cover, Good, HSG D
368	30	Woods, Good, HSG A
42,220	73	Weighted Average
20,721		49.08% Pervious Area
21,499		50.92% Impervious Area

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

**Summary for Subcatchment 23S: Subcatchment 23S**

Runoff = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
8,444	98	Paved roads w/curbs & sewers, HSG B
4,080	98	Roofs, HSG B
12,524	98	Weighted Average
12,524		100.00% Impervious Area

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

**Summary for Subcatchment 23\_26S: Roof 23\_26**

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.020 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
1,632	98	Roofs, HSG C
288	98	Water Surface, HSG C
1,920	98	Weighted Average
1,920		100.00% Impervious Area



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

**Summary for Subcatchment 24S: Subcatchment 24S**

Runoff = 3.72 cfs @ 12.08 hrs, Volume= 0.276 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
4,408	98	Paved roads w/curbs & sewers, HSG A
13,925	98	Paved roads w/curbs & sewers, HSG B
699	98	Paved roads w/curbs & sewers, HSG C
797	98	Roofs, HSG A
6,394	98	Roofs, HSG B
8	98	Roofs, HSG C
1,515	39	>75% Grass cover, Good, HSG A
4,195	61	>75% Grass cover, Good, HSG B
31,941	90	Weighted Average
5,710		17.88% Pervious Area
26,231		82.12% Impervious Area

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

**Summary for Subcatchment 25S: Subcatchment 26S**

Runoff = 1.76 cfs @ 12.08 hrs, Volume= 0.131 af, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
1,677	98	Paved roads w/curbs & sewers, HSG A
485	98	Paved roads w/curbs & sewers, HSG B
6,545	98	Paved roads w/curbs & sewers, HSG C
692	98	Roofs, HSG A
1,090	98	Roofs, HSG B
253	98	Roofs, HSG C
442	39	>75% Grass cover, Good, HSG A
3,896	74	>75% Grass cover, Good, HSG C
15,080	90	Weighted Average
4,338		28.77% Pervious Area
10,742		71.23% Impervious Area



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

**Summary for Subcatchment 26S: Subcatchment 26S**

Runoff = 1.74 cfs @ 12.08 hrs, Volume= 0.134 af, Depth= 4.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
2,715	98	Paved roads w/curbs & sewers, HSG A
6,682	98	Paved roads w/curbs & sewers, HSG C
822	98	Roofs, HSG A
2,311	98	Roofs, HSG C
426	39	>75% Grass cover, Good, HSG A
1,144	74	>75% Grass cover, Good, HSG C
14,100	94	Weighted Average
1,570		11.13% Pervious Area
12,530		88.87% Impervious Area

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

**Summary for Subcatchment 27S: Subcatchment 27S**

Runoff = 0.72 cfs @ 12.27 hrs, Volume= 0.125 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
601	98	Paved roads w/curbs & sewers, HSG A
120	98	Paved roads w/curbs & sewers, HSG D
60,280	39	>75% Grass cover, Good, HSG A
8,297	61	>75% Grass cover, Good, HSG B
5,432	74	>75% Grass cover, Good, HSG C
975	80	>75% Grass cover, Good, HSG D
26,377	30	Woods, Good, HSG A
14,750	55	Woods, Good, HSG B
191	77	Woods, Good, HSG D
117,023	43	Weighted Average
116,302		99.38% Pervious Area
721		0.62% Impervious Area



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

**Summary for Subcatchment 27\_30S: Roof 27\_30**

Runoff = 0.25 cfs @ 12.08 hrs, Volume= 0.020 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
1,632	98	Roofs, HSG B
300	98	Water Surface, HSG B
1,932	98	Weighted Average
1,932		100.00% Impervious Area

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

**Summary for Subcatchment 31\_35S: Roof 31\_35**

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
2,040	98	Roofs, HSG B
384	98	Water Surface, HSG B
2,424	98	Weighted Average
2,424		100.00% Impervious Area

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

**Summary for Subcatchment 36\_38S: Roof 36\_38**

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.015 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"



Area (sf)	CN	Description
1,170	98	Roofs, HSG B
294	98	Water Surface, HSG B
1,464	98	Weighted Average
1,464		100.00% Impervious Area

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

**Summary for Subcatchment 39\_44S: Roof 39\_44**

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
2,184	98	Roofs, HSG B
228	98	Water Surface, HSG B
2,412	98	Weighted Average
2,412		100.00% Impervious Area

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

**Summary for Subcatchment 45\_50S: Roof 45\_50**

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 5.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-YR STORM Rainfall=5.67"

Area (sf)	CN	Description
2,184	98	Roofs, HSG B
228	98	Water Surface, HSG B
2,412	98	Weighted Average
2,412		100.00% Impervious Area

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



**Summary for Reach 1R: Analysis Point #1**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.681 ac, 6.99% Impervious, Inflow Depth = 0.00" for 10-YR STORM event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

**Summary for Reach 2R: Analysis Point #2**

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.706 ac, 42.05% Impervious, Inflow Depth > 1.30" for 10-YR STORM event  
 Inflow = 4.14 cfs @ 12.35 hrs, Volume= 0.836 af  
 Outflow = 4.14 cfs @ 12.35 hrs, Volume= 0.836 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

**Summary for Reach 10R: HW 1**

[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.470 ac, 29.47% Impervious, Inflow Depth = 2.09" for 10-YR STORM event  
 Inflow = 1.14 cfs @ 12.09 hrs, Volume= 0.082 af  
 Outflow = 1.14 cfs @ 12.09 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Max. Velocity= 3.12 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.18 fps, Avg. Travel Time= 0.6 min

Peak Storage= 15 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.47'

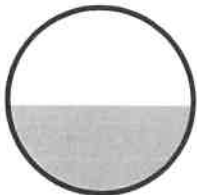
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.52 cfs

12.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

Length= 40.0' Slope= 0.0050 '/'

Inlet Invert= 54.00', Outlet Invert= 53.80'





**Summary for Pond 1P: DMH 1**

[63] Warning: Exceeded Reach 10R INLET depth by 2.44' @ 12.09 hrs

[80] Warning: Exceeded Pond 12P by 1.01' @ 24.25 hrs (2.68 cfs 0.381 af)

Inflow Area = 1.204 ac, 61.55% Impervious, Inflow Depth = 3.57" for 10-YR STORM event  
 Inflow = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af  
 Outflow = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 56.91' @ 12.09 hrs

Flood Elev= 57.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	53.70'	<b>12.0" Round Culvert</b> L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 53.70' / 52.07' S= 0.0272 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=4.80 cfs @ 12.09 hrs HW=56.88' TW=54.30' (Dynamic Tailwater)

1=Culvert (Inlet Controls 4.80 cfs @ 6.11 fps)

**Summary for Pond 1\_2P: Roof 1\_2**

Inflow Area = 0.018 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.10 cfs @ 12.08 hrs, Volume= 0.008 af  
 Outflow = 0.02 cfs @ 12.47 hrs, Volume= 0.008 af, Atten= 76%, Lag= 22.9 min  
 Discarded = 0.02 cfs @ 12.47 hrs, Volume= 0.008 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 54.48' @ 12.47 hrs Surf.Area= 96 sf Storage= 96 cf

Plug-Flow detention time= 31.4 min calculated for 0.008 af (100% of inflow)

Center-of-Mass det. time= 31.4 min ( 777.4 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	51.99'	251 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.99	96	0.0	0	0
52.00	96	40.0	0	0
55.99	96	40.0	153	154
56.00	96	100.0	1	155
57.00	96	100.0	96	251

Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	<b>40.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00



Coef. (English) 2.80 2.92 3.08 3.30 3.32  
 #2 Discarded 51.99' **3.000 in/hr Exfiltration over Surface area**  
 Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'

**Discarded OutFlow** Max=0.02 cfs @ 12.47 hrs HW=54.48' (Free Discharge)

↑ **2=Exfiltration** ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=51.99' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 2P: BIORETENTION 1

Inflow Area = 2.089 ac, 58.97% Impervious, Inflow Depth = 1.52" for 10-YR STORM event  
 Inflow = 3.50 cfs @ 12.08 hrs, Volume= 0.265 af  
 Outflow = 1.22 cfs @ 12.35 hrs, Volume= 0.274 af, Atten= 65%, Lag= 16.0 min  
 Discarded = 1.22 cfs @ 12.35 hrs, Volume= 0.274 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Starting Elev= 48.50' Surf.Area= 3,030 sf Storage= 412 cf

Peak Elev= 51.28' @ 12.35 hrs Surf.Area= 3,293 sf Storage= 2,761 cf (2,349 cf above start)

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	48.16'	9,898 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
48.16	3,030	146.5	0.0	0	0	3,030
48.17	3,030	146.5	40.0	12	12	3,031
48.50	3,030	146.5	40.0	400	412	3,080
49.49	3,030	146.5	40.0	1,200	1,612	3,225
49.50	3,030	146.5	5.0	2	1,613	3,226
50.99	3,030	146.5	5.0	226	1,839	3,445
51.00	3,030	146.5	100.0	30	1,870	3,446
52.00	4,010	185.6	100.0	3,509	5,378	4,493
53.00	5,050	204.4	100.0	4,520	9,898	5,108

Device	Routing	Invert	Outlet Devices
#1	Primary	49.50'	<b>12.0" Round Culvert</b> L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 49.50' / 49.00' S= 0.0200 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	52.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Discarded	48.16'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 47.50' Phase-In= 0.10'



**Discarded OutFlow** Max=1.22 cfs @ 12.35 hrs HW=51.28' (Free Discharge)

↑ **3=Exfiltration** ( Controls 1.22 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=48.50' TW=0.00' (Dynamic Tailwater)

↑ **1=Culvert** ( Controls 0.00 cfs)

↑ **2=Orifice/Grate** ( Controls 0.00 cfs)

### Summary for Pond 3P: Front depression

Inflow Area = 0.681 ac, 6.99% Impervious, Inflow Depth = 1.63" for 10-YR STORM event  
 Inflow = 0.76 cfs @ 12.34 hrs, Volume= 0.093 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 52.55' @ 25.29 hrs Surf.Area= 8,879 sf Storage= 4,032 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description		
#1	52.00'	34,350 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
52.00	5,815	434.1	0	0	5,815
54.00	19,963	845.8	24,368	24,368	47,767
54.50	19,963	845.8	9,982	34,350	48,190

Device	Routing	Invert	Outlet Devices				
#1	Primary	54.00'	<b>40.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b>				
			Head (feet)	0.20	0.40	0.60	0.80 1.00
			Coef. (English)	2.80	2.92	3.08	3.30 3.32

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=52.00' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 3\_5P: Roof 3\_5

Inflow Area = 0.028 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.16 cfs @ 12.08 hrs, Volume= 0.013 af  
 Outflow = 0.04 cfs @ 12.45 hrs, Volume= 0.013 af, Atten= 75%, Lag= 22.3 min  
 Discarded = 0.04 cfs @ 12.45 hrs, Volume= 0.013 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 53.70' @ 12.45 hrs Surf.Area= 204 sf Storage= 139 cf

Plug-Flow detention time= 24.9 min calculated for 0.013 af (100% of inflow)

Center-of-Mass det. time= 24.9 min ( 770.9 - 746.0 )



Volume	Invert	Avail.Storage	Storage Description	
#1	51.99'	532 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
51.99	204	0.0	0	0
52.00	204	40.0	1	1
55.99	204	40.0	326	326
56.00	204	100.0	2	328
57.00	204	100.0	204	532

Device	Routing	Invert	Outlet Devices
#1	Primary	56.00'	<b>40.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	51.99'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'

**Discarded OutFlow** Max=0.04 cfs @ 12.45 hrs HW=53.70' (Free Discharge)

↑ **2=Exfiltration** ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=51.99' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 4P: DMH 4

Inflow Area = 0.288 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af  
 Outflow = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 52.65' @ 12.11 hrs

Flood Elev= 55.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	51.71'	<b>12.0" Round Culvert</b> L= 142.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 51.71' / 51.00' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.59 cfs @ 12.08 hrs HW=52.63' TW=51.98' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 1.59 cfs @ 2.77 fps)



**Summary for Pond 5P: DMH 5**

Inflow Area = 1.204 ac, 61.55% Impervious, Inflow Depth = 3.57" for 10-YR STORM event  
 Inflow = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af  
 Outflow = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 53.11' @ 12.10 hrs

Flood Elev= 56.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	50.94'	<b>15.0" Round Culvert</b> L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 50.94' / 50.74' S= 0.0050 ' / S= 0.0050 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.84 cfs @ 12.09 hrs HW=53.07' TW=52.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 4.84 cfs @ 3.95 fps)

**Summary for Pond 6\_11P: Roof 6\_11**

Inflow Area = 0.067 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af  
 Outflow = 0.07 cfs @ 12.53 hrs, Volume= 0.030 af, Atten= 82%, Lag= 26.9 min  
 Discarded = 0.07 cfs @ 12.53 hrs, Volume= 0.030 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 55.07' @ 12.53 hrs Surf.Area= 456 sf Storage= 379 cf

Plug-Flow detention time= 39.9 min calculated for 0.030 af (100% of inflow)

Center-of-Mass det. time= 39.9 min ( 785.9 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	52.99'	1,190 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
52.99	465	0.0	0	0
53.00	456	40.0	2	2
56.99	456	40.0	728	730
57.00	456	100.0	5	734
58.00	456	100.0	456	1,190

Device	Routing	Invert	Outlet Devices
#1	Primary	57.00'	<b>40.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	52.99'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'



**Discarded OutFlow** Max=0.07 cfs @ 12.53 hrs HW=55.07' (Free Discharge)

↑ **2=Exfiltration** ( Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=52.99' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 11P: CB 2

Inflow Area = 0.288 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af  
 Outflow = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.60 cfs @ 12.08 hrs, Volume= 0.130 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 53.03' @ 12.09 hrs

Flood Elev= 55.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	52.10'	<b>12.0" Round Culvert</b> L= 58.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.10' / 51.81' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

**Primary OutFlow** Max=1.59 cfs @ 12.08 hrs HW=53.02' TW=52.63' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 1.59 cfs @ 2.75 fps)

### Summary for Pond 12P: CB 3

[58] Hint: Peaked 1.80' above defined flood level

Inflow Area = 0.733 ac, 82.12% Impervious, Inflow Depth = 4.52" for 10-YR STORM event  
 Inflow = 3.72 cfs @ 12.08 hrs, Volume= 0.276 af  
 Outflow = 3.72 cfs @ 12.08 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min  
 Primary = 3.72 cfs @ 12.08 hrs, Volume= 0.276 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 57.75' @ 12.09 hrs

Flood Elev= 55.95'

Device	Routing	Invert	Outlet Devices
#1	Primary	52.70'	<b>15.0" Round Culvert</b> L= 176.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.70' / 51.82' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=3.70 cfs @ 12.08 hrs HW=57.71' TW=56.86' (Dynamic Tailwater)

↑ **1=Culvert** (Outlet Controls 3.70 cfs @ 3.02 fps)



**Summary for Pond 12\_15P: Roof 27\_30**

Inflow Area = 0.044 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.25 cfs @ 12.08 hrs, Volume= 0.020 af  
 Outflow = 0.03 cfs @ 12.63 hrs, Volume= 0.020 af, Atten= 88%, Lag= 32.8 min  
 Discarded = 0.03 cfs @ 12.63 hrs, Volume= 0.020 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 58.32' @ 12.63 hrs Surf.Area= 300 sf Storage= 280 cf

Plug-Flow detention time= 64.0 min calculated for 0.020 af (100% of inflow)  
 Center-of-Mass det. time= 64.0 min ( 810.0 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description	
#1	55.99'	783 cf	<b>Custom Stage Data (Prismatic) Listed below (Recalc)</b>	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.99	300	0.0	0	0
56.00	300	40.0	1	1
59.99	300	40.0	479	480
60.00	300	100.0	3	483
61.00	300	100.0	300	783

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	<b>96.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	55.99'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'

**Discarded OutFlow** Max=0.03 cfs @ 12.63 hrs HW=58.32' (Free Discharge)  
 ↳2=Exfiltration ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.99' TW=0.00' (Dynamic Tailwater)  
 ↳1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond 13P: CB 4**

Inflow Area = 1.204 ac, 61.55% Impervious, Inflow Depth = 3.57" for 10-YR STORM event  
 Inflow = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af  
 Outflow = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af, Atten= 0%, Lag= 0.0 min  
 Primary = 4.85 cfs @ 12.09 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 54.32' @ 12.09 hrs  
 Flood Elev= 56.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	51.72'	<b>15.0" Round Culvert</b>



L= 136.0' CPP, projecting, no headwall, Ke= 0.900  
 Inlet / Outlet Invert= 51.72' / 51.04' S= 0.0050 ' S= 0.0050 ' Cc= 0.900  
 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.84 cfs @ 12.09 hrs HW=54.30' TW=53.07' (Dynamic Tailwater)  
 ↑1=Culvert (Outlet Controls 4.84 cfs @ 3.95 fps)

### Summary for Pond 16\_19P: Roof 16\_19

Inflow Area = 0.047 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af  
 Outflow = 0.03 cfs @ 12.63 hrs, Volume= 0.021 af, Atten= 88%, Lag= 33.1 min  
 Discarded = 0.03 cfs @ 12.63 hrs, Volume= 0.021 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 58.37' @ 12.63 hrs Surf.Area= 312 sf Storage= 297 cf

Plug-Flow detention time= 65.3 min calculated for 0.021 af (100% of inflow)  
 Center-of-Mass det. time= 65.3 min ( 811.3 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description	
#1	55.99'	814 cf	<b>Custom Stage Data (Prismatic) Listed below (Recalc)</b>	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.99	312	0.0	0	0
56.00	312	40.0	1	1
59.99	312	40.0	498	499
60.00	312	100.0	3	502
61.00	312	100.0	312	814
Device	Routing	Invert	Outlet Devices	
#1	Primary	60.00'	<b>96.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b>	
			Head (feet) 0.20 0.40 0.60 0.80 1.00	
			Coef. (English) 2.80 2.92 3.08 3.30 3.32	
#2	Discarded	55.99'	<b>3.000 in/hr Exfiltration over Surface area</b>	
			Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'	

**Discarded OutFlow** Max=0.03 cfs @ 12.63 hrs HW=58.37' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.99' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)



**Summary for Pond 20P: WET POND 1**

Inflow Area = 2.516 ac, 62.69% Impervious, Inflow Depth = 3.42" for 10-YR STORM event  
 Inflow = 9.64 cfs @ 12.09 hrs, Volume= 0.716 af  
 Outflow = 3.45 cfs @ 12.37 hrs, Volume= 0.710 af, Atten= 64%, Lag= 16.8 min  
 Primary = 3.45 cfs @ 12.37 hrs, Volume= 0.710 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Starting Elev= 50.50' Surf.Area= 4,388 sf Storage= 9,548 cf

Peak Elev= 52.42' @ 12.37 hrs Surf.Area= 7,885 sf Storage= 20,632 cf (11,084 cf above start)

Plug-Flow detention time= 307.6 min calculated for 0.491 af (69% of inflow)

Center-of-Mass det. time= 116.1 min ( 917.2 - 801.0 )

Volume	Invert	Avail.Storage	Storage Description		
#1	46.50'	35,335 cf	<b>Custom Stage Data (Irregular) Listed below (Recalc)</b>		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.50	693	243.2	0	0	693
47.00	1,065	252.6	436	436	1,084
48.00	1,870	279.6	1,449	1,885	2,258
49.00	2,782	314.3	2,311	4,196	3,925
50.00	3,840	360.2	3,297	7,493	6,411
50.50	4,388	369.6	2,055	9,548	6,987
51.00	4,983	385.1	2,341	11,889	7,937
51.99	6,207	411.2	5,528	17,417	9,637
52.00	7,208	541.0	67	17,484	19,472
53.00	8,880	569.0	8,029	25,514	22,007
54.00	10,793	605.7	9,821	35,335	25,488

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	<b>18.0" Round Culvert</b> L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 50.50' / 49.00' S= 0.0500 ' S= 0.0500 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	50.50'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	52.00'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	53.00'	<b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Primary	53.50'	<b>5.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32



**Primary OutFlow** Max=3.45 cfs @ 12.37 hrs HW=52.42' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 3.45 cfs of 7.26 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.86 cfs @ 6.29 fps)
- 3=Orifice/Grate (Orifice Controls 2.60 cfs @ 2.07 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)
- 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

### Summary for Pond 20\_22P: Roof 20\_22

Inflow Area = 0.033 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.18 cfs @ 12.08 hrs, Volume= 0.015 af  
 Outflow = 0.02 cfs @ 12.64 hrs, Volume= 0.015 af, Atten= 88%, Lag= 33.4 min  
 Discarded = 0.02 cfs @ 12.64 hrs, Volume= 0.015 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 58.42' @ 12.64 hrs Surf.Area= 217 sf Storage= 211 cf

Plug-Flow detention time= 66.5 min calculated for 0.015 af (100% of inflow)  
 Center-of-Mass det. time= 66.5 min ( 812.5 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description	
#1	55.99'	566 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.99	217	0.0	0	0
56.00	217	40.0	1	1
59.99	217	40.0	346	347
60.00	217	100.0	2	349
61.00	217	100.0	217	566

Device	Routing	Invert	Outlet Devices	
#1	Primary	60.00'	<b>96.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b>	
			Head (feet) 0.20 0.40 0.60 0.80 1.00	
			Coef. (English) 2.80 2.92 3.08 3.30 3.32	
#2	Discarded	55.99'	<b>3.000 in/hr Exfiltration over Surface area</b>	
			Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'	

**Discarded OutFlow** Max=0.02 cfs @ 12.64 hrs HW=58.42' (Free Discharge)

- 2=Exfiltration (Controls 0.02 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.99' TW=0.00' (Dynamic Tailwater)

- 1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)



**Summary for Pond 23\_26P: Roof 23\_26**

Inflow Area = 0.044 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.24 cfs @ 12.08 hrs, Volume= 0.020 af  
 Outflow = 0.03 cfs @ 12.64 hrs, Volume= 0.020 af, Atten= 88%, Lag= 33.5 min  
 Discarded = 0.03 cfs @ 12.64 hrs, Volume= 0.020 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 58.44' @ 12.64 hrs Surf.Area= 288 sf Storage= 282 cf

Plug-Flow detention time= 66.9 min calculated for 0.020 af (100% of inflow)

Center-of-Mass det. time= 66.9 min ( 812.9 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description	
#1	55.99'	752 cf	<b>Custom Stage Data (Prismatic) Listed below (Recalc)</b>	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.99	288	0.0	0	0
56.00	288	40.0	1	1
59.99	288	40.0	460	461
60.00	288	100.0	3	464
61.00	288	100.0	288	752

Device	Routing	Invert	Outlet Devices	
#1	Primary	60.00'	<b>96.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b>	
			Head (feet) 0.20 0.40 0.60 0.80 1.00	
			Coef. (English) 2.80 2.92 3.08 3.30 3.32	
#2	Discarded	55.99'	<b>3.000 in/hr Exfiltration over Surface area</b>	
			Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'	

**Discarded OutFlow** Max=0.03 cfs @ 12.64 hrs HW=58.44' (Free Discharge)

↑ **2=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.99' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 27\_30P: Roof 27\_30**

Inflow Area = 0.044 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.25 cfs @ 12.08 hrs, Volume= 0.020 af  
 Outflow = 0.03 cfs @ 12.63 hrs, Volume= 0.020 af, Atten= 88%, Lag= 32.8 min  
 Discarded = 0.03 cfs @ 12.63 hrs, Volume= 0.020 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 58.32' @ 12.63 hrs Surf.Area= 300 sf Storage= 280 cf

Plug-Flow detention time= 64.0 min calculated for 0.020 af (100% of inflow)

Center-of-Mass det. time= 64.0 min ( 810.0 - 746.0 )



Volume	Invert	Avail.Storage	Storage Description
#1	55.99'	783 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)
55.99	300	0.0	0
56.00	300	40.0	1
59.99	300	40.0	479
60.00	300	100.0	3
61.00	300	100.0	300
Cum.Store (cubic-feet)			
			0
			1
			480
			483
			783
Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	<b>96.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	55.99'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'

**Discarded OutFlow** Max=0.03 cfs @ 12.63 hrs HW=58.32' (Free Discharge)

↳ **2=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.99' TW=0.00' (Dynamic Tailwater)

↳ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 31\_35P: Roof 31\_35

Inflow Area = 0.056 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af  
 Outflow = 0.04 cfs @ 12.67 hrs, Volume= 0.025 af, Atten= 88%, Lag= 35.1 min  
 Discarded = 0.04 cfs @ 12.67 hrs, Volume= 0.025 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 59.30' @ 12.67 hrs Surf.Area= 384 sf Storage= 355 cf

Plug-Flow detention time= 67.9 min calculated for 0.025 af (100% of inflow)

Center-of-Mass det. time= 67.9 min ( 813.9 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	56.99'	1,002 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)
56.99	384	0.0	0
57.00	384	40.0	2
60.99	384	40.0	613
61.00	384	100.0	4
62.00	384	100.0	384
Cum.Store (cubic-feet)			
			0
			2
			614
			618
			1,002



Device	Routing	Invert	Outlet Devices
#1	Primary	61.00'	<b>123.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	56.99'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 50.50' Phase-In= 0.01'

**Discarded OutFlow** Max=0.04 cfs @ 12.67 hrs HW=59.30' (Free Discharge)

↑ **2=Exfiltration** ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=56.99' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

### Summary for Pond 36\_38P: Roof 36\_38

Inflow Area = 0.034 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.19 cfs @ 12.08 hrs, Volume= 0.015 af  
 Outflow = 0.03 cfs @ 12.58 hrs, Volume= 0.015 af, Atten= 86%, Lag= 29.8 min  
 Discarded = 0.03 cfs @ 12.58 hrs, Volume= 0.015 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 57.64' @ 12.58 hrs Surf.Area= 294 sf Storage= 194 cf

Plug-Flow detention time= 46.1 min calculated for 0.015 af (100% of inflow)

Center-of-Mass det. time= 46.1 min ( 792.1 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description	
#1	55.99'	767 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.99	294	0.0	0	0
56.00	294	40.0	1	1
59.99	294	40.0	469	470
60.00	294	100.0	3	473
61.00	294	100.0	294	767

Device	Routing	Invert	Outlet Devices
#1	Primary	60.00'	<b>90.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	55.99'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 50.50' Phase-In= 0.01'

**Discarded OutFlow** Max=0.03 cfs @ 12.58 hrs HW=57.64' (Free Discharge)

↑ **2=Exfiltration** ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=55.99' TW=0.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)



**Summary for Pond 39\_44P: Roof 39\_44**

Inflow Area = 0.055 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af  
 Outflow = 0.04 cfs @ 12.59 hrs, Volume= 0.025 af, Atten= 86%, Lag= 30.6 min  
 Discarded = 0.04 cfs @ 12.59 hrs, Volume= 0.025 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 56.98' @ 12.59 hrs Surf.Area= 300 sf Storage= 359 cf

Plug-Flow detention time= 65.7 min calculated for 0.025 af (100% of inflow)

Center-of-Mass det. time= 65.7 min ( 811.7 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description	
#1	53.99'	783 cf	<b>Custom Stage Data (Prismatic) Listed below (Recalc)</b>	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.99	300	0.0	0	0
54.00	300	40.0	1	1
57.99	300	40.0	479	480
58.00	300	100.0	3	483
59.00	300	100.0	300	783

Device	Routing	Invert	Outlet Devices	
#1	Primary	58.00'	<b>72.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b>	
			Head (feet) 0.20 0.40 0.60 0.80 1.00	
			Coef. (English) 2.80 2.92 3.08 3.30 3.32	
#2	Discarded	53.99'	<b>3.000 in/hr Exfiltration over Surface area</b>	
			Conductivity to Groundwater Elevation = 51.00' Phase-In= 0.01'	

**Discarded OutFlow** Max=0.04 cfs @ 12.59 hrs HW=56.98' (Free Discharge)

↑ **2=Exfiltration** ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=53.99' TW=54.00' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond 40P: LOW POINT**

Inflow Area = 1.419 ac, 49.16% Impervious, Inflow Depth = 3.58" for 10-YR STORM event  
 Inflow = 5.94 cfs @ 12.09 hrs, Volume= 0.424 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 53.94' @ 24.34 hrs Surf.Area= 21,405 sf Storage= 18,465 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)



Volume	Invert	Avail.Storage	Storage Description		
#1	52.00'	45,022 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
52.00	1,480	195.4	0	0	1,480
54.00	22,343	662.6	19,716	19,716	33,391
55.00	28,390	704.3	25,306	45,022	37,978
Device	Routing	Invert	Outlet Devices		
#1	Primary	54.60'	15.0" Round Culvert L= 93.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 54.60' / 54.14' S= 0.0049 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf		

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=52.00' TW=54.04' (Dynamic Tailwater)

1=Culvert ( Controls 0.00 cfs)

### Summary for Pond 45\_50P: Roof 45\_50

Inflow Area = 0.055 ac, 100.00% Impervious, Inflow Depth = 5.43" for 10-YR STORM event  
 Inflow = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af  
 Outflow = 0.04 cfs @ 12.59 hrs, Volume= 0.025 af, Atten= 86%, Lag= 30.6 min  
 Discarded = 0.04 cfs @ 12.59 hrs, Volume= 0.025 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3  
 Peak Elev= 56.98' @ 12.59 hrs Surf.Area= 300 sf Storage= 359 cf

Plug-Flow detention time= 65.7 min calculated for 0.025 af (100% of inflow)  
 Center-of-Mass det. time= 65.7 min ( 811.7 - 746.0 )

Volume	Invert	Avail.Storage	Storage Description	
#1	53.99'	783 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.99	300	0.0	0	0
54.00	300	40.0	1	1
57.99	300	40.0	479	480
58.00	300	100.0	3	483
59.00	300	100.0	300	783

Device	Routing	Invert	Outlet Devices
#1	Primary	58.00'	<b>72.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Discarded	53.99'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 51.00'    Phase-In= 0.01'



**Discarded OutFlow** Max=0.04 cfs @ 12.59 hrs HW=56.98' (Free Discharge)

↑2=Exfiltration (Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=53.99' TW=50.50' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

### Summary for Pond CB 1: CB 1

Inflow Area = 2.089 ac, 58.97% Impervious, Inflow Depth = 1.52" for 10-YR STORM event  
 Inflow = 3.50 cfs @ 12.08 hrs, Volume= 0.265 af  
 Outflow = 3.50 cfs @ 12.08 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min  
 Primary = 3.50 cfs @ 12.08 hrs, Volume= 0.265 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 53.18' @ 12.08 hrs

Flood Elev= 55.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	51.90'	<b>15.0" Round Culvert</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 51.90' / 51.79' S= 0.0050 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=3.49 cfs @ 12.08 hrs HW=53.17' TW=51.02' (Dynamic Tailwater)

↑1=Culvert (Barrel Controls 3.49 cfs @ 3.47 fps)

### Summary for Pond CB1A: CB 1A

[80] Warning: Exceeded Pond DMH2 by 0.04' @ 12.11 hrs (0.05 cfs 0.000 af)

Inflow Area = 1.765 ac, 53.49% Impervious, Inflow Depth = 0.89" for 10-YR STORM event  
 Inflow = 1.76 cfs @ 12.08 hrs, Volume= 0.131 af  
 Outflow = 1.76 cfs @ 12.08 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.76 cfs @ 12.08 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 54.30' @ 12.08 hrs

Flood Elev= 56.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	53.47'	<b>15.0" Round Culvert</b> L= 110.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 53.47' / 52.92' S= 0.0050 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.75 cfs @ 12.08 hrs HW=54.30' TW=53.73' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 1.75 cfs @ 2.87 fps)



**Summary for Pond CB1B: CB 1B**

Inflow Area = 1.765 ac, 53.49% Impervious, Inflow Depth = 0.89" for 10-YR STORM event  
 Inflow = 1.76 cfs @ 12.08 hrs, Volume= 0.131 af  
 Outflow = 1.76 cfs @ 12.08 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min  
 Primary = 1.76 cfs @ 12.08 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 53.73' @ 12.08 hrs

Flood Elev= 56.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	52.82'	<b>15.0" Round Culvert</b> L= 165.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 52.82' / 52.00' S= 0.0050 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.75 cfs @ 12.08 hrs HW=53.73' TW=53.17' (Dynamic Tailwater)

↑1=Culvert (Outlet Controls 1.75 cfs @ 2.56 fps)

**Summary for Pond DMH2: DMH 2**

Inflow Area = 1.419 ac, 49.16% Impervious, Inflow Depth = 0.00" for 10-YR STORM event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 54.28' @ 12.07 hrs

Flood Elev= 58.01'

Device	Routing	Invert	Outlet Devices
#1	Primary	54.04'	<b>15.0" Round Culvert</b> L= 94.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 54.04' / 53.57' S= 0.0050 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=54.04' TW=53.47' (Dynamic Tailwater)

↑1=Culvert ( Controls 0.00 cfs)



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 1_2S: Roof 1_2</b>	Runoff Area=776 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.13 cfs 0.010 af
<b>Subcatchment 3_5S: Roof 3_5</b>	Runoff Area=1,224 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.20 cfs 0.016 af
<b>Subcatchment 6_11S: Roof 6_11</b>	Runoff Area=2,904 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.47 cfs 0.039 af
<b>Subcatchment 10S: Subcatchment 10S</b> Flow Length=280'	Runoff Area=29,654 sf 6.99% Impervious Runoff Depth=2.64" Slope=0.0100 '/' Tc=22.8 min CN=59 Runoff=1.30 cfs 0.150 af
<b>Subcatchment 12_15S: Roof 12_15</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.026 af
<b>Subcatchment 16_19S: Roof 16_18</b>	Runoff Area=2,040 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.33 cfs 0.027 af
<b>Subcatchment 20S: Subcatchment 20S</b>	Runoff Area=18,078 sf 20.06% Impervious Runoff Depth=3.56" Tc=6.0 min CN=68 Runoff=1.73 cfs 0.123 af
<b>Subcatchment 20_22S: Roof 20_22</b>	Runoff Area=1,440 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.23 cfs 0.019 af
<b>Subcatchment 21S: Subcatchment 21S</b>	Runoff Area=61,821 sf 49.16% Impervious Runoff Depth=4.98" Tc=6.0 min CN=81 Runoff=8.18 cfs 0.589 af
<b>Subcatchment 22S: Subcatchment 22S</b>	Runoff Area=42,220 sf 50.92% Impervious Runoff Depth=4.10" Tc=6.0 min CN=73 Runoff=4.66 cfs 0.331 af
<b>Subcatchment 23S: Subcatchment 23S</b>	Runoff Area=12,524 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=2.03 cfs 0.167 af
<b>Subcatchment 23_26S: Roof 23_26</b>	Runoff Area=1,920 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.026 af
<b>Subcatchment 24S: Subcatchment 24S</b>	Runoff Area=31,941 sf 82.12% Impervious Runoff Depth=6.01" Tc=6.0 min CN=90 Runoff=4.86 cfs 0.367 af
<b>Subcatchment 25S: Subcatchment 26S</b>	Runoff Area=15,080 sf 71.23% Impervious Runoff Depth=6.01" Tc=6.0 min CN=90 Runoff=2.30 cfs 0.173 af
<b>Subcatchment 26S: Subcatchment 26S</b>	Runoff Area=14,100 sf 88.87% Impervious Runoff Depth=6.48" Tc=6.0 min CN=94 Runoff=2.23 cfs 0.175 af
<b>Subcatchment 27S: Subcatchment 27S</b>	Runoff Area=117,023 sf 0.62% Impervious Runoff Depth=1.16" Tc=6.0 min CN=43 Runoff=2.58 cfs 0.259 af



<b>Subcatchment 27_30S: Roof 27_30</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.31 cfs 0.026 af
<b>Subcatchment 31_35S: Roof 31_35</b>	Runoff Area=2,424 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af
<b>Subcatchment 36_38S: Roof 36_38</b>	Runoff Area=1,464 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.24 cfs 0.019 af
<b>Subcatchment 39_44S: Roof 39_44</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af
<b>Subcatchment 45_50S: Roof 45_50</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=6.95" Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af
<b>Reach 1R: Analysis Point #1</b>	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
<b>Reach 2R: Analysis Point #2</b>	Inflow=8.43 cfs 1.241 af Outflow=8.43 cfs 1.241 af
<b>Reach 10R: HW 1</b>	Avg. Flow Depth=0.61' Max Vel=3.46 fps Inflow=1.73 cfs 0.123 af 12.0" Round Pipe n=0.013 L=40.0' S=0.0050 ' Capacity=2.52 cfs Outflow=1.73 cfs 0.123 af
<b>Pond 1P: DMH 1</b>	Peak Elev=61.51' Inflow=6.59 cfs 0.491 af 12.0" Round Culvert n=0.013 L=60.0' S=0.0272 ' Outflow=6.59 cfs 0.491 af
<b>Pond 1_2P: Roof 1_2</b>	Peak Elev=55.34' Storage=129 cf Inflow=0.13 cfs 0.010 af Discarded=0.03 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.010 af
<b>Pond 2P: BIORETENTION 1</b>	Peak Elev=51.62' Storage=3,928 cf Inflow=4.53 cfs 0.348 af Discarded=1.36 cfs 0.358 af Primary=0.00 cfs 0.000 af Outflow=1.36 cfs 0.358 af
<b>Pond 3P: Front depression</b>	Peak Elev=52.81' Storage=6,521 cf Inflow=1.30 cfs 0.150 af Outflow=0.00 cfs 0.000 af
<b>Pond 3_5P: Roof 3_5</b>	Peak Elev=54.31' Storage=189 cf Inflow=0.20 cfs 0.016 af Discarded=0.05 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.016 af
<b>Pond 4P: DMH 4</b>	Peak Elev=53.11' Inflow=2.03 cfs 0.167 af 12.0" Round Culvert n=0.013 L=142.0' S=0.0050 ' Outflow=2.03 cfs 0.167 af
<b>Pond 5P: DMH 5</b>	Peak Elev=54.43' Inflow=6.59 cfs 0.491 af 15.0" Round Culvert n=0.013 L=40.0' S=0.0050 ' Outflow=6.59 cfs 0.491 af
<b>Pond 6_11P: Roof 6_11</b>	Peak Elev=55.83' Storage=518 cf Inflow=0.47 cfs 0.039 af Discarded=0.08 cfs 0.039 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.039 af
<b>Pond 11P: CB 2</b>	Peak Elev=53.55' Inflow=2.03 cfs 0.167 af 12.0" Round Culvert n=0.013 L=58.0' S=0.0050 ' Outflow=2.03 cfs 0.167 af



**Pond 12P: CB 3**

Peak Elev=62.95' Inflow=4.86 cfs 0.367 af  
 15.0" Round Culvert n=0.013 L=176.0' S=0.0050 '/' Outflow=4.86 cfs 0.367 af

**Pond 12\_15P: Roof 27\_30**

Peak Elev=59.20' Storage=385 cf Inflow=0.31 cfs 0.026 af  
 Discarded=0.03 cfs 0.026 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.026 af

**Pond 13P: CB 4**

Peak Elev=56.69' Inflow=6.59 cfs 0.491 af  
 15.0" Round Culvert n=0.013 L=136.0' S=0.0050 '/' Outflow=6.59 cfs 0.491 af

**Pond 16\_19P: Roof 16\_19**

Peak Elev=59.27' Storage=409 cf Inflow=0.33 cfs 0.027 af  
 Discarded=0.04 cfs 0.027 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.027 af

**Pond 20P: WET POND 1**

Peak Elev=52.70' Storage=22,910 cf Inflow=13.27 cfs 0.988 af  
 Outflow=6.54 cfs 0.982 af

**Pond 20\_22P: Roof 20\_22**

Peak Elev=59.33' Storage=290 cf Inflow=0.23 cfs 0.019 af  
 Discarded=0.03 cfs 0.019 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.019 af

**Pond 23\_26P: Roof 23\_26**

Peak Elev=59.35' Storage=387 cf Inflow=0.31 cfs 0.026 af  
 Discarded=0.03 cfs 0.026 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.026 af

**Pond 27\_30P: Roof 27\_30**

Peak Elev=59.20' Storage=385 cf Inflow=0.31 cfs 0.026 af  
 Discarded=0.03 cfs 0.026 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.026 af

**Pond 31\_35P: Roof 31\_35**

Peak Elev=60.18' Storage=490 cf Inflow=0.39 cfs 0.032 af  
 Discarded=0.04 cfs 0.032 af Primary=0.00 cfs 0.000 af Outflow=0.04 cfs 0.032 af

**Pond 36\_38P: Roof 36\_38**

Peak Elev=58.28' Storage=270 cf Inflow=0.24 cfs 0.019 af  
 Discarded=0.03 cfs 0.019 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.019 af

**Pond 39\_44P: Roof 39\_44**

Peak Elev=58.00' Storage=484 cf Inflow=0.39 cfs 0.032 af  
 Discarded=0.05 cfs 0.032 af Primary=0.03 cfs 0.000 af Outflow=0.08 cfs 0.032 af

**Pond 40P: LOW POINT**

Peak Elev=54.26' Storage=25,666 cf Inflow=8.18 cfs 0.589 af  
 15.0" Round Culvert n=0.013 L=93.0' S=0.0049 '/' Outflow=0.00 cfs 0.000 af

**Pond 45\_50P: Roof 45\_50**

Peak Elev=58.00' Storage=484 cf Inflow=0.39 cfs 0.032 af  
 Discarded=0.05 cfs 0.032 af Primary=0.03 cfs 0.000 af Outflow=0.08 cfs 0.032 af

**Pond CB 1: CB 1**

Peak Elev=53.49' Inflow=4.53 cfs 0.348 af  
 15.0" Round Culvert n=0.013 L=22.0' S=0.0050 '/' Outflow=4.53 cfs 0.348 af

**Pond CB1A: CB 1A**

Peak Elev=54.50' Inflow=2.30 cfs 0.173 af  
 15.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=2.30 cfs 0.173 af

**Pond CB1B: CB 1B**

Peak Elev=53.98' Inflow=2.30 cfs 0.173 af  
 15.0" Round Culvert n=0.013 L=165.0' S=0.0050 '/' Outflow=2.30 cfs 0.173 af

**Pond DMH2: DMH 2**

Peak Elev=54.48' Inflow=0.00 cfs 0.000 af  
 15.0" Round Culvert n=0.013 L=94.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af



**20737\_PR CONDITION\_8-25-2021**

*Type III 24-hr 25-YR STORM Rainfall=7.19"*

Prepared by Microsoft

Printed 8/25/2021

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**Total Runoff Area = 8.387 ac   Runoff Volume = 2.639 af   Average Runoff Depth = 3.78"**  
**60.80% Pervious = 5.099 ac   39.20% Impervious = 3.288 ac**



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points x 3  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 1_2S: Roof 1_2</b>	Runoff Area=776 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.15 cfs 0.012 af
<b>Subcatchment 3_5S: Roof 3_5</b>	Runoff Area=1,224 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.24 cfs 0.020 af
<b>Subcatchment 6_11S: Roof 6_11</b>	Runoff Area=2,904 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.56 cfs 0.046 af
<b>Subcatchment 10S: Subcatchment 10S</b> Flow Length=280'	Runoff Area=29,654 sf 6.99% Impervious Runoff Depth=3.68" Slope=0.0100 '/' Tc=22.8 min CN=59 Runoff=1.84 cfs 0.209 af
<b>Subcatchment 12_15S: Roof 12_15</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.38 cfs 0.031 af
<b>Subcatchment 16_19S: Roof 16_18</b>	Runoff Area=2,040 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.40 cfs 0.033 af
<b>Subcatchment 20S: Subcatchment 20S</b>	Runoff Area=18,078 sf 20.06% Impervious Runoff Depth=4.75" Tc=6.0 min CN=68 Runoff=2.31 cfs 0.164 af
<b>Subcatchment 20_22S: Roof 20_22</b>	Runoff Area=1,440 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.023 af
<b>Subcatchment 21S: Subcatchment 21S</b>	Runoff Area=61,821 sf 49.16% Impervious Runoff Depth=6.32" Tc=6.0 min CN=81 Runoff=10.27 cfs 0.747 af
<b>Subcatchment 22S: Subcatchment 22S</b>	Runoff Area=42,220 sf 50.92% Impervious Runoff Depth=5.35" Tc=6.0 min CN=73 Runoff=6.07 cfs 0.432 af
<b>Subcatchment 23S: Subcatchment 23S</b>	Runoff Area=12,524 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=2.43 cfs 0.201 af
<b>Subcatchment 23_26S: Roof 23_26</b>	Runoff Area=1,920 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.37 cfs 0.031 af
<b>Subcatchment 24S: Subcatchment 24S</b>	Runoff Area=31,941 sf 82.12% Impervious Runoff Depth=7.41" Tc=6.0 min CN=90 Runoff=5.92 cfs 0.453 af
<b>Subcatchment 25S: Subcatchment 26S</b>	Runoff Area=15,080 sf 71.23% Impervious Runoff Depth=7.41" Tc=6.0 min CN=90 Runoff=2.80 cfs 0.214 af
<b>Subcatchment 26S: Subcatchment 26S</b>	Runoff Area=14,100 sf 88.87% Impervious Runoff Depth=7.89" Tc=6.0 min CN=94 Runoff=2.69 cfs 0.213 af
<b>Subcatchment 27S: Subcatchment 27S</b>	Runoff Area=117,023 sf 0.62% Impervious Runoff Depth=1.85" Tc=6.0 min CN=43 Runoff=4.86 cfs 0.414 af



<b>Subcatchment 27_30S: Roof 27_30</b>	Runoff Area=1,932 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.38 cfs 0.031 af
<b>Subcatchment 31_35S: Roof 31_35</b>	Runoff Area=2,424 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.47 cfs 0.039 af
<b>Subcatchment 36_38S: Roof 36_38</b>	Runoff Area=1,464 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.28 cfs 0.023 af
<b>Subcatchment 39_44S: Roof 39_44</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.47 cfs 0.039 af
<b>Subcatchment 45_50S: Roof 45_50</b>	Runoff Area=2,412 sf 100.00% Impervious Runoff Depth=8.37" Tc=6.0 min CN=98 Runoff=0.47 cfs 0.039 af
<b>Reach 1R: Analysis Point #1</b>	Inflow=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af
<b>Reach 2R: Analysis Point #2</b>	Inflow=13.18 cfs 1.666 af Outflow=13.18 cfs 1.666 af
<b>Reach 10R: HW 1</b>	Avg. Flow Depth=0.75' Max Vel=3.64 fps Inflow=2.31 cfs 0.168 af 12.0" Round Pipe n=0.013 L=40.0' S=0.0050 ' Capacity=2.52 cfs Outflow=2.31 cfs 0.168 af
<b>Pond 1P: DMH 1</b>	Peak Elev=66.92' Inflow=8.23 cfs 0.620 af 12.0" Round Culvert n=0.013 L=60.0' S=0.0272 ' Outflow=8.23 cfs 0.620 af
<b>Pond 1_2P: Roof 1_2</b>	Peak Elev=56.00' Storage=155 cf Inflow=0.15 cfs 0.012 af Discarded=0.03 cfs 0.012 af Primary=0.02 cfs 0.000 af Outflow=0.06 cfs 0.012 af
<b>Pond 2P: BIORETENTION 1</b>	Peak Elev=51.92' Storage=5,072 cf Inflow=5.49 cfs 0.426 af Discarded=1.48 cfs 0.436 af Primary=0.00 cfs 0.000 af Outflow=1.48 cfs 0.436 af
<b>Pond 3P: Front depression</b>	Peak Elev=53.04' Storage=9,092 cf Inflow=1.84 cfs 0.209 af Outflow=0.00 cfs 0.000 af
<b>Pond 3_5P: Roof 3_5</b>	Peak Elev=54.90' Storage=237 cf Inflow=0.24 cfs 0.020 af Discarded=0.06 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.06 cfs 0.020 af
<b>Pond 4P: DMH 4</b>	Peak Elev=53.68' Inflow=2.43 cfs 0.201 af 12.0" Round Culvert n=0.013 L=142.0' S=0.0050 ' Outflow=2.43 cfs 0.201 af
<b>Pond 5P: DMH 5</b>	Peak Elev=55.83' Inflow=8.23 cfs 0.620 af 15.0" Round Culvert n=0.013 L=40.0' S=0.0050 ' Outflow=8.23 cfs 0.620 af
<b>Pond 6_11P: Roof 6_11</b>	Peak Elev=56.57' Storage=654 cf Inflow=0.56 cfs 0.046 af Discarded=0.09 cfs 0.046 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.046 af
<b>Pond 11P: CB 2</b>	Peak Elev=54.33' Inflow=2.43 cfs 0.201 af 12.0" Round Culvert n=0.013 L=58.0' S=0.0050 ' Outflow=2.43 cfs 0.201 af



**Pond 12P: CB 3**

Peak Elev=69.06' Inflow=5.92 cfs 0.453 af  
 15.0" Round Culvert n=0.013 L=176.0' S=0.0050 '/' Outflow=5.92 cfs 0.453 af

**Pond 12\_15P: Roof 27\_30**

Peak Elev=60.00' Storage=484 cf Inflow=0.38 cfs 0.031 af  
 Discarded=0.04 cfs 0.031 af Primary=0.02 cfs 0.000 af Outflow=0.06 cfs 0.031 af

**Pond 13P: CB 4**

Peak Elev=59.37' Inflow=8.23 cfs 0.620 af  
 15.0" Round Culvert n=0.013 L=136.0' S=0.0050 '/' Outflow=8.23 cfs 0.620 af

**Pond 16\_19P: Roof 16\_19**

Peak Elev=60.00' Storage=503 cf Inflow=0.40 cfs 0.033 af  
 Discarded=0.04 cfs 0.032 af Primary=0.05 cfs 0.000 af Outflow=0.09 cfs 0.033 af

**Pond 20P: WET POND 1**

Peak Elev=52.97' Storage=25,207 cf Inflow=16.72 cfs 1.257 af  
 Outflow=8.80 cfs 1.250 af

**Pond 20\_22P: Roof 20\_22**

Peak Elev=60.00' Storage=350 cf Inflow=0.28 cfs 0.023 af  
 Discarded=0.03 cfs 0.023 af Primary=0.06 cfs 0.000 af Outflow=0.08 cfs 0.023 af

**Pond 23\_26P: Roof 23\_26**

Peak Elev=60.00' Storage=465 cf Inflow=0.37 cfs 0.031 af  
 Discarded=0.04 cfs 0.030 af Primary=0.07 cfs 0.001 af Outflow=0.11 cfs 0.031 af

**Pond 27\_30P: Roof 27\_30**

Peak Elev=60.00' Storage=484 cf Inflow=0.38 cfs 0.031 af  
 Discarded=0.04 cfs 0.031 af Primary=0.02 cfs 0.000 af Outflow=0.06 cfs 0.031 af

**Pond 31\_35P: Roof 31\_35**

Peak Elev=61.00' Storage=619 cf Inflow=0.47 cfs 0.039 af  
 Discarded=0.04 cfs 0.039 af Primary=0.02 cfs 0.000 af Outflow=0.06 cfs 0.039 af

**Pond 36\_38P: Roof 36\_38**

Peak Elev=58.91' Storage=344 cf Inflow=0.28 cfs 0.023 af  
 Discarded=0.03 cfs 0.023 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.023 af

**Pond 39\_44P: Roof 39\_44**

Peak Elev=58.01' Storage=486 cf Inflow=0.47 cfs 0.039 af  
 Discarded=0.05 cfs 0.035 af Primary=0.21 cfs 0.003 af Outflow=0.26 cfs 0.039 af

**Pond 40P: LOW POINT**

Peak Elev=54.54' Storage=32,558 cf Inflow=10.27 cfs 0.747 af  
 15.0" Round Culvert n=0.013 L=93.0' S=0.0049 '/' Outflow=0.00 cfs 0.000 af

**Pond 45\_50P: Roof 45\_50**

Peak Elev=58.01' Storage=486 cf Inflow=0.47 cfs 0.039 af  
 Discarded=0.05 cfs 0.035 af Primary=0.21 cfs 0.003 af Outflow=0.26 cfs 0.039 af

**Pond CB 1: CB 1**

Peak Elev=53.91' Inflow=5.49 cfs 0.426 af  
 15.0" Round Culvert n=0.013 L=22.0' S=0.0050 '/' Outflow=5.49 cfs 0.426 af

**Pond CB1A: CB 1A**

Peak Elev=54.78' Inflow=2.80 cfs 0.214 af  
 15.0" Round Culvert n=0.013 L=110.0' S=0.0050 '/' Outflow=2.80 cfs 0.214 af

**Pond CB1B: CB 1B**

Peak Elev=54.35' Inflow=2.80 cfs 0.214 af  
 15.0" Round Culvert n=0.013 L=165.0' S=0.0050 '/' Outflow=2.80 cfs 0.214 af

**Pond DMH2: DMH 2**

Peak Elev=54.75' Inflow=0.00 cfs 0.000 af  
 15.0" Round Culvert n=0.013 L=94.0' S=0.0050 '/' Outflow=0.00 cfs 0.000 af



**20737\_PR CONDITION\_8-25-2021**

*Type III 24-hr 50-YR STORM Rainfall=8.61"*

Prepared by Microsoft

Printed 8/25/2021

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**Total Runoff Area = 8.387 ac   Runoff Volume = 3.413 af   Average Runoff Depth = 4.88"**  
**60.80% Pervious = 5.099 ac   39.20% Impervious = 3.288 ac**



Select Product?

Extreme Precipitation Tables - HTML?

Extreme Precipitation Tables - Text/CSV?

Partial Duration Series - by Point?

Partial Duration Series - by Station?

Distribution Curves - Graphical?

Distribution Curves - Text/TBL?

Intensity Frequency Duration Graphs?

Precipitation Frequency Duration Graphs?

GIS Data Files?

Regional/State Maps?

Select Location? Double-click the map to place a marker, or enter address or latitude/longitude.

Locate by Address?

3400 LaFayette Road, p

Locate by Lat/Lon?

°N °W

Locate by State/County?

Map data ©2021 Imagery ©2021 , CNES / Airbus, Maine GeoLibrary, MassGIS, Commonwealth of Massachusetts EOE, Maxar Technologies, USDA Farm Service Agency

Select Options?

Smoothing?

Yes

Delivery?

Popup

Submit?



# 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	70.797 degrees West
Latitude	43.022 degrees North
Elevation	0 feet
Date/Time	Mon, 08 Mar 2021 11:43:51 -0500

## 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	0.66	0.82	1.04	1yr	0.71	0.98	1.22	1.57	2.05	2.69	2.96	1yr	2.38	2.84	3.26	3.98	4.61	1yr
2yr	0.32	0.50	0.62	0.82	1.03	1.30	2yr	0.89	1.19	1.52	1.95	2.51	3.25	3.61	2yr	2.87	3.47	3.98	4.73	5.38	2yr
5yr	0.37	0.58	0.73	0.98	1.25	1.61	5yr	1.08	1.47	1.90	2.45	3.17	4.12	4.64	5yr	3.64	4.46	5.11	6.01	6.78	5yr
10yr	0.41	0.65	0.82	1.12	1.46	1.90	10yr	1.26	1.73	2.25	2.92	3.79	4.93	5.60	10yr	4.36	5.39	6.17	7.20	8.08	10yr
25yr	0.48	0.77	0.98	1.35	1.79	2.36	25yr	1.54	2.16	2.80	3.67	4.79	6.25	7.20	25yr	5.54	6.92	7.93	9.16	10.19	25yr
50yr	0.54	0.87	1.11	1.55	2.09	2.78	50yr	1.80	2.54	3.32	4.37	5.73	7.49	8.70	50yr	6.63	8.37	9.59	10.99	12.14	50yr
100yr	0.60	0.98	1.26	1.79	2.44	3.29	100yr	2.11	3.00	3.95	5.22	6.86	8.98	10.53	100yr	7.95	10.12	11.60	13.19	14.48	100yr
200yr	0.68	1.11	1.44	2.07	2.86	3.88	200yr	2.47	3.55	4.67	6.21	8.19	10.77	12.74	200yr	9.53	12.25	14.04	15.83	17.28	200yr
500yr	0.81	1.33	1.74	2.52	3.52	4.83	500yr	3.04	4.42	5.84	7.81	10.37	13.70	16.39	500yr	12.12	15.76	18.07	20.17	21.84	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	0.72	0.89	1yr	0.62	0.87	0.92	1.33	1.67	2.26	2.59	1yr	2.00	2.50	2.90	3.17	3.95	1yr
2yr	0.32	0.49	0.60	0.81	1.00	1.19	2yr	0.87	1.17	1.37	1.82	2.33	3.09	3.51	2yr	2.74	3.37	3.88	4.61	5.14	2yr
5yr	0.35	0.54	0.67	0.93	1.18	1.41	5yr	1.02	1.38	1.61	2.12	2.73	3.85	4.28	5yr	3.41	4.12	4.79	5.64	6.36	5yr
10yr	0.39	0.60	0.74	1.04	1.34	1.61	10yr	1.16	1.57	1.81	2.39	3.06	4.45	4.99	10yr	3.94	4.80	5.59	6.56	7.35	10yr
25yr	0.45	0.68	0.84	1.20	1.58	1.91	25yr	1.37	1.87	2.11	2.75	3.53	4.80	6.08	25yr	4.24	5.85	6.89	8.03	8.90	25yr
50yr	0.49	0.75	0.93	1.34	1.80	2.19	50yr	1.55	2.14	2.36	3.07	3.93	5.43	7.06	50yr	4.81	6.78	8.06	9.36	10.30	50yr
100yr	0.55	0.83	1.04	1.50	2.06	2.49	100yr	1.77	2.44	2.64	3.40	4.35	6.12	8.19	100yr	5.42	7.87	9.45	10.93	11.91	100yr
200yr	0.61	0.91	1.16	1.68	2.34	2.85	200yr	2.02	2.78	2.95	3.77	4.80	6.88	9.50	200yr	6.09	9.13	11.09	12.77	13.80	200yr
500yr	0.71	1.06	1.36	1.97	2.80	3.41	500yr	2.42	3.33	3.44	4.29	5.48	8.03	11.56	500yr	7.11	11.12	13.71	15.72	16.75	500yr

## Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.73	0.89	1.09	1yr	0.77	1.06	1.27	1.74	2.20	3.02	3.17	1yr	2.68	3.05	3.63	4.41	5.11	1yr
2yr	0.34	0.52	0.64	0.87	1.07	1.27	2yr	0.92	1.24	1.48	1.96	2.51	3.46	3.73	2yr	3.06	3.58	4.11	4.87	5.69	2yr
5yr	0.40	0.62	0.77	1.05	1.34	1.63	5yr	1.16	1.59	1.88	2.53	3.24	4.38	4.98	5yr	3.88	4.79	5.43	6.40	7.19	5yr
10yr	0.47	0.72	0.90	1.25	1.62	1.98	10yr	1.40	1.94	2.28	3.10	3.94	5.39	6.20	10yr	4.77	5.97	6.81	7.87	8.78	10yr
25yr	0.58	0.88	1.10	1.57	2.06	2.58	25yr	1.78	2.52	2.95	4.06	5.12	7.86	8.31	25yr	6.96	7.99	9.08	10.36	11.43	25yr
50yr	0.67	1.03	1.28	1.84	2.48	3.15	50yr	2.14	3.08	3.59	4.99	6.28	9.84	10.38	50yr	8.71	9.98	11.31	12.73	13.96	50yr
100yr	0.79	1.20	1.50	2.17	2.98	3.83	100yr	2.57	3.75	4.37	6.14	7.71	12.31	12.97	100yr	10.89	12.47	14.07	15.68	17.07	100yr
200yr	0.93	1.40	1.77	2.57	3.58	4.68	200yr	3.09	4.57	5.33	7.56	9.46	15.43	16.22	200yr	13.66	15.59	17.52	19.29	20.88	200yr
500yr	1.15	1.72	2.21	3.21	4.56	6.08	500yr	3.94	5.94	6.92	9.99	12.43	20.83	21.79	500yr	18.43	20.96	23.41	25.38	27.25	500yr





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## **SITE-SPECIFIC SOIL MAPPING REPORT**

**3400 Lafayette Road  
Tax Map 297, Lot 11  
Portsmouth, New Hampshire**

**April 2021**

**File No. 04.0191186.00**



### **PREPARED FOR:**

**John O'Neil  
Dover, New Hampshire**

### **GZA GeoEnvironmental, Inc.**

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## VIA EMAIL

April 1, 2021  
File No. 04.0191186.00

Mr. John O'Neil  
42J Dover Point Road  
Dover, New Hampshire 03820

Re: Site Specific Soil Map Report  
3400 Lafayette Road, Tax Map 297, Lot 11  
Portsmouth, New Hampshire

Dear Mr. O'Neil:

This report presents the findings of Site-Specific Soil Mapping conducted at 3400 Lafayette Road Portsmouth, New Hampshire, New Hampshire Tax Map 297, Lot 11 (i.e., the Site). This report summarizes the results of the field work completed in January and March 2021 to identify Site soils and develop mapping.

Should you have any questions, please feel free to contact Lindsey White at 603-232-8753 or [lindsey.white@gza.com](mailto:lindsey.white@gza.com).

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

  
Lindsey White, Soil Scientist Apprentice  
Project Manager

  
Deborah M. Zarta Gier, CNRP  
Consultant/Reviewer

  
Tracy L. Tarr, CWS, CESSWI  
Associate Principal

  
James Long, James Long, CWS, CSS  
Field Lead

LEW/DMZ/TLT

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Attachment: Site-Specific Soil Mapping Report





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## FIGURE

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## APPENDICES

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## 1.0 INTRODUCTION

This report presents the findings of Site-Specific Soil Mapping conducted by GZA GeoEnvironmental, Inc. (GZA) during January and March 2021. GZA completed test pit observations on January 9, 2021 and hand dug test pits on March 12, 2021. GZA understands the parcel is approximately 45 acres and is proposed to be developed as a condominium association. The Site is primarily undeveloped and forested, and a portion of the Site closest to Lafayette Road currently serves as headquarters for Cornerstone Tree Care. The Site is bordered to the east by Lafayette Road, to the south by Coach Road, to the west by City of Portsmouth owned, and to the north by Ocean Road and Nathaniel Drive.

GZA understands that the proposed development is planned to be located in the upland area on the eastern side of the Site. GZA further understands a site-specific soil map is required to support the potential development of the Site and Alteration of Terrain permitting through the New Hampshire Department of Environmental Services (NHDES) to be completed by Jones and Beach Engineers. This report is subject to the Limitations in **Appendix A**.

## 2.0 METHODOLOGY

The soil mapping of the Site was conducted in accordance with the standards set forth in the Society of Soil Scientists of Northern New England (SSSNNE) Publication No. 3 "Site-Specific Soil Mapping Standards for New Hampshire and Vermont, Version 5.0" dated December 2017 by New Hampshire Certified Soil Scientists (CSS) James H. Long (CSS #15). The Site-Specific Standards are based on a universally recognized taxonomic system of soil classification and are supported by national soil mapping standards established by the USDA National Cooperative Soil Survey.

This investigation has been prepared based on a combination of publicly available databases and site-specific data collected by on-site observations. This report provides soil information including soil drainage classification, physical characteristics, and depth to bedrock (if encountered). Soil characteristics on the property were assessed through the evaluation of 13 test pits evaluated on January 9, 2021. On March 12, 2021, additional hand dug test pits were conducted to complete the site-specific soil identification. The hand dug holes were completed with a tile spade and soil auger used to reach depths of 40 inches or more to examine and identify the soils' characteristics. Locations were selected when changes in slope, vegetation or soil surface were observed. Where changes were noted from one hole to the next involving soil drainage or parent material, a soil boundary was placed on the map between the holes to reflect the transition between the soils as it occurs on the landscape. The slopes of the soil map units were measured in the field using a clinometer and augmented by the topography shown on the Existing Conditions Plan dated 3/3/2021 prepared and provided by Jones & Beach Engineers, Inc. (see Figure 1 – Site Specific Soil Map). For purposes of this report, GZA considered the minimum size of a Site-Specific Soil Survey map units as 2,000 square feet, with the exception being poorly or very poorly drained soil areas that are jurisdictional wetlands. Wetland delineations on the Site were previously conducted by GZA in January 2021.





GZA used the following resources during data collection to support on-site observations:

- Natural Resource Conservation Service (NRCS) Web Soil Survey<sup>1</sup>;
- New Hampshire Statewide Geographic Information System Clearinghouse (NH GRANIT)<sup>2</sup>.

The Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS). Use of the online resource NH GRANIT LiDAR- Based Bare Earth Hillshade of the project area provided imagery to assist in soil unit delineation.

### 3.0 RESULTS

#### 3.1 SITE DESCRIPTION

The on-site observations were conducted on January 9 and March 12, 2021 using a base plan with a 1:40 scale and 2-foot topography. No snow cover present during soil mapping field work on March 12, 2021.

Results of our observations indicate the Site is underlain by sandy glaciofluvial deposits, organic deposits and human disturbed soils.

According to the WSS, a very large portion of the Site is mapped as sandy glaciofluvial deposits and organic deposits in the low-lying swales and human disturbed soils west of the proposed development. GZA understands that this area is a reclaimed sand and gravel pit that is now a mix of a man-made pond and scrub-shrub wetlands (pers. comm. John O'Neill, see **Appendix B – Photo Log**). According to the WSS, a significant portion of the Site is underlain by a stratified drift aquifer and glaciofluvial deposits. GZA observed broad sandy glaciofluvial deposits with uniform smooth surfaces adjacent Lafayette Road. Most of the forest land is undisturbed with a large portion classified as wetlands (see **Figure 1 – Site-Specific Soil Map**).

In accordance with the Site-Specific Soil Mapping standards, the identified individual soil map units have been correlated to the New Hampshire State-Wide Numerical Soils Legend maintained by the New Hampshire State office of the NRCS. Soil characteristics for each of these units comply with the Range in Characteristics described in the Official Series Descriptions for each map unit. The human disturbed soil map units are labelled in accordance with the "Site-Specific Soil Mapping Standards for New Hampshire and Vermont, Version 5.0" dated December 2017- *Disturbed Soil Mapping Unit Supplement for New Hampshire DES AoT Site Specific Soil Maps* (see **Appendix C – Disturbed Soil Mapping Unit Supplement for DES AoT**). The disturbed soil map unit Denominators provide additional information on Drainage Class, Parent Material, Restrictive/Impervious Layers, Estimated Ksat, and Hydrologic Soil Group.

---

<sup>1</sup> [www.websoilsurvey.sc.egov.usda.gov/App/HomePage.htm](http://www.websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)

<sup>2</sup> <https://granitview.unh.edu/>





### 3.2 SOIL MAP UNIT DESCRIPTIONS

Individual soil map units are summarized in the table below:

Soil ID	Soil Type
26	Windsor (excessively drained)
199	Dumps, bark chips and organic matter
313	Deerfield (moderately drained)
350	Udipsammets, wet substratum (moderately well drained to somewhat poorly drained)
393	Timakwa (muck)
448	Scituate (moderately well drained)
538	Squamscott (poorly drained)
900	Endoaquents, sandy or gravelly

#### **26A - Windsor (excessively drained), loamy sand, 0 to 3 percent slopes**

This map unit consists of excessively drained soils that formed in sandy glaciofluvial deposits. It occurs on the knolls in undisturbed uplands.

Typically, the surface layer is very dark brown to dark brown loamy very fine sand about 4 inches thick. The subsoil is dark brown, strong brown, dark yellowish brown to yellowish brown loamy sand, sand and coarse sand about 24 inches thick. The substratum, to a depth of 40 inches or more, is yellowish brown, light yellowish gray, light olive brown sand and coarse sand.

Included with this mapping are small areas of slopes greater than 3 percent; and moderately well drained Deerfield soils. These inclusions make up as much as 15 percent of the map unit.

#### **26B - Windsor (excessively drained), loamy sand, 3 to 8 percent slopes**

This map unit consists of excessively drained soils that formed in sandy glaciofluvial deposits. It occurs on the knolls in the undisturbed uplands.

Typically, the surface layer is very dark brown to dark brown loamy very fine sand about 4 inches thick. The subsoil is dark brown, strong brown, dark yellowish brown to yellowish brown loamy sand, sand and coarse sand about 24 inches thick. The substratum, to a depth of 40 inches or more, is yellowish brown, light yellowish gray, light olive brown sand and coarse sand.

Included with this mapping are small areas of slopes less than 3 percent and greater than 8 percent; and moderately well drained Deerfield soils. These inclusions make up as much as 15 percent of the map unit.





**26D - Windsor (excessively drained), loamy sand, 15 to 25 percent slopes**

This map unit consists of excessively drained soils that formed in sandy glaciofluvial deposits. It occurs on the knolls in the undisturbed uplands.

Typically, the surface layer is very dark brown to dark brown loamy very fine sand about 4 inches thick. The subsoil is dark brown, strong brown, dark yellowish brown to yellowish brown loamy sand, sand and coarse sand about 24 inches thick. The substratum, to a depth of 40 inches or more, is yellowish brown, light yellowish gray, light olive brown sand and coarse sand.

Included with this mapping are small areas of slopes less than 15 percent and greater than 25 percent; and moderately well drained Deerfield soils. These inclusions make up as much as 15 percent of the map unit.

**26E - Windsor (excessively drained), loamy sand, 25 to 50 percent slopes**

This map unit consists of excessively drained soils that formed in sandy glaciofluvial deposits. It occurs on the knolls in the undisturbed uplands.

Typically, the surface layer is very dark brown to dark brown loamy very fine sand about 4 inches thick. The subsoil is dark brown, strong brown, dark yellowish brown to yellowish brown loamy sand, sand and coarse sand about 24 inches thick. The substratum, to a depth of 40 inches or more, is yellowish brown, light yellowish gray, light olive brown sand and coarse sand.

Included with this mapping are small areas of slopes less than 25 percent and greater than 50 percent; and moderately well drained Deerfield soils. These inclusions make up as much as 15 percent of the map unit.

**199E - Dumps, bark chips, and organic matter, 25 to 50 percent slopes**

This map unit consists of loamy sand fill materials with stumps and woody debris. Undisturbed material is at a depth of more than 40 inches. There are no identifiable diagnostic horizons at a depth within 40 inches.

**313A -Deerfield loamy sand, 0 to 3 percent slopes**

This map unit consists of moderately well drained soils that formed in sandy glaciofluvial deposits. It occurs at the swales adjacent to the Windsor soils.

Typically, the surface layer is black, very dark brown to dark brown loamy fine sand about 4 inches thick. The subsoil is brown, strong brown, dark yellowish brown, yellowish brown to light olive brown fine sand and sand about 20 inches thick. The substratum, to a depth of 40 inches or more, is light brownish gray to light olive brown sand, and coarse sand.

Included with this mapping are small areas of slopes greater than 3 percent. These inclusions make up as much as 15 percent of the map unit.

**313C -Deerfield loamy sand, 8 to 15 percent slopes**





This map unit consists of moderately well drained soils that formed in sandy glaciofluvial deposits. It occurs at the swales adjacent to the Windsor soils.

Typically, the surface layer is black, very dark brown to dark brown loamy fine sand about 4 inches thick. The subsoil is brown, strong brown, dark yellowish brown, yellowish brown to light olive brown fine sand and sand about 20 inches thick. The substratum, to a depth of 40 inches or more, is light brownish gray to light olive brown sand, and coarse sand.

Included with this mapping are small areas of slopes less than 8 percent and greater than 15 percent. These inclusions make up as much as 15 percent of the map unit.

#### **350C – Udipsamments, wet substratum, 8 to 15 percent slopes**

This map unit is characterized by soil textures of loamy fine sand to sand and gravel throughout the entire particle-size class control section. Saturated hydraulic conductivity (Ksat) is high or very high. Drainage class is moderately well drained.

Included with this mapping are small areas of slopes less than 8 percent and greater than 15 percent; and moderately well drained Deerfield soils. These inclusions make up as much as 15 percent of the map unit.

#### **350D – Udipsamments, wet substratum, 15 to 25 percent slopes**

This map unit is characterized by soil textures of loamy fine sand to sand and gravel throughout the entire particle-size class control section. Saturated hydraulic conductivity (Ksat) is high or very high. Drainage class is moderately well drained.

Included with this mapping are small areas of slopes less than 15 percent and greater than 25 percent; and moderately well drained Deerfield soils. These inclusions make up as much as 15 percent of the map unit.

#### **393A -Timakwa muck, 0 to 3 percent slopes**

This map unit consists of very poorly drained soils that formed in muck over sandy glaciofluvial deposits. The very poorly drained Timakwa soils have mucky surfaces that 16 to 51 inches thick over sands. It occurs in low lying areas within the mapping area.

Typically, the surface layer is black muck about 30 inches thick. The subsoil and substratum, to a depth of 40 inches or more, is light brownish gray, light olive gray to gray very fine sand, fine sand and sand.

Included with this mapping are small areas of poorly drained Squamscott soils along the margins, sandy alluvial deposits and very deep organic deposits, Catden soils, greater than 51 inches thick. Included with this mapping are small areas of slopes greater than 3 percent. These inclusions make up as much as 20 percent of the map unit.

#### **448A -Scituate fine sandy loam, 0 to 3 percent slopes**

This map unit consists of well drained soils that formed in loamy sand compact glacial till. It occurs on the upland areas within the mapping area.





Typically, the surface layer is black very fine sandy loam about 4 inches thick. The subsoil is brown, strong brown, dark yellowish brown, yellowish brown and light olive brown sandy loam, loamy fine sand and loamy sand about 30 inches thick. The substratum, to a depth of 40 inches or more, is light olive brown, olive and light yellowish brown loamy fine sand, loamy sand, loamy coarse sand, and gravelly loamy sand. Note that refusal was noted between 42-50" in the map unit.

Included with this mapping are small areas of slopes greater than 3 percent, and moderately well drained Deerfield soils. These inclusions make up as much as 15 percent of the map unit.

#### **538A – Squamscott, poorly drained, 0 to 3 percent slopes**

This map unit consists of poorly drained soils that formed in sandy material over loamy sediments. These soils are typically located on marine plains or terraces.

Typically, the surface layer is black loamy very fine sand about 4 inches thick. The E horizon is light brownish gray, loamy fine sand, approximately 2 inches thick. The subsoil is dark reddish brown loamy sand to a depth to about 24 inches. The substratum to a depth greater than 40 inches is gray, silt loam.

Included in this map unit are small areas of slopes greater than 3 percent, and very poorly drained Timakwa soils. These inclusions make up as much as 15 percent of the map unit.

#### **900A - Endoaquents, sandy or gravelly, 0 to 3 percent slopes**

This map unit consists of poorly drained soils that formed in excavated sandy glaciofluvial deposits. It occurs in the ponded area of the old sand and gravel pit. The soils range from fine sand to sand and their gravelly analogs.

Included with this mapping are small areas of slopes greater than 3 percent. These inclusions make up as much as 10 percent of the map unit.

### **3.3 HYDROLOGIC SOIL GROUP CORRELATION**

In order to correlate the soil map units identified, as part of this soil survey, to the appropriate hydrologic soil group, we referenced the Society of Soil Scientists of Northern New England "Ksat Values for New Hampshire Soils, Special Publication No. 5, September 2009"<sup>3</sup>. Below is the correlation of the identified soil map units to the appropriate hydrologic soil group.

Soil ID	Soil Type	Hydrologic Soil Group
26	Windsor (excessively drained)	A
199	Dumps, bark chips and organic matter	No Group
313	Deerfield (moderately well drained)	B
350	Udipsamments, nearly level (moderately well drained)	D
393	Timakwa (very poorly drained)	D

<sup>3</sup> [www.sssne.org/publications.html](http://www.sssne.org/publications.html)





448	Scituate (moderately well drained)	C
538	Squamscott (poorly drained)	D
900	Endoaquents, sandy or gravelly (poorly drained)	D

#### 4.0 FINDINGS AND CONCLUSIONS

GZA has completed Site-Specific Soil Mapping on the Site in support of proposed development of the Site. The following is a summary of our findings and conclusions:

- The Site consists of a mix of primarily sandy glaciofluvial deposits and loamy sand compact glacial till, with areas of sandy alluvial deposits, organic deposits, and human disturbed soils.
- The WSS shows a very large portion of the Site is mapped as sandy glaciofluvial deposits and organic deposits in the low-lying swales and human disturbed soils west of the proposed development. This area contains a reclaimed sand and gravel pit that is now a mix of a man-made pond and scrub-shrub wetlands.
- The Site currently is used as the headquarters for Cornerstone Tree Care. Associated with this use, there are some mulch piles and logs stored on Site.





**Figure 1 – Site Specific Soil Map**













## **Appendix A - Natural Resource Limitations**





## **USE OF REPORT**

1. GZA GeoEnvironmental, Inc. (GZA) has prepared this report on behalf of, and for the exclusive use of Mr. John O'Neil ("Client") for the stated purpose(s) and location(s) identified in the report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's risk, and without any liability to GZA.

## **STANDARD OF CARE**

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the data gathered and observations made during the course of our work. Conditions other than described in this report may be found at the subject location(s).
3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

## **LIMITS TO OBSERVATIONS**

4. Natural resource characteristics are inherently variable. Biological community composition and diversity can be affected by seasonal, annual or anthropogenic influences. In addition, soil conditions are reflective of subsurface geologic materials, the composition and distribution of which vary spatially.
5. The observations described in this report were made on the dates referenced and under the conditions stated therein. Conditions observed and reported by GZA reflect the conditions that could be reasonably observed based upon the visual observations of surface conditions and/or a limited observation of subsurface conditions at the specific time of observation. Such conditions are subject to environmental and circumstantial alteration and may not reflect conditions observable at another time.
6. The conclusions and recommendations contained in this report are based upon the data obtained from a limited number of surveys performed during the course of our work on the site, as described in the Report. There may be variations between these surveys and other past or future surveys due to inherent environmental and circumstantial variability.

## **RELIANCE ON INFORMATION FROM OTHERS**

7. Preparation of this Report may have relied upon information made available by Federal, state and local authorities; and/or work products prepared by other professionals as specified in the report. Unless specifically stated, GZA did not attempt to independently verify the accuracy or completeness of that information.

## **COMPLIANCE WITH REGULATIONS AND CODES**

8. GZA's services were performed to render an opinion on the presence and/or condition of natural resources as described in the Report. Standards used to identify or assess these resources as well as regulatory jurisdiction, if any, are stated in the Report. Standards for identification of jurisdictional resources and regulatory control





over them may vary between governmental agencies at Federal, state and local levels and are subject to change over time which may affect the conclusions and findings of this report.

#### **NEW INFORMATION**

9. In the event that the Client or others authorized to use this report obtain information on environmental regulatory compliance issues at the site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this work, may modify the conclusions stated in this report.

#### **ADDITIONAL SERVICES**

10. GZA recommends that we be retained to provide further investigation, if necessary, which would allow GZA to (1) observe compliance with the concepts and recommendations contained herein; (2) evaluate whether the manner of implementation creates a potential new finding; and (3) evaluate whether the manner of implementation affects or changes the conditions on which our opinions were made.





## **Appendix B – Photo Log**



**PHOTO LOG**  
**Lafayette Road**  
**Portsmouth, New Hampshire**

**Photos Taken: January 9 & 20, 2021**



**Photograph No. 1: Looking at the pond on Site. GZA understands this is a man-made pond.**



**Photograph No. 2: Looking at portion of the Site proposed to be developed. This portion of the Site consists of Deerfield loamy sand with 0 to 3 percent slopes (Soil Unit 313A).**



**PHOTO LOG**  
**Lafayette Road**  
**Portsmouth, New Hampshire**

**Photos Taken: January 9 & 20, 2021**



**Photograph No. 3: Looking at portion of the Site proposed to be developed. This portion of the Site consists of Scituate fine sandy loam with 0 to 3 percent slopes (Soil Unit 448A).**



**Photograph No. 4: Looking westerly into an emergent wetland on Site near wetland flag B-45. This area consists of Endoaquents, sandy or gravelly with 0 to 3 percent slopes (Soil Unit 900A)**





## **Appendix C - Disturbed Soil Mapping Unit Supplement for DES AOT**



### **Supplemental Symbols**

The five components of the Disturbed Soil Mapping Unit Supplement are as follows:

#### **Symbol 1: Drainage Class**

- a** - Excessively Drained
- b** - Somewhat Excessively Drained
- c** - Well Drained
- d** - Moderately Well Drained
- e** - Somewhat Poorly Drained
- f** - Poorly Drained
- g** - Very Poorly Drained
- h** - Not Determined

#### **Symbol 2: Parent Material (of naturally formed soil only, if present)**

- a** - No natural soil within 60"
- b** - Glaciofluvial Deposits (outwash/terraces of sand or sand and gravel)
- c** - Glacial Till Material (active ice)
- d** - Glaciolacustrine very fine sand and silt deposits (glacial lakes)
- e** - Loamy/sandy over Silt/Clay deposits
- f** - Marine Silt and Clay deposits (ocean waters)
- g** - Alluvial Deposits (floodplains)
- h** - Organic Materials-Fresh water Bogs, etc.
- j** - Organic Materials-Tidal Marsh

#### **Symbol 3: Restrictive/Impervious Layers**

- a** - None
- b** - Bouldery surface with more than 15% of the surface covered with boulders
- c** - Mineral restrictive layer(s) are present in the soil profile less than 40 inches below the soil surface such as hard pan, platy structure or clayey texture with consistence of at least firm ( i.e. more than 20 newtons). For other examples of soil characteristics that qualify for restrictive layers, see "Soil Manual for Site evaluations in NH" 2nd Ed., (page 3-17, figure 3-14)
- d** - Bedrock in the soil profile; 0-20 inches
- e** - Bedrock in the soil profile; 20-60 inches
- f** - Areas where depth to bedrock is so variable that a single soil type cannot be applied, will be mapped as a complex of soil types
- g** - Subject to Flooding
- h** - Man-made impervious surface including pavement, concrete, or built-up surfaces (i.e. buildings) with no morphological restrictive layer within control section

#### **Symbol 4: Estimated Ksat\* (most limiting layer excluding symbol 3h above).**

- a** - High.
- b** - Moderate
- c** - Low
- d** - Not determined

\*See "Guidelines for Ksat Class Placement" in Chapter 3 of the Soil Survey Manual, USDA

#### **Symbol 5: Hydrologic Soil Group\***

- a** - Group A
- b** - Group B
- c** - Group C
- d** - Group D
- e** - Not determined

\*excluding man-made surface impervious/restrictive layers





GZA GeoEnvironmental, Inc.



### GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

0.38	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
0.95	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
0.43	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
0.01	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.24	inches	Rd = Weighted groundwater recharge depth	
0.4314	ac-in	GRV = AI * Rd	
1,566	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12")	

**Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):**

The combined storage volume of the voids in the infiltration drip edges is approximately 5,688 CF, exceeding the requirement of 1,566 CF.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.





**TEST PIT EVALUATION REPORT**  
**Lafayette Road, Tax Map 297, Lot 11**  
**Portsmouth, New Hampshire**

File No. 04.0191186.00

Evaluated by: James H. Long, CSS Designer: 988 Witnessed by: None Date: 1/9/21

Test Pit No. 1 NOTES: Some large boulders

Depth (inches)	Description
2-0	Forest Mat
0-10	10YR3/3 Dark brown, loamy very fine sand, granular, friable
10-22	10YR4/4 Dark yellowish brown, loamy sand, granular, friable
22-48	2.5Y3/3 Dark olive brown, sandy, single grain, loose 2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
48-60	2.5Y5/2 Grayish brown, cobbly gravelly coarse sand, single grain, loose 2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
60-96	5Y5/2 Olive gray, silty clay, angular blocky, firm

Estimated Seasonal High Water Table @	22	inches	Observed Water Table @	48	inches
Restrictive @	72	inches	Roots @	22	inches
Refusal @	60	inches			
Percolation Rate =	4	Minutes / Inch @ 24			

Test Pit No. 2 NOTES:

Depth (inches)	Description
2-0	Forest Mat
0-8	10YR3/3 Dark brown, loamy very fine sand, granular, friable
8-24	10YR5/4 Yellowish brown, loamy sand, granular, friable
24-48	2.5Y4/3 Olive brown, sand, single grain, loose 2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
48-60	2.5Y5/2 Grayish brown, cobbly gravelly coarse sand, single grain, loose
60-96	5Y5/2 Olive gray, silty clay, massive, firm 5Y7/2 Light gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	24	inches	Observed Water Table @	48	inches
Restrictive @	60	inches	Roots @	24	inches
Refusal @	none	inches			
Percolation Rate =	4	Minutes / Inch @ 24			





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**Test Pit No.** 3

**NOTES:**

Depth (inches)	Description
0-12	10YR3/3 Dark brown, loamy very fine sand, granular, friable
12-16	7.5YR4/6 Strong brown, loamy fine sand, granular, friable
16-28	10YR5/4 Light Yellowish brown, loamy sand, granular, friable
28-46	2.5Y5/4 Light olive brown, sand, single grain, loose
46-96	5Y3/2 Dark olive gray, cobbly gravelly coarse sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	46	inches	Observed Water Table @	none	inches
Restrictive @	none	inches	Roots @	46	inches
Refusal @	none	inches			
Percolation Rate =	3	Minutes / Inch @ 28			

**Test Pit No.** 4

**NOTES:**

Depth (inches)	Description
0-6	10YR3/3 Dark brown, very fine loamy sand, granular, friable
6-14	10YR5/6 Yellowish brown, loamy fine sand, granular, friable
14-26	10YR5/4 Yellowish brown, loamy sand, granular, friable
26-40	2.5Y5/4 Light olive brown, sand, single grain, loose
40-96	5Y5/3 Olive, coarse gravelly sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	40	inches	Observed Water Table @	none	inches
Restrictive @	none	inches	Roots @	30	inches
Refusal @	none	inches			
Percolation Rate =	2	Minutes / Inch @ 30			





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Evaluated by: James H. Long, CSS Designer: 988 Witnessed by: None Date: 1/9/21

Test Pit No. 5

**NOTES:**

Depth (inches)	Description
2-0	Forest Mat
0-10	10YR3/3 Dark brown, loamy very fine sand, granular, friable
10-14	10YR5/6 Yellowish brown, loamy fine sand, granular, friable
14-24	10YR5/4 Yellowish brown, loamy sand, granular, friable
24-46	2.5Y4/3 Olive brown, sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
46-60	2.5Y4/3 Olive brown, coarse gravelly sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
Estimated Seasonal High Water Table @ 24 inches	
Observed Water Table @ 46 inches	
Restrictive @ none inches	
Roots @ 30 inches	
Refusal @ none inches	
Percolation Rate = 4 Minutes / Inch @ 24	

Test Pit No. 6

**NOTES:**

Depth (inches)	Description
^0-12	10YR4/3 Brown, loamy very fine sand, granular, friable (fill)
12-16	10YR5/6 Yellowish brown, loamy fine sand, granular, friable
16-32	10YR5/4 Yellowish brown, loamy sand, granular, friable
32-60	2.5Y4/3 Olive brown, sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
60-77	2.5Y5/2 Grayish brown, cobbly gravelly coarse sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
Estimated Seasonal High Water Table @ 32 inches	
Observed Water Table @ 56 inches	
Restrictive @ none inches	
Roots @ 32 inches	
Refusal @ none inches	
Percolation Rate = 2 Minutes / Inch @ 32	





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**Test Pit No. 7** **NOTES:**

Depth (inches)	Description
0-8	10YR4/3 Brown, loamy very fine sand, granular, friable
8-14	10YR5/6 Yellowish brown, loamy fine sand, granular, friable
14-28	10YR5/4 Yellowish brown, loamy sand, granular, friable
28-60	2.5Y4/3 Olive brown, sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features
60-72	2.5Y4/3 Olive brown, cobbly gravelly coarse sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	28	inches	Observed Water Table @	48	inches
Restrictive @	none	inches	Roots @	28	inches
Refusal @	none	inches			
Percolation Rate =	4	Minutes / Inch @ 28			

**Test Pit No. 8** **NOTES:**

Depth (inches)	Description
0-12	10YR3/3 Dark brown, loamy very fine sand, granular, friable
12-16	10YR5/6 Yellowish brown, loamy fine sand, granular, friable
16-32	10YR5/4 Yellowish brown, sand, single grain, loose
32-84	2.5Y4/3 Olive brown, sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	32	inches	Observed Water Table @	48	inches
Restrictive @	none	inches	Roots @	24	inches
Refusal @	none	inches			
Percolation Rate =	4	Minutes / Inch @ 24			





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**Test Pit No. 9**

**NOTES:**

**Depth (inches)**

**Description**

0-20      10YR4/3 Brown, loamy very fine sand, granular, friable (fill)

20-24      10YR5/4 Yellowish brown, loamy sand, granular, friable

24-42      2.5Y4/3 Olive brown, sand, single grain, loose

2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

42-72      2.5Y4/3 Olive brown, coarse gravelly sand, single grain, loose

2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	24	inches	Observed Water Table @	32	inches
Restrictive @	none	inches	Roots @	24	inches
Refusal @	none	inches			
Percolation Rate =	4	Minutes / Inch @ 24			

**Test Pit No. 10**

**NOTES:**

**Depth (inches)**

**Description**

2-0      Forest Mat

0-10      10YR3/3 Dark brown, very fine sandy loam, granular, friable

10-16      10YR5/6 Yellowish brown, fine sandy loam, granular, friable

16-32      10YR5/4 Yellowish brown, fine sandy loam, granular, friable

32-42      2.5Y5/3 Light olive brown, gravelly loamy sand, massive, firm

2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	32	inches	Observed Water Table @	None	inches
Restrictive @	32	inches	Roots @	32	inches
Refusal @	none	inches			
Percolation Rate =	8	Minutes / Inch @ 24			





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**Test Pit No. 11**

**NOTES:**

Depth (inches)	Description
0-4	10YR4/3 Brown, very fine sandy loam, granular, friable
4-16	10YR5/6 Yellowish brown, fine sandy loam, granular, friable
16-30	10YR5/4 Yellowish brown, fine sandy loam, granular, friable
30-50	2.5Y5/3 Light olive brown, gravelly loamy sand, massive, firm
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	30	inches	Observed Water Table @	none	inches
Restrictive @	30	inches	Roots @	30	inches
Refusal @	50	inches			
Percolation Rate =	8	Minutes / Inch @ 30			

**Test Pit No. 12**

**NOTES:**

Depth (inches)	Description
0-10	10YR4/3 Brown, loamy very fine sand, granular, friable
10-16	7.5YR4/3 Brown, loamy fine sand, granular, friable
16-36	7.5YR5/4 Brown, sand, single grain, loose
36-72	10YR5/3 Brown, sand, single grain, loose
72-108	2.5Y6/3 Light yellowish brown, sand, single grain, loose

Estimated Seasonal High Water Table @	>72	inches	Observed Water Table @	108	inches
Restrictive @	none	inches	Roots @	30	inches
Refusal @	none	inches			
Percolation Rate =	2	Minutes / Inch @ 28			





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**Test Pit No.** 13 **NOTES:** Test pit in landscape yard

Depth (inches)	Description
^0-16	2.5Y2.5/1 Black, loamy very fine sand, granular, friable (fill)
16-26	7.5YR4/6 Strong brown, loamy fine sand, granular, friable
26-72	2.5Y5/4 Light olive brown, sand, single grain, loose
72-108	2.5Y5/3 Light olive brown, sand, single grain, loose
	2.5Y6/2 Light brownish gray and 7.5YR4/6 Strong brown redoximorphic features

Estimated Seasonal High Water Table @	72	inches	Observed Water Table @	96	inches
Restrictive @	30	inches	Roots @	30	inches
Refusal @	50	inches			
Percolation Rate =	2	Minutes / Inch @ 28			





# STORMWATER POND DESIGN CRITERIA

Env-Wq 1508.03

Type/Node Name: **Wet Pond #1 - Pond 20P**

Enter the type of stormwater pond (e.g., Wet Pond) and the node name in the drainage analysis, if applicable.

2.52	ac	A = Area draining to the practice	
1.58	ac	A <sub>i</sub> = Impervious area draining to the practice	
0.63	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.61	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.55	ac-in	WQV = 1" x Rv x A	
5,609	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
561	cf	10% x WQV (check calc for sediment forebay and micropool volume)	
2,804	cf	50% x WQV (check calc for extended detention volume)	
726	cf	V <sub>SED</sub> = Sediment forebay volume	≥ 10%WQV
9,548	cf	V <sub>PP</sub> = Permanent pool volume (volume below the lowest invert of the outlet structure) Attach stage-storage table.	
no	cf	Extended Detention? <sup>1</sup>	≤ 50% WQV
-		V <sub>ED</sub> = Volume of extended detention (if "yes" is given in box above)	
		E <sub>ED</sub> = Elevation of WQV if "yes" is given in box above <sup>2</sup>	
-	cfs	2Q <sub>avg</sub> = 2 * V <sub>ED</sub> / 24 hrs * (1hr / 3600 sec) (used to check against Q <sub>EDmax</sub> below)	
	cfs	Q <sub>EDmax</sub> = Discharge at the E <sub>ED</sub> (attach stage-discharge table)	< 2Q <sub>avg</sub>
-	hours	T <sub>ED</sub> = Drawdown time of extended detention = 2V <sub>ED</sub> /Q <sub>EDmax</sub>	≥ 24-hrs
3.00	:1	Pond side slopes	≥ 3:1
51.70	ft	Elevation of seasonal high water table	
50.50	ft	Elevation of lowest pond outlet	
46.70	ft	Max floor = Maximum elevation of pond bottom (ft)	
42.50	ft	Minimum floor (to maintain depth at less than 8')	≤ 8 ft
46.50	ft	Elevation of pond floor <sup>3</sup>	≤ Max floor and > Min floor
240.00	ft	Length of the flow path between the inlet and outlet at mid-depth	
38.00	ft	Average width ([average of the top width + average bottom width]/2)	
6.32	:1	Length to average width ratio	≥ 3:1
Yes	Yes/No	Is the perimeter curvilinear.	← Yes
Yes	Yes/No	Are the inlet and outlet located as far apart as possible.	← Yes
No	Yes/No	Is there a manually-controlled drain to dewater the pond over a 24hr period?	
If no state why: Existing ground elevation too high.			
N/A		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of <6")?	
52.97	ft	Peak elevation of the 50-year storm event	
54.00	ft	Berm elevation of the pond	
YES		50 peak elevation ≤ the berm elevation?	←yes

1. If the entire WQV is stored in the perm. pool, there is no extended det., and the following five lines do not apply.
2. This is the elevation of WQV if the hydrologic analysis is set up to include the permanent pool storage in the node description.
3. If the pond floor elevation is above the max floor elev., a hydrologic budget must be submitted to demonstrate that a minimum depth of 3 feet can be maintained. (First check whether a revised "lowest pond outlet" elev. will resolve the issue.)

Designer's Notes:



**Stage-Area-Storage for Pond 20P: WET POND 1**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
46.50	693	0	51.70	5,835	15,672
46.60	761	73	51.80	5,962	16,261
46.70	832	152	51.90	6,090	16,864
46.80	907	239	52.00	7,208	17,484
46.90	984	334	52.10	7,367	18,213
47.00	1,065	436	52.20	7,528	18,958
47.10	1,135	546	52.30	7,691	19,719
47.20	1,208	663	52.40	7,856	20,496
47.30	1,283	788	52.50	8,022	21,290
47.40	1,360	920	52.60	8,190	22,101
47.50	1,439	1,060	52.70	8,360	22,928
47.60	1,521	1,208	52.80	8,532	23,773
47.70	1,605	1,364	52.90	8,705	24,635
47.80	1,691	1,529	53.00	8,880	25,514
47.90	1,779	1,702	53.10	9,063	26,411
48.00	1,870	1,885	53.20	9,248	27,326
48.10	1,953	2,076	53.30	9,434	28,261
48.20	2,038	2,276	53.40	9,623	29,213
48.30	2,125	2,484	53.50	9,813	30,185
48.40	2,213	2,701	53.60	10,005	31,176
48.50	2,303	2,926	53.70	10,200	32,186
48.60	2,396	3,161	53.80	10,395	33,216
48.70	2,489	3,406	53.90	10,593	34,265
48.80	2,585	3,659	54.00	<b>10,793</b>	<b>35,335</b>
48.90	2,683	3,923			
49.00	2,782	4,196			
49.10	2,880	4,479			
49.20	2,980	4,772			
49.30	3,082	5,075			
49.40	3,185	5,388			
49.50	3,290	5,712			
49.60	3,396	6,046			
49.70	3,505	6,391			
49.80	3,615	6,747			
49.90	3,727	7,114			
50.00	3,840	7,493			
50.10	3,947	7,882			
50.20	4,055	8,282			
50.30	4,164	8,693			
50.40	4,275	9,115			
<u>50.50</u>	4,388	<u>9,548</u>			
50.60	4,504	9,993			
50.70	4,621	10,449			
50.80	4,740	10,917			
50.90	4,861	11,397			
51.00	4,983	11,889			
51.10	5,101	12,394			
51.20	5,219	12,910			
51.30	5,340	13,437			
51.40	5,461	13,977			
51.50	5,584	14,530			
51.60	5,709	15,094			



**Summary for Pond 20P: WET POND 1**

Inflow Area = 2.516 ac, 62.69% Impervious, Inflow Depth = 5.99" for 50-YR STORM event  
 Inflow = 16.72 cfs @ 12.09 hrs, Volume= 1.257 af  
 Outflow = 8.80 cfs @ 12.23 hrs, Volume= 1.250 af, Atten= 47%, Lag= 8.7 min  
 Primary = 8.80 cfs @ 12.23 hrs, Volume= 1.250 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3

Starting Elev= 50.50' Surf.Area= 4,388 sf Storage= 9,548 cf

Peak Elev= 52.97' @ 12.23 hrs Surf.Area= 8,819 sf Storage= 25,207 cf (15,659 cf above start)

Plug-Flow detention time= 212.1 min calculated for 1.030 af (82% of inflow)

Center-of-Mass det. time= 92.0 min ( 881.4 - 789.4 )

Volume	Invert	Avail.Storage	Storage Description		
#1	46.50'	35,335 cf	<b>Custom Stage Data (Irregular) Listed below (Recalc)</b>		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.50	693	243.2	0	0	693
47.00	1,065	252.6	436	436	1,084
48.00	1,870	279.6	1,449	1,885	2,258
49.00	2,782	314.3	2,311	4,196	3,925
50.00	3,840	360.2	3,297	7,493	6,411
50.50	4,388	369.6	2,055	9,548	6,987
51.00	4,983	385.1	2,341	11,889	7,937
51.99	6,207	411.2	5,528	17,417	9,637
52.00	7,208	541.0	67	17,484	19,472
53.00	8,880	569.0	8,029	25,514	22,007
54.00	10,793	605.7	9,821	35,335	25,488

Device	Routing	Invert	Outlet Devices
#1	Primary	50.50'	<b>18.0" Round Culvert</b> L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 50.50' / 49.00' S= 0.0500 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	50.50'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600
#3	Device 1	52.00'	<b>36.0" W x 12.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Device 1	53.00'	<b>48.0" x 48.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Primary	53.50'	<b>5.0' long x 4.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32



**Primary OutFlow** Max=8.80 cfs @ 12.23 hrs HW=52.97' TW=0.00' (Dynamic Tailwater)

- 
- 1=Culvert (Inlet Controls 8.80 cfs @ 4.98 fps)
  - 2=Orifice/Grate (Passes < 0.99 cfs potential flow)
  - 3=Orifice/Grate (Passes < 9.13 cfs potential flow)
  - 4=Orifice/Grate (Controls 0.00 cfs)
  - 5=Broad-Crested Rectangular Weir (Controls 0.00 cfs)





# FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: \_\_\_\_\_

Bioretention 1 - Pond 2P

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes	Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
2.09 ac	A = Area draining to the practice	
1.23 ac	A <sub>I</sub> = Impervious area draining to the practice	
0.59 decimal	I = Percent impervious area draining to the practice, in decimal form	
0.58 unitless	R <sub>v</sub> = Runoff coefficient = 0.05 + (0.9 x I)	
1.21 ac-in	WQV = 1" x R <sub>v</sub> x A	
4,404 cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,101 cf	25% x WQV (check calc for sediment forebay volume)	
3,303 cf	75% x WQV (check calc for surface sand filter volume)	
Forebay	Method of Pretreatment? (not required for clean or roof runoff)	
1,187 cf	V <sub>SED</sub> = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:		
sf	A <sub>SA</sub> = Surface area of the practice	
iph	K <sub>sat</sub> <sub>DESIGN</sub> = Design infiltration rate <sup>1</sup>	
	If K <sub>sat</sub> (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
Yes/No	(Use the calculations below)	
- hours	T <sub>DRAIN</sub> = Drain time = V / (A <sub>SA</sub> * I <sub>DESIGN</sub> )	≤ 72-hrs
Calculate time to drain if system IS underdrained:		
51.75 ft	E <sub>WQV</sub> = Elevation of WQV (attach stage-storage table)	
1.41 cfs	Q <sub>WQV</sub> = Discharge at the E <sub>WQV</sub> (attach stage-discharge table)	
1.74 hours	T <sub>DRAIN</sub> = Drain time = 2WQV/Q <sub>WQV</sub>	≤ 72-hrs
49.50 feet	E <sub>FC</sub> = Elevation of the bottom of the filter course material <sup>2</sup>	
N/A feet	E <sub>UD</sub> = Invert elevation of the underdrain (UD), if applicable	
47.50 feet	E <sub>SHWT</sub> = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
44.50 feet	E <sub>ROCK</sub> = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
#VALUE! feet	D <sub>FC to UD</sub> = Depth to UD from the bottom of the filter course	≥ 1'
5.00 feet	D <sub>FC to ROCK</sub> = Depth to bedrock from the bottom of the filter course	≥ 1'
2.00 feet	D <sub>FC to SHWT</sub> = Depth to SHWT from the bottom of the filter course	≥ 1'
51.92 ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
53.00 ft	Elevation of the top of the practice	
YES	50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:		
YES ac	Drainage Area check.	< 10 ac
cf	V = Volume of storage <sup>3</sup> (attach a stage-storage table)	≥ 75%WQV
inches	D <sub>FC</sub> = Filter course thickness	18", or 24" if within GPA
Sheet	Note what sheet in the plan set contains the filter course specification.	
Yes/No	Access grate provided?	← yes



YES	ac	Drainage Area no larger than 5 ac?	← yes
9,697	cf	V = Volume of storage <sup>3</sup> (attach a stage-storage table)	≥ WQV
18.0	inches	D <sub>FC</sub> = Filter course thickness	18", or 24" if within GPA
Sheet	D3	Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet	D3	Note what sheet in the plan set contains the planting plans and surface cover	
<b>If porous pavement is proposed:</b>			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A <sub>SA</sub> = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	≤ 5:1
	inches	D <sub>FC</sub> = Filter course thickness	12", or 18" if within GPA
Sheet		Note what sheet in the plan set contains the filter course spec.	mod. 304.1 (see spec)

1. Rate of the limiting layer (either the filter course or the underlying soil).  $K_{sat\_design}$  includes factor of safety. See Env-Wq 1504.14 for guidance on determining the infiltration rate.
2. See lines 34, 40 and 48 for required depths of filter media.
3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet structure, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

**Designer's Notes:**

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.



## Stage-Area-Storage for Pond 2P: BIORETENTION 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
48.16	3,030	0	50.76	3,030	1,804
48.21	3,030	61	50.81	3,030	1,812
48.26	3,030	121	50.86	3,030	1,820
48.31	3,030	182	50.91	3,030	1,827
48.36	3,030	242	50.96	3,030	1,835
48.41	3,030	303	51.01	3,039	1,900
48.46	3,030	364	51.06	3,085	2,053
48.51	3,030	424	51.11	3,131	2,208
48.56	3,030	485	51.16	3,178	2,366
48.61	3,030	545	51.21	3,224	2,526
48.66	3,030	606	51.26	3,272	2,689
48.71	3,030	667	51.31	3,319	2,853
48.76	3,030	727	51.36	3,367	3,020
48.81	3,030	788	51.41	3,415	3,190
48.86	3,030	848	51.46	3,464	3,362
48.91	3,030	909	51.51	3,513	3,536
48.96	3,030	970	51.56	3,562	3,713
49.01	3,030	1,030	51.61	3,611	3,893
49.06	3,030	1,091	51.66	3,661	4,074
49.11	3,030	1,151	51.71	3,712	4,259
49.16	3,030	1,212	51.76	3,762	4,446
49.21	3,030	1,273	51.81	3,813	4,635
49.26	3,030	1,333	51.86	3,865	4,827
49.31	3,030	1,394	51.91	3,916	5,021
49.36	3,030	1,454	51.96	3,968	5,219
49.41	3,030	1,515	52.01	4,020	5,418
49.46	3,030	1,576	52.06	4,069	5,620
49.51	3,030	1,615	52.11	4,119	5,825
49.56	3,030	1,623	52.16	4,168	6,032
49.61	3,030	1,630	52.21	4,218	6,242
49.66	3,030	1,638	52.26	4,269	6,454
49.71	3,030	1,645	52.31	4,320	6,669
49.76	3,030	1,653	52.36	4,371	6,886
49.81	3,030	1,660	52.41	4,422	7,106
49.86	3,030	1,668	52.46	4,474	7,328
49.91	3,030	1,676	52.51	4,525	7,553
49.96	3,030	1,683	52.56	4,578	7,781
50.01	3,030	1,691	52.61	4,630	8,011
50.06	3,030	1,698	52.66	4,683	8,244
50.11	3,030	1,706	52.71	4,736	8,479
50.16	3,030	1,713	52.76	4,789	8,718
50.21	3,030	1,721	52.81	4,843	8,958
50.26	3,030	1,729	52.86	4,897	9,202
50.31	3,030	1,736	52.91	4,951	9,448
50.36	3,030	1,744	52.96	5,006	9,697
50.41	3,030	1,751			
50.46	3,030	1,759			
50.51	3,030	1,766			
50.56	3,030	1,774			
50.61	3,030	1,782			
50.66	3,030	1,789			
50.71	3,030	1,797			



## Stage-Discharge for Pond 2P: BIORETENTION 1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
48.16	0.00	0.00	0.00	50.76	1.04	1.04	0.00
48.21	0.11	0.11	0.00	50.81	1.06	1.06	0.00
48.26	0.24	0.24	0.00	50.86	1.07	1.07	0.00
48.31	0.26	0.26	0.00	50.91	1.09	1.09	0.00
48.36	0.27	0.27	0.00	50.96	1.10	1.10	0.00
48.41	0.29	0.29	0.00	51.01	1.12	1.12	0.00
48.46	0.31	0.31	0.00	51.06	1.14	1.14	0.00
48.51	0.32	0.32	0.00	51.11	1.16	1.16	0.00
48.56	0.34	0.34	0.00	51.16	1.18	1.18	0.00
48.61	0.35	0.35	0.00	51.21	1.20	1.20	0.00
48.66	0.37	0.37	0.00	51.26	1.22	1.22	0.00
48.71	0.39	0.39	0.00	51.31	1.24	1.24	0.00
48.76	0.40	0.40	0.00	51.36	1.26	1.26	0.00
48.81	0.42	0.42	0.00	51.41	1.27	1.27	0.00
48.86	0.43	0.43	0.00	51.46	1.29	1.29	0.00
48.91	0.45	0.45	0.00	51.51	1.31	1.31	0.00
48.96	0.47	0.47	0.00	51.56	1.33	1.33	0.00
49.01	0.48	0.48	0.00	51.61	1.35	1.35	0.00
49.06	0.50	0.50	0.00	51.66	1.37	1.37	0.00
49.11	0.51	0.51	0.00	51.71	1.39	1.39	0.00
49.16	0.53	0.53	0.00	51.76	1.41	1.41	0.00
49.21	0.55	0.55	0.00	51.81	1.43	1.43	0.00
49.26	0.56	0.56	0.00	51.86	1.45	1.45	0.00
49.31	0.58	0.58	0.00	51.91	1.47	1.47	0.00
49.36	0.59	0.59	0.00	51.96	1.49	1.49	0.00
49.41	0.61	0.61	0.00	52.01	1.54	1.51	0.03
49.46	0.62	0.62	0.00	52.06	1.91	1.54	0.38
49.51	0.64	0.64	0.00	52.11	2.49	1.56	0.94
49.56	0.66	0.66	0.00	52.16	3.22	1.58	1.64
49.61	0.67	0.67	0.00	52.21	4.07	1.60	2.47
49.66	0.69	0.69	0.00	52.26	5.02	1.62	3.40
49.71	0.70	0.70	0.00	52.31	6.07	1.64	4.43
49.76	0.72	0.72	0.00	52.36	6.24	1.66	4.59
49.81	0.74	0.74	0.00	52.41	6.31	1.68	4.63
49.86	0.75	0.75	0.00	52.46	6.38	1.70	4.68
49.91	0.77	0.77	0.00	52.51	6.45	1.72	4.73
49.96	0.78	0.78	0.00	52.56	6.52	1.74	4.78
50.01	0.80	0.80	0.00	52.61	6.58	1.76	4.82
50.06	0.82	0.82	0.00	52.66	6.65	1.78	4.87
50.11	0.83	0.83	0.00	52.71	6.72	1.80	4.91
50.16	0.85	0.85	0.00	52.76	6.78	1.82	4.96
50.21	0.86	0.86	0.00	52.81	6.85	1.85	5.00
50.26	0.88	0.88	0.00	52.86	6.92	1.87	5.05
50.31	0.90	0.90	0.00	52.91	6.98	1.89	5.09
50.36	0.91	0.91	0.00	52.96	7.05	1.91	5.14
50.41	0.93	0.93	0.00				
50.46	0.94	0.94	0.00				
50.51	0.96	0.96	0.00				
50.56	0.98	0.98	0.00				
50.61	0.99	0.99	0.00				
50.66	1.01	1.01	0.00				
50.71	1.02	1.02	0.00				



**Summary for Pond 2P: BIORETENTION 1**

Inflow Area = 2.089 ac, 58.97% Impervious, Inflow Depth = 2.45" for 50-YR STORM event  
 Inflow = 5.49 cfs @ 12.08 hrs, Volume= 0.426 af  
 Outflow = 1.48 cfs @ 12.43 hrs, Volume= 0.436 af, Atten= 73%, Lag= 21.0 min  
 Discarded = 1.48 cfs @ 12.43 hrs, Volume= 0.436 af  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3  
 Starting Elev= 48.50' Surf.Area= 3,030 sf Storage= 412 cf  
 Peak Elev= 51.92' @ 12.43 hrs Surf.Area= 3,930 sf Storage= 5,072 cf (4,660 cf above start)

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 13.7 min ( 780.4 - 766.8 )

Volume	Invert	Avail.Storage	Storage Description			
#1	48.16'	9,898 cf	<b>Custom Stage Data (Irregular) Listed below (Recalc)</b>			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
48.16	3,030	146.5	0.0	0	0	3,030
48.17	3,030	146.5	40.0	12	12	3,031
48.50	3,030	146.5	40.0	400	412	3,080
49.49	3,030	146.5	40.0	1,200	1,612	3,225
49.50	3,030	146.5	5.0	2	1,613	3,226
50.99	3,030	146.5	5.0	226	1,839	3,445
51.00	3,030	146.5	100.0	30	1,870	3,446
52.00	4,010	185.6	100.0	3,509	5,378	4,493
53.00	5,050	204.4	100.0	4,520	9,898	5,108

Device	Routing	Invert	Outlet Devices
#1	Primary	49.50'	<b>12.0" Round Culvert</b> L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 49.50' / 49.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	52.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Discarded	48.16'	<b>3.000 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 47.50' Phase-In= 0.10'

**Discarded OutFlow** Max=1.48 cfs @ 12.43 hrs HW=51.92' (Free Discharge)  
 ↳ **3=Exfiltration** ( Controls 1.48 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=48.50' TW=0.00' (Dynamic Tailwater)  
 ↳ **1=Culvert** ( Controls 0.00 cfs)  
 ↳ **2=Orifice/Grate** ( Controls 0.00 cfs)



# JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885  
603.772.4746 - JonesandBeach.com

## STORMWATER MANAGEMENT INSPECTION AND MAINTENANCE MANUAL

**Prepared for:**

**Residential Condominiums  
Tax Map 297, Lot 11  
3400 LaFayette Road  
Portsmouth, NH 03801**

**Prepared by:**

**Jones & Beach Engineers, Inc.  
85 Portsmouth Avenue  
P.O. Box 219  
Stratham, NH 03885  
Phone: (603) 772-4746  
Fax: (603) 772-0227  
May 14, 2021  
JBE Project No. 20737**



# Inspection and Maintenance of Facilities and Property

## A. Maintenance of Common Facilities or Property

Green and Company/ future owners and assigns are responsible for maintenance of all stormwater infrastructure associated with the facility and the property. This includes all temporary and permanent stormwater and erosion control facilities, roadways, and parking areas both during and after construction. During the construction period, inspections shall be conducted at least once every seven (7) calendar days or once every 14 calendar days and within 24 hours of the end of a storm event of 0.5 inch or greater. Permanent Stormwater BMPs shall be inspected annually following post-construction and shall be performed by a qualified inspector by December 31st of each year. Green and Company/ future owners and assigns are required to keep inspection reports filed on-site in a location easily accessible to the City Engineer. Green and Company/ future owners and assigns shall consent to inspections by the Planning Board or its designee for compliance with City regulations. Green and Company/ future owners and assigns shall be open to working with the City to achieve the stormwater goals promulgated by the EPA as they become applicable. This manual is assignable to any future owners and condominium association. Should ownership of the property change, the current owner(s) shall continue to be responsible until the succeeding owner(s) notifies the Town that said succeeding owner(s) has assumed such responsibility. Upon subsequent transfers, the responsibility shall continue to be that of the transferring owner until the transferee owner notifies the Town of assumption of responsibility.

## C. General Inspection and Maintenance Requirements

1. Permanent stormwater and sediment and erosion control facilities to be maintained on the site include, but are not limited to, the following:
  - a. Catch basins and drain manholes
  - b. Culverts
  - c. Swales
  - d. Vegetation and landscaping
  - e. Parking lots and roadways
  - f. Riprap inlet and outlet protection aprons
  - g. Rain Gardens (Bio-retention systems)
  - h. Wet Pond
  - i. Roof Drip Edges
2. Maintenance of permanent measures shall follow the following schedule:
  - a. Normal winter roadway and parking lot maintenance including plowing and snow removal. Snow removal contractors shall be NH Certified Green SnowPro.
  - b. Road and parking lot sweeping at the end of every winter, preferably at the start of the spring rain season.
  - c. **Inspection** of culvert inlets and outlets at least **once per month** during the rainy season (March to November). Any debris is to be removed and disposed of properly.



- d. **Annual inspection** of the site for erosion, destabilization, settling, and sloughing. Any needed repairs are to be conducted immediately.
- e. **Annual inspection** of site's vegetation and landscaping. Any areas that are bare shall be reseeded and mulched with hay or, if the case is extreme, loamed and seeded or sodded to ensure adequate vegetative cover. Landscape specimens shall be replaced in kind, if they are found to be dead or dying.
- f. **Annual inspection** of catch basins and drain manholes to determine if they need to be cleaned. Catch basins are to be cleaned if the depth of deposits is greater than one-half the depth from the basin bottom to the invert of the lowest pipe or opening into or out of the basin. If a catch basin significantly exceeds the one-half depth standard during the inspection, then it should be cleaned more frequently. If woody debris or trash accumulates in a catch basin, then it should be cleaned on a weekly basis. Manholes should be cleaned of any material upon inspection. Catch basins and manholes can be cleaned either manually or by specially designed equipment including, but not limited to, bucket loaders and vacuum pumps. Before any materials can be disposed, it is necessary to perform a detailed chemical analysis to determine if the materials meet the EPA criteria for hazardous waste. This will help determine how the materials should be stored, treated, and disposed. Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet should also be removed.
- g. Permanent stone check dams should be **inspected annually** in order to ensure that they are in good condition. Any sediment accumulated behind them shall be removed if it is deeper than six inches.
- h. Rock riprap should be **inspected annually** and after every major storm event in order to ensure that it has not been displaced, undermined, or otherwise damaged. Displaced rock should be replaced, or additional rock added in order to maintain the structure(s) in their undamaged state. Woody vegetation should not be allowed to become established in riprap areas, and/or any debris removed from the void spaces between the rocks. If the riprap is adjacent to a stream or other waterbody, the water should be kept clear of obstructions, debris, and sediment deposits.
- i. Raingarden - Bioretention Cells:
- Visually inspect monthly and repair erosion. Use small stones to stabilize erosion along drainage paths.
  - Check the pH once or twice a year. Apply an alkaline product, such as limestone, if needed.
  - Re-mulch any void areas by hand as needed.
  - Every 6 months, in the spring and fall, add a fresh mulch layer.
  - Once every 2 to 3 years, in the spring, remove old mulch layer before applying new one.
  - Immediately after the completion of cell construction, water plant material for 14 consecutive days unless there is sufficient natural rainfall.
  - When trees have taken root, or at least by 6 months, remove stakes and wires.
  - Once a month (more frequently in the summer), visually inspect vegetation for disease or pest problems.
  - If treatment is warranted, use the least toxic approach.



- Twice a year, from March 15th to April 30th and October 1st to November 30th, remove and replace all dead and diseased vegetation considered beyond treatment.
- During times of extended drought, look for physical features of stress (unrevived wilting, yellow, spotted or brown leaves, loss of leaves, etc.). Water in the early morning as needed.
- Weed regularly, if needed.
- Prune excess growth annually or more often, if desired. Trimmed materials may be recycled back in with replenished mulch or land filled if there is a concern of heavy metals accumulation.
- After rainstorms, inspect the cell and make sure that drainage paths are clear and that ponding water dissipates over 4-6 hours. (Water may pond for longer times during the winter and early spring.)
- KEEP IN MIND, THE BIORETENTION CELL IS NOT A POND. IT SHOULD NOT PROVIDE A BREEDING GROUND FOR MOSQUITOES. MOSQUITOES NEED AT LEAST FOUR (4) DAYS OF STANDING WATER TO DEVELOP AS LARVA.

Cleaning Criteria for all Sedimentation Forebays: Sediment should be removed from the sedimentation chamber (forebay) when it accumulates to a depth of more than 12 inches (30 cm) or 10 percent of the pretreatment volume. The sedimentation forebay should be cleaned of vegetation if persistent standing water and wetland vegetation becomes dominant. The cleaning interval is once every year. A dry sedimentation forebay is the optimal condition while in practice this condition is rarely achieved. The sedimentation chamber, forebay, and treatment cell outlet devices should be cleaned when drawdown times exceed 60 to 72 hours. Materials can be removed with heavy construction equipment; however this equipment should not track on the wetland surface. Revegetation of disturbed areas as necessary. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.

- j. Wet ponds are to be inspected after every major storm event for the first six months of operation and on an annual basis thereafter. Inspections and maintenance shall include the following:
- i. Inspection of the water levels to ensure proper drainage.
  - ii. Inspection of the inlets and outlets to ensure that flow areas are not blocked by debris. If required, debris is to be removed and located to an area that can handle such debris.
  - iii. Inspection of side slopes and embankment for rodent burrows, erosion, destabilization, settling, and other signs of structural failure. Areas showing signs of erosion or thin or dying vegetation should be repaired immediately by whatever means necessary, *with the exception of fertilizer*. Rodent burrows are to be repaired immediately and the suspect animals apprehended with non-lethal traps if the problem persists.
  - iv. Pond berms should be mowed at least once annually so as to prevent the establishment of woody vegetation – trees should *never* be allowed to grow on a pond berm, as they may destabilize the structure and increase the potential for failure.
  - v. Inspection of the riprap outlet protection aprons, emergency spillways, forebays, and check dams. Dislodged stone is to be replaced, and any sediment deposits and woody growth removed. If necessary, check dams shall be repaired in order to ensure proper height and level lip elevations.
  - vi. Maintenance dredging: wet ponds may lose some of their volume annually due to sediment accumulation. Dredging is required when accumulated volume loss reaches 15%, or approximately every 15-20 years. This operation should be done with a vacuum



truck once the sediment has reached a level one-foot above the pond bottom. All sediment removed must be disposed of in an approved manner.

- vii. Every five years, the services of a professional engineer should be retained to perform a thorough inspection of all the aspects of the pond and its infrastructure.

k. House Roof Drip Edge System:

The following recommendations will help assure that the roof drip edge system is maintained to preserve its effectiveness.

- In the spring and fall, visually inspect the area around the system and repair any erosion. Use small stones to stabilize erosion along drainage paths. Re-mulch any void areas by hand as needed. Also inspect the roof collection and piping and clean and repair as necessary.
- Do not plant deep rooted trees and shrubs within 5' of the system.  
Keep heavy vehicles from driving or parking over the system.

See attached sample forms as a guideline.

Any inquiries in regards to the design, function, and/or maintenance of any one of the above mentioned facilities or tasks shall be directed to the project engineer:

Jones & Beach Engineers, Inc.  
85 Portsmouth Avenue  
P.O. Box 219  
Stratham, NH 03885

T#: (603) 772-4746  
F#: (603) 772-0227



**Commitment to maintenance requirements**

I agree to complete and/or observe all of the required maintenance practices and their respective schedules as outlined above.

---

**Signature**

---

**Print Name**

---

**Title**

---

**Date**



### Annual Operations and Maintenance Report

Green and Company/ future owners and assigns are responsible to perform the maintenance obligations and hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. Green and Company/ future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form. Green and Company/ future owners and assigns are required to keep inspection reports filed on-site in a location easily accessible to the City Engineer.

Construction Activity	Date of Inspection	Who Inspected	Findings of Inspector/ Responsible Party for Maintenance (if req'd) and Date of Maintenance
Vegetation and landscaping  (Annual Inspection)			
Parking lots and roadways   Date Vacuumed: (Attach Receipts)			
Culverts  (Annual Inspection)			
Swales  (Annual Inspection)			
Rip rap outlet protection  (Annual Inspection)			



Catch basins and drain manholes  (Annual Inspection)			
Bio-retention system  (Annual Inspection)			
Wet pond  (Annual Inspection)			
Roof drip edges  (Annual Inspection)			
Other:			



Other:			
Other:			
Other:			
Other:			
Other:			



## Deicing Log

[illegible]



## Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters

Maintenance of bioretention systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of bioretention systems and tree filters to insure they remain clear of leaves and debris and free draining. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, overly wet or dry (I.E., drought), regional hydrologic conditions, and the upstream land use.

### ACTIVITIES

The most common maintenance activity is the removal of leaves from the system and bypass structure. Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Mulch and/or vegetation coverage is integral to the performance of the system, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then biannually.
Check to insure the filter surface remains well draining after storm event. <b>Remedy:</b> If filter bed is clogged, draining poorly, or standing water covers more than 15% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. <b>Remedy:</b> Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, biannually, frequency adjusted as needed after 3 inspections
Check for animal burrows and short circuiting in the system <b>Remedy:</b> Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted.	
Check to insure the filter bed does not contain more than 2 inches accumulated material <b>Remedy:</b> Remove sediment as necessary. If 2 inches or more of filter bed has been removed, replace media with either mulch or a (50% sand, 20% woodchips, 20% compost, 10% soil) mixture.	
During extended periods without rainfall, inspect plants for signs of distress. <b>Remedy:</b> Plants should be watered until established (typical only for first few months) or as needed thereafter.	
Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. <b>Remedy:</b> Repair or replace any damaged structural parts, inlets, outlets, sidewalls.	Annually
Check for robust vegetation coverage throughout the system. <b>Remedy:</b> If at least 50% vegetation coverage is not established after 2 years, reinforcement planting should be performed.	
Check for dead or dying plants, and general long term plant health. <b>Remedy:</b> This vegetation should be cut and removed from the system. If woody vegetation is present, care should be taken to remove dead or decaying plant Material. Separation of Herbaceous vegetation rootstock should occur when overcrowding is observed.	As needed



## CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location:

Inspector:

Date:

Time:

Site Conditions:

Date Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
<b>1. Initial Inspection After Planting and Mulching</b>		
Plants are stable, roots not exposed	S U	
Surface is at design level, typically 4" below overpass	S U	
Overflow bypass / inlet ( if available) is functional	S U	
<b>2. Debris Cleanup (2 times a year minimum, Spring &amp; Fall)</b>		
Litter, leaves, and dead vegetation removed from the system	S U	
Prune perennial vegetation	S U	
<b>3. Standing Water (1 time a year, After large storm events)</b>		
No evidence of standing water after 72 hours	S U	
<b>4. Short Circuiting &amp; Erosion (1 time a year, After large storm events)</b>		
No evidence of animal burrows or other holes	S U	
No evidence of erosion	S U	
<b>5. Drought Conditions (As needed)</b>		
Water plants as needed	S U	
Dead or dying plants		
<b>6. Overflow Bypass / Inlet Inspection (1 time a year, After large storm events)</b>		
No evidence of blockage or accumulated leaves	S U	
Good condition, no need for repair	S U	
<b>7. Vegetation Coverage (once a year)</b>		
50% coverage established throughout system by first year	S U	
Robust coverage by year 2 or later	S U	
<b>8. Mulch Depth (if applicable)(once every 2 years)</b>		
Mulch at original design depth after tilling or replacement	S U	
<b>9. Vegetation Health (once every 3 years)</b>		
Dead or decaying plants removed from the system	S U	
<b>10. Tree Pruning (once every 3 years)</b>		
Prune dead, diseased, or crossing branches	S U	
<b>Corrective Action Needed</b>		<b>Due Date</b>
1.		
2.		
3.		



## CONTROL OF INVASIVE PLANTS

During maintenance activities, check for the presence of invasive plants and remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.

### Background:

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.





## Methods for Disposing Non-Native Invasive Plants

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



**Tatarian honeysuckle**  
*Lonicera tatarica*

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

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

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

Knowing how a particular plant reproduces indicates its method of spread and helps determine

the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

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

Control of invasives is beyond the scope of this fact sheet. For information about control visit [www.nhinvasives.org](http://www.nhinvasives.org) or contact your UNH Cooperative Extension office.

### New Hampshire Regulations

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

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



## How and When to Dispose of Invasives?

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

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

**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.

**Tarpping 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>	<b>Fruit and Seeds</b> 	<b>Prior to fruit/seed ripening</b> Seedlings and small plants <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> Larger plants <ul style="list-style-type: none"> <li>▪ Use as firewood.</li> <li>▪ Make a brush pile.</li> <li>▪ Chip.</li> <li>▪ Burn.</li> </ul>
		<b>After fruit/seed is ripe</b> Don't remove from site. <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip once all fruit has dropped from branches.</li> <li>▪ Leave resulting chips on site and monitor.</li> </ul>
oriental bittersweet <i>(Celastrus orbiculatus)</i> multiflora rose <i>(Rosa multiflora)</i>	<b>Fruits, Seeds, Plant Fragments</b> 	<b>Prior to fruit/seed ripening</b> Seedlings and small plants <ul style="list-style-type: none"> <li>▪ Pull or cut and leave on site with roots exposed. No special care needed.</li> </ul> Larger plants <ul style="list-style-type: none"> <li>▪ Make a brush pile.</li> <li>▪ Burn.</li> </ul>
		<b>After fruit/seed is ripe</b> Don't remove from site. <ul style="list-style-type: none"> <li>▪ Burn.</li> <li>▪ Make a covered brush pile.</li> <li>▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.</li> </ul>



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"> <li>▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling.</li> </ul> <p>black swallow-wort (<i>Cynanchum nigrum</i>)</p> <ul style="list-style-type: none"> <li>▪ May cause skin rash. Wear gloves and long sleeves when handling.</li> </ul> <p>pale swallow-wort (<i>Cynanchum rossicum</i>)</p> <p>giant hogweed (<i>Heracleum mantegazzianum</i>)</p> <ul style="list-style-type: none"> <li>▪ Can cause major skin rash. Wear gloves and long sleeves when handling.</li> </ul> <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><b>Fruits and Seeds</b></p> 	<p><b>Prior to flowering</b></p> <p>Depends on scale of infestation</p> <p>Small infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul> <p><b>During and following flowering</b></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"> <li>▪ Pull or cut plant and leave on site with roots exposed.</li> </ul> <p>Large infestation</p> <ul style="list-style-type: none"> <li>▪ Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting).</li> <li>▪ Monitor. Remove any re-sprouting material.</li> </ul>
<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><b>Fruits, Seeds, Plant Fragments</b></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><b>Small infestation</b></p> <ul style="list-style-type: none"> <li>▪ Bag all plant material and let rot.</li> <li>▪ Never pile and use resulting material as compost.</li> <li>▪ Burn.</li> </ul> <p><b>Large infestation</b></p> <ul style="list-style-type: none"> <li>▪ Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile.</li> <li>▪ Monitor and remove any sprouting material.</li> <li>▪ Pile, let dry, and burn.</li> </ul>

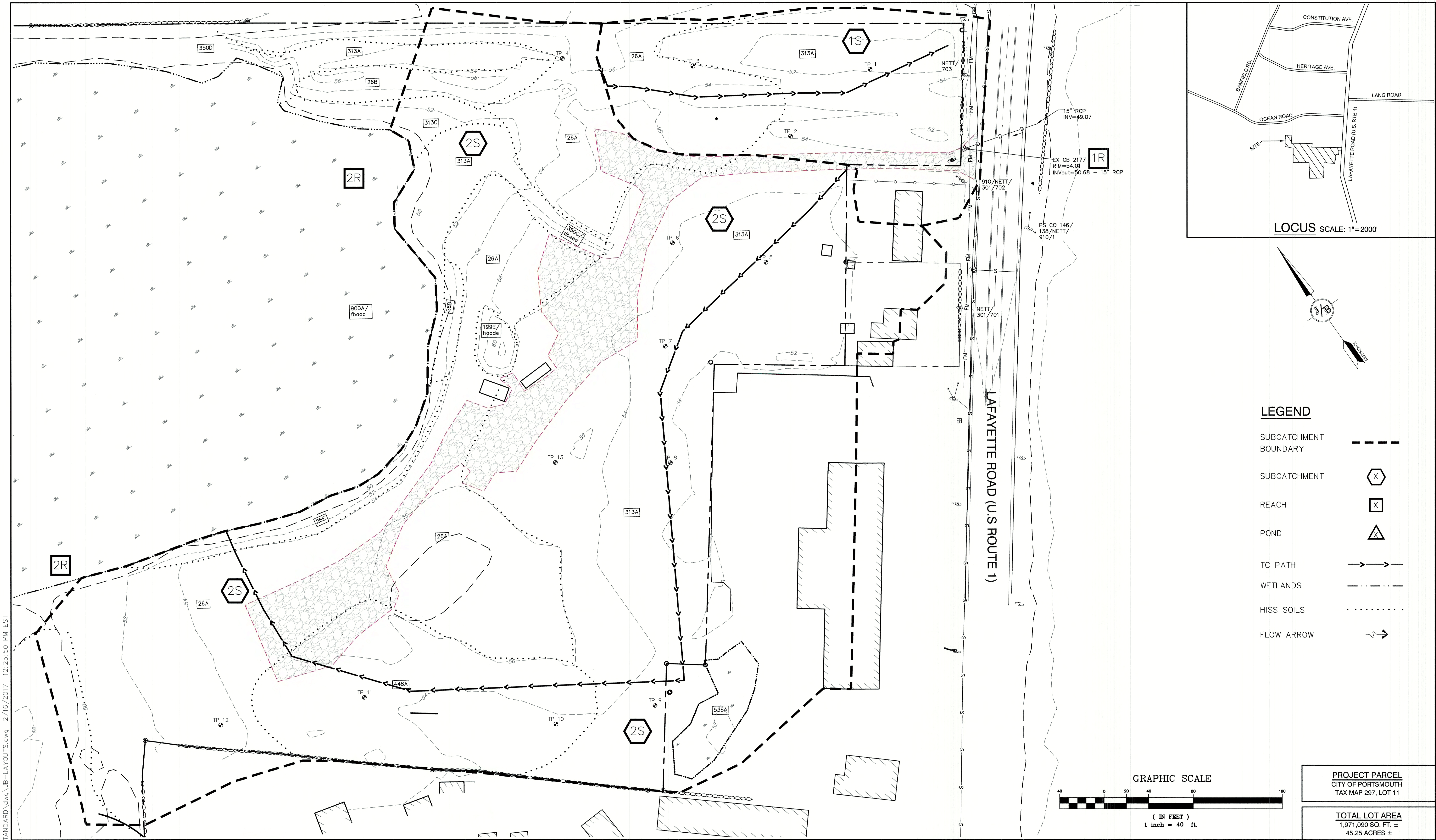
January 2010

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Design: JAC Draft: LAZ Date: 3/3/21  
Checked: JAC Scale: AS SHOWN Project No.: 20737  
Drawing Name: 20737-PLAN.dwg  
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.



REV.	DATE	REVISION	BY
0	5/17/21	ISSUED FOR REVIEW	MJK

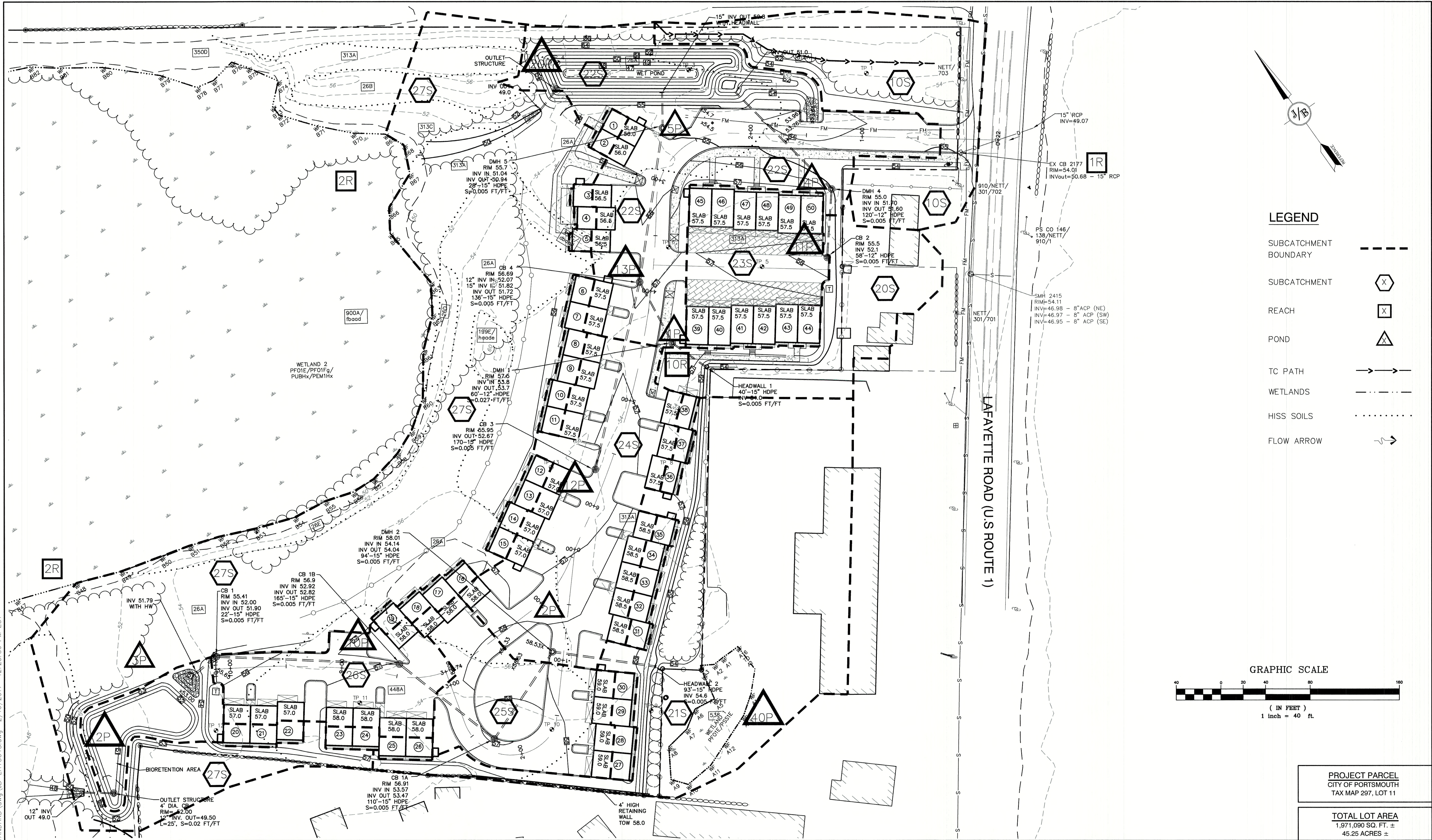
**J/B Jones & Beach Engineers, Inc.**  
Civil Engineering Services  
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885  
603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **EXISTING WATERSHED PLAN**  
Project: **3400 LAFAYETTE ROAD PORTSMOUTH, NH**  
Owner of Record: **RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

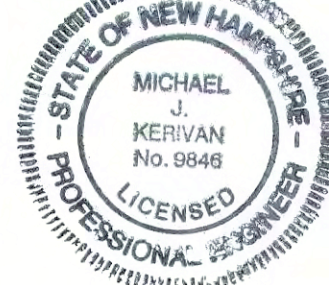
DRAWING No. **W1**  
SHEET 1 OF 2  
JBE PROJECT NO. 20737

PROJECT PARCEL  
CITY OF PORTSMOUTH  
TAX MAP 297, LOT 11  
TOTAL LOT AREA  
1,971,090 SQ. FT. ±  
45.25 ACRES ±





Design: JAC Draft: LAZ Date: 3/3/21  
Checked: JAC Scale: AS SHOWN Project No.: 20737  
Drawing Name: 20737-PLAN.dwg  
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REV.	DATE	REVISION	BY
0	5/17/21	ISSUED FOR REVIEW	MJK

Designed and Produced in NH  
**J/B Jones & Beach Engineers, Inc.**  
Civil Engineering Services  
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603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **PROPOSED WATERSHED PLAN**  
Project: **3400 LAFAYETTE ROAD PORTSMOUTH, NH**  
Owner of Record: **RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

DRAWING No. **W2**  
SHEET 2 OF 2  
JBE PROJECT NO. 20737

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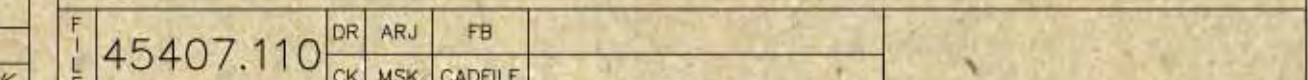










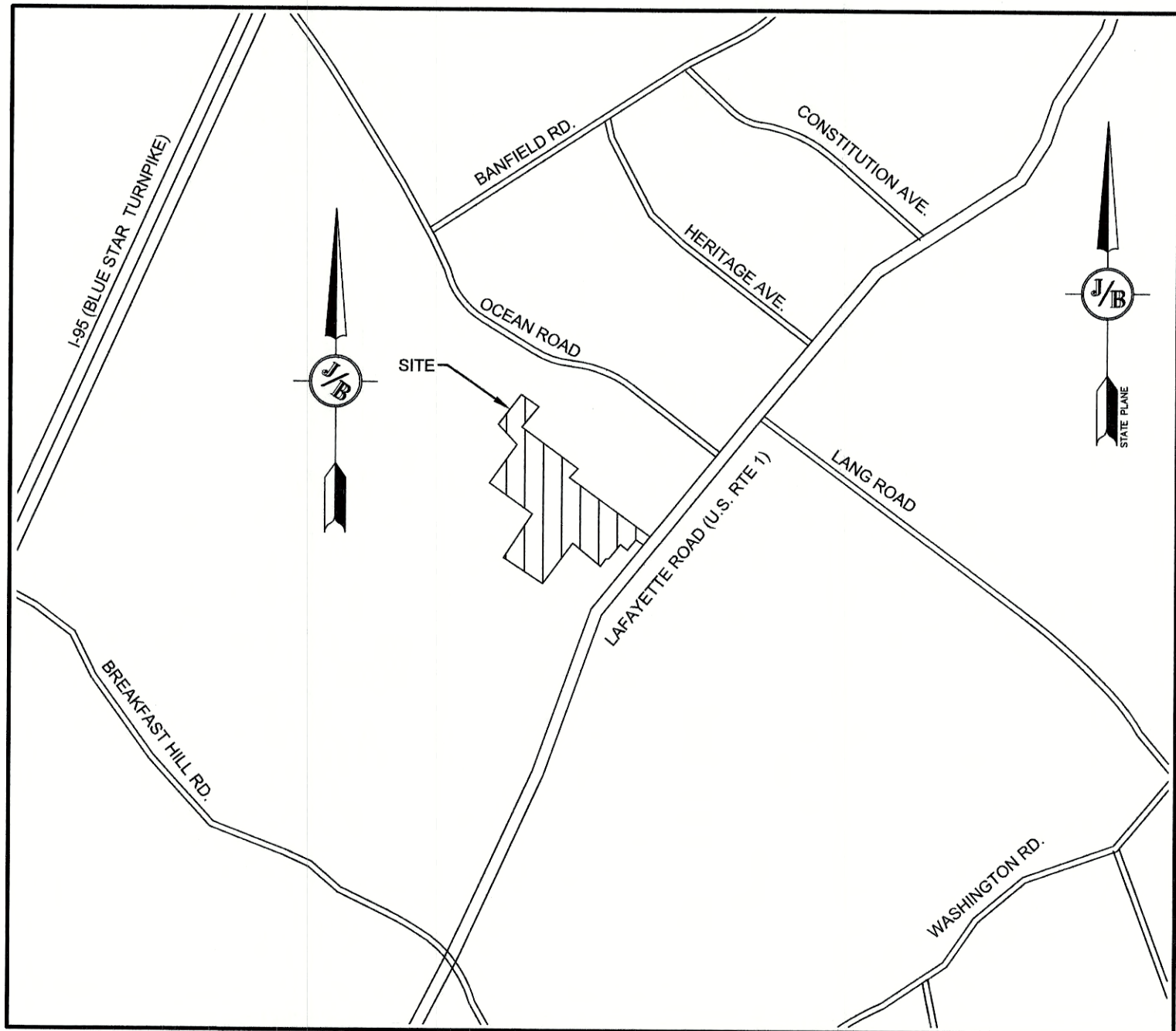




RESIDENTIAL CONDOMINIUMS  
TAX MAP 297, LOT 11  
3400 LAFAYETTE ROAD, PORTSMOUTH, NH

GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
		MAJOR CONTOUR
		MINOR CONTOUR
		EDGE OF PAVEMENT
		VERTICAL GRANITE CURB
		SLOPE GRANITE CURB
		CAPE COD BERM
		POURED CONCRETE CURB
		SILT FENCE
		DRAINAGE LINE
		SEWER LINE
		SEWER FORCE MAIN
		GAS LINE
		WATER LINE
		WATER SERVICE
		OVERHEAD ELECTRIC
		UNDERGROUND ELECTRIC
		GUARDRAIL
		UNDERDRAIN
		FIRE PROTECTION LINE
		THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
		SPOT GRADE
		PAVEMENT SPOT GRADE
		CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
		WELL
		TEST PIT
		FAILED TEST PIT
		MONITORING WELL
		PERC TEST
		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
		DRAIN MANHOLE
		SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
		CULVERT W/WINGWALLS
		CULVERT W/FLARED END SECTION
		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		4K SEPTIC AREA
		WETLAND IMPACT
		VEGETATED FILTER STRIP
		RIPRAP
		OPEN WATER
		FRESHWATER WETLANDS
		TIDAL WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL



LOCUS MAP

SCALE 1" = 2000'

SHEET INDEX

CS	COVER SHEET
A1-A2	BOUNDARY PLAN
EXOVR	OVERVIEW EXISTING CONDITIONS PLAN
C1	EXISTING CONDITIONS PLAN
OVR	OVERVIEW SITE PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
L1	LIGHTING PLAN
P1-P3	ROAD PLAN AND PROFILE
P4-P5	SEWER PROFILES
P6	PUMP STATION DETAILS AND PROFILE
D1-D3	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS
T1	TRUCK TURNING PLAN
TR1	STORMWATER TREATMENT PLAN
LS-1-4	LANDSCAPE PLANS

**CIVIL ENGINEER / SURVEYOR**  
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GZA ENVIRONMENTAL  
5 COMMERCE PARK NORTH  
SUITE 201  
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603-623-3600  
CONTACT: JAMES LONG

**APPLICANT**  
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11 LAFAYETTE ROAD  
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CONTACT: MICHAEL GREEN  
MPG114@GMAIL.COM

**LANDSCAPE ARCHITECT**  
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48 CONSTITUTION DRIVE  
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603-472-4488  
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MKRZEMINSKI@TFMORAN.COM

**ARCHITECT:**  
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CONTACT: MICHAEL MACNEIL

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(603) 555-5334  
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**TELEPHONE**  
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(603) 427-5525  
CONTACT: JOE CONSIDINE

**CABLE TV**  
COMCAST COMMUNICATION CORPORATION  
334-B CALEF HIGHWAY  
EPPING, NH 03042-2325  
(603) 679-5695

PROJECT PARCEL  
CITY OF PORTSMOUTH  
TAX MAP 297, LOT 11

TOTAL LOT AREA  
1,931,721 SQ. FT. ±  
44.35 ACRES ±

APPROVED — PORTSMOUTH, NH  
PLANNING BOARD

DATE:

Design: JAC Draft: LAZ Date: 3/3/21  
Checked: JAC Scale: AS NOTED Project No.: 20737  
Drawing Name: 20737-PLAN.dwg  
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REV.	DATE	REVISION	BY
8	8/25/21	REVISIONS PER CITY REVIEW	LAZ
7	7/20/21	REVISIONS PER CITY REVIEW	LAZ
6	6/22/21	REVISIONS PER CITY REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ

**J/B Jones & Beach Engineers, Inc.**  
85 Portsmouth Ave. Civil Engineering Services 603-772-4746  
PO Box 219 FAX: 603-772-0227  
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **COVER SHEET**  
Project: **3400 LAFAYETTE ROAD  
PORTSMOUTH, NH**  
Owner of Record: **RICCI CONSTRUCTION CO., INC.  
225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

DRAWING No.  
**CS**  
SHEET 1 OF 22  
JBE PROJECT NO. 20737

PROJECT NAME AND LOCATION  
JBE # 20737  
REVISION 8/20/21



# NATHANIEL DRIVE

LINE	BEARING	DISTANCE
L1	N35°59'50"E	378.06'
L2	N36°59'58"E	35.16'
L3	N34°54'13"E	30.65'
L4	N38°51'51"E	35.83'
L5	N33°51'16"E	41.69'
L6	N37°10'52"E	59.44'
L7	N33°21'24"E	56.95'
L8	N40°14'01"E	31.94'
L9	S46°52'29"E	39.26'
L10	S50°03'35"E	82.08'
L11	S48°42'40"E	137.96'
L12	S53°55'43"E	36.68'
L13	S48°09'47"E	131.94'
L14	S49°33'18"E	39.86'
L15	N36°48'00"E	114.97'
L16	S52°39'09"E	34.99'
L17	N36°58'03"E	270.24'
L18	S54°10'12"E	117.40'
L19	N35°49'48"E	180.50'
L20	S54°10'12"E	102.31'
L21	N36°31'52"E	128.03'
L22	N54°44'40"W	643.59'
L23	N55°24'35"W	194.43'
L24	N54°56'09"W	255.65'
L25	N54°38'29"W	182.42'
L26	N42°52'40"E	95.06'
L27	N43°42'48"E	77.78'

## PLAN REFERENCES:

- "SUBDIVISION PLAN OF SOUTHSIDE MANOR, PORTSMOUTH, NH." DATED JANUARY 30, 1952. SURVEYED BY CHARLES BREWER, SUBDIVISION BY LUCIEN GEOFFRION. R.C.R.D. 02163.
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MAP 296 LOT 11  
CITY OF PORTSMOUTH  
CONSERVATION COMM.  
PO BOX 6697  
PORTSMOUTH, NH 03802  
BK 2484 PG 311

MAP 297 LOT 4  
CITY OF PORTSMOUTH  
1 JUNKINS AVENUE  
PORTSMOUTH, NH 03801  
BK 4601 PG 1186  
PLAN 12848

MAP 297 LOT 5  
PORTSMOUTH LAFAYETTE RD LLC  
87 MOUNTAIN BLVD SUITE 201  
WARREN NJ 07059  
BK 6090 PG 325  
PLAN 12460

MAP 297 LOT 6  
NAVEESHA HOSPITALITY LLC  
440 BEDFORD ST  
LEXINGTON MA 02420  
BK 5230 PG 888

MAP 292 LOT 163  
MACPHAIL MICHAEL K  
MACPHAIL CHELSEA L  
3334 LAFAYETTE ROAD  
PORTSMOUTH NH 03801

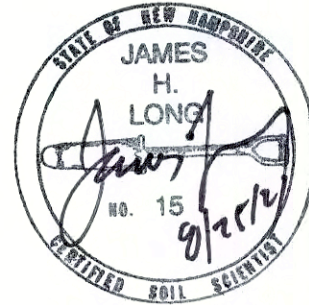
MAP 297 LOT 12  
KRUKOFF PATRICIA  
96 COAKLEY RD  
PORTSMOUTH NH 03801

MAP 291 LOT 9  
WESTCHESTER CORNER LLC  
72 SOUTH BROADWAY  
SALEM NH 03079  
BK 5617 PG 1043  
PLAN 38075

MAP 297 LOT 10  
ROBERT NELSON  
FIFI WENAS  
3430 LAFAYETTE RD  
PORTSMOUTH NH  
03801  
BK 4933 PG 2134

MAP 297 LOT 9  
JOSEPH & PATRICIA  
ROBERGE  
3448 LAFAYETTE RD  
PORTSMOUTH NH 03801  
BK 3404 PG 2132

MAP 297 LOT 8  
OLD TEX MEX LLC  
PO BOX 372  
GREENLAND NH  
03840  
BK 4721 PG 1943



## NOTES:

- THE INTENT OF THIS PLAN IS TO SHOW THE A PORTION OF THE EXISTING BOUNDARY OF TAX MAP 297 LOT 11.
- THE UTILITY LOCATIONS SHOWN HEREON WERE DETERMINED BY OBSERVED ABOVE GROUND EVIDENCE AND SHOULD BE CONSIDERED APPROXIMATE IN LOCATION ONLY. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY. ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK OR CALL DIG-SAFE AT 1-888-DIG-SAFE.
- SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 33015C0270F, DATED JANUARY 29, 2021.
- BASIS OF BEARING: HORIZONTAL - NAD83 NH STATE PLANE  
VERTICAL - NAVD88.
- CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
- ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
- RESEARCH WAS PERFORMED THROUGH THE CITY OF PORTSMOUTH GIS DATABASE, AND AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAN IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAN MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE.
- ANY USE OF THIS PLAN AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
- THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY JAMES LONG CWS #007 IN JANUARY, 2021 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
  - THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
  - THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
  - THE CURRENT VERSION OF THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, AS PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION AND/OR THE CURRENT VERSION OF THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, AS PUBLISHED BY THE USDA, NRCS, AS APPROPRIATE.
  - THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
- THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
- ALL BOUNDARY LINES PERTINENT TO THE DEVELOPMENT SHOWN IN THIS PLAN SET HAVE BEEN SURVEYED BY THIS OFFICE. ALL BOUNDARY LINES NOT ANNOTATED WITH BEARING AND DISTANCES ARE PER CITY TAX MAPS, AND SHALL BE CONSIDERED APPROXIMATE.
- SURVEY TIE LINES SHOWN HEREON ARE NOT BOUNDARY LINES. THEY SHOULD ONLY BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY THIS SURVEY.
- MAP 297 LOT 10 FIRST CONVEYED IN 1955 (BOOK 1363 PAGE 228) AS LOT 28 ON "SUBDIVISION PLAT OF SOUTHSIDE MANOR." LOT 28 IS BOUNDED NORTHEASTERLY BY EDGEWOOD ROAD, PER DEED DESCRIPTION. THE DESCRIPTION OF THIS LOT DOES NOT CORRESPOND TO THE LOTS SHOWN ON PLAN REFERENCE 1. NO OTHER PLANS OF SOUTHSIDE MANOR HAVE BEEN FOUND RECORDED AT R.C.R.D. A WIDTH OF 35' WAS ASSUMED FOR EDGEWOOD ROAD, TO BE CONSISTENT WITH THE RECORDED PLAN.

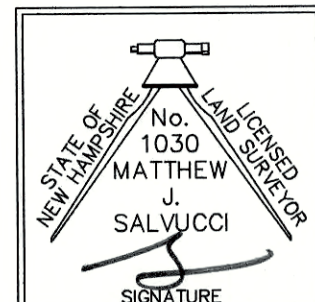
## CERTIFICATION:

PURSUANT TO RSA 676:18-III AND RSA 672:14

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

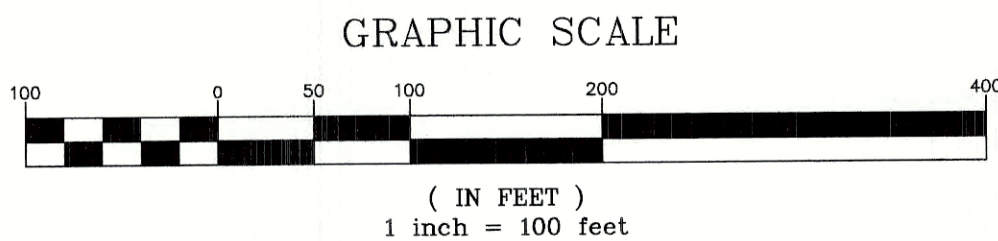
I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

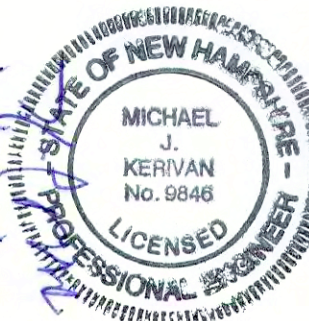


MATTHEW J. SALVUCCI, LLS 1030  
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

DATE: 8/24/21



Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.		



REV.	DATE	REVISION	BY
8	8/25/21	REVISIONS PER CITY REVIEW	LAZ
7	7/20/21	REVISIONS PER CITY REVIEW	LAZ
6	6/22/21	REVISIONS PER CITY REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
REV.	DATE	REVISION	BY

Designed and Produced in NH

**J/B Jones & Beach Engineers, Inc.**

85 Portsmouth Ave. Stratham, NH 03885

Civil Engineering Services

603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

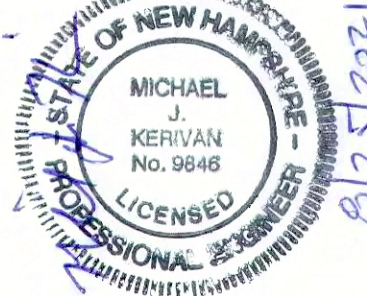
Plan Name:	<b>BOUNDARY PLAN</b>
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.	<b>A1</b>
SHEET 2 OF 22	JBE PROJECT NO. 20737





Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
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5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
REV.	DATE	REVISION	BY

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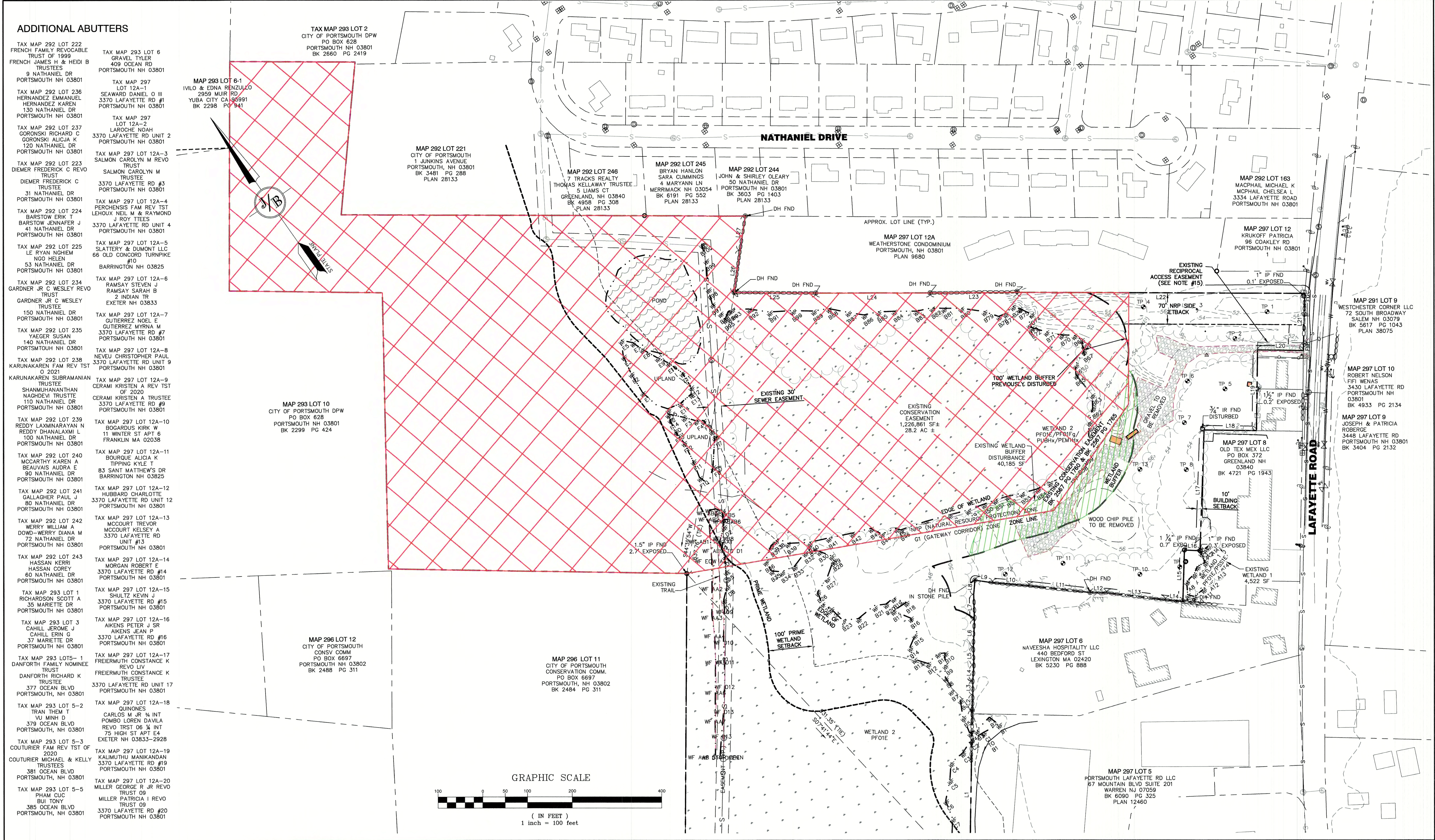
Designed and Produced in NH

Civil Engineering Services

Plan Name:	BOUNDARY PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.	A2
SHEET 3 OF 22 JBE PROJECT NO. 20737	





Design: JAC Draft: LAZ Date: 3/3/21  
Checked: JAC Scale: AS SHOWN Project No.: 20737  
Drawing Name: 20737-PLAN.dwg  
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REV.	DATE	REVISION	BY

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85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

Civil Engineering Services

603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **OVERVIEW EXISTING CONDITIONS PLAN**

Project: **3400 LAFAYETTE ROAD  
PORTSMOUTH, NH**

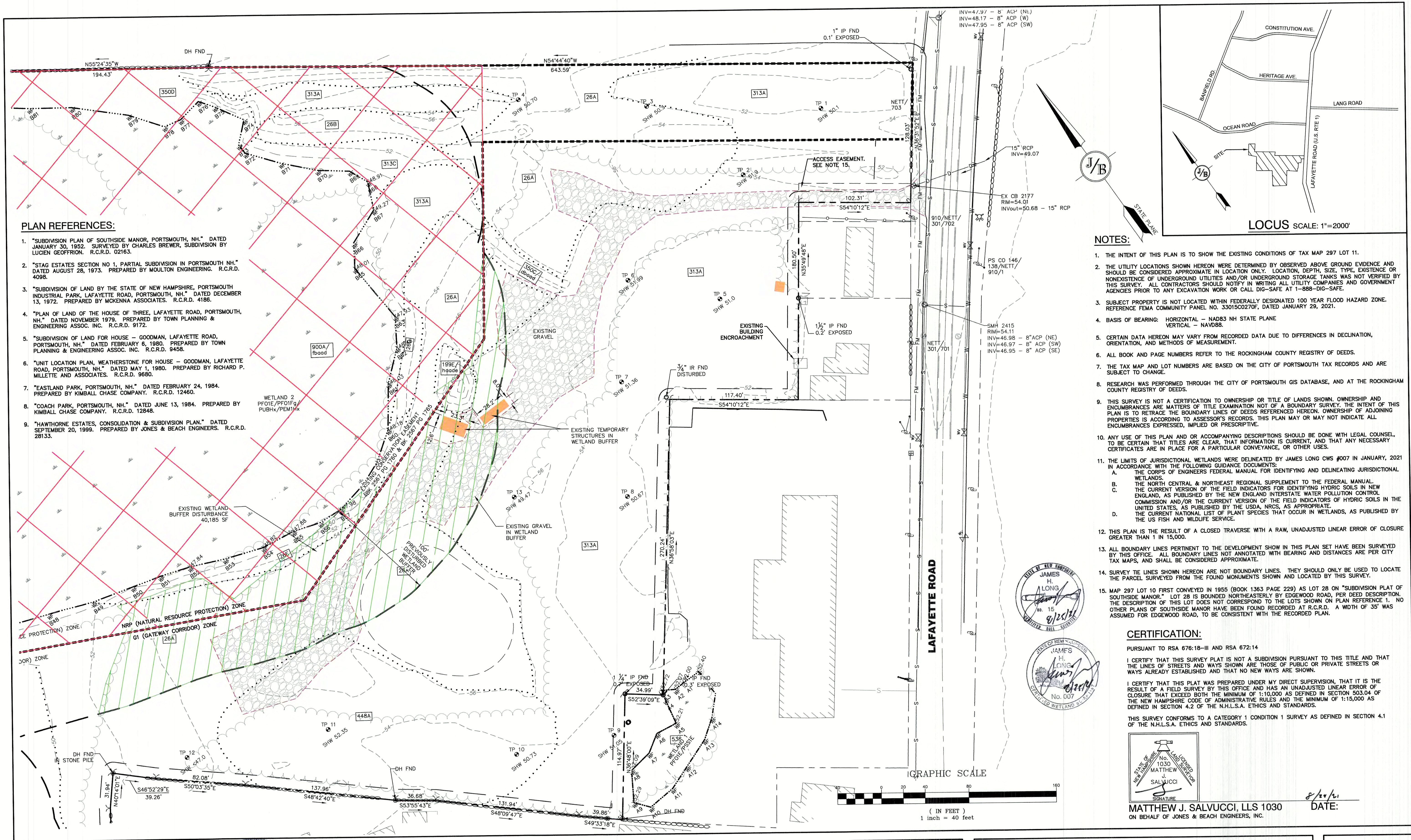
Owner of Record: **RICCI CONSTRUCTION CO., INC.  
225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

DRAWING No.

**EXOVR**

SHEET 4 OF 22  
JBE PROJECT NO. 20737





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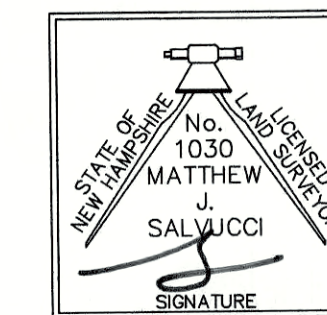
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PURSUANT TO RSA 676:18-III AND RSA 672:14

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THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.



MATTHEW J. SALVUCCI, LLS 1030  
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

DATE: 8/25/21

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		
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REV.	DATE	REVISION	BY

Designed and Produced in NH

**J/B Jones & Beach Engineers, Inc.**

85 Portsmouth Ave. PO Box 219 Stratham, NH 03885

Civil Engineering Services

603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.	C1
SHEET 5 OF 22	JBE PROJECT NO. 20737

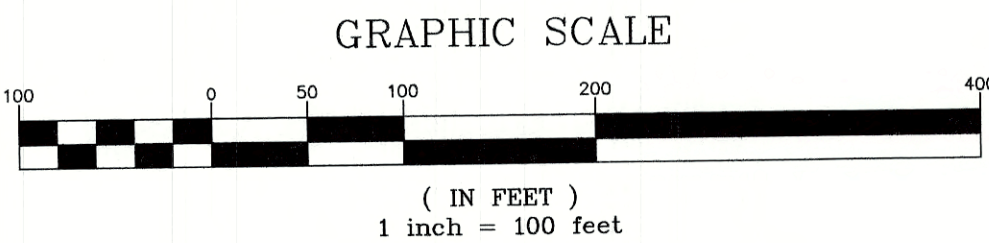


TEMPORARY WETLAND BUFFER IMPACTS		
	EXISTING	PROPOSED
A	40,185 SF	1,900 SF
B		650 SF
C		100 SF
TOTAL	40,185 SF	2,650 SF

COMMUNITY SPACE					
REQUIRED (10%)		PROPOSED			
190,422 SF	4.4 AC	PROPOSED EASEMENT	449,145 SF	10.31 AC	
		DOG PARK / COMMON AREA	4,820 SF		
		GREENWAY	19,200 SF	0.44 AC	
TOTAL	4.4 AC	TOTAL PROPOSED	473,165 SF	10.9 AC	

ZONING AREAS					
	GATEWAY DISTRICT		NATURAL RESOURCE DISTRICT		TOTAL SITE
TOTAL IMPERVIOUS AREA	99,370 SF	14.7%	0 SF		99,370 SF 5.2%
OPEN SPACE	577,990 SF	85.30%	1,226,861 SF	100%	1,804,851 SF 94.80%
TOTAL	677,360 SF		1,226,861 SF		1,904,221 SF


LINE	BEARING	DISTANCE
L1	N35°59'50"E	378.06'
L2	N36°59'58"E	35.16'
L3	N34°54'13"E	30.65'
L4	N38°51'51"E	35.83'
L5	N33°51'16"E	41.69'
L6	N37°10'52"E	59.44'
L7	N33°21'24"E	56.95'
L8	N40°14'01"E	31.94'
L9	S46°52'29"E	39.26'
L10	S50°03'35"E	82.08'
L11	S48°42'40"E	137.96'
L12	S53°55'43"E	36.68'
L13	S48°09'47"E	131.94'
L14	S49°33'18"E	39.86'
L15	N36°48'00"E	114.97'
L16	S52°39'09"E	34.99'
L17	N36°58'03"E	270.24'
L18	S54°10'12"E	117.40'
L19	N35°49'48"E	180.50'
L20	S54°10'12"E	102.31'
L21	N36°31'52"E	128.03'
L22	N54°44'40"W	643.59'
L23	N55°24'35"W	194.43'
L24	N54°56'09"W	255.65'
L25	N54°38'29"W	182.42'
L26	N42°52'40"E	95.06'
L27	N43°42'48"E	77.78'



Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		
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8	8/25/21	REVISIONS PER CITY REVIEW	LAZ
7	7/20/21	REVISIONS PER CITY REVIEW	LAZ
6	6/22/21	REVISIONS PER CITY REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
REV.	DATE	REVISION	BY



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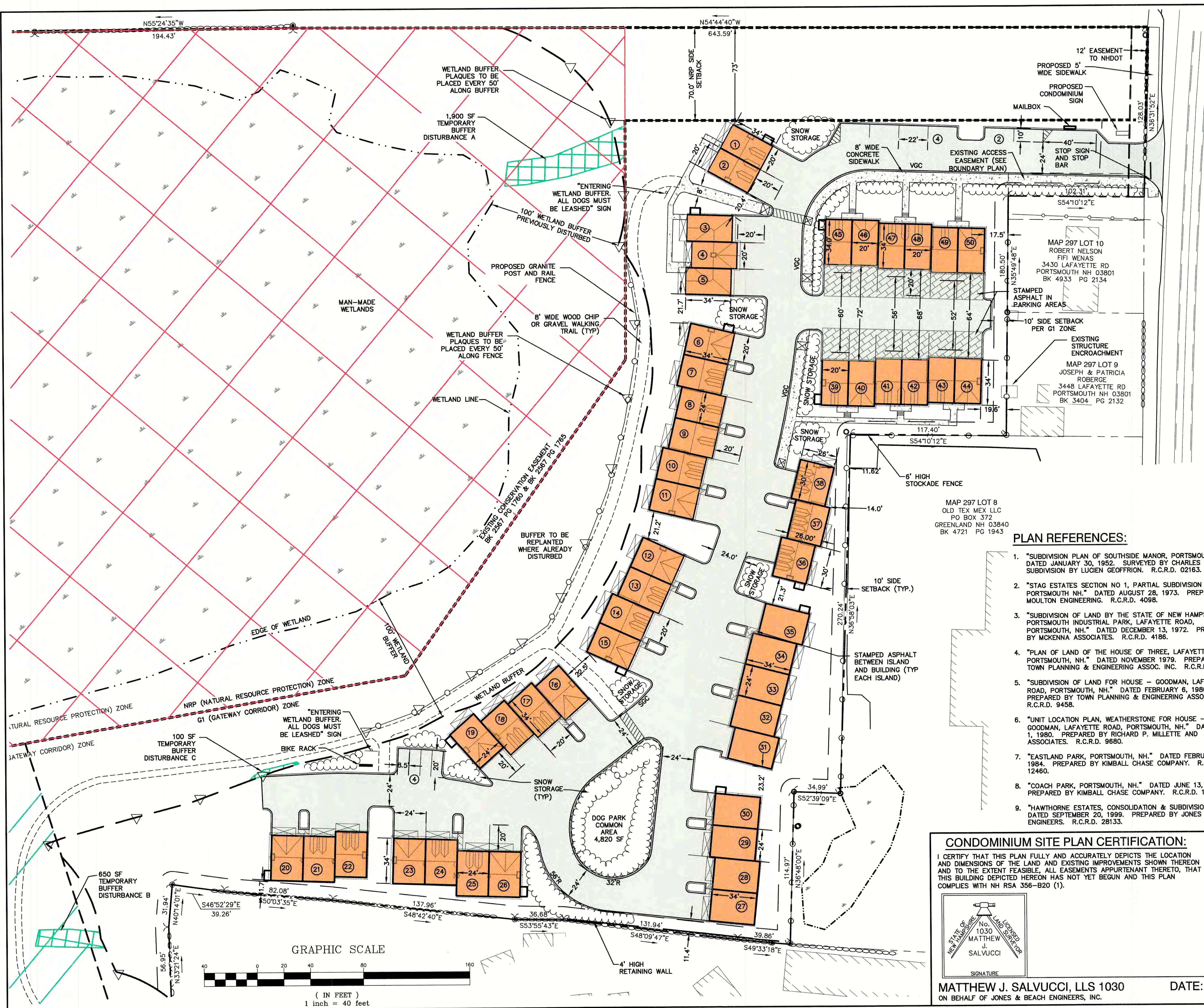
Plan Name:	OVERVIEW SITE PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.

OVR

SHEET 6 OF 22  
JBE PROJECT NO. 20737





**SITE NOTES:**

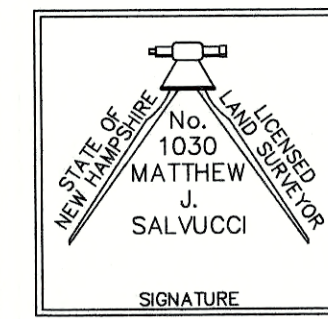
- THE INTENT OF THIS PLAN IS SHOW THE SITE LAYOUT FOR A 50-UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT ON TAX MAP 297 LOT 11.
- ZONING DISTRICT: GATEWAY CORRIDOR (G1), USE: GATEWAY TOWNHOUSE  
LOT AREA MINIMUM = NO REQUIREMENT FOUND  
LOT FRONTAGE MINIMUM = 100'  
BUILDING SETBACKS (MINIMUM):  
FRONT SETBACK = 70' FROM CENTERLINE OF LAFAYETTE ROAD  
SIDE SETBACK = 10'  
REAR SETBACK = 15'  
WETLAND SETBACK = 100'  
MAX. BUILDING HEIGHT = 35'  
AREA OF LOT WITHIN G1 DISTRICT = 677,360 S.F. = 15.55 AC  
MIN. OPEN SPACE = 20%  
OPEN SPACE PROPOSED WITHIN G1 DISTRICT = 577,990 S.F. = 85.3% ±  
MAX. BUILDING COVERAGE = 50%  
BUILDING COVERAGE PROPOSED WITHIN G1 DISTRICT = 38,108 S.F. = 5.6%  
DENSITY ALLOWED = 16 UNITS/ACRE = 16 X 15.55 AC = 248 UNITS ALLOWED  
ZONING DISTRICT: NATURAL RESOURCE PROTECTION (NRP)  
LOT AREA MINIMUM = NO REQUIREMENT  
LOT FRONTAGE MINIMUM = NO REQUIREMENT  
BUILDING SETBACKS (MINIMUM):  
FRONT SETBACK = 70'  
SIDE SETBACK = 70'  
REAR SETBACK = 70'  
MAX. BUILDING HEIGHT = 35'  
MAX. BUILDING COVERAGE = NO REQUIREMENT  
AREA OF LOT WITHIN NRP DISTRICT = 1,226,861 S.F. ± = 28.2 AC  
MIN. OPEN SPACE = 95%  
OPEN SPACE PROPOSED = 1,226,861 S.F. = 28.2 AC - 100% WITHIN NRP DISTRICT  
EXISTING CONSERVATION EASEMENT = 28.16 AC = 64.4% OF SITE  
PROPOSED CONSERVATION EASEMENT = 10.3 AC = 23.6% OF SITE  
TOTAL CONSERVATION EASEMENT = 38.5 AC = 88.0% OF SITE  
TOTAL IMPERVIOUS AREA = 99,370 SF = 5.2% OF SITE  
TOTAL DISTURBED AREA = 211,700 SF = 4.8 AC = 11.1% OF SITE
- PARKING CALCULATIONS:  
1.3 SPACES PER UNIT > 750 S.F.  
TOTAL NUMBER OF UNITS = 50. EACH UNIT HAS 2 SPACES IN GARAGE.  
10 OUTDOOR PARKING SPACES PROVIDED.  
TOTAL SPACES REQUIRED = 65, TOTAL SPACES PROVIDED = 110
- THIS PLAN SET HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC., FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA AS SHOWN ON THE DESIGN PLANS, INCLUDING ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS ON THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS, MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED. CONTRACTOR TO ALWAYS CONTACT DIG SAFE PRIOR TO DIGGING ON-SITE OR OFF-SITE TO ENSURE SAFETY AND OBEY THE LAW.
- ALL CONSTRUCTION SHALL CONFORM TO CITY STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
- SUBJECT PROPERTY IS NOT LOCATED WITHIN FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA COMMUNITY PANEL NO. 330150270E, DATED MAY 17, 2005.
- LANDOWNERS ARE RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING PERMITTING REQUIRED UNDER THESE REGULATIONS.
- ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.). THIS DOCUMENT IS TO BE KEPT ON-SITE AT ALL TIMES AND UPDATED AS REQUIRED.
- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES AND BONDS.
- ALL SIGNAGE AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND NHDOT STANDARDS AND SPECIFICATIONS (NON-REFLECTORIZED PAVEMENT MARKINGS), UNLESS OTHERWISE NOTED. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE CITY ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
- ALL PARKING STALLS SHALL BE SEPARATED USING 4" WIDE SOLID STRIPES. STRIPING SHALL HAVE TWO COATS OF PAINT, ALKYD BASIN SYNTHETIC RESIN, FEDERAL SPECIFICATION TTP-115 TYPE 1, IN A COLOR OF WHITE. ALL STOP BARS SHALL BE 18" IN WIDTH; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
- THERE SHALL BE NO PARKING ALONG THE ACCESS ROAD.
- ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS AND AREAS TO BE TO OUTSIDE OF MASONRY, UNLESS OTHERWISE NOTED.
- ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
- ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
- THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THE SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
- EACH UNIT TO HAVE TRASH CANS INSIDE THE UNITS AND TO BE PICKED UP BY A PRIVATE TRASH HAULER.
- SNOW TO BE TRUCKED OFF-SITE WHEN DESIGNATED SNOW STORAGE AREA ARE FULL. GREEN SNOW PRO TECHNIQUES TO BE UTILIZED ON THIS SITE. SNOW REMOVAL COMPANY STAFF SHALL ATTEND GREEN SNOW PRO TRAINING.
- THE FOLLOWING STATE PERMITS ARE REQUIRED FOR THIS PROJECT:  
NHDES WETLAND PERMIT  
NHDES SEWER CONNECTION PERMIT  
NHDOT DRIVEWAY PERMIT
- A VARIANCE FROM THE PORTSMOUTH ZONING BOARD OF ADJUSTMENT FOR BUILDING SETBACKS IS PENDING.

**PLAN REFERENCES:**

- "SUBDIVISION PLAN OF SOUTHSIDE MANOR, PORTSMOUTH, NH," DATED JANUARY 30, 1952. SURVEYED BY CHARLES BREWER, SUBDIVISION BY LUCIEN GEOFFRON. R.C.R.D. 02163.
- "STAG ESTATES SECTION NO 1, PARTIAL SUBDIVISION IN PORTSMOUTH NH," DATED AUGUST 28, 1973. PREPARED BY MOULTON ENGINEERING. R.C.R.D. 4098.
- "SUBDIVISION OF LAND BY THE STATE OF NEW HAMPSHIRE, PORTSMOUTH INDUSTRIAL PARK, LAFAYETTE ROAD, PORTSMOUTH, NH," DATED DECEMBER 13, 1972. PREPARED BY MCKENNA ASSOCIATES. R.C.R.D. 4186.
- "PLAN OF LAND OF THE HOUSE OF THREE, LAFAYETTE ROAD, PORTSMOUTH, NH," DATED NOVEMBER 1979. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9172.
- "SUBDIVISION OF LAND FOR HOUSE - GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH," DATED FEBRUARY 6, 1980. PREPARED BY TOWN PLANNING & ENGINEERING ASSOC. INC. R.C.R.D. 9458.
- "UNIT LOCATION PLAN, WEATHERSTONE FOR HOUSE - GOODMAN, LAFAYETTE ROAD, PORTSMOUTH, NH," DATED MAY 1, 1980. PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES. R.C.R.D. 9680.
- "EASTLAND PARK, PORTSMOUTH, NH," DATED FEBRUARY 24, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12460.
- "COACH PARK, PORTSMOUTH, NH," DATED JUNE 13, 1984. PREPARED BY KIMBALL CHASE COMPANY. R.C.R.D. 12848.
- "HAWTHORNE ESTATES, CONSOLIDATION & SUBDIVISION PLAN," DATED SEPTEMBER 20, 1999. PREPARED BY JONES & BEACH ENGINEERS. R.C.R.D. 28133.

**CONDOMINIUM SITE PLAN CERTIFICATION:**

I CERTIFY THAT THIS PLAN FULLY AND ACCURATELY DEPICTS THE LOCATION AND DIMENSIONS OF THE LAND AND EXISTING IMPROVEMENTS SHOWN THEREON AND TO THE EXTENT FEASIBLE, ALL EASEMENTS APPURTENANT THERETO, THAT THIS BUILDING DEPICTED HEREON HAS NOT YET BEGUN AND THIS PLAN COMPLIES WITH NH RSA 356-B20 (1).



MATTHEW J. SALVUCCI, LLS 1030  
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

DATE:

Design: JAC | Draft: LAZ | Date: 3/3/21  
Checked: JAC | Scale: AS SHOWN | Project No.: 20737  
Drawing Name: 20737-PLAN.dwg  
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5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
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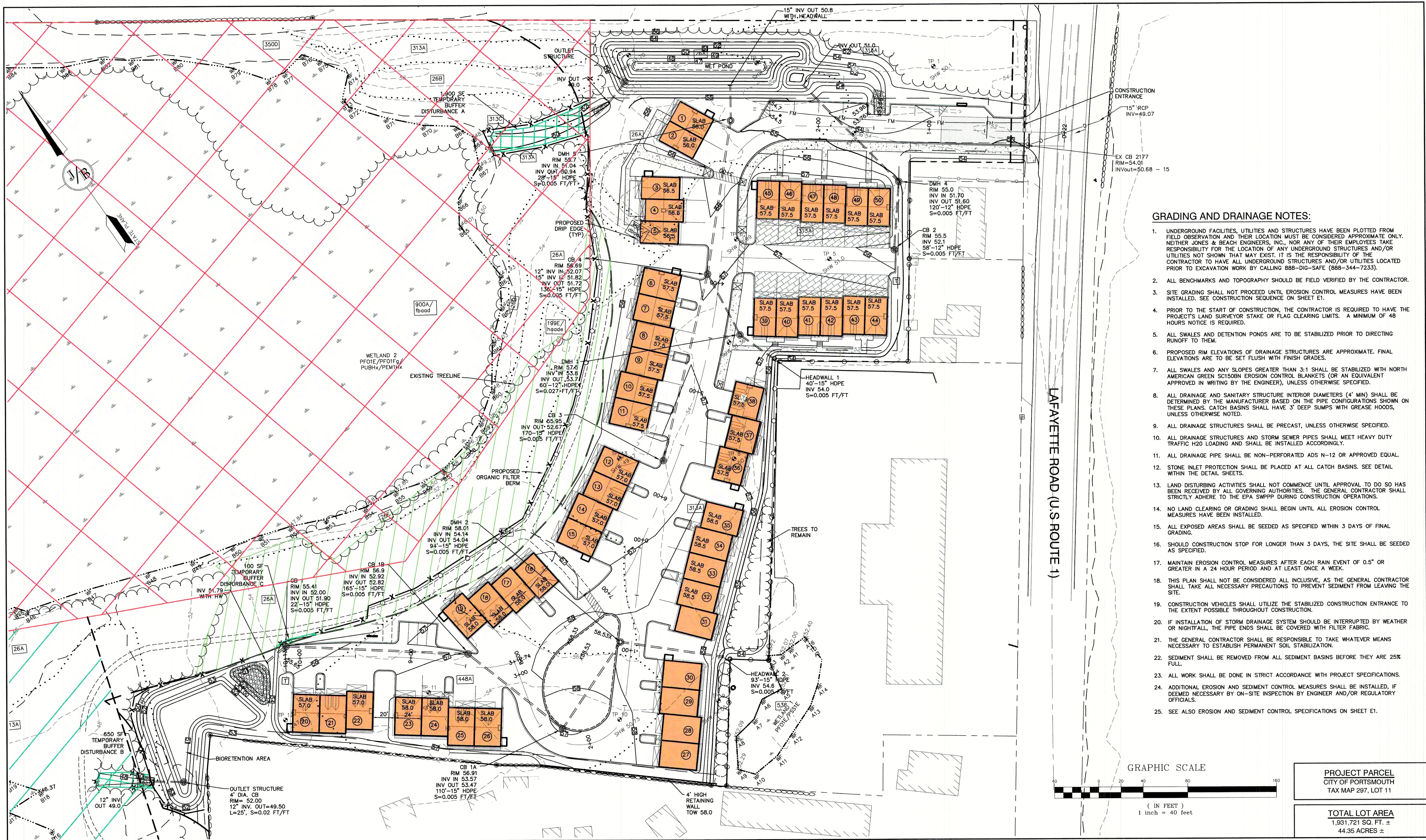
Plan Name:	<b>CONDOMINIUM SITE PLAN</b>
Project:	<b>3400 LAFAYETTE ROAD PORTSMOUTH, NH</b>
Owner of Record:	<b>RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229</b>

DRAWING No.

**C2**

SHEET 7 OF 22  
JBE PROJECT NO. 20737





**GRADING AND DRAINAGE NOTES:**

- UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888-DIG-SAFE (888-344-7233).
- ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
- SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
- ALL SWALES AND DETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
- ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN SC150BN EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
- ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 3' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
- ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED.
- ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
- ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL.
- STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
- LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
- NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
- ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
- SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
- MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
- THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
- CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
- IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
- SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
- ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
- ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
- SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.

Design: JAC Draft: LAZ Date: 3/3/21  
Checked: JAC Scale: AS SHOWN Project No.: 20737  
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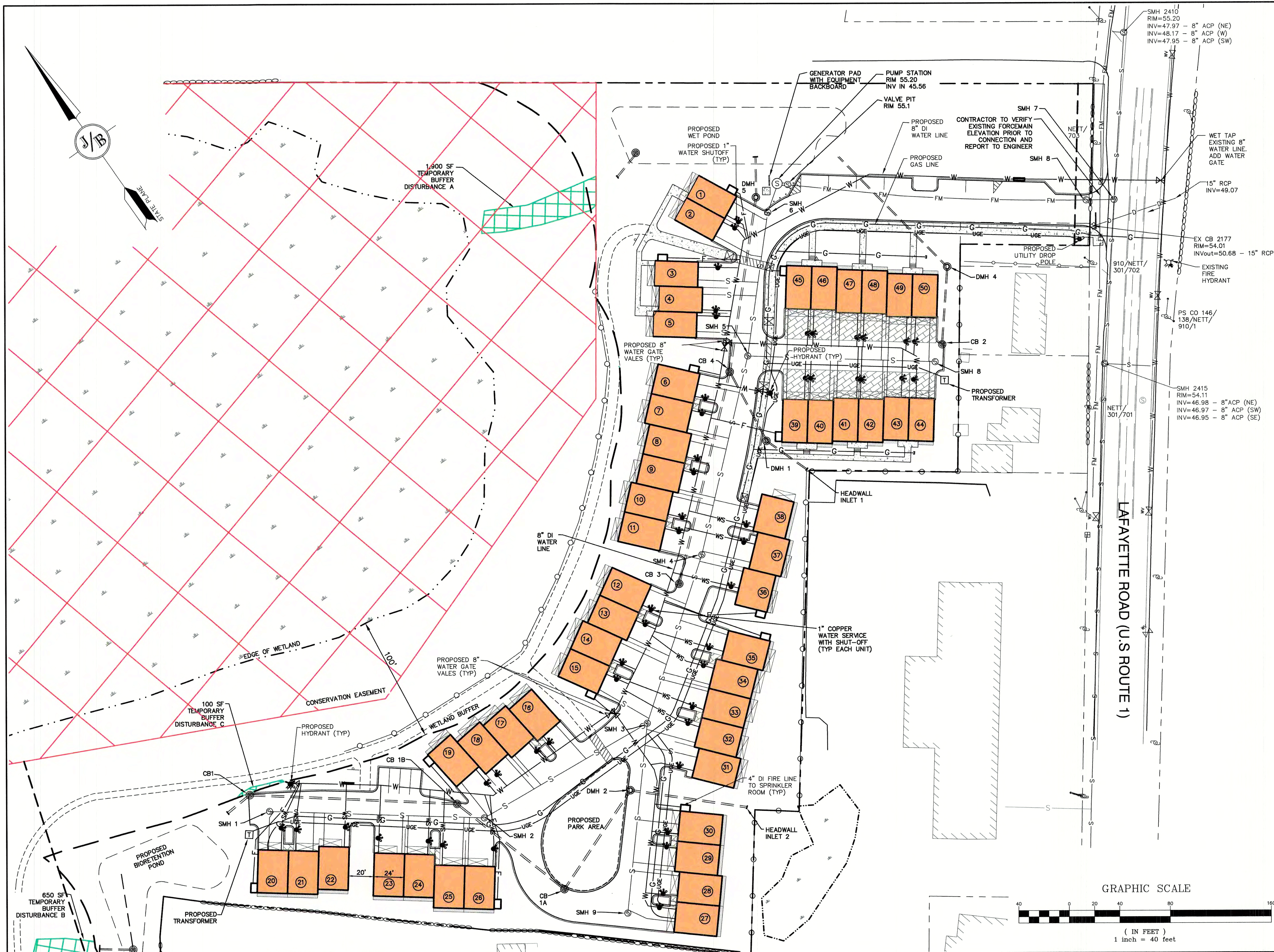
Plan Name: **GRADING AND DRAINAGE PLAN**  
Project: **3400 LAFAYETTE ROAD PORTSMOUTH, NH**  
Owner of Record: **RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

**PROJECT PARCEL**  
CITY OF PORTSMOUTH  
TAX MAP 297, LOT 11

**TOTAL LOT AREA**  
1,931,721 SQ. FT. ±  
44.35 ACRES ±

DRAWING No.  
**C3**  
SHEET 8 OF 22  
JBE PROJECT NO. 20737





UTILITY NOTES:

1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, CONNECTION FEES AND BONDS.
2. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
3. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, FIRE ALARM, GAS, WATER, AND SEWER).
4. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE CITY STANDARDS AND REGULATIONS, AND NHDES STANDARDS AND SPECIFICATIONS, WHICHEVER ARE MORE STRINGENT, UNLESS OTHERWISE SPECIFIED.
6. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
7. BUILDING TO BE SERVED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
8. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITY STUBS PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
9. AS-BUILT PLANS SHALL BE SUBMITTED TO DEPARTMENT OF PUBLIC WORKS.
10. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE THROUGH CHANNEL UNDERLAYMENT OF INVERT, AND SHELF SHALL CONSIST OF BRICK MASONRY.
11. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30 INCH DIA. CLEAR OPENING. THE WORD "SEWER" OR "DRAIN" SHALL BE CAST INTO THE CENTER OF THE UPPER FACE OF EACH COVER WITH RAISED, 3" LETTERS.
12. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H20 LOADS.
13. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
14. SANITARY SEWER FLOW CALCULATIONS:  
50 - THREE BEDROOM UNITS @ 150 GPD/BEDROOM =  
TOTAL FLOW = 22,500 GPD
15. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4" MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
16. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, GAS GATES AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
17. ALL WATER MAINS AND SERVICE PIPES SHALL HAVE A MINIMUM 12" VERTICAL AND 24" HORIZONTAL SEPARATION TO MANHOLES, OR CONTRACTOR SHALL INSTALL BOARD INSULATION FOR FREEZING PROTECTION.
18. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMANS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICHEVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMANS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
19. THRUST BLOCKS SHALL BE PROVIDED AT ALL BENDS, TEES, MECHANICAL JOINTS AND FIRE HYDRANTS.
20. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
21. THE CONTRACTOR SHALL HAVE THE APPROVAL OF ALL GOVERNING AGENCIES HAVING JURISDICTION OVER FIRE PROTECTION SYSTEM PRIOR TO INSTALLATION.
22. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
23. EXISTING UTILITIES SHALL BE DISINFECTED BEFORE CONSTRUCTION.
24. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
25. ALL GRAVITY SEWER PIPE, MANHOLES, AND FORCE MAINS SHALL BE TESTED ACCORDING TO NHDES STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWAGE AND WASTEWATER TREATMENT FACILITIES, CHAPTER ENV-WQ 700, ADOPTED ON 10-15-14.
26. ENV-WQ 704.06 GRAVITY SEWER PIPE TESTING: GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY USE OF LOW-PRESSURE AIR TESTS CONFORMING WITH ASTM F1417-92(2005) OR UNI-BELL PVC PIPE ASSOCIATION UNI-B-6. LINES SHALL BE CLEANED AND VISUALLY INSPECTED AND TRUE TO LINE AND GRADE. DEFLECTION TESTS SHALL TAKE PLACE AFTER 30 DAYS FOLLOWING INSTALLATION AND THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 3% OF AVERAGE INSIDE DIAMETER. A RIGID BALL OR MANDREL WITH A DIAMETER OF AT LEAST 95% OF THE AVERAGE INSIDE PIPE DIAMETER SHALL BE USED FOR TESTING PIPE DEFLECTION. THE DEFLECTION TEST SHALL BE CONDUCTED WITHOUT MECHANICAL PULLING DEVICES.
27. ENV-WQ 704.17 SEWER MANHOLE TESTING: SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PRIOR TO BACKFILLING AND PLACEMENT OF SHELVES AND INVERTS.
28. SANITARY SEWER LINES SHALL BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM AN EXISTING OR PROPOSED WATER LINE. WHEN A SEWER LINE CROSSES UNDER A WATER LINE, THE SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATERMAIN. THE SEWER LINE SHALL ALSO MAINTAIN A VERTICAL SEPARATION OF NOT LESS THAN 18 INCHES.
29. SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6 FEET BELOW GRADE IN ALL ROADWAY LOCATIONS, AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS-COUNTRY LOCATIONS. PROVIDE TWO-INCHES OF R-10 FOAM BOARD INSULATION 2-FOOT WIDE TO BE INSTALLED 6-INCHES OVER SEWER PIPE IN AREAS WHERE DEPTH IS NOT ACHIEVED. A WAIVER FROM THE DEPARTMENT OF ENVIRONMENTAL SERVICES WASTEWATER ENGINEERING BUREAU IS REQUIRED PRIOR TO INSTALLING SEWER AT LESS THAN MINIMUM COVER.
30. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO FOUR (4) HOURS OR LESS AS DESIGNATED BY THE CITY SEWER DEPARTMENT.
31. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
32. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.

Design: JAC    Draft: LAZ    Date: 3/3/21  
Checked: JAC    Scale: AS SHOWN    Project No.: 20737  
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6	6/22/21	REVISIONS PER CITY REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
REV.	DATE	REVISION	BY

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Civil Engineering Services  
85 Portsmouth Ave.    603-772-4746  
PO Box 219    FAX: 603-772-0227  
Stratham, NH 03885    E-MAIL: JBE@JONESANDBEACH.COM

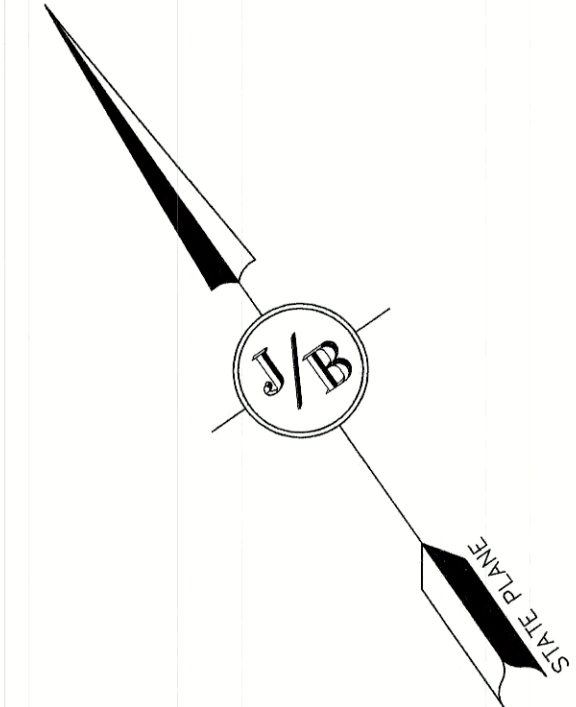
Plan Name: **UTILITY PLAN**  
Project: **3400 LAFAYETTE ROAD  
PORTSMOUTH, NH**  
Owner of Record: **RICCI CONSTRUCTION CO., INC.  
225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

DRAWING No. **C4**  
SHEET 9 OF 22  
JBE PROJECT NO. 20737



LIGHTING AND ELECTRICAL NOTES:

1. SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
2. CONTRACTOR SHALL INSTALL PROPOSED LIGHT POLES ACCORDING TO CITY REGULATIONS.
3. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER CITY REGULATIONS.
4. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
5. ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDELES.
6. LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
7. ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
8. THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03108, ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.



DESCRIPTION

The Traditionaire LED outdoor luminaire displays the old-fashioned charm of traditional area lighting, enhancing any setting with distinctive styling. As a decorative luminaire, the Traditionaire LED tastefully complements the architectural and environmental design of parks and roadways. The high-lumen downlight configuration uses Cooper Lighting Solutions' patented LightBAR™ technology to deliver uniform and efficient illumination to pedestrian and roadway applications.

SPECIFICATION FEATURES

**Construction**  
Hinged (stainless steel hinge pins) die-cast aluminum housing and cover with cupola. 3G vibration tested to ensure strength of construction and longevity in application.

**Optics**  
Choice of six patented, high-efficiency AccuLED Optic™ technology manufactured from injection-molded acrylic. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optic technology, creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 3000K CCT, 5000K CCT and 5700K CCT. For the ultimate level of spill

light control, an optional house-side shield accessory can be field or factory installed. The house-side shield is designed to seamlessly integrate with the SL2 or SL3 optics.

**Electrical**  
LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation, greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightBARs feature an IP66 enclosure rating and

maintain greater than 95% lumen maintenance at 60,000 hours per IESNA TM-21.

**Mounting**  
Self-aligning pole-top fitter for 3" O.D. pole tops or vertical tenons. Square headed 1-1/4" polymer coated mounting bolts with a lock nut.

**Finish**  
Cast components finished in a super durable black TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Optional colors include: bronze, grey and white. RAL and custom color matches available.

**Warranty**  
Five-year warranty.

Streetworks

Catalog #		Type	
Project			
Comments		Date	
Prepared by			

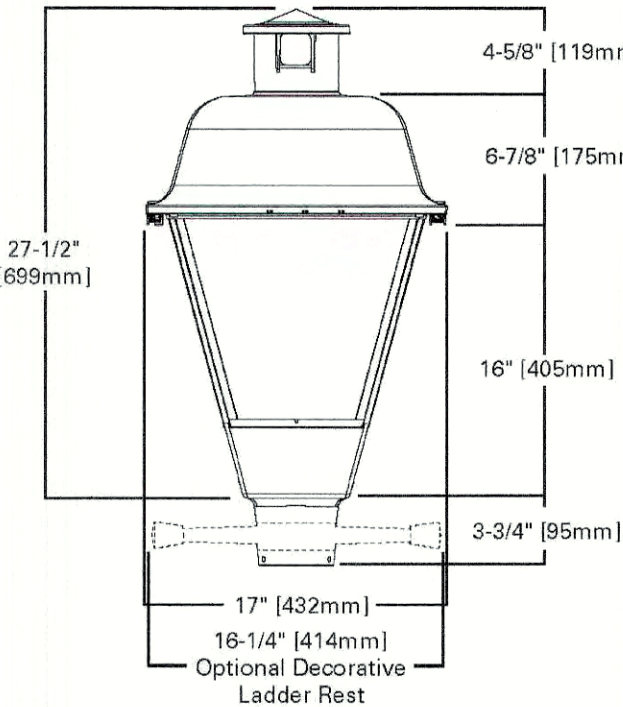


UTLD  
TRADITIONAIRE  
LED DOWNLIGHT

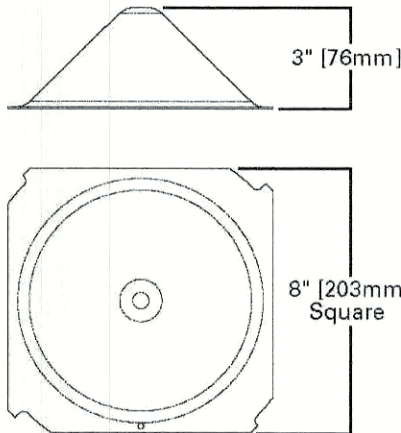
1 - 3 LightBARs  
Solid State LED

DECORATIVE POST TOP  
LUMINAIRE

DIMENSIONS



OPTIONAL BIRD CONE



**CERTIFICATION DATA**  
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LM79 / LM80 Compliant  
3G Vibration Rated  
IP66 LightBARs  
ISO 9001

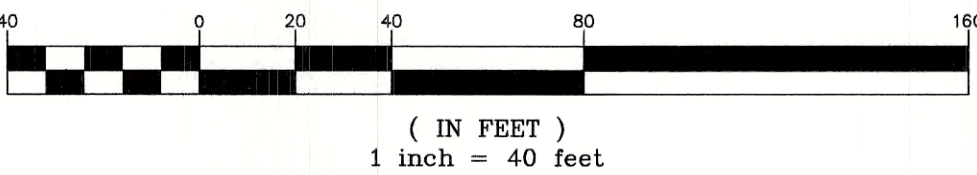
**ENERGY DATA**  
**Electronic LED Driver**  
>0.9 Power Factor  
<20% Total Harmonic Distortion  
120-277V/50 & 60Hz, 347V/60Hz, 480V/60Hz  
-40°C Minimum Temperature  
40°C Ambient Temperature Rating

**EPA**  
Effective Projected Area: (Sq. Ft.)  
2.3

**SHIPPING DATA**  
Approximate Net Weight:  
37 lbs. (17 kgs.)

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
1	24	P4	SINGLE	UTLD-F02-LED-E-U-SL4/ MTD ON 12" POLE T80
2	8	P3	SINGLE	UTLD-F02-LED-E-U-13/ MTD ON A 12" POLE T80

GRAPHIC SCALE



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J/B

Jones & Beach Engineers, Inc.

Designed and Produced in NH

Civil Engineering Services

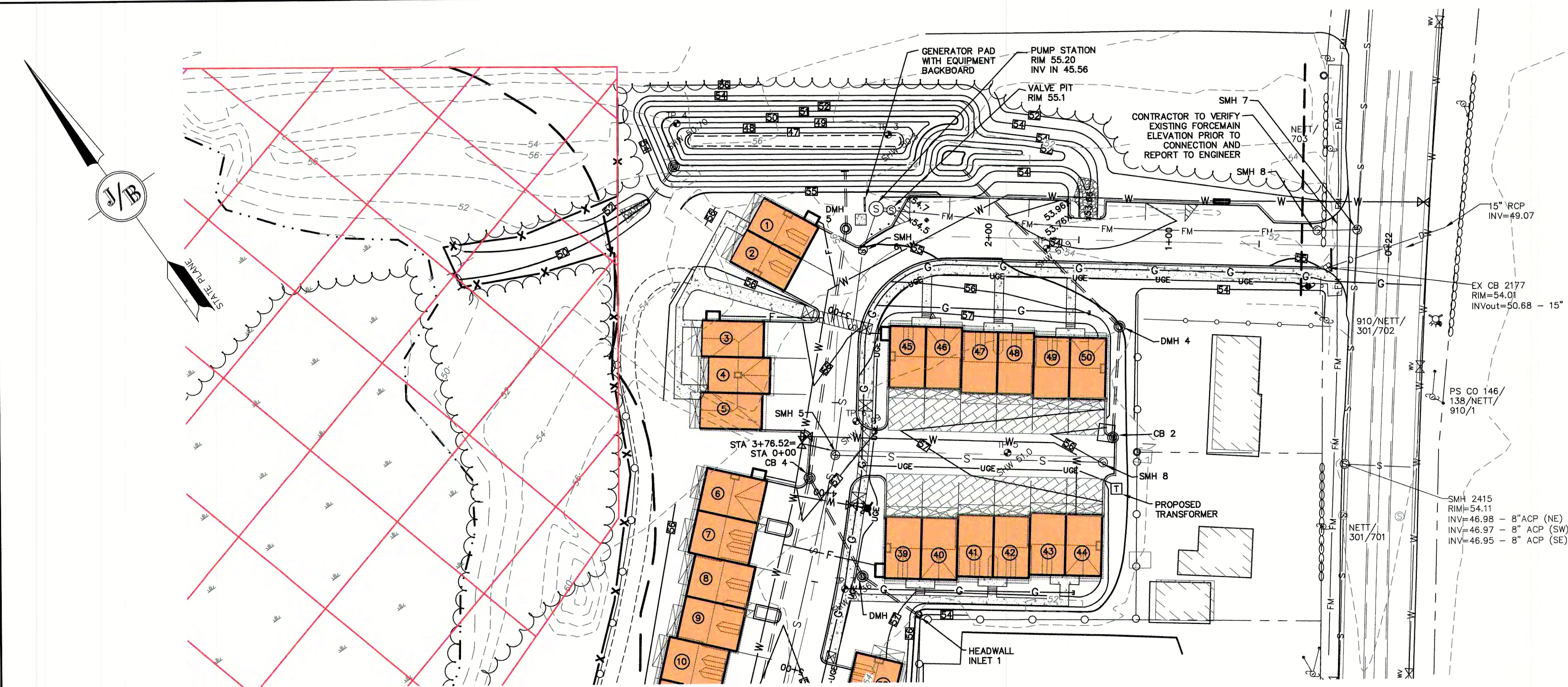
85 Portsmouth Ave.  
PO Box 219  
Stratham, NH 03885

603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	LIGHTING PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

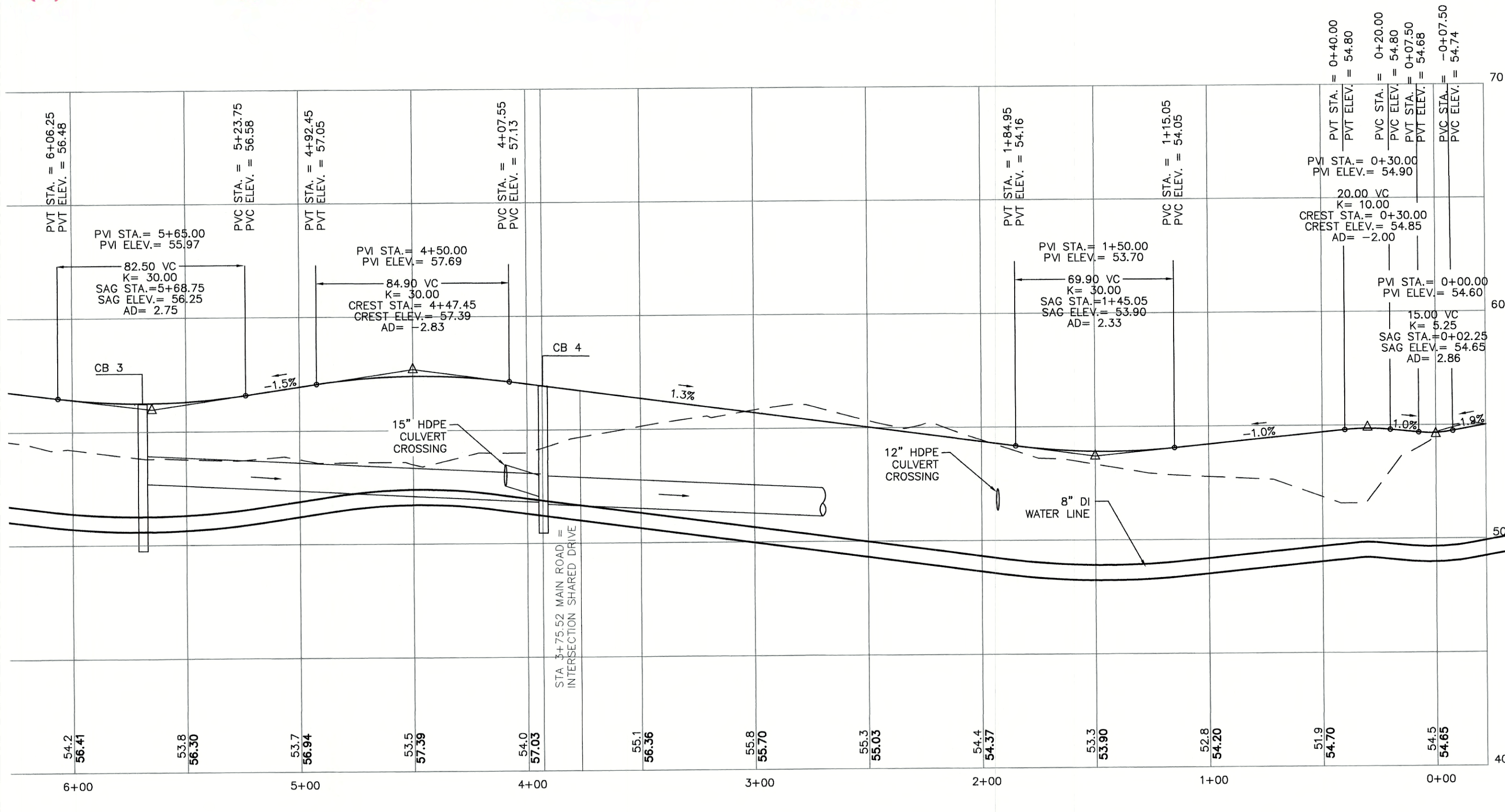
DRAWING No.	L1
SHEET 10 OF 22 JBE PROJECT NO. 20737	





NOTES:

- THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE CONSTRUCTION SITE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND BE MADE ACCESSIBLE TO THE PUBLIC. THE CONSTRUCTION SITE OPERATOR SHALL SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA REGIONAL OFFICE SEVEN DAYS PRIOR TO COMMENCEMENT OF ANY WORK ON SITE. EPA WILL POST THE NOI AT [HTTP://WWW.EPA.GOV/NPDES/STORMWATER/NOI/NOISEARCH.CFM](http://www.epa.gov/npdes/stormwater/noi/noisearch.cfm). AUTHORIZATION IS GRANTED UNDER THE PERMIT ONCE THE NOI IS SHOWN IN "ACTIVE" STATUS ON THIS WEBSITE. A COMPLETED NOTICE OF TERMINATION SHALL BE SUBMITTED TO THE NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET:  
A. FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR  
A. ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED. PROVIDE DPW WITH A COPY OF THE NOTICE OF TERMINATION (NOT).
- ALL ROAD AND DRAINAGE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR THE CITY, AND NHDOT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
- AS-BUILT PLANS TO BE SUBMITTED TO THE CITY PRIOR TO ACCEPTANCE OF THE ROADWAY.
- DEVELOPER IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL WETLAND REGULATIONS, INCLUDING ANY PERMITTING AND SETBACK REQUIREMENTS REQUIRED UNDER THESE REGULATIONS.
- CONTRACTOR TO COORDINATE AND COMPLETE ALL WORK REQUIRED FOR THE RELOCATION AND/OR INSTALLATION OF ELECTRIC, CATV, TELEPHONE, AND FIRE ALARM PER UTILITY DESIGN AND STANDARDS. LOCATIONS SHOWN ARE APPROXIMATE. LOW PROFILE STRUCTURES SHALL BE USED TO THE GREATEST EXTENT POSSIBLE.
- THIS PLAN HAS BEEN PREPARED BY JONES & BEACH ENGINEERS, INC. FOR MUNICIPAL AND STATE APPROVALS AND FOR CONSTRUCTION BASED ON DATA OBTAINED FROM ON-SITE FIELD SURVEY AND EXISTING MUNICIPAL RECORDS. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCY FROM DATA SHOWN ON THE DESIGN PLANS. THIS INCLUDES ANY UNFORESEEN CONDITIONS, SUBSURFACE OR OTHERWISE, FOR EVALUATION AND RECOMMENDATIONS. ANY CONTRADICTION BETWEEN ITEMS OF THIS PLAN/PLAN SET, OR BETWEEN THE PLANS AND ON-SITE CONDITIONS MUST BE RESOLVED BEFORE RELATED CONSTRUCTION HAS BEEN INITIATED.
- SILTATION AND EROSION CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION, SHALL BE MAINTAINED DURING CONSTRUCTION, AND SHALL REMAIN UNTIL SITE HAS BEEN STABILIZED WITH PERMANENT VEGETATION. SEE DETAIL SHEET E1 FOR ADDITIONAL NOTES ON EROSION CONTROL.
- ALL DISTURBED AREAS NOT STABILIZED BY NOVEMBER 1st SHALL BE COVERED WITH AN EROSION CONTROL BLANKET. PRODUCT TO BE SPECIFIED BY THE ENGINEER.
- FINAL DRAINAGE, GRADING AND EROSION PROTECTION MEASURES SHALL CONFORM TO REGULATIONS OF THE PUBLIC WORKS DEPARTMENT.
- CONTRACTOR TO VERIFY EXISTING UTILITIES AND TO NOTIFY ENGINEER OF ANY DISCREPANCY IMMEDIATELY.
- ROADWAY INTERSECTIONS WITH SLOPE GRANITE CURB SHALL EXTEND AROUND RADIUS WITH 6' STRAIGHT PIECE ALONG TANGENT.
- 6" PERFORATED ADS UNDER DRAIN PLACEMENT TO BE DETERMINED BY THE ENGINEER DURING TIME OF SUBGRADE INSPECTION. CONTRACTOR TO ADJUST LOCATION IN THE FIELD ONLY WITH PRIOR APPROVAL OF PROJECT ENGINEER OR PUBLIC WORKS DEPARTMENT. CONTRACTOR TO INCLUDE 3000 LF IN BID PRICE.
- ALL DRIVEWAYS TO BE CONSTRUCTED MAXIMUM 10% SLOPE. SEE DETAIL SHEET.
- ENGINEER TO INSTALL PERMANENT BENCHMARK (REINFORCED GRANITE MARKER) AT LOCATIONS SHOWN ON PLANS. BENCH MARKS TO BE TIED TO STATE PLANE COORDINATE SYSTEM.
- DRAINAGE INSPECTION AND MAINTENANCE SCHEDULE: ORGANIC FILTER BERM WILL BE INSPECTED DURING AND AFTER STORM EVENTS TO ENSURE THAT THE BERM STILL HAS INTEGRITY AND IS NOT ALLOWING SEDIMENT TO PASS. SEDIMENT BUILD UP IN SWALES WILL BE REMOVED IF IT IS DEEPER THAN SIX INCHES, AND IS TO BE REMOVED FROM SUMPS BELOW THE INLET OF CULVERTS SEMIANNUALLY, AS WELL AS FROM CATCH BASINS, FOLLOWING MAJOR STORM EVENTS, THE STAGE DISCHARGE OUTLET STRUCTURES ARE TO BE INSPECTED AND ANY DEBRIS REMOVED FROM THE ORIFICE, TRASH TRACK AND EMERGENCY SPILL WAY. INFREQUENTLY, SEDIMENT MAY ALSO HAVE TO BE REMOVED FROM THE SUMP OF THE STRUCTURE.
- ALL DRAINAGE INFRASTRUCTURE SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING ANY RUNOFF TO IT.
- DETENTION PONDS REQUIRE TIMELY MAINTENANCE AND SHOULD BE INSPECTED AFTER EVERY MAJOR STORM EVENT, AS WELL AS FREQUENTLY DURING THE FIRST YEAR OF OPERATION, AND ANNUALLY THEREAFTER. EVERY FIVE YEARS, THE SERVICES OF A PROFESSIONAL ENGINEER SHOULD BE RETAINED TO PERFORM A THOROUGH INSPECTION OF THE DETENTION POND AND ITS INFRASTRUCTURE. ANY DEBRIS AND SEDIMENT ACCUMULATIONS SHOULD BE REMOVED FROM THE OUTLET STRUCTURE(S) AND EMERGENCY SPILLWAY(S) AND DISPOSED OF PROPERLY. DETENTION POND BERMS SHOULD BE MOWED AT LEAST ONCE ANNUALLY SO AS TO PREVENT THE ESTABLISHMENT OF WOODY VEGETATION. TREES SHOULD NEVER BE ALLOWED TO GROW ON A DETENTION POND BERM, AS THEY MAY DESTABILIZE THE STRUCTURE AND INCREASE THE POTENTIAL FOR FAILURE. AREAS SHOWING SIGNS OF EROSION OR THIN OR DYING VEGETATION SHOULD BE REPAIRED IMMEDIATELY BY WHATEVER MEANS NECESSARY, WITH THE EXCEPTION OF FERTILIZER. RODENT BORROWS SHOULD BE REPAIRED IMMEDIATELY AND THE ANIMALS SHOULD BE TRAPPED AND RELOCATED IF THE PROBLEM PERSISTS.
- THE DETENTION PONDS ARE TO BE CONSTRUCTED PRIMARILY THROUGH EXCAVATION. IN THOSE AREAS WHERE THE BERMS MUST BE CONSTRUCTED BY THE PLACEMENT OF FILL, THE ENTIRE EMBANKMENT AREA OF THE DETENTION PONDS SHALL BE EXCAVATED TO PROPOSED GRADE, STRIPPED OF ALL ORGANIC MATERIALS, COMPACTED TO AT LEAST 95% AND SCARIFIED PRIOR TO THE PLACEMENT OF THE EMBANKMENT MATERIAL. IN THE EVENT THE FOUNDATION MATERIAL EXPOSED DOES NOT ALLOW THE SPECIFIED COMPACTION, AN ADDITIONAL ONE FOOT (1') OF EXCAVATION AND THE PLACEMENT OF A ONE FOOT (1') THICK, TWELVE FOOT (12') WIDE PAD OF THE MATERIAL DESCRIBED IN THE NOTE BELOW, COMPACTED TO 95% OF ASTM D-1557 MAY BE NECESSARY. PLACEMENT AND COMPACTION SHOULD OCCUR AT A MOISTURE CONTENT OF OPTIMUM PLUS OR MINUS 3%, AND NO FROZEN OR ORGANIC MATERIAL SHOULD BE PLACED WITHIN FOR ANY REASON.
- EMBANKMENT MATERIAL FOR THE BERMS SHALL BE CLEAN MINERAL SOIL WITH A CLAY COMPONENT FREE OF ROOTS, ORGANIC MATTER, AND OTHER DELETERIOUS SUBSTANCES, AND SHALL CONTAIN NO ROCKS OR LUMPS OVER FOUR INCHES (4") IN DIAMETER. THIS MATERIAL SHOULD BE INSTALLED IN 8" LIFTS AND COMPACTED TO 95% OS ASTM D-1557, AND SHOULD MEET THE FOLLOWING SPECIFICATIONS: 4" PASSING 100%, #4 SIEVE 25-70%, #200 SIEVE 10-29% (IN TOTAL SAMPLE).
- EMBANKMENT IS TO HAVE 3:1 SIDE SLOPES (MAX.) AND IS TO BE BROUGHT TO SPECIFIED GRADES PRIOR TO THE ADDITION OF LOAM (4" MINIMUM) SO AS TO ALLOW FOR THE COMPACTION OF THE STRUCTURE OVER TIME WHILE MAINTAINING THE PROPER BERM ELEVATION.
- COMPACTION TESTING SERVICES (I.E. NUCLEAR DENSITY TESTS) ARE TO BE PERFORMED BY AN INDEPENDENT GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR FOR ROADWAY CONSTRUCTION, AND ON THE FOUNDATION OF THE BERM AND ON EVERY LIFT OF NEWLY PLACED MATERIAL.
- ORNAMENTAL STREET LIGHTING SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE HOME OWNER'S ASSOCIATION. LIGHTING SHALL NOT TO BE OWNED OR MAINTAINED BY THE CITY.
- SLOPED GRANITE CURB TO BE TIPPED DOWN AT ALL DRIVEWAY ENTRANCES BY THE CONTRACTOR. ALL DRIVEWAY LOCATIONS SHALL BE REVIEWED AND APPROVED BY PUBLIC WORKS PRIOR TO ISSUANCE OF BUILDING PERMIT.



GRAPHIC SCALE  
( IN FEET )  
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1 inch = 4 ft Vert.

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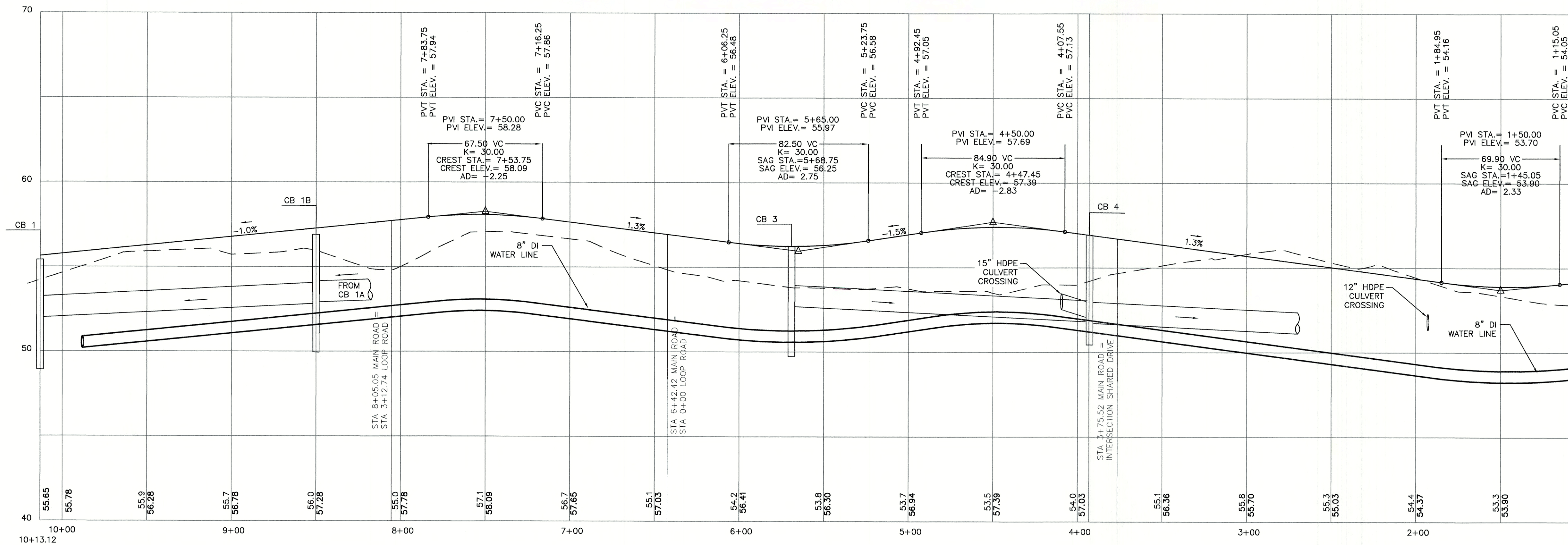
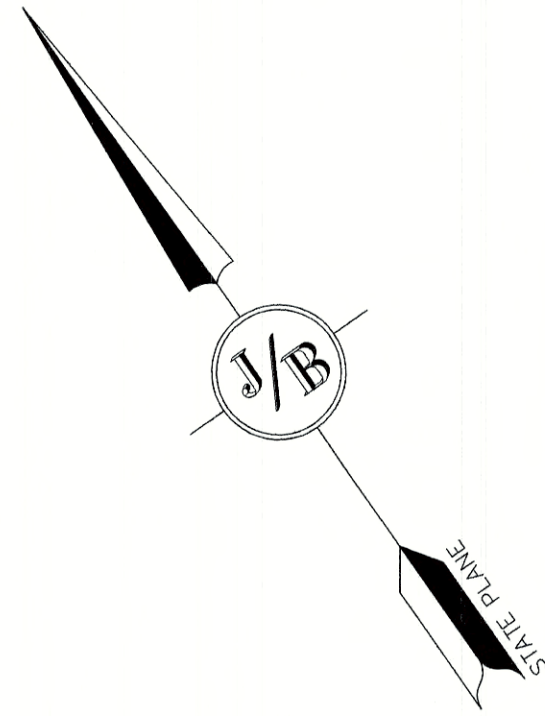
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REV.	DATE	REVISION	BY

Designed and Produced in NH  
**J/B Jones & Beach Engineers, Inc.**  
85 Portsmouth Ave. Civil Engineering Services 603-772-4746  
PO Box 219 603-772-0227  
Stratham, NH 03885 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **PLAN AND PROFILE**  
Project: **3400 LAFAYETTE ROAD PORTSMOUTH, NH**  
Owner of Record: **RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

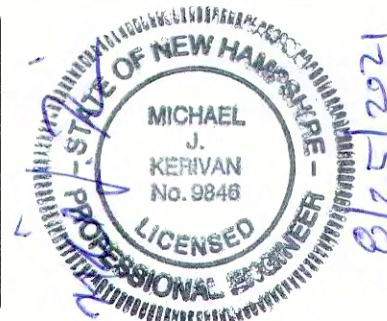
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**P1**  
SHEET 11 OF 22  
JBE PROJECT NO. 20737





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( IN FEET )  
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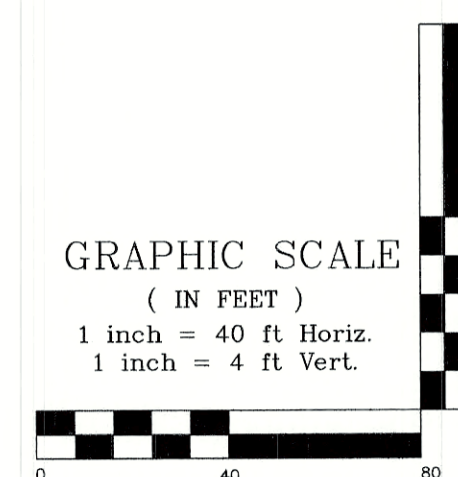
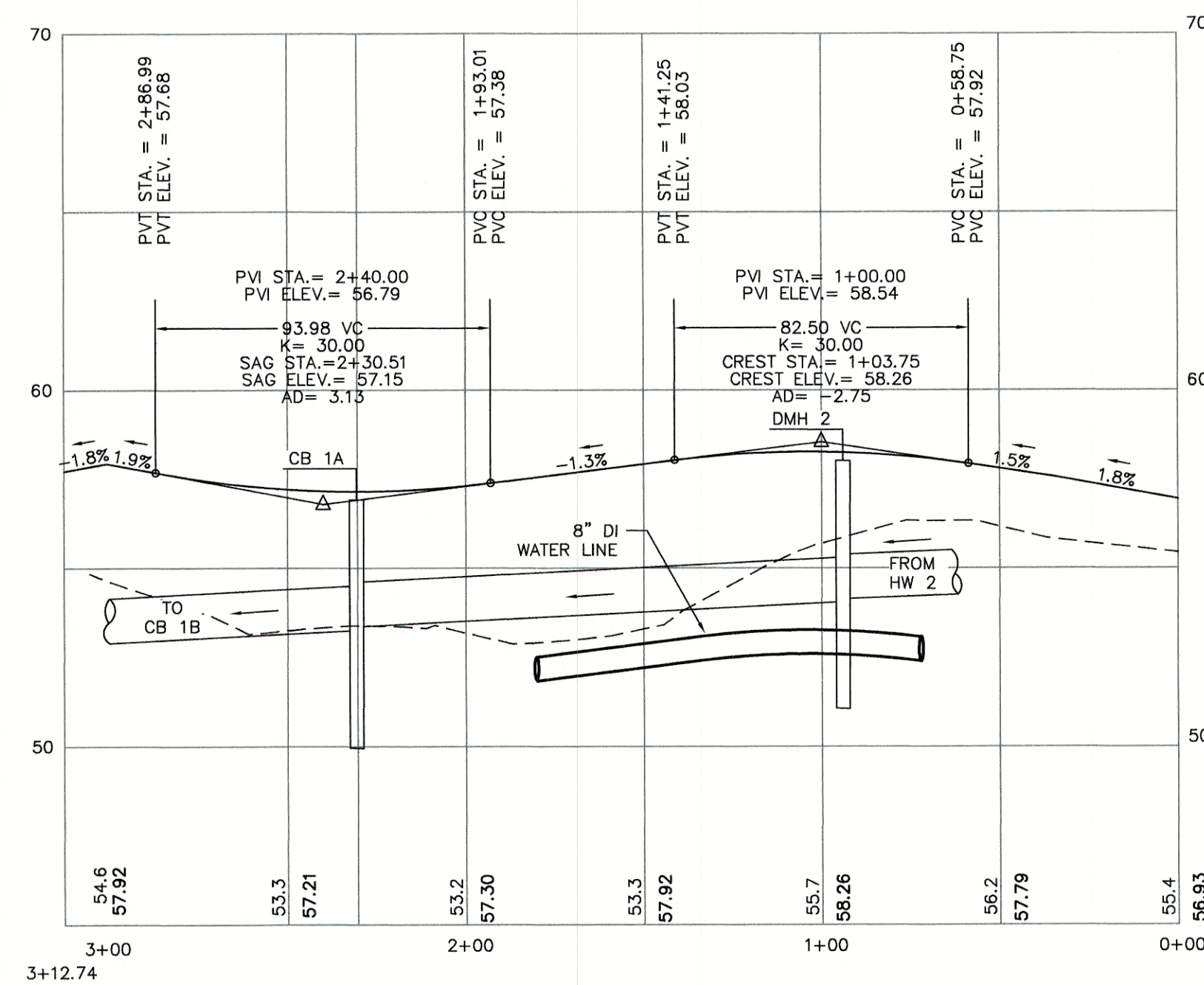
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DRAWING No.	P2
SHEET 12 OF 22	JBE PROJECT NO. 20737





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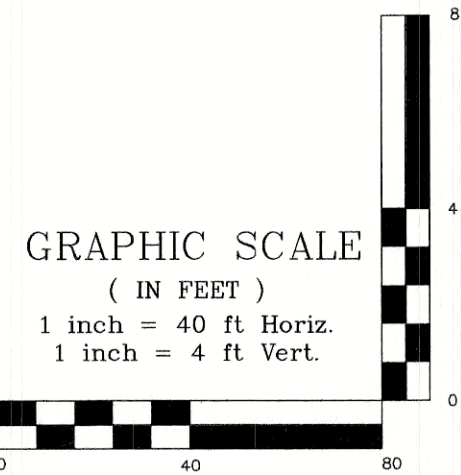
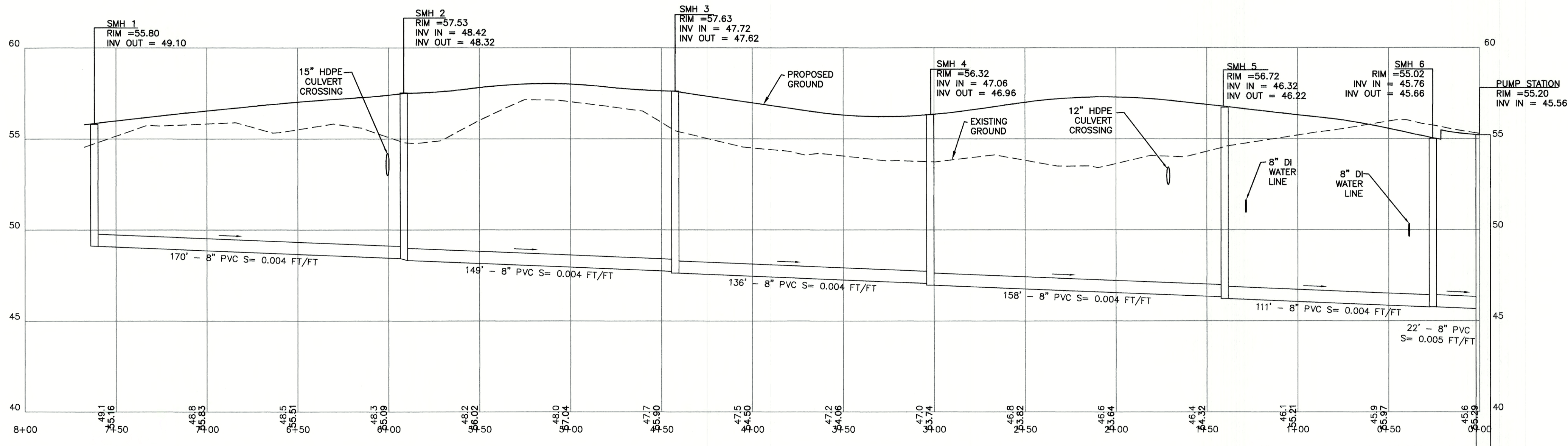
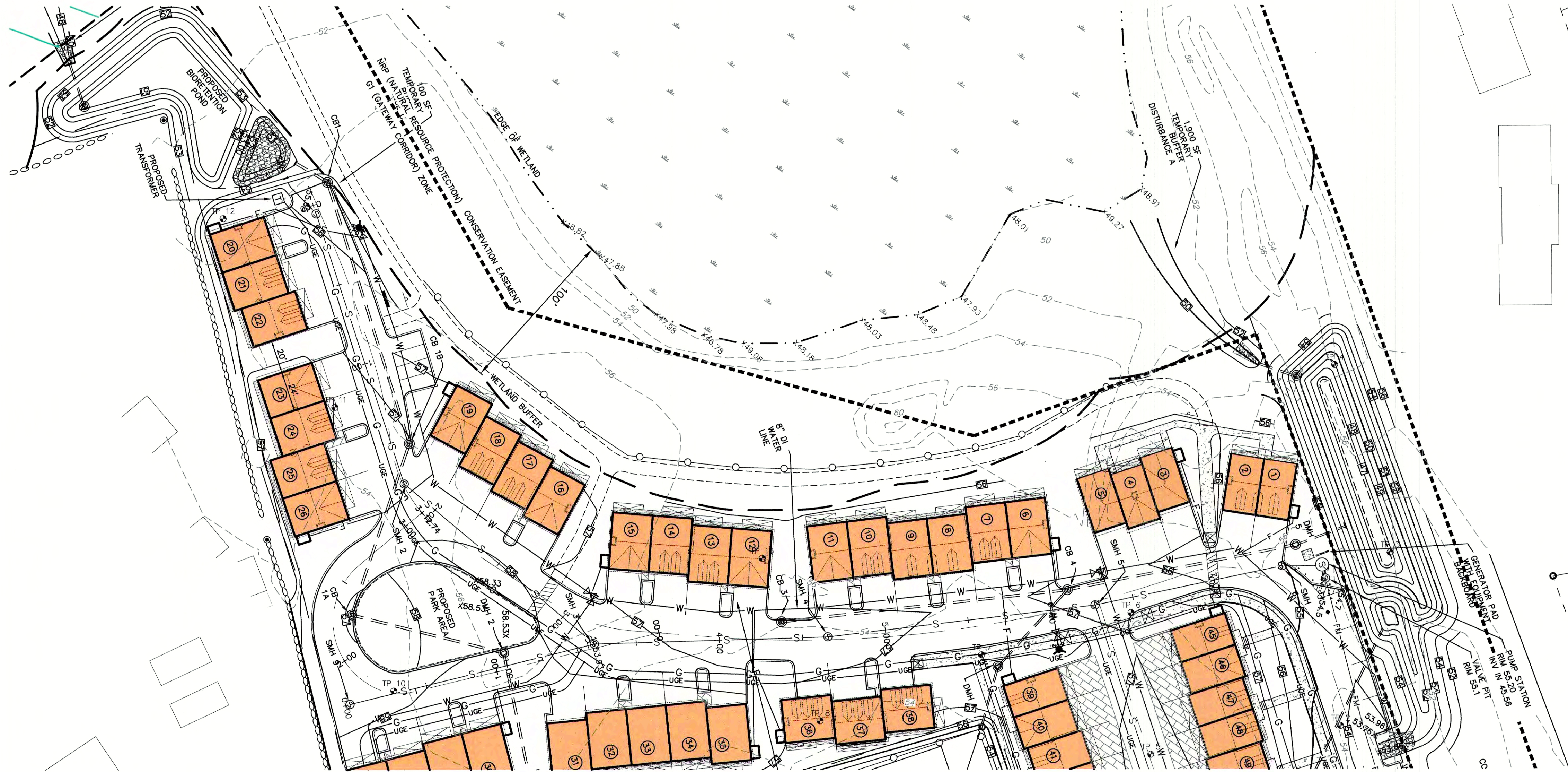
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Civil Engineering Services  
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603-772-4746 FAX: 603-772-0227 E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: **PLAN AND PROFILE**  
3400 LAFAYETTE ROAD  
PORTSMOUTH, NH  
Owner of Record: RICCI CONSTRUCTION CO., INC.  
225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No. **P3**  
SHEET 13 OF 22  
JBE PROJECT NO. 20737





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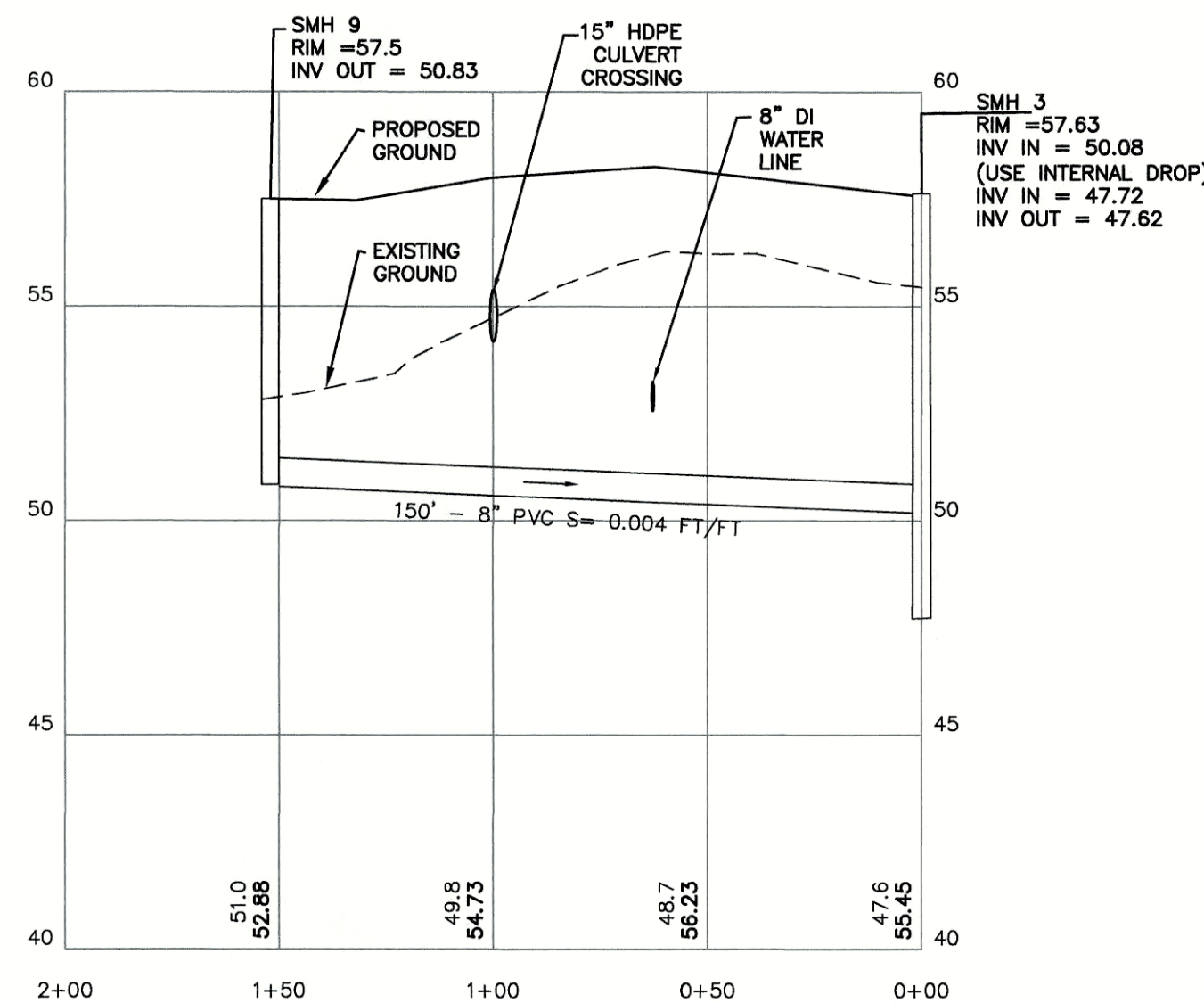
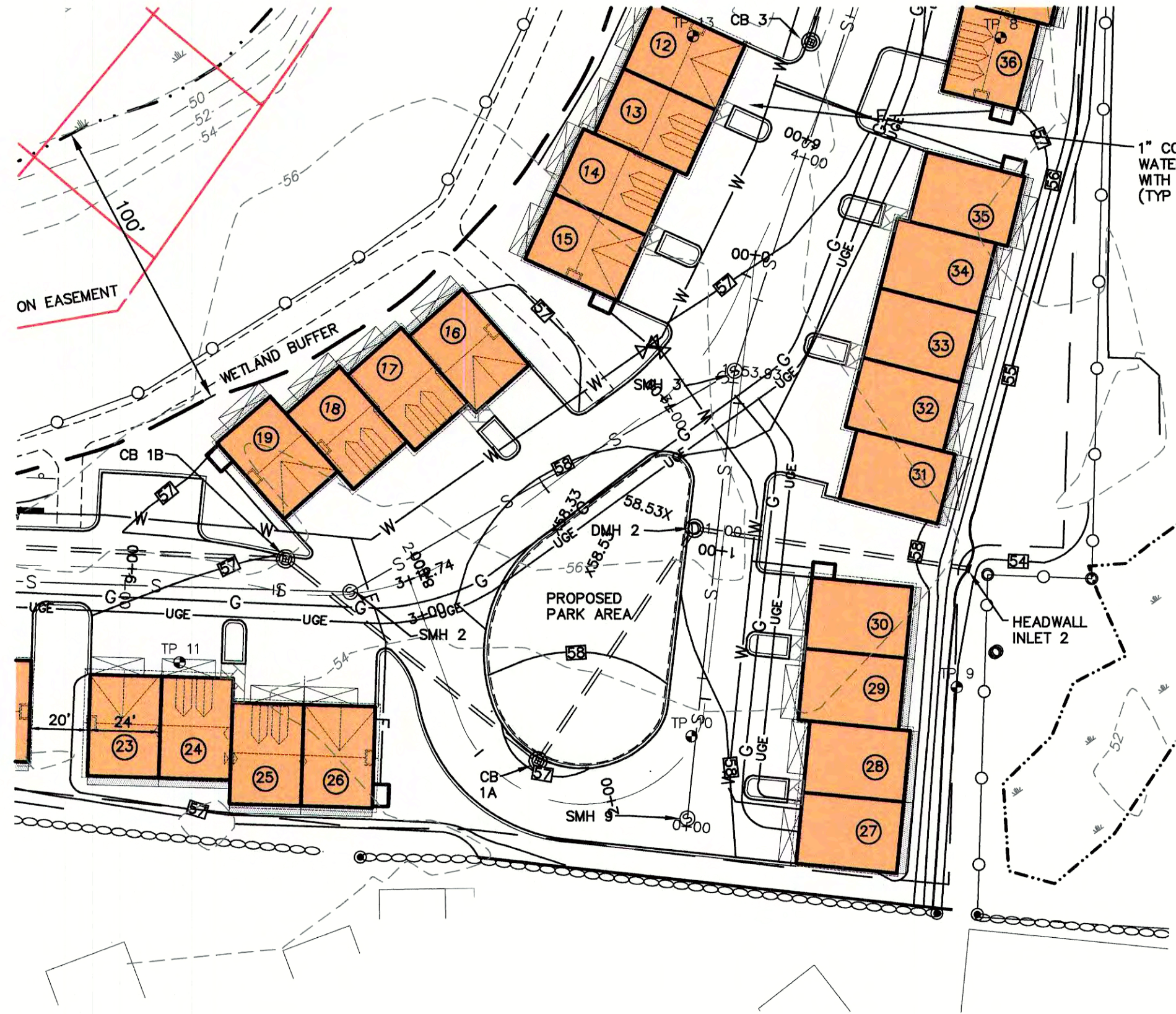
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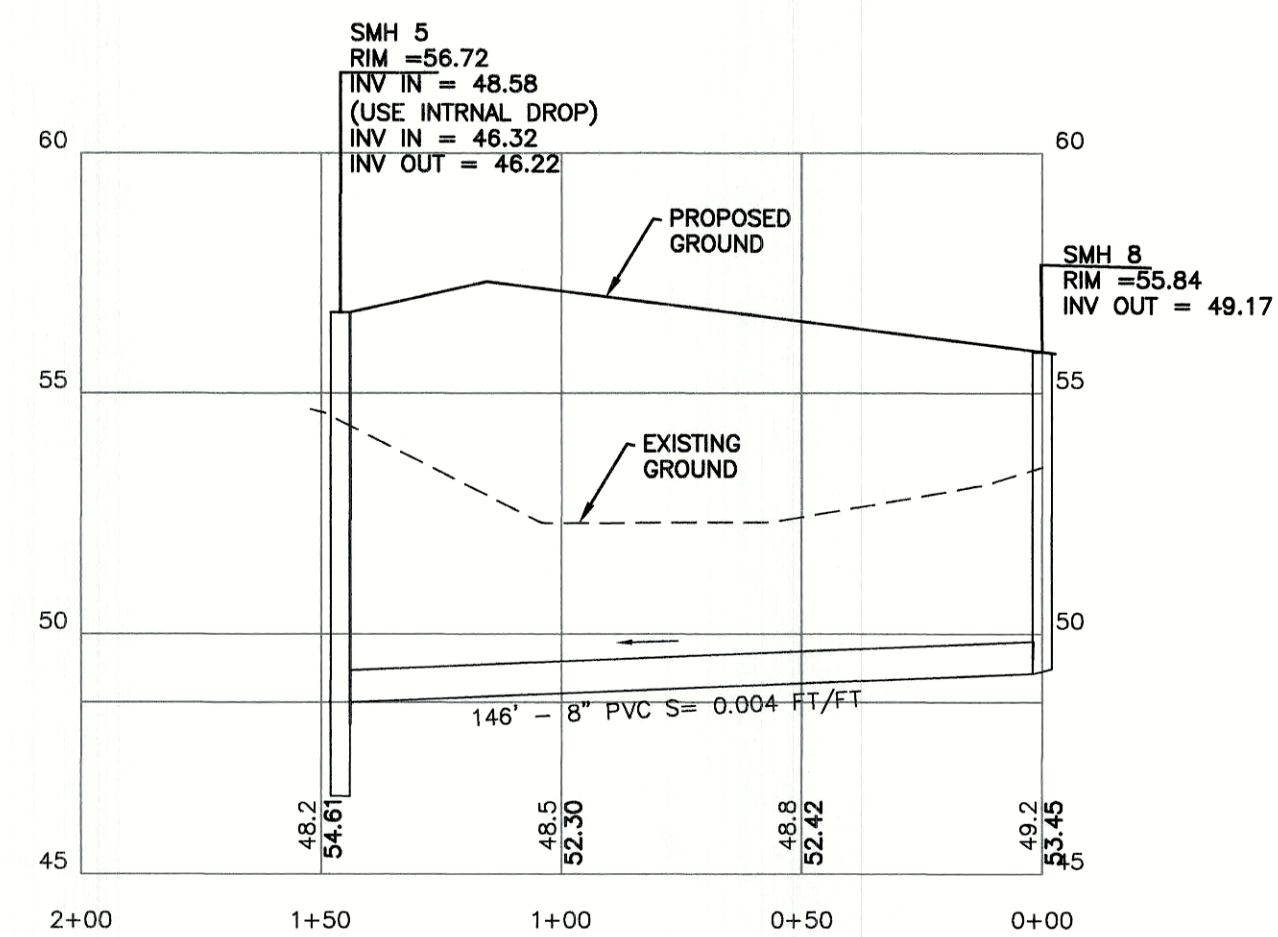
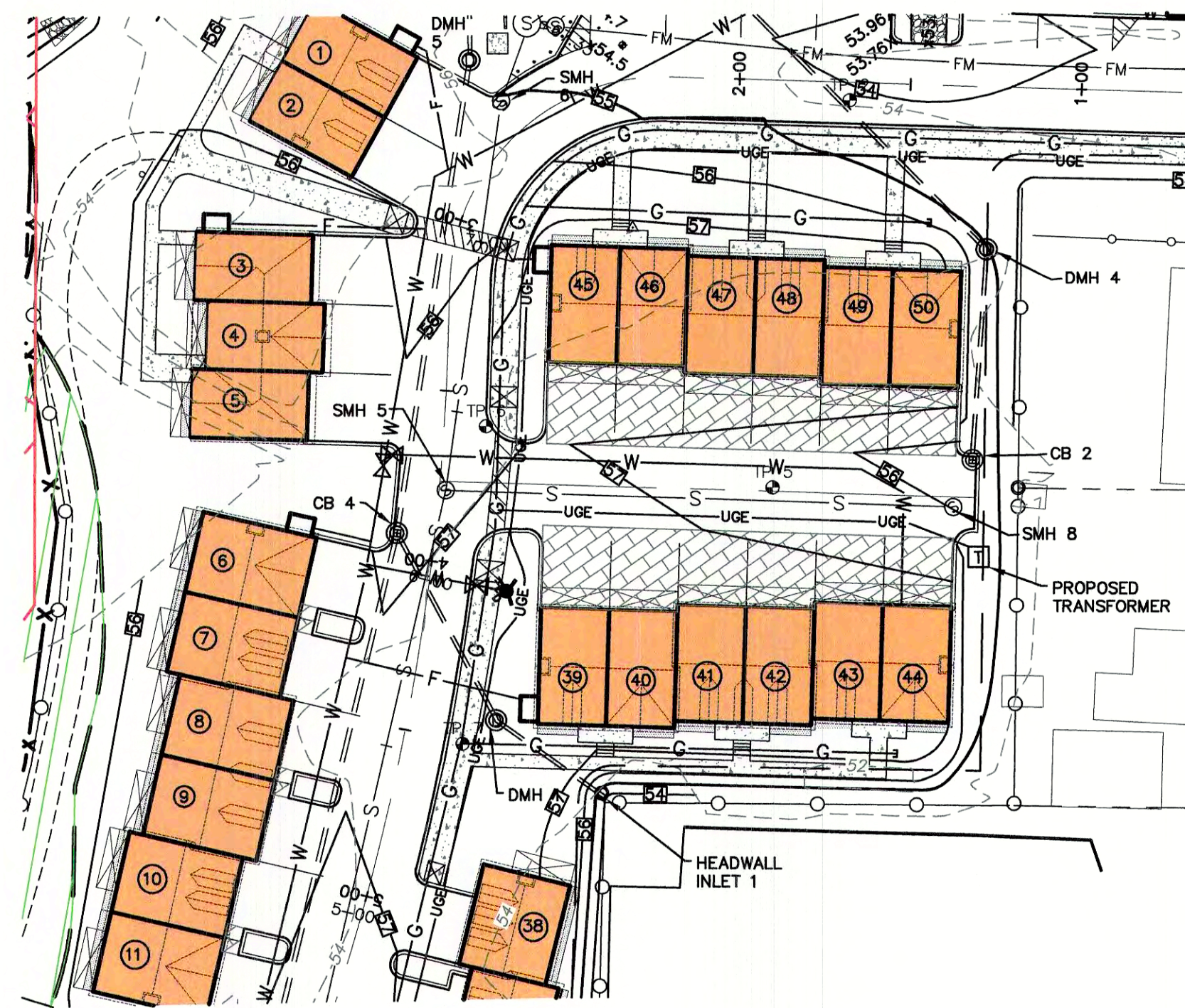
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Project: **3400 LAFAYETTE ROAD PORTSMOUTH, NH**  
Owner of Record: **RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229**

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JBE PROJECT NO. 20737

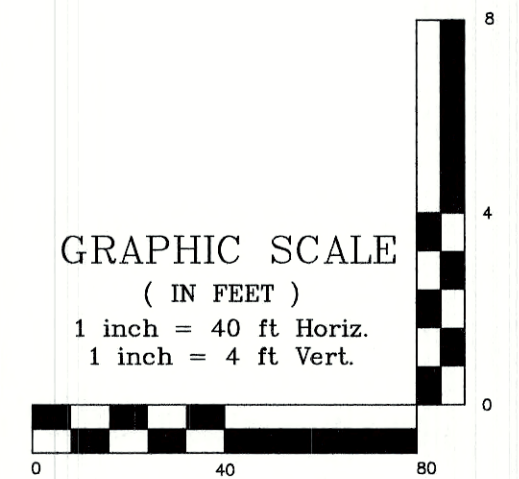




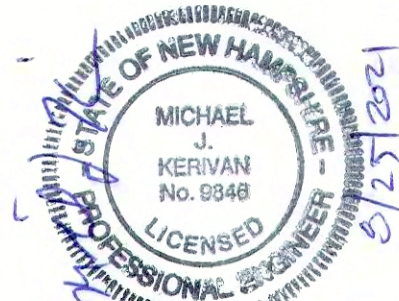
LOOP ROAD



SHARED DRIVEWAY



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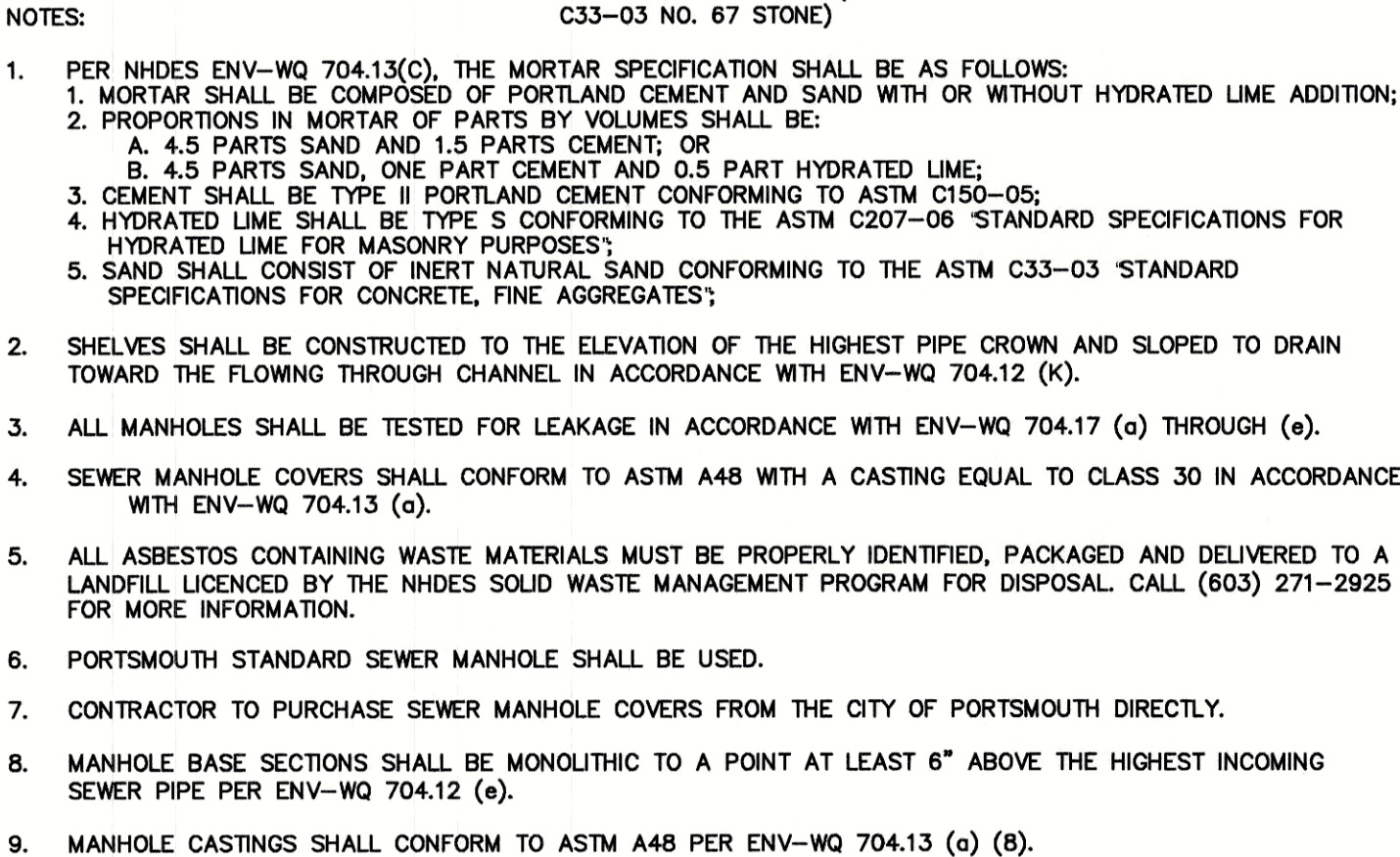












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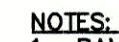
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- NOT TO SCALE



1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO PAVEMENT DETAILS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
3. TRENCH BACKFILL SHALL CONFORM WITH ENV. Wq 704.11(h) AND BE FREE OF DEBRIS, PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT OR CLAY, EXCAVATED LEDGE OR ROCKS OVER SIX INCHES.
4. W= MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, WIDTH SHALL BE NO MORE THAN 36"; FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, WIDTH SHALL BE 24 INCHES PLUS PIPE O.D. WIDTH SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
5. RIGID FOAM INSULATION TO BE PROVIDED WHERE COVER IN THE ROADWAY IS LESS THAN 6' AND CROSS COUNTRY IS LESS THAN 4' WHERE INDICATED ON THE DES APPROVED PLANS.
6. PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES A 1/2" SIEVE AND A MAXIMUM OF 15% PASSES A #200 SIEVE IN ACCORDANCE WITH Env-Wq 704.11(b).
7. JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL AND CERTIFIED BY THE MANUFACTURER AS CONFORMING TO THE ASTM D3212 STANDARD IN EFFECT WHEN THE JOINT SEALS WERE MANUFACTURED, AND SHALL BE PUSH-ON, BELL-AND-SPIGOT TYPE PER Env-Wq 704.05 (e).

NOT TO SCALE

A circular professional engineer seal for the State of New Hampshire. The outer ring contains the text "STATE OF NEW HAMPSHIRE" at the top and "PROFESSIONAL ENGINEER" at the bottom. The center of the seal contains the name "MICHAEL J. KERIVAN" and the license number "No. 9846". The seal is stamped in blue ink on a document with handwritten notes and a date stamp "12/22/21".

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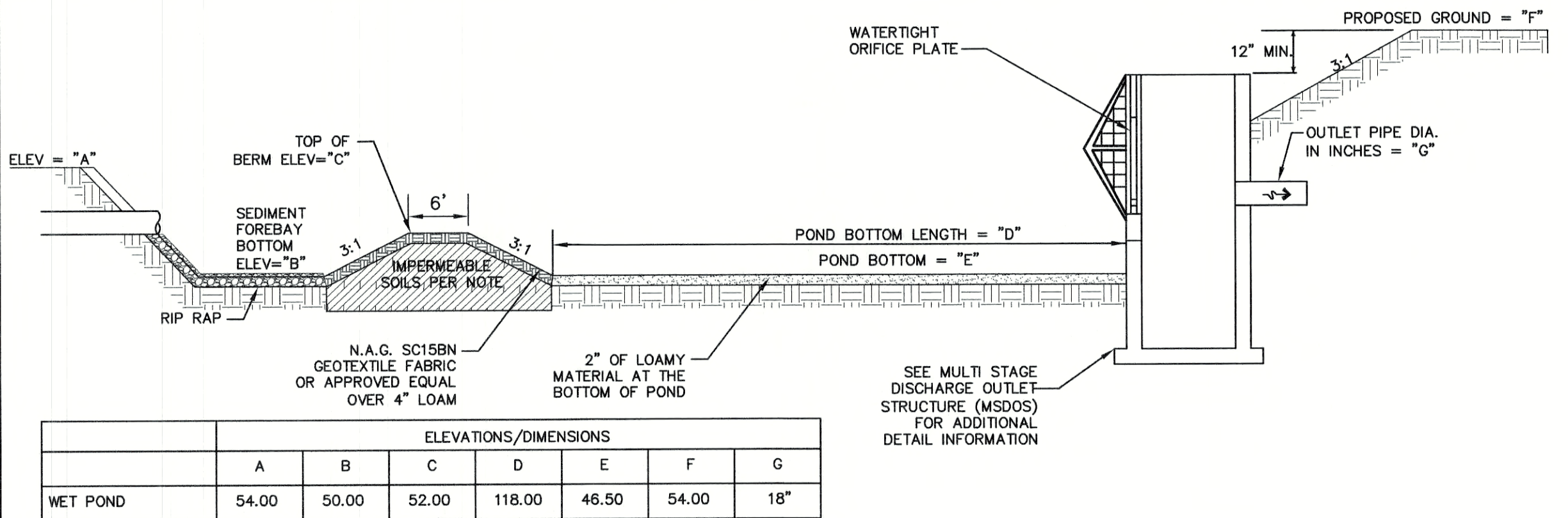
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885	<i>Civil Engineering Services</i>	603-772-4746 FAX: 603-772-0227 E-MAIL: <a href="mailto:JBE@JONESANDBEACH.COM">JBE@JONESANDBEACH.COM</a>
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SHEET 18 OF 22  
JBE PROJECT NO. 20737



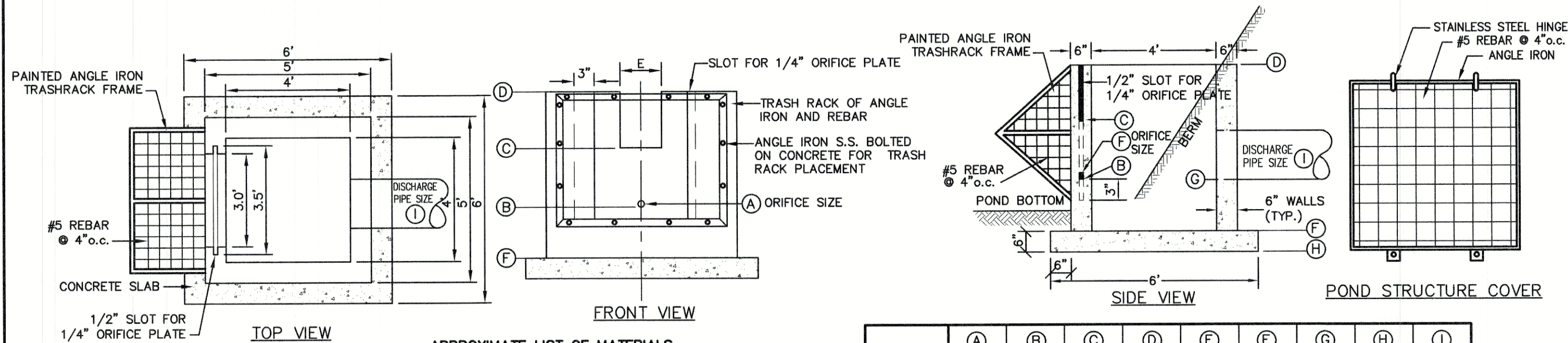


### WET POND SECTION

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### WET POND CONSTRUCTION CRITERIA

- FOUNDATION PREPARATION --- THE FOUNDATION AREA SHALL BE CLEARED OF TREES LOGS, STUMPS, ROOTS, BRUSH, BOULDERS, SOD, AND RUBBISH. IF NEEDED TO ESTABLISH VEGETATION, THE TOPSOIL AND SOD SHALL BE STOCKPILED AND SPREAD ON THE COMPLETED DAM AND SPILLWAYS. FOUNDATION SURFACES SHALL BE SLOPED NO STEEPER THAN 1:1. THE FOUNDATION AREA SHALL BE THOROUGHLY SCARIFIED BEFORE PLACEMENT OF THE MATERIAL. THE SURFACE SHALL HAVE MOISTURE ADDED OR IT SHALL BE COMPACTED, IF NECESSARY, SO THAT THE FIRST LAYER OF FILL MATERIAL CAN BE COMPACTED AND BONDED TO THE FOUNDATIONS. THE CUTOFF TRENCH AND ANY OTHER REQUIRED EXCAVATIONS SHALL BE DUG TO THE LINES AND GRADES SHOWN ON THE PLANS OR AS STAKED IN THE FIELD. IF THEY ARE SUITABLE, EXCAVATED MATERIALS SHALL BE USED IN THE PERMANENT FILL. EXISTING STREAM CHANNELS IN THE FOUNDATION AREA SHALL BE SLOPED NO STEEPER THAN 1:1 AND DEEPEENED AND WIDENED AS NECESSARY TO REMOVE ALL STONES, GRAVEL, SAND, STUMPS, ROOTS, AND OTHER OBJECTIONABLE MATERIAL AND TO ACCOMMODATE COMPACTION EQUIPMENT. FILL PLACEMENT --- THE MATERIAL PLACED IN THE FILL SHALL BE FREE OF DETRIMENTAL AMOUNTS OF SOD, ROOTS, FROZEN SOIL, STONES MORE THAN 6 INCHES IN DIAMETER (EXCEPT FOR ROCK FILLS), AND OTHER OBJECTIONABLE MATTER.
- SELECTED BACK FILL MATERIAL SHALL BE PLACED AROUND STRUCTURES, PIPE CONDUITS AND ANTI SEEP COLLARS AT ABOUT THE SAME RATE ON ALL SIDES, TO PREVENT DAMAGE FROM UNEQUAL LOADING. THE PLACING AND SPREADING OF FILL MATERIAL SHALL BE STARTED AT THE LOWEST POINT OF THE FOUNDATION AND THE FILL BROUGHT UP IN HORIZONTAL LAYERS OF SUCH THICKNESS THAT THE REQUIRED COMPACTION CAN BE OBTAINED. THE FILL SHALL BE CONSTRUCTED IN CONTINUOUS HORIZONTAL LAYERS EXCEPT WHERE OPENINGS OR SECTIONALIZED FILLS ARE REQUIRED. IN THOSE CASES, THE SLOPE OF THE BONDING SURFACES BETWEEN THE EMBANKMENT IN PLACE AND THE EMBANKMENT TO BE PLACED SHALL NOT BE STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL. THE BONDING SURFACE SHALL BE TREATED THE SAME AS THAT SPECIFIED FOR THE FOUNDATION SO AS TO INSURE A GOOD BOND WITH THE NEW FILL. THE DISTRIBUTION AND GRADATION OF MATERIALS SHALL BE SUCH THAT NO LENSES, POCKETS, STREAKS, OR LAYERS OF MATERIAL DIFFER SUBSTANTIALLY IN TEXTURE OF GRADATION FROM THE SURROUNDING MATERIAL. IF IT IS NECESSARY TO USE MATERIALS OF VARYING TEXTURE AND GRADATION, THE MORE IMPERVIOUS MATERIAL SHALL BE PLACED IN THE CENTER AND UPSTREAM PARTS OF THE FILL. IF ZONED FILLS OF SUBSTANTIALLY DIFFERING MATERIALS ARE SPECIFIED, THE ZONES SHALL BE PLACED ACCORDING TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. THE COMPLETE WORK SHALL CONFORM TO THE LINES, GRADES, AND ELEVATIONS SHOWN ON THE DRAWINGS OR AS STAKED IN THE FIELD.
- MOISTURE CONTROL --- THE MOISTURE CONTENT OF THE FILL MATERIAL SHALL BE ADEQUATE FOR OBTAINING THE REQUIRED COMPACTION. MATERIAL THAT IS TOO WET SHALL BE DRIED TO MEET THIS REQUIREMENT, AND MATERIAL THAT IS TOO DRY SHALL HAVE WATER ADDED AND MIXED UNTIL THE REQUIREMENT IS MET.
- COMPACTION --- CONSTRUCTION EQUIPMENT SHALL BE OPERATED OVER THE AREAS OR EACH LAYER OF FILL TO INSURE THAT THE REQUIRED COMPACTION IS OBTAINED. SPECIAL EQUIPMENT SHALL BE USED IF NEEDED TO OBTAIN THE REQUIRED COMPACTION. IF A MINIMUM REQUIRED DENSITY IS SPECIFIED, EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY. FILL ADJACENT TO STRUCTURES, PIPE CONDUITS, AND ANTI SEEP COLLARS SHALL BE COMPACTED TO A DENSITY EQUIVALENT TO THAT OF THE SURROUNDING FILL BY MEANS OF HAND TAMPING OR MANUALLY DIRECTED POWER TAMPER OR PLATE VIBRATORS. FILL ADJACENT TO CONCRETE STRUCTURES SHALL NOT BE COMPACTED UNTIL THE CONCRETE IS STRONG ENOUGH TO SUPPORT THE LOAD.
- PROTECTION --- A PROTECTIVE COVER OF VEGETATION SHALL BE ESTABLISHED ON ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, AND BORROW AREA IF SOIL AND CLIMATIC CONDITIONS PERMIT. IF SOIL OR CLIMATIC CONDITIONS PRECLUDE THE USE OF VEGETATION AND PROTECTION IS NEEDED, NON-VEGETATIVE MEANS SUCH AS MULCHES OR GRAVEL MAY BE USED. IN SOME PLACES, TEMPORARY VEGETATION MAY BE USED UNTIL CONDITIONS PERMIT ESTABLISHMENT OF PERMANENT VEGETATION. THE EMBANKMENT AND SPILLWAY SHALL BE FENCED IF NECESSARY TO PROTECT THE VEGETATION.
- SEEDBED PREPARATION, SEEDING, FERTILIZING, AND MULCHING SHALL COMPLY WITH THE APPROPRIATE VEGETATIVE BMP'S.
- CONCRETE --- THE MIX DESIGN AND TESTING OF CONCRETE SHALL BE CONSISTENT WITH THE STRENGTH REQUIREMENTS OF THE JOB. MIX REQUIREMENTS OR NECESSARY STRENGTH SHALL BE SPECIFIED. THE TYPE OF CEMENT, AIR ENTRAPMENT, SLUMP, AGGREGATE, OR OTHER PROPERTIES SHALL BE SPECIFIED IF NECESSARY. ALL CONCRETE IS TO CONSIST OF A WORKABLE MIX THAT CAN BE PLACED AND FINISHED IN AN ACCEPTABLE MANNER. NECESSARY CURING SHALL BE SPECIFIED. REINFORCING STEEL SHALL BE PLACED AS INDICATED ON THE PLANS AND SHALL BE HELD SECURELY IN PLACE DURING CONCRETE PLACEMENT. SUB GRADES AND FORMS SHALL BE INSTALLED TO LINE AND GRADE, AND THE FORMS SHALL BE MORTAR TIGHT AND UNYIELDING AS THE CONCRETE IS PLACED.
- THE CONTRACTOR WILL NOTIFY JONES AND BEACH ENGINEERS AFTER EACH OF THE GRAVEL WETLAND PONDS HAVE BEEN EXCAVATED TO THE BOTTOM OF THE SYSTEM FOR A MANDATORY INSPECTION PRIOR TO BUILDING BERMS, PLACING STONE OR INSTALLING PIPE SYSTEM.
- BERMS AND WEIRS SEPARATING THE FOREBAY AND TREATMENT CELLS SHOULD BE CONSTRUCTED WITH CLAY, OR NON-CONDUCTIVE SOILS, AND/OR A FINE GEOTEXTILE, OR SOME COMBINATION THEREOF, TO AVOID WATER SEEPAGE AND SOIL PIPING THROUGH THESE EARTHEN DIVIDERS.



#### APPROXIMATE LIST OF MATERIALS

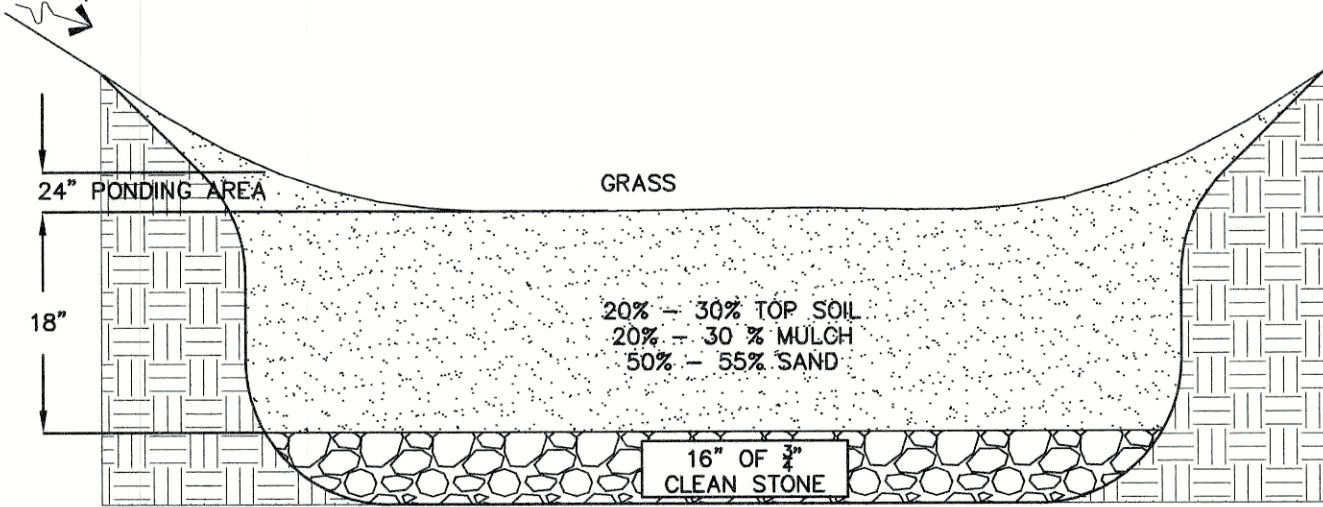
- 3 C.Y. - 5000 PSI CONCRETE
- 15 ANGLE IRONS @ 4' LENGTH
- REQUIRED S.S. BOLTS AND FASTENERS
- 1/4" STEEL PLATE WITH DRILLED ORIFICES
- 1 C.Y. - CRUSHED STONE FOR BASE
- 48 #5 REBARS @ 1', 2' AND 3' LENGTHS
- 32 #4 REBARS @ 4.5' LENGTH

- NOTES:
- REINFORCING STEEL SHALL CONSIST OF A SINGLE LAYER OF HORIZONTAL AND VERTICAL PLACED #4 REBAR @ 12" O.C.
  - CONCRETE BOX TO BE CONSTRUCTED OR PRECAST OF EQUAL DIMENSIONS AND REINFORCING.
  - CONCRETE SLAB TO BE CONSTRUCTED ALONG WITH BASE. FOR PRECAST BOX, A SLOTTED CONCRETE SLAB TO BE USED.
  - SECTION JOINTS AND PIPE OPENING SHALL BE SEALED WATERTIGHT WITH MORTAR BY CONTRACTOR.

### MULTI-STAGE DISCHARGE OUTLET STRUCTURE (MSDOS)

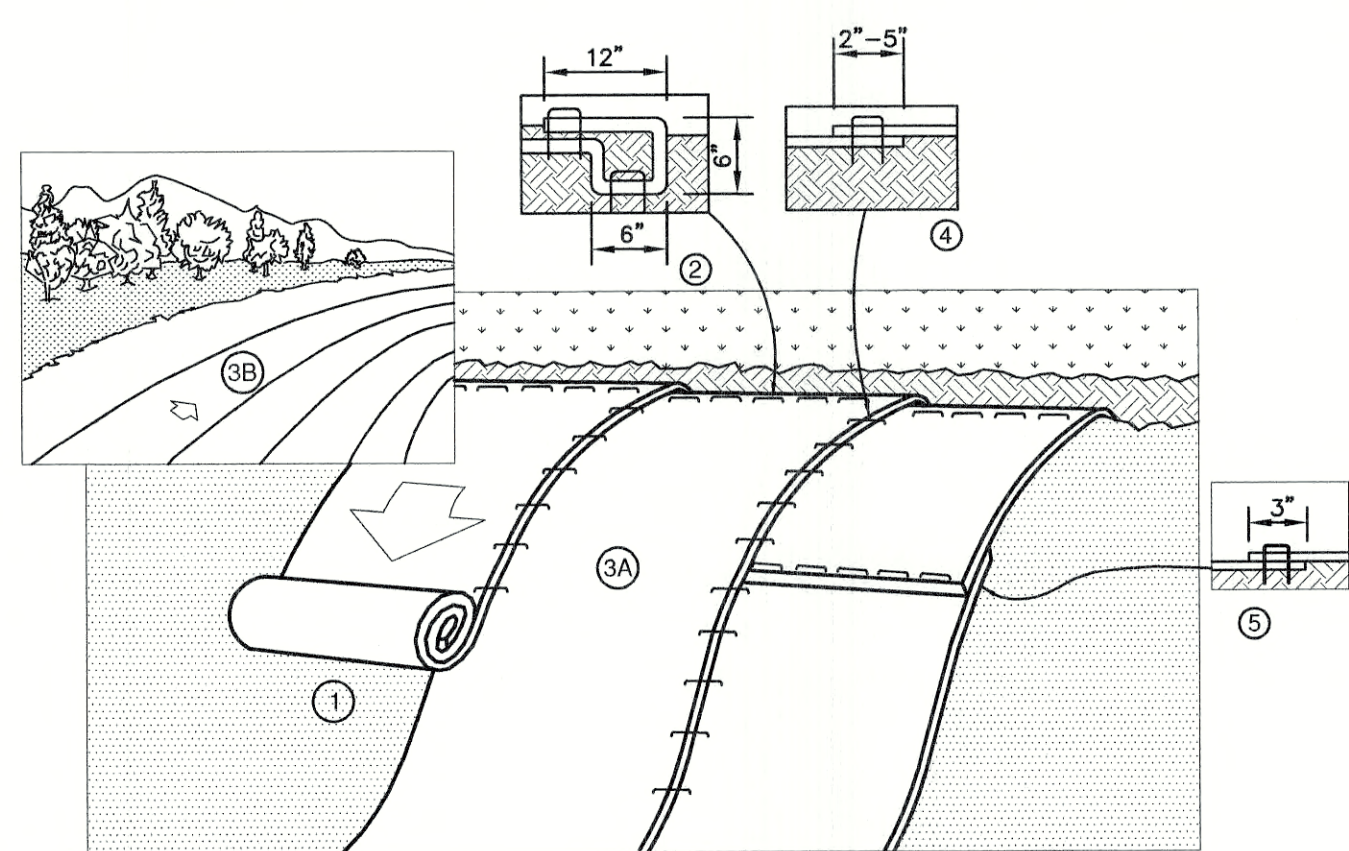
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SAND SPECIFICATION		TOPSOIL SPECIFICATION	
SIEVE SIZE	% BY WEIGHT	LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15 TO 25% FINES PASSING THE #200 SIEVE.	
#4	100	MULCH SPECIFICATION MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE.	
#10	95-100		
#20	80-100		
#40	50-85		
#60	25-60		
#100	10-30		
#200	2-10		
	0-5		



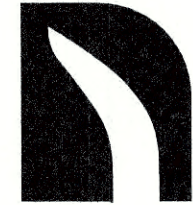
### BIORETENTION SYSTEM (with open side and bottom)

NOT TO SCALE



#### NOTES:

- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
- CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.



#### NORTH AMERICAN GREEN

14649 HIGHWAY 41 NORTH  
EVANSVILLE, INDIANA 47725  
1-800-772-2040

### EROSION CONTROL BLANKET SLOPE INSTALLATION

NORTH AMERICAN GREEN (800) 772-2040

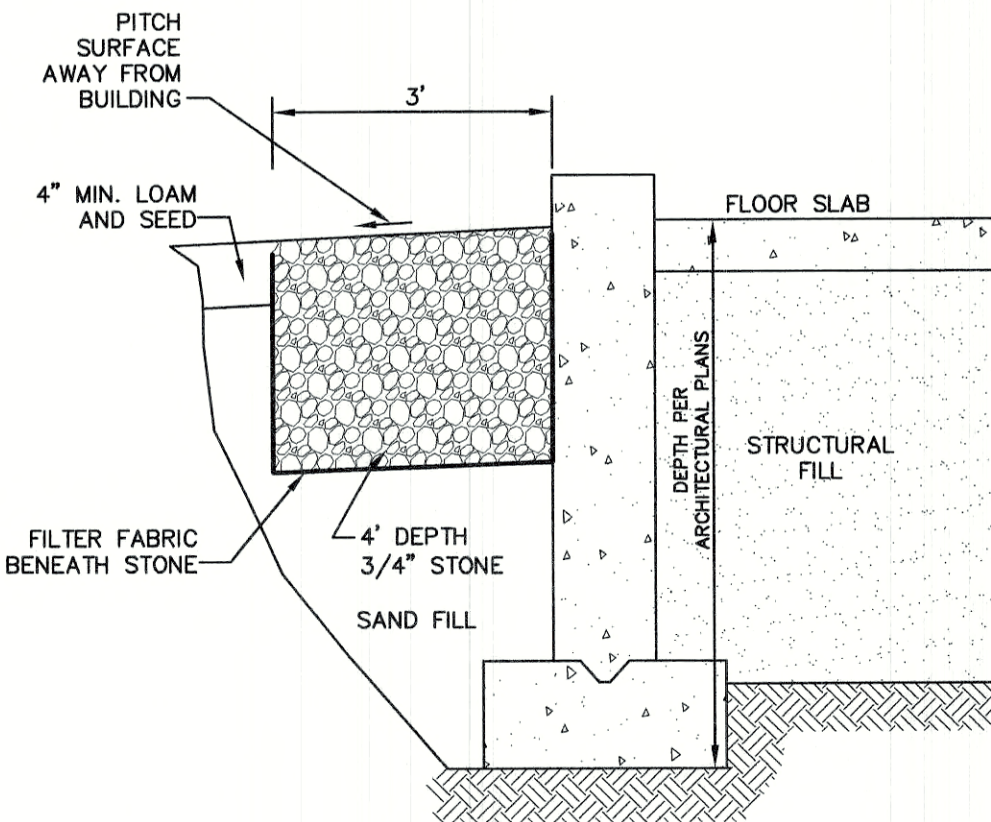
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### DESIGN CONSIDERATIONS

- DO NOT PLACE BIORETENTION SYSTEMS INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
- DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUN-OFF, WATER FROM EXCAVATIONS) TO THE BIORETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
- DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

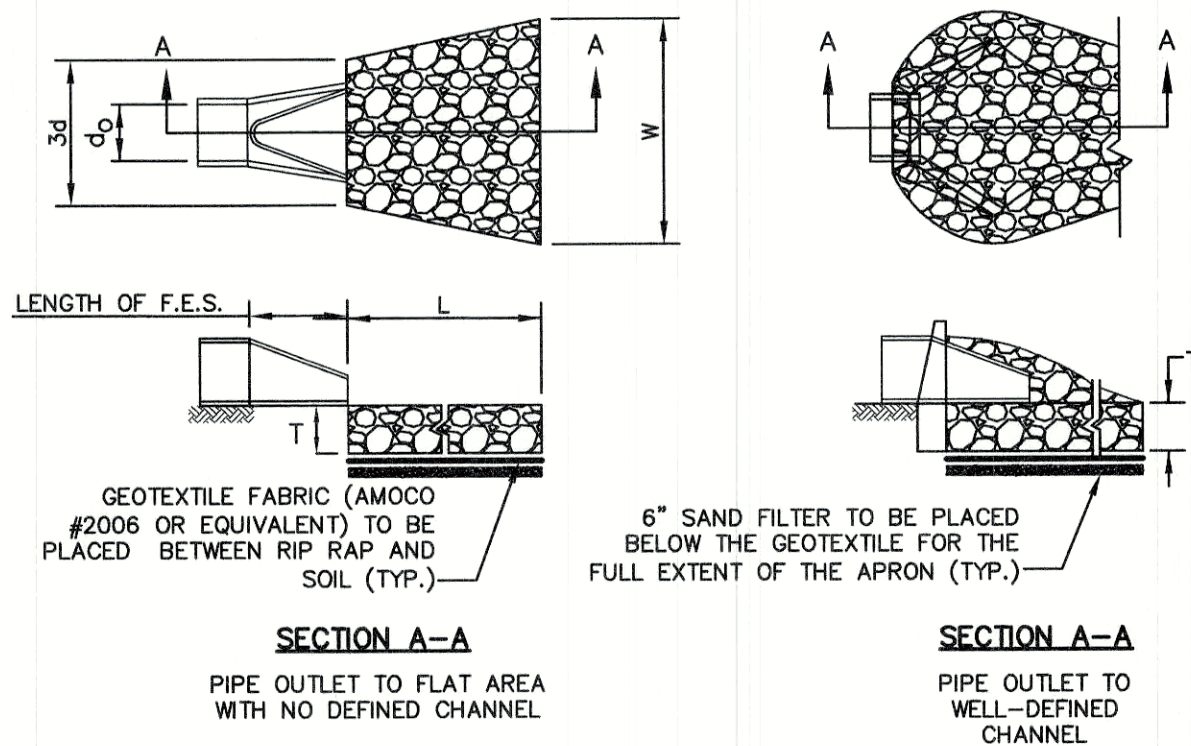
### MAINTENANCE REQUIREMENTS:

- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
- PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
- TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
- AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72 HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
- VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.



### DRIP EDGE DETAIL

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#### SECTION A-A

PIPE OUTLET TO FLAT AREA  
WITH NO DEFINED CHANNEL

#### SECTION A-A

PIPE OUTLET TO  
WELL-DEFINED  
CHANNEL

#### TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES

THICKNESS OF RIP RAP = 1.5 FEET			
d50 SIZE=	0.50	FEET	6 INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES)		
	FROM	TO	
100%	9	12	
85%	8	11	
50%	6	9	
15%	2	3	

#### NOTES:

- THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
- THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
- GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE RIP RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
- STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
- OUTLETS TO A DEFINED CHANNEL SHALL HAVE 2:1 OR FLATTER SIDE SLOPES AND SHOULD BEGIN AT THE TOP OF THE CULVERT AND TAPER DOWN TO THE CHANNEL BOTTOM THROUGH THE LENGTH OF THE APRON.
- MAINTENANCE: THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE REPAIRED IMMEDIATELY. THE CHANNEL IMMEDIATELY BELOW THE OUTLET SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO OUTLET PROTECTION.

### RIP RAP OUTLET PROTECTION APRON

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5	5/5/21	REVISIONS	LAZ
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**J/B Jones & Beach Engineers, Inc.**

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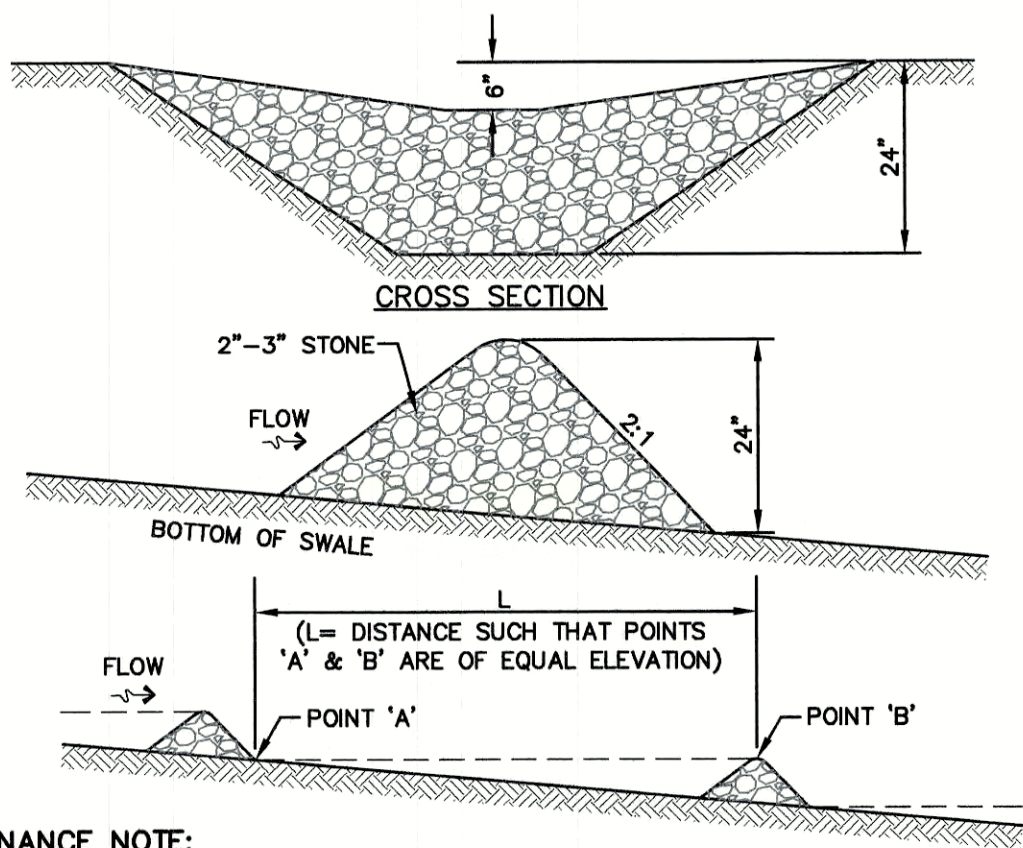
Civil Engineering Services

603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.
<b>D3</b>
SHEET 19 OF 22 JBE PROJECT NO. 20737



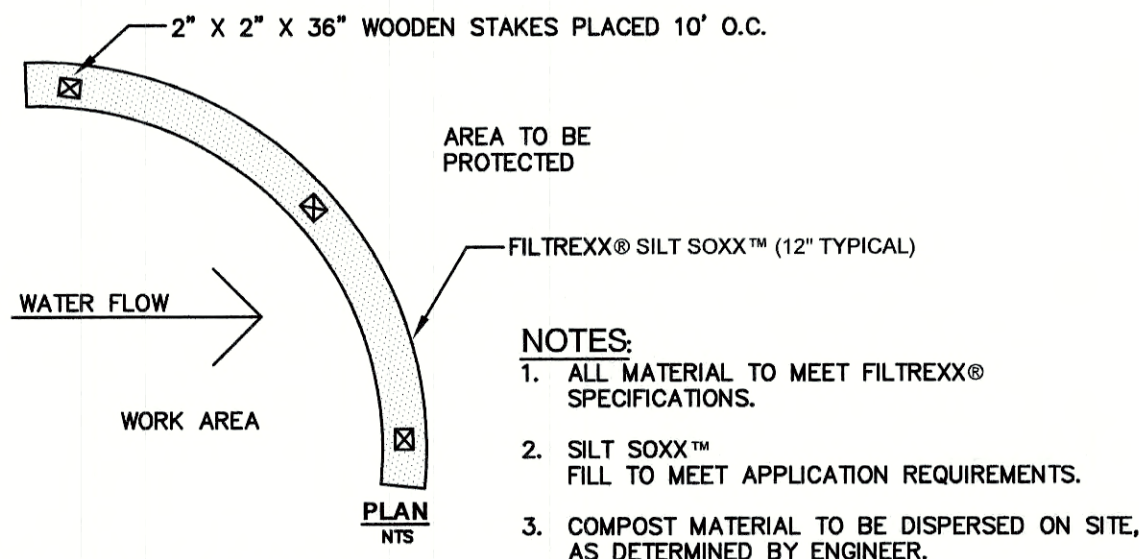
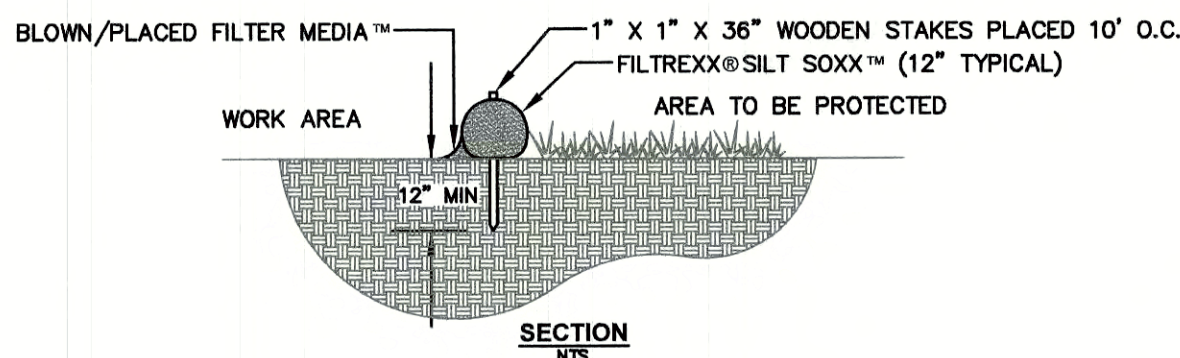


**MAINTENANCE NOTE:**

1. STONE CHECK DAMS SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED AND MULCHED. WHILE THIS PRACTICE IS NOT INTENDED TO BE USED PRIMARILY FOR SEDIMENT TRAPPING, SOME SEDIMENT WILL ACCUMULATE BEHIND THE STRUCTURES. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE.

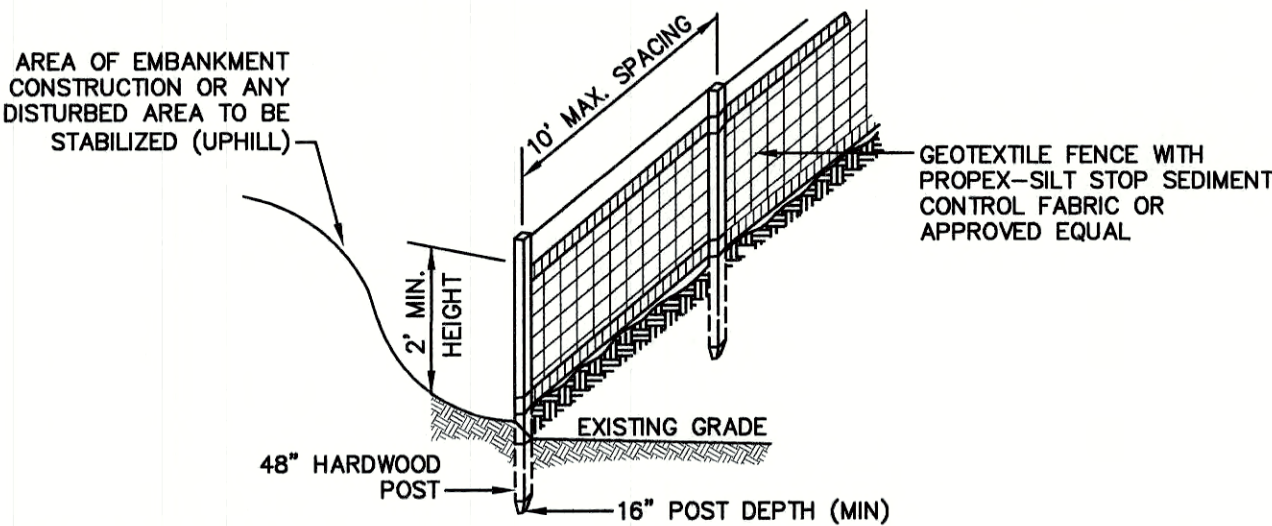
**STONE CHECK DAM**

NOT TO SCALE



**FILTREXX® SILT SOXX™**

NOT TO SCALE



**CONSTRUCTION SPECIFICATIONS:**

1. WOVEN FABRIC FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. FILTER CLOTH SHALL BE FASTENED TO WOVEN WIRE EVERY 24" AT TOP, MID AND BOTTOM AND EMBEDDED IN THE GROUND A MINIMUM OF 8" AND THEN COVERED WITH SOIL.
2. THE FENCE POSTS SHALL BE A MINIMUM OF 48" LONG, SPACED A MAXIMUM 10' APART, AND DRIVEN A MINIMUM OF 16" INTO THE GROUND.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THE ENDS OF THE FABRIC SHALL BE OVERLAPPED 6", FOLDED AND STAPLED TO PREVENT SEDIMENT FROM BY-PASSING.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SEDIMENT REMOVED AND PROPERLY DISPOSED OF WHEN IT IS 6" DEEP OR VISIBLE 'BULGES' DEVELOP IN THE SILT FENCE.
5. PLACE THE ENDS OF THE SILT FENCE UP CONTOUR TO PROVIDE FOR SEDIMENT STORAGE.
6. SILT FENCE SHALL REMAIN IN PLACE FOR 24 MONTHS.

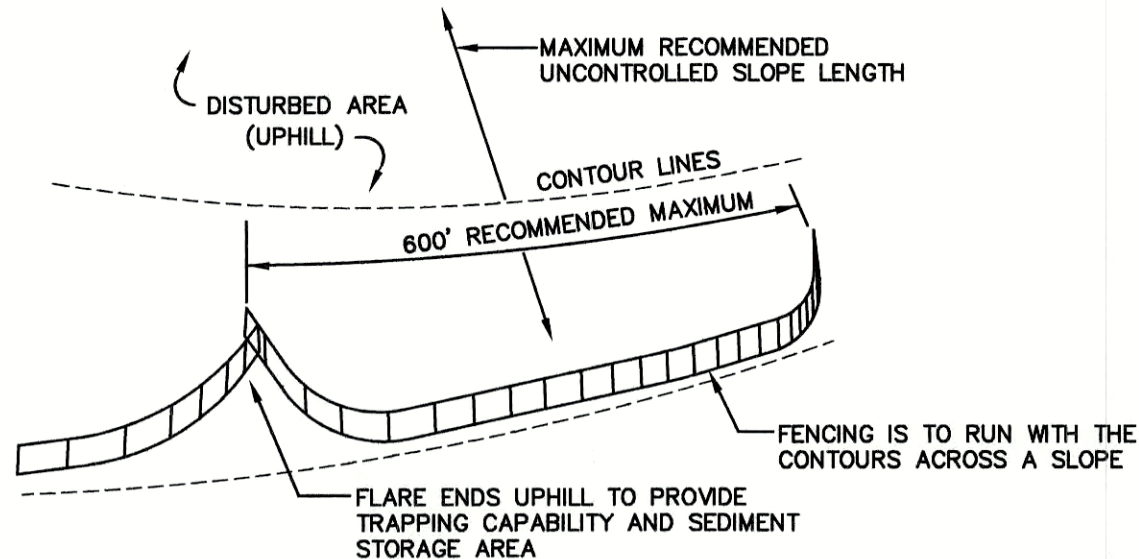
**SILT FENCE**

NOT TO SCALE

**TEMPORARY EROSION CONTROL NOTES**

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF 5 ACRES BE EXPOSED AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED, DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. SILT FENCES AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED OF.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND RE-VEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER OCTOBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
  - a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
  - b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
  - c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR
  - d. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. FUGITIVE DUST CONTROL IS REQUIRED TO BE CONTROLLED IN ACCORDANCE WITH ENV-A 1000, AND THE PROJECT IS TO MEET THE REQUIREMENTS AND INTENT OF RSA 430:53 AND AGR 3800 RELATIVE TO 'INVASIVE SPECIES'.
12. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR'S NAME, ADDRESS, AND PHONE NUMBER SHALL BE SUBMITTED TO DES VIA EMAIL (SEE BELOW).
13. PRIOR TO CONSTRUCTION, A PHASING PLAN THAT DELINEATES EACH PHASE OF THE PROJECT SHALL BE SUBMITTED. ALL TEMPORARY SEDIMENT BASINS THAT WILL BE NEEDED FOR DEWATERING WORK AREAS SHALL BE LOCATED AND IDENTIFIED ON THIS PLAN.
14. IN ORDER TO ENSURE THE STABILITY OF THE SITE AND EFFECTIVE IMPLEMENTATION OF THE SEDIMENT AND EROSION CONTROL MEASURES SPECIFIED IN THE PLANS FOR THE DURATION OF CONSTRUCTION, THE CONTRACTOR SHALL BE IN STRICT COMPLIANCE WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS IN ADDITION TO THOSE CALLED FOR IN THE SWPPP:
  - a. A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL OR A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE ("MONITOR") SHALL BE EMPLOYED TO INSPECT THE SITE FROM THE START OF ALTERATION OF TERRAIN ACTIVITIES UNTIL THE SITE IS IN FULL COMPLIANCE WITH THE SITE SPECIFIC PERMIT ("PERMIT").
  - b. DURING THIS PERIOD, THE MONITOR SHALL INSPECT THE SUBJECT SITE AT LEAST ONCE A WEEK, AND IF POSSIBLE, DURING ANY ½ INCH OR GREATER RAIN EVENT (I.E. ½ INCH OF PRECIPITATION OR MORE WITHIN A 24 HOUR PERIOD). IF UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THIS EVENT.
  - c. THE MONITOR SHALL PROVIDE TECHNICAL ASSISTANCE AND RECOMMENDATIONS TO THE CONTRACTOR ON THE APPROPRIATE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROLS REQUIRED TO MEET THE REQUIREMENTS OF RSA 485 A:17 AND ALL APPLICABLE DES PERMIT CONDITIONS.
  - d. WITHIN 24 HOURS OF EACH INSPECTION, THE MONITOR SHALL SUBMIT A REPORT TO DES VIA EMAIL (RIDGELY MAUCK AT: RIDGELY.MAUCK@DES.NH.GOV).
  - e. THE MONITOR SHALL MEET WITH DES TO DECIDE UPON A REPORT FORMAT. THE REPORT FORMAT SHALL BE REVIEWED AND APPROVED BY DES PRIOR TO THE START OF CONSTRUCTION.

- a. A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL OR A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE ("MONITOR") SHALL BE EMPLOYED TO INSPECT THE SITE FROM THE START OF ALTERATION OF TERRAIN ACTIVITIES UNTIL THE SITE IS IN FULL COMPLIANCE WITH THE SITE SPECIFIC PERMIT ("PERMIT").
- b. DURING THIS PERIOD, THE MONITOR SHALL INSPECT THE SUBJECT SITE AT LEAST ONCE A WEEK, AND IF POSSIBLE, DURING ANY ½ INCH OR GREATER RAIN EVENT (I.E. ½ INCH OF PRECIPITATION OR MORE WITHIN A 24 HOUR PERIOD). IF UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THIS EVENT.
- c. THE MONITOR SHALL PROVIDE TECHNICAL ASSISTANCE AND RECOMMENDATIONS TO THE CONTRACTOR ON THE APPROPRIATE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROLS REQUIRED TO MEET THE REQUIREMENTS OF RSA 485 A:17 AND ALL APPLICABLE DES PERMIT CONDITIONS.
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- e. THE MONITOR SHALL MEET WITH DES TO DECIDE UPON A REPORT FORMAT. THE REPORT FORMAT SHALL BE REVIEWED AND APPROVED BY DES PRIOR TO THE START OF CONSTRUCTION.



7. SILT FENCES SHALL BE REMOVED WHEN NO LONGER NEEDED AND THE SEDIMENT COLLECTED SHALL BE DISPOSED AS DIRECTED BY THE ENGINEER. THE AREA DISTURBED BY THE REMOVAL SHALL BE SMOOTHED AND REVEGETATED.

**MAINTENANCE:**

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE DONE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED, OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED, SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

**SEEDING SPECIFICATIONS**

1. **GRADING AND SHAPING**
  - A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
  - B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. **SEEDBED PREPARATION**
  - A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
  - B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. **ESTABLISHING A STAND**
  - A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:  
AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.  
NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.  
PHOSPHATE(P205), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.  
POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.  
(NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
  - B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
  - C. REFER TO THE 'SEEDING GUIDE' AND 'SEEDING RATES' TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWNVETCH, BIRDSFOOT, TREFOLI AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
  - D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. **MULCH**
  - A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
  - B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FOR THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. **MAINTENANCE TO ESTABLISH A STAND**
  - A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
  - B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
  - C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/
GRAVEL PIT, SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.					
1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.					
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.					

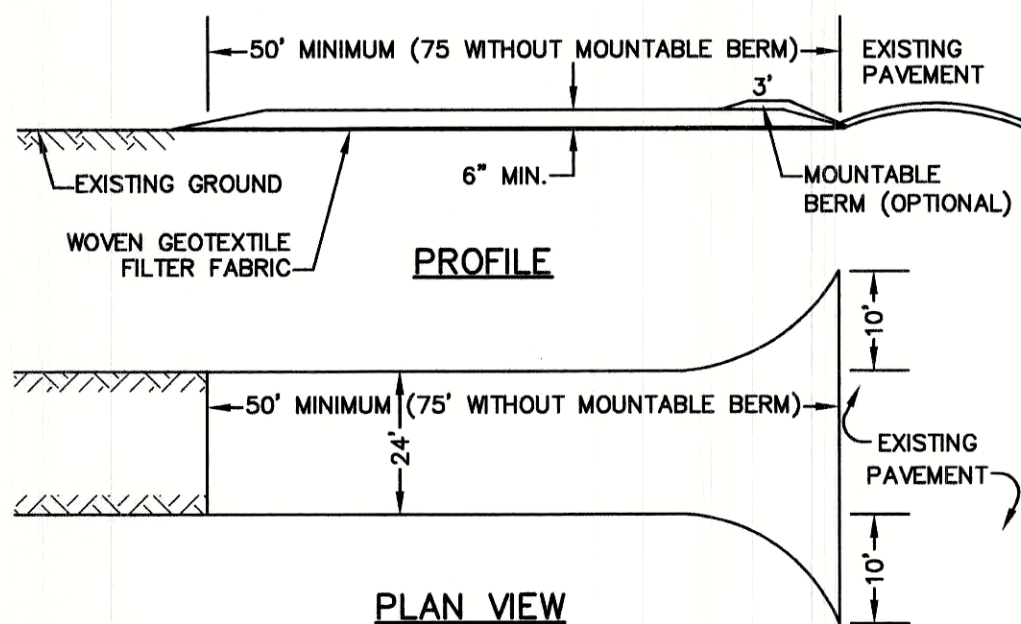
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

**SEEDING GUIDE**

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE CREEPING RED FESCUE RED TOP TOTAL	20 20 2 42	0.45 0.45 0.05 0.95
B. TALL FESCUE CREEPING RED FESCUE CROWN VETCH OR FLAT PEA TOTAL	15 10 15 30 40 OR 55	0.35 0.25 0.35 0.75 0.95 OR 1.35
C. TALL FESCUE CREEPING RED FESCUE BIRDS FOOT TREFOLI TOTAL	20 20 8 48	0.45 0.45 0.20 1.10
D. TALL FESCUE FLAT PEA TOTAL	20 30 50	0.45 0.75 1.20
E. CREEPING RED FESCUE 1/ KENTUCKY BLUEGRASS 1/ TOTAL	50 50 100	1.15 1.15 2.30
F. TALL FESCUE 1	150	3.60

1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.

**SEEDING RATES**



**NOTES:**

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, 75' WITHOUT A MOUNTABLE BERM, AND EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

**STABILIZED CONSTRUCTION ENTRANCE**

NOT TO SCALE

**CONSTRUCTION SEQUENCE**

1. PRIOR TO THE START OF ANY ACTIVITY, IT IS THE RESPONSIBILITY OF THE SITE'S SITE DEVELOPER (OR OWNER) TO FILE A NOTICE OF INTENT (NOI) FORM WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) IN ORDER TO GAIN COVERAGE UNDER THE NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. A PRE CONSTRUCTION MEETING IS TO BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION.
2. WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION.
3. CUT AND REMOVE TREES IN CONSTRUCTION AREA AS REQUIRED OR DIRECTED.
4. INSTALL SILT FENCING, HAY BALES AND CONSTRUCTION ENTRANCES PRIOR TO THE START OF CONSTRUCTION. THESE ARE TO BE MAINTAINED UNTIL THE FINAL PAVEMENT SURFACING AND LANDSCAPING AREAS ARE ESTABLISHED.
5. CLEAR, CUT, GRUB AND DISPOSE OF DEBRIS IN APPROVED FACILITIES. THIS INCLUDES ANY REQUIRED DEMOLITION OF EXISTING STRUCTURES, UTILITIES, ETC.
6. CONSTRUCT AND/OR INSTALL TEMPORARY OR PERMANENT SEDIMENT AND/OR DETENTION BASIN(S) AS REQUIRED. THESE FACILITIES SHALL BE INSTALLED AND STABILIZED PRIOR TO DIRECTING RUN-OFF TO THEM.
7. STRIP LOAM AND PAVEMENT, OR RECLAIM EXISTING PAVEMENT WITHIN LIMITS OF WORK PER THE RECOMMENDATIONS OF THE PROJECT ENGINEER AND STOCKPILE EXCESS MATERIAL. STABILIZE STOCKPILE AS NECESSARY.
8. PERFORM PRELIMINARY SITE GRADING IN ACCORDANCE WITH THE PLANS, INCLUDING THE CONSTRUCTION OF ANY RETAINING WALLS AND SOUND WALLS.
9. INSTALL THE SEWER AND DRAINAGE SYSTEMS FIRST, THEN ANY OTHER UTILITIES IN ACCORDANCE WITH THE PLAN AND DETAILS. ANY CONFLICTS BETWEEN UTILITIES ARE TO BE RESOLVED WITH THE INVOLVEMENT AND APPROVAL OF THE ENGINEER.
10. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
11. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINAGE DITCHES, CHECK DAMS, SEDIMENT TRAPS, ETC., TO PREVENT EROSION ON THE SITE AND PREVENT ANY SILTATION OF ABUTTING WALLS AND/OR PROPERTY.
13. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
14. PAVE ALL ROADWAYS WITH INITIAL 'BASE COURSE'.
15. PERFORM ALL REMAINING SITE CONSTRUCTION (I.E. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
16. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (I.E. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
17. FINISH PAVING ALL ROADWAYS AND PARKING AREAS WITH 'FINISH' COURSE.
18. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
19. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
21. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDING AREAS HAVE BEEN 75%-85% ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE. SMOOTH AND RE-VEGETATE ALL DISTURBED AREAS.
22. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
23. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
24. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
25. UPON COMPLETION OF CONSTRUCTION, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ANY RELEVANT PERMITTING AGENCIES THAT THE CONSTRUCTION HAS BEEN FINISHED IN A SATISFACTORY MANNER.

Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS NOTED	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		
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8	8/25/21	REVISIONS PER CITY REVIEW	LAZ
7	7/20/21	REVISIONS PER CITY REVIEW	LAZ
6	6/22/21	REVISIONS PER CITY REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
REV.	DATE	REVISION	BY

J/B

Jones & Beach Engineers, Inc.

Designed and Produced in NH

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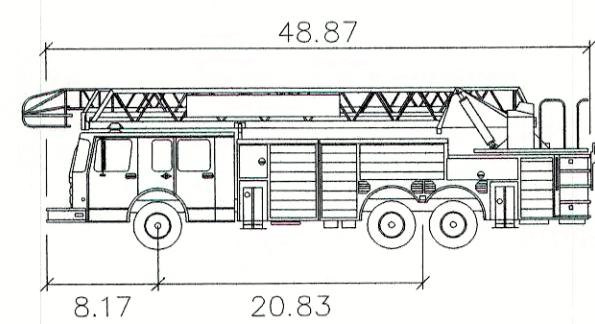
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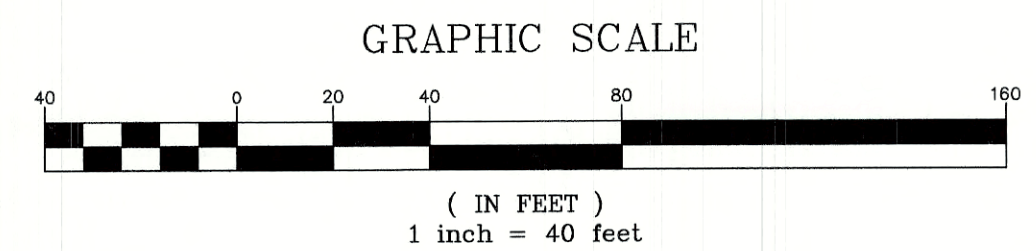
Plan Name:	EROSION AND SEDIMENT CONTROL DETAILS
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.	E1
SHEET 20 OF 22 JBE PROJECT NO. 20737	





Portsmouth Fire Truck	
	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



Design: JAC	Draft: LAZ	Date: 3/3/21
Checked: JAC	Scale: AS SHOWN	Project No.: 20737
Drawing Name: 20737-PLAN.dwg		
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8	8/25/21	REVISIONS PER CITY REVIEW	LAZ
7	7/20/21	REVISIONS PER CITY REVIEW	LAZ
6	6/22/21	REVISIONS PER CITY REVIEW	LAZ
5	5/5/21	REVISIONS	LAZ
4	3/18/21	ADDED DETAIL	LAZ
REV.	DATE	REVISION	BY

**J/B** Jones & Beach Engineers, Inc.

85 Portsmouth Ave.  
PO Box 219  
Stratham, NH 03885

Designed and Produced in NH  
*Civil Engineering Services*  
603-772-4746  
FAX: 603-772-0227  
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	TRUCK TURNING PLAN
Project:	3400 LAFAYETTE ROAD PORTSMOUTH, NH
Owner of Record:	RICCI CONSTRUCTION CO., INC. 225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 1930 PG 0229

DRAWING No.

**T1**

SHEET 21 OF 22  
JBE PROJECT NO. 20737







NOTE

1. SEE DETAIL SHEET FOR LANDSCAPE RELATED NOTES AND DETAILS.

LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS	GROWTH HABIT
SHADE TREES					
	9	ACER RUBRUM 'REDPOINTE' **REDPOINTE RED MAPLE	2 1/2" TO 3" CAL.	B&B	PYRAMIDAL
	8	ACER SACCHARUM 'COMMEMORATION' **COMMEMORATION SUGAR MAPLE	3" TO 3 1/2" CAL.	B&B	ROUNDED
	12	MAACKIA AMURENSIS AMUR MAACKIA	2 1/2" TO 3" CAL.	B&B	ROUNDED
	7	NYSSA SYLVATICA *BLACK GUM	2 1/2" TO 3" CAL.	B&B	PYRAMIDAL
	13	QUERCUS P. 'GREEN PILLAR' **GREEN PILLAR GREEN OAK	2 1/2" TO 3" CAL.	B&B	COLUMNAR
	4	ULMUS AMERICANA 'VALLEY FORGE' **VALLEY FORGE AMERICAN ELM	2 1/2" TO 3" CAL.	B&B	SPREADING-VASE
EVERGREEN TREES					
	9	ABIES BALSAMAE *BALSAM FIR	6' TO 7'	B&B	PYRAMIDAL
	28	JUNIPERUS VIRGINIANA *EASTERN RED CEDAR	6' TO 7'	B&B	UPRIGHT-PYRAMIDAL
	18	PICEA GLAUCA *WHITE SPRUCE	7' TO 8'	B&B	PYRAMIDAL
	3	PINUS STROBUS *WHITE PINE	6' TO 7'	B&B	PYRAMIDAL
DECIDUOUS SHRUB					
	16	AMELANCHEIR ALNIFOLIA 'REGENT' *REGENT SERVICEBERRY	5 GAL.	CONT.	ROUNDED
	4	CLETHRA ALNIFOLIA 'COMPACTA' **COMPACT SUMMERSWEET	7 GAL.	CONT.	ROUNDED
	9	CORNUS SERICEA 'ARCTIC FIRE' **ARCTIC FIRE RED-OSIER DOGWOOD	7 GAL.	CONT.	ROUNDED
	20	FORSYTHIA 'GOLD TIDE' GOLD TIDE FORSYTHIA	3 GAL.	CONT.	LOW-SPREADING
	32	HYDRANGEA ARBORESCENS 'INCREDIBALL' INCREDIBALL SMOOTH HYDRANGEA	5 GAL.	CONT.	ROUNDED
	9	PHYSOCARPUS O. 'BURGUNDY CANDY' **BURGUNDY CANDY NINEBARK	2 GAL.	CONT.	ROUNDED
	14	VIBURNUM P.T. 'SUMMER SNOWFLAKE' SUMMER SNOWFLAKE VIBURNUM	3' TO 4'	B&B	ROUNDED
EVERGREEN SHRUB					
	31	AZALEA 'GIRARD'S CRIMSON' GIRARD'S CRIMSON AZALEA	3 GAL.	CONT.	ROUNDED
	16	RHODODENDRON 'ROSEUM PINK' **ROSEUM PINK RHODODENDRON	7 GAL.	CONT.	ROUNDED
	9	ILEX GLABRA 'COMPACTA' **COMPACT INKBERRY	3 GAL.	CONT.	ROUNDED
	49	JUNIPERUS CHINENSIS 'SEAGREEN' SEAGREEN JUNIPER	3 GAL.	CONT.	ARCHING
	7	JUNIPERUS H. 'BAR HARBOR' *BAR HARBOR JUNIPER	3 GAL.	CONT.	LOW-SPREADING
	11	PINUS M. 'MOPS' MOPS MUGO PINE	3 GAL.	CONT.	ROUNDED
	73	THUJA O. NIGRA *DARK AMERICAN ARBORVITAE	5' TO 6'	B&B	UPRIGHT-PYRAMIDAL
GRASSES					
	36	PANICUM VIRGATUM 'CLOUD NINE' **CLOUD NINE SWITCH GRASS	3 GAL.	CONT.	UPRIGHT

\*NATIVE, \*\* IMPROVED NATIVE  
NOTE: ALL PLANTS CONTAINED IN LEGEND HAVE BEEN LOCATED ON SITE TO REFLECT A PROPER GROWING ENVIRONMENT AND MEET THE HARDINESS ZONE OF 6a AS DETERMINED BY THE U.S. DEPT. OF AGRICULTURE.

SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

LANDSCAPE PLAN

3400 LAFAYETTE ROAD  
PORTSMOUTH, NH

OWNED BY  
RICCI CONSTRUCTION CO, INC.

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=60' (11"X17')

SCALE: 1"=30' (22"X34')

MARCH 8, 2021



LAFAYETTE ROAD (U.S. ROUTE 1)

MATCHLINE

NOTES

- THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
- ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
- PLANT TYPES MAY VARY BASED ON AVAILABILITY AND SUPPLY. THIS LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY AND REPRESENTS THE INTENT, BUT PLANT SIZES, SPECIES, AND AMOUNTS MAY VARY.

HORIZONTAL SCALE 1"=30'  
30 15 0 30

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Civil Engineers  
Structural Engineers  
Traffic Engineers  
Land Surveyors  
Landscape Architects  
Scientists

48 Constitution Drive  
Bedford, NH 03110  
Phone (603) 472-4488  
Fax (603) 472-9747  
www.tfmoran.com

45407.110

DR ARJ FB  
CK MSK CADFILE

45407-110 LANDSCAPE

LS-1

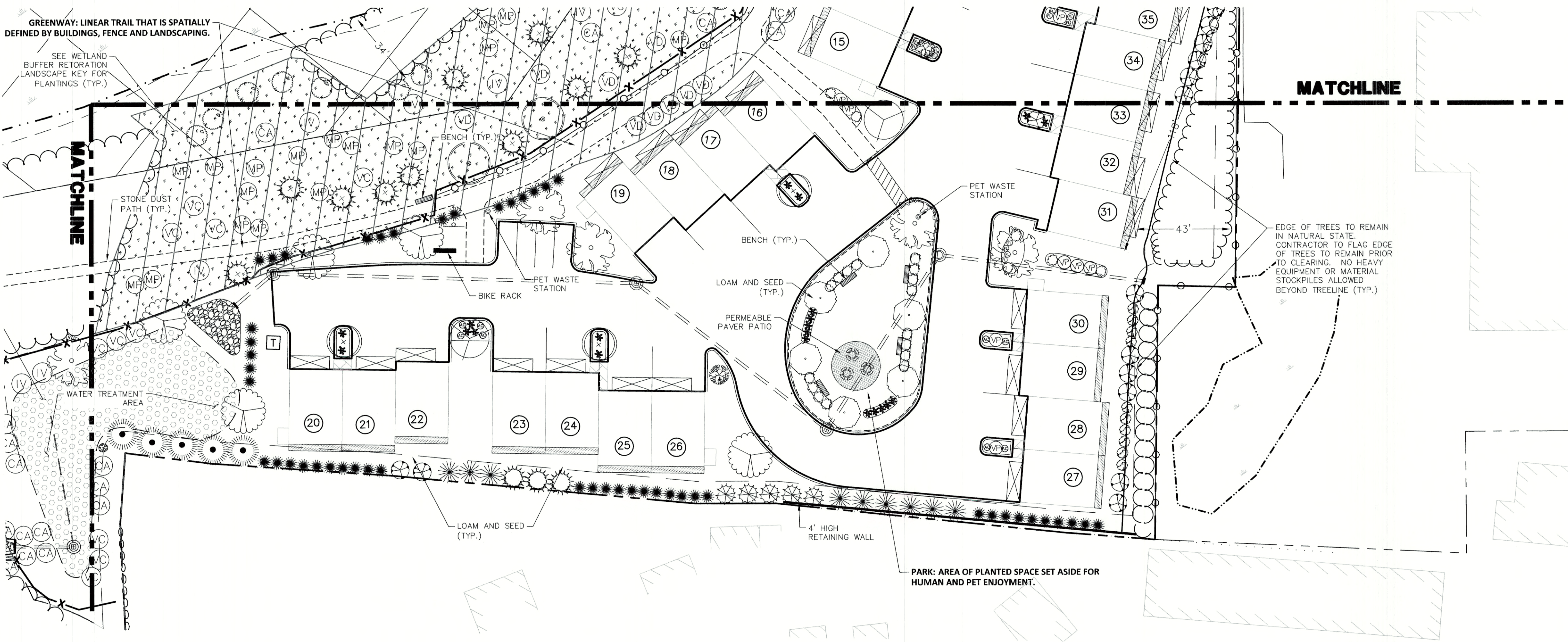


NOTE

1. SEE DETAIL SHEET FOR LANDSCAPE RELATED NOTES AND DETAILS.

GREENWAY: LINEAR TRAIL THAT IS SPATIALLY DEFINED BY BUILDINGS, FENCE AND LANDSCAPING.

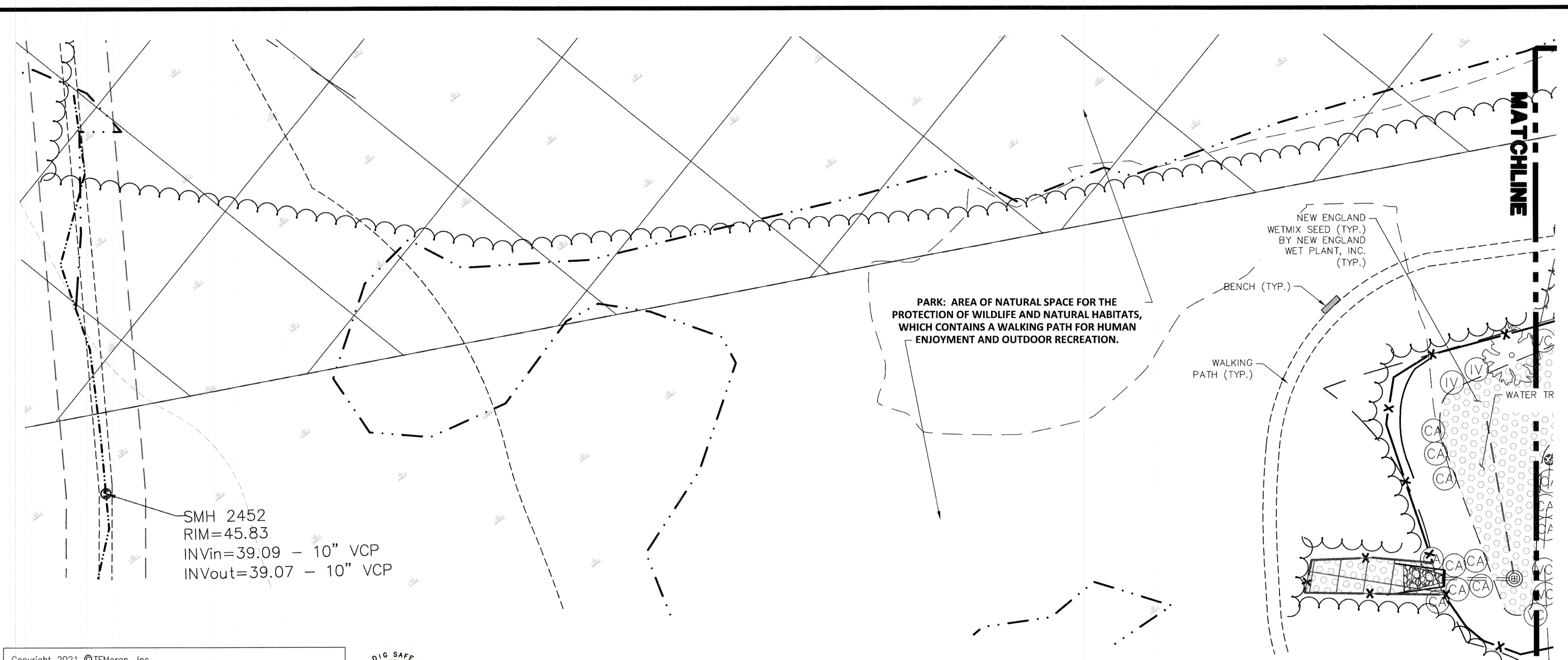
SEE WETLAND BUFFER RESTORATION LANDSCAPE KEY FOR PLANTINGS (TYP.)



WETLAND BUFFER RESTORATION & STORMWATER TREATMENT KEY

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS	GROWTH HABIT
	6	QUERCUS ALBA *WHITE OAK	2" TO 2 1/2" CAL.	B&B	UP-RIGHT BROAD
	14	RHUS TYPHINA *STAGHORN SUMAC	3 GAL.	CONT.	CLUMPING
	46	CORNUS AMOMUM *SILKY DOGWOOD	3 GAL.	CONT.	ROUNDED
	27	MYRICA PENSYLVANICA *NORTHERN BAYBERRY	3 GAL.	CONT.	ROUNDED
	32	VIBURNUM DENTATUM *ARROWWOOD VIBURNUM	3 GAL.	CONT.	ROUNDED
	11/3	ILEX VERTICILLATA *WINTERBERRY/**JIM DANDY WINTERBERRY	3 GAL.	CONT.	ROUNDED
	17	VACCINIUM CORYMBOSUM *HIGHBUSH BLUEBERRY	3 GAL.	CONT.	ROUNDED
	14	PINUS STROBUS *WHITE PINE	4' TO 5'	B&B	PYRAMIDAL
	35,700± SF	*NEW ENGLAND CONSERVATION/WILDLIFE MIX NEW ENGLAND WETLAND PLANT INC.	BAGS	BULK LBS	
	18,560± SF	*NEW ENGLAND WETMIX NEW ENGLAND WETLAND PLANT INC.	BAGS	BULK LBS	

\*NATIVE, \*\* IMPROVED NATIVE



SMH 2452  
RIM=45.83  
INVin=39.09 - 10" VCP  
INVout=39.07 - 10" VCP

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HORIZONTAL SCALE 1"=30'  
30 15 0 30

REV	DATE	DESCRIPTION	DR	CK
4	8/23/2021	REVISIONS CONSERVATION COMMISSION COMMENTS	MSK	JCC
3	7/27/2021	REVISE PER SITE LAYOUT REVISIONS	MSK	JCC
2	6/18/2021	REVISE PER SITE LAYOUT REVISIONS	MSK	JCC
1	5/13/2021	REVISE PER GRADING & UTILITY LAYOUT	MSK	JCC

SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

LANDSCAPE PLAN

3400 LAFAYETTE ROAD  
PORTSMOUTH, NH

OWNED BY

RICCI CONSTRUCTION CO, INC.

PREPARED FOR

GREEN & COMPANY REAL ESTATE

1"=60' (11"X17")

SCALE: 1"=30' (22"X34')

MARCH 8, 2021



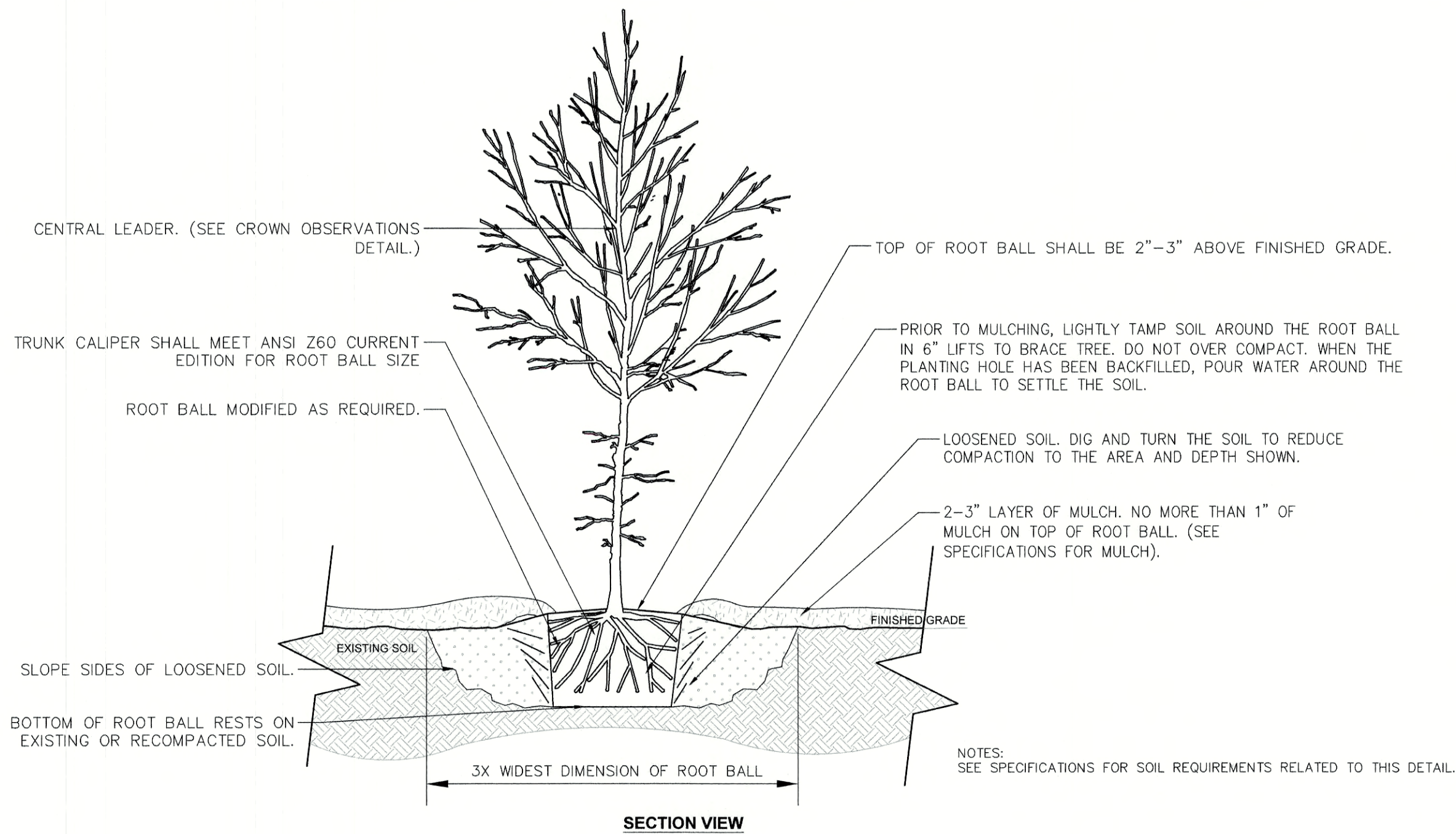
Civil Engineers  
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F	45407.110	DR	ARJ	FB	-	LS-2
RE		CK	MSK	CADFILE	45407-110 LANDSCAPE	

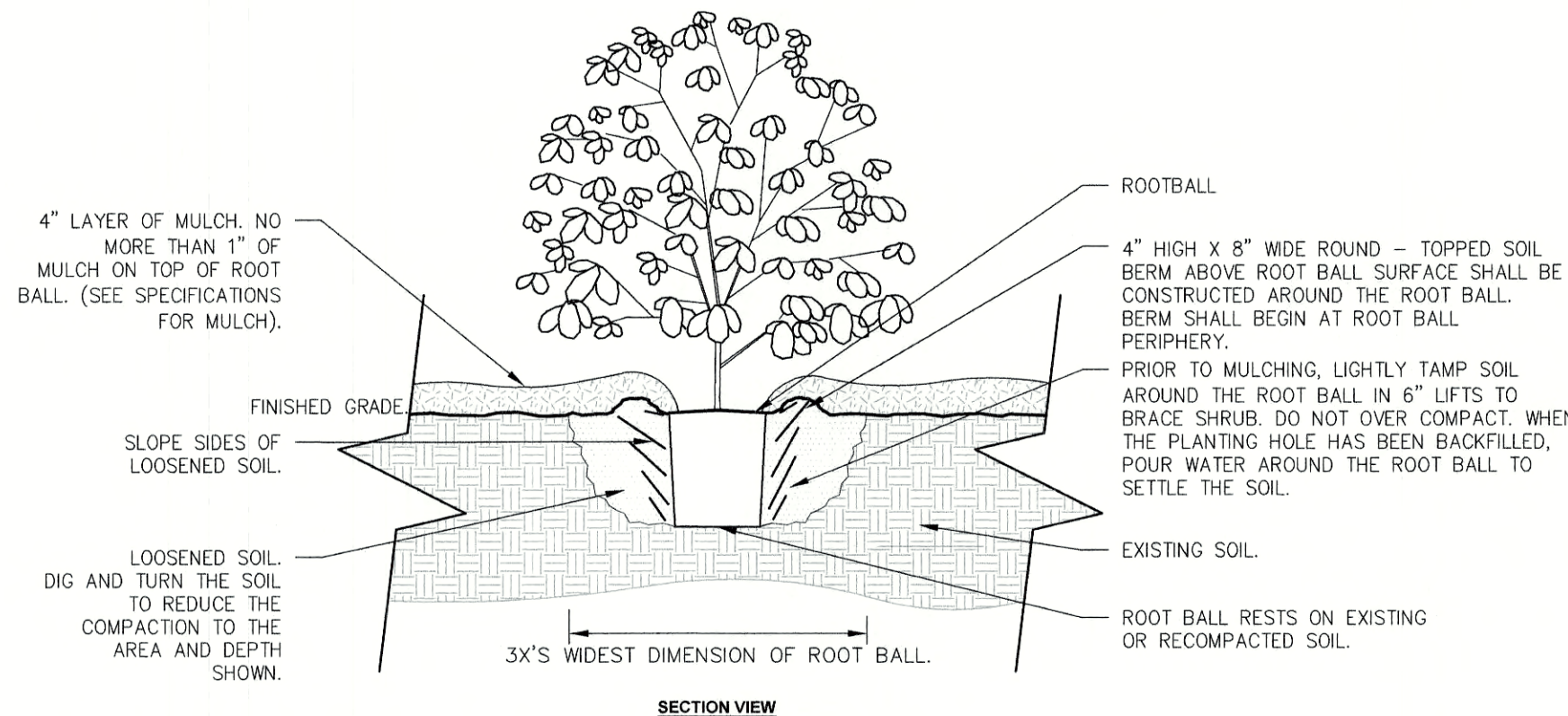


Aug 24, 2021 - 1:35pm  
F:\MSC Projects\45407 - Portsmouth\45407-110 - Green and Co - 3400 Lafayette Rd\Design\PRODUCTION DRAWINGS\45407-110 Landscape.dwg



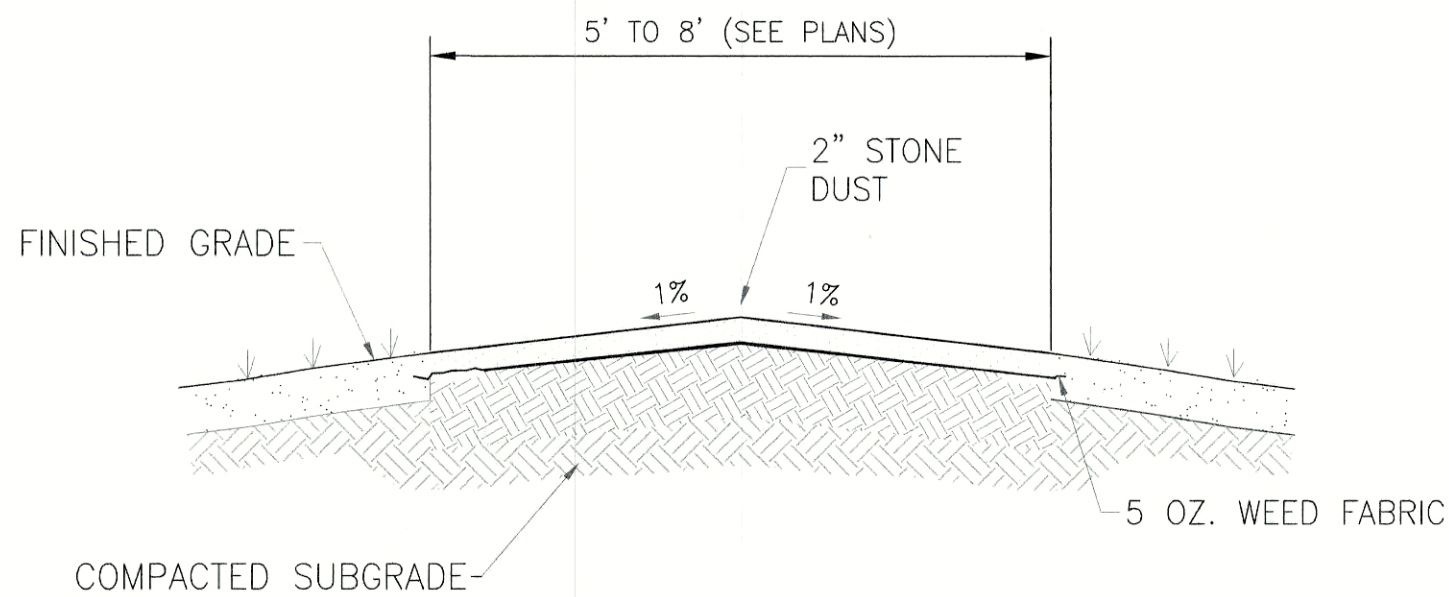
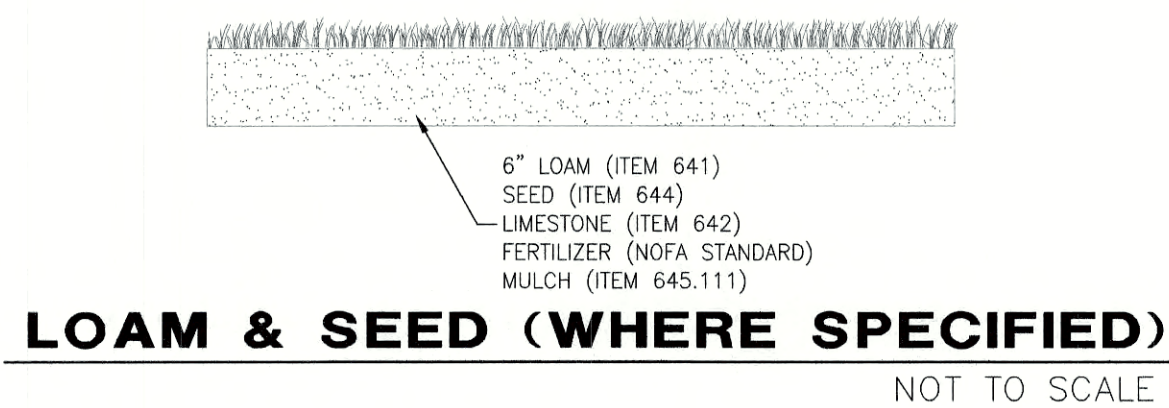
## TREE WITH BERM

NOT TO SCALE



## SHRUB PLANTING

NOT TO SCALE



## LANDSCAPE NOTES

- CONTRACTOR WILL LOCATE, VERIFY AND MARK ALL EXISTING AND NEWLY INSTALLED UNDERGROUND UTILITIES PRIOR TO ANY LAWNWORK OR PLANTING. ANY CONFLICTS WHICH MIGHT OCCUR BETWEEN PLANTING AND UTILITIES WILL IMMEDIATELY BE REPORTED TO THE LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE, SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
- CONTRACTOR WILL FURNISH AND PLANT ALL PLANTS IN QUANTITIES AS SHOWN ON THIS PLAN. IN CASES OF DISCREPANCY BETWEEN PLAN AND LIST CLARIFY WITH LANDSCAPE ARCHITECT PRIOR TO PLACING PURCHASE ORDER AND AGAIN PRIOR TO PLANTING.
- SEE PLANTING DETAILS AND IF INCLUDED, SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE THE APPROPRIATE ARRANGEMENTS TO PROVIDE ALL PLANTS AND MATERIALS TO ACCOMMODATE PLANTING WITHIN THE TIME ALLOWED BY THE CONSTRUCTION SCHEDULE.
- PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 15TH UNLESS OTHERWISE NOTED IN SPECIFICATIONS. THERE WILL BE NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISIONS ARE MADE FOR DROUGHT BY PROVIDING ADDITIONAL WATERING.
- ALL PLANTS WILL BE NURSERY GROWN.
- PLANTS WILL BE IN ACCORDANCE, AT A MINIMUM, WITH CURRENT EDITION OF "AMERICAN STANDARDS FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN HORTICULTURE INDUSTRY ASSOCIATION.
- TREES WILL BE PRUNED IN ACCORDANCE WITH THE LATEST EDITION OF ANSI A300 PART 1, "TREE, SHRUB AND OTHER WOODY PLANT MAINTENANCE STANDARD PRACTICES".
- PLANTS MATERIAL IS SUBJECT TO APPROVAL / REJECTION BY THE LANDSCAPE ARCHITECT AT THE SITE AND AT THE NURSERY.
- ALL PLANTS WILL BE MOVED WITH ROOT SYSTEMS AS SOLID UNITS AND WITH BALLS OF EARTH FIRMLY WRAPPED WITH BURLAP. NO PLANT WILL BE ACCEPTED WHEN BALL OF EARTH SURROUNDING ITS ROOTS HAS BEEN BADLY CRACKED OR BROKEN BEFORE PLANTING. ALL PLANTS THAT CANNOT BE PLANTED AT ONCE WILL BE HEeled-IN BY SETTING IN THE GROUND AND COVERING THE BALLS WITH SOIL AND THEN WATERING. DURING TRANSPORT, ALL PLANT MATERIALS WILL BE WRAPPED WITH WIND PROOF COVERING.
- NEWLY PLANTED MATERIAL WILL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL GRADE OF THE PLANT PRIOR TO DIGGING.
- MULCH FOR PLANTED AREAS (NOT INCLUDING RAIN GARDENS) WILL BE AGED SHREDDED PINE BARK, PARTIALLY DECOMPOSED, DARK BROWN IN COLOR AND FREE OF WOOD CHIPS UNLESS OTHERWISE SHOWN.
- PLANT MATERIAL WILL BE LOCATED OUTSIDE BUILDING DRIPLINES AND ROOF VALLEY POINTS OF CONCENTRATION TO PREVENT DAMAGE TO PLANTS. CLARIFY DISCREPANCIES WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED, WILL RECEIVE SIX (6) INCH LOAM AND SEED AT THE DIRECTION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
- ALL PLANT GROUPINGS WILL BE IN MULCH BEDS UNLESS OTHERWISE SPECIFIED OR NOTED ON PLANS. WHERE MULCHED PLANT BED ADJUTS LAWN, PROVIDE TURF CUT EDGE.
- ALL PLANT BEDS WILL INTERSECT WITH PAVEMENT AT 90 DEGREES UNLESS OTHERWISE NOTED ON PLANS.
- ALL PLANT BED EDGES WILL BE SMOOTH AND CONSISTENT IN LAYOUT OF RADII AND TANGENTS. IRREGULAR, WAVY EDGES WILL NOT BE ACCEPTED.

## LANDSCAPE GUARANTEE AND MAINTENANCE NOTES

- CONTRACTOR WILL BE RESPONSIBLE FOR ALL MEANS, METHODS AND TECHNIQUES OF WATERING.
- CONTRACTOR WILL BEGIN WATERING IMMEDIATELY AFTER PLANTING. ALL PLANTS WILL BE THOROUGHLY WATERED TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS WILL BE WATERED WEEKLY, OR MORE OFTEN, IF NECESSARY DURING THE FIRST GROWING SEASON BUT NOT LESS THAN ONE YEAR FROM TIME OF INSTALLATION.
- WATER ALL LAWNS AS REQUIRED. DO NOT LET NEWLY PLANTED LAWNS DRY OUT DURING THE FIRST FOUR WEEKS MINIMUM.
- ALL NEW LAWNS WILL BE MAINTAINED AND MOWED A MINIMUM THREE (3) TIMES BEFORE REQUESTING REVIEW BY LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE FOR ACCEPTANCE. MAINTENANCE AND MOWING WILL CONTINUE UNTIL ACCEPTED BY LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE IS ISSUED IN WRITING.
- THE CONTRACTOR WILL MAINTAIN AND GUARANTEE ALL PLANTINGS TO BE IN GOOD HEALTHY, FLOURISHING AND ACCEPTABLE CONDITION FOR A PERIOD OF ONE (1) YEAR BEGINNING AT THE DATE OF ACCEPTANCE BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE. ALL GRASSES, TREES AND SHRUBS THAT, IN THE OPINION OF THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE SHOWING LESS THAN 80% HEALTHY GROWTH AT THE END OF ONE (1) YEAR PERIOD WILL BE IMMEDIATELY REPLACED BY THE CONTRACTOR.
- DECIDUOUS PLANT MATERIAL INSTALLED AFTER SEPTEMBER 30 AND BEFORE APRIL 15 WILL NOT BE REVIEWED THAT SEASON FOR ACCEPTANCE DUE TO STAGE OF LEAF PHYSIOLOGY. THIS PLANT MATERIAL WILL NOT BE REVIEWED UNTIL THE FOLLOWING GROWING SEASON. GUARANTEE PERIOD WILL BEGIN ONLY AFTER ACCEPTANCE BY LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE.
- EVERGREEN PLANT MATERIAL INSTALLED AFTER OCTOBER 30 AND BEFORE APRIL 15 WILL NOT BE REVIEWED THAT SEASON FOR ACCEPTANCE DUE TO END OF GROWTH SEASON. THIS PLANT MATERIAL WILL NOT BE REVIEWED UNTIL THE FOLLOWING GROWING SEASON. GUARANTEE PERIOD WILL BEGIN ONLY AFTER ACCEPTANCE BY LANDSCAPE ARCHITECT OR OWNERS' REPRESENTATIVE.

## INVASIVE PLANT NOTES

- EXISTING NON-NATIVE, INVASIVE PLANT SPECIES WILL BE IDENTIFIED, REMOVED, DESTROYED AND LEGALLY DISPOSED OF OFF-SITE IN ACCORDANCE WITH THE LATEST UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION METHODS OF DISPOSING NON-NATIVE INVASIVE PLANTS. SEE "MANAGE AND CONTROL INVASIVES" AND PROPERLY DISPOSE OF INVASIVE PLANTS".

## PORTSMOUTH NOTES

- THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNER'S WILL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS INDICATED ON THESE PLANS.
- ALL REQUIRED PLANT MATERIAL, INCLUDING WETLAND BUFFER PLANTINGS, SHALL BE TENDED AND MAINTAINED IN A HEALTHY GROWING CONDITION, REPLACED WHEN NECESSARY, AND KEPT FREE OF REFUSE AND DEBRIS. ALL LANDSCAPING AND MAINTENANCE THEREOF SHALL FOLLOW THE NOFA (NORTHEAST ORGANIC FARMING ASSOCIATION) STANDARDS FOR ORGANIC LAND CARE.
- ALL REQUIRED FENCES AND WALLS WILL BE MAINTAINED IN GOOD REPAIR.
- THE PROPERTY OWNER WILL 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.
- ALL IMPROVEMENTS SHOWN ON THIS PLAN WILL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THIS PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES WILL BE MADE TO THIS PLAN WITHOUT THE WRITTEN APPROVAL OF THE PORTSMOUTH PLANNING BOARD OR PLANNING DIRECTOR.
- THE LANDSCAPE PLAN WILL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

## SEEDING NOTES

- SLOPES UP TO AND INCLUDING 3:1 GRADE, SEED WILL BE NEW ENGLAND EROSION CONTROL & RESTORATION MIX PER NEW ENGLAND WETLANDS PLANTS INC., AMHERST, MA.
- SLOPES STEEPER THAN 3:1 GRADE, SEED WILL BE NEW ENGLAND EROSION CONTROL & RESTORATION MIX PER NEW ENGLAND WETLANDS PLANTS INC., AMHERST, MA. SEE CIVIL FOR ADDITIONAL EROSION CONTROL MEASURES.
- GENERAL SEED WILL BE NHDOT SPECIFICATION SECTION 644, TABLE 644-1-PARK SEED TYPE 15, INCLUDING NOTES TO TABLE 1, 2 & 3.

## SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

**LANDSCAPE DETAIL SHEET**

**3400 LAFAYETTE ROAD**

**PORTSMOUTH, NH**

OWNED BY

**RICCI CONSTRUCTION CO, INC.**

PREPARED FOR

**GREEN & COMPANY REAL ESTATE**

**SCALE: NOT TO SCALE**

**MARCH 8, 2021**



Civil Engineers  
Structural Engineers  
Traffic Engineers  
Land Surveyors  
Landscape Architects  
Scientists

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F I E	45407.110	DR	ARJ	FB	-	45407-110 LANDSCAPE	LS-3

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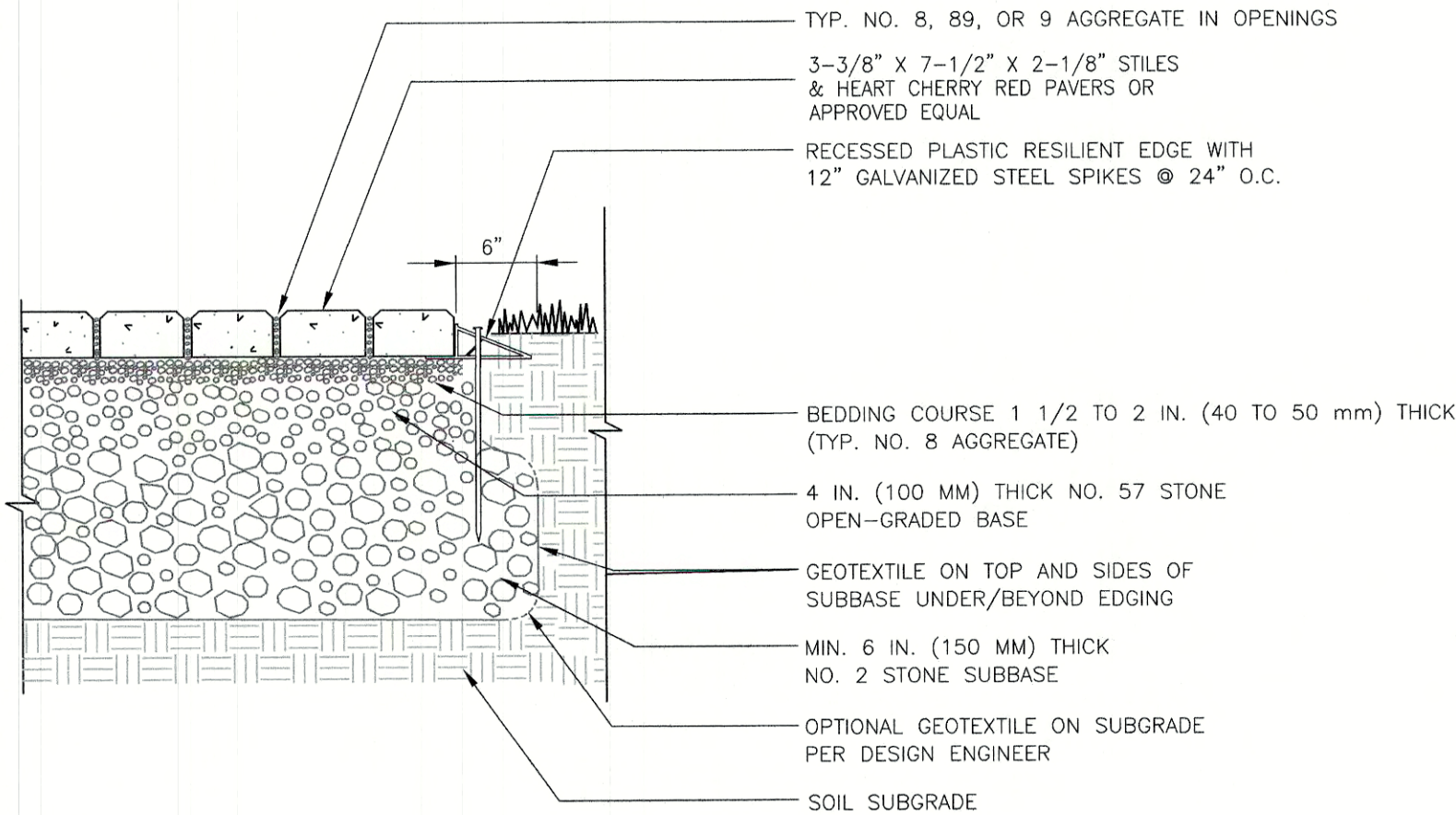
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Aug 24, 2021 - 8:47am F:\MISC Projects\45407 - Portsmouth\45407-110 - Green and Co. - 3400 Lafayette Rd\Design\PRODUCTION DRAWINGS\45407-110 Landscape.dwg



## PERMEABLE PAVER DETAIL

NOT TO SCALE

KIRBYBUILT  
222 STATE ST.  
BATAVIA, IL 60510  
TOLL FREE: 1-855-888-7461  
PHONE: (855) 888-7461  
FAX: (630) 879-8687  
www.kirbybuilt.com

☐ SELECT DESIRED COLOR:

- ☐ CEDAR    ☐ BLACK  
☐ GREEN    ☐ BROWN  
☐ DESERT TAN    ☐ GRAY

☐ SELECT DESIRED FRAME COLOR:

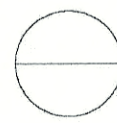
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☐ GREEN    ☐ BROWN  
☐ DESERT TAN    ☐ GRAY

☐ SELECT DESIRED MOUNT:

- ☐ PORTABLE

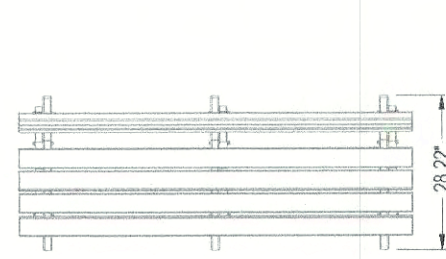
NOTES:

1. ALL MATERIAL RECYCLED HDPE.
2. ALL HARDWARE STAINLESS STEEL.
3. SHIPPED PARTIALLY ASSEMBLED.
4. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. DO NOT SCALE DRAWING.
6. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
7. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
8. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT WWW.CADDDETAILS.COM/INFO AND ENTER REFERENCE NUMBER 1177-059.

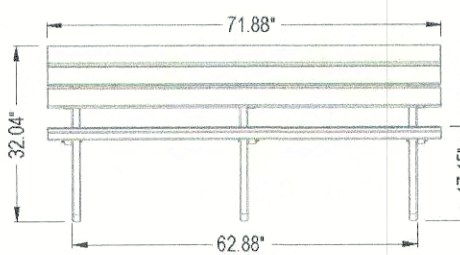


LEGEND A-FRAME BENCHES

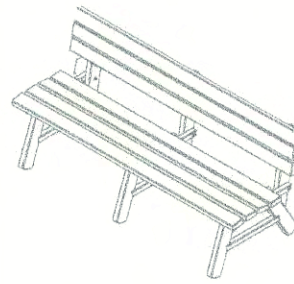
ABC1020 - 6' LEGEND A-FRAME BENCH  
OR APPROVED EQUAL



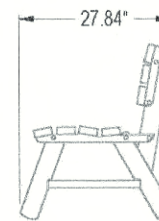
TOP VIEW



FRONT VIEW



ISOMETRIC VIEW



SIDE VIEW

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☐ SELECT DESIRED COLOR:

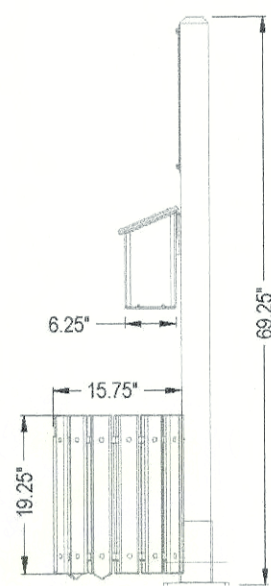
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☐ GREEN    ☐ BROWN  
☐ DESERT TAN    ☐ GRAY

☐ SELECT DESIRED MOUNT:

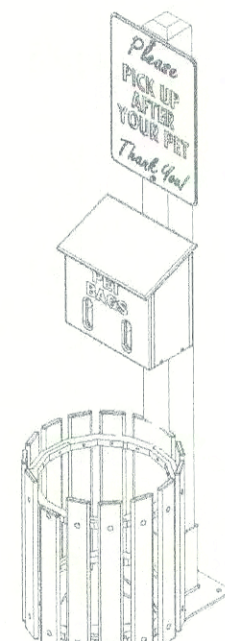
- ☐ SURFACE  
☐ IN-GROUND



FRONT VIEW



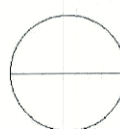
SIDE VIEW



ISOMETRIC VIEW

NOTES:

1. ALL MATERIAL RECYCLED HDPE.
2. ALL HARDWARE STAINLESS STEEL.
3. SHIPPED PARTIALLY ASSEMBLED.
4. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. DO NOT SCALE DRAWING.
6. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
7. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
8. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT WWW.CADDDETAILS.COM/INFO AND ENTER REFERENCE NUMBER 1177-206.



STANDARD ROLL BAG PET WASTE STATIONS

APW1220/APW1215 - STANDARD ROLL BAG PET WASTE STATION AND SIGN (BAG DISPENSER, 5 GALLON RECEPTACLE, POST, SIGN) - SURFACE MOUNT OR IN-GROUND  
OR APPROVED EQUAL



*Michael S. Krzeminski*  
8/25/2021

## SITE DEVELOPMENT PLANS

TAX MAP 297 LOT 11

**LANDSCAPE DETAIL SHEET**

**3400 LAFAYETTE ROAD  
PORTSMOUTH, NH**

OWNED BY

**RICCI CONSTRUCTION CO, INC.**

PREPARED FOR

**GREEN & COMPANY REAL ESTATE**

SCALE: NOT TO SCALE

MARCH 8, 2021


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48 Constitution Drive, Bedford, N.H. 03110

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This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.



REV	DATE	DESCRIPTION	MSK	JCC	DR	CK
4	8/23/2021	REVISIONS CONSERVATION COMMISSION COMMENTS	MSK	JCC		
2	6/18/2021	REVISE PER SITE LAYOUT REVISIONS	MSK	JCC		

		Civil Engineers Structural Engineers Traffic Engineers Land Surveyors Landscape Architects Scientists	48 Constitution Drive Bedford, NH 03110 Phone (603) 472-4488 Fax (603) 472-9747 <a href="http://www.tfmoran.com">www.tfmoran.com</a>
REF	45407.110	DR ARJ FB CK MSK CADFILE	-
		45407-110 LANDSCAPE	
			LS-4



**MEMORANDUM**

Ref: 2105A

To: Michael Green  
Green & Company

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Residential Development  
Portsmouth, New Hampshire

Date: May 17, 2021

---

As requested, Pernaw & Company, Inc. has prepared this “*Trip Generation*” memorandum regarding your proposed residential development project located at 3400 Lafayette Road in Portsmouth, New Hampshire. The purpose of this memorandum is to summarize our research of available traffic count data and the results of our trip generation analyses. To summarize:

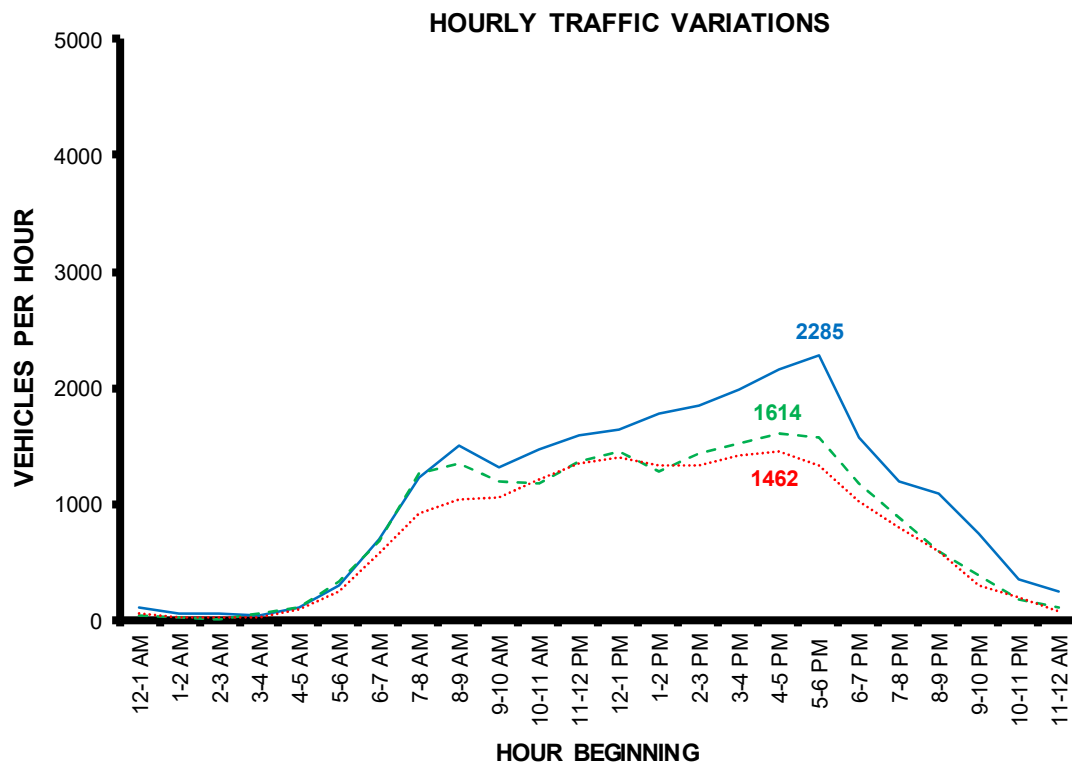
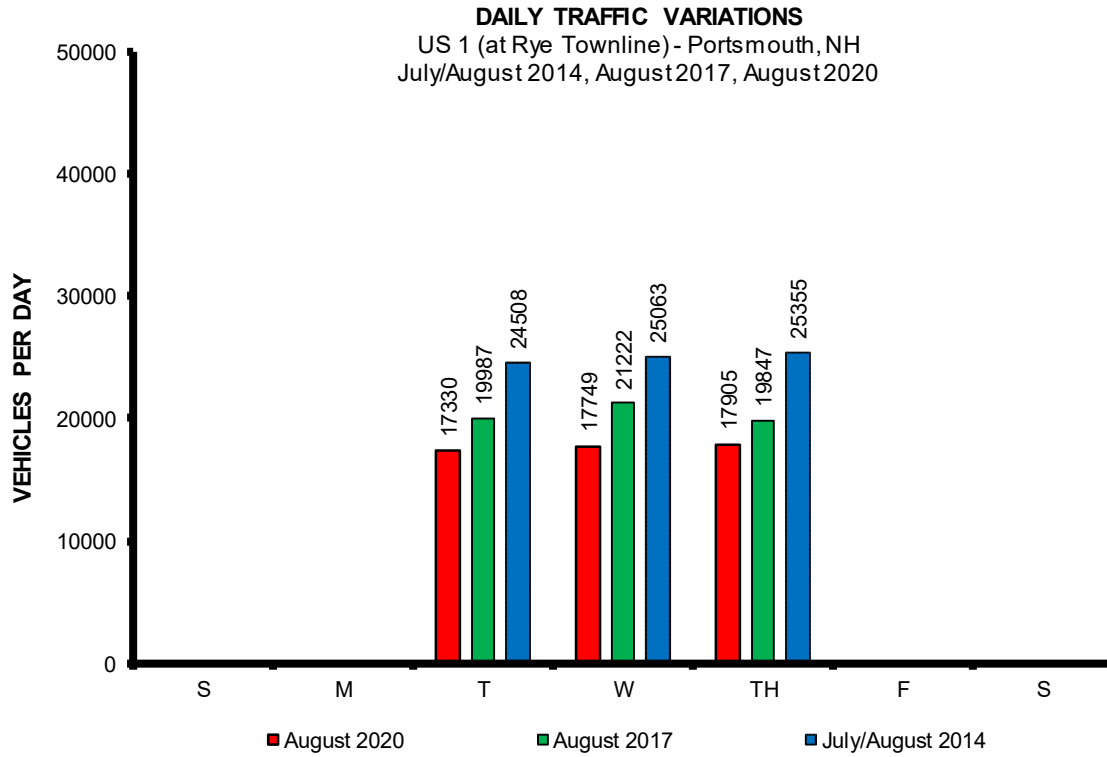
Proposed Development – The plan entitled: “*Site Plan*” prepared by Jones & Beach Engineers, Inc., Drawing Number C2, Sheet 7 of 25, dated 3/3/21 (revised 5/5/21) shows the location of the subject site, the proposed residential townhouse condominiums, and the internal roadway layout (see Attachment 1). The proposed residential development involves the construction of 50 multi-family dwelling units in 13 separate buildings. Vehicular access to the residential development is proposed via a two-way site access road that will intersect the west side of Lafayette Road approximately 150-feet south of the Weatherstone Condominium driveway.

Existing Conditions – Lafayette Road extends in a general north-south direction along the site frontage and provides access to Rye and Hampton to the south, and Maine to the north. This roadway provides one travel lane in each direction with a center turn lane. The speed limit is posted at 45 mph in this area.

Existing Traffic Volumes – According to a short-term NHDOT traffic count conducted on Lafayette Road (at Rye Townline) in August 2020, this roadway section carried an estimated Annual Average Daily Traffic (AADT) volume of approximately 15,268 vehicles per day (vpd) in 2020, down from 18,297 vpd in 2019. This count station is located approximately 0.4 mile south of the subject site.

The hourly data indicates that weekday volumes typically reached peak levels from 3:00 to 4:00 PM, 4:00 to 5:00 PM or 5:00 to 6:00 PM. The diagrams on Page 2 summarize the daily and hourly variations in traffic demand over several years (2014, 2017 and 2020) at this location (see Attachments 2 - 5). When compared with previous count data, it is obvious that the 2020 traffic levels on Lafayette Road have been affected by the COVID-19 pandemic.







Trip Generation - To estimate the quantity of vehicle-trips that will be produced by the proposed residential development, the standard trip generation rates and equations published by the Institute of Transportation Engineers<sup>1</sup> (ITE) were considered. More specifically, the trip generation equations for Land Use Code 221 - Multifamily Housing (Mid-Rise) were utilized, and the number of dwelling units was used as the independent variable.

<b>Table 1</b>	<b>Trip Generation Summary 50 Multi-Family Dwelling Units<sup>1</sup></b>
----------------	---

	Average Weekday Volumes
Weekday Total (24 hours)	
Entering	136 veh
Exiting	<u>136 veh</u>
Total	272 trips
Weekday AM Peak Hour	
Entering	4 veh
Exiting	<u>13 veh</u>
Total	17 trips
Weekday PM Peak Hour	
Entering	<b>14 veh</b>
Exiting	<b><u>9 veh</u></b>
Total	<b>23 trips</b>

<sup>1</sup> LUC 221- Multifamily Housing (Mid-Rise) - Trip Equation Method

Based upon ITE Land Use Code 221, the overall development is expected to generate approximately 17 vehicle-trips (4 arrivals, 13 departures) during the AM peak hour period, and 23 vehicle-trips (14 arrivals, 9 departures) during the PM peak hour period, on an average weekday basis (see Attachment 6).

<sup>1</sup> Institute of Transportation Engineers, *Trip Generation*, 10<sup>th</sup> Edition (Washington, D.C., 2017)

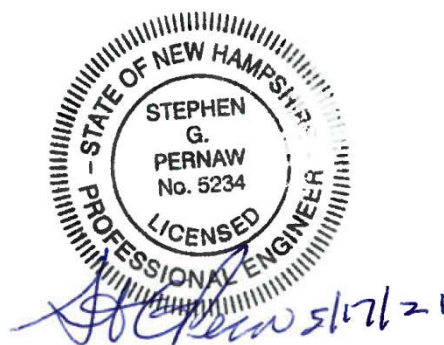


## Findings & Conclusions

1. The NHDOT count station that is located on Lafayette Road approximately 0.4 miles south of the subject site (at Rye Townline) revealed that this section of Lafayette Road carried an estimated Annual Average Daily Traffic volume of approximately 15,268 vehicles per day in 2020, down from 18,297 vehicles per day in 2019. The highest hourly traffic volumes typically occurred in the early evening from 3:00 to 4:00 PM, 4:00 to 5:00 PM or 5:00 to 6:00 PM on weekdays. When compared to previous count data, it is obvious that the current traffic levels on Lafayette Road have been affected by the COVID-19 pandemic.
2. The proposed residential development is expected to generate approximately 17 vehicle-trips (4 arrivals, 13 departures) during the morning peak hour, and 23 vehicle-trips (14 arrivals, 9 departures) during the evening peak hour, on an average weekday basis.
3. Development sites that generate fewer than 500 vehicle-trips per day are generally considered to be “low” traffic generators. Based on the daily estimate of 272 vehicle-trips per day (see Table 1), the proposed development is not considered to be a major traffic generator.

The trip generation estimates contained herein are not of sufficient magnitude to significantly alter the prevailing traffic operations on nearby roads and intersections. In fact, random traffic flow from one day to the next accounts for more variability than will result from the proposed residential development. In terms of recommendations, the proposed site access road approach to US1 should operate under stop sign control (MUTCD R1-1), and be delineated with a 12–24-inch white stop line. A short section of 4-inch double-yellow centerline on access road to separate inbound and outbound vehicles is considered optional, but desirable. The design of this intersection should be compatible with a Single-Unit Design Vehicle and local fire apparatus. Clear sight distance triangles should be established looking left and looking right from the access road approach to US1 for safety reasons.

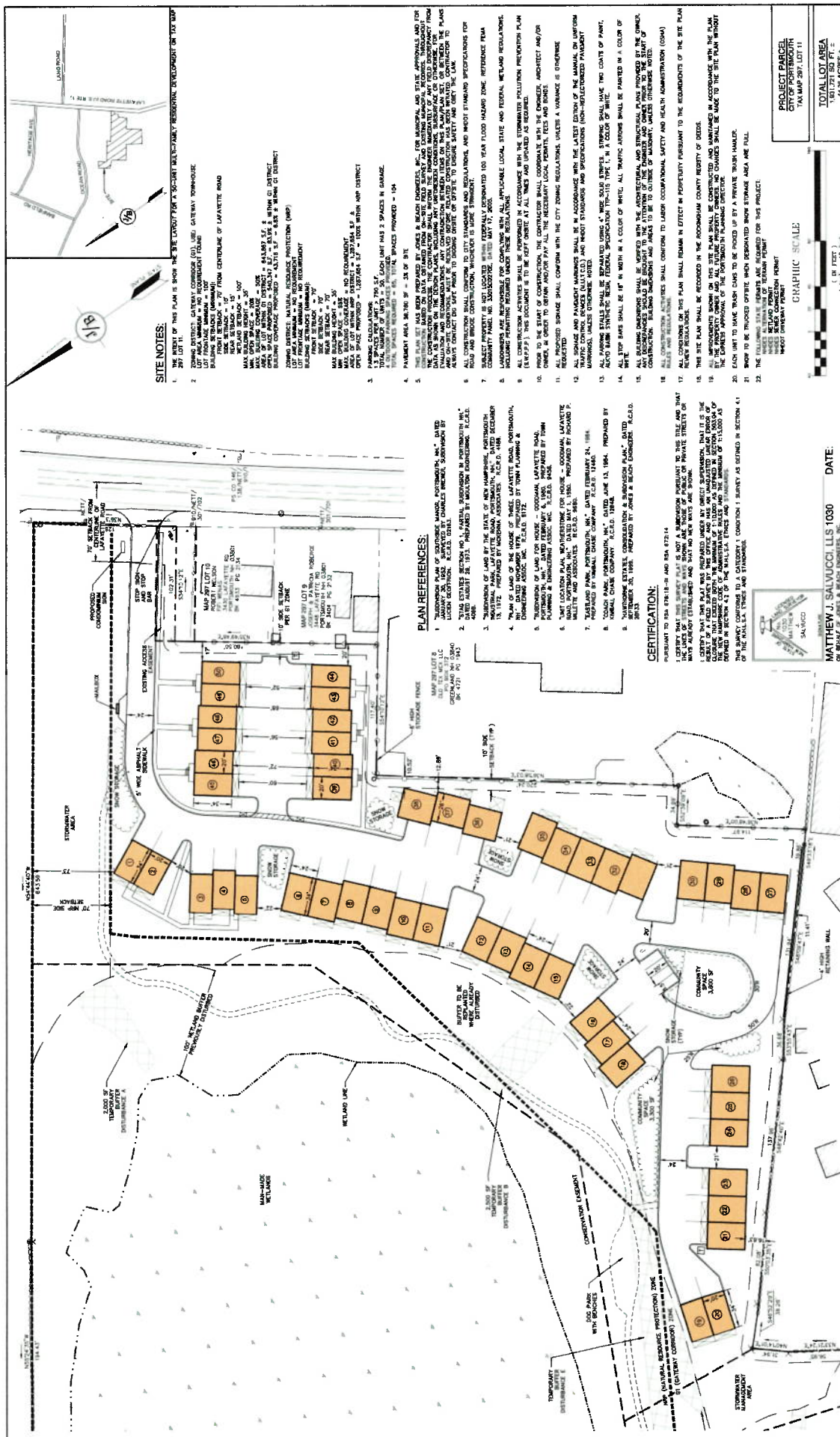
## Attachments





## **A T T A C H M E N T S**





**SITE PLAN**  
3400 LAFAYETTE ROAD  
PORTSMOUTH, NH  
RICKI CONSTRUCTION CO., INC.  
225 BANFIELD ROAD, PORTSMOUTH, NH 03801 BK 193D PG 0229

Planned Name	
Project	
Owner of Record	

Engineers, Inc.	800 773-4748
	FAX 503-773-0227
	10015 SAND BEACH COM

**J/B Jones & Beach Engineering**  
Civil Engineering Services  
66 Portsmouth Ave  
PO Box 219  
Southport, NH 03885  
E MAIL: JBE@JONES-AND-BEACH.COM  
Designed and Produced in NH

5	5/15/21	REVISION	LAZ
4	5/11/21	ADDED DETAIL	LAZ
3	3/2/21	ADDED SURVEY INFO	LAZ
2	1/10/21	MINOR REVISIONS	DJM
1	11/20/20	REVISED PER CLIENT	DJM
REV	DATE	REVISION	BY

Design: JAC	Draft: LAZ	Date: 3/2/21
Checked: JAC	Scale: A3 SHOWN	Project No: 20737
Drawing Name: 20737 PI AN.dwg		





# Transportation Data Management System

List View

All DIRs

Record	1	of 1	Goto Record	go
Location ID	82379021		MPO ID	
Type	SPOT		HPMS ID	
On NHS	Yes		On HPMS	Yes
LRS ID	U0000001__		LRS Loc Pt.	
SF Group	04	▶	Route Type	
AF Group	04	▶	Route	US 1
GF Group	E	▶	Active	Yes
Class Dist Grp	Default	▶	Category	3
Seas Clss Grp	Default	▶		
WIM Group	Default	▶		
QC Group	Default			
Funct'l Class	Other Principal Arterial		Milepost	
Located On	Lafayette Rd			
Loc On Alias	US 1 (LAFAYETTE RD) AT RYE TL			
More Detail ▶				
<b>STATION DATA</b>				

 Directions: **2-WAY** **NB** **SB** ?

AADT ?								
	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2020	15,268	1,462	10	51	14,192 (93%)	1,076 (7%)	
	2019	18,297 <sup>3</sup>		10	51	16,759 (92%)	1,538 (8%)	Grown from 2018
	2018	18,080 <sup>3</sup>		10	51	16,671 (92%)	1,409 (8%)	Grown from 2017
	2017	17,725	1,741	10	51	16,448 (93%)	1,277 (7%)	
	2016	22,063 <sup>3</sup>				20,122 (91%)	1,941 (9%)	Grown from 2015
1-5 of 15								

Travel Demand Model										
	Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT				VOLUME TREND ?	
	Date	Int	Total	Year	Annual Growth
	Thu 8/13/2020	60	17,905	2020	-17%
	Wed 8/12/2020	60	17,749	2019	1%
	Tue 8/11/2020	60	17,330	2018	2%
	Thu 8/31/2017	60	19,847	2017	-20%
	Wed 8/30/2017	60	21,222	2016	2%
	Tue 8/29/2017	60	19,987	2015	3%
	Fri 8/1/2014	60	25,642	2014	7%
	Thu 7/31/2014	60	25,355	2011	6%
	Wed 7/30/2014	60	25,063	2009	-4%
	Tue 7/29/2014	60	24,508		





# Transportation Data Management System



Excel Version

2020

Weekly Volume Report			
Location ID:	82379021	Type:	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	Period:	Mon 8/10/2020 - Sun 8/16/2020
AADT:	15268		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		39	44	56				46	0.3%
1:00 AM		44	33	34				37	0.2%
2:00 AM		21	26	23				23	0.1%
3:00 AM		33	29	30				31	0.2%
4:00 AM		72	83	95				83	0.5%
5:00 AM		238	317	249				268	1.5%
6:00 AM		568	586	584				579	3.3%
7:00 AM		911	928	917				919	5.2%
8:00 AM		1060	1039	1045				1,048	5.9%
9:00 AM		1147	1070	1052				1,090	6.2%
10:00 AM		1128	1210	1211				1,183	6.7%
11:00 AM		1247	1261	1342				1,283	7.3%
12:00 PM		1326	1342	1406				1,358	7.7%
1:00 PM		1244	1272	1334				1,283	7.3%
2:00 PM		1274	1312	1325				1,304	7.4%
3:00 PM		1399	1345	1424				1,389	7.9%
4:00 PM		1373	1458	1462				1,431	8.1%
5:00 PM		1280	1308	1325				1,304	7.4%
6:00 PM		1008	1092	1019				1,040	5.9%
7:00 PM		782	875	798				818	4.6%
8:00 PM		586	580	594				587	3.3%
9:00 PM		313	266	293				291	1.6%
10:00 PM		145	174	204				174	1.0%
11:00 PM		92	99	83				91	0.5%
<b>Total</b>	<b>0</b>	<b>17,330</b>	<b>17,749</b>	<b>17,905</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>24hr Total</b>		17330	17749	17905				17,661	
<b>AM Pk Hr</b>		11:00	11:00	11:00					
<b>AM Peak</b>		1247	1261	1342				1,283	
<b>PM Pk Hr</b>		3:00	4:00	4:00					
<b>PM Peak</b>		1399	1458	1462				1,440	
<b>% Pk Hr</b>		8.07%	8.21%	8.17%				8.15%	





# Transportation Data Management System



Excel Version

2017

Weekly Volume Report			
Location ID:	82379021	Type:	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	Period:	Mon 8/28/2017 - Sun 9/3/2017
AADT:	17725		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		82	75	38				65	0.3%
1:00 AM		43	47	29				40	0.2%
2:00 AM		18	31	17				22	0.1%
3:00 AM		47	40	54				47	0.2%
4:00 AM		69	74	114				86	0.4%
5:00 AM		360	348	343				350	1.7%
6:00 AM		820	693	672				728	3.6%
7:00 AM		1232	1115	1268				1,205	5.9%
8:00 AM		1396	1238	1357				1,330	6.5%
9:00 AM		1156	1236	1195				1,196	5.9%
10:00 AM		1233	1357	1183				1,258	6.2%
11:00 AM		1325	1443	1376				1,381	6.8%
12:00 PM		1490	1630	1446				1,522	7.5%
1:00 PM		1365	1663	1276				1,435	7.0%
2:00 PM		1424	1712	1436				1,524	7.5%
3:00 PM		1530	1741	1521				1,597	7.8%
4:00 PM		1581	1618	1614				1,604	7.9%
5:00 PM		1592	1609	1572				1,591	7.8%
6:00 PM		1166	1310	1186				1,221	6.0%
7:00 PM		818	882	885				862	4.2%
8:00 PM		614	552	595				587	2.9%
9:00 PM		331	432	379				381	1.9%
10:00 PM		179	260	175				205	1.0%
11:00 PM		116	116	116				116	0.6%
<b>Total</b>	<b>0</b>	<b>19,987</b>	<b>21,222</b>	<b>19,847</b>	<b>0</b>	<b>0</b>	<b>0</b>		
<b>24hr Total</b>		19987	21222	19847				20,352	
<b>AM Pk Hr</b>		8:00	11:00	11:00					
<b>AM Peak</b>		1396	1443	1376				1,405	
<b>PM Pk Hr</b>		5:00	3:00	4:00					
<b>PM Peak</b>		1592	1741	1614				1,649	
<b>% Pk Hr</b>		7.97%	8.20%	8.13%				8.10%	





# Transportation Data Management System



Excel Version

2014

Weekly Volume Report			
Location ID:	82379021	Type:	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	Period:	Mon 7/28/2014 - Sun 8/3/2014
AADT:	21000		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	73	91	94	106	121			97	0.4%
1:00 AM	47	55	86	58	74			64	0.3%
2:00 AM	44	40	41	60	43			46	0.2%
3:00 AM	33	60	55	35	56			48	0.2%
4:00 AM	122	100	85	113	113			107	0.4%
5:00 AM	288	306	318	293	291			299	1.2%
6:00 AM	656	688	733	701	659			687	2.8%
7:00 AM	1147	1158	1198	1228	1210			1,188	4.8%
8:00 AM	1321	1427	1436	1505	1378			1,413	5.7%
9:00 AM	1340	1326	1354	1314	1397			1,346	5.5%
10:00 AM	1266	1463	1414	1471	1579			1,439	5.8%
11:00 AM	1477	1607	1616	1587	1617			1,581	6.4%
12:00 PM	1642	1636	1671	1644	1753			1,669	6.8%
1:00 PM	1664	1649	1705	1773	1788			1,716	7.0%
2:00 PM	1704	1705	1787	1850	1841			1,777	7.2%
3:00 PM	1874	1919	1989	1989	1989			1,952	7.9%
4:00 PM	1926	2058	2107	2160	2148			2,080	8.4%
5:00 PM	1981	2182	2163	2285	2078			2,138	8.7%
6:00 PM	1425	1580	1598	1570	1732			1,581	6.4%
7:00 PM	917	1202	1267	1195	1204			1,157	4.7%
8:00 PM	791	1004	982	1085	1052			983	4.0%
9:00 PM	521	711	730	742	777			696	2.8%
10:00 PM	257	367	417	350	467			372	1.5%
11:00 PM	192	174	217	241	275			220	0.9%
Total	22,708	24,508	25,063	25,355	25,642	0	0		
24hr Total	22708	24508	25063	25355	25642			24,655	
AM Pk Hr	11:00	11:00	11:00	11:00	11:00				
AM Peak	1477	1607	1616	1587	1617			1,581	
PM Pk Hr	5:00	5:00	5:00	5:00	4:00				
PM Peak	1981	2182	2163	2285	2148			2,152	
% Pk Hr	8.72%	8.90%	8.63%	9.01%	8.38%			8.73%	



## Trip Generation Summary

Alternative: Alternative 1

Phase:

Project: 2105A Gen

Open Date: 5/14/2021

Analysis Date: 5/14/2021

ITE	Land Use	Weekday Average Daily Trips				Weekday AM Peak Hour of Adjacent Street Traffic				Weekday PM Peak Hour of Adjacent Street Traffic			
		*	Enter	Exit	Total	*	Enter	Exit	Total	*	Enter	Exit	Total
221	MID-RISE 1		136	135	271		4	13	17		14	9	23
	50 Dwelling Units												
	Unadjusted Volume		136	135	271		4	13	17		14	9	23
	Internal Capture Trips		0	0	0		0	0	0		0	0	0
	Pass-By Trips		0	0	0		0	0	0		0	0	0
	Volume Added to Adjacent Streets		136	135	271		4	13	17		14	9	23

Total Weekday Average Daily Trips Internal Capture = 0 Percent

Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

\* - Custom rate used for selected time period.

Source: Institute of Transportation Engineers, Trip Generation Manual 10th Edition

**TRIP GENERATION 10, TRAFFICWARE, LLC**



1752

SEP 16 4 24 PM '60

434/505  
R.R.

1930 229

THE STATE OF NEW HAMPSHIRE

ROCKINGHAM, SS.

SUPERIOR COURT

ERMINIO A. RICCI

V

HEIRS OF CHARLES MAIN  
HEIRS OF EZRA H. WINCHESTER  
WHOM IT MAY CONCERN

DECREE

The foregoing Petition to Quiet Title having been filed, orders of notice by publication having been complied with, a report of guardian ad litem having been filed, and the case having come on to be heard:

IT IS NOW ADJUDGED, ORDERED AND DECREED:

1. That legal title in possession and in fee in:

Two certain parcels of land situate on the northwesterly side of Lafayette Road in Portsmouth, County of Rockingham and State of New Hampshire, and being bounded and described as follows:

Parcel No 1. Beginning at the northerly corner of Lot No. 5 on Portsmouth Assessor's Plan No. 216, which said point is 635 feet, more or less, northwesterly from Lafayette Road, and thence running southwesterly by said Lot No. 5, a distance of 298 feet to a corner; thence turning and running northwesterly by said Lot No. 5 and by land of owners unknown, 380 feet to a corner; thence turning and running northerly 153 feet to a corner; thence turning and running northeasterly 166 feet to Lot No. 3 on said Assessor's Plan; thence turning and running southeasterly by said Lot No. 3, a distance of 670 feet to the point of beginning. Recorded in Rockingham County Registry of Deeds, Book 1589, Page 442.

Parcel No. 2. Beginning on the northwesterly side of Lafayette Road, so-called, at the easterly corner of Lot No. 5 on Portsmouth Assessor's Plan No. 216, and thence running northwesterly by said Lot No. 5 a distance of 635 feet, and continuing in the same direction by Lot No. 4 a distance of 670 feet to a corner; thence turning and running northeasterly 141 feet to Lot No. 2 on said Assessor's Plan; thence turning and running southeasterly by said Lot No. 2 a distance of 1278 feet to said Lafayette Road, thence turning and running southwesterly by said Lafayette Road, 66 feet to the point of beginning.

is hereby vested in Erminio A. Ricci, free and clear of all claims of the



1930 230

Heirs of Charles Main, Heirs of Ezra H. Winchester, and of any other parties whom it may concern or who may have an interest in the premises.

2. This decree shall be recorded in Rockingham County Registry of Deeds.

Dated At Exeter, New Hampshire, this 13th day of September, 1968.

s/ Thomas J. Morris  
Presiding Justice

A true copy:

In Witness Whereof, I have hereunto set my hand and affixed the seal of the Superior Court this thirteenth day of September, A.D. 1968.

*Wm. J. Sumner*  
Clerk of Court





LCHIP	ROA530574	25.00
RECORDING		14.00
SURCHARGE		2.00

### QUITCLAIM DEED

KNOW ALL MEN BY THESE PRESENTS, that I, **Joanne M. Grasso**, an unmarried person having an address of 14 Nixon Park, Portsmouth, NH 03801, grant to **Ricci Construction Co., Inc.**, a New Hampshire corporation having an address of 225 Banfield Road, Portsmouth, New Hampshire 03801 for no consideration and with QUITCLAIM COVENANTS, the following property:

Two certain parcels of land situate on the northwesterly side of Lafayette Road in Portsmouth, County of Rockingham and State of New Hampshire, and being bounded and described as follows:

Parcel No 1. Beginning at the northerly corner of Lot No. 5 on Portsmouth Assessor's Plan No. 216, which said point is 635 feet, more or less, northwesterly from Lafayette Road, and thence running southwesterly by said Lot No. 5, a distance of 295 feet to a corner; thence turning and running northwesterly by said Lot No. 5 and by land of owners unknown, 580 feet to a corner; thence turning and running northerly 153 feet to a corner; thence turning and running northeasterly 166 feet to Lot No. 3 on said Assessor's Plan; thence turning and running southeasterly by said Lot No. 3, a distance of 670 feet to the point of beginning.

Parcel No. 2. Beginning on the northwesterly side of Lafayette Road, so-called at the easterly corner of Lot No. 5 on Portsmouth Assessor's Plan No. 216, and thence running northwesterly by said Lot No. 5 a distance of 635 feet, and continuing in the same direction by Lot No. 4 a distance of 670 feet to a corner; thence turning and running northeasterly 141 feet to Lot No. 2 on said Assessor's Plan; thence turning and running southeasterly by said Lot No. 2 a distance of 1278 feet to said Lafayette Road, thence turning and running southwesterly by said Lafayette Road, 66 feet to the point of beginning.

Meaning and intending to describe and convey all of my right, title and interest in the aforementioned property obtained by be through the Estate of Erminio A. Ricci who deceased on January 12, 1982 (see Rockingham County Probate Court Docket Number 55880. See also Decree dated September 13, 1968 and recorded at the Rockingham County Registry of Deeds at Book 1930, Page 229.



THIS IS A NON-CONTRACTUAL TRANSFER. THIS IS NOT HOMESTEAD  
PROPERTY.

Witness my hand this 18 day of November 2020.

Joanne M. Grasso  
Joanne M. Grasso

STATE OF NEW HAMPSHIRE  
COUNTY OF ROCKINGHAM

November 18, 2020

Personally appeared before me, the above named Joanne M. Grasso, known to me to  
be the person whose name is subscribed to the within instrument and acknowledged that she  
executed same for the purposes therein contained. In witness whereof I hereunto set my hand  
and official seal.



Elizabeth G. Taylor  
NOTARY PUBLIC  
My Commission Expires: Jan 08.2025





## 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. 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 Owner/Applicant: Green & Company Date Submitted: 5/14/2021

Phone Number: 603-964-7572 E-mail: mgreen@greenandcompany.com

Site Address: Lafayette Road Map: 297 Lot: 11

Zoning District: Gateway Corridor (G1) Lot area: 1,931,721 sq. ft.

Application Requirements			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Fully executed and signed Application form. (2.5.2.3)		N/A
<input checked="" type="checkbox"/>	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF). (2.5.2.8)		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. (2.5.3.1A)		
<input checked="" type="checkbox"/>	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. (2.5.3.1B)	Architectural Plans	N/A
<input checked="" type="checkbox"/>	Tax map and lot number, and current zoning of all parcels under Site Plan Review. (2.5.3.1C)	Existing Conditions Plan	N/A
<input checked="" type="checkbox"/>	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. (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 checked="" 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. (2.5.3.1E)	EX OVR	N/A
<input checked="" type="checkbox"/>	Names, addresses and telephone numbers of all professionals involved in the site plan design. (2.5.3.1F)	Cover Sheet	N/A
<input checked="" type="checkbox"/>	List of reference plans. (2.5.3.1G)	C1	N/A
<input checked="" type="checkbox"/>	List of names and contact information of all public or private utilities servicing the site. (2.5.3.1H)	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 checked="" 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. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. (2.5.4.1A)	Required on all plan sheets	N/A
<input checked="" 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 checked="" 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)	Note on C1	N/A
<input checked="" type="checkbox"/>	Plans shall be drawn to scale. (2.5.4.1D)	Required on all plan sheets	N/A
<input checked="" type="checkbox"/>	Plans shall be prepared and stamped by a NH licensed civil engineer. (2.5.4.1D)	All Sheets	N/A
<input checked="" type="checkbox"/>	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. (2.5.4.1E)	C1 & EX OVR	N/A
<input checked="" type="checkbox"/>	Title (name of development project), north point, scale, legend. (2.5.4.2A)	All Sheets	N/A
<input checked="" type="checkbox"/>	Date plans first submitted, date and explanation of revisions. (2.5.4.2B)	All Sheets	N/A
<input checked="" 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 checked="" type="checkbox"/>	Source and date of data displayed on the plan. (2.5.4.2D)	C2	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 checked="" 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)	C2	N/A
<input checked="" 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)	C2	N/A
<input checked="" type="checkbox"/>	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "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." c. "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." (2.13.4)	Landscaping Plans	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
	<b>1. Existing Conditions: (2.5.4.3A)</b>		
<input checked="" type="checkbox"/>	a. Surveyed plan of site showing existing natural and built features;	C1	
<input checked="" type="checkbox"/>	b. Zoning boundaries;	C1	
<input checked="" type="checkbox"/>	c. Dimensional Regulations;	C2	
<input checked="" type="checkbox"/>	d. Wetland delineation, wetland function and value assessment;	C1	
<input type="checkbox"/>	e. SFHA, 100-year flood elevation line and BFE data.	N/A	
	<b>2. Buildings and Structures: (2.5.4.3B)</b>		
<input checked="" type="checkbox"/>	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;	Architectural Plans	
<input checked="" type="checkbox"/>	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;	Architectural Plans	
<input checked="" type="checkbox"/>	c. Total Floor Area;	Architectural Plans	
<input checked="" type="checkbox"/>	d. Number of Usable Floors;	Architectural Plans	
<input checked="" type="checkbox"/>	e. Gross floor area by floor and use.	Architectural Plans	
	<b>3. Access and Circulation: (2.5.4.3C)</b>		
<input checked="" type="checkbox"/>	a. Location/width of access ways within site;	C2	
<input checked="" type="checkbox"/>	b. Location of curbing, right of ways, edge of pavement and sidewalks;	C2	
<input checked="" type="checkbox"/>	c. Location, type, size and design of traffic signing (pavement markings);	C2	
<input checked="" type="checkbox"/>	d. Names/layout of existing abutting streets;	OVR	
<input checked="" type="checkbox"/>	e. Driveway curb cuts for abutting prop. and public roads;	OVR	
<input type="checkbox"/>	f. If subdivision; Names of all roads, right of way lines and easements noted;	N/A	
<input checked="" type="checkbox"/>	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	T1	
	<b>4. Parking and Loading: (2.5.4.3D)</b>		
<input checked="" type="checkbox"/>	a. Location of off street parking/loading areas, landscaped areas/buffers;	C2	
<input checked="" type="checkbox"/>	b. Parking Calculations (# required and the # provided).	C2	
	<b>5. Water Infrastructure: (2.5.4.3E)</b>		
<input checked="" type="checkbox"/>	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	C4	
<input type="checkbox"/>	b. Location of wells and monitoring wells (include protective radii).	N/A	
	<b>6. Sewer Infrastructure: (2.5.4.3F)</b>		
<input checked="" type="checkbox"/>	a. Size, type and location of sanitary sewage facilities & Engineering data.	C4-C5	
	<b>7. Utilities: (2.5.4.3G)</b>		
<input checked="" type="checkbox"/>	a. The size, type and location of all above & below ground utilities;	C4	
<input checked="" type="checkbox"/>	b. Size type and location of generator pads, transformers and other fixtures.	C4	



**Site Plan Specifications – Required Exhibits and Data**

<input checked="" type="checkbox"/>	<b>Required Items for Submittal</b>	<b>Item Location (e.g. Page/line or Plan Sheet/Note #)</b>	<b>Waiver Requested</b>
<input type="checkbox"/>	<b>8. Solid Waste Facilities: (2.5.4.3H)</b>	N/A	
<input type="checkbox"/>	a. The size, type and location of solid waste facilities.	N/A	
	<b>9. Storm water Management: (2.5.4.3I)</b>		
<input checked="" type="checkbox"/>	a. The location, elevation and layout of all storm-water drainage.	C3	
	<b>10. Outdoor Lighting: (2.5.4.3J)</b>		
<input checked="" type="checkbox"/>	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	L1	
<input checked="" type="checkbox"/>	<b>11. Indicate where dark sky friendly lighting measures have been implemented. (10.1)</b>	L1	
	<b>12. Landscaping: (2.5.4.3K)</b>		
<input checked="" type="checkbox"/>	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	Landscaping Plan	
<input checked="" type="checkbox"/>	b. Location of any irrigation system and water source.	Landscaping Plan	
	<b>13. Contours and Elevation: (2.5.4.3L)</b>		
<input checked="" type="checkbox"/>	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C3	
	<b>14. Open Space: (2.5.4.3M)</b>		
<input checked="" type="checkbox"/>	a. Type, extent and location of all existing/proposed open space.	C2	
<input type="checkbox"/>	<b>15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)</b>		
<input checked="" type="checkbox"/>	<b>16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)</b>	C2	
<input type="checkbox"/>	<b>17. Character/Civic District (All following information shall be included): (2.5.4.3Q)</b>	N/A	
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);	N/A	
	b. Applicable Special Requirements (10.5A21.30);	N/A	
	c. Proposed building form/type (10.5A43);	N/A	
	d. Proposed community space (10.5A46).	N/A	



Other Required Information			
<input checked="" type="checkbox"/>	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
<input checked="" type="checkbox"/>	Traffic Impact Study or Trip Generation Report, as required. <i>(Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application) (3.2.1-2)</i>		
<input checked="" type="checkbox"/>	Indicate where Low Impact Development Design practices have been incorporated. (7.1)	C3	
<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"/>	Indicate where measures to minimize impervious surfaces have been implemented. (7.4.3)		
<input checked="" type="checkbox"/>	Calculation of the maximum effective impervious surface as a percentage of the site. (7.4.3.2)	C2	
<input checked="" type="checkbox"/>	Stormwater Management and Erosion Control Plan. <i>(Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application) (7.4.4.1)</i>	W Sheets	

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 checked="" type="checkbox"/>	All local approvals, permits, easements and licenses required, including but not limited to: <ul style="list-style-type: none"> <li>a. Waivers;</li> <li>b. Driveway permits;</li> <li>c. Special exceptions;</li> <li>d. Variances granted;</li> <li>e. Easements;</li> <li>f. Licenses.</li> </ul> (2.5.3.2A)		
<input checked="" 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"> <li>a. Calculations relating to stormwater runoff;</li> <li>b. Information on composition and quantity of water demand and wastewater generated;</li> <li>c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls;</li> <li>d. Estimates of traffic generation and counts pre- and post-construction;</li> <li>e. Estimates of noise generation;</li> <li>f. A Stormwater Management and Erosion Control Plan;</li> <li>g. Endangered species and archaeological / historical studies;</li> <li>h. Wetland and water body (coastal and inland) delineations;</li> <li>i. Environmental impact studies.</li> </ul> (2.5.3.2B)		



### 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 checked="" 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)	Pending	
<input checked="" 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)	Pending	

Applicant's Signature: \_\_\_\_\_

Date: \_\_\_\_\_



## Letter of Authorization

I/We, Ricci Construction Co. Inc., John E. Ricci, President of 225 Banfield Road, Portsmouth, NH 03801, as owner of certain real property situated Portsmouth, NH further described as 45.25 acres +/- of land on Lafayette Road, Portsmouth, New Hampshire, as shown on Tax Assessors Map 297 Lot 11, and further defined by legal description found at the Rockingham County Registry of Deeds Book 1930, Page 0229, recorded on September 16, 1968, do hereby authorize Green & Company Building and Development Corp. and its Affiliates, Agents, Assigns and Engineers to act on my/our behalf and to appear before the zoning board of adjustment and/or the planning board of said city/town and/or any of its boards or commissions, in my/our behalf for the purpose of seeking any regulatory relief that may be requested by the person I/we have above authorized, including variances, special exceptions, dimensional waivers, site plan approval, lot line adjustment approval and development/subdivision approval, hereby ratifying any actions taken by him/her/them to obtain any such relief. I/We authorize Green & Company Building and Development Corp. and its Affiliates, Agents, Assigns and Engineers to act in my/our behalf in all matters concerning the development and approval process, without limitation, for the above stated property, to include any required signatures.

I/We shall cooperate fully with Green & Company Building and Development Corp. and its Affiliates, Agents, Assigns and Engineers in seeking timely public approvals and for the completion of the sale contemplated herein. I/We agree to use my/our good faith efforts to provide any assistance I/we reasonably can to Green & Company Building and Development Corp. and its Affiliates, Agents, Assigns and Engineers throughout the development process, including but not limited to signing permit applications as needed.

Elizabeth J. Taylor  
Witness

John E. Ricci  
Owner: John E. Ricci, President  
Ricci Construction Co. Inc.

10.14.20  
Date

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Owner:

\_\_\_\_\_  
Date