JONES&BEACH
ENGINEERS INC.
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August 23, 2021

Portsmouth Technical Advisory Committee
Attn: Peter Stith, Chair
1 Junkins Avenue, Suite 3rd Floor
Portsmouth, NH 03801

RE: TAC Response Letter
375 Banfield Road, Portsmouth, NH
Tax Map 266, Lot 7
JBE Project No. 19190.2

Dear Mr. Stith,

We are in receipt of comments from Stefanie Casella, Town Planner, dated August 2, 2021. Review comments are listed below with our responses in bold.

GENERAL COMMENTS:

1. *Please correctly address your response letters to the Chair of TAC, not the Planning Board Chair. Also, your cover letter mentions comments from Jillian Harris dated July 6, 2021. Jillian left employment with the City in April, the comments were sent either by Juliet Walker or Stefanie Casella.*
   RESPONSE: The names have been corrected on this response letter.

2. *Please respond to the CMA review of the recommended road improvements*
   RESPONSE: We agree with the recommended road improvements.

3. *The drainage analysis should be updated for the latest plan set and shall be reviewed by a third-party engineer. Staff recommend that CMA do the work since they are also involved in other aspects of project.*
   RESPONSE: The drainage analysis has been revised per comments from the NHDES AOT Bureau and the revised analysis is enclosed with this resubmission.

4. *This project is the site of an old landfill. As a result, there are known contaminants on the site. Please provide information from NHDES about the status of the review of this project. According to NHDES regulations what specific activities and uses are allowed/ not allowed on the site based on the existence of known contaminants on the site? Can you please provide a response to the concerns raised about water quality by the abutter David Ecker?*
   RESPONSE: We have received a letter from NHDES that outlines additional items that will need to be completed. The State is actively reviewing and processing the information they are receiving from Wilcox & Barton. A soil management plan

remedial action report will be prepared and submitted to NHDES. There will be onsite monitoring required by NHDES during construction and post construction. The State will be reviewing this property as the construction proceeds and afterwards until they are satisfied with the testing results.

To respond to Mr. Ecker's comments, I would say that none of the previous owners have cleaned this property over the last 50 years. With approval of this site plan, the development will greatly improve conditions on this property. Depending on the soil contamination, some will be removed from the property, other soil will be placed under the building and parking lot and no longer infiltrated into the ground. This cut and cover technique is the preferred method of improving sites like this one. In a meeting with NHDES on 8/20, it was stated that this use is the best use for a property like this one and the construction techniques are the preferred process.

5. *How do trucks navigate the turning movements to all the loading docks?*
   RESPONSE: See Sheet T3 with simulations of a WB-62 accessing different loading dock locations.

6. *Can an alternative paving material (i.e. cobblestones or textured paving be used for the wide radii along Banfield Road?*
   RESPONSE: Textured paving has been specified.

7. *The engineer/developer needs to demonstrate in writing that the application meets all the requirements of Article 7 of the City's Site Plan Review regulations as these relate to stormwater management. Particular emphasis should be on compliance with Section 7.4- Stormwater Management and Erosion Control Plan (SMECP), and Section 7.6- Post Construction Stormwater Management Design Standards (Paragraphs 7.6.1, 7.6.2 and 7.6.3). Note that 7.6.3 refers to the "Pollutant Tracking and Accounting Program (PTAP)", that is part of the City's MS4 Program requirements.*
   RESPONSE: See enclosed "Stormwater Management Regulations Review".

8. *The DES response/agreement regarding the Wilcox Site Investigation plan for the old landfill is required.*
   RESPONSE: We have included a copy of the recent letter from NHDES.

Included with this response letter are the following:

1. Two (2) Full Size Plan Sets.
2. One (1) Half Size Plan Set.
3. Six (6) Revised Drainage Analysis.
4. NHDES Letter from Scott Drew
5. Stormwater Operations and Maintenance Manual.
6. Stormwater Management Regulations Review.

Thank you very much for your time.

Very truly yours,
JONES & BEACH ENGINEERS, INC.

Joseph Coronati
Vice President

cc: Rob Graham, Banfield Realty, LLC (letter and plans via email)
Jim Gove, Gove Environmental Services, Inc. (letter and plans via email)
Bill Wilcox, Wilcox & Barton, Inc. (letter and plans via email)
Peter Britz, City of Portsmouth (letter and plans via email)

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Robert R. Scott, Commissioner

EMAIL ONLY

August 9, 2021

Robert Graham
Banfield Realty, LLC
304 Maplewood Avenue
Portsmouth, NH 03801

Subject: **Portsmouth** – Former Country Motor Sales, 375 Banfield Road
DES Site #**199408047**, Project #40176

Supplemental Data Transmittal, prepared by Wilcox & Barton, Inc. (W&B), dated January 27, 2021

Site Investigation Report, prepared by W&B, dated July 9, 2020

Dear Mr. Graham:

The New Hampshire Department of Environmental Services (NHDES) has reviewed the Supplemental Data Transmittal and Site Investigation (SI) Report submitted for the above-referenced site (Site). NHDES understands that some SI activities were completed in response to our letter dated February 16, 2011. Based on review of the SI Report, data transmittal and historical submittals, NHDES offers the following comments:

Soil

- During May 2020, 25 soil borings were advanced in the northeastern portion of the Site and 94 soil samples were collected for laboratory analysis of metals and polychlorinated biphenyls (PCBs). Arsenic was detected in all samples, including at concentrations exceeding the Soil Remediation Standard (SRS) in 70 of the samples. The concentrations were generally in the range reported previously for soil samples collected at the Site, which NHDES concluded in a letter dated August 8, 2007 were due to naturally occurring conditions. As such, the arsenic present in Site soil appears to be a background condition as defined in NH Code of Administrative Rules Chapter Env-Or 600 (*Contaminated Site Management*), Part Env-Or 602.03. In these cases, per Env-Or 606.19(f), NHDES does not require further investigation or remediation of the arsenic.

- Lead was detected at concentrations exceeding the SRS in samples collected from boreholes SB-6, SB-10 and SB-14 advanced in the northeast portion of the Site during May 2020. Lead was also detected in soil samples collected from this portion of the Site during previous assessment work (e.g. Limited Subsurface Investigation report prepared by Ransom Environmental Consulting, Inc. [Ransom] dated October 10, 2008) at concentrations exceeding the SRS. It appears the lead is the result of releases associated with former Site activities, including automobile storage, crushing and salvage operations. NHDES generally concurs with W&B's recommendation to manage lead-impacted soil in this area of the Site via placement of a suitable cap or cover and recordation of an Activity

and Use Restriction (AUR). ***A soil management plan (SMP) shall be submitted to NHDES that describes the management of soil during upcoming Site redevelopment activities, to include excavation activities, any temporary onsite storage, reuse, and any offsite disposal of soil conducted in accordance with Env-Or 611. Commencement of redevelopment activities that involve disturbance of soil shall not occur until NHDES has reviewed the SMP.*** Submittal of the Application for AUR shall include a requirement to prepare a separate SMP for management of any soil that may be disturbed during future Site activities. The plans for capping or covering lead-impacted soil and the SMPs must incorporate the results of historical investigations including pertinent analytical data for all soil samples.

Soil samples were collected from test pits completed in the central, lowland portion of the Site by Ransom during October 2008 as part of the investigation referenced above and analyzed for metals. Lead was detected at concentrations exceeding the SRS in the samples collected from test pits TP120, TP122 and TP123. Some detected concentrations (e.g. 4,060 milligrams per kilogram [mg/kg] at TP120) indicate a gross level of contamination. We understand this portion of the Site is the location of a pre-1981 landfill and the waste is the source of the lead in soil. NHDES is concerned the waste and impacted soil may: 1) be a source of metals contamination identified in Site surface water and sediment; and 2) pose a direct-contact exposure risk to humans. The Remedial Action Plan (RAP) discussed below shall include evaluation of remedies for the waste and contaminated soil in the area of the landfill.

- PCBs were detected at concentrations up to 0.80 mg/kg (total of all Aroclors) in 13 of the samples collected from the soil borings advanced in the northeast portion of the Site during May 2020. PCBs were also detected at concentrations up to 12.93 mg/kg (total of all Aroclors) in samples from this portion of the Site during previous assessment work (e.g. Ransom, 2008). It appears the PCBs are the result of releases associated with former Site activities, including automobile storage, crushing and salvage operations. In accordance with our letter dated February 16, 2011, options for management of PCB-containing soils must be considered. Such consideration should include whether the PCB-containing soils are regulated under the Toxic Substances Control Act (TSCA), which includes assessment of their source, date of release, and concentrations. Please note that United States Environmental Protection Agency Region 1 PCB coordinator Kimberly Tisa is an available resource regarding TSCA applicability.

- Asbestos was identified via laboratory analysis in bulk waste samples collected from test pits excavated in the area of the landfill during previous assessment work (Ransom, 2008). W&B identified suspect asbestos-containing material (ACM) in test pits advanced in the area of the landfill during May 2020. Options for management of ACM must be considered.

NHDES requests that a Remedial Action Plan (RAP) be prepared in accordance with Env-Or 606.10 and Env-Or 606.12 for the contaminated soils and waste including metals, PCBs, and asbestos. We are amenable to discussions with W&B regarding the due date for submittal of the RAP. Figures presented in the RAP should show key site features such as areas of former automobile storage, crushing and salvage operations, the landfill, septic systems and

leach fields (both historical and current). We understand the evaluation of remedial alternatives will include capping or cover of contaminated soil and waste and recordation of an AUR.

Groundwater

- Relatively elevated concentrations of lead and other metals including arsenic, barium and cadmium were detected in samples collected during June 2020 and January 2021 from wells MW-101, MW-102 and MW-104. These wells appear to be located within or hydraulically downgradient of the landfill. To assess the potential for groundwater to be a contaminant migration pathway from the landfill to surface water and sediment, we request that additional sampling be completed of wells MW-101, MW-102 and MW-104 for analysis of total and dissolved metals. Field-based water quality parameters (e.g. temperature, dissolved oxygen, pH, conductivity, oxidation-reduction potential, and turbidity) should also be collected during the sampling.

- The PAH benzo(b)fluoranthene was detected at a concentration slightly exceeding the AGQS in the sample collected from monitoring well MW-101 during June 2020. We request that an additional sample be collected from this well for analysis of PAHs. We recommend the sample be filtered in the field.

- Various per- and polyfluoroalkyl substances (PFAS) were detected in samples collected from Site monitoring wells during June 2020 and/or January 2021. Perfluorooctane sulfonic acid (PFOS), perfluorohexane sulfonic acid (PFHxS), and perfluorooctanoic acid (PFOA) were detected at concentrations exceeding applicable AGQS. Based on these results, we request that additional sampling of wells MW-1, MW-4, MW-5, MW-6, MW-7, MW-8, MW-106R, MW-109, MW-203 and MW-204 be completed for analysis of PFAS. Please continue to analyze samples for a broad list of PFAS to aid in understanding potential sources, nature and extent of PFAS at the Site. We recommend that Quality Assurance/Quality Control samples (e.g. field blank, equipment rinsate blank, and trip blank) be analyzed for PFAS and the results considered when evaluating data quality/usability. All potential sources of PFAS and contaminant migration pathways should be considered when developing the conceptual site model (CSM), to include the storage and use of PFAS-containing products, knowledge of any releases of such products, and any application of fire suppressing foam.

  We request upload of all PFAS data to the NHDES Environmental Monitoring Database (EMD). Instructions for EMD upload can be found at the following link: https://www4.des.state.nh.us/nh-pfas-investigation/wp-content/uploads/pfas-emd-guidance.pdf

Please submit results of the additional groundwater monitoring with the RAP. Pending our review, an Application for Groundwater Management Permit may be requested for the Site.

Sediment and Surface Water

- W&B collected sediment samples during May 2020 from locations identified as SD-101 through SD-106 for analysis of PCBs and metals. PCBs were not detected at concentrations above the laboratory reporting limit. Various metals were detected including lead at concentrations up to 940 mg/kg. The nature of these sediment samples is not fully explained in the SI Report. Based on Figure 3, it appears some of the samples were collected from areas identified as wetland and some were not. It's not clear if any of the samples were collected from Pickering Brook. We request that more information be provided, including sediment descriptions/classification and photographs of representative sediment and the sampling locations. An evaluation of the potential for direct-contact exposure to humans should also be provided.

- Surface water samples were collected during May 2020 from locations identified as SW-101 through SW-106 for analysis of PCBs and total metals. The samples were apparently collocated with the sediment samples. PCBs were not detected at concentrations above the laboratory reporting limit. The metals data provided in the SI Report needs to be supported by the following:

    1. For comparison of cadmium, chromium, lead and silver data to the protection of aquatic life freshwater criteria presented in Table 1703-1 of Env-Wq 1703.21, hardness data must be collected concurrently and used to calculate appropriate criteria values. The water effect ratio should be considered when determining appropriate criteria values for arsenic, cadmium, chromium, lead, mercury and silver (see Env-Wq 1703.22[d]). Additionally, the total concentrations must be converted to dissolved concentrations for arsenic, cadmium, chromium, lead, mercury and silver, with the results for silver compared to the acute exposure criteria. Results of the other metals may be compared to chronic criteria. Refer to equations and tables in Env-Wq 1703.23 and Env-Wq 1703.24 to calculate applicable criteria.

    2. Information regarding whether comparison of the metals data to the protection of human health criteria presented in Table 1703-1 is applicable. Specifically, please assess whether water and fish from Pickering Brook and the wetland system are consumed by humans.

    3. Information regarding the hydrology of Pickering Brook and the wetland system to improve the CSM. Specifically, prepare a figure that shows the direction of surface water flow and the location and interconnectedness of specific streams. The figure would benefit from inclusion of ground surface topography, showing locations of drainages and swales at the Site. Sample locations SW-101 though SW-106 should be depicted on the figure.

- Some details (e.g. property boundaries and location of wetlands) of the Site Plan presented in the SI Report do not correspond with that presented in the set of plans titled Commercial Site Plan "Industrial Warehouse" prepared by Jones & Beach Engineers, Inc.

and submitted to NHDES' Wetlands Bureau and Alteration of Terrain Bureau to facilitate review of applicable permits. Please ensure Site features are accurately depicted on figures included in the RAP and any future submittals.

- The lead analytical results presented in Table 3 of the SI Report for sample SW-101 differ from that in the laboratory analytical report. Please address such discrepancies for future submittals.

Additional surface water sampling at locations SW-101 through SW-106 for analysis of metals and hardness is warranted. Field-based water quality parameters should be collected during the sampling. Please submit results of the additional surface water sampling and the information requested above for sediment and surface water with the RAP. Submittal of an addendum to the RAP for these media may be requested at a later date.

Please note, the contamination at the Site will be managed under HAZWASTE Project #40176. This project number should be identified on all future submittals.

Should you have any questions regarding this letter, please contact me at NHDES' Waste Management Division.

Sincerely,

Waste Management Division

Digitally signed by Waste Management Division
DN: cn=Waste Management Division, o=Waste Management Division, ou, email=lisa.l.newton@des.nh.gov, c=US
Date: 2021.08.09 11:25:30 -04'00'

Scott Drew, P.G.
Hazardous Waste Remediation Bureau
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Gloria Andrews, P.E., Alteration of Terrain Bureau
Stefanie Giallongo, Wetlands Bureau
William R. Wilcox, Wilcox & Barton, Inc.
Robert W. Rooks, P.E., Wilcox & Barton, Inc.
Attention Health Officer, City of Portsmouth

Stormwater Management Regulations Review

375 Banfield Road
Portsmouth, NH 03801
Tax Map 266, Lot 7

Prepared for:

Banfield Realty, LLC
304 Maplewood Ave.
Portsmouth, NH 03801

Prepared by:
Jones & Beach Engineers, Inc.
85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
August 23, 2021
JBE Project No. 19190.2

Banfield Realty, LLC proposes to construct a 75,000 S.F. industrial warehouse building on a 14.96-acre parcel of land located at 375 Banfield Road in Portsmouth, NH. Currently the parcel consists of two commercial buildings with an associated accessory shed and parking. The existing buildings and parking with their associated utilities 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 meeting it below 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 vegetated buffer as well as four small footprint, high-efficiency "Focal Point" biofiltration systems will be used for stormwater treatment. Infiltration is not allowable on the subject property for reasons that are further expounded in the response to 7.6.1.3 but underground detention tanks will be used to reduce peak flow rates to the extent possible.

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

A large amount of pavement is proposed to be removed from the 100' Wetland Buffer which will improve the overall functioning of the buffer. A conditional use permit is requested for the new temporary and permanent impacts to the buffer. Only a small corner of the driveway in addition to the vegetated swale at the ultimate outfall and the lined and underdrained stormwater treatment buffer are to be located in the 100' Wetland Buffer post-construction, which is unavoidable and will, in the case of the treatment buffer and vegetated swale, actually serve to improve water quality by being close enough to the wetland to prevent tracking over unlined ground in the contaminated parts of the site.

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.

This project will improve groundwater quality as it will mitigate the currently existing site contamination problem by lining all stormwater treatment and detention practices.

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 no such water system is proposed.

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 Focal Point is a high-efficiency, planted biofiltration 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 and a Third Party Review has been requested by TAC.

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 description is included in the narrative.

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 the Focal Point and a vegetated treatment buffer 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. A description of the site's history and contamination is included. No known water quality concerns exist except that the nearby Pickering Brook is chloride impaired and as such a salt minimization plan reviewed by the AOT Bureau was prepared for the AOT permit, and this plan shall be adhered to.

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.

Instructions for handling of demolition material is included on Sheet DM-1.

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.

Infiltration is not proposed.

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 bodes, 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 #19 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 pavement within the buffer will be removed and the only pavement that will exist in the buffer post-construction will be a small corner of the site driveway which is unavoidable given the curb cut location that has been agreed to between the applicant and TAC. Additional disturbance will be for the removal of impervious surface and for the installation of the lined vegetated swale and liner and underdrain for the stormwater treatment buffer, both of which will enhance water quality by depositing treated runoff in locations that will lower the potential for contact with contaminants before reaching the wetland. In order to have outfalls in these locations, however, buffer disturbance is required. A conditional use permit for these impacts was requested with the initial Land Use Application.

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. Focal points will be located adjacent to the proposed development and the stormwater detention chambers will be under-pavement.

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 once and an environmental monitor will be employed throughout the construction process.

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 post-construction peak flow rate toward Analysis Point #2 will be approximately the same as though slightly lower than the pre-construction peak flow rate and the post-construction peak flow rate will be reduced greatly in extreme storms and otherwise will stay close to the existing peak flow rate (but will be reduced nonetheless in all analyzed storms). Approximately 9.7 acres of the 15-acre subject parcel is will remain undisturbed and the removal of pavement within 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 disturbance areas for which a conditional use permit is sought.

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.

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 lined treatment technologies including four proprietary "Focal Point" biofiltration systems as well as a vegetated buffer that is designed per NHDES standards to be able to treat the runoff directed toward it. The systems will be lined to prevent infiltration due to the presence of solid waste contaminants on the site and the ultimate discharge will be as close as the wetland edge as possible to prevent tracking over land. In effect, groundwater recharge is not allowable due to the unique site conditions, but the wetland will be recharged directly by treated water.

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 lowest amount of impervious surface practicable for the intended site use is proposed. A vegetated buffer is proposed in order to treat runoff from the site driveway and the remainder of impervious surface from the proposed 75,000 S.F. building and the associated parking and loading areas is treated via biofiltration through proprietary Focal Point systems. The intent of this particular site design is to prevent infiltration, so all systems are lined, but the aforementioned innovative and low impact solutions are proposed in order to treat stormwater to a manner acceptable by both the NHDES 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.

The subject parcel has a history of being used as a landfill and a car crusher. The chief finding of Wilcox & Barton's site investigation was that contamination is present on the site exceeding the Soil Remediation Standards (SRS) limits per Env-Or 606.19 throughout the site absent of a distinct source, and exceedances of the Ambient Groundwater Quality Standards (ACQS) developed per Env-Or 603.03 in discrete locations with no plume-like distribution. Pursuant to Env-Wq 1508(c)(2), infiltration or groundwater recharge practices are not allowable in areas exceeding these limits.

Therefore, we are proposing to line all stormwater treatment and detention practices and outlet as close to the wetland edge as possible to avoid tracking over upland areas. We will use low-impact solutions for stormwater treatment including proprietary Focal Point biofiltration systems for the majority of impervious areas as well as a vegetated buffer for the site driveway. Groundwater recharge is not allowable but we are taking steps to ensure that the quality of runoff from the site is improved over that of the existing condition.

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).

ACF has worked with NHDES to develop appropriate sizing criteria for their Focal Point biofiltration systems. These are designed to treat the Water Quality Flow (WQF) storm without activating the domed overflow and additionally contain 174 S.F. of high-efficiency filter media per acre of impervious runoff. In response to the Pollutant Discharge Minimization Requirements, the Focal Point is accepted by NHDES as an acceptable method for minimizing pollutant discharges; the four proposed focal points are close to the pavement and building exits and therefore accessible for maintenance activities; infiltration rate requirements do not apply as the systems are designed specifically to avoid infiltration; we are meeting the water supply well setback criteria per Env-Wq 1508.02, and as previously mentioned, the Focal Point is sized to treat the 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.

Per Note #2 on Sheet L1, the Focal Points are to be planted with perennial grasses, coneflowers, daylilies, butterfly milkweed, bee balm, blue flag iris, and Joe Pye weed, in random groupings of 10-12 plants approximately 3 feet on center. The vegetated treatment buffer is to remain in a natural meadow/forest condition in perpetuity or until a new use with its own stormwater management system is approved and under construction.

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).

The seasonal high-water table is not applicable to this design as all systems will be lined to prevent infiltration.

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. Infiltration to groundwater is not permissible on this site and stored snowmelt will be treated in the proposed stormwater management system.

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.

The Focal Points are all located outside the protected wetland buffer. The vegetated treatment buffer, which is to remain undisturbed except as necessary to install a liner and underdrain, will be located in the wetland buffer, replacing a large amount of existing pavement that is to be removed. A Conditional Use Permit for this was requested at the time of application.

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.

This Ordinance was reviewed. It is unclear whether it applies as all runoff will reach the wetland system after detention and treatment, although the wetland system eventually drains toward a cross-street culvert. That being said, we comply with the Ordinance and no prohibited discharges are proposed.

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.

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 Focal Point is designed and sized to treat the Water Quality Flow without activating the domed overflow.

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 the Focal Point system is designed to meet applicable stormwater treatment standards per the approved sizing parameters accepted by ACF Environmental and NHDES.

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.

We are lining all stormwater treatment practices and preventing over-land flow in order to ensure that there are no additional pollutant loads contributing to existing water body impairments and to improve the current situation that is caused by solid waste contaminants.

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 I&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.

Daniel Meditz, E.I.T
Project Engineer

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE MANUAL

Prepared for:

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Map 266, Lot 7
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Prepared by:
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Phone: (603) 772-4746
December 30, 2020
Revised May 17, 2021
Revised July 30, 2021
JBE Project No. 19190.2

Inspection and Maintenance of Facilities and Property

A. Maintenance of Common Facilities or Property

1. Banfield Realty, LLC, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. Banfield Realty, LLC, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form. Permanent stormwater BMPs shall be inspected annually following construction and the annual report and certification shall be submitted to the City by December 31st of each year. The Inspection and Maintenance records must be provided to NH Department of Environmental Services upon request.

B. General Inspection and Maintenance Requirements

1. Temporary and permanent stormwater and sediment and erosion control facilities to be maintained on the site include, but are not limited to, the following:

    a. Silt fencing
    b. Temporary diversion and swales
    c. Construction entrances
    d. Drain manholes
    e. Culverts
    f. Vegetated Swale
    g. Vegetation and landscaping
    h. Parking lots and roadways
    i. Stormwater Treatment Buffer
    j. Convergent PRETX Pretreatment
    k. ACF Environmental R-Tank Underground Detention System
    l. ACF Environmental Focal Point Biofiltration System
    m. Riprap inlet and outlet protection aprons

2. Maintenance of temporary measures shall follow the following schedule:

    a. The general contractor shall strictly adhere to the Stormwater Pollution Prevention Plan (SWPPP) during construction operations.

    b. During the construction process, all silt fencing will be **inspected during and after storm events** to ensure that the fence still has integrity and is not allowing sediment to pass. Any section of fence that has failed or is failing is to be replaced immediately, overlapping adjacent fence sections by at least one foot. If the problem persists, measures such as additional fencing (i.e. double) or the addition of haybales on the project side of the fence line should be considered. Sediment is to be removed from behind the fencing if found to be deeper than six inches and disposed of properly.

c. Sediment is to be removed from behind diversions if found to be deeper than six inches and disposed of properly.

d. Culvert inlet protection measures should be **inspected once per week** and after every major storm event. Sediment accumulations around the stone should be removed if they are deeper than six inches. If extensive amounts of sediment appear to have become trapped within the gravel filter stone such that proper operation of the structure has become impractical, the stone should be cleaned or otherwise replaced.

e. The stabilized construction entrance(s) shall be **inspected weekly** and after every rain event in order to ensure that the pad(s) are not becoming choked with sediment. Additional stone shall be added if required.

f. All construction debris and trash shall be removed from the site at the completion of construction and disposed of properly.

g. Once construction has been completed, the contractor is to remove all temporary erosion control measures and, if necessary, smooth and revegetated the areas disturbed by the removal.

3. 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 drain manholes to determine if they need to be cleaned. Manholes should be cleaned of any material upon inspection. 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.

f. **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.

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. Stormwater Treatment Buffer:

This 70'x30' area shall remain undisturbed in perpetuity or until the construction of a new approved use, i.e one other than the 75,000 S.F. industrial warehouse and office building, with its own stormwater management system begins. At least 20% of its ground cover shall be forested and the remainder shall be meadow grass. This area shall be i**nspected annually** to ensure that it has been kept in its intended state as aforementioned, and that its functioning has not been compromised by erosion or siltation. Allowed uses include mowing of grass to a height of not below 4 inches, removal of unsafe, dead, or diseased trees, or maintenance to correct erosion or siltation. Disallowed uses include but are not limited to the construction of new buildings, parking areas, outdoor patios, or recreational areas in the buffer.

j. Convergent PRETX Pretreatment:

See attached Convergent inspection and maintenance guidance document.

k. ACF Environmental R-Tank Underground Detention System:

See attached ACF Environmental inspection and maintenance guidance document.

l. ACF Environmental Focal Point Biofiltration System:

See attached ACF Environmental inspection and maintenance guidance document.

m. Vegetated Swale:

Inspect annually for erosion, sediment accumulation, vegetation loss, and presence of invasive species. Perform periodic mowing; frequency depends on location and type of grass. Do not cut shorter than Water Quality Flow depth (maximum 4-inches). Remove debris and accumulated sediment, based on inspection. Repair eroded areas, remove invasive species and dead vegetation, and reseed with applicable grass mix as warranted by inspection.

Annual Operations and Maintenance Report

Banfield Realty, LLC, future owners and assigns are responsible to perform the maintenance obligations or hire a Professional Engineer to review the site on an annual basis for maintenance and certification of the stormwater system. Banfield Realty, LLC, future owners and assigns shall keep receipts and records of all maintenance companies hired throughout the year to submit along with the following form. Permanent stormwater BMPs shall be inspected annually following construction and the annual report and certification shall be submitted to the City by December 31st of each year. The Inspection and Maintenance records must be provided to NH Department of Environmental Services upon request.

Construction Activity	Date of Inspection	Who Inspected	Findings of Inspector
Drain Manhole #1			
Drain Manhole #2			
Drain Manhole #3			
Drain Manhole #4			
Drain Manhole #5			
Drain Manhole #6			
Drain Manhole #7			

Drain Manhole #8			
Culverts			
Vegetation and landscaping			
Parking lots and roadways			
Stormwater Treatment Buffer			
Vegetated Swale			
Convergent PRETX Pretreatment			

ACF R-Tank			
ACF Focal Point #1			
ACF Focal Point #2			
ACF Focal Point #3			
ACF Focal Point #4			
Rip-Rap Inlet and Outlet Protection Aprons			

Other:			
Other:			
Other:			

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.

_____
Owner's Name

_____
Print Name

_____
Title

_____
Date

Deicing Log

Date Applied	Type of Deicing Material	Amount Applied

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:

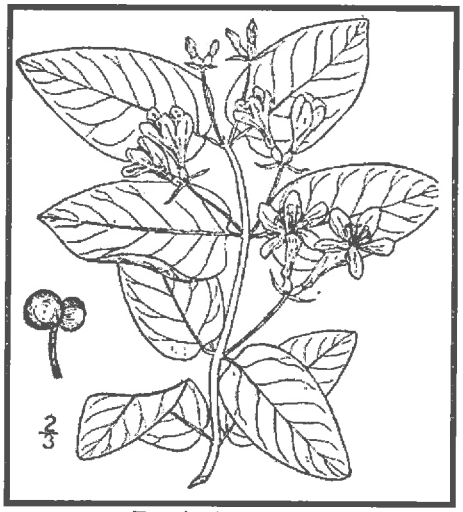
Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, 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.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

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



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

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

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

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

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

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

New Hampshire Regulations

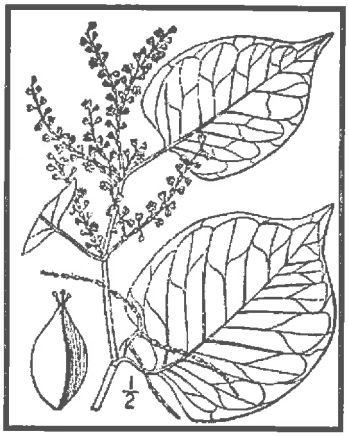
Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

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

How and When to Dispose of Invasives?

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

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



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

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

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

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

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

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

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

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

Suggested Disposal Methods for Non-Native Invasive Plants

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

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

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

January 2010

CONVERGENT
WATER TECHNOLOGIES

PRETX OPERATION AND MAINTENANCE GUIDE

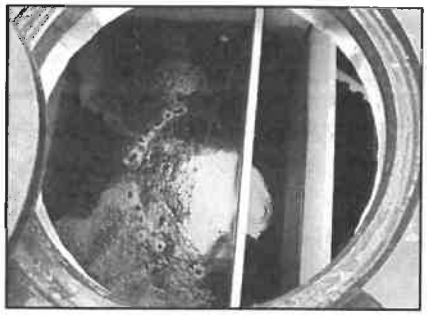
February 2020

PRETX™ BIOFILTER PRETREATMENT
OPERATION AND MAINTENANCE GUIDANCE

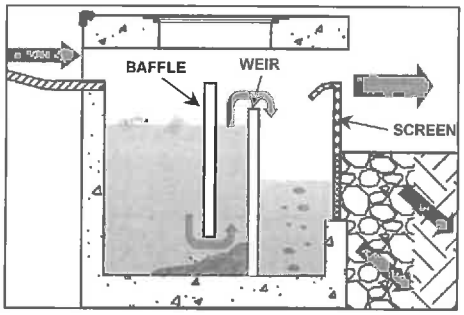
PRETX systems provide pretreatment of sediment and debris prior to filtration and infiltration. Maintenance of PRETX pretreatment catch basins is simple and typically uses a standard vactor truck for cleaning. Simply remove the manhole cover and vactor out debris from within the sump and clean internal components by pressure washing. PRETX units are comprised of an outer precast concrete shell and consist of HDPE and stainless-steel internals that are resistant to rust and rot from corrosive winter runoff. Ideal tools include camera, shovel, hoe/rake, manhole pick, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local authority or company procedures.

Routine annual inspections and periodic maintenance is required for the effective operation of PRETX systems. The Responsible Parties should maintain PRETX systems in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for PRETX systems, along with a suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending upon a variety of factors including land use intensity, seasonality, the occurrence of large storm events, overly wet or dry (i.e., drought) regional hydrologic conditions, and any changes or redevelopment in the upstream land use.

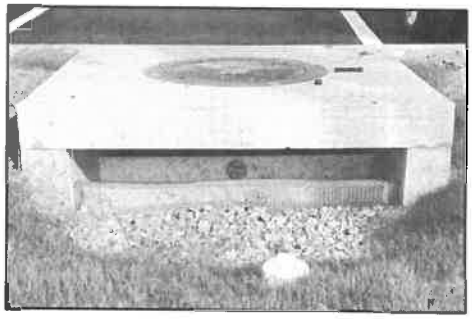
Activity	Frequency
NOTE: A properly functioning PRETX system will trap floatables such as bottles, cups, and leaves within the first sump area behind the baffle. Settleables such as sand, saturated leaves and trash will fall to the bottom of the sump area behind the weir wall. Lastly, removal of smaller debris such as cigarettes, grass clippings, etc. will be removed by the screened outlet.	Annual Inspection
Cleaning of PRETX systems is best conducted by a vactor truck with pressure washing for removal of accumulated sediment, trash, and debris.	
Remove maintenance cover and inspect for accumulation of trash and debris.	
Inspect for floatables behind baffle wall and remove as needed by vactor.	
Inspect for settleable behind weir wall and remove as needed by vactor.	
Inspect outlet screen for accumulated debris and clean as needed by pressure wash.	
Check the inlet area (curb throat or drop inlet grate) and surrounding pavement area immediately upstream for sediment deposition, weed growth, etc. Remove as needed with a broom and shovel or by vactor.	
Check to insure the PRETX system drains to the outvert level completely after storm events.	
This process is to be repeated until proper drainage and function has been restored.	As Needed
Repair or replace any damaged structural parts, inlets, outlets, grates.	



TOP VIEW WITH COVER REMOVED



SIDE VIEW OF TRASH AND DEBRIS ACCUMULATION



REAR VIEW OF OUTLET SCREEN

CHECKLIST FOR OPERATION & MAINTENANCE
PRETX™ BIOFILTER PRETREATMENT

Location:

Inspector:

Date: Time: Site Conditions:

Date Since Last Rain Event:

NOTE: A properly functioning PRETX system will trap floatables such as bottles, cups, and leaves within the first sump area behind the baffle. Settleables such as sand, saturated leaves and trash will fall to the bottom of the sump area behind the weir wall. Lastly, removal of smaller debris such as cigarettes, grass clippings, etc. will be removed by the screened outlet.

Inspection Items	Satisfactory (S) or Unsatisfactory (U)		Comments/Corrective Action
1. Remove maintenance cover to allow for visual inspection	S	U	
2. Complete drainage of PRETX system to outvert elevation after storm flow ceases	S	U	
3. Proper grading and drainage to PRETX inlet and outlet, no evidence of short-circuit or bypass of flow around or under structure	S	U	
4. Accumulation of settleable trash and debris within PRETX sump is 6" or less	S	U	
5. Sump area is empty of floatable trash and debris. Excessive accumulation of floatables will bypass baffle wall.	S	U	
6. Outlet screen is clear of debris	S	U	
7. Clogging and function of inlet/outlet components	S	U	
8. Cracking, spalling, or deterioration of concrete	S	U	
9. Nuisance vegetation, animal burrows, or settling of structure	S	U	
10. Undesirable odors	S	U	
11. Complaints from residents	S	U	
12. Public hazards noted	S	U	
13.	S	U	
14.	S	U	
15.	S	U	

Corrective Action Needed	Due Date
1.	
2.	
3.	
4.	
5.	

R-TANK

R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

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

Inspection

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

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

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

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

Inspection Ports

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

Maintenance Ports

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

Manholes

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

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

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

R-TANK OPERATION INSPECTION & MAINTENANCE

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

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

Maintenance

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

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

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

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

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

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

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

ACF ENVIRONMENTAL
LET'S GET IT DONE

2831 Cardwell Road
Richmond, Virginia, 23234
800.448.3636
FAX 804.743.7779
acfenvironmental.com

Step-By-Step Inspection & Maintenance Routine

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

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

R-Tank Maintenance Log

ACF ENVIRONMENTAL
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Site Name:______________________________

Location:______________________________

System Owner:______________________________

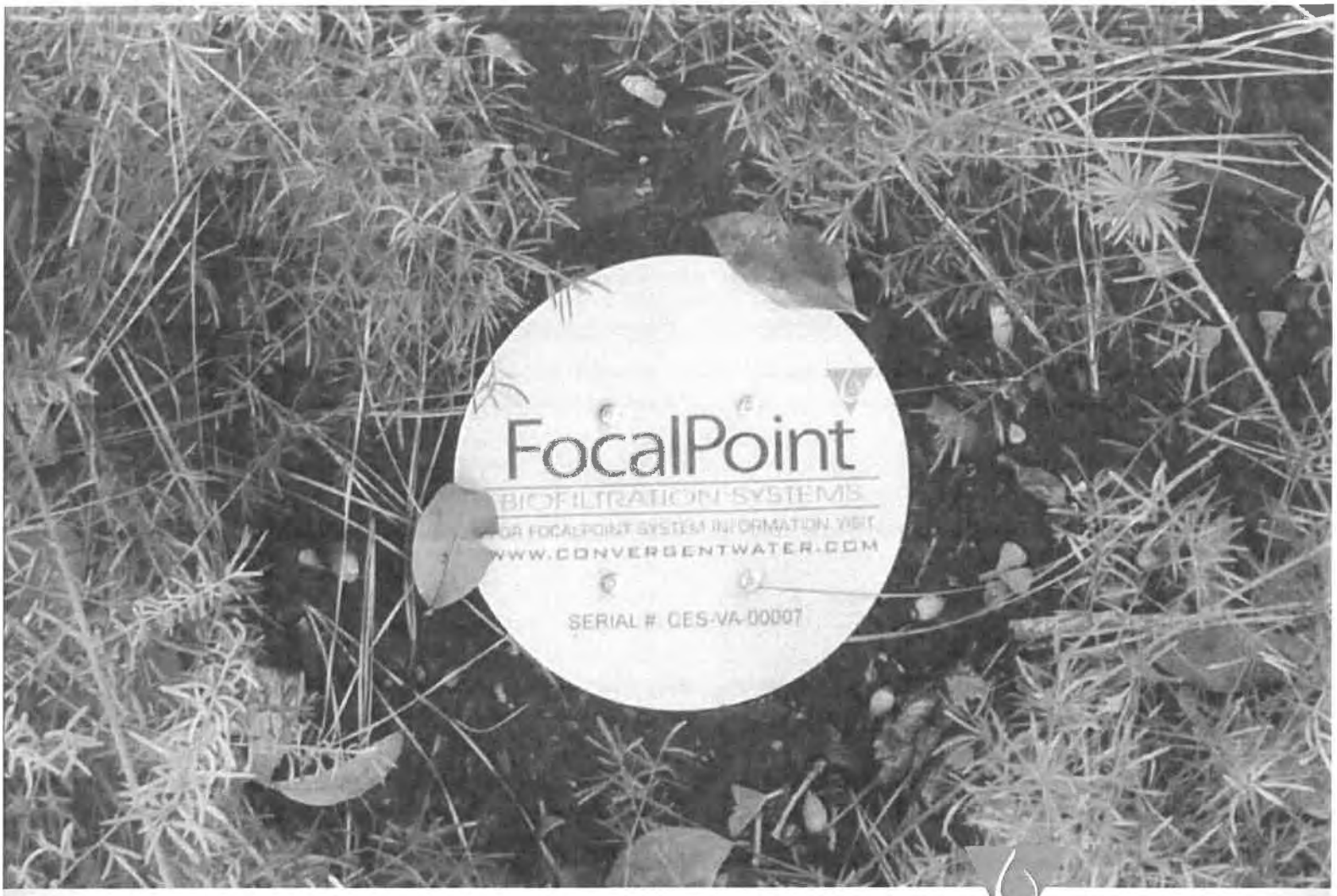
Company Responsible for Maintenance:______________________________

Contact:______________________________

Phone Number:______________________________

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

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



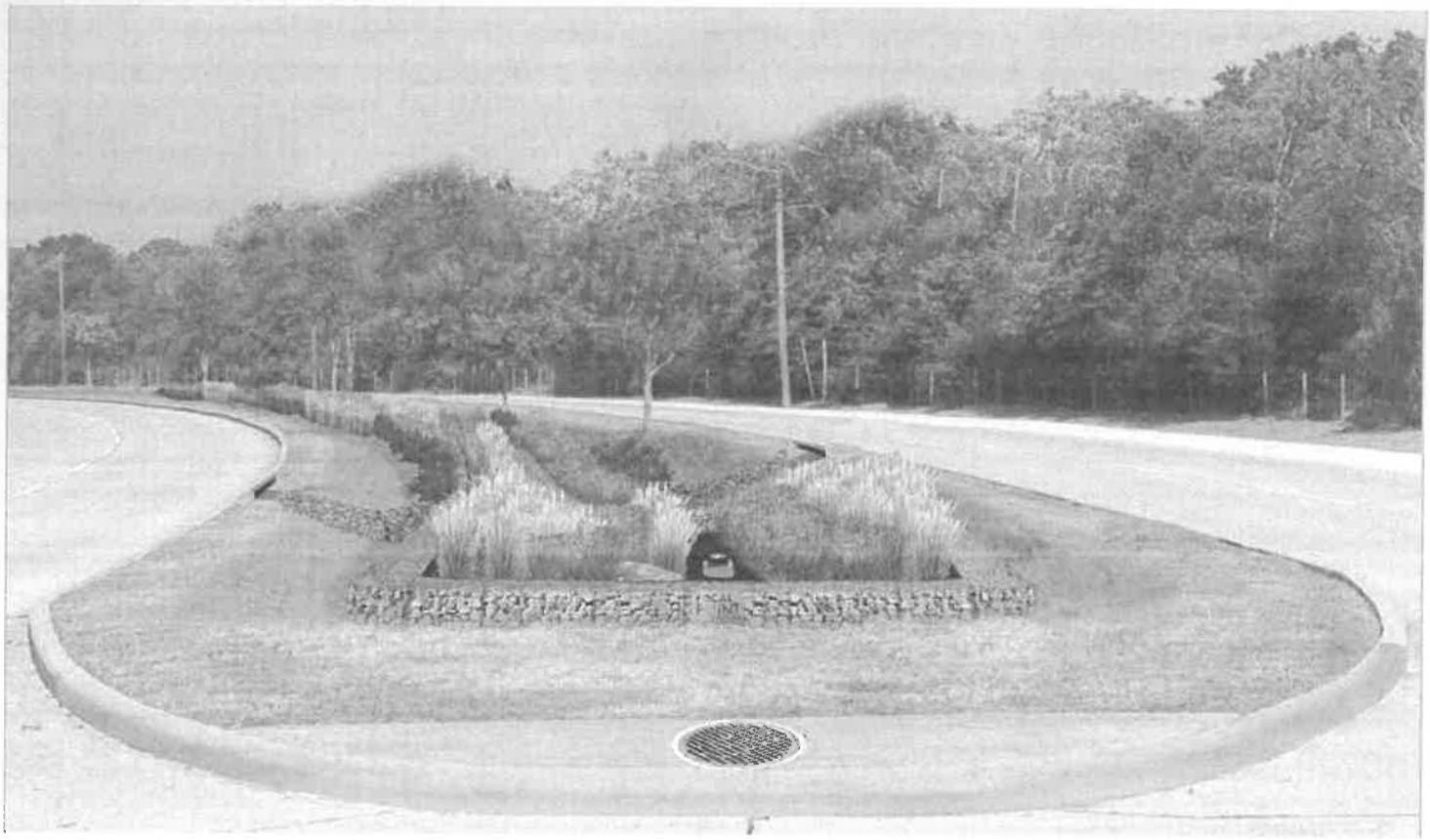
FocalPoint

BIOFILTRATION SYSTEMS

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM (HPMBS)

Operations & Maintenance

ACF ENVIRONMENTAL
Customer Focused, Environmentally Committed



GENERAL DESCRIPTION

The following general specifications describe the general operations and maintenance requirements for the FocalPoint® High Performance Modular Biofiltration System (HPMBS). The system utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The treatment system is a fully equipped, modular, constructed in place system designed to treat contaminated runoff.

Stormwater enters the FocalPoint® HPMBS, is filtered by the High Flow Biofiltration Media and passes through to the underdrain/storage system where the treated water is detained, retained or infiltrated to sub-soils, prior to discharge to the storm sewer system of any remaining flow.

Higher flows bypass the FocalPoint® HPMBS via a downstream inlet or other overflow conveyance. Maintenance is a simple, inexpensive and safe operation that does not require confined space entry, pumping or vacuum equipment, or specialized tools. Properly trained landscape personnel can effectively maintain FocalPoint® HPMBS by following instructions in this manual.

BASIC OPERATIONS

FocalPoint® is a modular, high performance biofiltration system that often works in tandem with other integrated management practices (IMP). Contaminated stormwater runoff enters the biofiltration bed through a conveyance swale, planter box, or directly through a curb cut or false inlet. Energy is dissipated by a rock or vegetative dissipation device and is absorbed by a 3-inch layer of aged, double shredded hardwood mulch, with fines removed, (when specified) on the surface of the biofiltration media.

As the water passes through the mulch layer, most of the larger sediment particles and heavy metals are removed through sedimentation and chemical reactions with the organic material in the mulch. Water passes through the biofiltration media where the finer particles are removed and numerous chemical reactions take place to immobilize and capture pollutants in the soil media.

The cleansed water passes into the underdrain/storage system and remaining flows are directed to a storm sewer system or other appropriate discharge point. Once the pollutants are in the soil, bacteria begin to break down and metabolize the materials and the plants begin to uptake and metabolize the pollutants. Some pollutants such as heavy metals, which are chemically bound to organic particles in the mulch, are released over time as the organic matter decomposes to release the metals to the feeder roots of the plants and the cells of the bacteria in the soil where they remain and are recycled. Other pollutants such as phosphorus are chemically bound to the soil particles and released slowly back to the plants and bacteria and used in their metabolic processes. Nitrogen goes through a variety of very complex biochemical processes where it can ultimately end up in the plant/bacteria biomass, turned to nitrogen gas or dissolves back into the water column as nitrates depending on soil temperature, pH and the availability of oxygen. The pollutants ultimately are retained in the mulch, soil and biomass with some passing out of the system into the air or back into the water.

DESIGN AND INSTALLATION

Each project presents different scopes for the use of FocalPoint® HPMBS. To ensure the safe and specified function of this stormwater BMP, Convergent Water Technologies and/or its Value Added Resellers (VAR) review each application before supply. Information and design assistance is available to the design engineer during the planning process. Correct FocalPoint® sizing is essential to optimum performance. The engineer shall submit calculations for approval by the local jurisdiction when required. The contractor and/or VAR is responsible for the correct installation of FocalPoint® HPMBS units as described in approved plans. A comprehensive installation manual is available at www.convergentwater.com.

MAINTENANCE

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons for maintenance include:

- Avoid legal challenges from your jurisdiction's maintenance enforcement program.
- Prolong the lifespan of your FocalPoint® HPMBS.
- Avoid costly repairs.
- Help reduce pollutant loads leaving your property.

Simple maintenance of the FocalPoint® HPMBS is required to continue effective pollutant removal from stormwater runoff before any discharge into downstream waters. This procedure will also extend the longevity of the living biofiltration system. The unit will recycle and accumulate pollutants within the biomass, but may also subjected to other materials entering the surface of the system. This may include trash, silt and leaves etc. which will be contained above the mulch and/or biofiltration media layer. Too much silt may inhibit the FocalPoint's® HPMBS flow rate, which is a primary reason for system maintenance. Removal of accumulated silt/sediment and/or replacement of the mulch layer (when specified), is an important activity that prevents over accumulation of such silt/sediment.

When to Maintain?

Convergent Water Technologies and/or its VAR includes a 1-year maintenance plan with each system purchased. Annual included maintenance consists of two (2) scheduled maintenance visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated for full operation. Full operation is defined as when the site is appropriately stabilized, the unit is installed and activated (by VAR), i.e., when mulch (if specified) and plantings are added.

Activation should be avoided until the site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed). Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

A first inspection to determine if maintenance is necessary should be performed at least twice annually after storm events of greater than (1) one inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required. Regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the VAR/Maintenance contractor and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the VAR/Maintenance contractor of any damage to the plant(s), which constitute(s) an integral part of the biofiltration technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance of the FocalPoint® HPMBS to the VAR/Maintenance contractor (i.e. no pruning or fertilizing).

EXCLUSION OF SERVICES

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant(s) in the FocalPoint® HPMBS.

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the VAR/Maintenance contractor maintenance contract. Should a major contamination event occur, the Owner must block off the outlet pipe of the FocalPoint® (where the cleaned runoff drains to, such as drop-inlet) and block off the point where water enters of the FocalPoint® HPMBS. The VAR/Maintenance contractor should be informed immediately.

MAINTENANCE VISIT SUMMARY

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of FocalPoint® HPMBS and surrounding area
2. Removal of debris, trash and mulch
3. Mulch replacement
4. Plant health evaluation (including measurements) and pruning or replacement as necessary
5. Clean area around FocalPoint® HPMBS
6. Complete paperwork, including date stamped photos of the tasks listed above.

MAINTENANCE TOOLS, SAFETY EQUIPMENT AND SUPPLIES

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes.

MAINTENANCE VISIT PROCEDURE

Inspection of FocalPoint® HPMBS and surrounding area

Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

- Standing Water yes | no
- Is Bypass Inlet Clear? yes | no
- Damage to HPMBS System yes | no
- to Overflow conveyance yes | no

Removal of Silt / Sediment / Clay

Dig out silt (if any) and mulch and remove trash & foreign items.

- Silt / Clay Found? yes | no
- Cups / Bags Found? yes | no
- Leaves? yes | no
- Volume of material removed _____ (volume or weight)

Removal of debris, trash and mulch

After removal of mulch and debris, measure distance from the top of the FocalPoint® HPMBS engineered media soil to the flow line elevation of the adjacent overflow conveyance. If this distance is greater than that specified on the plans (typ. 6" - 12"), add media (not top soil or other) to recharge to the distance specified.

- Distance to media surface to flow line of overflow conveyance (inches) _____
- # of Buckets of Media Added _____

Mulch Replacement

Most maintenance visits require only replacement mulch (if utilized) which must be, aged, double shredded hardwood mulch with fines removed. For smaller projects, one cubic foot of mulch will cover four square feet of biofiltration bed, and for larger projects, one cubic yard of mulch will cover 108 square feet of biofiltration bed. Some visits may require additional FocalPoint® HPMBS engineered soil media available from the VAR/Contractor.

- Add double shredded, aged hardwood mulch which has been screened to remove fines, evenly across the entire biofiltration media bed to a depth of 3".
- Clean accumulated sediment from energy dissipation system at the inlet to the FocalPoint® HPMBS to allow for entry of trash during a storm event.

Plant health evaluation and pruning or replacement as necessary

Examine the plant's health and replace if dead or dying.
Prune as necessary to encourage growth in the correct directions

- Height above Grate (feet) _____
- Width at Widest point (feet) _____
- Health alive | dead
- Damage to Plant yes | no

Clean area around FocalPoint® HPMBS

- Clean area around unit and remove all refuse to be disposed of appropriately.

Complete paperwork

- Deliver Maintenance Report and photographs as appropriate.
- Some jurisdictions may require submission of maintenance reports in accordance with approvals.
- It is the responsibility of the Owner to comply with local regulations.

FocalPoint Warranty

Seller warrants goods sold hereunder against defects in materials and workmanship only, for a period of (1) year from date the Seller activates the system into service. Seller makes no other warranties, express or implied.

Seller's liability hereunder shall be conditioned upon the Buyer's installation, maintenance, and service of the goods in strict compliance with the written instructions and specifications provided by the Seller. Any deviation from Seller's instructions and specifications or any abuse or neglect shall void warranties.

In the event of any claim upon Seller's warranty, the burden shall be upon the Buyer to prove strict compliance with all instructions and specifications provided by the Seller.

Seller's liability hereunder shall be limited only to the cost or replacement of the goods. Buyer agrees that Seller shall not be liable for any consequential losses arising from the purchase, installation, and/or use of the goods.

Maintenance Checklist

Element	Problem	What To Check	Should Exist	Action
Inlet	Excessive sediment or trash accumulation	Accumulation of sediment or trash impair free flow of water into FocalPoint	Inlet free of obstructions allowing free flow into FocalPoint System	Sediments or trash should be removed
Mulch Cover	Trash and floatable debris accumulation	Excessive trash or debris accumulation.	Minimal trash or other debris on mulch cover	Trash and debris should be removed and mulch cover raked level. Ensure that bark nugget
Mulch Cover	Ponding of water on mulch cover	Ponding in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils	Stormwater should drain freely and evenly over mulch cover.	Contact VAR for advice.
Plants	Plants not growing, or in poor condition	Soil/mulch too wet, evidence of spill. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact VAR for advice.
Plants	Plant growth excessive	Plants should be appropriate to the species and location of FocalPoint		Trim/prune plants in accordance with typical landscaping and

THIS PLAN IS NOT FOR CONSTRUCTION

THIS PLAN IS INTENDED TO SERVE AS A GUIDE FOR INSPECTION AND MAINTENANCE OPERATIONS, ANNUALLY OR AS REQUIRED.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 268, LOT 7

TOTAL LOT AREA
851,747 S.F.
14.96 ACRES

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

REV.	DATE	REVISION	BY
2	7/30/21	REVISED PER AOT COMMENTS	DJM
1	5/3/21	REVISED PER NEW LAYOUT	DJM
0	1/27/21	ISSUED FOR REVIEW	DJM

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:	BMP LOCATION PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
BMP
SHEET 1 OF 1
JBE PROJECT NO. 19190.2

DRAINAGE ANALYSIS

SEDIMENT AND EROSION CONTROL PLAN

375 Banfield Road
Portsmouth, NH 03801
Tax Map 266, Lot 7

Prepared for:

Banfield Realty, LLC
304 Maplewood Ave.
Portsmouth, NH 03801

Prepared by:
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85 Portsmouth Avenue
P.O. Box 219
Stratham, NH 03885
(603) 772-4746
December 30, 2020
REVISED February 17, 2021
REVISED May 17, 2021
REVISED August 16, 2021
JBE Project No. 19190.2

EXECUTIVE SUMMARY

Banfield Realty, LLC proposes to construct a 75,000 S.F. industrial warehouse building on a 14.96-acre parcel of land located at 375 Banfield Road in Portsmouth, NH. Currently the parcel consists of two commercial buildings with an associated accessory shed and parking. The existing buildings and parking with their associated utilities are to be removed so the new development can occur.
A drainage analysis of the entire site 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. The analysis was conducted using data for the 2 Year – 24 Hour (3.71"), 10 Year – 24 Hour (5.64"), 25 Year – 24 Hour (7.14"), and 50 Year – 24 Hour (8.57") storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. 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. A summary of the existing and proposed conditions peak rates of runoff is as follows:

Analysis Point	2 Year		10 Year		25 Year		50 Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Analysis Point #1	2.82	2.51	9.93	6.76	16.83	10.64	24.06	18.66
Analysis Point #2	0.00	0.00	0.02	0.01	0.12	0.05	0.39	0.19

The project site is located in the Industrial (I) Zoning District. The existing topography is such that runoff for the majority of the site (Subcatchment 1) flows into a major wetland (Analysis Point 1) which ultimately drains to a cross-street 12" culvert. Runoff from the undeveloped western corner (Subcatchment 2) sheet flows directly into an abutting lot (Analysis Point 2). The proposed development results in a decrease in the peak flow rate to both Analysis Points during all analyzed storms.

The proposed site development consists of the aforementioned industrial warehouse building with associated parking, utilities, and septic system. The same 2 Analysis Points were used in the Post Development Analysis. Runoff from most of the developed portions of the site will be treated with ACF Focal Point biofiltration systems and then detained in the ACF R-Tank subsurface detention basin before being discharged through a vegetated swale into Analysis Point 1. The exception to that is for the driveway that will be discharged through a level spreader into a Developed Area Buffer, designed per NHDES standards for stormwater treatment. Runoff from the periphery of the site will maintain its existing flow pattern.

The use of Best Management Practices per the NHDES Stormwater Manual have been applied to the design of this drainage system and will be observed during all stages of construction. All land disturbed during construction will be stabilized within thirty days of groundbreaking and abutting property owners will suffer minimal adversity resultant of this development.

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1.0 RAINFALL CHARACTERISTICS

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 (3.71"), 10 Year – 24 Hour (5.64"), 25 Year – 24 Hour (7.14"), and 50 Year – 24 Hour (8.57") storm events. 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.

The proposed peak rates of runoff will be reduced from the existing condition, thereby minimizing any potential for a negative impact on abutting properties or erosion of the wetland system. This is accomplished through treatment of stormwater runoff and attenuation of peak flows resulting from storm events.

2.0 EXISTING CONDITIONS ANALYSIS

The subject parcel consists of two commercial buildings and an accessory shed with associated parking. Behind this development, there are foot trails, lawns, woods, and two separate wetlands; one of which encumbers a large portion of the property and has an associated 100' buffer and another small, isolated wetland. The existing buildings are serviced by City water, natural gas, overhead electric, and an on-site septic system. The existing topography of the site features a hill on the north side with a sharp dropoff to relatively level ground around the major wetland system.

In the existing condition, the aforementioned hill divides the site into two subcatchments. Subcatchment 1 consists of developed area, lawn, and woods, runoff from all of which flows directly into the major wetland. Subcatchment 2 consists of a small area of forest and lawn on the opposite slope of the hill from which runoff flows to the abutter's property.

Existing soil types were determined through a Site-Specific Soil Survey conducted by a Certified Soil Scientist. These soils are categorized into Hydrologic Soil Groups (HSG) A, C, and D.

3.0 PROPOSED CONDITIONS ANALYSIS

The addition of the proposed impervious parking areas and the 75,000 S.F. industrial warehouse building causes an increase in the curve number (C_n) and a decrease in the time of concentration (T_c), the result being a potential increase in peak rates of runoff from the site. The construction of the parking lot, industrial warehouse building, catch basins, focal points, R-Tank, and associated grading, split the site into 11 subcatchments. The site will be graded such that runoff from most of the developed areas of the site will receive treatment through ACF Focal Point biofiltration systems. All runoff treated by the biofiltration system will then be directed into a lined R-Tank subsurface detention system for attenuation before being discharged into a vegetated swale which leads Analysis Point 1. The driveway will runoff through a level spreader into a Developed Area Buffer per NHDES standards for stormwater treatment. The undeveloped remainder of the site will maintain its existing flow pattern.

The peak flow rates to Analysis Point 2 are decreased as the site grading leads to a smaller portion of land being sloped in that direction, all of which is to remain undisturbed with this development.

4.0 SEDIMENT & EROSION CONTROL BEST MANAGEMENT PRACTICES

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment by the use of Best Management Practices as outlined in the NHDES Stormwater Manual. Any area disturbed by construction will be re-stabilized within 30 days and abutting properties and wetlands will suffer minimal adversity resultant of this development. All drainage structures will be constructed and stabilized prior to having runoff directed to them.

4.1 Silt Fence / Construction Fence

The plan set delineates the location of silt fence for sediment control. Sheet E1 – Erosion and Sediment Control Details, has the specifications for installation of the silt fence. This is necessary in areas where there is adjacent property or wetlands downslope of the area of development. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or equal. The four-foot fencing to be installed using six-foot posts at least two feet in the ground at a spacing of six to eight feet.

4.2 Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 3-inch coarse aggregate, and the pad itself constructed to a minimum length of 50 feet for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1.

4.3 Environmental Dust Control

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water can be applied. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

4.4 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 30 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutting property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification on Sheet E1 using seeding mixture C.

4.5 Temporary Sediment Traps

Temporary Sediment Traps are small temporary ponding areas that are formed by excavation or by constructing an earthen embankment across a drainage way and providing a stabilized outlet. These structures intercept sediment-laden runoff from small, disturbed areas and detain it long enough for the majority of the sediment to settle out into the sump of the trap.

4.6 Riprap Outlet Protection

Riprap Outlet Protection will be provided at the outlet of all culverts that discharge runoff into the environment (as opposed to a catch basin). The riprap outlet protection has been designed with the equations provided in the NHDES Stormwater Manual depending on inlet or outlet control. Details of the protection design can be found on Sheet E1 – Erosion & Sediment Control Details.

4.7 Catch Basins

A catch basin is a pre-cast concrete structure intended for the capture of stormwater utilized in streets and parking areas. Grease hoods attached to the outlet pipe of the structures allow for the capture of grease, oils, and other floatable solids from runoff, thereby minimizing their presence in the subsequent discharge.

4.8 Construction Sequence

1. Prior to the start of *any* activity, it is the responsibility of the site's Developer (or Owner) to file a Notice of Intent (NOI) form and a copy of one (shared) Stormwater Pollution Prevention Plan (SWPPP) with the U.S. Environmental Protection Agency (EPA) in order to gain coverage under the NPDES General Permit for Stormwater Discharges from Construction Activities. A pre-construction meeting shall be held prior to the start of construction to discuss the SWPPP and all associated responsibilities. Participants shall include the developer (or owner), the General Contractor, the Site Contractor, and the Engineer.

2. Cut and remove trees in construction area as required or directed.

3. Install silt fencing, and construction entrances prior to the start of earthwork. These shall be maintained until the final pavement surfacing and landscaping areas are established.

4. Clear, cut, grub, and dispose of debris in approved facilities. This includes any required demolition of existing structures, utilities, etc.

5. Construct and/or install temporary sediment basin(s) as required. These facilities shall be installed and stabilized prior to directing runoff to them.

6. 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.

7. Perform preliminary site grading in accordance with the plans, including the construction of any stormwater detention/retention ponds, drainage swales, retaining walls, and sound walls.

8. Prepare building pad(s) to enable building construction to begin.

9. Install the sewer and drainage systems first, then any other utilities in accordance with the plans 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 the details.

11. All swales and drainage structures are to be constructed and stabilized prior to having runoff 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 waters and/or property.

13. Perform final fine grading, including placement of any "select" subgrade materials.

14. Pave all parking lots and 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. riprap, erosion control blankets, etc.).

17. Finish paving all roadways and parking areas with finish course.

18. Complete permanent seeding and landscaping.

19. Remove temporary erosion control measures after seeding areas have been 85% established and site improvements are complete. Smooth and re-vegetate all disturbed areas.

20. Clean site and all drainage structures, pipes, and sumps of all silt and debris.

21. Install all painted pavement markings and signage per the plans and details.

22. 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.

4.9 Temporary Erosion Control Measures

1. The smallest practical area of land shall be exposed at any one time. At no time shall an area in excess of that required for construction be exposed.

2. Erosion, sediment and detention measures shall be installed as shown on the plans and at locations as required, or 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 loam and seeded with seed mixture "C" at a rate not less than 1.10 pounds of seed per 1,000 square feet of area (48 lbs. per acre).

4. Silt fences and other barriers shall be inspected every seven 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 properly disposed of.

5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and revegetated.

6. Areas must be seeded and mulched within 3 days of final grading, or temporarily stabilized within 14 days of initial disturbance of soil.

7. All proposed vegetated areas not stabilized by or are disturbed after October 15th must be protected with North American Green S75 erosion control blankets (or an equivalent approved in writing by the engineer) and seeded with winter rye or oats at a rate of 2.50 pounds per 1,000 square feet of area (108.90 lbs. per acre). Unstabilized swales shall be protected with erosion control blankets appropriate to the design flow conditions and seeded to the same specification. Placement of blankets shall not occur over accumulated snow.

8. 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" or non-erosive material such as stone or riprap has been installed; or
   d. Erosion control blankets have been properly installed.

9. After October 15th where work has stopped for the season, incomplete roadway or parking surfaces shall be protected with a minimum of 3" of crushed gravel meeting NHDOT Item 304.3.

10. 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 inspection and maintenance requirements to those called for in the SWPPP.

4.10 Inspection and Maintenance Schedule

4.26.1 Temporary Best Management Practices

Silt Fencing

During the construction process, all silt fencing will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Any section of fence that has failed or is failing is to be replaced immediately, overlapping adjacent fence sections by at least one foot. If the problem persists, measures such as additional fencing (i.e. double) or the addition of hay-bales on the project side of the fence line should be considered. Sediment is to be removed from behind the fencing if found to be deeper than six inches and disposed of properly.

Swales

Sediment build-up in swales will be removed if it is deeper than six inches and disposed of properly.

Sediment Traps

Sediment traps are to be inspected once per week and after every precipitation event. Sediment is to be removed from the traps if it is deeper than six inches and disposed of properly. The lip of the outlet crest should be maintained so as to provide an even, level edge so as to promote sheet flow out of the structure so as to minimize the potential for erosion downstream form the structure. Any erosion must be repaired and stabilized immediately.

4.26.2 Permanent Best Management Practices

Catch Basins

Sediment and debris is to be removed from catch basin sumps semi-annually (as well as from sumps below the inlet of culverts). Grease hoods are to be wiped clean and the rags disposed of properly. Debris obscuring the grate inlet should also be removed.

Drainage Swales

Sediment build-up in swales is to be removed if it is deeper than six inches, and any debris also removed. Areas where vegetation has not become established or has died should be reseeded. If this fails, additional loam and seed may be required. *Fertilizers should be utilized only as a last resort.* Mowing should be performed at least once a year, but not shorter than four inches, and all grass clippings removed.

5.0 CONCLUSION

This proposed site development located at 375 Banfield Road in Portsmouth, NH will have minimal adverse effect on abutting infrastructures, properties, and wetlands by way of stormwater runoff or siltation. Appropriate steps will be taken to eliminate erosion and sedimentation; these will be accomplished through the construction of a drainage system consisting of site grading, curbing, catch basins, ACF Focal Point biofiltration systems, a treatment buffer, and subsurface detention with a downstream vegetated swale. The use of Best Management Practices developed by the State of New Hampshire have been utilized in the design of this system and their application will be enforced throughout the construction process.

A site specific, terrain alteration permit (RSA 485:A-17) is required for this site plan due to the area of disturbance being greater than 100,000 square-feet.

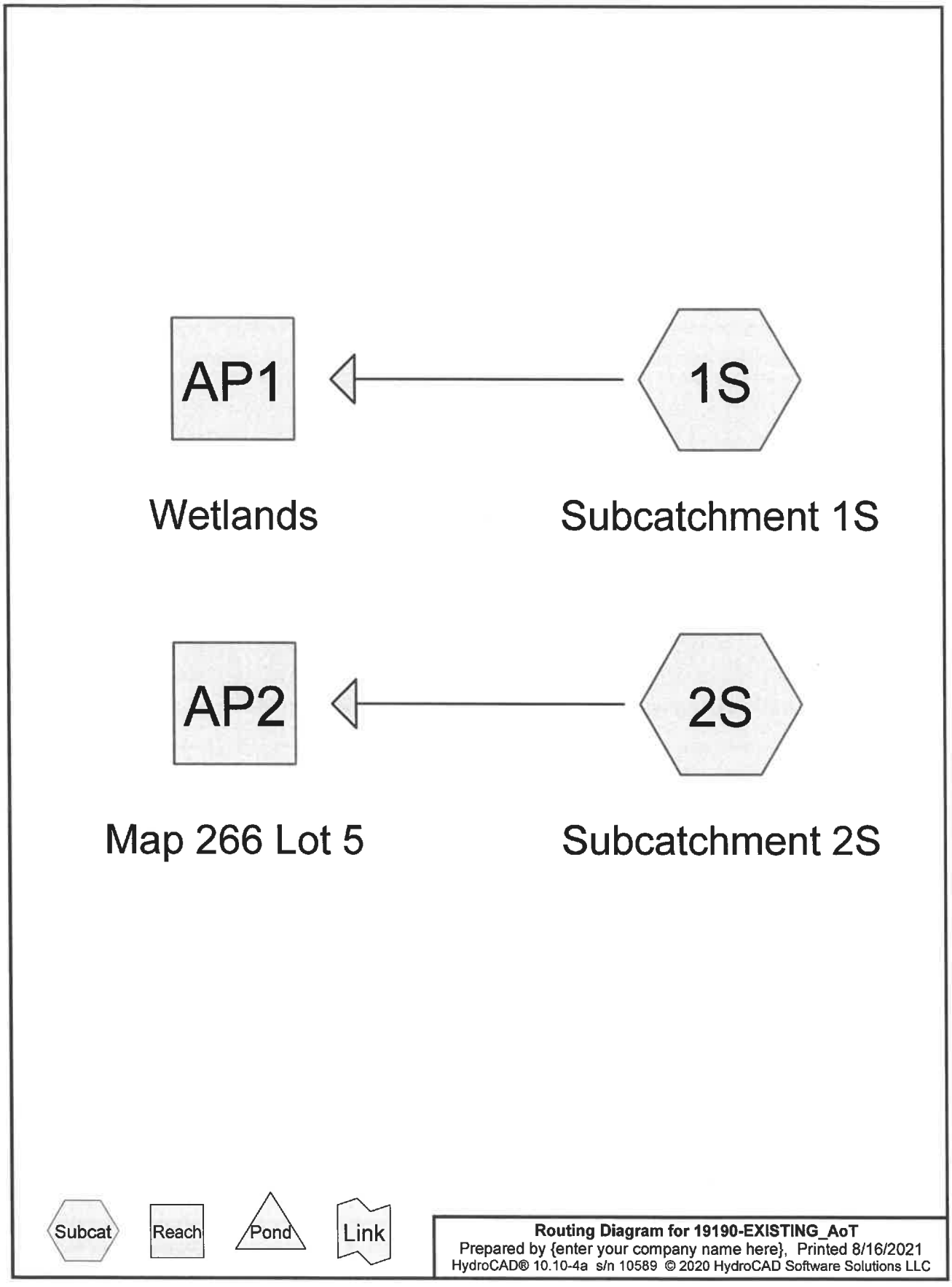
Respectfully Submitted,
JONES & BEACH ENGINEERS, INC.

Daniel Meditz, E.I.T
Project Engineer

APPENDIX I

EXISTING CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR


AP1
1S
Wetlands
Subcatchment 1S
AP2
2S
Map 266 Lot 5
Subcatchment 2S
Subcat
Reach
Pond
Link
Routing Diagram for 19190-EXISTING_AoT
Prepared by {enter your company name here}, Printed 8/16/2021
HydroCAD® 10.10-4a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.601	39	>75% Grass cover, Good, HSG A (1S, 2S)
0.786	74	>75% Grass cover, Good, HSG C (1S)
0.045	80	>75% Grass cover, Good, HSG D (1S)
0.389	65	Brush, Good, HSG C (1S)
0.033	96	Gravel surface, HSG D (1S)
0.010	98	Paved parking, HSG A (1S)
0.715	98	Paved parking, HSG D (1S)
0.166	98	Roofs, HSG D (1S)
2.453	30	Woods, Good, HSG A (1S, 2S)
2.318	70	Woods, Good, HSG C (1S)
0.141	77	Woods, Good, HSG D (1S)
0.050	32	Woods/grass comb., Good, HSG A (1S)
1.059	72	Woods/grass comb., Good, HSG C (1S)
10.766	**56**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.113	HSG A	1S, 2S
0.000	HSG B	
4.552	HSG C	1S
1.101	HSG D	1S
0.000	Other	
10.766		**TOTAL AREA**

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

Subcatchment1S: Subcatchment1S Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>0.58"
Flow Length=864' Tc=27.0 min CN=59 Runoff=2.82 cfs 0.463 af

Subcatchment2S: Subcatchment2S Runoff Area=48,019 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=371' Tc=15.3 min CN=33 Runoff=0.00 cfs 0.000 af

Reach AP1: Wetlands Inflow=2.82 cfs 0.463 af
Outflow=2.82 cfs 0.463 af

Reach AP2: Map 266 Lot 5 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 10.766 ac Runoff Volume = 0.463 af Average Runoff Depth = 0.52"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

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

Subcatchment1S: Subcatchment1S Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>1.60"
Flow Length=864' Tc=27.0 min CN=59 Runoff=9.93 cfs 1.289 af

Subcatchment2S: Subcatchment2S Runoff Area=48,019 sf 0.00% Impervious Runoff Depth>0.11"
Flow Length=371' Tc=15.3 min CN=33 Runoff=0.02 cfs 0.010 af

Reach AP1: Wetlands Inflow=9.93 cfs 1.289 af
Outflow=9.93 cfs 1.289 af

Reach AP2: Map 266 Lot 5 Inflow=0.02 cfs 0.010 af
Outflow=0.02 cfs 0.010 af

Total Runoff Area = 10.766 ac Runoff Volume = 1.300 af Average Runoff Depth = 1.45"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 9.93 cfs @ 12.42 hrs, Volume= 1.289 af, Depth> 1.60"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
7,231	98	Roofs, HSG D
31,165	98	Paved parking, HSG D
416	98	Paved parking, HSG A
19,112	39	>75% Grass cover, Good, HSG A
53,727	39	>75% Grass cover, Good, HSG A
26,447	39	>75% Grass cover, Good, HSG A
72,824	30	Woods, Good, HSG A
2,193	32	Woods/grass comb., Good, HSG A
6,121	77	Woods, Good, HSG D
46,133	72	Woods/grass comb., Good, HSG C
100,976	70	Woods, Good, HSG C
25,142	74	>75% Grass cover, Good, HSG C
9,094	74	>75% Grass cover, Good, HSG C
16,936	65	Brush, Good, HSG C
1,295	80	>75% Grass cover, Good, HSG D
679	80	>75% Grass cover, Good, HSG D
1,455	96	Gravel surface, HSG D
420,946	59	Weighted Average
382,134		90.78% Pervious Area
38,812		9.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	31	0.0500	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
2.7	20	0.0500	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
4.5	49	0.2400	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
4.1	124	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	111	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	105	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.1	94	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	330	0.0150	0.61		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.0	864	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.02 cfs @ 15.08 hrs, Volume= 0.010 af, Depth> 0.11"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
34,026	30	Woods, Good, HSG A
13,993	39	>75% Grass cover, Good, HSG A
48,019	33	Weighted Average
48,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	72	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
5.4	28	0.0500	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
0.6	48	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	113	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	110	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.3	371	Total			

Summary for Reach AP1: Wetlands

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

Inflow Area = 9.664 ac, 9.22% Impervious, Inflow Depth > 1.60" for 10 Yr 24 Hr(+15%) event
Inflow = 9.93 cfs @ 12.42 hrs, Volume= 1.289 af
Outflow = 9.93 cfs @ 12.42 hrs, Volume= 1.289 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 AP2: Map 266 Lot 5

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

Inflow Area = 1.102 ac, 0.00% Impervious, Inflow Depth > 0.11" for 10 Yr 24 Hr(+15%) event
Inflow = 0.02 cfs @ 15.08 hrs, Volume= 0.010 af
Outflow = 0.02 cfs @ 15.08 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

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

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

Subcatchment1S: Subcatchment1S Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>2.59"
Flow Length=864' Tc=27.0 min CN=59 Runoff=16.83 cfs 2.083 af

Subcatchment2S: Subcatchment2S Runoff Area=48,019 sf 0.00% Impervious Runoff Depth>0.40"
Flow Length=371' Tc=15.3 min CN=33 Runoff=0.12 cfs 0.037 af

Reach AP1: Wetlands Inflow=16.83 cfs 2.083 af
Outflow=16.83 cfs 2.083 af

Reach AP2: Map 266 Lot 5 Inflow=0.12 cfs 0.037 af
Outflow=0.12 cfs 0.037 af

Total Runoff Area = 10.766 ac Runoff Volume = 2.120 af Average Runoff Depth = 2.36"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

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

Subcatchment1S: Subcatchment1S Runoff Area=420,946 sf 9.22% Impervious Runoff Depth>3.63"
Flow Length=864' Tc=27.0 min CN=59 Runoff=24.06 cfs 2.920 af

Subcatchment2S: Subcatchment2S Runoff Area=48,019 sf 0.00% Impervious Runoff Depth>0.81"
Flow Length=371' Tc=15.3 min CN=33 Runoff=0.39 cfs 0.075 af

Reach AP1: Wetlands Inflow=24.06 cfs 2.920 af
Outflow=24.06 cfs 2.920 af

Reach AP2: Map 266 Lot 5 Inflow=0.39 cfs 0.075 af
Outflow=0.39 cfs 0.075 af

Total Runoff Area = 10.766 ac Runoff Volume = 2.995 af Average Runoff Depth = 3.34"
91.72% Pervious = 9.875 ac 8.28% Impervious = 0.891 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 24.06 cfs @ 12.39 hrs, Volume= 2.920 af, Depth> 3.63"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
7,231	98	Roofs, HSG D
31,165	98	Paved parking, HSG D
416	98	Paved parking, HSG A
19,112	39	>75% Grass cover, Good, HSG A
53,727	39	>75% Grass cover, Good, HSG A
26,447	39	>75% Grass cover, Good, HSG A
72,824	30	Woods, Good, HSG A
2,193	32	Woods/grass comb., Good, HSG A
6,121	77	Woods, Good, HSG D
46,133	72	Woods/grass comb., Good, HSG C
100,976	70	Woods, Good, HSG C
25,142	74	>75% Grass cover, Good, HSG C
9,094	74	>75% Grass cover, Good, HSG C
16,936	65	Brush, Good, HSG C
1,295	80	>75% Grass cover, Good, HSG D
679	80	>75% Grass cover, Good, HSG D
1,455	96	Gravel surface, HSG D
420,946	59	Weighted Average
382,134		90.78% Pervious Area
38,812		9.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	31	0.0500	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
2.7	20	0.0500	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
4.5	49	0.2400	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
4.1	124	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	111	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	105	0.0500	3.60		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.1	94	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	330	0.0150	0.61		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.0	864	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.39 cfs @ 12.43 hrs, Volume= 0.075 af, Depth> 0.81"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
34,026	30	Woods, Good, HSG A
13,993	39	>75% Grass cover, Good, HSG A
48,019	33	Weighted Average
48,019		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	72	0.0300	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
5.4	28	0.0500	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
0.6	48	0.0625	1.25		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	113	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.2	110	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.3	371	Total			

Summary for Reach AP1: Wetlands

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

Inflow Area = 9.664 ac, 9.22% Impervious, Inflow Depth > 3.63" for 50 Yr 24 Hr(+15%) event
Inflow = 24.06 cfs @ 12.39 hrs, Volume= 2.920 af
Outflow = 24.06 cfs @ 12.39 hrs, Volume= 2.920 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 AP2: Map 266 Lot 5

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

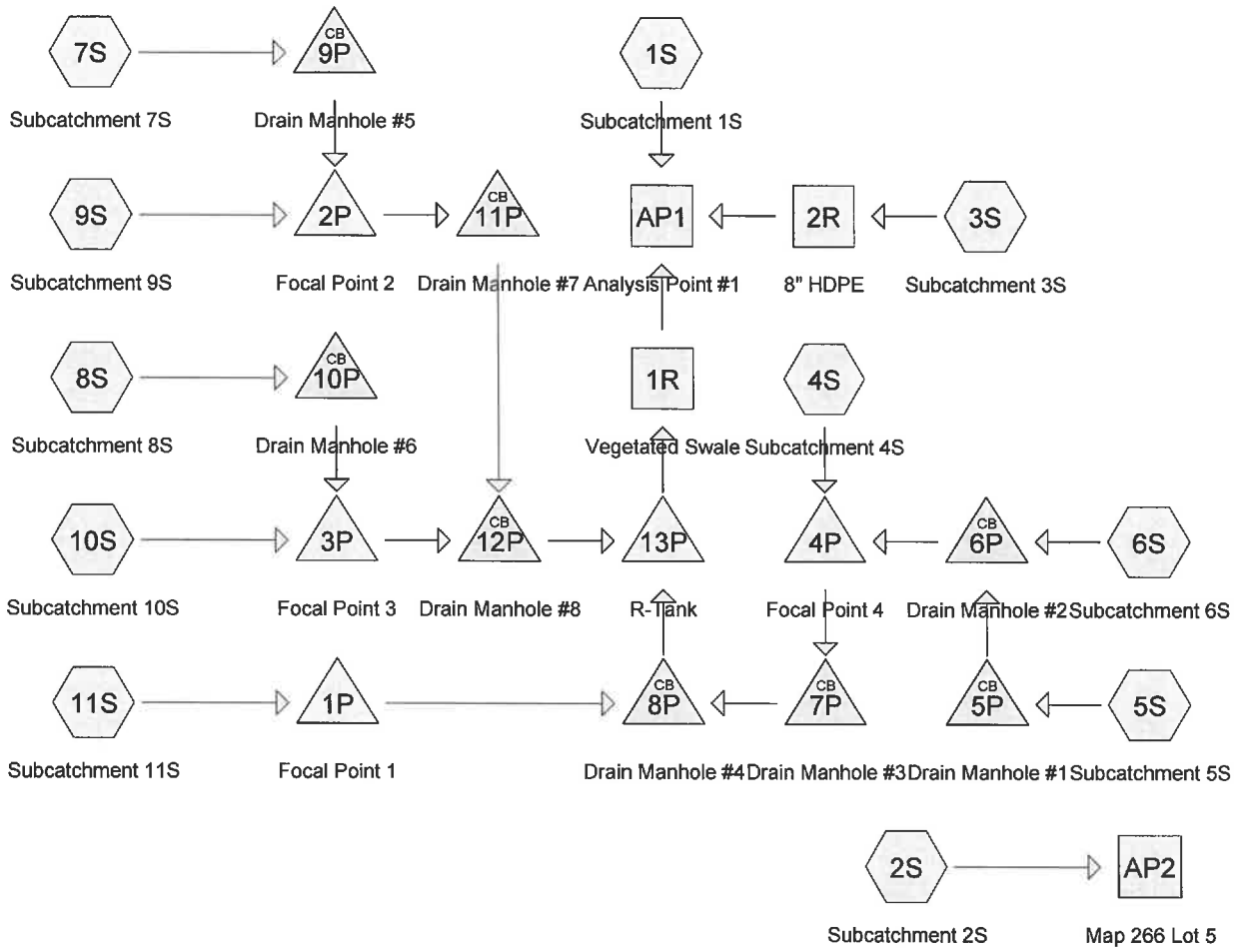
Inflow Area = 1.102 ac, 0.00% Impervious, Inflow Depth > 0.81" for 50 Yr 24 Hr(+15%) event
Inflow = 0.39 cfs @ 12.43 hrs, Volume= 0.075 af
Outflow = 0.39 cfs @ 12.43 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

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

APPENDIX II

PROPOSED CONDITIONS DRAINAGE ANALYSIS

Summary 2 YEAR
Complete 10 YEAR
Summary 25 YEAR
Complete 50 YEAR



Subcat Reach Pond Link

Routing Diagram for 19190-PROPOSED_AoT
Prepared by {enter your company name here}, Printed 8/16/2021
HydroCAD® 10.10-4a s/n 10589 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.661	39	>75% Grass cover, Good, HSG A (1S, 2S, 4S, 9S, 10S, 11S)
0.575	74	>75% Grass cover, Good, HSG C (1S, 10S, 11S)
0.641	80	>75% Grass cover, Good, HSG D (1S, 3S, 4S, 11S)
0.746	98	Paved parking, HSG A (9S, 10S, 11S)
0.313	98	Paved parking, HSG C (10S, 11S)
0.164	98	Paved parking, HSG D (3S, 11S)
1.205	98	Roofs, HSG A (5S, 6S, 7S, 8S)
0.271	98	Roofs, HSG C (5S, 6S, 7S, 8S)
0.245	98	Roofs, HSG D (5S, 6S)
1.501	30	Woods, Good, HSG A (1S, 2S, 4S)
2.292	70	Woods, Good, HSG C (1S)
0.051	77	Woods, Good, HSG D (1S)
1.101	72	Woods/grass comb., Good, HSG C (1S)
10.766	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.113	HSG A	1S, 2S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S
0.000	HSG B	
4.552	HSG C	1S, 5S, 6S, 7S, 8S, 10S, 11S
1.101	HSG D	1S, 3S, 4S, 5S, 6S, 11S
0.000	Other	
10.766		**TOTAL AREA**

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

Subcatchment1S: Subcatchment1S Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>0.76"
Flow Length=646' Tc=32.6 min CN=63 Runoff=2.08 cfs 0.325 af

Subcatchment2S: Subcatchment2S Runoff Area=27,616 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=223' Tc=11.9 min CN=32 Runoff=0.00 cfs 0.000 af

Subcatchment3S: Subcatchment3S Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>2.03"
Flow Length=176' Tc=8.0 min CN=83 Runoff=0.77 cfs 0.059 af

Subcatchment4S: Subcatchment4S Runoff Area=33,970 sf 0.00% Impervious Runoff Depth>0.19"
Flow Length=225' Tc=17.6 min CN=48 Runoff=0.03 cfs 0.012 af

Subcatchment5S: Subcatchment5S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47"
Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af

Subcatchment6S: Subcatchment6S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47"
Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af

Subcatchment7S: Subcatchment7S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47"
Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af

Subcatchment8S: Subcatchment8S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>3.47"
Tc=6.0 min CN=98 Runoff=1.52 cfs 0.125 af

Subcatchment9S: Subcatchment9S Runoff Area=54,147 sf 45.38% Impervious Runoff Depth>0.91"
Flow Length=471' Tc=19.6 min CN=66 Runoff=0.79 cfs 0.094 af

Subcatchment10S: Subcatchment10S Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>2.55"
Flow Length=170' Tc=7.7 min CN=89 Runoff=1.24 cfs 0.096 af

Subcatchment11S: Subcatchment11S Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>1.96"
Flow Length=195' Tc=6.0 min CN=82 Runoff=0.98 cfs 0.071 af

Reach 1R: Vegetated Swale Avg. Flow Depth=0.33' Max Vel=0.27 fps Inflow=0.27 cfs 0.277 af
n=0.150 L=100.0' S=0.0050 '/' Capacity=11.89 cfs Outflow=0.27 cfs 0.275 af

Reach 2R: 8" HDPE Avg. Flow Depth=0.27' Max Vel=5.78 fps Inflow=0.77 cfs 0.059 af
8.0" Round Pipe n=0.013 L=70.0' S=0.0343 '/' Capacity=2.24 cfs Outflow=0.77 cfs 0.059 af

Reach AP1: Analysis Point #1 Inflow=2.51 cfs 0.659 af
Outflow=2.51 cfs 0.659 af

Reach AP2: Map 266 Lot 5 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 1P: Focal Point 1 Peak Elev=41.99' Storage=115 cf Inflow=0.98 cfs 0.071 af
Outflow=0.86 cfs 0.071 af

Pond 2P: Focal Point 2 Peak Elev=46.26' Storage=207 cf Inflow=1.85 cfs 0.219 af
Outflow=1.67 cfs 0.219 af

Pond 3P: Focal Point 3 Peak Elev=46.96' Storage=389 cf Inflow=2.74 cfs 0.220 af
Outflow=2.59 cfs 0.220 af

Pond 4P: Focal Point 4 Peak Elev=45.82' Storage=491 cf Inflow=3.04 cfs 0.262 af
Outflow=2.31 cfs 0.262 af

Pond 5P: Drain Manhole #1 Peak Elev=46.96' Inflow=1.52 cfs 0.125 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=1.52 cfs 0.125 af

Pond 6P: Drain Manhole #2 Peak Elev=46.59' Inflow=3.04 cfs 0.249 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0077 '/' Outflow=3.04 cfs 0.249 af

Pond 7P: Drain Manhole #3 Peak Elev=39.95' Inflow=2.31 cfs 0.262 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0075 '/' Outflow=2.31 cfs 0.262 af

Pond 8P: Drain Manhole #4 Peak Elev=39.95' Inflow=3.17 cfs 0.333 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=3.17 cfs 0.332 af

Pond 9P: Drain Manhole #5 Peak Elev=47.57' Inflow=1.52 cfs 0.125 af
12.0" Round Culvert n=0.013 L=86.0' S=0.0058 '/' Outflow=1.52 cfs 0.125 af

Pond 10P: Drain Manhole #6 Peak Elev=48.28' Inflow=1.52 cfs 0.125 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0065 '/' Outflow=1.52 cfs 0.125 af

Pond 11P: Drain Manhole #7 Peak Elev=43.00' Inflow=1.67 cfs 0.219 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=1.67 cfs 0.219 af

Pond 12P: Drain Manhole #8 Peak Elev=42.37' Inflow=4.24 cfs 0.439 af
24.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=4.24 cfs 0.439 af

Pond 13P: R-Tank Peak Elev=39.95' Storage=23,998 cf Inflow=7.40 cfs 0.775 af
Outflow=0.27 cfs 0.277 af

Total Runoff Area = 10.766 ac Runoff Volume = 1.156 af Average Runoff Depth = 1.29"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

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

Subcatchment1S: Subcatchment1S Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>1.91"
Flow Length=646' Tc=32.6 min CN=63 Runoff=6.04 cfs 0.821 af

Subcatchment2S: Subcatchment2S Runoff Area=27,616 sf 0.00% Impervious Runoff Depth>0.08"
Flow Length=223' Tc=11.9 min CN=32 Runoff=0.01 cfs 0.004 af

Subcatchment3S: Subcatchment3S Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>3.75"
Flow Length=176' Tc=8.0 min CN=83 Runoff=1.40 cfs 0.109 af

Subcatchment4S: Subcatchment4S Runoff Area=33,970 sf 0.00% Impervious Runoff Depth>0.84"
Flow Length=225' Tc=17.6 min CN=48 Runoff=0.37 cfs 0.054 af

Subcatchment5S: Subcatchment5S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40"
Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af

Subcatchment6S: Subcatchment6S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40"
Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af

Subcatchment7S: Subcatchment7S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40"
Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af

Subcatchment8S: Subcatchment8S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>5.40"
Tc=6.0 min CN=98 Runoff=2.32 cfs 0.194 af

Subcatchment9S: Subcatchment9S Runoff Area=54,147 sf 45.38% Impervious Runoff Depth>2.17"
Flow Length=471' Tc=19.6 min CN=66 Runoff=2.08 cfs 0.224 af

Subcatchment10S: Subcatchment10S Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>4.38"
Flow Length=170' Tc=7.7 min CN=89 Runoff=2.08 cfs 0.165 af

Subcatchment11S: Subcatchment11S Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>3.65"
Flow Length=195' Tc=6.0 min CN=82 Runoff=1.82 cfs 0.133 af

Reach 1R: Vegetated Swale Avg. Flow Depth=0.47' Max Vel=0.33 fps Inflow=0.53 cfs 0.431 af
n=0.150 L=100.0' S=0.0050 '/' Capacity=11.89 cfs Outflow=0.53 cfs 0.429 af

Reach 2R: 8" HDPE Avg. Flow Depth=0.38' Max Vel=6.75 fps Inflow=1.40 cfs 0.109 af
8.0" Round Pipe n=0.013 L=70.0' S=0.0343 '/' Capacity=2.24 cfs Outflow=1.40 cfs 0.109 af

Reach AP1: Analysis Point #1 Inflow=6.76 cfs 1.359 af
Outflow=6.76 cfs 1.359 af

Reach AP2: Map 266 Lot 5 Inflow=0.01 cfs 0.004 af
Outflow=0.01 cfs 0.004 af

Pond 1P: Focal Point 1 Peak Elev=42.58' Storage=272 cf Inflow=1.82 cfs 0.133 af
Outflow=1.70 cfs 0.131 af

Pond 2P: Focal Point 2 Peak Elev=46.72' Storage=396 cf Inflow=3.46 cfs 0.418 af
Outflow=3.62 cfs 0.418 af

Pond 3P: Focal Point 3 Peak Elev=47.13' Storage=473 cf Inflow=4.38 cfs 0.358 af
Outflow=4.32 cfs 0.358 af

Pond 4P: Focal Point 4 Peak Elev=46.13' Storage=713 cf Inflow=4.72 cfs 0.442 af
Outflow=4.72 cfs 0.442 af

Pond 5P: Drain Manhole #1 Peak Elev=47.71' Inflow=2.32 cfs 0.194 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=2.32 cfs 0.194 af

Pond 6P: Drain Manhole #2 Peak Elev=47.11' Inflow=4.64 cfs 0.387 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0077 '/' Outflow=4.64 cfs 0.387 af

Pond 7P: Drain Manhole #3 Peak Elev=42.18' Inflow=4.72 cfs 0.442 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0075 '/' Outflow=4.72 cfs 0.442 af

Pond 8P: Drain Manhole #4 Peak Elev=42.18' Inflow=6.35 cfs 0.573 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=6.35 cfs 0.573 af

Pond 9P: Drain Manhole #5 Peak Elev=47.90' Inflow=2.32 cfs 0.194 af
12.0" Round Culvert n=0.013 L=86.0' S=0.0058 '/' Outflow=2.32 cfs 0.194 af

Pond 10P: Drain Manhole #6 Peak Elev=48.60' Inflow=2.32 cfs 0.194 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0065 '/' Outflow=2.32 cfs 0.194 af

Pond 11P: Drain Manhole #7 Peak Elev=43.48' Inflow=3.62 cfs 0.418 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=3.62 cfs 0.418 af

Pond 12P: Drain Manhole #8 Peak Elev=42.87' Inflow=7.93 cfs 0.776 af
24.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=7.93 cfs 0.776 af

Pond 13P: R-Tank Peak Elev=42.18' Storage=42,761 cf Inflow=14.27 cfs 1.349 af
Outflow=0.53 cfs 0.431 af

Total Runoff Area = 10.766 ac Runoff Volume = 2.286 af Average Runoff Depth = 2.55"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 6.04 cfs @ 12.49 hrs, Volume= 0.821 af, Depth> 1.91"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
17,375	39	>75% Grass cover, Good, HSG A
33,619	30	Woods, Good, HSG A
19,910	74	>75% Grass cover, Good, HSG C
99,843	70	Woods, Good, HSG C
47,938	72	Woods/grass comb., Good, HSG C
3,491	80	>75% Grass cover, Good, HSG D
2,215	77	Woods, Good, HSG D
224,391	63	Weighted Average
224,391		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0600	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
1.3	78	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.1	468	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.6	646	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.01 cfs @ 15.34 hrs, Volume= 0.004 af, Depth> 0.08"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
22,122	30	Woods, Good, HSG A
5,494	39	>75% Grass cover, Good, HSG A
27,616	32	Weighted Average
27,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
1.1	123	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	223	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 1.40 cfs @ 12.11 hrs, Volume= 0.109 af, Depth> 3.75"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
2,767	98	Paved parking, HSG D
12,428	80	>75% Grass cover, Good, HSG D
15,195	83	Weighted Average
12,428		81.79% Pervious Area
2,767		18.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
0.4	33	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.0	176	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 0.37 cfs @ 12.34 hrs, Volume= 0.054 af, Depth> 0.84"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
14,449	39	>75% Grass cover, Good, HSG A
9,642	30	Woods, Good, HSG A
9,879	80	>75% Grass cover, Good, HSG D
33,970	48	Weighted Average
33,970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	41	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
2.4	27	0.3300	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
1.1	17	0.3300	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
2.7	85	0.0050	0.52	3.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.9	55	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

17.6 225 Total

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
11,448	98	Roofs, HSG A
3,233	98	Roofs, HSG C
4,069	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
11,834	98	Roofs, HSG A
293	98	Roofs, HSG C
6,623	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
18,108	98	Roofs, HSG A
642	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Depth> 5.40"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
11,115	98	Roofs, HSG A
7,635	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 9S: Subcatchment 9S

Runoff = 2.08 cfs @ 12.29 hrs, Volume= 0.224 af, Depth> 2.17"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
24,571	98	Paved parking, HSG A
29,576	39	>75% Grass cover, Good, HSG A
54,147	66	Weighted Average
29,576		54.62% Pervious Area
24,571		45.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	38	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
2.2	39	0.3300	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
5.7	177	0.0050	0.52	3.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.6	37	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	180	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
19.6	471	Total			

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 2.08 cfs @ 12.11 hrs, Volume= 0.165 af, Depth> 4.38"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
153	98	Paved parking, HSG A
13,337	98	Paved parking, HSG C
1,022	39	>75% Grass cover, Good, HSG A
5,113	74	>75% Grass cover, Good, HSG C
19,625	89	Weighted Average
6,135		31.26% Pervious Area
13,490		68.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
0.2	6	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.23"
0.8	58	0.0200	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.23"
0.4	70	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	170	Total			

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 1.82 cfs @ 12.09 hrs, Volume= 0.133 af, Depth> 3.65"

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 24 Hr(+15%) Rainfall=5.64"

Area (sf)	CN	Description
7,767	98	Paved parking, HSG A
319	98	Paved parking, HSG C
4,370	98	Paved parking, HSG D
4,431	39	>75% Grass cover, Good, HSG A
30	74	>75% Grass cover, Good, HSG C
2,115	80	>75% Grass cover, Good, HSG D
19,032	82	Weighted Average
6,576		34.55% Pervious Area
12,456		65.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	37	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
0.6	63	0.0400	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.23"
0.4	95	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	195	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Vegetated Swale

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 1.12" for 10 Yr 24 Hr(+15%) event
Inflow = 0.53 cfs @ 16.34 hrs, Volume= 0.431 af
Outflow = 0.53 cfs @ 16.41 hrs, Volume= 0.429 af, Atten= 0%, Lag= 3.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.33 fps, Min. Travel Time= 5.1 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 6.7 min

Peak Storage= 160 cf @ 16.41 hrs
Average Depth at Peak Storage= 0.47' , Surface Width= 4.82'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 11.89 cfs

2.00' x 2.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 100.0' Slope= 0.0050 '/'
Inlet Invert= 36.50', Outlet Invert= 36.00'

Summary for Reach 2R: 8" HDPE

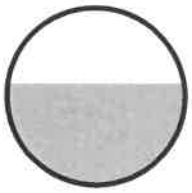
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.349 ac, 18.21% Impervious, Inflow Depth > 3.75" for 10 Yr 24 Hr(+15%) event
Inflow = 1.40 cfs @ 12.11 hrs, Volume= 0.109 af
Outflow = 1.40 cfs @ 12.12 hrs, Volume= 0.109 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 6.75 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 0.5 min

Peak Storage= 15 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.38' , Surface Width= 0.66'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.24 cfs

8.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 70.0' Slope= 0.0343 '/'
Inlet Invert= 40.20', Outlet Invert= 37.80'



Summary for Reach AP1: Analysis Point #1

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

Inflow Area = 10.132 ac, 29.07% Impervious, Inflow Depth > 1.61" for 10 Yr 24 Hr(+15%) event
Inflow = 6.76 cfs @ 12.47 hrs, Volume= 1.359 af
Outflow = 6.76 cfs @ 12.47 hrs, Volume= 1.359 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Map 266 Lot 5

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

Inflow Area = 0.634 ac, 0.00% Impervious, Inflow Depth > 0.08" for 10 Yr 24 Hr(+15%) event
Inflow = 0.01 cfs @ 15.34 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 15.34 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Focal Point 1

Inflow Area = 0.437 ac, 65.45% Impervious, Inflow Depth > 3.65" for 10 Yr 24 Hr(+15%) event
Inflow = 1.82 cfs @ 12.09 hrs, Volume= 0.133 af
Outflow = 1.70 cfs @ 12.14 hrs, Volume= 0.131 af, Atten= 7%, Lag= 2.7 min
Primary = 1.70 cfs @ 12.14 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 42.58' @ 12.13 hrs Surf.Area= 526 sf Storage= 272 cf

Plug-Flow detention time= 14.9 min calculated for 0.131 af (98% of inflow)
Center-of-Mass det. time= 5.5 min (816.4 - 810.9)

Volume	Invert	Avail.Storage	Storage Description
#1	39.25'	53 cf	**3.00'W x 20.00'L x 2.25'H Focal Point Area 1 Z=1.0** 267 cf Overall x 20.0% Voids
#2	41.50'	641 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		694 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	60	0	0
43.50	581	641	641

Device	Routing	Invert	Outlet Devices
#1	Primary	38.46'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.46' / 37.95' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 3	39.25'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	38.46'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	42.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.14 hrs HW=42.58' TW=39.76' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.63 cfs of 20.02 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes 1.21 cfs of 2.02 cfs potential flow)
  │ └─**2=Exfiltration** (Exfiltration Controls 1.21 cfs)
  └─**4=Orifice/Grate** (Weir Controls 0.42 cfs @ 0.90 fps)

Summary for Pond 2P: Focal Point 2

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 3.00" for 10 Yr 24 Hr(+15%) event
Inflow = 3.46 cfs @ 12.11 hrs, Volume= 0.418 af
Outflow = 3.62 cfs @ 12.12 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.3 min
Primary = 3.62 cfs @ 12.12 hrs, Volume= 0.418 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 46.72' @ 12.12 hrs Surf.Area= 899 sf Storage= 396 cf

Plug-Flow detention time= 1.1 min calculated for 0.417 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (808.7 - 807.6)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	138 cf	**8.00'W x 27.50'L x 2.25'H Focal Point Area 1 Z=1.0** 690 cf Overall x 20.0% Voids
#2	46.00'	1,215 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		1,353 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	220	0	0
48.00	995	1,215	1,215

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	**18.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.40' S= 0.0156 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 3	43.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	42.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.44 cfs @ 12.12 hrs HW=46.70' TW=43.44' (Dynamic Tailwater)
- **1=Culvert** (Passes 3.44 cfs of 11.62 cfs potential flow)
  - **3=Orifice/Grate** (Passes 2.06 cfs of 2.17 cfs potential flow)
    - **2=Exfiltration** (Exfiltration Controls 2.06 cfs)
  - **4=Orifice/Grate** (Weir Controls 1.38 cfs @ 1.46 fps)

Summary for Pond 3P: Focal Point 3

Inflow Area = 0.881 ac, 84.01% Impervious, Inflow Depth > 4.88" for 10 Yr 24 Hr(+15%) event
Inflow = 4.38 cfs @ 12.10 hrs, Volume= 0.358 af
Outflow = 4.32 cfs @ 12.11 hrs, Volume= 0.358 af, Atten= 1%, Lag= 0.7 min
Primary = 4.32 cfs @ 12.11 hrs, Volume= 0.358 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 47.13' @ 12.11 hrs Surf.Area= 813 sf Storage= 473 cf

Plug-Flow detention time= 1.2 min calculated for 0.358 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (767.8 - 766.6)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	93 cf	**7.00'W x 20.00'L x 2.25'H Focal Point Z=1.0** 467 cf Overall x 20.0% Voids
#2	46.00'	1,996 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		2,089 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	140	0	0
48.00	832	972	972
49.00	1,216	1,024	1,996

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.05' S= 0.0228 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	43.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	42.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.24 cfs @ 12.11 hrs HW=47.12' TW=42.84' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.24 cfs of 8.78 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes 1.88 cfs of 2.38 cfs potential flow)
  │ └─**2=Exfiltration** (Exfiltration Controls 1.88 cfs)
  └─**4=Orifice/Grate** (Weir Controls 2.36 cfs @ 1.86 fps)

Summary for Pond 4P: Focal Point 4

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 3.23" for 10 Yr 24 Hr(+15%) event
Inflow = 4.72 cfs @ 12.09 hrs, Volume= 0.442 af
Outflow = 4.72 cfs @ 12.12 hrs, Volume= 0.442 af, Atten= 0%, Lag= 1.6 min
Primary = 4.72 cfs @ 12.12 hrs, Volume= 0.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 46.13' @ 12.12 hrs Surf.Area= 1,234 sf Storage= 713 cf

Plug-Flow detention time= 1.2 min calculated for 0.442 af (100% of inflow)
Center-of-Mass det. time= 1.2 min (768.0 - 766.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.75'	145 cf	**5.00'W x 42.00'L x 2.25'H Focal Point Z=1.0** 726 cf Overall x 20.0% Voids
#2	45.00'	1,437 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		1,582 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	210	0	0
46.00	735	473	473
47.00	1,193	964	1,437

Device	Routing	Invert	Outlet Devices
#1	Primary	41.96'	**15.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.96' / 38.75' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	42.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	41.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	45.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.48 cfs @ 12.12 hrs HW=46.10' TW=40.12' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.48 cfs of 8.75 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.37 cfs @ 9.49 fps)
  │ └─**2=Exfiltration** (Passes 2.37 cfs of 2.83 cfs potential flow)
  └─**4=Orifice/Grate** (Weir Controls 2.10 cfs @ 1.79 fps)

Summary for Pond 5P: Drain Manhole #1

Inflow Area = 0.430 ac,100.00% Impervious, Inflow Depth > 5.40" for 10 Yr 24 Hr(+15%) event
Inflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af
Outflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 47.71' @ 12.09 hrs
Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.05'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.05' / 45.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.09 hrs HW=47.64' TW=47.06' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.26 cfs @ 2.88 fps)

Summary for Pond 6P: Drain Manhole #2

Inflow Area = 0.861 ac,100.00% Impervious, Inflow Depth > 5.40" for 10 Yr 24 Hr(+15%) event
Inflow = 4.64 cfs @ 12.09 hrs, Volume= 0.387 af
Outflow = 4.64 cfs @ 12.09 hrs, Volume= 0.387 af, Atten= 0%, Lag= 0.0 min
Primary = 4.64 cfs @ 12.09 hrs, Volume= 0.387 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 47.11' @ 12.09 hrs
Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	45.50'	**15.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 45.50' / 45.30' S= 0.0077 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.52 cfs @ 12.09 hrs HW=47.06' TW=46.06' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.52 cfs @ 3.68 fps)

Summary for Pond 7P: Drain Manhole #3

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 3.23" for 10 Yr 24 Hr(+15%) event
Inflow = 4.72 cfs @ 12.12 hrs, Volume= 0.442 af
Outflow = 4.72 cfs @ 12.12 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min
Primary = 4.72 cfs @ 12.12 hrs, Volume= 0.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 42.18' @ 16.33 hrs
Flood Elev= 44.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.50'	**18.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.50' / 38.20' S= 0.0075 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.48 cfs @ 12.12 hrs HW=40.12' TW=39.68' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.48 cfs @ 2.54 fps)

Summary for Pond 8P: Drain Manhole #4

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 2.078 ac, 55.20% Impervious, Inflow Depth > 3.31" for 10 Yr 24 Hr(+15%) event
Inflow = 6.35 cfs @ 12.12 hrs, Volume= 0.573 af
Outflow = 6.35 cfs @ 12.12 hrs, Volume= 0.573 af, Atten= 0%, Lag= 0.0 min
Primary = 6.35 cfs @ 12.12 hrs, Volume= 0.573 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 42.18' @ 16.34 hrs
Flood Elev= 45.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.85'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.85' / 37.60' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.10 cfs @ 12.12 hrs HW=39.69' TW=39.41' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.10 cfs @ 2.02 fps)

Summary for Pond 9P: Drain Manhole #5

Inflow Area = 0.430 ac,100.00% Impervious, Inflow Depth > 5.40" for 10 Yr 24 Hr(+15%) event
Inflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af
Outflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 47.90' @ 12.09 hrs
Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.80'	**12.0" Round Culvert** L= 86.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.80' / 46.30' S= 0.0058 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.09 hrs HW=47.87' TW=46.67' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.26 cfs @ 2.88 fps)

Summary for Pond 10P: Drain Manhole #6

Inflow Area = 0.430 ac,100.00% Impervious, Inflow Depth > 5.40" for 10 Yr 24 Hr(+15%) event
Inflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af
Outflow = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min
Primary = 2.32 cfs @ 12.09 hrs, Volume= 0.194 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 48.60' @ 12.09 hrs
Flood Elev= 52.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	47.50'	**12.0" Round Culvert** L= 46.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.50' / 47.20' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.26 cfs @ 12.09 hrs HW=48.57' TW=47.11' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.26 cfs @ 2.88 fps)

Summary for Pond 11P: Drain Manhole #7

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 3.00" for 10 Yr 24 Hr(+15%) event
Inflow = 3.62 cfs @ 12.12 hrs, Volume= 0.418 af
Outflow = 3.62 cfs @ 12.12 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min
Primary = 3.62 cfs @ 12.12 hrs, Volume= 0.418 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 43.48' @ 12.12 hrs
Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	42.30'	**18.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.30' / 41.80' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.45 cfs @ 12.12 hrs HW=43.44' TW=42.83' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.45 cfs @ 3.32 fps)

Summary for Pond 12P: Drain Manhole #8

Inflow Area = 2.554 ac, 67.91% Impervious, Inflow Depth > 3.65" for 10 Yr 24 Hr(+15%) event
Inflow = 7.93 cfs @ 12.11 hrs, Volume= 0.776 af
Outflow = 7.93 cfs @ 12.11 hrs, Volume= 0.776 af, Atten= 0%, Lag= 0.0 min
Primary = 7.93 cfs @ 12.11 hrs, Volume= 0.776 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 42.87' @ 12.12 hrs
Flood Elev= 49.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.30'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.30' / 41.10' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.66 cfs @ 12.11 hrs HW=42.83' TW=39.38' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 7.66 cfs @ 4.10 fps)

Summary for Pond 13P: R-Tank

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 3.50" for 10 Yr 24 Hr(+15%) event
Inflow = 14.27 cfs @ 12.12 hrs, Volume= 1.349 af
Outflow = 0.53 cfs @ 16.34 hrs, Volume= 0.431 af, Atten= 96%, Lag= 253.6 min
Primary = 0.53 cfs @ 16.34 hrs, Volume= 0.431 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 42.18' @ 16.34 hrs Surf.Area= 9,582 sf Storage= 42,761 cf

Plug-Flow detention time= 420.8 min calculated for 0.430 af (32% of inflow)
Center-of-Mass det. time= 249.3 min (1,034.6 - 785.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	36.95'	3,703 cf	**60.43'W x 74.37'L x 8.21'H Field A** 36,879 cf Overall - 27,621 cf Embedded = 9,257 cf x 40.0% Voids
#2A	37.20'	26,240 cf	**ACF R-Tank HD 5** x 1290 Inside #1 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1290 Chambers in 43 Rows
#3B	36.95'	4,708 cf	**30.25'W x 168.21'L x 8.21'H Field B** 41,746 cf Overall - 29,977 cf Embedded = 11,770 cf x 40.0% Voids
#4B	37.20'	28,478 cf	**ACF R-Tank HD 5** x 1400 Inside #3 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1400 Chambers in 20 Rows
		63,129 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	**15.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.00' / 36.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	37.20'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	42.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.53 cfs @ 16.34 hrs HW=42.18' TW=36.97' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.53 cfs of 9.96 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.36 cfs @ 10.64 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 1.46 fps)

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

Subcatchment1S: Subcatchment1S Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>2.98"
Flow Length=646' Tc=32.6 min CN=63 Runoff=9.69 cfs 1.281 af

Subcatchment2S: Subcatchment2S Runoff Area=27,616 sf 0.00% Impervious Runoff Depth>0.34"
Flow Length=223' Tc=11.9 min CN=32 Runoff=0.05 cfs 0.018 af

Subcatchment3S: Subcatchment3S Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>5.15"
Flow Length=176' Tc=8.0 min CN=83 Runoff=1.91 cfs 0.150 af

Subcatchment4S: Subcatchment4S Runoff Area=33,970 sf 0.00% Impervious Runoff Depth>1.56"
Flow Length=225' Tc=17.6 min CN=48 Runoff=0.84 cfs 0.101 af

Subcatchment5S: Subcatchment5S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90"
Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af

Subcatchment6S: Subcatchment6S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90"
Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af

Subcatchment7S: Subcatchment7S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90"
Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af

Subcatchment8S: Subcatchment8S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>6.90"
Tc=6.0 min CN=98 Runoff=2.94 cfs 0.247 af

Subcatchment9S: Subcatchment9S Runoff Area=54,147 sf 45.38% Impervious Runoff Depth>3.30"
Flow Length=471' Tc=19.6 min CN=66 Runoff=3.24 cfs 0.342 af

Subcatchment10S: Subcatchment10S Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>5.84"
Flow Length=170' Tc=7.7 min CN=89 Runoff=2.73 cfs 0.219 af

Subcatchment11S: Subcatchment11S Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>5.04"
Flow Length=195' Tc=6.0 min CN=82 Runoff=2.49 cfs 0.184 af

Reach 1R: Vegetated Swale Avg. Flow Depth=0.98' Max Vel=0.49 fps Inflow=2.37 cfs 0.886 af
n=0.150 L=100.0' S=0.0050 '/' Capacity=11.89 cfs Outflow=2.36 cfs 0.884 af

Reach 2R: 8" HDPE Avg. Flow Depth=0.47' Max Vel=7.18 fps Inflow=1.91 cfs 0.150 af
8.0" Round Pipe n=0.013 L=70.0' S=0.0343 '/' Capacity=2.24 cfs Outflow=1.91 cfs 0.150 af

Reach AP1: Analysis Point #1 Inflow=10.64 cfs 2.314 af
Outflow=10.64 cfs 2.314 af

Reach AP2: Map 266 Lot 5 Inflow=0.05 cfs 0.018 af
Outflow=0.05 cfs 0.018 af

Pond 1P: Focal Point 1 Peak Elev=42.70' Storage=314 cf Inflow=2.49 cfs 0.184 af
Outflow=2.65 cfs 0.181 af

Pond 2P: Focal Point 2 Peak Elev=46.81' Storage=445 cf Inflow=4.85 cfs 0.589 af
Outflow=4.80 cfs 0.589 af

Pond 3P: Focal Point 3 Peak Elev=47.23' Storage=528 cf Inflow=5.64 cfs 0.467 af
Outflow=5.59 cfs 0.467 af

Pond 4P: Focal Point 4 Peak Elev=46.24' Storage=806 cf Inflow=6.24 cfs 0.596 af
Outflow=6.14 cfs 0.596 af

Pond 5P: Drain Manhole #1 Peak Elev=48.78' Inflow=2.94 cfs 0.247 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=2.94 cfs 0.247 af

Pond 6P: Drain Manhole #2 Peak Elev=47.81' Inflow=5.89 cfs 0.495 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0077 '/' Outflow=5.89 cfs 0.495 af

Pond 7P: Drain Manhole #3 Peak Elev=42.72' Inflow=6.14 cfs 0.596 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0075 '/' Outflow=6.14 cfs 0.596 af

Pond 8P: Drain Manhole #4 Peak Elev=42.70' Inflow=8.79 cfs 0.777 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=8.79 cfs 0.777 af

Pond 9P: Drain Manhole #5 Peak Elev=48.30' Inflow=2.94 cfs 0.247 af
12.0" Round Culvert n=0.013 L=86.0' S=0.0058 '/' Outflow=2.94 cfs 0.247 af

Pond 10P: Drain Manhole #6 Peak Elev=48.97' Inflow=2.94 cfs 0.247 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0065 '/' Outflow=2.94 cfs 0.247 af

Pond 11P: Drain Manhole #7 Peak Elev=43.77' Inflow=4.80 cfs 0.589 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=4.80 cfs 0.589 af

Pond 12P: Drain Manhole #8 Peak Elev=43.16' Inflow=10.35 cfs 1.056 af
24.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=10.35 cfs 1.056 af

Pond 13P: R-Tank Peak Elev=42.70' Storage=47,050 cf Inflow=19.12 cfs 1.833 af
Outflow=2.37 cfs 0.886 af

Total Runoff Area = 10.766 ac Runoff Volume = 3.284 af Average Runoff Depth = 3.66"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

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

Subcatchment1S: Subcatchment1S Runoff Area=224,391 sf 0.00% Impervious Runoff Depth>4.09"
Flow Length=646' Tc=32.6 min CN=63 Runoff=13.45 cfs 1.757 af

Subcatchment2S: Subcatchment2S Runoff Area=27,616 sf 0.00% Impervious Runoff Depth>0.73"
Flow Length=223' Tc=11.9 min CN=32 Runoff=0.19 cfs 0.038 af

Subcatchment3S: Subcatchment3S Runoff Area=15,195 sf 18.21% Impervious Runoff Depth>6.52"
Flow Length=176' Tc=8.0 min CN=83 Runoff=2.39 cfs 0.189 af

Subcatchment4S: Subcatchment4S Runoff Area=33,970 sf 0.00% Impervious Runoff Depth>2.37"
Flow Length=225' Tc=17.6 min CN=48 Runoff=1.39 cfs 0.154 af

Subcatchment5S: Subcatchment5S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>8.32"
Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af

Subcatchment6S: Subcatchment6S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>8.32"
Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af

Subcatchment7S: Subcatchment7S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>8.32"
Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af

Subcatchment8S: Subcatchment8S Runoff Area=18,750 sf 100.00% Impervious Runoff Depth>8.32"
Tc=6.0 min CN=98 Runoff=3.54 cfs 0.299 af

Subcatchment9S: Subcatchment9S Runoff Area=54,147 sf 45.38% Impervious Runoff Depth>4.46"
Flow Length=471' Tc=19.6 min CN=66 Runoff=4.42 cfs 0.462 af

Subcatchment10S: Subcatchment10S Runoff Area=19,625 sf 68.74% Impervious Runoff Depth>7.24"
Flow Length=170' Tc=7.7 min CN=89 Runoff=3.35 cfs 0.272 af

Subcatchment11S: Subcatchment11S Runoff Area=19,032 sf 65.45% Impervious Runoff Depth>6.40"
Flow Length=195' Tc=6.0 min CN=82 Runoff=3.12 cfs 0.233 af

Reach 1R: Vegetated Swale Avg. Flow Depth=1.43' Max Vel=0.61 fps Inflow=5.47 cfs 1.351 af
n=0.150 L=100.0' S=0.0050 '/' Capacity=11.89 cfs Outflow=5.46 cfs 1.349 af

Reach 2R: 8" HDPE Avg. Flow Depth=0.59' Max Vel=7.31 fps Inflow=2.39 cfs 0.189 af
8.0" Round Pipe n=0.013 L=70.0' S=0.0343 '/' Capacity=2.24 cfs Outflow=2.38 cfs 0.189 af

Reach AP1: Analysis Point #1 Inflow=18.66 cfs 3.295 af
Outflow=18.66 cfs 3.295 af

Reach AP2: Map 266 Lot 5 Inflow=0.19 cfs 0.038 af
Outflow=0.19 cfs 0.038 af

Pond 1P: Focal Point 1 Peak Elev=43.40' Storage=640 cf Inflow=3.12 cfs 0.233 af
Outflow=3.05 cfs 0.230 af

Pond 2P: Focal Point 2 Peak Elev=46.92' Storage=506 cf Inflow=6.15 cfs 0.761 af
Outflow=6.21 cfs 0.761 af

Pond 3P: Focal Point 3 Peak Elev=47.37' Storage=607 cf Inflow=6.84 cfs 0.570 af
Outflow=6.55 cfs 0.570 af

Pond 4P: Focal Point 4 Peak Elev=46.44' Storage=986 cf Inflow=7.76 cfs 0.751 af
Outflow=7.11 cfs 0.751 af

Pond 5P: Drain Manhole #1 Peak Elev=50.07' Inflow=3.54 cfs 0.299 af
12.0" Round Culvert n=0.013 L=60.0' S=0.0050 '/' Outflow=3.54 cfs 0.299 af

Pond 6P: Drain Manhole #2 Peak Elev=48.67' Inflow=7.07 cfs 0.597 af
15.0" Round Culvert n=0.013 L=26.0' S=0.0077 '/' Outflow=7.07 cfs 0.597 af

Pond 7P: Drain Manhole #3 Peak Elev=43.50' Inflow=7.11 cfs 0.751 af
18.0" Round Culvert n=0.013 L=40.0' S=0.0075 '/' Outflow=7.11 cfs 0.751 af

Pond 8P: Drain Manhole #4 Peak Elev=43.40' Inflow=10.07 cfs 0.981 af
24.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=10.07 cfs 0.981 af

Pond 9P: Drain Manhole #5 Peak Elev=48.74' Inflow=3.54 cfs 0.299 af
12.0" Round Culvert n=0.013 L=86.0' S=0.0058 '/' Outflow=3.54 cfs 0.299 af

Pond 10P: Drain Manhole #6 Peak Elev=49.40' Inflow=3.54 cfs 0.299 af
12.0" Round Culvert n=0.013 L=46.0' S=0.0065 '/' Outflow=3.54 cfs 0.299 af

Pond 11P: Drain Manhole #7 Peak Elev=44.30' Inflow=6.21 cfs 0.761 af
18.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=6.21 cfs 0.761 af

Pond 12P: Drain Manhole #8 Peak Elev=43.48' Inflow=12.71 cfs 1.331 af
24.0" Round Culvert n=0.013 L=30.0' S=0.0067 '/' Outflow=12.71 cfs 1.331 af

Pond 13P: R-Tank Peak Elev=43.37' Storage=52,683 cf Inflow=22.75 cfs 2.312 af
Outflow=5.47 cfs 1.351 af

Total Runoff Area = 10.766 ac Runoff Volume = 4.300 af Average Runoff Depth = 4.79"
72.65% Pervious = 7.821 ac 27.35% Impervious = 2.945 ac

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 13.45 cfs @ 12.47 hrs, Volume= 1.757 af, Depth> 4.09"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
17,375	39	>75% Grass cover, Good, HSG A
33,619	30	Woods, Good, HSG A
19,910	74	>75% Grass cover, Good, HSG C
99,843	70	Woods, Good, HSG C
47,938	72	Woods/grass comb., Good, HSG C
3,491	80	>75% Grass cover, Good, HSG D
2,215	77	Woods, Good, HSG D
224,391	63	Weighted Average
224,391		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0600	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
1.3	78	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.1	468	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.6	646	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 0.19 cfs @ 12.41 hrs, Volume= 0.038 af, Depth> 0.73"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
22,122	30	Woods, Good, HSG A
5,494	39	>75% Grass cover, Good, HSG A
27,616	32	Weighted Average
27,616		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
1.1	123	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	223	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 2.39 cfs @ 12.11 hrs, Volume= 0.189 af, Depth> 6.52"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
2,767	98	Paved parking, HSG D
12,428	80	>75% Grass cover, Good, HSG D
15,195	83	Weighted Average
12,428		81.79% Pervious Area
2,767		18.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.23		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
0.4	33	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	43	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.0	176	Total			

Summary for Subcatchment 4S: Subcatchment 4S

Runoff = 1.39 cfs @ 12.27 hrs, Volume= 0.154 af, Depth> 2.37"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
14,449	39	>75% Grass cover, Good, HSG A
9,642	30	Woods, Good, HSG A
9,879	80	>75% Grass cover, Good, HSG D
33,970	48	Weighted Average
33,970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	41	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
2.4	27	0.3300	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
1.1	17	0.3300	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
2.7	85	0.0050	0.52	3.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.9	55	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

17.6 225 Total

Summary for Subcatchment 5S: Subcatchment 5S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
11,448	98	Roofs, HSG A
3,233	98	Roofs, HSG C
4,069	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 6S: Subcatchment 6S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
11,834	98	Roofs, HSG A
293	98	Roofs, HSG C
6,623	98	Roofs, HSG D
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 7S: Subcatchment 7S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
18,108	98	Roofs, HSG A
642	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 8S: Subcatchment 8S

Runoff = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Depth> 8.32"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
11,115	98	Roofs, HSG A
7,635	98	Roofs, HSG C
18,750	98	Weighted Average
18,750		100.00% Impervious Area

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

Summary for Subcatchment 9S: Subcatchment 9S

[47] Hint: Peak is 141% of capacity of segment #3

Runoff = 4.42 cfs @ 12.27 hrs, Volume= 0.462 af, Depth> 4.46"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
24,571	98	Paved parking, HSG A
29,576	39	>75% Grass cover, Good, HSG A
54,147	66	Weighted Average
29,576		54.62% Pervious Area
24,571		45.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	38	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.23"
2.2	39	0.3300	0.30		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
5.7	177	0.0050	0.52	3.13	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.150 Sheet flow over Short Grass
0.6	37	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	180	0.0140	2.40		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
19.6	471	Total			

Summary for Subcatchment 10S: Subcatchment 10S

Runoff = 3.35 cfs @ 12.11 hrs, Volume= 0.272 af, Depth> 7.24"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
153	98	Paved parking, HSG A
13,337	98	Paved parking, HSG C
1,022	39	>75% Grass cover, Good, HSG A
5,113	74	>75% Grass cover, Good, HSG C
19,625	89	Weighted Average
6,135		31.26% Pervious Area
13,490		68.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	36	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.23"
0.2	6	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.23"
0.8	58	0.0200	1.24		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.23"
0.4	70	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.7	170	Total			

Summary for Subcatchment 11S: Subcatchment 11S

Runoff = 3.12 cfs @ 12.09 hrs, Volume= 0.233 af, Depth> 6.40"

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 50 Yr 24 Hr(+15%) Rainfall=8.57"

Area (sf)	CN	Description
7,767	98	Paved parking, HSG A
319	98	Paved parking, HSG C
4,370	98	Paved parking, HSG D
4,431	39	>75% Grass cover, Good, HSG A
30	74	>75% Grass cover, Good, HSG C
2,115	80	>75% Grass cover, Good, HSG D
19,032	82	Weighted Average
6,576		34.55% Pervious Area
12,456		65.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	37	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.23"
0.6	63	0.0400	1.66		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.23"
0.4	95	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.4	195	Total, Increased to minimum Tc = 6.0 min			

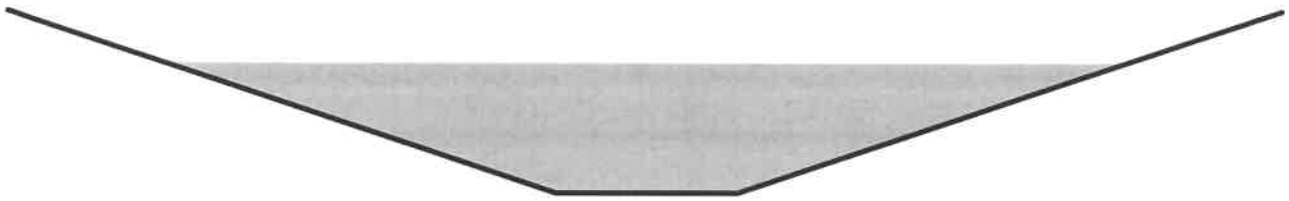
Summary for Reach 1R: Vegetated Swale

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 3.50" for 50 Yr 24 Hr(+15%) event
Inflow = 5.47 cfs @ 12.70 hrs, Volume= 1.351 af
Outflow = 5.46 cfs @ 12.74 hrs, Volume= 1.349 af, Atten= 0%, Lag= 2.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 0.61 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.30 fps, Avg. Travel Time= 5.5 min

Peak Storage= 895 cf @ 12.74 hrs
Average Depth at Peak Storage= 1.43' , Surface Width= 10.56'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 11.89 cfs

2.00' x 2.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 100.0' Slope= 0.0050 '/'
Inlet Invert= 36.50', Outlet Invert= 36.00'



Summary for Reach 2R: 8" HDPE

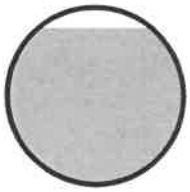
[52] Hint: Inlet/Outlet conditions not evaluated
[55] Hint: Peak inflow is 107% of Manning's capacity

Inflow Area = 0.349 ac, 18.21% Impervious, Inflow Depth > 6.52" for 50 Yr 24 Hr(+15%) event
Inflow = 2.39 cfs @ 12.11 hrs, Volume= 0.189 af
Outflow = 2.38 cfs @ 12.11 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Max. Velocity= 7.31 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.79 fps, Avg. Travel Time= 0.4 min

Peak Storage= 23 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 0.43'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 2.24 cfs

8.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 70.0' Slope= 0.0343 '/'
Inlet Invert= 40.20', Outlet Invert= 37.80'



Summary for Reach AP1: Analysis Point #1

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

Inflow Area = 10.132 ac, 29.07% Impervious, Inflow Depth > 3.90" for 50 Yr 24 Hr(+15%) event
Inflow = 18.66 cfs @ 12.51 hrs, Volume= 3.295 af
Outflow = 18.66 cfs @ 12.51 hrs, Volume= 3.295 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Reach AP2: Map 266 Lot 5

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

Inflow Area = 0.634 ac, 0.00% Impervious, Inflow Depth > 0.73" for 50 Yr 24 Hr(+15%) event
Inflow = 0.19 cfs @ 12.41 hrs, Volume= 0.038 af
Outflow = 0.19 cfs @ 12.41 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Summary for Pond 1P: Focal Point 1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 0.437 ac, 65.45% Impervious, Inflow Depth > 6.40" for 50 Yr 24 Hr(+15%) event
Inflow = 3.12 cfs @ 12.09 hrs, Volume= 0.233 af
Outflow = 3.05 cfs @ 12.09 hrs, Volume= 0.230 af, Atten= 2%, Lag= 0.1 min
Primary = 3.05 cfs @ 12.09 hrs, Volume= 0.230 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 43.40' @ 12.68 hrs Surf.Area= 740 sf Storage= 640 cf

Plug-Flow detention time= 16.3 min calculated for 0.229 af (99% of inflow)
Center-of-Mass det. time= 8.4 min (803.5 - 795.2)

Volume	Invert	Avail.Storage	Storage Description
#1	39.25'	53 cf	**3.00'W x 20.00'L x 2.25'H Focal Point Area 1 Z=1.0** 267 cf Overall x 20.0% Voids
#2	41.50'	641 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		694 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	60	0	0
43.50	581	641	641

Device	Routing	Invert	Outlet Devices
#1	Primary	38.46'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.46' / 37.95' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 3	39.25'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	38.46'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	42.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.05 cfs @ 12.09 hrs HW=42.70' TW=41.60' (Dynamic Tailwater)
- **1=Culvert** (Passes 3.05 cfs of 12.53 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 1.26 cfs @ 5.05 fps)
    - **2=Exfiltration** (Passes 1.26 cfs of 1.29 cfs potential flow)
  - **4=Orifice/Grate** (Weir Controls 1.79 cfs @ 1.45 fps)

Summary for Pond 2P: Focal Point 2

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 5.46" for 50 Yr 24 Hr(+15%) event
Inflow = 6.15 cfs @ 12.13 hrs, Volume= 0.761 af
Outflow = 6.21 cfs @ 12.16 hrs, Volume= 0.761 af, Atten= 0%, Lag= 1.8 min
Primary = 6.21 cfs @ 12.16 hrs, Volume= 0.761 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 46.92' @ 12.15 hrs Surf.Area= 978 sf Storage= 506 cf

Plug-Flow detention time= 1.1 min calculated for 0.761 af (100% of inflow)
Center-of-Mass det. time= 1.1 min (802.0 - 800.9)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	138 cf	**8.00'W x 27.50'L x 2.25'H Focal Point Area 1 Z=1.0** 690 cf Overall x 20.0% Voids
#2	46.00'	1,215 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		1,353 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	220	0	0
48.00	995	1,215	1,215

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	**18.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.40' S= 0.0156 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 3	43.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	42.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.18 cfs @ 12.16 hrs HW=46.92' TW=44.25' (Dynamic Tailwater)
└─1=**Culvert** (Passes 6.18 cfs of 10.99 cfs potential flow)
  ├─3=**Orifice/Grate** (Orifice Controls 1.97 cfs @ 7.87 fps)
  │ └─2=**Exfiltration** (Passes 1.97 cfs of 2.26 cfs potential flow)
  └─4=**Orifice/Grate** (Weir Controls 4.21 cfs @ 2.12 fps)

Summary for Pond 3P: Focal Point 3

Inflow Area = 0.881 ac, 84.01% Impervious, Inflow Depth > 7.77" for 50 Yr 24 Hr(+15%) event
Inflow = 6.84 cfs @ 12.10 hrs, Volume= 0.570 af
Outflow = 6.55 cfs @ 12.12 hrs, Volume= 0.570 af, Atten= 4%, Lag= 1.3 min
Primary = 6.55 cfs @ 12.12 hrs, Volume= 0.570 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 47.37' @ 12.12 hrs Surf.Area= 894 sf Storage= 607 cf

Plug-Flow detention time= 1.3 min calculated for 0.570 af (100% of inflow)
Center-of-Mass det. time= 1.3 min (759.4 - 758.1)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	93 cf	**7.00'W x 20.00'L x 2.25'H Focal Point Z=1.0** 467 cf Overall x 20.0% Voids
#2	46.00'	1,996 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		2,089 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	140	0	0
48.00	832	972	972
49.00	1,216	1,024	1,996

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.05' S= 0.0228 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	43.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	42.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.43 cfs @ 12.12 hrs HW=47.35' TW=43.43' (Dynamic Tailwater)
- **1=Culvert** (Passes 6.43 cfs of 9.05 cfs potential flow)
  - **3=Orifice/Grate** (Passes 2.06 cfs of 2.38 cfs potential flow)
    - **2=Exfiltration** (Exfiltration Controls 2.06 cfs)
  - **4=Orifice/Grate** (Orifice Controls 4.37 cfs @ 3.56 fps)

Summary for Pond 4P: Focal Point 4

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 5.49" for 50 Yr 24 Hr(+15%) event
Inflow = 7.76 cfs @ 12.09 hrs, Volume= 0.751 af
Outflow = 7.11 cfs @ 12.12 hrs, Volume= 0.751 af, Atten= 8%, Lag= 1.9 min
Primary = 7.11 cfs @ 12.12 hrs, Volume= 0.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 46.44' @ 12.13 hrs Surf.Area= 1,379 sf Storage= 986 cf

Plug-Flow detention time= 1.4 min calculated for 0.750 af (100% of inflow)
Center-of-Mass det. time= 1.4 min (770.0 - 768.6)

Volume	Invert	Avail.Storage	Storage Description
#1	42.75'	145 cf	**5.00'W x 42.00'L x 2.25'H Focal Point Z=1.0** 726 cf Overall x 20.0% Voids
#2	45.00'	1,437 cf	**Surface Bowl (Prismatic)**Listed below (Recalc)
		1,582 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	210	0	0
46.00	735	473	473
47.00	1,193	964	1,437

Device	Routing	Invert	Outlet Devices
#1	Primary	41.96'	**15.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.96' / 38.75' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	42.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	41.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	45.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.87 cfs @ 12.12 hrs HW=46.42' TW=43.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.87 cfs of 7.37 cfs potential flow)
  ├─**3=Orifice/Grate** (Orifice Controls 2.23 cfs @ 8.90 fps)
  │ └─**2=Exfiltration** (Passes 2.23 cfs of 3.17 cfs potential flow)
  └─**4=Orifice/Grate** (Orifice Controls 4.64 cfs @ 3.78 fps)

Summary for Pond 5P: Drain Manhole #1

Inflow Area = 0.430 ac,100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
Inflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af
Outflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
Primary = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 50.07' @ 12.09 hrs
Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.05'	**12.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.05' / 45.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.44 cfs @ 12.09 hrs HW=49.87' TW=48.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.44 cfs @ 4.38 fps)

Summary for Pond 6P: Drain Manhole #2

Inflow Area = 0.861 ac,100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
Inflow = 7.07 cfs @ 12.09 hrs, Volume= 0.597 af
Outflow = 7.07 cfs @ 12.09 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.0 min
Primary = 7.07 cfs @ 12.09 hrs, Volume= 0.597 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 48.67' @ 12.09 hrs
Flood Elev= 53.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	45.50'	**15.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 45.50' / 45.30' S= 0.0077 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.88 cfs @ 12.09 hrs HW=48.54' TW=46.36' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.88 cfs @ 5.61 fps)

Summary for Pond 7P: Drain Manhole #3

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 5.49" for 50 Yr 24 Hr(+15%) event
Inflow = 7.11 cfs @ 12.12 hrs, Volume= 0.751 af
Outflow = 7.11 cfs @ 12.12 hrs, Volume= 0.751 af, Atten= 0%, Lag= 0.0 min
Primary = 7.11 cfs @ 12.12 hrs, Volume= 0.751 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 43.50' @ 12.50 hrs
Flood Elev= 44.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	38.50'	**18.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.50' / 38.20' S= 0.0075 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=7.03 cfs @ 12.12 hrs HW=43.00' TW=41.90' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 7.03 cfs @ 3.98 fps)

Summary for Pond 8P: Drain Manhole #4

Inflow Area = 2.078 ac, 55.20% Impervious, Inflow Depth > 5.67" for 50 Yr 24 Hr(+15%) event
Inflow = 10.07 cfs @ 12.11 hrs, Volume= 0.981 af
Outflow = 10.07 cfs @ 12.11 hrs, Volume= 0.981 af, Atten= 0%, Lag= 0.0 min
Primary = 10.07 cfs @ 12.11 hrs, Volume= 0.981 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 43.40' @ 12.69 hrs
Flood Elev= 45.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.85'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.85' / 37.60' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.97 cfs @ 12.11 hrs HW=41.78' TW=41.08' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 9.97 cfs @ 3.18 fps)

Summary for Pond 9P: Drain Manhole #5

Inflow Area = 0.430 ac,100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
Inflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af
Outflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
Primary = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 48.74' @ 12.09 hrs
Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.80'	**12.0" Round Culvert** L= 86.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.80' / 46.30' S= 0.0058 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.44 cfs @ 12.09 hrs HW=48.67' TW=46.89' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.44 cfs @ 4.38 fps)

Summary for Pond 10P: Drain Manhole #6

Inflow Area = 0.430 ac,100.00% Impervious, Inflow Depth > 8.32" for 50 Yr 24 Hr(+15%) event
Inflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af
Outflow = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
Primary = 3.54 cfs @ 12.09 hrs, Volume= 0.299 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 49.40' @ 12.09 hrs
Flood Elev= 52.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	47.50'	**12.0" Round Culvert** L= 46.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.50' / 47.20' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.44 cfs @ 12.09 hrs HW=49.33' TW=47.32' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.44 cfs @ 4.38 fps)

Summary for Pond 11P: Drain Manhole #7

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 5.46" for 50 Yr 24 Hr(+15%) event
Inflow = 6.21 cfs @ 12.16 hrs, Volume= 0.761 af
Outflow = 6.21 cfs @ 12.16 hrs, Volume= 0.761 af, Atten= 0%, Lag= 0.0 min
Primary = 6.21 cfs @ 12.16 hrs, Volume= 0.761 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 44.30' @ 12.14 hrs
Flood Elev= 49.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	42.30'	**18.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.30' / 41.80' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.18 cfs @ 12.16 hrs HW=44.25' TW=43.40' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 6.18 cfs @ 3.50 fps)

Summary for Pond 12P: Drain Manhole #8

Inflow Area = 2.554 ac, 67.91% Impervious, Inflow Depth > 6.25" for 50 Yr 24 Hr(+15%) event
Inflow = 12.71 cfs @ 12.13 hrs, Volume= 1.331 af
Outflow = 12.71 cfs @ 12.13 hrs, Volume= 1.331 af, Atten= 0%, Lag= 0.0 min
Primary = 12.71 cfs @ 12.13 hrs, Volume= 1.331 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 43.48' @ 12.58 hrs
Flood Elev= 49.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.30'	**24.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.30' / 41.10' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.50 cfs @ 12.13 hrs HW=43.43' TW=41.25' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 12.50 cfs @ 4.64 fps)

Summary for Pond 13P: R-Tank

Inflow Area = 4.632 ac, 62.21% Impervious, Inflow Depth > 5.99" for 50 Yr 24 Hr(+15%) event
Inflow = 22.75 cfs @ 12.12 hrs, Volume= 2.312 af
Outflow = 5.47 cfs @ 12.70 hrs, Volume= 1.351 af, Atten= 76%, Lag= 34.9 min
Primary = 5.47 cfs @ 12.70 hrs, Volume= 1.351 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 43.37' @ 12.70 hrs Surf.Area= 9,582 sf Storage= 52,683 cf

Plug-Flow detention time= 243.1 min calculated for 1.351 af (58% of inflow)
Center-of-Mass det. time= 127.6 min (908.8 - 781.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	36.95'	3,703 cf	**60.43'W x 74.37'L x 8.21'H Field A** 36,879 cf Overall - 27,621 cf Embedded = 9,257 cf x 40.0% Voids
#2A	37.20'	26,240 cf	**ACF R-Tank HD 5** x 1290 Inside #1 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1290 Chambers in 43 Rows
#3B	36.95'	4,708 cf	**30.25'W x 168.21'L x 8.21'H Field B** 41,746 cf Overall - 29,977 cf Embedded = 11,770 cf x 40.0% Voids
#4B	37.20'	28,478 cf	**ACF R-Tank HD 5** x 1400 Inside #3 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 1400 Chambers in 20 Rows
		63,129 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	**15.0" Round Culvert** L= 100.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.00' / 36.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	37.20'	**2.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	42.00'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.47 cfs @ 12.70 hrs HW=43.37' TW=37.92' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.47 cfs of 10.88 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 11.23 fps)
  └─**3=Orifice/Grate** (Orifice Controls 5.09 cfs @ 4.15 fps)

APPENDIX III

Charts, Graphs, and Calculations:

Extreme Precipitation Estimates
Rip Rap Sizing Calculations
Focal Point Design Worksheets with WQF Worksheet and HydroCAD Printouts
Site Specific Soil Survey Report & Map
Pre- and Post-Construction Watershed Maps

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	70.790 degrees West
Latitude	43.043 degrees North
Elevation	0 feet
Date/Time	Mon, 03 Aug 2020 15:51:28 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.71	0.98	1.22	1.57	2.04	2.67	2.94	**1yr**	2.37	2.83	3.24	3.96	4.58	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.50	3.23	3.59	**2yr**	2.86	3.45	3.96	4.71	5.36	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.44	3.15	4.09	4.61	**5yr**	3.62	4.43	5.07	5.97	6.74	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.24	2.90	3.77	4.90	5.57	**10yr**	4.34	5.35	6.13	7.16	8.03	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.34	**25yr**	1.53	2.15	2.78	3.64	4.76	6.21	7.15	**25yr**	5.50	6.87	7.87	9.09	10.12	**25yr**
50yr	0.54	0.86	1.10	1.54	2.08	2.76	**50yr**	1.79	2.53	3.30	4.34	5.69	7.45	8.64	**50yr**	6.59	8.31	9.50	10.90	12.07	**50yr**
100yr	0.60	0.97	1.25	1.77	2.42	3.26	**100yr**	2.09	2.98	3.92	5.18	6.81	8.92	10.46	**100yr**	7.90	10.05	11.49	13.08	14.39	**100yr**
200yr	0.68	1.10	1.43	2.05	2.83	3.85	**200yr**	2.44	3.52	4.63	6.16	8.13	10.69	12.65	**200yr**	9.46	12.16	13.89	15.69	17.16	**200yr**
500yr	0.80	1.32	1.72	2.49	3.49	4.78	**500yr**	3.01	4.39	5.79	7.74	10.29	13.60	16.27	**500yr**	12.03	15.65	17.86	19.98	21.68	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.89	**1yr**	0.63	0.87	0.92	1.33	1.67	2.24	2.55	**1yr**	1.99	2.45	2.88	3.17	3.91	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.08	3.48	**2yr**	2.72	3.35	3.85	4.58	5.11	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.41	**5yr**	1.01	1.38	1.61	2.12	2.73	3.82	4.24	**5yr**	3.38	4.08	4.76	5.59	6.30	**5yr**
10yr	0.39	0.60	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.81	2.39	3.06	4.41	4.93	**10yr**	3.91	4.74	5.52	6.49	7.28	**10yr**
25yr	0.44	0.67	0.84	1.19	1.57	1.91	**25yr**	1.36	1.86	2.10	2.76	3.54	4.75	6.00	**25yr**	4.20	5.77	6.78	7.92	8.80	**25yr**
50yr	0.49	0.74	0.92	1.32	1.78	2.18	**50yr**	1.54	2.13	2.35	3.08	3.94	5.37	6.95	**50yr**	4.75	6.68	7.91	9.22	10.17	**50yr**
100yr	0.54	0.82	1.03	1.48	2.03	2.48	**100yr**	1.75	2.42	2.63	3.42	4.36	6.04	8.04	**100yr**	5.35	7.73	9.24	10.74	11.76	**100yr**
200yr	0.60	0.90	1.14	1.66	2.31	2.83	**200yr**	1.99	2.77	2.94	3.78	4.81	6.78	9.31	**200yr**	6.00	8.95	10.79	12.52	13.61	**200yr**
500yr	0.70	1.04	1.34	1.94	2.76	3.39	**500yr**	2.38	3.31	3.42	4.32	5.49	7.89	11.30	**500yr**	6.99	10.86	13.26	15.37	16.49	**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	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.20	3.01	3.16	**1yr**	2.66	3.04	3.61	4.39	5.08	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.45	3.71	**2yr**	3.05	3.57	4.10	4.85	5.67	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.59	1.88	2.53	3.24	4.36	4.96	**5yr**	3.86	4.77	5.40	6.38	7.17	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.93	2.28	3.10	3.94	5.37	6.20	**10yr**	4.75	5.96	6.80	7.85	8.76	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.57	**25yr**	1.77	2.51	2.95	4.06	5.13	7.84	8.31	**25yr**	6.94	7.99	9.09	10.34	11.41	**25yr**
50yr	0.67	1.02	1.27	1.83	2.46	3.13	**50yr**	2.12	3.06	3.59	4.99	6.28	9.81	10.40	**50yr**	8.68	10.00	11.34	12.71	13.95	**50yr**
100yr	0.79	1.19	1.49	2.16	2.96	3.81	**100yr**	2.55	3.72	4.36	6.14	7.71	12.28	13.01	**100yr**	10.87	12.51	14.13	15.66	17.06	**100yr**
200yr	0.92	1.39	1.76	2.55	3.55	4.65	**200yr**	3.07	4.55	5.32	7.56	9.46	15.41	16.29	**200yr**	13.63	15.66	17.64	19.29	20.88	**200yr**
500yr	1.14	1.70	2.19	3.18	4.53	6.04	**500yr**	3.91	5.90	6.91	9.98	12.44	20.81	21.93	**500yr**	18.42	21.08	23.64	25.40	27.27	**500yr**

RIP RAP CALCULATIONS
Industrial Warehouse
375 Banfield Road
Portsmouth, NH 03801

Jones & Beach Engineers, Inc.
P.O. Box 219
Stratham, NH 03885
28-Apr-21

Rip Rap equations were obtained from the *Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.*
Aprons are sized for the 25-Year storm event.

TAILWATER < HALF THE D_o

$L_a = (1.8 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = L_a + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
				#DIV/0!	#DIV/0!	#DIV/0!
				#DIV/0!	#DIV/0!	#DIV/0!

TAILWATER > HALF THE D_o

$L_a = (3.0 \times Q) / D_0^{3/2} + (7 \times D_o)$
$W = (0.4 \times L_a) + (3 \times D_o)$ or defined channel width
$d_{50} = (0.02 \times Q^{4/3}) / (T_w \times D_0)$

Culvert or Catch Basin (Sta. No.)	Tailwater (Feet) T_w	Discharge (C.F.S.) Q	Diameter of Pipe D_o	Length of Rip Rap L_a (feet)	Width of Rip Rap W (feet)	d_{50}-Median Stone Rip Rap d50 (feet)
15" HDPE (Pond 13P)	0.64	2.39	1.25	13.9	9	0.08
12" HDPE (Pond 9P)	0.9	2.94	1	15.8	9	0.09
12" HDPE (Pond 10P)	0.84	2.95	1	15.9	9	0.10
15" HDPE (Pond 6P)	1.25	4.57	1.25	18.6	11	0.10

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.25	Feet	3	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d_{50} Size		From		To
100%		5		6
85%		4		5
50%		3		5
15%		1		2

Table 7-24 -- Recommended Rip Rap Gradation Ranges				
d_{50} Size =	0.5	Feet	6	Inches
% of Weight Smaller		Size of Stone (Inches)		
Than the Given d_{50} Size		From		To
100%		9		12
85%		8		11
50%		6		9
15%		2		3

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GENERAL CALCULATIONS - WQV and WQF (optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.44	ac	A = Area draining to the practice
0.28	ac	A_I = Impervious area draining to the practice
0.64	decimal	I = Percent impervious area draining to the practice, in decimal form
0.62	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.27	ac-in	WQV= 1" x Rv x A
995	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.62	inches	Q = Water quality depth. Q = WQV/A
96	unitless	CN = Unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.4	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.086	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
700.0	$cfs/mi^2/in$	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.300	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$.

Designer's Notes:

For Focal Point 1 (Pond 1P)

See Attached Focal Point Sizing Sheet

FP 1

DESIGN WORKSHEET

FOCALPOINT

NEW HAMPSHIRE AOT PROJECTS

1. **Determine FocalPoint bed area (minimum 174 sf/acre of impervious area - ex: 0.2 acres = 35 sf)**
   See step 2 to determine if minimum size is appropriate.
   - Tributary impervious area: = 0.28 ac **(A)**
   - Tributary pervious area: = 0.16 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 60 sf
   - FocalPoint bed area provided: = 60 sf
   - Dimensions of proposed FocalPoint: = 3 ft x 20 ft

2. **Model a Type II & III 24-hr rainfall event that generates the water quality volume to demonstrate that the entire storm volume is treated prior to activation of the overflow (typically set at 6 - 12 in above the mulch). Note: a 1.2 - 1.3 in rainfall event usually generates 1.0 in of runoff.**
   Contact ACF for a sample HydroCAD node.
   - Water quality volume (WQv) goal: = 995 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.95 in
   - Temporary storage depth provided: = 12 in
     (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 680 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 0 in

3. **Size the Harco PVC domed overflow riser.**
   Note: ACF recommends installation of a Fabco domed overflow filter kit for overflow protection.
   - Domed overflow riser diameter: = 24 in
   - Rim elevation of overflow riser: = 42.5
     (typically 6 - 12 in above mulch surface)
   - 6 in invert in elevation from FocalPoint: = 38.46
     (typically 3 ft below mulch surface)
   - 24 in invert out elevation: = 38.46

4. **Flood control - peak flow attenuation of major storms**
   The treated flow and bypass flow can be routed to a detention system such as an open pond or a subsurface solution like an expanded R-Tank system. (contact ACF for additional information on designing expanded R-Tank systems)

5. **Prepare a landscape plan for the FocalPoint bed area** ☑

6. **Design review and installation oversight by manufacturer's representative** ☐
   - The design has been reviewed by ACF Environmental ☐
   - Engineer will coordinate installation inspection with ACF Environmental

Contact Rob Woodman - Senior Stormwater Engineer
Cell: 207.272.4431 | Email: rwoodman@acfenv.com

ACF ENVIRONMENTAL

Summary for Pond 1P: Focal Point 1

Inflow Area = 0.437 ac, 65.45% Impervious, Inflow Depth > 0.24" for Focal Point WQF event
Inflow = 0.10 cfs @ 12.11 hrs, Volume= 0.009 af
Outflow = 0.10 cfs @ 12.12 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.1 min
Primary = 0.10 cfs @ 12.12 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 39.32' @ 12.12 hrs Surf.Area= 63 sf Storage= 1 cf

Plug-Flow detention time= 0.1 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (895.0 - 894.9)

Volume	Invert	Avail.Storage	Storage Description
#1	39.25'	53 cf	**3.00'W x 20.00'L x 2.25'H Focal Point Area 1 Z=1.0** 267 cf Overall x 20.0% Voids
#2	41.50'	641 cf	**Surface Bowl (Prismatic)** Listed below (Recalc)
		694 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
41.50	60	0	0
43.50	581	641	641

Device	Routing	Invert	Outlet Devices
#1	Primary	38.46'	**24.0" Round Culvert** L= 27.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 38.46' / 37.95' S= 0.0189 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 3	39.25'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	38.46'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	42.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.09 cfs @ 12.12 hrs HW=39.31' TW=38.32' (Dynamic Tailwater)
↑1=**Culvert** (Passes 0.09 cfs of 3.17 cfs potential flow)
↑3=**Orifice/Grate** (Passes 0.09 cfs of 0.93 cfs potential flow)
↑2=**Exfiltration** (Exfiltration Controls 0.09 cfs)
↑4=**Orifice/Grate** (Controls 0.00 cfs)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GENERAL CALCULATIONS - WQV and WQF (optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

1.67	ac	A = Area draining to the practice
0.99	ac	A_I = Impervious area draining to the practice
0.59	decimal	I = Percent impervious area draining to the practice, in decimal form
0.58	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.97	ac-in	WQV= 1" x Rv x A
3,537	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.58	inches	Q = Water quality depth. Q = WQV/A
95	unitless	CN = Unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.5	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.098	inches	Ia = Initial abstraction. Ia = 0.2S
19.6	minutes	T_c = Time of Concentration
550.0	$cfs/mi^2/in$	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.837	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$.

Designer's Notes:

For Focal Point 2 (Pond 2P)

See attached Focal Point Sizing Sheet

AP2

DESIGN WORKSHEET

FOCALPOINT

NEW HAMPSHIRE AOT PROJECTS

1. **Determine FocalPoint bed area (minimum 174 sf/acre of impervious area - ex: 0.2 acres = 35 sf) See step 2 to determine if minimum size is appropriate.**
   - Tributary impervious area: = 0.99 ac **(A)**
   - Tributary pervious area: = 0.68 ac **(B)**
   - Minimum FocalPoint bed area required: **= ((A x 1.0) + (B x 0.4)) * 174** = 220 sf
   - FocalPoint bed area provided: = 220 sf
   - Dimensions of proposed FocalPoint: = 8 ft x 27.5 ft

2. **Model a Type II & III 24-hr rainfall event that generates the water quality volume to demonstrate that the entire storm volume is treated prior to activation of the overflow (typically set at 6 - 12 in above the mulch). Note: a 1.2 - 1.3 in rainfall event usually generates 1.0 in of runoff. Contact ACF for a sample HydroCAD node.**
   - Water quality volume (WQv) goal: = 3537 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 2.03 in
   - Temporary storage depth provided: = 6 in (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 302 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 0 in

3. **Size the Harco PVC domed overflow riser. Note: ACF recommends installation of a Fabco domed overflow filter kit for overflow protection.**
   - Domed overflow riser diameter: = 18 in
   - Rim elevation of overflow riser: = 46.5 (typically 6 - 12 in above mulch surface)
   - 6 in invert in elevation from FocalPoint: = 42.96 (typically 3 ft below mulch surface)
   - 18 in invert out elevation: = 42.96

4. **Flood control - peak flow attenuation of major storms**
   The treated flow and bypass flow can be routed to a detention system such as an open pond or a subsurface solution like an expanded R-Tank system. (contact ACF for additional information on designing expanded R-Tank systems)

5. **Prepare a landscape plan for the FocalPoint bed area** ☑

6. **Design review and installation oversight by manufacturer's representative**
   - The design has been reviewed by ACF Environmental ☐
   - Engineer will coordinate installation inspection with ACF Environmental ☐

Contact Rob Woodman - Senior Stormwater Engineer
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ACF ENVIRONMENTAL

Summary for Pond 2P: Focal Point 2

Inflow Area = 1.673 ac, 59.43% Impervious, Inflow Depth > 0.29" for Focal Point WQF event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.040 af
Outflow = 0.50 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.2 min
Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 43.85' @ 12.09 hrs Surf.Area= 227 sf Storage= 4 cf

Plug-Flow detention time= 0.1 min calculated for 0.040 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (791.4 - 791.2)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	138 cf	**8.00'W x 27.50'L x 2.25'H Focal Point Area 1 Z=1.0** 690 cf Overall x 20.0% Voids
#2	46.00'	1,215 cf	**Surface Bowl (Prismatic)** Listed below (Recalc)
		1,353 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	220	0	0
48.00	995	1,215	1,215

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	**18.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.40' S= 0.0156 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 3	43.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	42.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.49 cfs @ 12.09 hrs HW=43.84' TW=42.66' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.49 cfs of 2.74 cfs potential flow)
↑**3=Orifice/Grate** (Passes 0.49 cfs of 0.95 cfs potential flow)
↑**2=Exfiltration** (Exfiltration Controls 0.49 cfs)
4=Orifice/Grate (Controls 0.00 cfs)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GENERAL CALCULATIONS - WQV and WQF (optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

0.88	ac	A = Area draining to the practice
0.74	ac	A_I = Impervious area draining to the practice
0.84	decimal	I = Percent impervious area draining to the practice, in decimal form
0.81	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.71	ac-in	WQV= 1" x Rv x A
2,577	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.81	inches	Q = Water quality depth. Q = WQV/A
98	unitless	CN = Unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.2	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.037	inches	Ia = Initial abstraction. Ia = 0.2S
7.7	minutes	T_c = Time of Concentration
675.0	$cfs/mi^2/in$	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.749	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$.

Designer's Notes:

For Focal Point 3 (Pond 3P)

See attached Focal Point Sizing Sheet

FP 3

DESIGN WORKSHEET

FOCALPOINT

NEW HAMPSHIRE AOT PROJECTS

1. **Determine FocalPoint bed area (minimum 174 sf/acre of impervious area - ex: 0.2 acres = 35 sf)**
   See step 2 to determine if minimum size is appropriate.
   - Tributary impervious area: = 0.74 ac **(A)**
   - Tributary pervious area: = 0.14 ac **(B)**
   - Minimum FocalPoint bed area required: = **((A x 1.0) + (B x 0.4)) * 174** = 138 sf
   - FocalPoint bed area provided: = 140 sf
   - Dimensions of proposed FocalPoint: = 20 ft x 7 ft

2. **Model a Type II & III 24-hr rainfall event that generates the water quality volume to demonstrate that the entire storm volume is treated prior to activation of the overflow (typically set at 6 - 12 in above the mulch). Note: a 1.2 - 1.3 in rainfall event usually generates 1.0 in of runoff.**
   Contact ACF for a sample HydroCAD node.
   - Water quality volume (WQv) goal: = 2577 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.34 in
   - Temporary storage depth provided: = 18 in
     (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 550 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 0 in

3. **Size the Harco PVC domed overflow riser.**
   Note: ACF recommends installation of a Fabco domed overflow filter kit for overflow protection.
   - Domed overflow riser diameter: = 15 in
   - Rim elevation of overflow riser: = 46.8
     (typically 6 - 12 in above mulch surface)
   - 6 in invert in elevation from FocalPoint: = 42.96
     (typically 3 ft below mulch surface)
   - 15 in invert out elevation: = 42.96

4. **Flood control - peak flow attenuation of major storms**
   The treated flow and bypass flow can be routed to a detention system such as an open pond or a subsurface solution like an expanded R-Tank system. (contact ACF for additional information on designing expanded R-Tank systems)

5. **Prepare a landscape plan for the FocalPoint bed area** ☑

6. **Design review and installation oversight by manufacturer's representative**
   - The design has been reviewed by ACF Environmental ☐
   - Engineer will coordinate installation inspection with ACF Environmental ☐

Contact Rob Woodman - Senior Stormwater Engineer
Cell: 207.272.4431 | Email: rwoodman@acfenv.com

ACF ENVIRONMENTAL

Summary for Pond 3P: Focal Point 3

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 0.881 ac, 84.01% Impervious, Inflow Depth > 0.78" for Focal Point WQF event
Inflow = 0.73 cfs @ 12.10 hrs, Volume= 0.057 af
Outflow = 0.61 cfs @ 12.16 hrs, Volume= 0.057 af, Atten= 16%, Lag= 3.5 min
Primary = 0.61 cfs @ 12.16 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 45.74' @ 12.16 hrs Surf.Area= 263 sf Storage= 79 cf

Plug-Flow detention time= 0.5 min calculated for 0.057 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (803.5 - 803.0)

Volume	Invert	Avail.Storage	Storage Description
#1	43.75'	93 cf	**7.00'W x 20.00'L x 2.25'H Focal Point Z=1.0** 467 cf Overall x 20.0% Voids
#2	46.00'	1,996 cf	**Surface Bowl (Prismatic)** Listed below (Recalc)
		2,089 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
46.00	140	0	0
48.00	832	972	972
49.00	1,216	1,024	1,996

Device	Routing	Invert	Outlet Devices
#1	Primary	42.96'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.96' / 42.05' S= 0.0228 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	43.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	42.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.61 cfs @ 12.16 hrs HW=45.71' TW=41.78' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.61 cfs of 6.81 cfs potential flow)
  - **3=Orifice/Grate** (Passes 0.61 cfs of 1.90 cfs potential flow)
    - **2=Exfiltration** (Exfiltration Controls 0.61 cfs)
  - **4=Orifice/Grate** (Controls 0.00 cfs)

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

GENERAL CALCULATIONS - WQV and WQF (optional worksheet)

This worksheet may be useful when designing a BMP **that does not fit into one of the specific worksheets already provided** (i.e. for a technology which is not a stormwater wetland, infiltration practice, etc.)

Water Quality Volume (WQV)

1.64	ac	A = Area draining to the practice
0.86	ac	A_I = Impervious area draining to the practice
0.52	decimal	I = Percent impervious area draining to the practice, in decimal form
0.52	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)
0.86	ac-in	WQV= 1" x Rv x A
3,107	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1	inches	P = Amount of rainfall. For WQF in NH, P = 1".
0.52	inches	Q = Water quality depth. Q = WQV/A
94	unitless	CN = Unit peak discharge curve number. $CN = 1000/(10+5P+10Q-10*[Q^2 + 1.25*Q*P]^{0.5})$
0.6	inches	S = Potential maximum retention. S = (1000/CN) - 10
0.120	inches	Ia = Initial abstraction. Ia = 0.2S
6.0	minutes	T_c = Time of Concentration
640.0	$cfs/mi^2/in$	q_u is the unit peak discharge. Obtain this value from TR-55 exhibits 4-II and 4-III.
0.856	cfs	WQF = q_u x WQV. Conversion: to convert "$cfs/mi^2/in$ * ac-in" to "cfs" multiply by $1mi^2/640ac$.

Designer's Notes:

For Focal Point 4 (Pond 4P)

See attached Focal Point sizing sheet

FP 4

DESIGN WORKSHEET

FOCALPOINT

NEW HAMPSHIRE AOT PROJECTS

1. **Determine FocalPoint bed area (minimum 174 sf/acre of impervious area - ex: 0.2 acres = 35 sf)**
   See step 2 to determine if minimum size is appropriate.
   - Tributary impervious area: = 0.86 ac **(A)**
   - Tributary pervious area: = 0.78 ac **(B)**
   - Minimum FocalPoint bed area required: = **((A x 1.0) + (B x 0.4)) * 174** = 204 sf
   - FocalPoint bed area provided: = 210 sf
   - Dimensions of proposed FocalPoint: = 5 ft x 42 ft

2. **Model a Type II & III 24-hr rainfall event that generates the water quality volume to demonstrate that the entire storm volume is treated prior to activation of the overflow (typically set at 6 - 12 in above the mulch). Note: a 1.2 - 1.3 in rainfall event usually generates 1.0 in of runoff.**
   Contact ACF for a sample HydroCAD node.
   - Water quality volume (WQv) goal: = 3107 ft^3
   - Type II & III 24-hr rainfall depth to generate WQv: = 1.20 in
   - Temporary storage depth provided: = 10 in
     (typically 6 - 12 in)
   - Temporary storage volume provided at above depth: = 437 ft^3
   - Peak ponding depth from Type III 24-hr storm event: = 0 in

3. **Size the Harco PVC domed overflow riser.**
   Note: ACF recommends installation of a Fabco domed overflow filter kit for overflow protection.
   - Domed overflow riser diameter: = 15 in
   - Rim elevation of overflow riser: = 45.8
     (typically 6 - 12 in above mulch surface)
   - 6 in invert in elevation from FocalPoint: = 41.96
     (typically 3 ft below mulch surface)
   - 18 in invert out elevation: = 41.96

4. **Flood control - peak flow attenuation of major storms**
   The treated flow and bypass flow can be routed to a detention system such as an open pond or a subsurface solution like an expanded R-Tank system. (contact ACF for additional information on designing expanded R-Tank systems)

5. **Prepare a landscape plan for the FocalPoint bed area** ☑

6. **Design review and installation oversight by manufacturer's representative**
   - The design has been reviewed by ACF Environmental ☑
   - Engineer will coordinate installation inspection with ACF Environmental ☑

Contact Rob Woodman - Senior Stormwater Engineer
Cell: 207.272.4431 | Email: rwoodman@acfenv.com

ACF ENVIRONMENTAL

Summary for Pond 4P: Focal Point 4

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=4)

Inflow Area = 1.641 ac, 52.47% Impervious, Inflow Depth > 0.57" for Focal Point WQF event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 0.078 af
Outflow = 0.86 cfs @ 12.14 hrs, Volume= 0.078 af, Atten= 15%, Lag= 3.1 min
Primary = 0.86 cfs @ 12.14 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 44.35' @ 12.14 hrs Surf.Area= 371 sf Storage= 92 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.4 min (779.5 - 779.1)

Volume	Invert	Avail.Storage	Storage Description
#1	42.75'	145 cf	**5.00'W x 42.00'L x 2.25'H Focal Point Z=1.0** 726 cf Overall x 20.0% Voids
#2	45.00'	1,437 cf	**Surface Bowl** (**Prismatic**) Listed below (Recalc)
		1,582 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.00	210	0	0
46.00	735	473	473
47.00	1,193	964	1,437

Device	Routing	Invert	Outlet Devices
#1	**Primary**	41.96'	**15.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.96' / 38.75' S= 0.0178 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 3	42.75'	**100.000 in/hr Exfiltration over Surface area** Phase-In= 0.10'
#3	Device 1	41.96'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	45.80'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.85 cfs @ 12.14 hrs HW=44.31' TW=38.96' (Dynamic Tailwater)
↑1=**Culvert** (Passes 0.85 cfs of 6.13 cfs potential flow)
↑3=**Orifice/Grate** (Passes 0.85 cfs of 1.75 cfs potential flow)
↑2=**Exfiltration** (Exfiltration Controls 0.85 cfs)
↑4=**Orifice/Grate** (Controls 0.00 cfs)

SITE-SPECIFIC SOIL SURVEY REPORT
375 Banfield Road
Portsmouth, NH
GES # 2020032

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 5.0, December 2017. This map product is within the technical standards of the National Cooperative Soil Survey. It is a special product, intended for the submission to NH DES Alteration of Terrain. It was produced by a professional soil scientist and is not a product of the USDA Natural Resource Conservation Service.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Survey (HISS) Symbols were determined using SSSNNE Special Publication No. 1, High Intensity Soil Maps for New Hampshire, December 2017.

2. DATE SOIL MAP PRODUCED

Field work conducted on 20 July 2020.
Test pits by Jones & Beach on April 8, 2020, were used to assist in the preparation of the soil map.

3. GEOGRAPHIC LOCATION AND SIZE OF SITE

Approximately 16 acres. Tax map 266, Lot 7. The site is located in Portsmouth, NH.

4. PURPOSE OF THE SOIL MAP

The preparation of this map was requested by Jones & Beach Engineers. The purpose was to meet the requirements of NH Alteration of Terrain. Also provided is a conversion to HISS map units is in the Soil Identification Legend.

5. SOIL IDENTIFICATION LEGEND

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. It was produced by a professional soil scientist, and is not a product of the USDA Natural Resources Conservation Service.

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www.gesinc.biz

The site specific soil survey field work was conducted 07-20-2020 and was prepared by James P. Gove, CSS # 004, Gove Environmental Services, Inc. The survey area is located on Banfield Road, Portsmouth, NH.
Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011. The numeric legend was amended to identify the correct soil components of the complex.

Hydrologic Soil Group from Ksat Values for New Hampshire Soils, Society of Soil Scientists of New England, Special Publication No. 5, September, 2009.

Hydrologic soil groups were estimated for disturbed soil map units 100, 100H, 400. 599. 900.

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
38	Eldridge fsl	343	C
100	Udorthents, wet substratum	363	C
100H	Udorthents, wet substratum, hydric	563	D
115	Scarboro muck	643	D
400	Udorthents, gravelly	161	A
510	Hoosic gsl	111	A
538	Squamscott fsl	543	C
599	Urban Land – Hoosic Complex	761/161	D/A
900	Endoaquents, gravelly	561	D

fsl = fine sandy loam gsl = gravelly sandy loam

SLOPE PHASE:					
0-8%	B	8-15%	C	15-25%	D
25%+	E				

Note: Map symbols 100, 100H, 400, 599, and 900 represent man-disturbed areas that were excavated, filled or graded.

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%+	E				

6. SOIL MAP UNIT DESCRIPTIONS

ELDRIDGE FSL (38) IS A SOIL THAT HAS DEVELOPED WITH LOAM OR SANDY OVERLAYING SILTS AND CLAYS. Based upon the test pits, the depth to seasonal high water table is 18" to 24". The mineral restrictive layer of silt loam begins at the same depth as the estimated seasonal high water table.

UDORTHENTS, WET SUBSTRATUM (100) AND UDORTHENTS, WET SUBSTRATUM, HYDRIC (100H) REPRESENT MAP UNITS WHERE FILL WAS PLACED OVER HYDRIC SOILS. The map unit 100 is no longer wetland, but have wetland soils buried 2 to 3 feet below the soil surface. Some of the fill was non-soil debris. The map unit 100H represents similar disturbance of filling, but is still wetlands with hydric soils near the surface (see photo below).

SCARBORO MUCK (115B) IS LOCATED ON THE LARGE, FLAT WETLAND AREA THAT LIES TO THE SOUTH OF THE PROPERTY. It appears that some of the muck areas were filled in the distant past (see 100 and 100H). There is over 16 inches of sapric organic over the underlying mineral soils (see photo below).

UDORTHENTS, GRAVELLY REPRESENT THE GRAVEL PIT THAT WAS PRESENT ON THE SITE. This is a shale dominated area that was excavated and graded. Along the northern boundary is a cut face that shows the depth of the original pit. The gravel material came from the Hoosic soil area that is still present. The soil boundary of this unit is intermixed with the Eldridge and would expect inclusions of each within the other map unit (see photo below).

HOOSIC GRAVELLY SANDY LOAM (510) IS FOUND IN THE HILL ON THE EASTERN PORTION OF THE SIRE. While much of the topsoil was removed from these map units, the basic substratum is still intact, with sandy textures, shale rock fragments and extremely deep water tables (see photo below).

SQUAMSCOTT FINE SANDY LOAM (538) REPRESENTS THE OTHER NATURAL WETLAND ON THE SITE. These are poorly drained soils with loam/sand textures over silt/clay textures. The seasonal water table is at the surface, but does drop over the course of the summer.

URBAN LAND – HOOSIC COMPLEX (599) REPRESENTS AREAS OF BUILDING AND PAVEMENT OVER THE EXCAVATED PIT AREA. Much of this map unit is impervious, but the soils around the impervious areas have the sand shale material of the original pit area.

ENDOAQUENTS, GRAVELLY (900) IS AN AREA OF EXCAVATION THAT HAS DEVELOPED INTO A WETLAND. This area is at the base of the cut face of the pit and captures water during the spring. It has a pipe outlet. The area has a short hydroperiod but, by definition in the soil standards, has a hydrologic soil group of D (see photo below).

7. RESPONSIBLE SOIL SCIENTIST

James P. Gove, C.S.S. #004

8. OTHER DISTINGUISHING FEATURES OF SITE

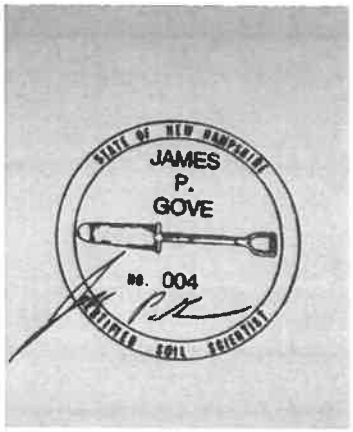
It is clear that a significant amount of soil disturbance took place on the site. The entire top of the hill was flattened and graded. Some of the side slopes are spoil piles or steep excavated or filled areas. In the southern portion of the site, fill was placed over wetlands years ago. Some of the trees on the fill are 60 years old. The fill was not clean but had non-soil material mixed in (see photo below).

9. LIMITING INCLUSIONS

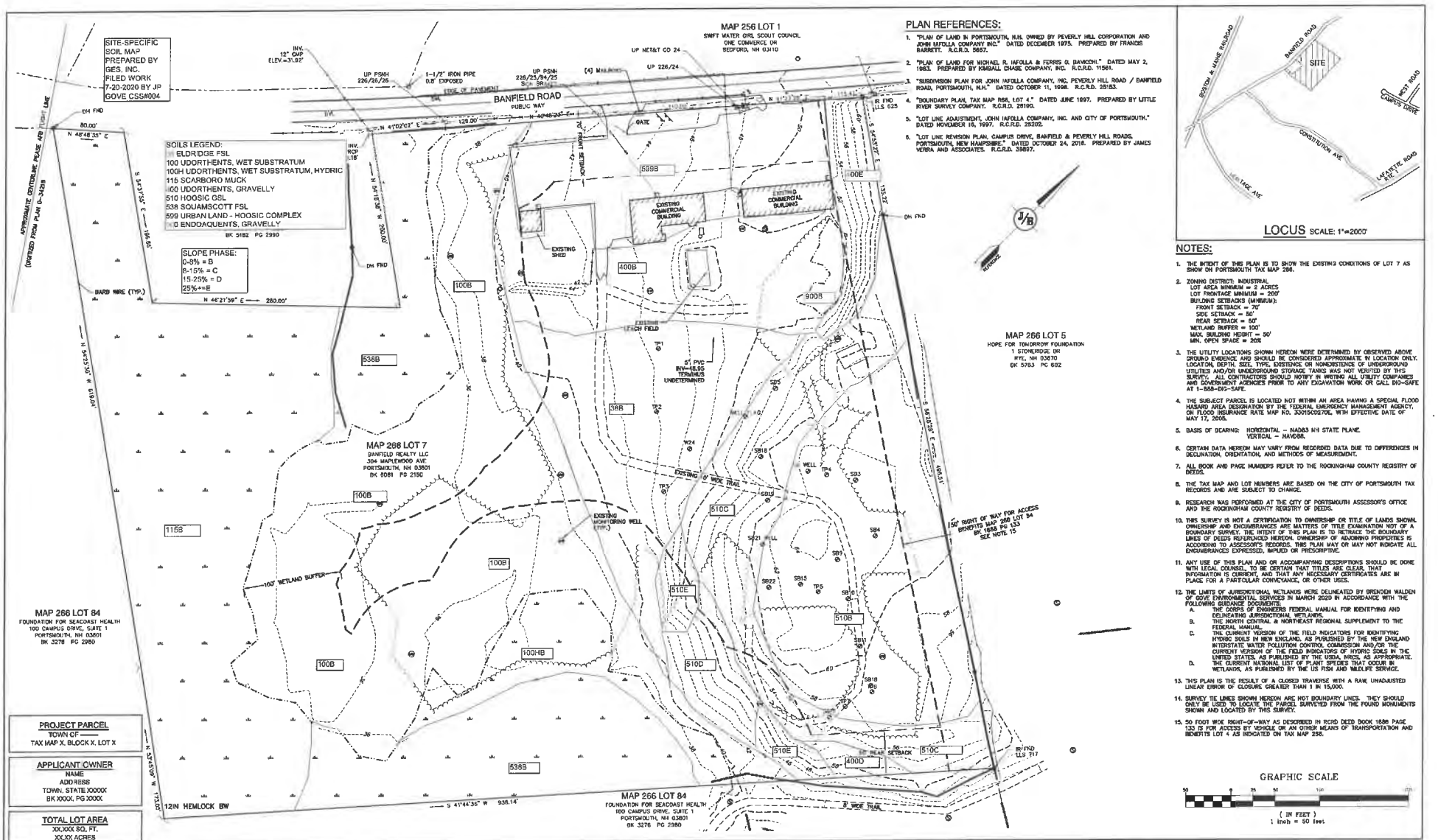
Obviously this is a mixed site of soil disturbance from man. Due to the disturbance, expectations of soils from one map unit will be found in another map unit. The only true clean map units are the wetlands that were flagged and located, and that is only for the natural wetland areas. The disturbed wetland areas (110H) has mounds of debris within the map units.

10. SPECIAL FEATURE SYMBOLS

None used



07-23-2020



PLAN REFERENCES:

1. "PLAN OF LAND IN PORTSMOUTH, N.H. OWNED BY PEVERLY HILL CORPORATION AND JOHN IAFOLLA COMPANY INC." DATED DECEMBER 1975. PREPARED BY FRANCIS BARRETT. R.C.R.D. 5657.
2. "PLAN OF LAND FOR MICHAEL R. IAFOLLA & FERRIS G. BAVICCHI." DATED MAY 2, 1983. PREPARED BY KIMBALL CHASE COMPANY, INC. R.C.R.D. 11561.
3. "SUBDIVISION PLAN FOR JOHN IAFOLLA COMPANY, INC. PEVERLY HILL ROAD / BANFIELD ROAD, PORTSMOUTH, N.H." DATED OCTOBER 11, 1996. R.C.R.D. 25153.
4. "BOUNDARY PLAN, TAX MAP 266, LOT 4." DATED JUNE 1997. PREPARED BY LITTLE RIVER SURVEY COMPANY. R.C.R.D. 28190.
5. "LOT LINE ADJUSTMENT, JOHN IAFOLLA COMPANY, INC. AND CITY OF PORTSMOUTH." DATED NOVEMBER 15, 1997. R.C.R.D. 28202.
6. "LOT LINE REVISION PLAN, CAMPUS DRIVE, BANFIELD & PEVERLY HILL ROADS, PORTSMOUTH, NEW HAMPSHIRE." DATED OCTOBER 24, 2016. PREPARED BY JAMES VERRA AND ASSOCIATES. R.C.R.D. 39897.

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF LOT 7 AS SHOW ON PORTSMOUTH TAX MAP 266.
2. ZONING DISTRICT: INDUSTRIAL
   LOT AREA MINIMUM = 2 ACRES
   LOT FRONTAGE MINIMUM = 200'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70'
   SIDE SETBACK = 50'
   REAR SETBACK = 50'
   WETLAND BUFFER = 100'
   MAX. BUILDING HEIGHT = 50'
   MIN. OPEN SPACE = 20%
3. 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.
4. THE SUBJECT PARCEL IS LOCATED NOT WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD AREA DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0270E, WITH EFFECTIVE DATE OF MAY 17, 2005.
5. BASIS OF BEARING: HORIZONTAL – NAD83 NH STATE PLANE.
   VERTICAL – NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSOR'S OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. 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.
11. 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.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY BRENDEN WALDEN OF GOVE ENVIRONMENTAL SERVICES IN MARCH 2020 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
   A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
   B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
   C. 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.
   D. THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
14. 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.
15. 50 FOOT WIDE RIGHT-OF-WAY AS DESCRIBED IN RCRD DEED BOOK 1688 PAGE 133 IS FOR ACCESS BY VEHICLE OR AN OTHER MEANS OF TRANSPORTATION AND BENEFITS LOT 4 AS INDICATED ON TAX MAP 266.

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 feet

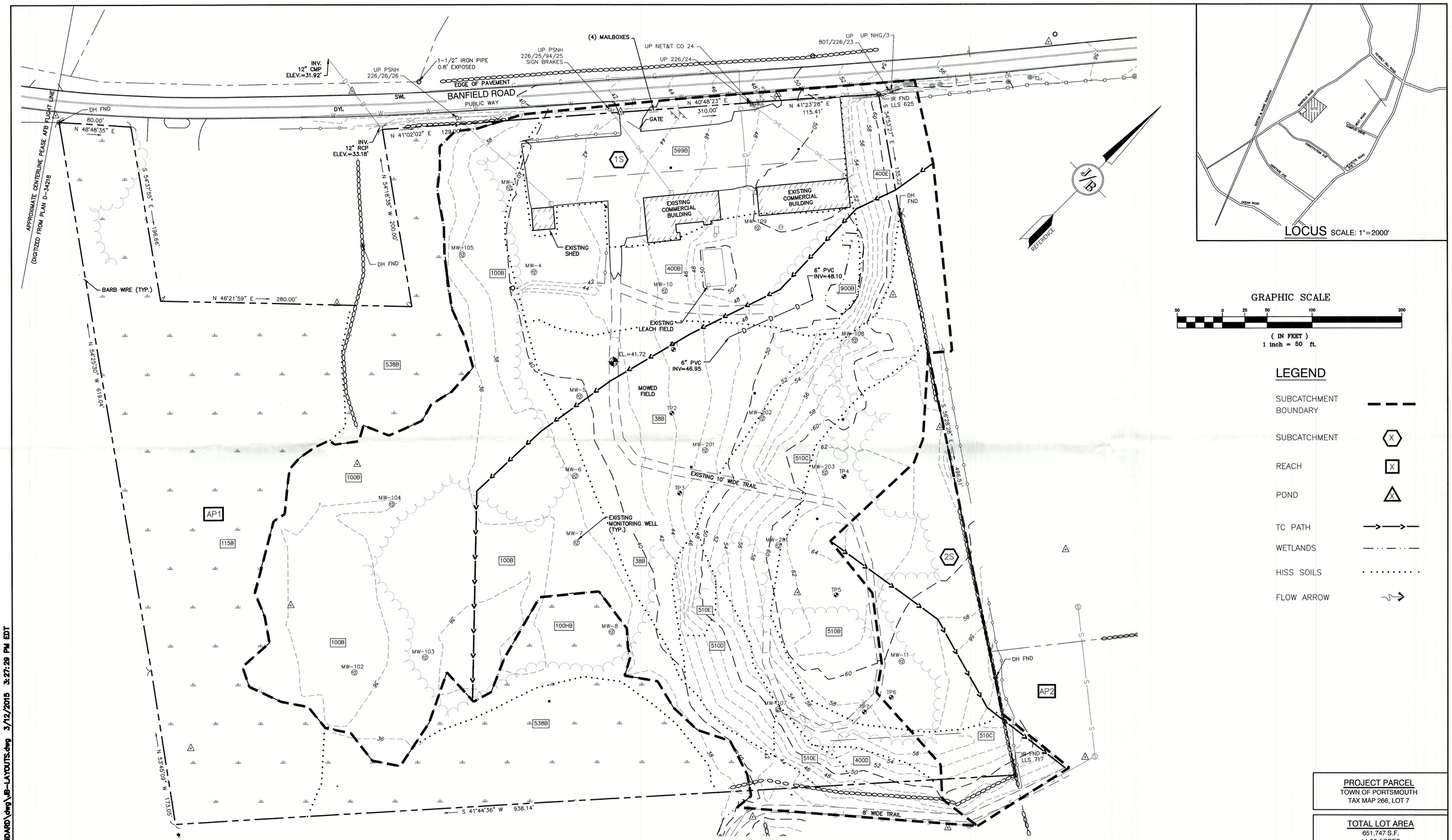
Design: BWG | Draft: DMC | Date: XX/XX/XX
Checked: DMC | Scale: AS-NOTED | Project No.: 19190
Drawing Name: 19190-EX-CONDITIONS.dwg

REV	DATE	REVISION	BY
0	—	ISSUED FOR REVIEW	—

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:	375 BANFIELD ROAD PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C1
SHEET X OF X
JBE PROJECT NO. 19190



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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN.dwg		

STATE OF NEW HAMPSHIRE — MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
3	5/17/21	REVISED PER CITY COMMENTS	DJM
2	5/3/21	REVISED PER CITY COMMENTS	DJM
1	2/17/21	REVISED PER CITY COMMENTS	DJM
0	12/30/20	ISSUED FOR REVIEW	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
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Civil Engineering Services
603-772-4746
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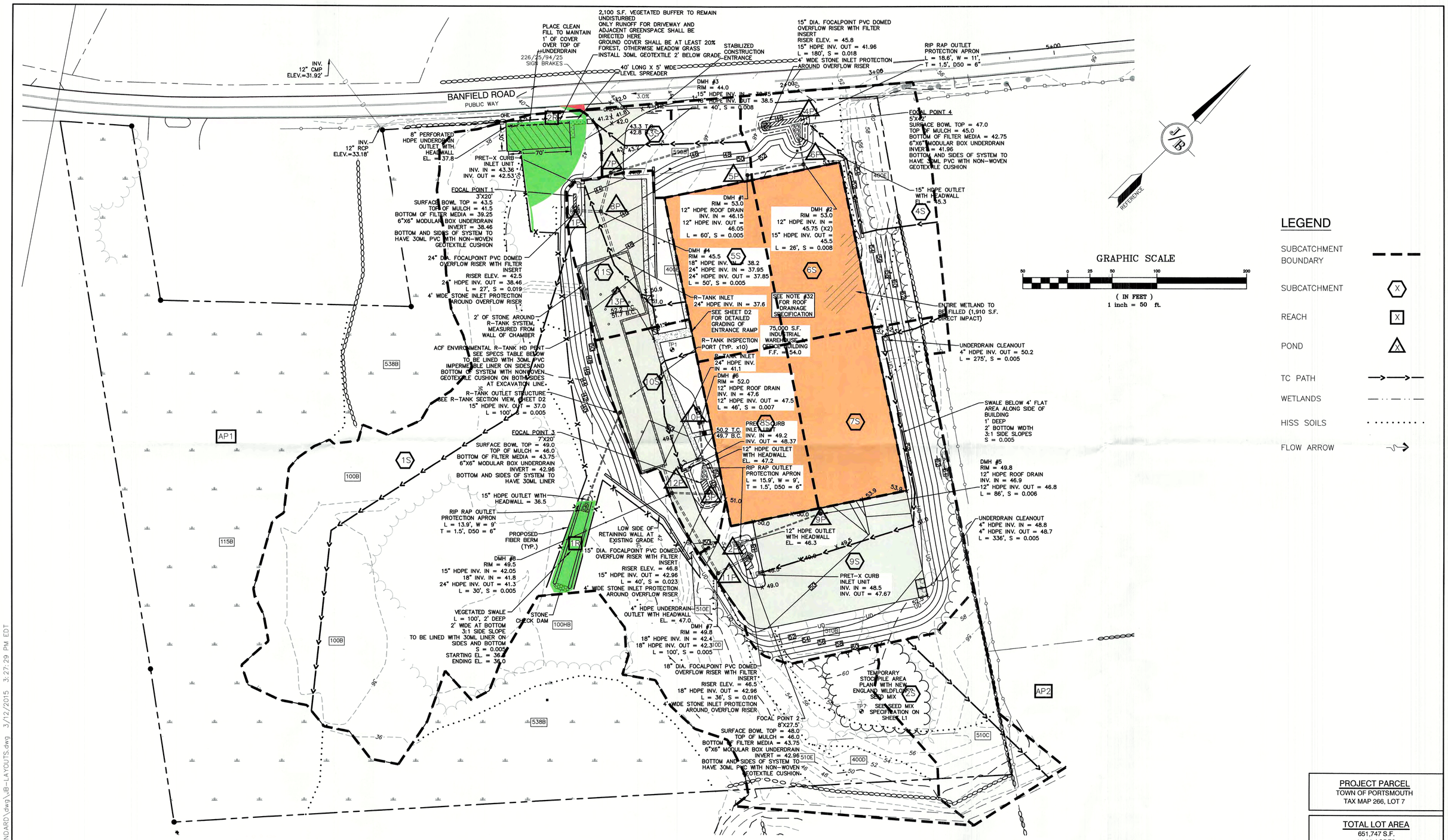
Plan Name:	EXISTING WATERSHED PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
W1
SHEET 1 OF 2
JBE PROJECT NO. 19190.2



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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN.dwg		

STATE OF NEW HAMPSHIRE · MICHAEL J. KERIVAN No. 9848 · LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
3	5/17/21	REVISED PER CITY COMMENTS	DJM
2	5/3/21	REVISED PER CITY COMMENTS	DJM
1	2/17/21	REVISED PER CITY COMMENTS	DJM
0	12/30/20	ISSUED FOR REVIEW	DJM

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E-MAIL: JBE@JONESANDBEACH.COM

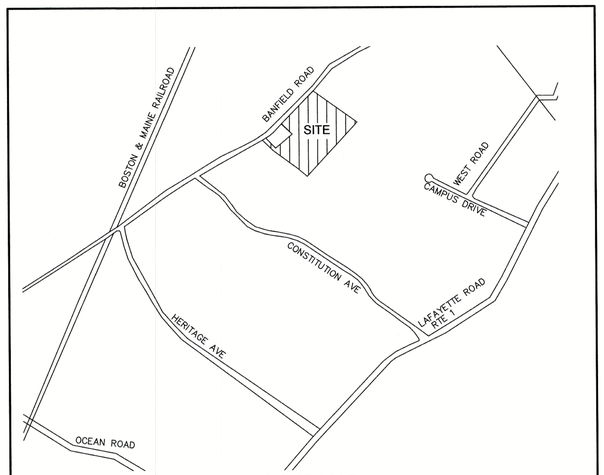
Plan Name:	PROPOSED WATERSHED PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
W2
SHEET 2 OF 2
JBE PROJECT NO. 19190.2

COMMERCIAL SITE PLAN
"INDUSTRIAL WAREHOUSE"
TAX MAP 266, LOT 7
375 BANFIELD 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
100	100	MAJOR CONTOUR
98	98	MINOR CONTOUR
		EDGE OF PAVEMENT
VGC	VGC	VERTICAL GRANITE CURB
SGC	SGC	SLOPE GRANITE CURB
CCB	CCB	CAPE COD BERM
PCC	PCC	POURED CONCRETE CURB
X	X	SILT FENCE / FIBER BERM
D		DRAINAGE LINE
S	S	SEWER LINE
FM	FM	SEWER FORCE MAIN
G	G	GAS LINE
W	W	WATER LINE
WS	WS	WATER SERVICE
OHE		OVERHEAD ELECTRIC
UGE	UGE	UNDERGROUND ELECTRIC
		GUARDRAIL
UD	UD	UNDERDRAIN
F	F	FIRE PROTECTION LINE
	W	THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
100x0 100.00	100x0 100.00	SPOT GRADE
		PAVEMENT SPOT GRADE
100.00 99.50	100.00 99.50	CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
W TP1	W	WELL
TP1		TEST PIT
		FAILED TEST PIT
M	M	MONITORING WELL
PT		PERC TEST
1		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
D	D	DRAIN MANHOLE
S	S	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" = 1000'

SHEET INDEX

CIVIL ENGINEER / SURVEYOR
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
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CONTACT: JOSEPH CORONATI
JCORONATI@JONESANDBEACH.COM

WETLAND AND SOIL CONSULTANT
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DRIVE BUILDING 2 UNIT H
EXETER, NH 03833
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CONTACT: JAMES GOVE
JGOVE@GESINC.BIZ

LANDSCAPE DESIGNER
LM LAND DESIGN
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BRENTWOOD, NH 03833
CONTACT: LISE MCNAUGHTON
(603) 770-7728
LMLANDDESIGN@GMAIL.COM

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UNITIL SERVICE CORP.
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PORTSMOUTH, NH 03801
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MACLEAND@UNITIL.COM

ELECTRIC
EVERSOURCE ENERGY
74 OLD DOVER ROAD
ROCHESTER, NH 03867
CONTACT: MARK BOUCHER
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TELEPHONE
CONSOLIDATED COMMUNICATIONS
1575 GREENLAND ROAD
GREENLAND, NH 03840
CONTACT: JOE CONSIDINE
(603) 427-5525

CABLE TV
COMCAST COMMUNICATION CORPORATION
334-B CALEF HIGHWAY
EPPING, NH 03402-2325
(603) 679-5695

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 – LICENSED PROFESSIONAL ENGINEER – 8/20/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
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PO Box 219
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Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

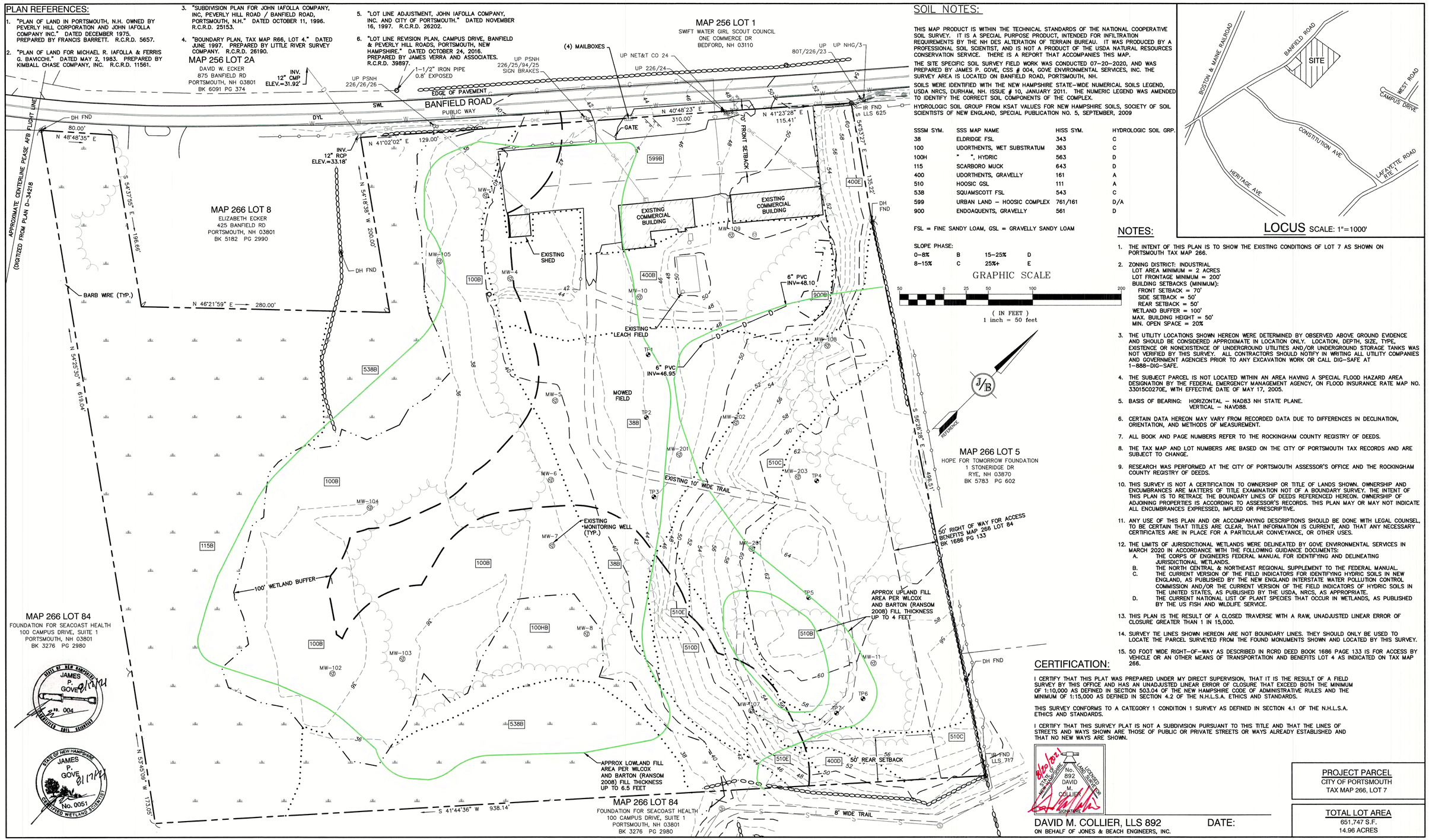
Plan Name:	COVER SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
CS
SHEET 1 OF 24
JBE PROJECT NO. 19190.2

INDUSTRIAL WAREHOUSE, PORTSMOUTH, NH
JBE # 19190.2
REVISION 16 - 8/18/21

PLAN REFERENCES:

1. "PLAN OF LAND IN PORTSMOUTH, N.H. OWNED BY PEVERLY HILL CORPORATION AND JOHN IAFOLLA COMPANY INC." DATED DECEMBER 1975. PREPARED BY FRANCIS BARRETT. R.C.R.D. 5657.
2. "PLAN OF LAND FOR MICHAEL R. IAFOLLA & FERRIS G. BAVICCHI." DATED MAY 2, 1983. PREPARED BY KIMBALL CHASE COMPANY, INC. R.C.R.D. 11561.
3. "SUBDIVISION PLAN FOR JOHN IAFOLLA COMPANY, INC, PEVERLY HILL ROAD / BANFIELD ROAD, PORTSMOUTH, N.H." DATED OCTOBER 11, 1996. R.C.R.D. 25153.
4. "BOUNDARY PLAN, TAX MAP R66, LOT 4." DATED JUNE 1997. PREPARED BY LITTLE RIVER SURVEY COMPANY. R.C.R.D. 26190.
5. "LOT LINE ADJUSTMENT, JOHN IAFOLLA COMPANY, INC. AND CITY OF PORTSMOUTH." DATED NOVEMBER 16, 1997. R.C.R.D. 26202.
6. "LOT LINE REVISION PLAN, CAMPUS DRIVE, BANFIELD & PEVERLY HILL ROADS, PORTSMOUTH, NEW HAMPSHIRE." DATED OCTOBER 24, 2016. PREPARED BY JAMES VERRA AND ASSOCIATES. R.C.R.D. 39897.



SOIL NOTES:

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.

THE SITE SPECIFIC SOIL SURVEY FIELD WORK WAS CONDUCTED 07-20-2020, AND WAS PREPARED BY JAMES P. GOVE, CSS # 004, GOVE ENVIRONMENTAL SERVICES, INC. THE SURVEY AREA IS LOCATED ON BANFIELD ROAD, PORTSMOUTH, NH.

SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH, ISSUE # 10, JANUARY 2011. THE NUMERIC LEGEND WAS AMENDED TO IDENTIFY THE CORRECT SOIL COMPONENTS OF THE COMPLEX.

HYDROLOGIC SOIL GROUP FROM KSAT VALUES FOR NEW HAMPSHIRE SOILS, SOCIETY OF SOIL SCIENTISTS OF NEW ENGLAND, SPECIAL PUBLICATION NO. 5, SEPTEMBER, 2009

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
38	ELDRIDGE FSL	343	C
100	UDORTHENTS, WET SUBSTRATUM	363	C
100H	" ", HYDRIC	563	D
115	SCARBORO MUCK	643	D
400	UDORTHENTS, GRAVELLY	161	A
510	HOOSIC GSL	111	A
538	SQUAMSCOTT FSL	543	C
599	URBAN LAND - HOOSIC COMPLEX	761/161	D/A
900	ENDOAQUENTS, GRAVELLY	561	D

FSL = FINE SANDY LOAM, GSL = GRAVELLY SANDY LOAM

SLOPE PHASE:

0-8%	B	15-25%	D
8-15%	C	25%+	E

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

LOCUS SCALE: 1"=1000'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF LOT 7 AS SHOWN ON PORTSMOUTH TAX MAP 266.
2. ZONING DISTRICT: INDUSTRIAL
   LOT AREA MINIMUM = 2 ACRES
   LOT FRONTAGE MINIMUM = 200'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70'
   SIDE SETBACK = 50'
   REAR SETBACK = 50'
   WETLAND BUFFER = 100'
   MAX. BUILDING HEIGHT = 50'
   MIN. OPEN SPACE = 20%
3. 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.
4. THE SUBJECT PARCEL IS NOT LOCATED WITHIN AN AREA HAVING A SPECIAL FLOOD HAZARD AREA DESIGNATION BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 33015C0270E, WITH EFFECTIVE DATE OF MAY 17, 2005.
5. BASIS OF BEARING: HORIZONTAL - NAD83 NH STATE PLANE.
   VERTICAL - NAVD88.
6. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
7. ALL BOOK AND PAGE NUMBERS REFER TO THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
8. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE CITY OF PORTSMOUTH TAX RECORDS AND ARE SUBJECT TO CHANGE.
9. RESEARCH WAS PERFORMED AT THE CITY OF PORTSMOUTH ASSESSOR'S OFFICE AND THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
10. 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.
11. 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.
12. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES IN MARCH 2020 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
    C. 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.
    D. THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.
13. THIS PLAN IS THE RESULT OF A CLOSED TRAVERSE WITH A RAW, UNADJUSTED LINEAR ERROR OF CLOSURE GREATER THAN 1 IN 15,000.
14. 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.
15. 50 FOOT WIDE RIGHT-OF-WAY AS DESCRIBED IN RCRD DEED BOOK 1686 PAGE 133 IS FOR ACCESS BY VEHICLE OR AN OTHER MEANS OF TRANSPORTATION AND BENEFITS LOT 4 AS INDICATED ON TAX MAP 266.

CERTIFICATION:

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.

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.

STATE OF NEW HAMPSHIRE No. 892 DAVID M. COLLIER LICENSED LAND SURVEYOR SIGNATURE

DAVID M. COLLIER, LLS 892 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

STATE OF NEW HAMPSHIRE JAMES P. GOVE 8/17/21 No. 004 CERTIFIED SOIL SCIENTIST

STATE OF NEW HAMPSHIRE JAMES P. GOVE 8/17/21 No. 0051 CERTIFIED WETLAND SCIENTIST

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS-NOTED
Date: 04/21/20	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg	

STATE OF NEW HAMPSHIRE MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER 8/20/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
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14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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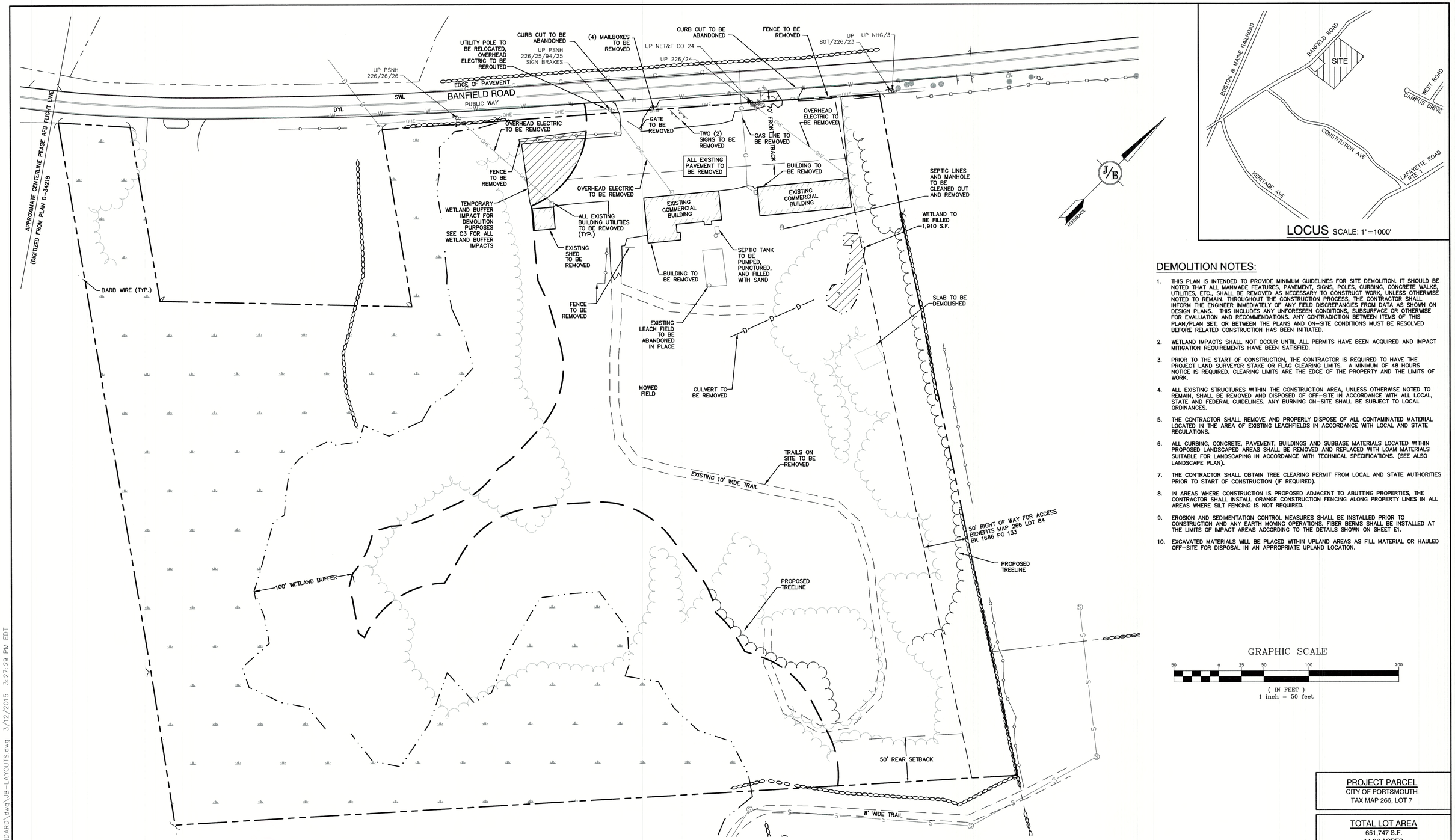
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	EXISTING CONDITIONS PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C1
SHEET 2 OF 24
JBE PROJECT NO. 19190.2



LOCUS SCALE: 1"=1000'

DEMOLITION NOTES:

1. THIS PLAN IS INTENDED TO PROVIDE MINIMUM GUIDELINES FOR SITE DEMOLITION. IT SHOULD BE NOTED THAT ALL MANMADE FEATURES, PAVEMENT, SIGNS, POLES, CURBING, CONCRETE WALKS, UTILITIES, ETC., SHALL BE REMOVED AS NECESSARY TO CONSTRUCT WORK, UNLESS OTHERWISE NOTED TO REMAIN. THROUGHOUT THE CONSTRUCTION PROCESS, THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY FIELD DISCREPANCIES FROM DATA AS SHOWN ON 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.
2. WETLAND IMPACTS SHALL NOT OCCUR UNTIL ALL PERMITS HAVE BEEN ACQUIRED AND IMPACT MITIGATION REQUIREMENTS HAVE BEEN SATISFIED.
3. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED. CLEARING LIMITS ARE THE EDGE OF THE PROPERTY AND THE LIMITS OF WORK.
4. ALL EXISTING STRUCTURES WITHIN THE CONSTRUCTION AREA, UNLESS OTHERWISE NOTED TO REMAIN, SHALL BE REMOVED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL GUIDELINES. ANY BURNING ON-SITE SHALL BE SUBJECT TO LOCAL ORDINANCES.
5. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONTAMINATED MATERIAL LOCATED IN THE AREA OF EXISTING LEACHFIELDS IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.
6. ALL CURBING, CONCRETE, PAVEMENT, BUILDINGS AND SUBBASE MATERIALS LOCATED WITHIN PROPOSED LANDSCAPED AREAS SHALL BE REMOVED AND REPLACED WITH LOAM MATERIALS SUITABLE FOR LANDSCAPING IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS. (SEE ALSO LANDSCAPE PLAN).
7. THE CONTRACTOR SHALL OBTAIN TREE CLEARING PERMIT FROM LOCAL AND STATE AUTHORITIES PRIOR TO START OF CONSTRUCTION (IF REQUIRED).
8. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
9. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO CONSTRUCTION AND ANY EARTH MOVING OPERATIONS. FIBER BERMS SHALL BE INSTALLED AT THE LIMITS OF IMPACT AREAS ACCORDING TO THE DETAILS SHOWN ON SHEET E1.
10. EXCAVATED MATERIALS WILL BE PLACED WITHIN UPLAND AREAS AS FILL MATERIAL OR HAULED OFF-SITE FOR DISPOSAL IN AN APPROPRIATE UPLAND LOCATION.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM
Checked: JAC	Scale: AS-NOTED
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg	Date: 04/21/20
	Project No.: 19190.2

STATE OF NEW HAMPSHIRE - MICHAEL J. KERIVAN No. 9646 - LICENSED PROFESSIONAL ENGINEER

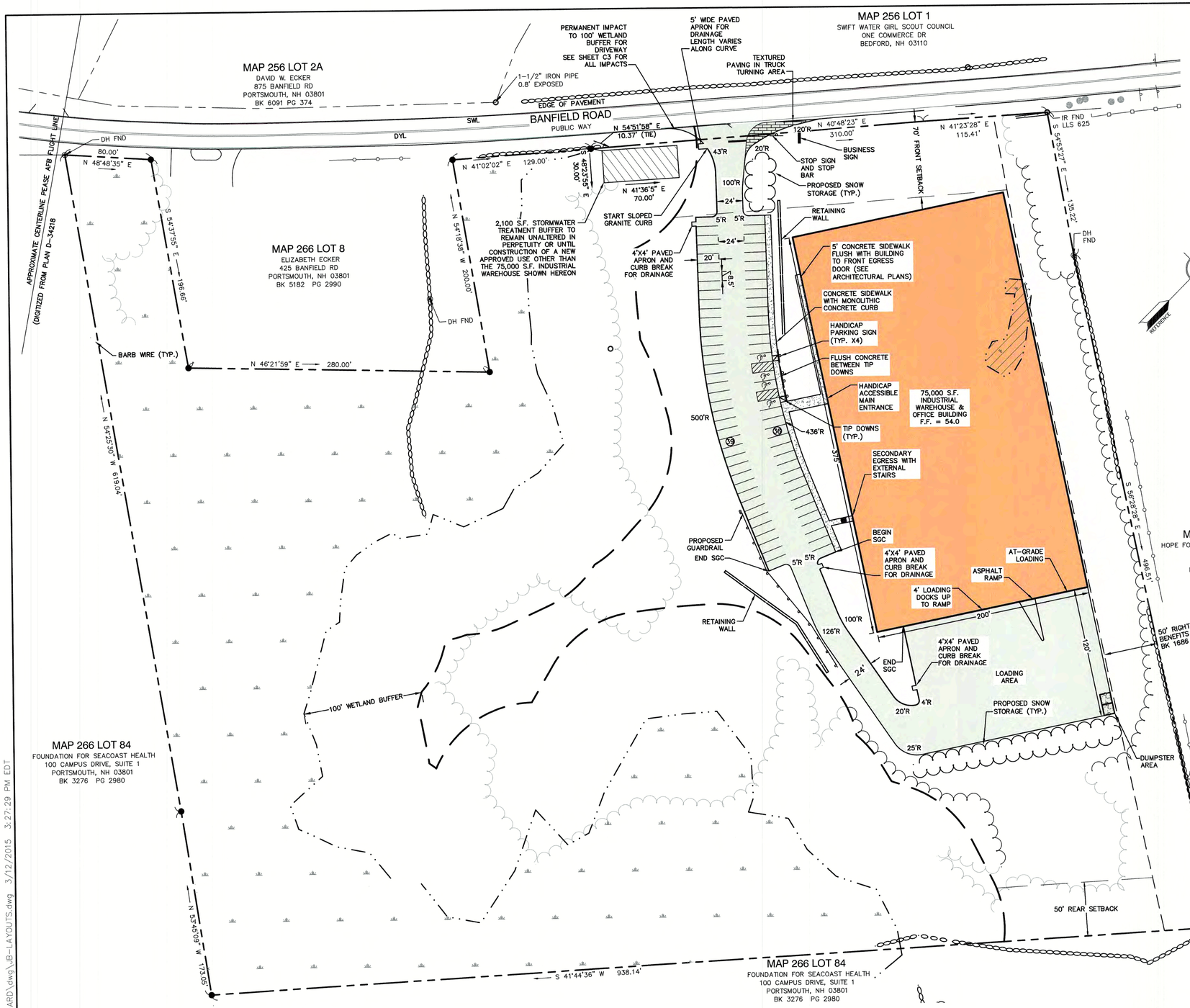
8/18/21

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
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

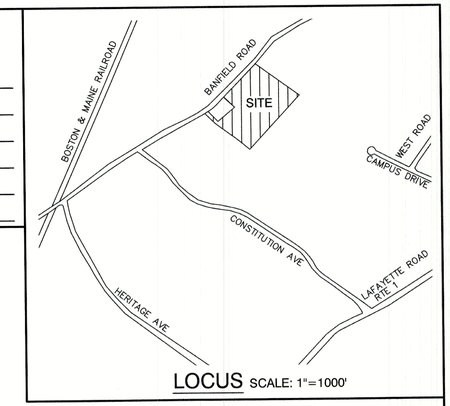
Plan Name:	DEMOLITION PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
DM-1
SHEET 3 OF 24
JBE PROJECT NO. 19190.2



APPROVED – PORTSMOUTH, NH
PLANNING BOARD

DATE:



LOCUS SCALE: 1"=1000'

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO CONSTRUCT AN INDUSTRIAL WAREHOUSE & OFFICE BUILDING WITH ASSOCIATED GRADING, DRAINAGE, AND UTILITIES.
2. ZONING DISTRICT: INDUSTRIAL
   LOT AREA MINIMUM = 2 ACRES
   LOT FRONTAGE MINIMUM = 200'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 70'
   SIDE SETBACK = 50'
   REAR SETBACK = 50'
   MAX. BUILDING HEIGHT = 70'
   MAX. BUILDING COVERAGE = 50%
   MIN. OPEN SPACE = 20%
   OPEN SPACE PROVIDED = 524,200 S.F. = 80.4%
   BUILDING COVERAGE PROVIDED = 75,000 S.F. = 11.5%
3. 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 ONSITE OR OFFSITE TO ENSURE SAFETY AND OBEY THE LAW.
4. PARKING CALCULATIONS: GENERAL MANUFACTURING: 1 SPACE REQUIRED PER 1000 SF GFA
   75,000 S.F. GFA PROPOSED: 75 PARKING SPACES REQUIRED
   75 PARKING SPACES PROVIDED
5. NHDES ALTERATION OF TERRAIN PERMIT NO. DATED .
   NHDES SEPTIC SYSTEM APPROVAL FOR CONSTRUCTION NO. DATED .
   NHDES WETLANDS BUREAU PERMIT NO. DATED .
6. ALL CONSTRUCTION SHALL CONFORM TO TOWN STANDARDS AND REGULATIONS, AND NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, WHICHEVER IS MORE STRINGENT.
7. 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.
8. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS A VARIANCE IS OTHERWISE REQUESTED.
9. 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.
10. 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.
11. ALL STOP BARS SHALL BE 18" IN WIDTH IN A COLOR OF WHITE; ALL TRAFFIC ARROWS SHALL BE PAINTED IN A COLOR OF WHITE.
12. 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.
13. SNOW TO BE STORED AT EDGE OF PAVEMENT AND IN AREAS SHOWN ON THE PLANS, OR TRUCKED OFFSITE TO AN APPROVED SNOW DUMPING LOCATION.
14. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
15. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
16. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
17. 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.
18. THE PRACTICES LISTED IN THE SALT MINIMIZATION PLAN PREPARED FOR THIS DEVELOPMENT AS A REQUIREMENT FOR ISSUANCE OF THE SITE-SPECIFIC ALTERATION OF TERRAIN PERMIT ARE TO BE IMPLEMENTED BY THE SITE OWNER AS WELL AS ALL FUTURE OWNERS AND ASSIGNS.
19. SNOW REMOVAL SHOULD BE PERFORMED BY SNO-PRO CERTIFIED PERSONNEL TO MINIMIZE THE POTENTIAL FOR CHLORIDE CONTAMINATION.
20. IF THE TENANT CHOOSES TO HAVE AN OUTDOOR SEATING AREA FOR EMPLOYEES, IT SHALL NOT BE LOCATED WITHIN THE 100' WETLAND BUFFER OR ON TOP OF SEPTIC COMPONENTS OR DRAINAGE PRACTICES.

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

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Design: JAC	Draft: DJM
Checked: JAC	Scale: AS-NOTED
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg	Date: 04/21/20
	Project No.: 19190.2

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN No. 9848 LICENSED PROFESSIONAL ENGINEER
8/20/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
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14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
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Designed and Produced in NH
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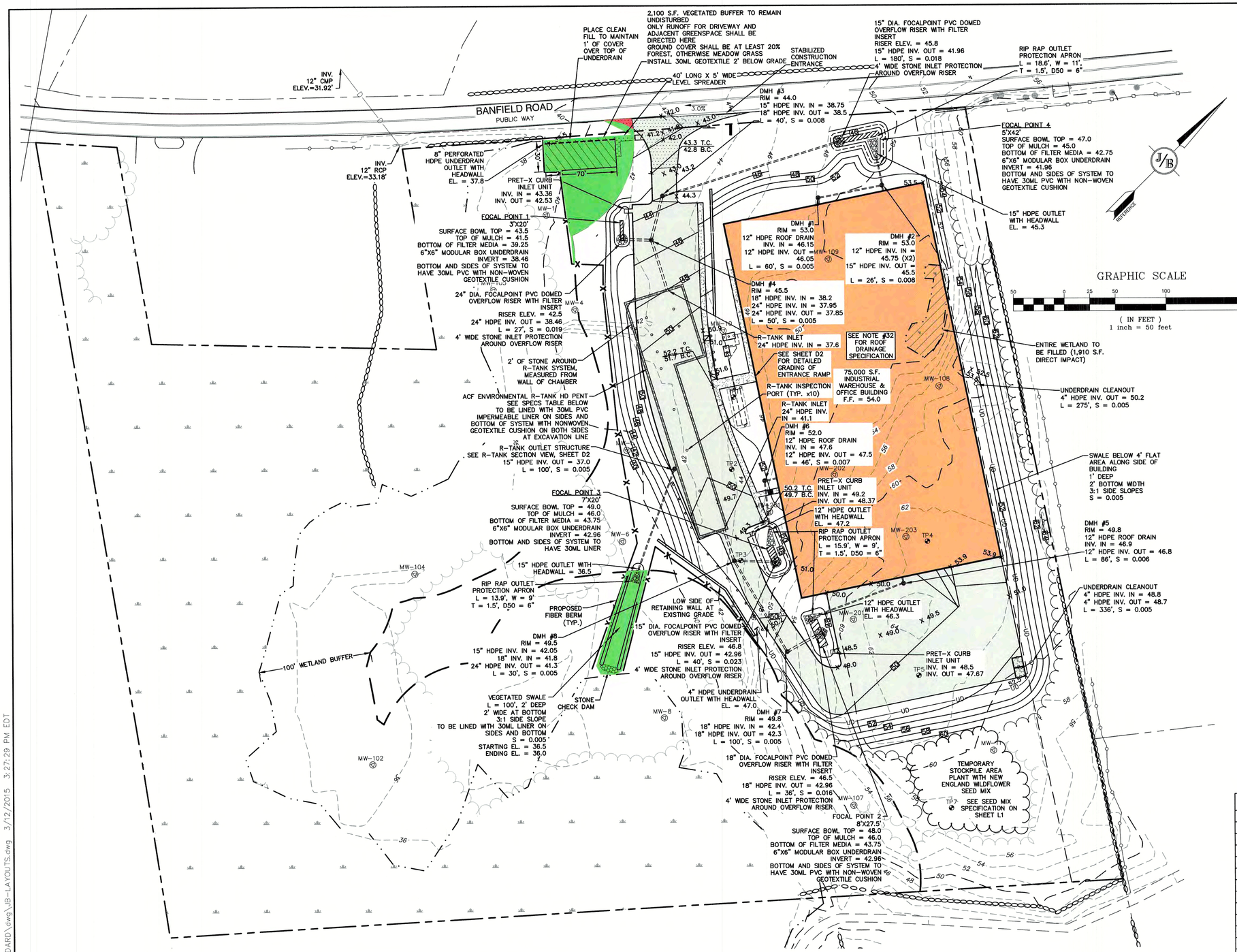
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	SITE PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C2
SHEET 4 OF 24
JBE PROJECT NO. 19190.2



GRADING AND DRAINAGE NOTES:

1. 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).
2. VERTICAL DATUM: NAVD88.
3. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
4. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
5. 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.
6. ALL ROOF DRAINS FROM BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT THE END. ALL EXTERIOR ROOF DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW DEVICES.
7. ALL SWALES AND DETENTION PONDS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
8. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
9. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
10. 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.
11. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE SHEETS D2-D6 FOR DRAINAGE DETAILS.
12. ALL DRAINAGE STRUCTURES AND STORMWATER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
13. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
14. ALL DRAINAGE PIPE SHALL BE NON-PERFORATED ADS N-12 OR APPROVED EQUAL.
15. STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
16. 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.
17. NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
18. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
19. SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
20. MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
21. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
22. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
23. IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
24. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
25. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
26. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
27. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
28. ALL CULVERT OR DRAINPIPE OUTLETS ARE TO HAVE CONCRETE HEADWALLS UNLESS OTHERWISE STATED.
29. AREA OF TOTAL DISTURBANCE = 225,000 S.F.
AREA OF IMPACT TO 100' WETLAND BUFFER: SEE BELOW
AREA OF WETLAND FILL = 1,910 S.F.
30. ALL STORMWATER TREATMENT, DETENTION, AND BIOFILTRATION PRACTICES TO BE LINED TO RESTRICT INFILTRATION AS SPECIFIED
31. ROOF TO BE SPLIT INTO FOUR QUADRANTS FOR DRAINAGE, EACH SLOPED INTO SEPERATE GUTTER. GUTTERS TO BE SLOPED TOWARD ROOF DRAINS AT DEPICTED LOCATIONS.

WETLAND BUFFER IMPACT LEGEND

= PERMANENT IMPACT (85 S.F. FOR CORNER OF DRIVEWAY)

= TEMPORARY IMPACT (3,350 S.F. EXISTING ASPHALT AND BUILDING REMOVAL, 140 S.F. FOR CORNER OF DRIVEWAY, 4,420 S.F. FOR STORMWATER MANAGEMENT = 7,910 S.F. TOTAL)

R-TANK SPECS	
TOP OF FILL	>47.07, < 52.41 (20"-84" ALLOWED)
TOP OF STONE COVER	45.41
TOP OF CHAMBER	44.41
BOTTOM OF CHAMBER	37.2
BOTTOM OF STONE BASE	36.95
CHAMBERS PER ROW, SECTION 1	30
# OF ROWS, SECTION 1	43
CHAMBERS PER ROW, SECTION 2	70
# OF ROWS, SECTION 2	20
LENGTH, SECTION 1	74.37'
WIDTH, SECTION 1	60.43'
LENGTH, SECTION 2	168.21'
WIDTH, SECTION 2	30.25'

PROJECT PARCEL
CITY OF PORTSMOUTH
TAX MAP 266, LOT 7

TOTAL LOT AREA
651,747 S.F.
14.96 ACRES

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9648
LICENSED PROFESSIONAL ENGINEER
8/18/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
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Civil Engineering Services
603-772-4746
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E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: GRADING AND DRAINAGE PLAN
Project: INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record: BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C3
SHEET 5 OF 24
JBE PROJECT NO. 19190.2

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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 TOWN 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 SERVICED 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. 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.
15. 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.
16. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE. WATERMAINS SHALL BE TESTED AT 1.5 TIMES THE WORKING PRESSURE OR 150 PSI, WHICH EVER IS GREATER. TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 4 OF AWWA STANDARD C 600. WATERMAINS SHALL BE DISINFECTED AFTER THE ACCEPTANCE OF THE PRESSURE AND LEAKAGE TESTS ACCORDING TO AWWA STANDARD C 651.
17. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
18. IF THE BUILDING IS REQUIRED TO HAVE A SPRINKLER SYSTEM, A PRECONSTRUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR, OWNER, ARCHITECT AND THE LOCAL FIRE DEPARTMENT PRIOR TO THE INSTALLATION.
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 TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
23. EXISTING UTILITIES SHALL BE DIGSAFED BEFORE CONSTRUCTION.
24. ALL WATER LINES SHOULD HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
25. ALL WATER AND SANITARY LEADS TO BUILDING(S) SHALL END AT RIGHT OF WAY AS SHOWN ON PLANS AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT END.
26. LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRIC CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
27. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.

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Design: JAC	Draft: DJM	Date: 04/21/20
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE — MICHAEL J. KERIVAN No. 9946 — LICENSED PROFESSIONAL ENGINEER — 8/20/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
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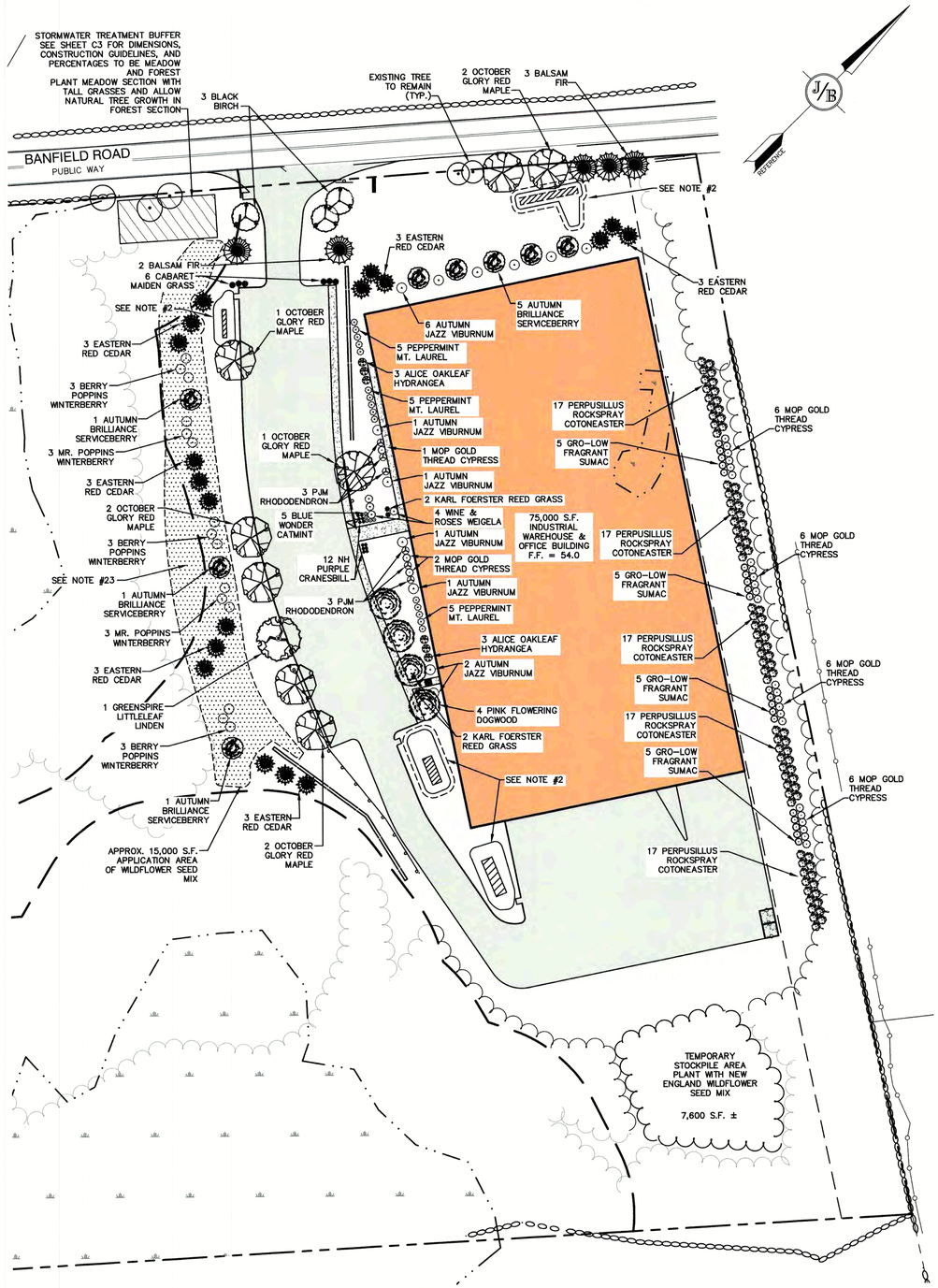
Plan Name:	UTILITY PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
C4
SHEET 6 OF 24
JBE PROJECT NO. 19190.2



PLANT LIST

QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
5	ABIES BALSAMEA	BALSAM FIR	8-10 FT. HT.
8	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	3.5" CALIPER
4	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	15 GALLON
3	BETULA LENTA	BLACK BIRCH	10 FT. HT. MULTI
4	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER REED GRASS	2 GALLON
28	CHAMAECYPARIS PISIFERA 'MOP'	MOP GOLD THREAD CYPRESS	3 GALLON
4	CORNUS FLORIDA F. RUBRA	PINK FLOWERING DOGWOOD	2.5" CALIPER
85	COTONEASTER HORIZONTALIS 'PERPUSILLUS'	PERPUSILLUS ROCKSPRAY COTONEASTER	2 GALLON
12	GERANIUM SANGUINEUM 'NH PURPLE'	NH PURPLE CRANESBILL	1 Gallon
6	HYDRANGEA QUERCIFOLIA 'ALICE'	ALICE OAKLEAF HYDRANGEA	5 GALLON
9	ILEX VERTICILLATA 'FARROWBPOP'	BERRY POPPINS WINTERBERRY	5 GALLON
6	ILEX VERTICILLATA 'FARROWMRP'	MR. POPPINS WINTERBERRY	5 GALLON
18	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	6-7 FT. HT.
15	KALMIA LATIFOLIA 'PEPPERMINT'	PEPPERMINT MT LAUREL	5 GALLON
6	MISCANTHUS SINENSIS 'CABARET'	CABARET MAIDEN GRASS	2 GALLON
5	NEPETA X FAASSENII 'BLUE WONDER'	BLUE WONDER CATMINT	1 GALLON
6	RHODODENDRON 'PJM'	PJM RHODODENDRON	5 GALLON
20	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	3 GALLON
1	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	3.5" CALIPER
12	VIBURNUM DENTATUM 'AUTUMN JAZZ'	AUTUMN JAZZ VIBURNUM	5 GALLON
4	WEIGELA FLORIDA 'ALEXANDRA'	WINE & ROSES WEIGELA	3 GALLON

NEW ENGLAND WILDFLOWER SEED MIX

BOTANICAL NAME	COMMON NAME	INDICATOR
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW-
ELYMUS CANADENSIS	CANADA WILD RYE	FACU+
FESTUCA RUBRA	RED FESCUE	FACU
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	NI
VERNONIA NOVEBORACENSIS	NEW YORK IRONWEED	FACW+
OENOTHERA BIENNIS	EVENING PRIMROSE	FACU-
ASTER NOVAE-ANGLIAE (SYMPHYOTRICHUM NOVAE-ANGLIA)	NEW ENGLAND ASTER	FACW-
RUDBECKIA HIRTA	BLACK EYED SUSAN	FACU-
SOLIDAGO JUNCEA	EARLY GOLDENROD	
EUPATORIUM FISTULOSUM (EUTROCHIUM FISTULOSUM)	HOLLOW-STEM JOE PYE WEED	FACW
ASTER LATERIFLORUS (SYMPHYOTRICHUM LATERIFLORUM)	STARVED/CALICO ASTER	FACW

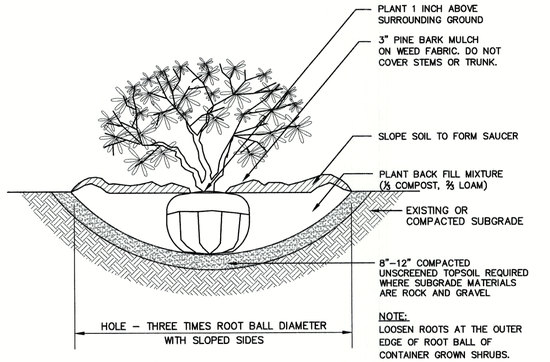
SEED MIX NOTES:

1. APPLICATION RATE: 23 LBS/ACRE, 1900 SQ. FT./LB
2. USE THE ABOVE "NEW ENGLAND WILDFLOWER MIX" TO RESTORE THE STOCKPILE AREA AFTER CONSTRUCTION.
3. FOR APPROX. 7,600 S.F. STOCKPILE AREA AND 15,000 S.F. PLANTING ALONG WETLAND BUFFER (22,600 S.F. TOTAL), UTILIZE 4 LBS± OF SEED MIX. COST IS APPROX. $75/LB.
4. THIS MIX CAN BE APPLIED BY HYDRO-SEEDING (NO TACKIFIERS), BY MECHANICAL SPREADER, OR BY HAND. LIGHTLY RAKE OR ROLL AFTER SOWING TO INCREASE SEED TO SOIL CONTACT. APPLY ON A CLEAN, WEED FREE SEED BED, BEST RESULTS ARE OBTAINED WITH A SPRING OR LATE FALL DORMANT SEEDING.
5. SOURCE: NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002. PHONE: 413-548-8000. EMAIL: INFO@NEWP.COM, WEB: WWW.NEWP.COM

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

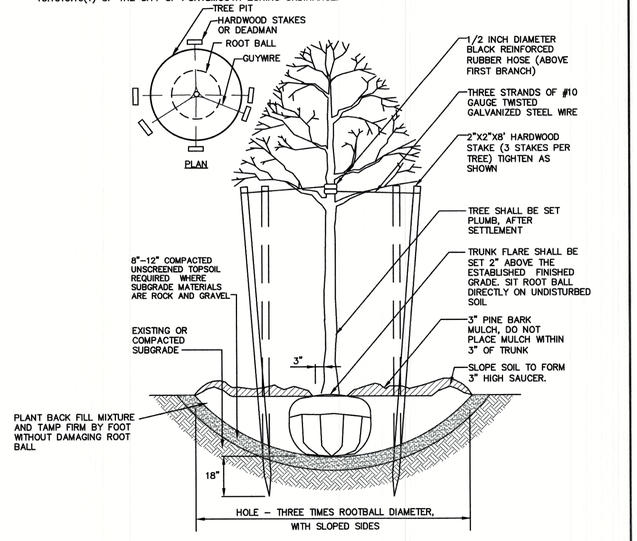


SHRUB PLANTING

NOT TO SCALE

LANDSCAPE NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. FOCAL POINT STORMWATER TREATMENT AREAS TO BE PLANTED WITH PERENNIAL GRASSES, CONEFLOWERS, DAYLILIES, BUTTERFLY MILKWEED, BEE BALM, BLUE FLAG IRIS, AND JOE PYE WEED. PLANT IN RANDOM GROUPINGS OF 10-12 PLANTS APPROXIMATELY 3 FEET ON CENTER. REMOVE STONE INLET PROTECTION AROUND OVERFLOW RISER AFTER CONSTRUCTION AND PLANT IN AFFECTED AREA.
3. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
4. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
5. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING FOR CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
6. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
7. ALL WORK AND PLANTS SHALL BE DONE, INSTALLED AND DETAILED IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
8. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
9. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION, EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS SPECIFIED.
10. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS WITH EDGE STRIPS TO SEPARATE TURF GRASS AREAS.
11. THE CONTRACTOR SHALL REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC. FROM ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE. GRASS SEED OR PINE BARK MULCH SHALL BE APPLIED AS DEPICTED ON PLANS.
12. FINISHED GRADES IN LANDSCAPED ISLANDS SHALL BE INSTALLED SO THAT THEY ARE 1" HIGHER THAN THE TOP OF THE SURROUNDING CURB.
13. ALL LANDSCAPING SHALL MEET THE TOWN STANDARDS AND REGULATIONS.
14. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE DRIPLINE OF THE TREE. THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
15. ALL MULCH AREAS SHALL RECEIVE A 3" LAYER OF SHREDDED PINE BARK MULCH OVER A 10 MIL WEED MAT EQUAL TO 'WEEDBLOCK' BY EASY GARDENER OR DEWITT WEED BARRIER.
16. ALL LANDSCAPED AREAS SHALL HAVE SELECT MATERIALS REMOVED TO A DEPTH OF AT LEAST 9" BELOW FINISH GRADE. THE RESULTING VOID IS TO BE FILLED WITH A MINIMUM OF 9" HIGH-QUALITY SCREENED LOAM AMENDED WITH 3" OF AGED ORGANIC COMPOST.
17. THIS PLAN IS INTENDED FOR LANDSCAPING PURPOSES ONLY. REFER TO CIVIL/SITE DRAWINGS FOR OTHER SITE CONSTRUCTION INFORMATION.
18. IRRIGATION PIPING SYSTEM SHALL BE REVIEWED AND APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION.
19. THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS SHALL BE RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND REPLACEMENT OF ALL REQUIRED SCREENING AND LANDSCAPE MATERIALS.
20. 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.
21. 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.
22. ALL BURLAP AND CAGES SHOULD BE REMOVED FOR LANDSCAPE PLANTS.
23. PLANTING IN WETLAND BUFFER WITHOUT FILLING OR DREDGING THE SAME AREA IS A PERMITTED USE PER SECTION 10.1016.10(1) OF THE CITY OF PORTSMOUTH ZONING ORDINANCE.



TREE PLANTING (FOR TREES UNDER 4" CALIPER)

NOT TO SCALE

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE - MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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

Plan Name:	LANDSCAPE PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

L1

SHEET 7 OF 24
JBE PROJECT NO. 19190.2

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	1	S3	SINGLE	GLEON-AF-01-LED-E1-SL3-HSS/ SSS4A20SFN1 (20' AFG)
	4	S4	SINGLE	GLEON-AF-01-LED-E1-SL4-HSS/ SSS4A20SFN1 (20' AFG)
	2	W	SINGLE	GWC-AF-02-LED-E1-T4FT/ WALL MTD 20' AFG
	9	W4	SINGLE	GWC-AF-01-LED-E1-SL4-600/ WALL MTD 15' AFG

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 TOWN REGULATIONS.
3. ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN 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-CANDLES.
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. NL INDICATES THAT THIS LUMINAIRE SHALL BE ON A NIGHT LIGHT CIRCUIT. FL INDICATES THAT THIS LUMINAIRE SHALL BE A FLOOD LIGHT FIXTURE. MOUNTING BRACKET FOR THIS FL FIXTURE SHALL BE MOUNTED 25' ABOVE BOTTOM OF POLE BASE FOR ALL LIGHT POLES. THESE DESIGNATIONS INDICATE WHAT PHASE LIGHTS ARE WIRED TO (TYP).
9. 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 ONE OF THEIR SUPPLIERS, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.

McGraw-Edison

DESCRIPTION

The Galleon™ LED luminaire delivers exceptional performance in a highly scalable, low-profile design. Patented, high-efficiency AccuLED Optics™ system provides uniform and energy conscious illumination to walkways, parking lots, roadways, building areas and security lighting applications. IP66 rated and UL/cUL Listed for wet locations.

		Type
Catalog #		
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Extruded aluminum driver enclosure thermally isolated from Light Squares for optimal thermal performance. Heavy-wall, die-cast aluminum end cape enclose housing and die-cast aluminum heat sinks. A unique, patent pending interlocking housing and heat sink provides scalability with superior structural rigidity. 3G vibration tested and rated. Optional tool-less hardware available for ease of entry into electrical chamber. Housing is IP66 rated.

Optics
Patented, high-efficiency injection-molded AccuLED Optics technology. Optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT 70 CRI. Optional 3000K, 5000K and 6000K CCT.

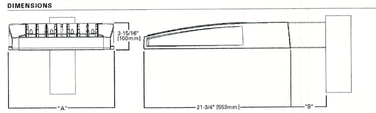
Electrical
LED drivers are mounted to removable tray assembly for ease of maintenance. 120-277V 50/60Hz, 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Standard with 0-10V dimming. Shipped standard with Eaton proprietary circuit module designed to withstand 10kV of transient line surge. The Galleon LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Light Squares are IP66 rated. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 600mA, 800mA and 1200mA drive currents (nominal).

Mounting
STANDARD ARM MOUNT: Extruded aluminum arm includes internal bolt guides allowing for easy positioning of fixture during mounting. When mounting two or more luminaires at 90° and 120° apart, the EA extended arm may be required. Refer to the arm mounting requirement table. Round pole adapter included. For wall mounting, specify wall mount bracket option. QUICK MOUNT ARM: Adapter is bolted directly to the pole. Quick mount arm slide into place on the adapter and is secured via two screws, facilitating quick and easy installation. The versatile, patent pending, quick mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8". Removal of the door on the quick mount arm enables wiring of the fixture without having to access the driver compartment. A knock-out enables round pole mounting.

Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Heat sink is powder coated black. Standard housing colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available.

Warranty
Five-year warranty.

DIMENSIONS



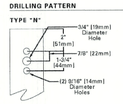
DIMENSION DATA

Number of Light Squares	"A" Width	"B" Standard Arm Length	"B" Optional Arm Length[1]	Weight with Arm (lbs.)	EPA with Arm ft²(Sq. Ft.)
1-4	15-1/2" [394mm]	7" [178mm]	10" [254mm]	33 (15.0 kgs.)	0.86
5-6	21-5/8" [549mm]	7" [178mm]	10" [254mm]	44 (20.0 kgs.)	1.00
7-8	27-3/8" [702mm]	7" [179mm]	13" [330mm]	54 (24.5 kgs.)	1.07
9-10	33-3/4" [857mm]	7" [179mm]	16" [406mm]	63 (28.6 kgs.)	1.12

NOTES: 1. Optional arm length to be used when mounting two fixtures at 90° on a single pole. 2. EPA calculated with optional arm length.

DRILLING PATTERN

TYPE "N"



GLEON GALLEON LED

1-10 Light Squares
Solid State LED

AREA/SITE LUMINAIRE

LumenSafe Technology

CERTIFICATION DATA
UL/cUL Wet Location Listed
ISO 9001
LM79 / LM80 Compliant
3G Vibration Rated
IP66 Rated
DesignLights Consortium® Qualified*

ENERGY DATA
Electronic LED Driver
≥0.9 Power Factor
<20% Total Harmonic Distortion
120V-277V 50/60Hz
347V & 480V 60Hz
40°C Min. Temperature
40°C Max. Temperature
50°C Max. Temperature (HA Option)

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EATON Powering Business Worldwide

*www.designlights.org

McGraw-Edison

DESCRIPTION

The Galleon™ Wall LED luminaire's appearance is complementary with the Galleon area and site luminaire bringing a modern architectural style to lighting applications. Flexible mounting options accommodate wall surfaces in both an upward and downward configuration. The Galleon family of LED products deliver exceptional performance with patented, high-efficiency AccuLED Optics™, providing uniform and energy conscious lighting for parking lots, building and security lighting applications.

		Type
Catalog #		
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction
Driver enclosure thermally isolated from optics for optimal thermal performance. Heavy wall aluminum housing die-cast with integral external heat sinks to provide superior structural rigidity and an IP66 rated housing. Overall construction passes a 1.5G vibration test to ensure mechanical integrity. UPLIGHTING: Specify with this UPL option for inverted mount uplight housing with additional protections to maintain IP rating.

Optics
Choice of thirteen patented, high-efficiency AccuLED Optics. The optics are precisely designed to shape the distribution maximizing efficiency and application spacing. AccuLED Optics create consistent distributions with the scalability to meet customized application requirements. Offered standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional 3000K, 5000K and 6000K CCT. Greater than 90% lumen maintenance expected at 60,000 hours. Available in standard 1A drive current and optional 1200mA, 800mA, and 600mA drive currents.

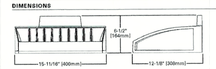
Electrical
LED drivers are mounted for ease of maintenance. 120-277V 50/60Hz, 347V or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Drivers are provided standard with 0-10V dimming. An optional Eaton proprietary surge protection module is available and designed to withstand 10kV of transient line surge. The Galleon Wall LED luminaire is suitable for operation in -40°C to 40°C ambient environments. For applications with ambient temperatures exceeding 40°C, specify the HA (High Ambient) option. Emergency egress options for -20°C ambient environments and occupancy sensor available.

Mounting
Gasketed and zinc plated rigid steel mounting attachment fits directly to 4" j-box or wall with the Galleon Wall "Hook-N-Lock" mechanism for quick installation. Secured with two captive corrosion resistant black oxide coated allen head set screws which are concealed but accessible from bottom of fixture.

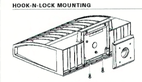
Finish
Housing finished in super durable TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult the McGraw-Edison Architectural Colors brochure for the complete selection.

Warranty
Five-year warranty.

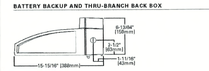
DIMENSIONS



HOOK-N-LOCK MOUNTING



BATTERY BACKUP AND THRU-BRANCH BACK BOX



EATON Powering Business Worldwide

*www.designlights.org

GWC GALLEON WALL

1-2 Light Squares
Solid State LED

WALL MOUNT LUMINAIRE

CERTIFICATION DATA
UL/cUL Listed
LM79 / LM80 Compliant
IP66 Housing
ISO 9001
DesignLights Consortium® Qualified*

ENERGY DATA
Electronic LED Driver
≥0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50-60Hz, 347V/60Hz, 480V/60Hz
-30°C Minimum Temperature
40°C Ambient Temperature Rating

SHIPPING DATA
Approximate Net Weight:
27 lbs. (12.2 kgs.)

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE — MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER — 8/20/21

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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:	LIGHTING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
L2
SHEET 8 OF 24
JBE PROJECT NO. 19190.2

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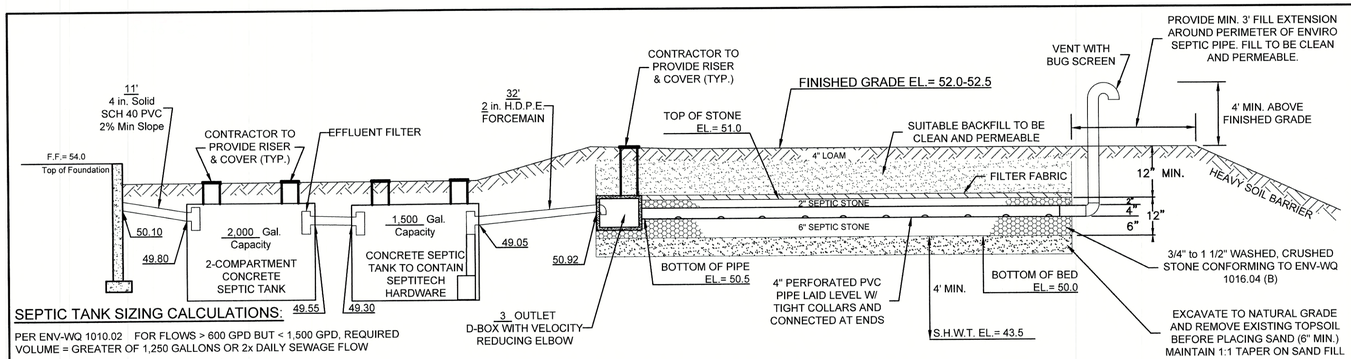


SEPTIC TANK SIZING CALCULATIONS:

PER ENV-WQ 1010.02 FOR FLOWS > 600 GPD BUT < 1,500 GPD, REQUIRED VOLUME = GREATER OF 1,250 GALLONS OR 2x DAILY SEWAGE FLOW

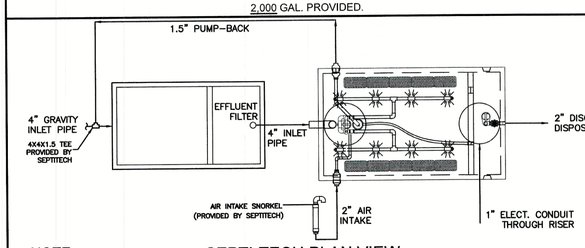
955 GPD X 2 = 1,910 GALLONS > 1,250 GALLONS

1,910 GALLONS REQUIRED

2,000 GAL. PROVIDED.

CROSS SECTION - DISPOSAL SYSTEM

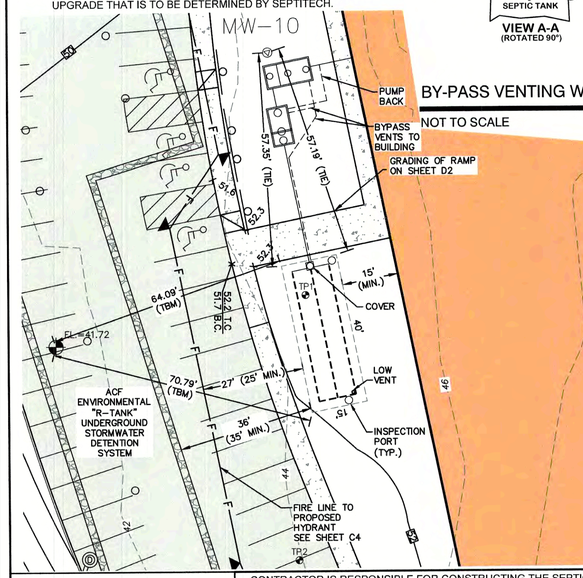
N.T.S.



SEPTI-TECH PLAN VIEW

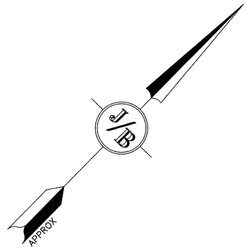
NOTE:

- CONTRACTOR IS RESPONSIBLE FOR PURCHASE AND INSTALLATION OF BOTH TANKS ON THE LOT. SEPTITECH WILL INSTALL THE EQUIPMENT AFTER THE TANK IS INSTALLED IN GROUND
- ALL PUMP SPECIFICATIONS AND MODELS TO BE SUPPLIED BY SEPTITECH
- SEPTITECH MODEL STAAR 1.0 DENITE REQUIRES A DISCHARGE PUMP UPGRADE THAT IS TO BE DETERMINED BY SEPTITECH.



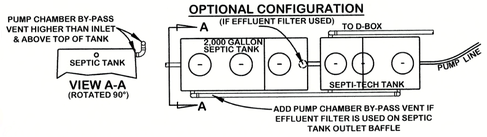
BY-PASS VENTING W/ EFFLUENT FILTER

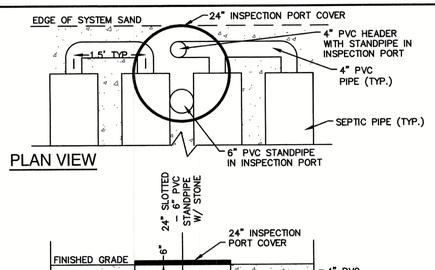
NOT TO SCALE



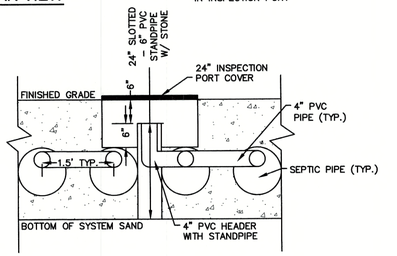
OPTIONAL CONFIGURATION

(IF EFFLUENT FILTER USED)





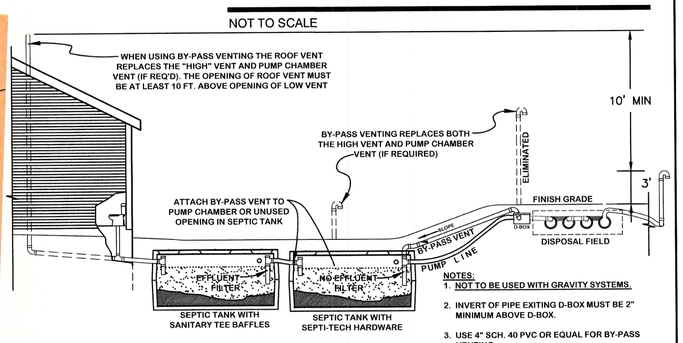
PLAN VIEW



SECTION VIEW

INSPECTION PORT DETAIL

NOT TO SCALE



BY-PASS VENTING

NOT TO SCALE

PROJECT PARCEL	
CITY OF PORTSMOUTH	
TAX MAP 266, LOT 7	
R.C.R.D. BK. 6081	PG. 2150
TOTAL LOT AREA:	14.96 ACRES

- CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE SEPTIC PLAN FROM THE NHDES APPROVED PLAN
- THE BUILDER/SITE CONTRACTOR IS RESPONSIBLE TO CONFIRM THE ZONING DIMENSIONAL REQUIREMENTS AND SETBACK LINE REQUIREMENTS PRIOR TO INITIATING CONSTRUCTION OF THE PROPOSED BUILDING AND SEPTIC SYSTEM. THE ZONING ORDINANCE OF THE MUNICIPALITY IS TO BE COMPLIED WITH. THE BUILDER/SITE CONTRACTOR IS ALSO RESPONSIBLE TO CONTACT THE MUNICIPALITY REGARDING INSPECTIONS PRIOR TO AND DURING CONSTRUCTION, I.E. LOCATION AND BED-BOTTOM INSPECTIONS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 feet

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TEST PIT LOGS

PERFORMED BY: JOSEPH CORONATI, JONES & BEACH ENGINEERS, INC. SSD# 1716

TEST PIT #1

0"-8"		LOAM
8"-18"	10YR 4/4	DARK YELLOWISH BROWN FINE SANDY LOAM GRANULAR, FRIABLE
18"-90"	10YR 5/6	YELLOWISH BROWN SILTY LOAM FIRM

SHWT = 18"
ROOTS = 18"
H_2O @ 32"
NO REFUSAL OBSERVED

◕ TEST PIT, DATE: APRIL 8, 2020

◐ PERC. TEST, DATE: APRIL 8, 2020
16 MIN./INCH

STONE & PIPE DESIGN CALCULATIONS

WAREHOUSE: 70 EMPLOYEES = 700 GPD (10 GPD / PERSON, PER ENV-WQ 1008-1)

OFFICE WITH CAFETERIA: 17 EMPLOYEES = 255 GPD (15 GPD / PERSON, PER ENV-WQ 1008-1)

955 GPD @ 16 MIN./INCH = 2,148 S.F. REQUIRED PER ENV-WQ 1016-1.
2,148 S.F. x 75% PRE-TREATMENT REDUCTION = 537 S.F. REQUIRED.

600 S.F. PROVIDED (SEE DIMENSIONS BELOW)

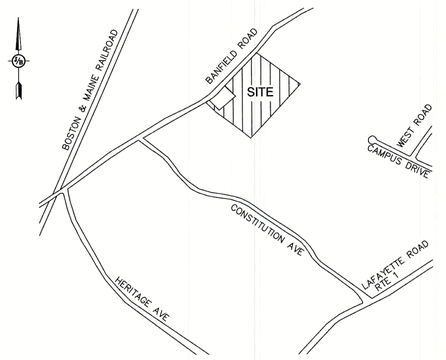
BED DIMENSIONS 40' x 15'.

DESIGN INTENT

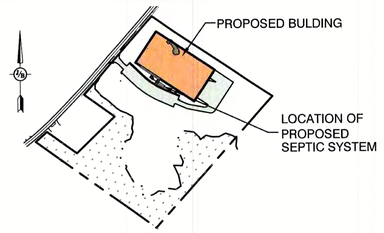
THE BOTTOM OF THE EFFLUENT DISPOSAL SYSTEM (E.D.S.) SHALL BE CONSTRUCTED AT ELEVATION 50.00. THIS IS APPROXIMATELY 5.00 FT ABOVE ORIGINAL GROUND ON THE HIGH CONTOUR (45.00) OF THE DESIGNED E.D.S. (ENV-WQ-1003.13(aa))

GENERAL NOTES

- CONTRACTOR TO VERIFY ALL ELEVATIONS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR TO NOTIFY DESIGNER OF ANY ABNORMAL CONDITIONS (HARDPAN OR SATURATED SOILS, LEDGE, ETC.) FOUND WHEN EXCAVATING PRIOR TO INSTALLATION OF THE SYSTEM.
- PER ENV-WQ 1016.03, CONTRACTOR IS TO PROTECT THE NATURAL ABSORPTION QUALITIES OF THE SOIL. DO NOT COMPACT OR DRIVE OVER THE AREA WITH EQUIPMENT AND PROTECT OPEN EXCAVATION TO PREVENT THE ENTRANCE OF SILT AND DEBRIS.
- FILL TO BE MEDIUM TO COURSE-TEXTURED SAND (0.5mm-2.0mm).
- REMOVE TOPSOIL BEFORE PLACING FILL.
- 4 INCH THICK LOAM & SEED AROUND PERIMETER OF FILL.
- CONTRACTOR TO INSTALL A VENT WHEN PROVIDING MORE THAN 18" OF COVER.
- VENTING IS REQUIRED FOR PUMP SYSTEMS
- SLOPE SYSTEM AWAY FROM BUILDING.
- SYSTEM WILL BE REPLACED IN SAME LOCATION IN CASE OF FAILURE.
- JOINTS ARE TO BE BELLED PVC OR STANDARD SLIP COLLARS.
- PER ENV-WQ 1010.11, THE FIRST COMPARTMENT IN MULTI-COMPARTMENT SEPTIC TANKS MUST EQUAL AT LEAST 2/3 OF THE REQUIRED VOLUME.
- PER ENV-WQ 1010.10, EXCEPTING LEDGE TANKS, THE LIQUID DEPTH OF THE SEPTIC TANK IS TO BE AT LEAST 40".
- THE OUTLET BAFFLE SHALL BE A VENTED TEE WHICH SHALL EXTEND TO A DISTANCE BELOW THE SURFACE EQUAL TO 40% OF THE LIQUID DEPTH AND SHALL EXTEND ABOVE THE LIQUID LINE TO NOT LESS THAN ONE INCH FROM THE TOP OF THE TANK.
- ALL CONNECTIONS BETWEEN A SEPTIC TANK AND THE PIPES LEADING TO AND EXITING FROM THE SEPTIC TANK SHALL BE SEALED WITH A WATERTIGHT, FLEXIBLE JOINT CONNECTOR THAT: (1) WILL ACCOMMODATE NORMAL MOVEMENT OF THE SEPTIC TANK WITHOUT LEAKING OR BREAKING; AND (2) HAS BEEN CERTIFIED BY ITS MANUFACTURER OR DISTRIBUTOR AS MEETING OR EXCEEDING THE APPLICABLE STANDARD IN ASTM C 1644-06, SECTION 7.
- CONTRACTOR TO PROVIDE RISERS FOR TANKS WITH MORE THAN 12" OF COVER.
- IF GARBAGE GRINDERS ARE DESIRED, SEPTIC TANK SHALL BE 50% LARGER.
- CITY OF PORTSMOUTH REQUIRES BED BOTTOM INSPECTION.
- PVC PIPING TO BE SUPPLIED BY: ELIMINATOR SYSTEMS INC. (603) 868-2242) OR EQUAL.
- 2,000 GALLON TWO-COMPARTMENT SEPTIC TANK, 1,500 GALLON SEPTIC TANK, & D-BOX TO BE SUPPLIED BY: SHEA CONCRETE. (800-696-7432) OR EQUAL.
- ADVANCED NITRATE TREATMENT SYSTEM TO BE SUPPLIED BY: SEPTITECH / BIO-MICROBICS MAINE INC., 207-333-6940. PRODUCT MAY NOT BE SUBSTITUTED WITHOUT FIRST CONTACTING THE DESIGNER.
- ROCKINGHAM COUNTY SOIL CONSERVATION SERVICE SOIL TYPE: ELDRIDGE.
- ANY CHANGES TO SEPTIC TANK, BUILDING OR WELL LOCATION/ORIENTATION WILL REQUIRE AN AS-BUILT PLAN TO BE PROVIDED BY THE DESIGNER PRIOR TO NHDES FINAL INSPECTION.
- PER ENV-WQ 1003.13(a)(3) THERE ARE NO KNOWN BURIAL SITES OR CEMETERIES ON THE LOT WITHIN 100' OF ANY COMPONENT OF THE ISDS.
- 50' SETBACK FROM POORLY DRAINED SOILS.
- DISTANCE FROM SEWER PIPE TO SURFACE WATER, OPEN DRAINAGE, VERY POORLY DRAINED SOIL, AN OPEN LOOP GEOTHERMAL WELL, OR A PRIVATE ON-SITE WELL SHALL BE 75 FT. THIS MAY BE REDUCED TO 50 FT IF SDR26 OR EQUIVALENT IS USED IN ACCORDANCE WITH ENV-WQ 1008.04(c)(1).
- DISTANCE FROM SEPTIC TANK TO SURFACE WATER, OPEN DRAINAGE, VERY POORLY DRAINED SOIL, AN OPEN LOOP GEOTHERMAL WELL, OR A PRIVATE ON-SITE WELL SHALL BE 75 FT. THIS MAY BE REDUCED TO 50 FT IF THE SEPTIC TANK IS EITHER MADE FROM PLASTIC OR COATED WITH A SEALANT TO PREVENT INFILTRATION AND EXFILTRATION IN ACCORDANCE WITH ENV-WQ 1008.04(c)(2).



LOCUS SCALE: 1"=1000'



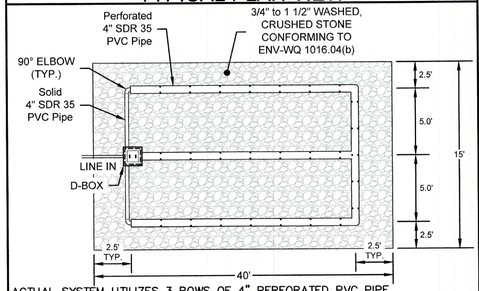
VICINITY SCALE: 1"=400'

REFERENCES

APPROVAL FOR CONSTRUCTION IS VALID FOR 4 YEARS FROM DATE OF ISSUE

- PREV. CONSTRUCTION APPROVAL #CA1998009388 ISSUED: 06/03/1998.
- SUBDIVISION APPROVAL: LARGER THAN 5 ACRES.

TYPICAL PLAN VIEW



ACTUAL SYSTEM UTILIZES 3 ROWS OF 4" PERFORATED PVC PIPE. SEE PLAN VIEW (LEFT) FOR ACTUAL LAYOUT/CONFIGURATION OF SYSTEM.

WETLAND DELINEATION

WETLANDS ON-SITE WERE DELINEATED BY: GOVE ENVIRONMENTAL SERVICES, INC. 8 CONTINENTAL DRIVE, UNIT H EXETER, NH 03833

DATE: SPRING, 2020

OWNER NOTES

- KNOW THE LOCATION OF YOUR SEPTIC TANK AND LEACHING AREA.
- INSPECT YOUR SEPTIC TANK YEARLY. HAVE THE SEPTIC TANK PUMPED AS NEEDED BUT AT LEAST ONCE EVERY THREE YEARS.
- DO NOT FLUSH BULKY ITEMS SUCH AS DIAPERS, SANITARY PADS OR BABY WIPES.
- DO NOT FLUSH TOXIC CHEMICALS SUCH AS PAINT THINNERS, DRANO, PESTICIDES, OR CHLORINE, AS THEY MAY KILL THE NECESSARY BACTERIA IN THE SEPTIC TANK.
- REPAIR LEAKING FIXTURES IN THE BUILDING PROMPTLY.
- BE CONSERVATIVE WITH WATER USE. SPREAD OUT USE OVER TIME, AND USE WATER-REDUCING FIXTURES WHENEVER AND WHEREVER POSSIBLE. TOO MUCH USE IN A SHORT TIME CAN OVERLOAD THE SYSTEM, WHICH MAY LEAD TO FAILURE.
- MOW YOUR LEACHING AREA REGULARLY. PREVENT DEEP-ROOTED TREES AND SHRUBS FROM GROWING ON AND ADJACENT TO YOUR LEACHING AREA.
- NO VEHICULAR TRAVEL, LIVESTOCK TRAVEL, OR SNOW REMOVAL IN AREA OF SYSTEM.

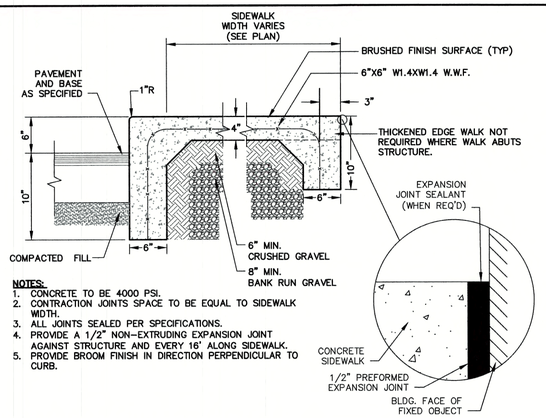
Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: 1" = 20'	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.DWG		

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
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:	EFFLUENT DISPOSAL DESIGN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

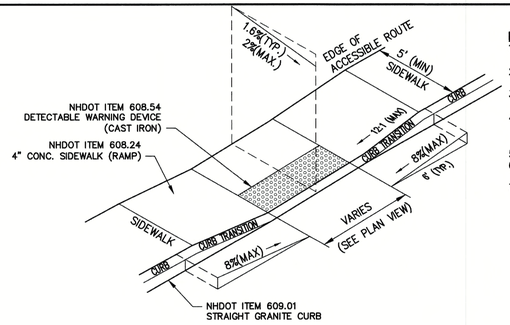
DRAWING No.
S1
SHEET 9 OF 24
JBE PROJECT NO. 19190.2



NOTES:
1. CONCRETE TO BE 4000 PSI.
2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
3. ALL JOINTS SEALED PER SPECIFICATIONS.
4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

MONOLITHIC CONCRETE SIDEWALK

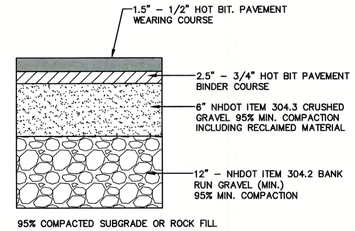
NOT TO SCALE



NOTES:
1. THE MAXIMUM ALLOWABLE CROSS SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 1.5%.
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE (SIDEWALK) CURB RAMPS SHALL BE 8%.
4. A MINIMUM OF 4 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (i.e., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SECTION FOR RAMP CONSTRUCTION.

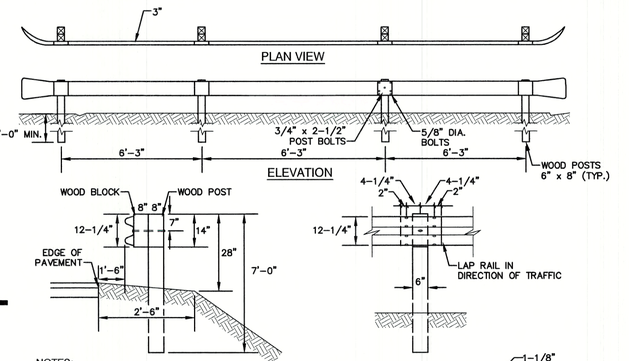
ACCESSIBLE CURB RAMP (TYPE `A')

NOT TO SCALE



TYPICAL BITUMINOUS PAVEMENT

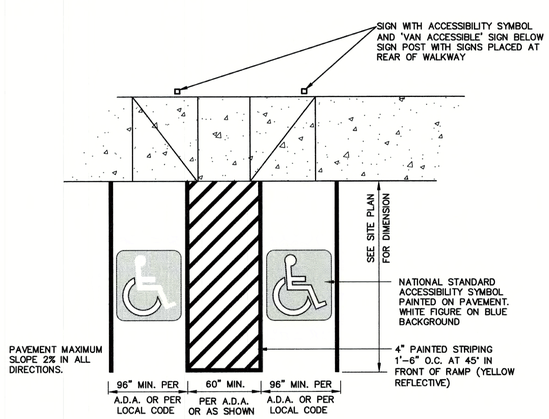
NOT TO SCALE



NOTES:
1. USE IN HEAVY TRAFFIC AREAS.
2. GUARD RAIL TO BE "CORE-TEN" TYPE (OR EQUIVALENT APPROVED BY THE ENGINEER.
3. USE 6'-0" POSTS WHEN FILL SLOPE IS 4:1 OR FLATTER.
4. ALL TIMBER POSTS TO BE TREATED WITH PRESERVATIVE MATERIAL CONFORMING TO AASHTO M133.
5. POST BOLTS TO BE 18" W/MIN. 2" THREAD LENGTH.

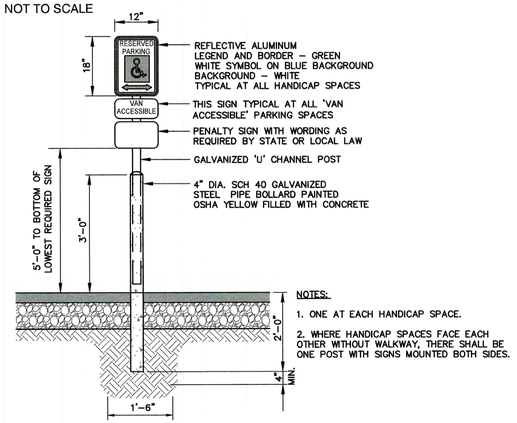
GUARD RAIL (CORE-TEN)

NOT TO SCALE



HANDICAP PARKING LAYOUT

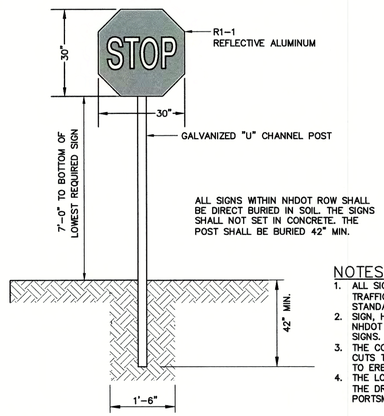
NOT TO SCALE



NOTES:
1. ONE AT EACH HANDICAP SPACE.
2. WHERE HANDICAP SPACES FACE EACH OTHER WITHOUT WALKWAY, THERE SHALL BE ONE POST WITH SIGNS MOUNTED BOTH SIDES.

HANDICAP PARKING SIGN (R7-8)

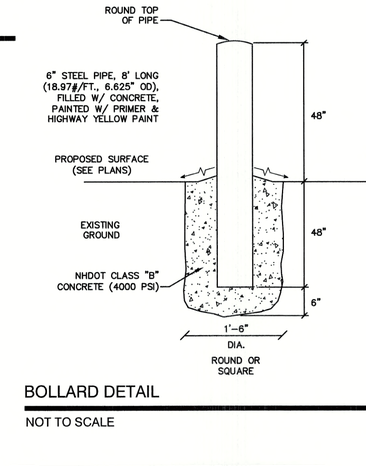
NOT TO SCALE



NOTES:
1. ALL SIGNAGE SHALL BE TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND NHDOT STANDARDS.
2. SIGN, HARDWARE, AND INSTALLATION TO CONFORM TO 2016 NHDOT STANDARD SPECIFICATION, SECTION 615 - TRAFFIC SIGNS.
3. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS/CATALOG CUTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ERECTING SIGNS.
4. THE LOCATION OF THE SIGNS SHALL BE AS INDICATED ON THE DRAWINGS AND/OR AS DIRECTED BY THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.

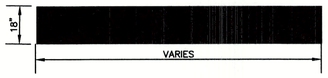
STOP SIGN (R1-1)

NOT TO SCALE



BOLLARD DETAIL

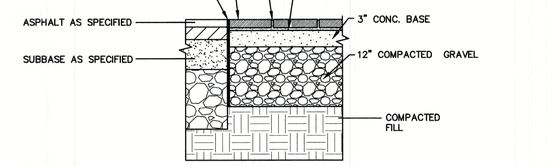
NOT TO SCALE



NOTES:
1. ALL STOP BARS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

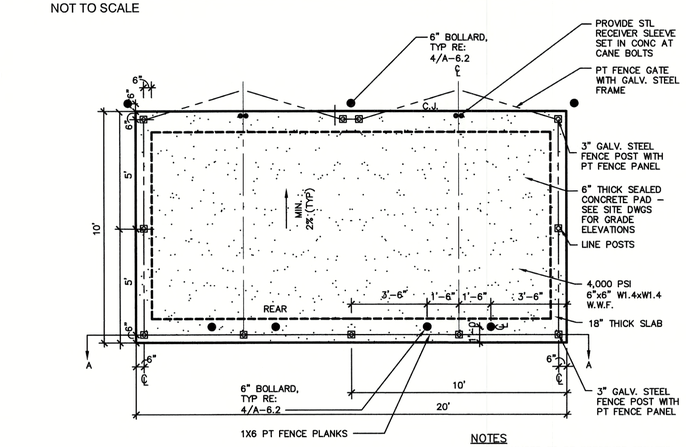
STOP BAR

NOT TO SCALE



TEXTURED PAVEMENT DETAIL

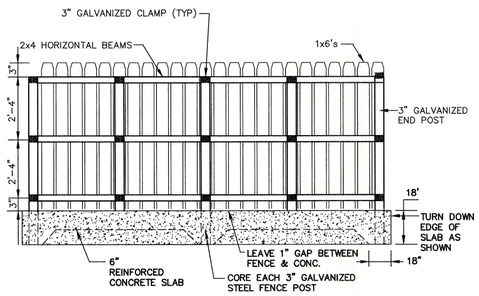
NOT TO SCALE



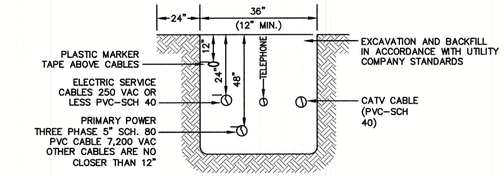
NOTES
1. ALL LUMBER TO BE PRESSURE TREATED.
2. WOOD FENCE TO BE PAINTED OR STAINED TO MATCH BUILDING FOUNDATION.
3. DUMPSTER SIZE VARIES, SEE SITE PLANS FOR SCREENING SIZE

DUMPSTER ENCLOSURE PLAN

NOT TO SCALE



SECTION A-A



NOTE: ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.

UTILITY TRENCH

NOT TO SCALE

NOTES:
1. EDGING TO BE PLACED PRIOR TO PLACING TOP SURFACE COURSE.
2. JOINTS BETWEEN STONES SHALL BE MORTARED.
3. SALVAGE GRANITE CURBS ON-SITE AND RESET TO THE EXTENT POSSIBLE.

SLOPED GRANITE CURB

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 04/21/20	
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2	
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg			

STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9646 — LICENSED PROFESSIONAL ENGINEER — 9/20/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
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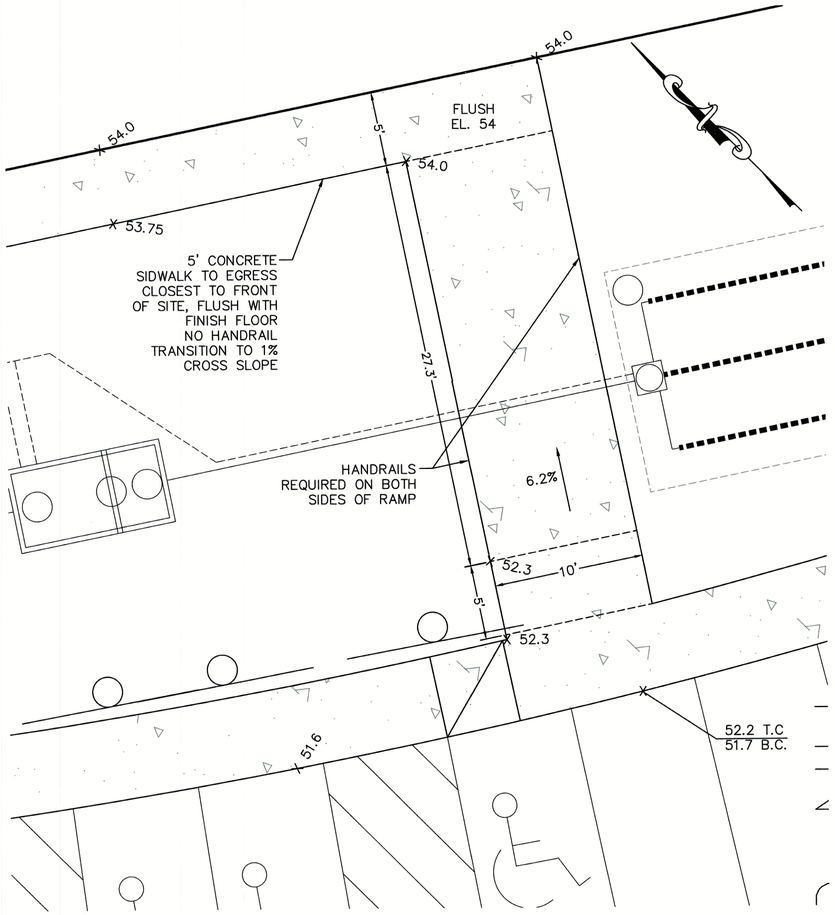
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
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:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

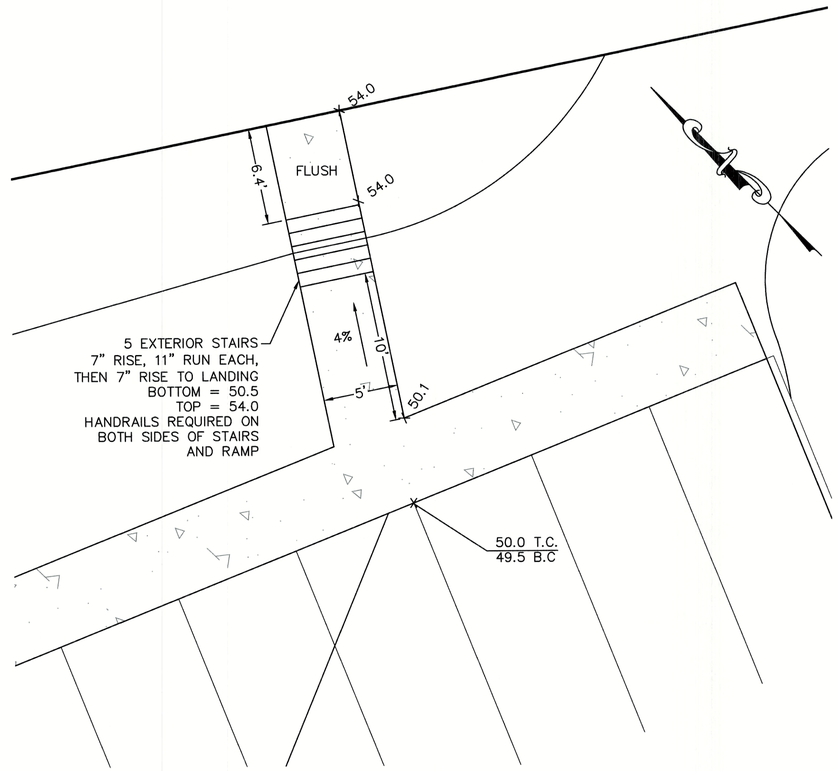
DRAWING No.
D1
SHEET 10 OF 24
JBE PROJECT NO. 19190.2



NOTES:
1. RAMP TO CONTAIN 6"x6" W1.4xW1.4 W.W.F. EXTENDING INTO FOOTING.
2. RAMP TO BE OF CONTRASTING COLOR TO WALK AND PAVEMENT.

MAIN ENTRANCE DETAIL

1 INCH = 5 FEET

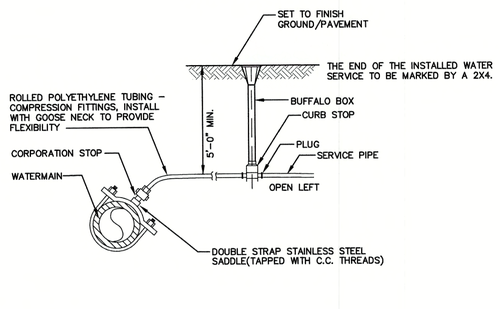


SECONDARY EGRESS DETAIL

1 INCH = 5 FEET

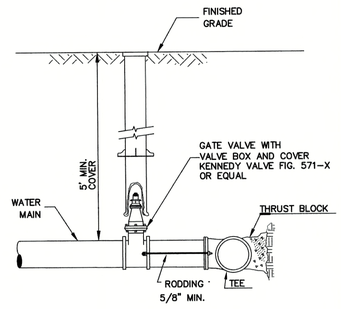
GAS TRENCH

NOT TO SCALE



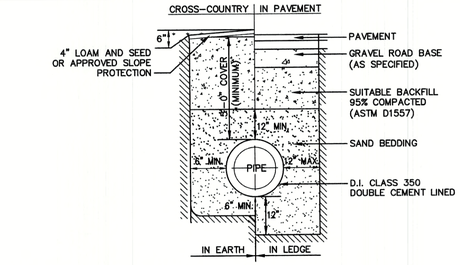
WATER SERVICE CONNECTION-POLYETHYLENE

NOT TO SCALE



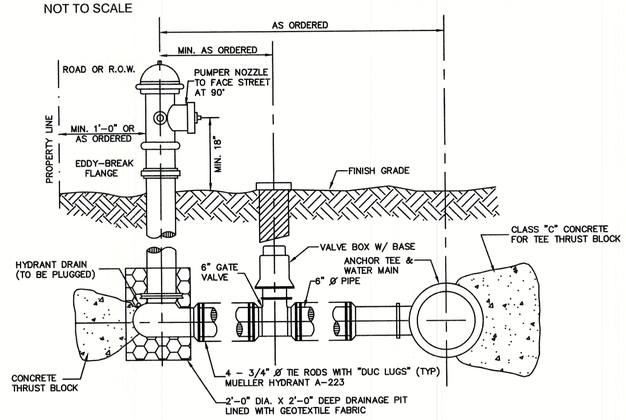
BURIED GATE VALVE DETAIL

NOT TO SCALE



WATER SYSTEM TRENCH

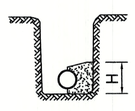
NOT TO SCALE



NOTES
1. ALL PIPE FITTINGS TO BE D.I. PRESSURE CLASS 350, THICKNESS CLASS 52.
2. HYDRANT TO BE PAINTED RED WITH WHITE "REFLECTOR" PAINT ON BONNET.
3. MECHANICAL JOINTS SHALL HAVE MEGALUG RETAINING GLANDS AS MADE BY EBBA OR APPROVED EQUAL.
4. STEAMER NOZZLE TO BE "STORCH" TYPE.
5. NATIONAL STANDARD THREAD.

HYDRANT INSTALLATION

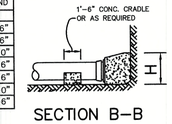
NOT TO SCALE



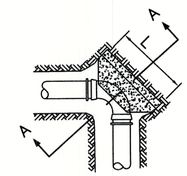
SECTION A–A

CONCRETE THRUST BLOCK DIMENSIONS								
PIPE DIA. (IN.)	TEE		90° BEND OR STUB		45° BEND		22.5° BEND	
	H	L	H	L	H	L	H	L
4"/6"	1'-6"	1'-6"	1'-6"	2'-0"	1'-6"	1'-6"	1'-6"	1'-6"
8"	2'-0"	2'-0"	2'-0"	3'-0"	1'-6"	2'-0"	1'-6"	1'-6"
10"	2'-0"	3'-0"	2'-6"	3'-6"	2'-0"	2'-6"	1'-6"	2'-0"
12"	2'-6"	3'-6"	3'-0"	4'-0"	2'-0"	3'-6"	1'-6"	2'-6"
15"	3'-0"	4'-6"	3'-6"	5'-6"	3'-0"	3'-6"	2'-0"	2'-6"
18"	4'-0"	5'-0"	4'-6"	6'-0"	3'-6"	4'-0"	2'-6"	3'-0"
24"	5'-0"	7'-0"	6'-0"	8'-0"	4'-0"	6'-0"	3'-0"	4'-6"

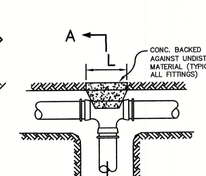
PIPING W/ MECHANICAL JOINT FITTINGS SHALL HAVE RETAINING GLANDS



SECTION B–B



PLAN



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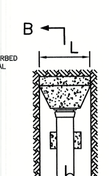

PLAN

THRUST BLOCK DETAILS

NOT TO SCALE

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN
No. 9848
LICENSED PROFESSIONAL ENGINEER
8/18/2021

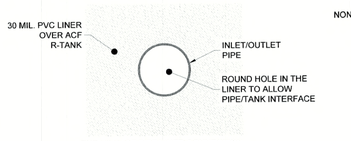
REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. Civil Engineering Services
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

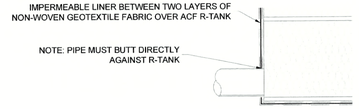
Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
D2
SHEET 11 OF 24
JBE PROJECT NO. 19190.2

CUT A ROUND HOLE IN THE LINER ENVELOPE AND GEOTEXTILE PROTECTION FABRIC THAT IS SLIGHTLY LARGER THAN THE PIPE.

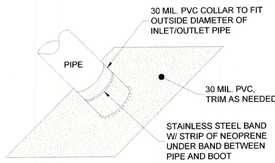


END VIEW OF PIPE/LINER CONNECTION

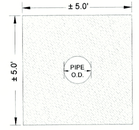


SIDE VIEW OF PIPE/LINER CONNECTION

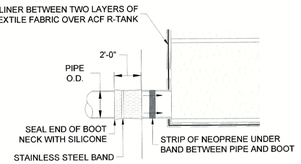
AFTER LINER IS CUT AND PIPE INSTALED, SLIDE BOOT AGAINST TANK AND SECURE WITH STAINLESS STEEL BAND, THEN BOND BOOT TO TANK LINER AND SEAL END OF BOOT WITH SILICONE. REPLACE ANY GEOTEXTILE PROTECTION FABRIC REMOVED DURING BOOT INSTALLATION PROCESS.



30 MIL. PVC BOOT



FRONT VIEW OF 30 MIL. PVC BOOT



SIDE VIEW OF 30 MIL PVC BOOT

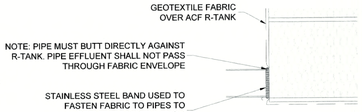
07/26/19

R-TANK TYPICAL INLET/OUTLET W/ 30 MIL PVC BOOT

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

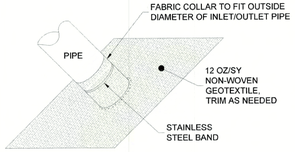
CUT AN "X" IN THE FABRIC ENVELOPE THAT IS SLIGHTLY LARGER THAN THE PIPE. PULL THE FABRIC FLAPS AROUND THE PIPE, AND SEAL WITH A STAINLESS STEEL BAND.

END VIEW OF PIPE/FABRIC CONNECTION

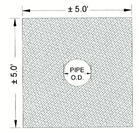


SIDE VIEW OF PIPE/FABRIC CONNECTION

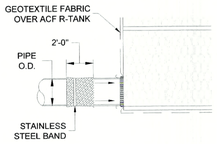
AFTER TANK WRAP IS SECURED TO PIPE, SLIDE BOOT AGAINST R-TANK AND SECURE WITH SECOND STAINLESS STEEL BAND, THEN ATTACH BOOT FLAP TO TANK ENVELOPE FABRIC WITH DUCT TAPE OR OTHER ADHESIVE.



GEOTEXTILE BOOT



FRONT VIEW OF GEOTEXTILE BOOT

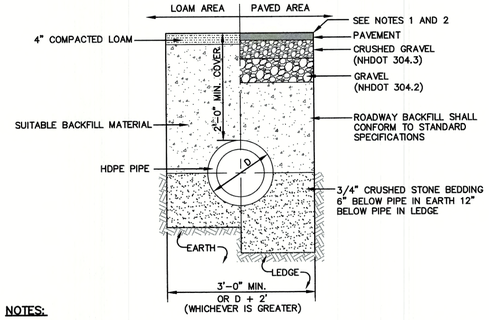


SIDE VIEW OF GEOTEXTILE BOOT

07/26/19

R-TANK TYPICAL INLET/OUTLET W/ GEOTEXTILE BOOT

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com



NOTES:

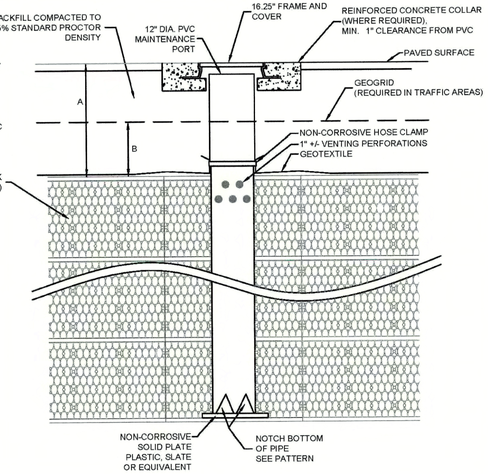
1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
2. NEW ROADWAY CONSTRUCTION SHALL CONFORM WITH PROJECT AND TOWN SPECIFICATIONS.
3. ALL MATERIALS ARE TO BE COMPACTED TO 95% OF ASTM D-1557.

DRAINAGE TRENCH

NOT TO SCALE

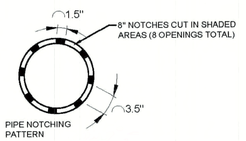
NOTES

- THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.
- MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
- ONLY R-TANK^{LD} AND R-TANK^{SD} MAY BE USED IN TRAFFIC APPLICATIONS.



DEPTH SUMMARY

TYPE	A	B
R-TANK^{LD}	12" MIN - 36" MAX	AS SHOWN ON PLANS
R-TANK^{HD}	20" MIN - 6.99' MAX	12"
R-TANK^{SD}	18" MIN - 9.99' MAX	12"



PIPE NOTCHING PATTERN

02/06/19

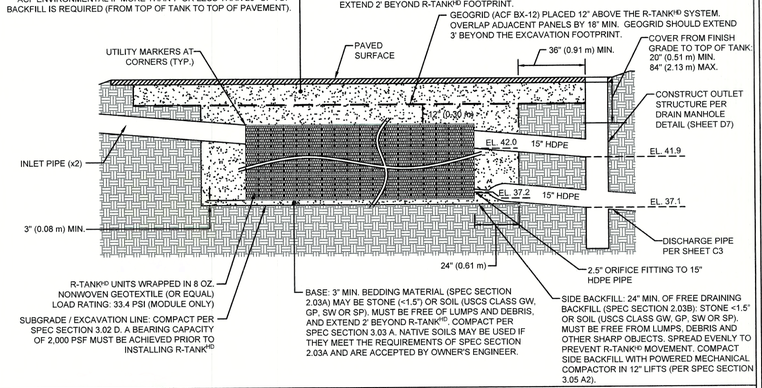
MAINTENANCE PORT FOR R-TANK^{LD}, R-TANK^{HD}, AND R-TANK^{SD}

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com

TOTAL COVER: 20" MINIMUM AND 84" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 7'. CONTACT ACF ENVIRONMENTAL IF MORE THAN 7' OR LESS THAN 20" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

NOTES:

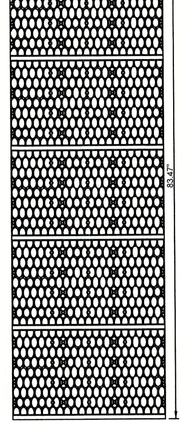
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{HD} MODULE SHEET .
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. R-TANK SYSTEM SHALL BE ENVELOPED BY 30ML PVC IMPERMEABLE LINER ON SIDES AND BOTTOM OF SYSTEM WITH NONWOVEN GEOTEXTILE CUSHION ON BOTH SIDES AT EXCAVATION LINE AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{HD} FOOTPRINT.



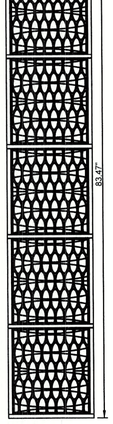
08/29/2018

R-TANK^{HD} & HS-20 LOADS - SECTION VIEW

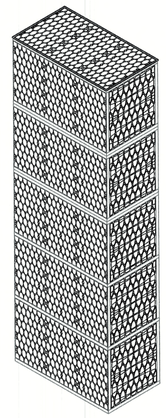
FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com



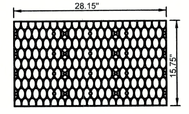
SECTION VIEW



FRONT VIEW



ISOMETRIC VIEW



PLAN VIEW

MODULE DATA

GEOMETRY: LENGTH = 28.15 IN. (715 MM) WIDTH = 15.75 IN. (400 MM) HEIGHT = 83.47 IN. (2120 MM) TANK VOLUME = 21.42 CF STORAGE VOLUME = 20.35 CF VOID INTERNAL VOLUME: 95% VOID SURFACE AREA: 90%	**LOAD RATING**: 33.4 PSI, (MODULE ONLY) HS25, (WITH ACF COVER SYSTEM)
	MATERIAL: 100% RECYCLED POLYPROPYLENE
	SMALL PLATES PER SEGMENT/TOTAL: 5/20

R-TANK^{HD} - PENT MODULE

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF ENVIRONMENTAL, 1-800-448-3636, www.acfenvironmental.com 5/16

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9846 LICENSED PROFESSIONAL ENGINEER — 10/21/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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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:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

D3

SHEET 12 OF 24
JBE PROJECT NO. 19190.2

PRETX SPECIFICATIONS

A. GENERAL

1. PRETX SYSTEMS ARE A PRE-FILTER AND CRITICAL MAINTENANCE DEVICE THAT EXTENDS THE OPERATING LIFE AND REDUCES THE MAINTENANCE BURDEN OF BIORETENTION SYSTEMS, RAIN GARDENS, BIOSWALES AND OTHER TYPES OF SURFACE BEST MANAGEMENT PRACTICES BY FILTERING OUT SEDIMENT, TRASH AND DEBRIS AT THE INLET.

B. PRODUCTS

1. PRETX IS AVAILABLE IN 3 MODELS THAT MANAGE MOST BIORETENTION INLET CONFIGURATIONS: CURB, DROP, AND INLINE.
2. PRETX-CURB IS FOR EDGE OF PAVEMENT RUNOFF AT A CURB CUT IN LIEU OF A STONE SPREADER.
3. PRETX-DROP IS FOR USE AS A DROP INLET CONFIGURATION ALONG A CURB LINE AND WOULD BE INSTALLED WITH A STANDARD DROP INLET GRATE.
4. PRETX-INLINE IS FOR USE WITH SUBSURFACE INLET AND OUTLET PIPE.
5. PRETX IS SIZED TO PRETREAT WATER QUALITY FLOWS AND BYPASS LARGER FLOWS THAT HAVE MINIMAL TRASH AND DEBRIS. PRETX CAN BE USED BOTH IN RETROFIT OR NEW INSTALLATIONS.
6. ACCEPTABLE SYSTEM SUPPLIER:
   CONVERGENT WATER TECHNOLOGIES, INC. OR ITS AUTHORIZED VALUE-ADDED RESELLER
   (800) 711-5428
   WWW.CONVERGENTWATER.COM

C. SUBMITTALS

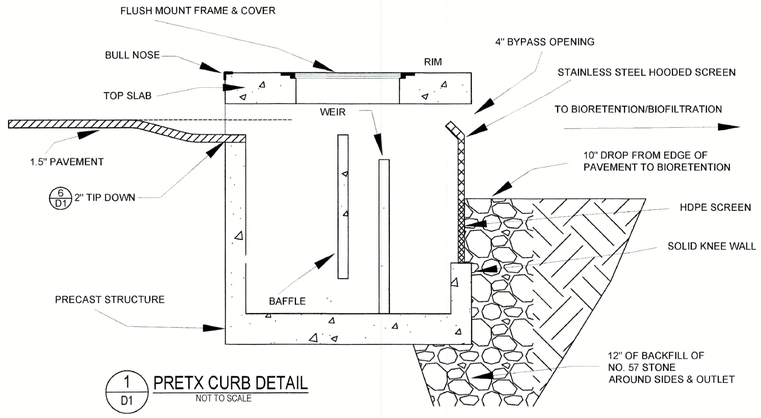
1. SUBMIT PROPOSED LAYOUT DRAWINGS. DRAWINGS SHALL INCLUDE TYPICAL SECTION DETAILS ANNOTED WITH SYSTEM ELEVATIONS (E.G., RIM, PIPE INVERTS, OUTSIDE BOTTOM OF STRUCTURE, ETC.).
2. SUBMIT MATERIAL CERTIFICATES FOR FRAMES AND COVERS
3. ANY PROPOSED EQUAL ALTERNATE PRODUCT SUBSTITUION TO THIS SPECIFICATON MUST BE SUBMITTED FOR REVIEW AND APPROVED PRIOR TO BID OPENING.

D. EXECUTION

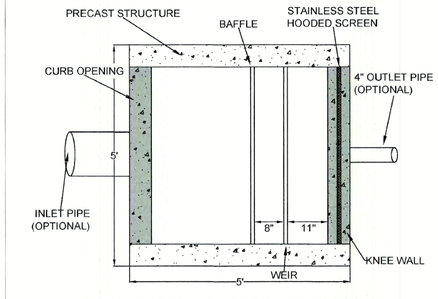
1. All PUBLIC STORM DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS AND ACCORDING TO LOCAL MUNICIPAL REQ UIREME NTS
2. All STORM DRAINAGE SYSTEM CONSTRUCTION IS SUBJECT TO INSPECTION AND APPROVAL BY THE PROJECT ENGINEER.
3. THE CONTRACTOR SHALL NOTIFYTHE PROJECT ENGINEER A MINIMUM OF TWO FULL BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTIO N.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING AND OBTAINING APPROVAL FROM DIG-SAFE AND DETERMINING THE LOCATION OF All UNDERGROUND UTILITIES PRIOR TO THE START OF CONSTRUCTION/ EXCAVATI ON AND SHALL NOTIFY THE PROJECT ENGINEER OF ANY POTENTIAL CONFLICTS.
5. TO PROTECT STORMWATER FLOW CONTROL AND QUALITY TREATMENT FACILITIES FROM SEDIMENTATION, THEY SHALL BE CONNECTED TO THE STORM CONVEYANCE SYSTEM ONLY AFTER ALL SITE WORK, ROAD CONSTRUCTION, UTILITY WORK AND LANDSCAPING ARE IN PLACE IN ALL AREAS ABOVE AND UPSTREAM OF THE FACILITY.
6. THE EXISTING STORM SEWER SYSTEM SHALL STAY ISOLATED FROM THE NEW SYSTEM UNTIL THE NEW SYSTEM IS CLEANED, AND APPROVED FOR USE. THERE SHALL BE NO DEBRIS IN THE LINES OR FURTHER CLEANING Will BE REQUIRED PRIOR TO ACCEPTANCE.
7. PROVIDE A 1.5" MINIMUM GAP BETWEEN THE KNOCKOUT WALL AND THE OUTSIDE OF THE PIPE. AFTER THE PIPE IS INSTALLED, FILL THE GAP WITH JOINT MORTAR
8. THE OPENING SHALL BE MEASURED AT THE TOP OF THE PRECAST BASE SECTION.
9. All PICKUP HOLES SHALL BE GROUTED FULL AFTER THE BASIN HAS BEEN PLACED.
10. STANDARD CURB INLETS AND TIPDOWNS SHALL BE PRECAST CONCRETE OR ASPHALT.
11. PIPE ENDS SHALL BE FLUSH WITH THE INNER WALL OR 1" MAXIMUM INTRUSION. MASONRY, CINDER BLOCKS, OR SIMILIAR MATERIALS MA Y BE USED TO ADJUST THE RISERS TO GRADE PRIOR TO GROUTING.
12. GROUTING SHALL BE SUFFICIENTTO PREVENT LEAKS BETWEEN THE PRECAST COMPONENTS OF THE COMPLETED STRUCTURE & SHALL BE PERFORMED INSIDE, BETWEEN & OUTSIDE OF All RISERS, JOINTS & PIPE PENETRATIONS.
13. MANHOLES TO BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M-199 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS.
14. All REINFORCED CAST IN PLACE CONCRETE SHALL BE CLASS 4000. All PRECAST CONCRETE SHALL BE CLASS 4000.
15. RECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS. KNOCKOUTS SHALL HAVE A WALL THICKNESS OF 2" MINIMUM.
16. MATING SURFACES OF MANHOLE RINGS AND COVERSSHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITIONS.

E. CONSTRUCTION AND SEQUENCING

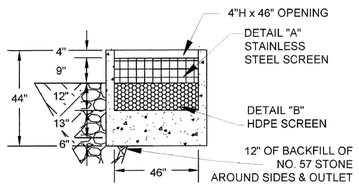
1. EXAMINATION
   A. VERIFY LAYOUT AND ORIENTATION OF PRE-TX SYSTEM AREA INCLUDING EDGE OF PAVEMENT, TIP DOWN, CURBS AND SIDEWALK, BIOFILTRATION SYSTEM, AND CONNECTIONS.
   B. VERIFY EXCAVATION BASE IS READY TO RECEIVE WORK AND EXCAVATIONS, DIMENSIONS, AND ELEVATIONS ARE AS INDICATED ON DRAWINGS.
2. PREPARATION
   A. CALL DIG SAFE AND RECEIVE APPROVAL BEFORE PERFORMING WORK.
   B. REQUEST UNDERGROUND UTILITIES TO BE LOCATED AND MARKED WITHIN AND SURROUNDING CONSTRUCTION AREAS.
   C. IDENTIFY REQUIRED LINES, LEVELS, CONTOURS, AND DATUM.
   D. CLEAR AND GRUB THE PROPOSED PRE-TX SYSTEM AREA.
3. EXCAVATION AND INSTALLATION
   A. THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE. COORDINATE WITH THE OWNER, AND ENGINEERS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
   B. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS TO DIVERT STORM WATER AWAY FROM THE PRE-TX SYSTEM AREA.
   C. EXCAVATE TO THE BOTTOM INVERT OF THE SYSTEM.
   D. TO MINIMIZE COMPACTION OF ADJACENT BIOFILTRATION SYSTEMS, WORK EXCAVATORS OR BACKHOES FROM THE SIDES TO EXCAVATE THE PRE-TX SYSTEM AREA TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS.
   E. ROUGH GRADE THE PRE-TX SYSTEM AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE PRE-TX SYSTEM FACILITIES TO WITHIN 1 FOOT OF STRUCTURE BOTTOM.
   F. PLACE 1 FOOT BED OF COARSE STONE TO ELEVATION OF BASE OF STRUCTURE.
   G. ESTABLISH ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT AND TIP DOWN, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
4. INSTALLATION
   A. PLACE THE PRECAST SYSTEM TO NECESSARY ELEVATION.
   B. VERIFY ELEVATIONS FOR ADJACENT CURBS, EDGE OF PAVEMENT, PAVEMENT GRADING FOR INLET GRATE FOR PRETX-DROP, SIDEWALK, PIPE INVERTS FOR INLETS AND OUTLETS, OUTLET INVERT FOR KNEE WALL.
   C. FOR PRETX-SURFACE:
      a. VERIFY ELEVATIONS FOR ADJACENT CURBS.
      b. VERIFY EDGE OF PAVEMENT TIP DOWN PAVEMENT GRADING FOR INLET GRATE.
      c. VERIFY CURB ELEVATION IN RELATION TO PAVEMENT AND TIP DOWN.
      d. VERIFY OUTLET INVERT FOR KNEE WALL IN RELATION TO FILTER MEDIA.
   D. FOR PRETX-DROP:
      a. VERIFY ALL INLET PIPES ENTER THE STRUCTURE UPSTREAM OF BAFFLE.
      b. VERIFY FRAME AND GRATE OFFSET ON INLET SIDE AND UPSTREAM OF BAFFLE.
      c. VERIFY CURB LOCATION WITH RESPECT TO FRAME AND GRATE ORIENTATION.
   E. INSTALL BAFFLES, WEIR, AND SCREENS AS INDICATED ON DRAWINGS.
   F. VERIFY MAINTENANCE ACCESS THROUGH GRATE OR COVER AND CLEARANCE FOR VACTOR.
   G. INSTALL TOP OF STRUCTURE LEVEL WITH ADJACENT CURB OR SIDEWALK AS PER MANUFACTURERS SPECIFICATIONS. ENGINEER FIELD VISIT REQUIRED PRIOR TO BACKFILLING.
5. BACKFILLING
   A. BACKFILL WITH APPROVED SOIL AND STONE TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
   B. BACKFILL WITH 12" OF NO. 57 STONE AROUND REAR, LEFT, AND RIGHT SIDES TO LEVEL WITH TOP OF HDPE SCREEN.
   C. BACKFILL WITH BIORETENTION SOIL MIX BEYOND STONE BACKFILL TO EQUAL ELEVATION OF THE TOP OF HDPE SCREEN.
   D. DO NOT BACKFILL SOIL OR STONE AGAINST STAINLESS SCREEN.
   E. DO NOT COMPACT ADJACENT FILTRATION SYSTEM SOIL WITH MECHANICAL EQUIPMENT.
   F. STABILIZE All REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/ OREROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
6. CLEAN UP
   A. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIA LS, RUBBISH, EXCESS SOIL, ETC., FROM THE PROJECT SITE. REPAIR PROMPTL Y ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.



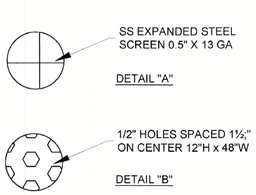
1 D1 PRETX CURB DETAIL
NOT TO SCALE



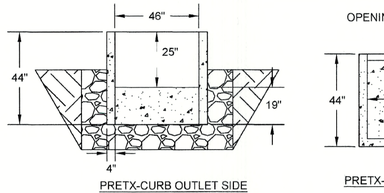
2 D1 PRETREATMENT CATCH BASIN PLAN VIEW
NOT TO SCALE



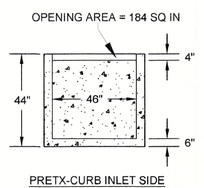
3 D1 PRETX CURB OUTLET SIDE
NOT TO SCALE



OUTLET SIDE INSTALLED W/ SCREENS

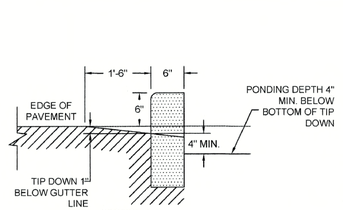


PRETX-CURB OUTLET SIDE

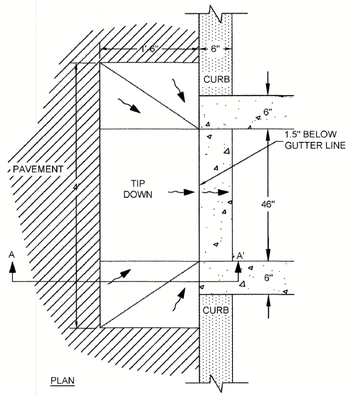


PRETX-CURB INLET SIDE

4 D1 PRETX CURB SIDE DETAIL
NOT TO SCALE

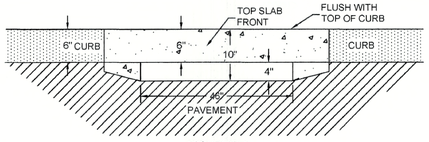


SECTION A-A'

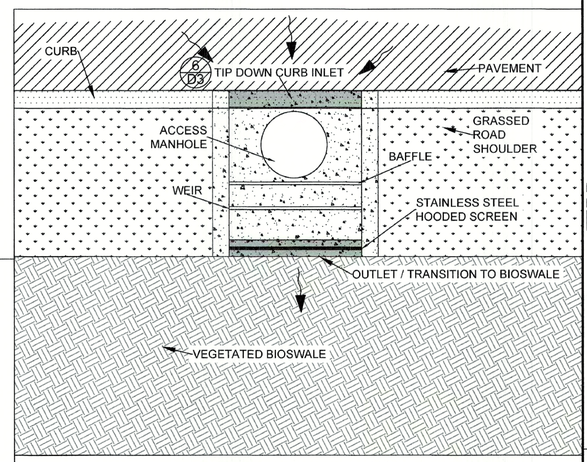


PLAN

5 D1 TIP DOWN CURB INLET DETAIL
NOT TO SCALE

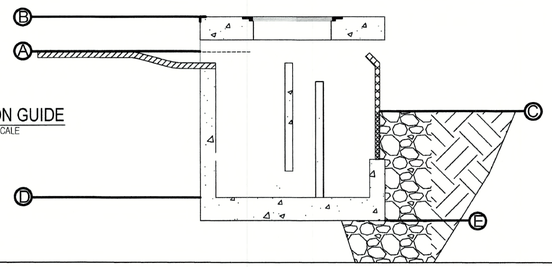


FRONT VIEW



7 D1 PRETX CURB OUTLET TO BIORETENTION CONFIGURATION
NOT TO SCALE

PRETX–CURB ELEVATION GUIDE		
POINT	DESCRIPTION	ELEV.
A	EDGE OF PAVEMENT	PER PLAN
B	OUTSIDE TOP SLAB	8" ABOVE A
C	TOP OF BIOFILTRATION	PER PLAN
D	SUMP INVERT	36" BELOW A
E	OUTSIDE BOTTOM	42" BELOW A



6 D1 ELEVATION GUIDE
NOT TO SCALE

D-1 PRETX^{TM} CURB INLET PRETREATMENT DETAIL

TO FIND A VALUE ADDED RESELLER IN YOUR AREA VISIT WWW.CONVERGENTWATER.COM/STORMWATER-PRODUCTS OR CONTACT CONVERGENT WATER TECHNOLOGIES AT 1.800.711.5428

REVISED 11/20/18: ELEVATION DETAILS ADDED. CHECKED BY RR.

CONVERGENT WATER TECHNOLOGIES

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE PROFESSIONAL ENGINEER MICHAEL J. KERIVAN No. 9845 LICENSED 8/20/21

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
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

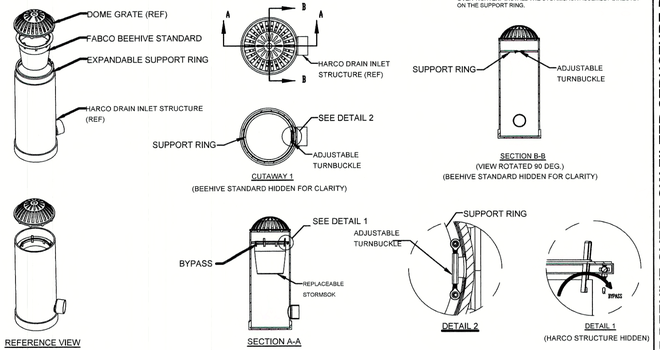
Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
D4
SHEET 13 OF 24
JBE PROJECT NO. 19190.2

STRUCTURE DIAMETER (IN.)	DEBRIS CAPACITY (CU.FT)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)
12	0.66	1.7	1.0
15	1.0	2.1	1.3
18	1.2	2.3	1.4
24	2.8	3.9	2.2
30	2.8	3.9	2.2

NOTES:
1. MATERIAL
   A) SUPPORT FLANGE: ALUMINUM ALLOY PLATE; 5000 SERIES
   B) STORMSOK: WOVEN POLYPROPYLENE GEOTEXTILE
   C) EXPANSION RING: ALUMINUM ALLOY CHANNEL, 6000 SERIES
   D) HARDWARE: STAINLESS STEEL
2. RECOMMENDED MINIMUM VAULT DEPTH: 2-IN BELOW STORMSOK
3. USE ONLY WITH FABCO REPLACEABLE STORMSOK

GENERAL INSTALLATION:
ADJUST THE TURNBUCKLE DOWN TO GIVE THE SMALLEST RING DIAMETER AND LOCATE THE EXPANSION RING INTO THE HARCO STRUCTURE A MINIMUM OF 6-IN DOWN FROM THE TOP OPENING AS SHOWN. BEGIN OPENING THE TURNBUCKLE UNTIL THE EXPANSION RING IS SELF SUPPORTING, THEN VERIFY THE RING IS LEVEL AND PLUMB TO THE HARCO STRUCTURE. USING A CALIBRATED TORQUE WRENCH, CONTINUE TO OPEN THE TURNBUCKLE TO GIVEN TORQUE (MODEL-SPECIFIC). DO NOT OVER TIGHTEN. INSTALL THE STORMSACK ASSEMBLY DIRECTLY ON THE SUPPORT RING.



ACF BEEHIVE OVERFLOW FILTER STRUCTURE DETAILS

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
WWW.ACFENVIRONMENTAL.COM
800.448.3636

FocalPoint HIGH PERFORMANCE SYSTEMS

REVISED AUG 2020

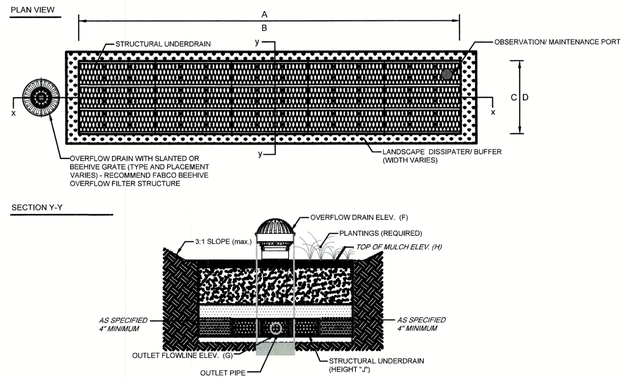
FOCALPOINT HP PERFORMANCE SPECIFICATION:

HIGH PERFORMANCE MEDIA
HIGH PERFORMANCE MEDIA MUST MEET A MINIMUM OF 100' PER HOUR INFILTRATION RATE.

HIGH PERFORMANCE STRUCTURAL UNDERDRAIN
MUST HAVE A MINIMUM OF 19 SQUARE INCHES OF ORIFICE OPENING PER SQUARE FOOT.
MUST MEET H20 LOADING REQUIREMENTS.
MUST BE MODULAR IN NATURE AND ASSEMBLED ON SITE.
MUST HAVE MINIMUM 90% INTERIOR VOID SPACE.

PLANT COMPONENT
SUPPLIER SHALL PROVIDE LIST OF ACCEPTABLE PLANTS.
IF PLANTS ARE NOT INCLUDED IN THE LANDSCAPE CONTRACT/PLANS, SITE CONTRACTOR SHALL PROVIDE PLANTS.
PLANTS SHALL BE INSTALLED AT THE TIME THE SYSTEM IS COMMISSIONED FOR USE. PLANTING OUTSIDE THIS TIME REQUIRES APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT OF RECORD.
SEE FOCALPOINT INSTALLATION GUIDE FOR PLANT SPACING, PLANTING PROCEDURES ETC.

FOCALPOINT HP CONSTRUCTION GUIDE		
A	FOCALPOINT LENGTH	SEE PLANS
B	# UNDERDRAIN LONG	SEE PLANS
C	FOCALPOINT WIDTH	SEE PLANS
D	# UNDERDRAIN WIDE	SEE PLANS
E	WATER QUALITY VOLUME	VARIES
F	OVERFLOW ELEVATION	SEE PLANS
G	OUTLET FLOWLINE	SEE PLANS
H	TOP OF MULCH	SEE PLANS
I	TOP OF GABION (OPTIONAL)	NO GABION
J	UNDERDRAIN HEIGHT	SEE PLANS



FOCALPOINT HP CONSTRUCTION GUIDE

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
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FocalPoint HIGH PERFORMANCE SYSTEMS

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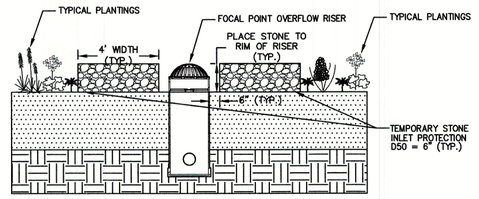
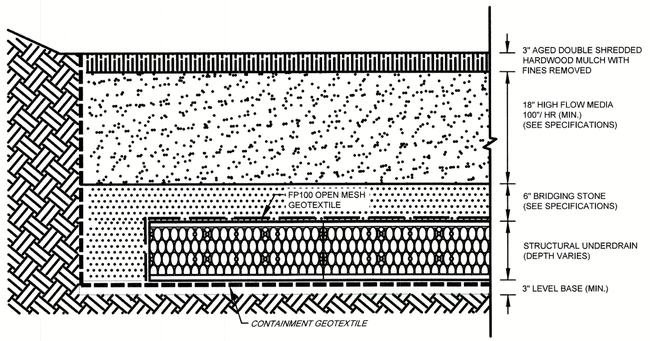


NOTES:
1. AFTER CONSTRUCTION, REMOVE STONE INLET PROTECTION AND VEGETATE AFFECTED AREA WITH TYPICAL BIORETENTION PLANTINGS AS SPECIFIED ON SHEET L1.
2. STONE INLET PROTECTION SHALL WRAP ALL THE WAY AROUND THE RISER IN A CIRCLE.

FOCAL POINT RISER STONE INLET PROTECTION

NOT TO SCALE



FOCALPOINT HP DETAILED CROSS SECTION

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
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FocalPoint HIGH PERFORMANCE SYSTEMS

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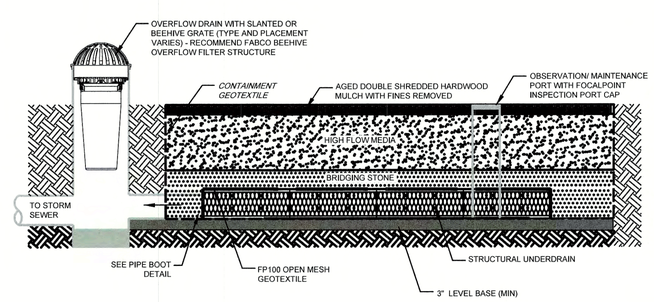

FOCALPOINT HP SECTION X-X

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Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 LICENSED PROFESSIONAL ENGINEER – 8/20/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
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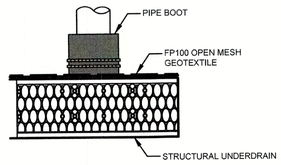
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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

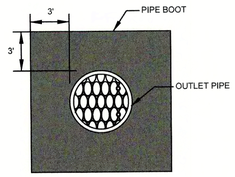
Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
D5
SHEET 14 OF 24
JBE PROJECT NO. 19190.2

OBSERVATION/ MAINTENANCE PORT CONNECTION

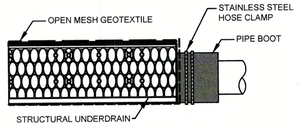


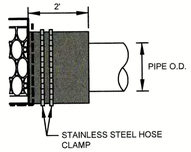
PIPE BOOT DETAIL



FRONT VIEW

OUTLET/ INLET PIPE CONNECTION





SIDE VIEW

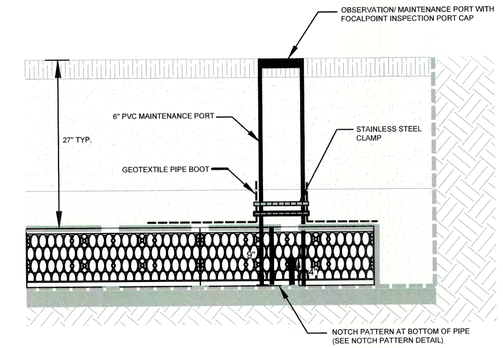
FOCALPOINT PIPE CONNECTION

FOR MORE INFORMATION CONTACT ACF ENVIRONMENTAL
WWW.ACFENVIRONMENTAL.COM
800.448.3636

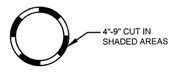
REVISED
AUG 2020

OBSERVATION/ MAINTENANCE PORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



PIPE NOTCH PATTERN DETAIL



FOCALPOINT OBSERVATION/ MAINTENANCE PORT

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Design: JAC	Draft: DJM	Date: 04/21/20
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 – LICENSED PROFESSIONAL ENGINEER – 8/20/2021

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12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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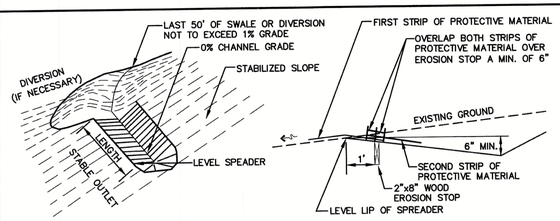
Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

D6

SHEET 15 OF 24
JBE PROJECT NO. 19190.2



ISOMETRIC VIEW

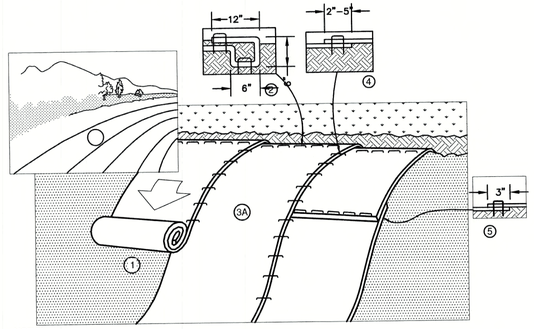
CROSS SECTION

NOTES:

1. CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO PERCENT GRADE TO ENSURE UNIFORM SPREADING OF RUNOFF.
2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL AND NOT ON FILL.
3. AN EROSION STOP SHALL BE PLACED VERTICALLY A MINIMUM OF SIX INCHES DEEP IN A SLIT TRENCH ONE FOOT BACK OF THE LEVEL LIP AND PARALLEL TO THE LIP. THE EROSION STOP SHALL EXTEND THE ENTIRE LENGTH OF THE LEVEL LIP.
4. ENTIRE LEVEL LIP AREA SHALL BE PROTECTED BY PLACING TWO STRIPS OF JUTE OR EXCELSIOR MATTING ALONG THE LIP. EACH STRIP SHALL OVERLAP THE EROSION STOP BY AT LEAST SIX INCHES.
5. ENTRANCE CHANNEL TO THE LEVEL SPREADER SHALL NOT EXCEED A 1 PERCENT GRADE FOR AT LEAST 50 FEET BEFORE ENTERING THE SPREADER.
6. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER MUST NOT RECONCENTRATE IMMEDIATELY BELOW THE SPREADER.
7. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.
8. MAINTENANCE: THE LEVEL SPREADER SHOULD BE CHECKED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE IF THE SPREADER HAS BEEN DAMAGED. SEDIMENT DEEPER THAN 4" ACCUMULATION SHOULD BE REMOVED. IF RILLING HAS TAKEN PLACE ON THE LIP, THEN THE DAMAGE SHOULD BE REPAIRED AND REVEGETATED. THE VEGETATION SHOULD BE MOWED OCCASIONALLY TO CONTROL WEEDS AND THE ENCROACHMENT OF WOODY VEGETATION. CLIPPINGS SHOULD BE REMOVED AND DISPOSED OF OUTSIDE THE SPREADER AND AWAY FROM OUTLET AREA. FERTILIZATION SHOULD BE DONE AS NECESSARY TO KEEP THE VEGETATION HEALTHY AND DENSE.

LEVEL SPREADER

NOT TO SCALE



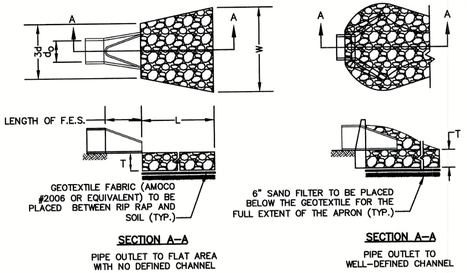
NOTES:

1. 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.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH 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.
3. 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.
4. 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.
5. 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)

NOT TO SCALE



SECTION A-A
PIPE OUTLET TO FLAT AREA WITH NO DEFINED CHANNEL

SECTION A-A
PIPE OUTLET TO WELL-DEFINED CHANNEL

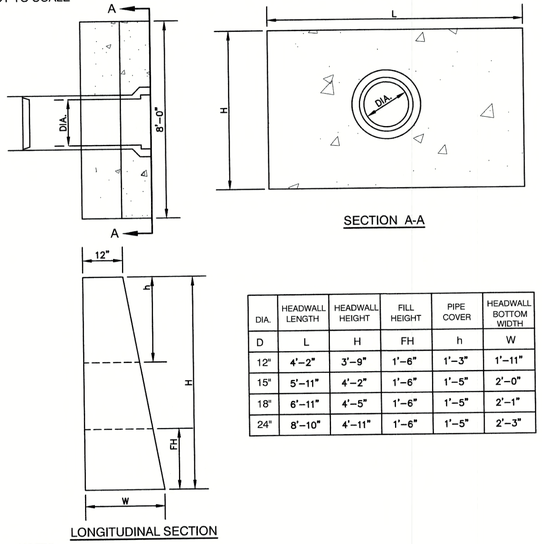
TABLE 7-24--RECOMMENDED RIP RAP GRADATION RANGES		
THICKNESS OF RIP RAP = 1.5 FEET		
d50 SIZE= 0.50	FEET 6	INCHES
% OF WEIGHT SMALLER THAN THE GIVEN d50 SIZE	SIZE OF STONE (INCHES) FROM	TO
100%	9	12
85%	8	11
50%	6	9
15%	2	3

NOTES:

1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP. 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.
4. 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.
5. 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.
6. 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

NOT TO SCALE



SECTION A-A

LONGITUDINAL SECTION

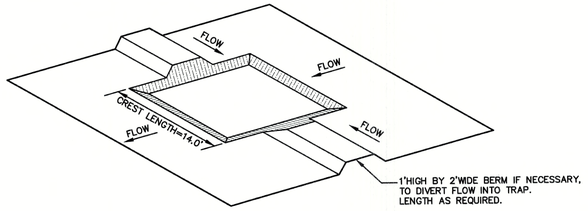
DIA.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	PIPE COVER	HEADWALL BOTTOM WIDTH
D	L	H	FH	h	W
12"	4'-2"	3'-9"	1'-6"	1'-3"	1'-11"
15"	5'-11"	4'-2"	1'-6"	1'-5"	2'-0"
18"	6'-11"	4'-5"	1'-6"	1'-5"	2'-1"
24"	8'-10"	4'-11"	1'-6"	1'-5"	2'-3"

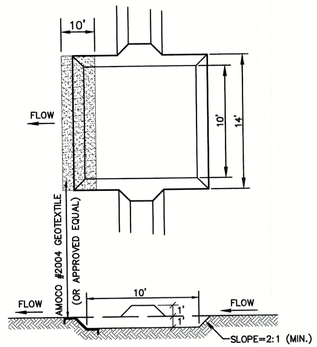
NOTES:

1. ALL DIMENSIONS GIVEN IN FEET & INCHES.
2. PROVIDE BELL END AT INLET HEADWALL, AND SPIGOT END AT OUTLET END HEADWALL.
3. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150. REINFORCING TO MEET OR EXCEED ASTM A-615 GRADE 60 DEFORMED BARS.
4. 1" THREADED INSERTS PROVED FOR FINAL ATTACHMENT IN FIELD BY OTHERS.

PRECAST CONCRETE HEADWALL

NOT TO SCALE



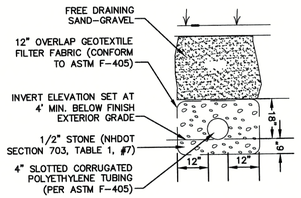


CONSTRUCTION SPECIFICATIONS:

1. THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ALL VEGETATION, ROOTS, AND DEBRIS.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS, WOODY VEGETATION, STONES OVER 6" SIZE, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIALS. THE FILL SHALL BE COMPACTED BY ROUTING CONSTRUCTION EQUIPMENT OVER IT SO THAT THE ENTIRE AREA OF THE FILL IS TRAVERSED BY AT LEAST ONE WHEEL OR TREAD TRACK OF THE EQUIPMENT.
3. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
4. ALL CUT AND FILL SLOPES SHALL BE 2:1 (H:V) OR FLATTER.
5. OUTLET CREST ELEVATIONS SHALL BE AT LEAST ONE FOOT BELOW THE TOP OF THE EMBANKMENT.
6. OUTLET CREST IS TO BE STABILIZED WITH AMOCO #2004 GEOTEXTILE (OR APPROVED EQUAL), WHICH IS TO BE "TOED" INTO THE GROUND AT ITS ENDS AT LEAST SIX INCHES AND IS TO EXTEND AT LEAST ONE FOOT INTO THE TRAP AND ONE FOOT DOWNSTREAM FROM THE OUTLET EDGE FOR THE ENTIRE LENGTH OF THE CREST.
7. ALL DISTURBED AREAS SHALL BE VEGETATED USING THE APPROPRIATE VEGETATIVE BEST MANAGEMENT PRACTICE.
8. ALL TRAPS ARE TO HAVE SEDIMENT DEPOSITS REMOVED AND DISPOSED PROPERLY AT LEAST ONCE WEEKLY AND AFTER EACH RAINFALL.

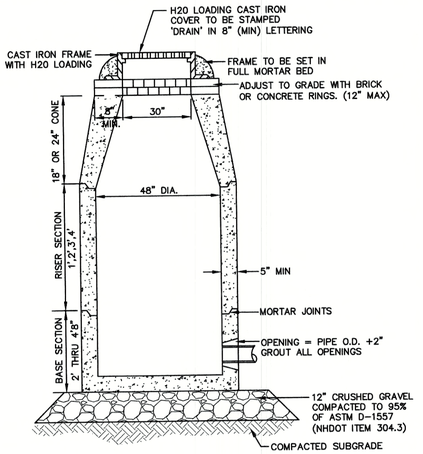
TEMPORARY SEDIMENT TRAP

NOT TO SCALE



UNDERDRAIN DETAIL

NOT TO SCALE

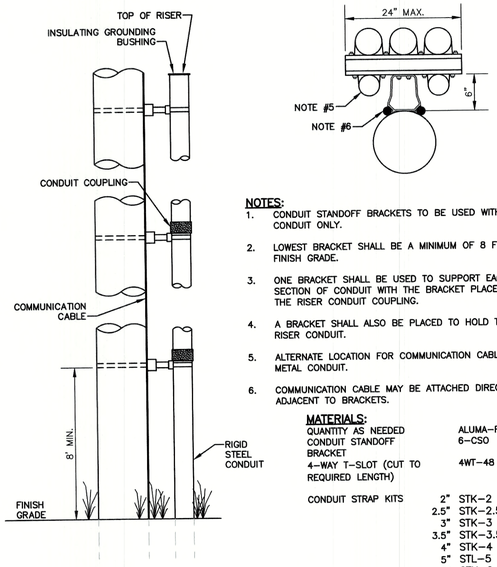


NOTES:

1. BASE SECTION SHALL BE MONOLITHIC WITH 48" INSIDE DIAMETER.
2. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
3. CONCRETE SHALL BE COMPRESSIVE STRENGTH 4000 PSI, TYPE II CEMENT.
4. FRAMES AND GRATES SHALL BE HEAVY DUTY AND DESIGNED FOR H20 LOADING.
5. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS SO AS TO BE WATERTIGHT.
6. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
7. ALL DRAIN MANHOLE FRAMES AND GRATES SHALL BE NHDOT TYPE MH-1, OR NEENAH R-1798 OR APPROVED EQUAL (30" DIA. TYPICAL).
8. STANDARD FRAME(S) AND GRATE(S) SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM, BUT NO MORE THAN 12"), OR PRECAST CONCRETE 'DONUTS'.

DRAIN MANHOLE

NOT TO SCALE



NOTES:

1. CONDUIT STANDOFF BRACKETS TO BE USED WITH METAL CONDUIT ONLY.
2. LOWEST BRACKET SHALL BE A MINIMUM OF 8 FEET ABOVE FINISH GRADE.
3. ONE BRACKET SHALL BE USED TO SUPPORT EACH 10 FT. SECTION OF CONDUIT WITH THE BRACKET PLACED JUST BELOW THE RISER CONDUIT COUPLING.
4. A BRACKET SHALL ALSO BE PLACED TO HOLD THE ROD OF THE RISER CONDUIT.
5. ALTERNATE LOCATION FOR COMMUNICATION CABLE IF RUN IN METAL CONDUIT.
6. COMMUNICATION CABLE MAY BE ATTACHED DIRECTLY TO POLE ADJACENT TO BRACKETS.

MATERIALS:

QUANTITY AS NEEDED	ALUMA-FORM
CONDUIT STANDOFF BRACKET	6-CSO
4-WAY T-SLOT (CUT TO REQUIRED LENGTH)	4WT-48
CONDUIT STRAP KITS	2" STK-2
	2.5" STK-2.5
	3" STK-3
	3.5" STK-3.5
	4" STK-4
	5" STL-5
	6" STK-6

UTILITY POLE RISER DETAIL

NOT TO SCALE

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9846 — LICENSED PROFESSIONAL ENGINEER — 6/20/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
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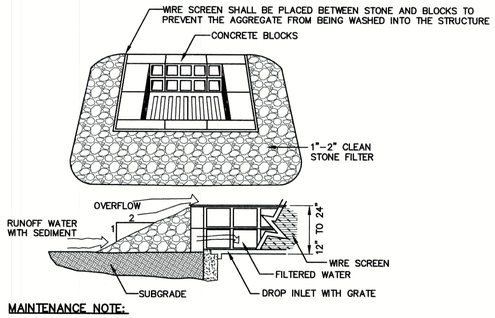
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
D7
SHEET 16 OF 24
JBE PROJECT NO. 19190.2

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. FIBER BERMS 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 7 DAYS OF THE INITIAL DISTURBANCE OF SOIL OR AS DIRECTED BY THE CITY ENGINEER. 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. 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.

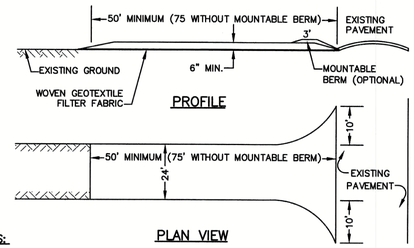


MAINTENANCE NOTE:

1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED IN A SUITABLE UPLAND AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

TEMPORARY CATCH BASIN INLET PROTECTION (Block and Gravel Drop Inlet Sediment Filter)

NOT TO SCALE

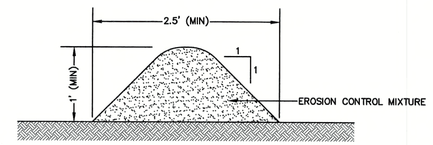


NOTES:

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



NOTES:

1. ORGANIC FIBER BERMS SHALL BE UTILIZED IN LIEU OF SILT FENCE.
2. THE EROSION CONTROL MIX USED IN THE FILTER BERMS SHALL BE A WELL-GRADED MIXTURE OF PARTICLE SIZES, MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, OR ACCEPTABEL MANUFACTURED PRODUCTS, AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH, AND SHALL MEET THE FOLLOWING STANDARDS:
   a) THE ORGANIC CONTENT SHALL BE 80-100% OF DRY WEIGHT.
   b) PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN, AND 70-85% PASSING A 0.75" SCREEN.
   c) THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
   d) LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
   e) SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
   f) THE pH SHALL BE BETWEEN 5.0 AND 8.0.
3. ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
4. ON SLOPES LESS THAN 5%, OR AT THE BOTTOM OF SLOPES STEEPER THAN 3:1, UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE), AND A MINIMUM OF 36" WIDE. ON LONGER OR STEEPER SLOPES, THE BERM SHALL BE WIDER TO ACCOMMODATE THE POTENTIAL ADDITIONAL RUNOFF.
5. FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
6. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE STRUCTURE.
7. STRUCTURES MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED.

ORGANIC FIBER BERM

NOT TO SCALE

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(P2O5), 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, TREFOIL 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 FROM 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.

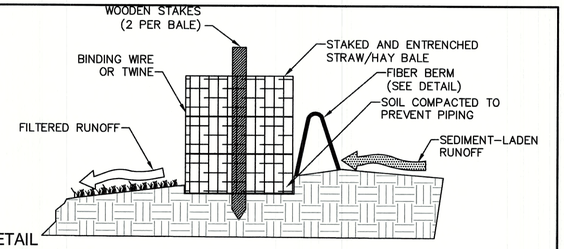
NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
* C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	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



HAYBALE DETAIL

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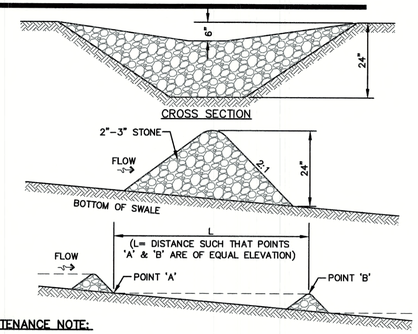

MAINTENANCE NOTE:

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

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 SHALL BE HELD WITH ALL DEPARTMENT HEADS PRIOR TO THE START OF CONSTRUCTION. AN ONSITE PRE CONSTRUCTION MEETING IS TO BE HELD WITH THE CITY OF 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.
2. WETLAND BOUNDARIES ARE TO BE CLEARLY MARKED PRIOR TO THE START OF CONSTRUCTION. AT LEAST A TEMPORARY CULVERT OR ROADBED TO BE IN PLACE 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. PREPARE BUILDING PAD(S) TO ENABLE BUILDING CONSTRUCTION TO BEGIN.
10. 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.
11. INSTALL INLET PROTECTION AT ALL CATCH BASINS AS THEY ARE CONSTRUCTED IN ACCORDANCE WITH DETAILS.
12. ALL SWALES AND DRAINAGE STRUCTURES ARE TO BE CONSTRUCTED AND STABILIZED PRIOR TO HAVING RUN-OFF DIRECTED TO THEM.
13. 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 WATERS AND/OR PROPERTY.
14. PERFORM FINAL FINE GRADING, INCLUDING PLACEMENT OF 'SELECT' SUBGRADE MATERIALS.
15. PAVE ALL PARKING LOTS AND ROADWAYS WITH INITIAL 'BASE COURSE'.
16. PERFORM ALL REMAINING SITE CONSTRUCTION (i.e. BUILDING, CURBING, UTILITY CONNECTIONS, ETC.).
17. LOAM AND SEED ALL DISTURBED AREAS AND INSTALL ANY REQUIRED SEDIMENT AND EROSION CONTROL FACILITIES (i.e. RIP RAP, EROSION CONTROL BLANKETS, ETC.).
18. FINISH PAVING ALL ROADWAYS AND PARKING AREAS WITH 'FINISH' COURSE.
19. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
20. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
21. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
22. 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.
23. CLEAN SITE AND ALL DRAINAGE STRUCTURES, PIPES AND SUMPS OF ALL SILT AND DEBRIS.
24. INSTALL ALL PAINTED PAVEMENT MARKINGS AND SIGNAGE PER THE PLANS AND DETAILS.
25. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.
26. 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.

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Checked: JAC	Scale: AS NOTED	Project No.: 19190.2	
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg			

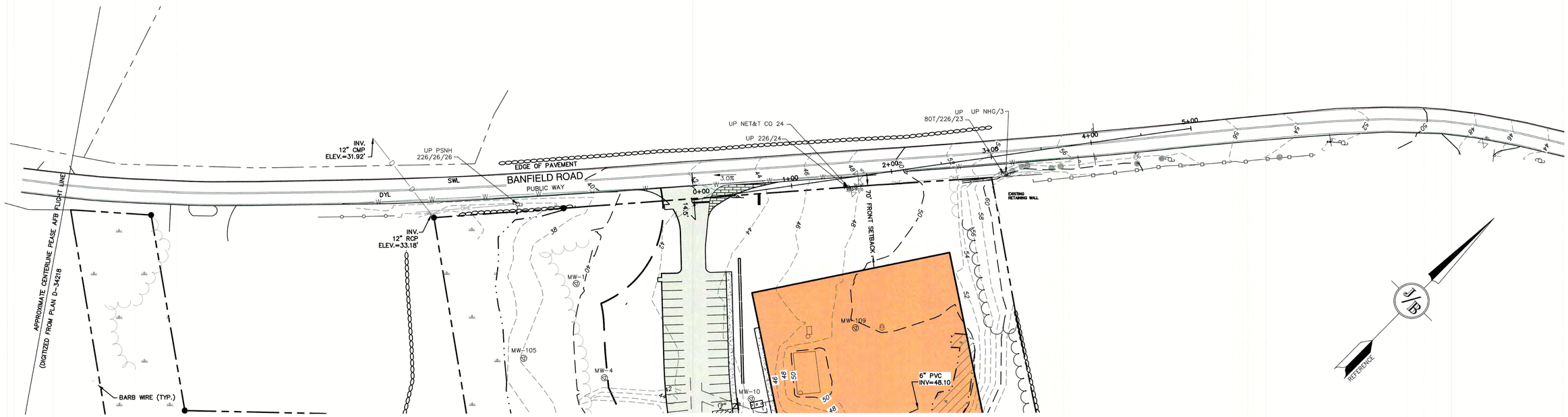
STATE OF NEW HAMPSHIRE — MICHAEL J. KERVAN No. 9346 LICENSED PROFESSIONAL ENGINEER — 8/18/21

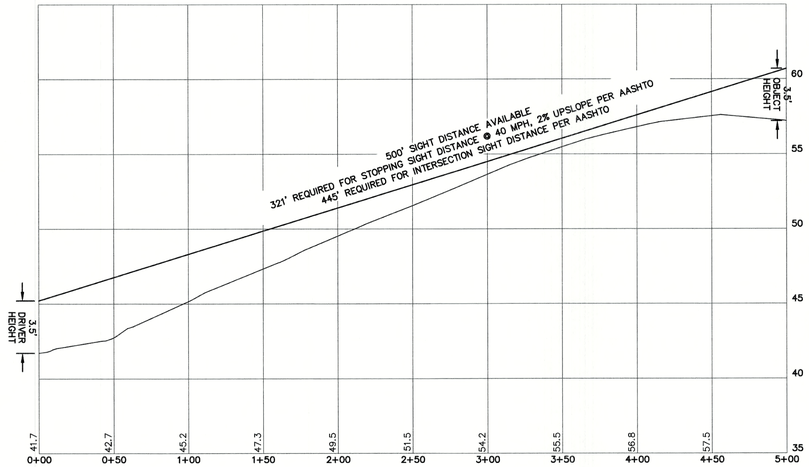
REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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:	EROSION AND SEDIMENT CONTROL DETAILS
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
E1
SHEET 17 OF 24
JBE PROJECT NO. 19190.2





INTERSECTION SIGHT DISTANCE PROFILE

GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft Horiz.
1 inch = 5 ft Vert.
10 5 0
0 50 100

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STATE OF NEW HAMPSHIRE — MICHAEL J. KERWIN No. 9846 — LICENSED PROFESSIONAL ENGINEER — 8/20/21

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
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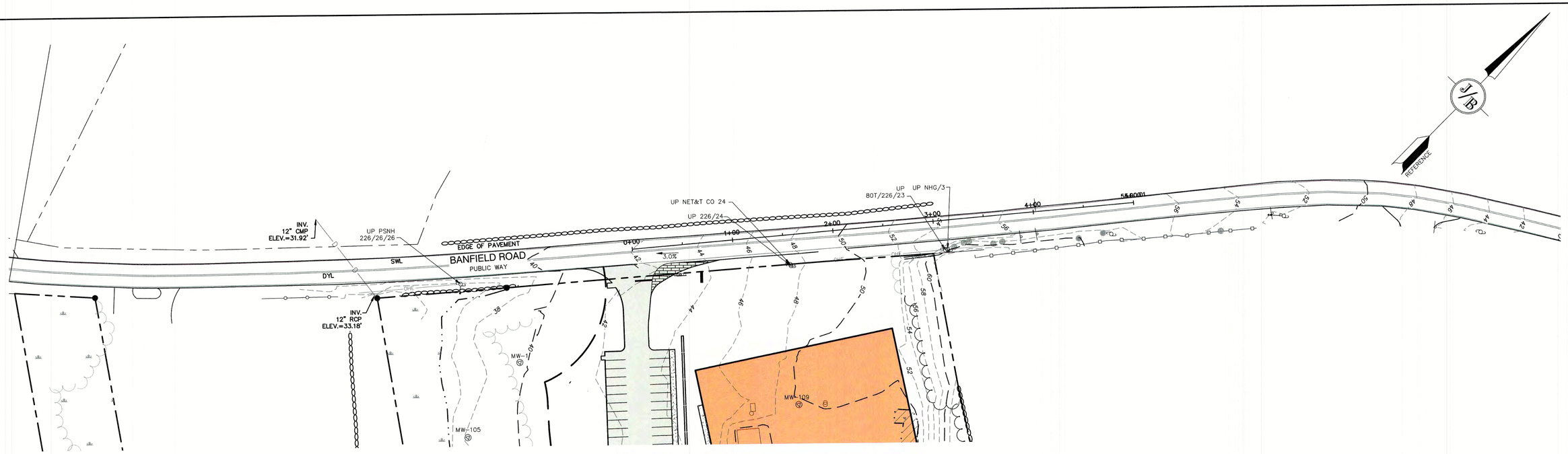
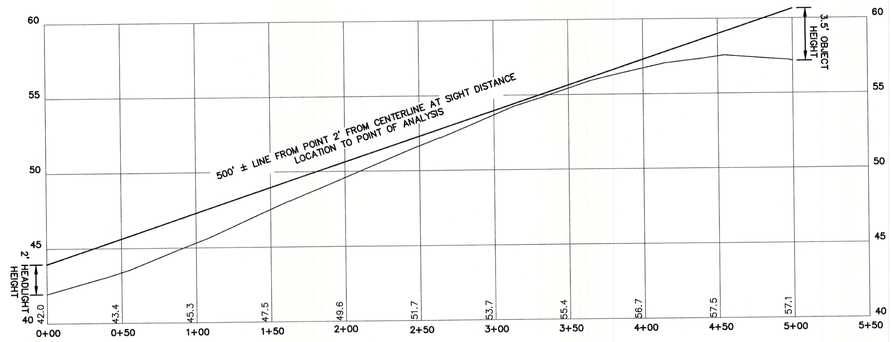
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	HIGHWAY ACCESS PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
H1
SHEET 18 OF 24
JBE PROJECT NO. 19190.2





SIGHT DISTANCE PROFILE ALONG BANFIELD ROAD

GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft Horiz.
1 inch = 5 ft Vert.

10 5 0
0 50 100

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Design: JAC	Draft: DJM	Date: 04/21/20
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERVAN No. 9646 LICENSED
PROFESSIONAL ENGINEER
8/23/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
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12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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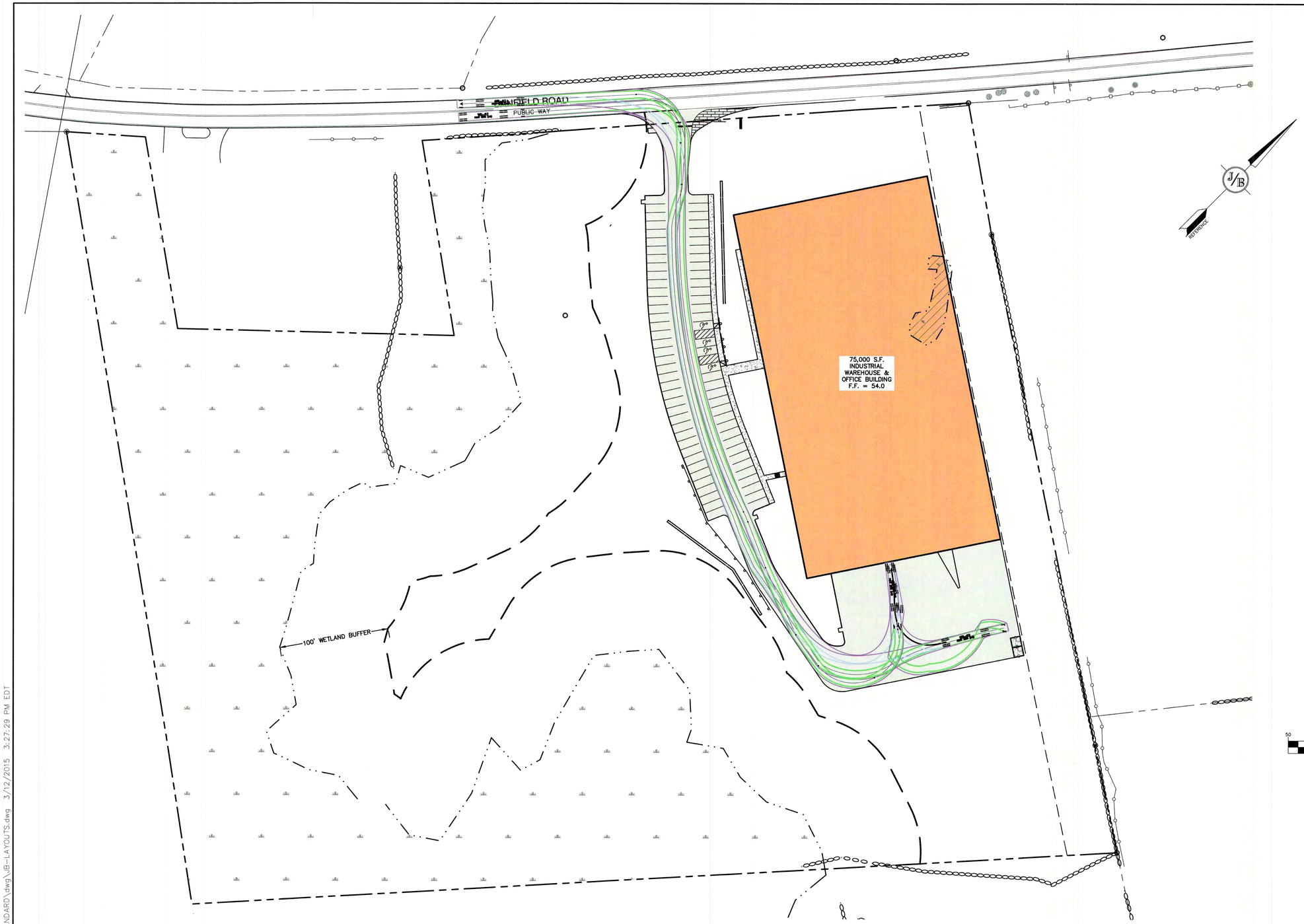
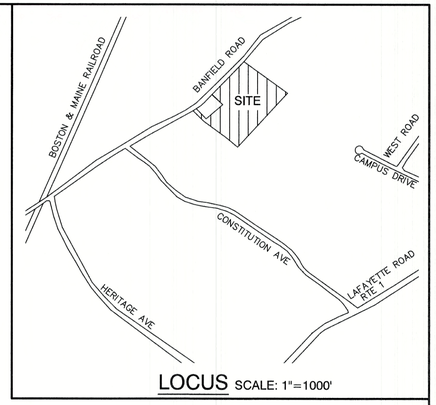
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	HIGHWAY ACCESS PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.
H2
SHEET 19 OF 24
JBE PROJECT NO. 19190.2





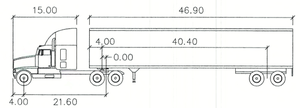
LOCUS SCALE: 1"=1000'

LEGEND

= FRONT TIRES

= REAR TIRES

= VEHICLE BODY



WB-62

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 31.9
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

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Design: JAC	Draft: DJM	Date: 04/21/20
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9646 LICENSED PROFESSIONAL ENGINEER – 8/19/21

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
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12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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: OVERVIEW TRUCK TURNING PLAN

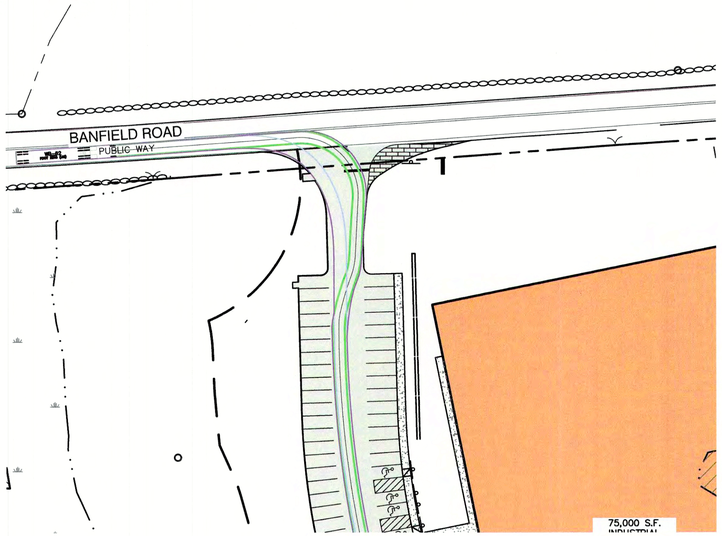
Project: INDUSTRIAL WAREHOUSE
375 BANFIELD ROAD, PORTSMOUTH, NH 03801

Owner of Record: BANFIELD REALTY LLC
304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

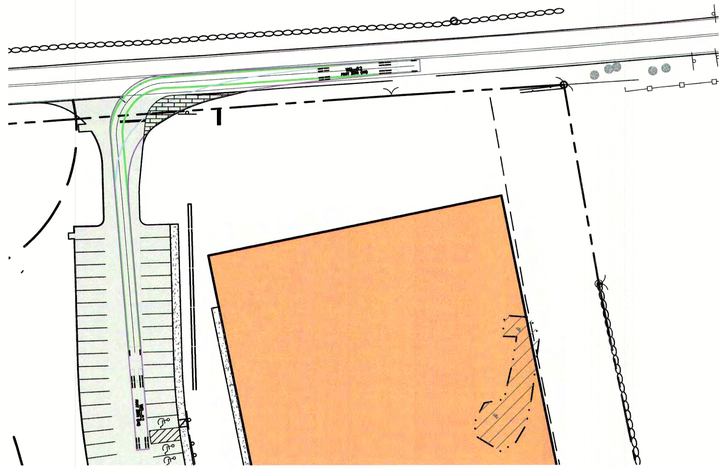
DRAWING No.

T1

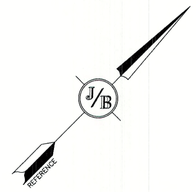
SHEET 20 OF 24
JBE PROJECT NO. 19190.2

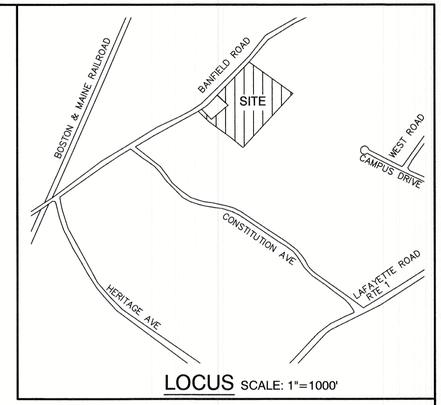


RIGHT TURN IN PLAN



RIGHT TURN OUT PLAN





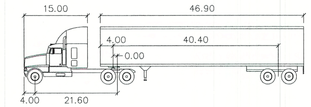
LOCUS SCALE: 1"=1000'

LEGEND

= FRONT TIRES

= REAR TIRES

= VEHICLE BODY

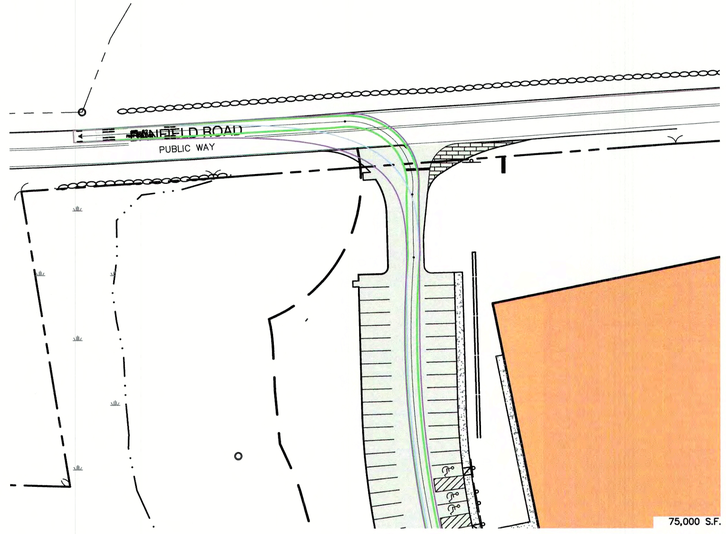


WB-62

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 31.9
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

LEFT TURN IN PLAN



LEFT TURN OUT PLAN

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

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Design: JAC	Draft: DJM	Date: 04/21/20
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Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 – LICENSED PROFESSIONAL ENGINEER – 8/20/21

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
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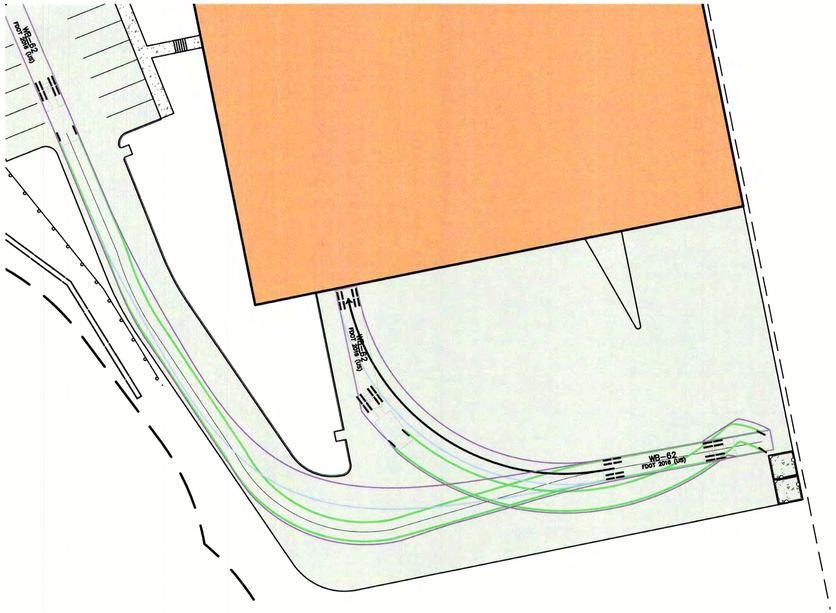
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

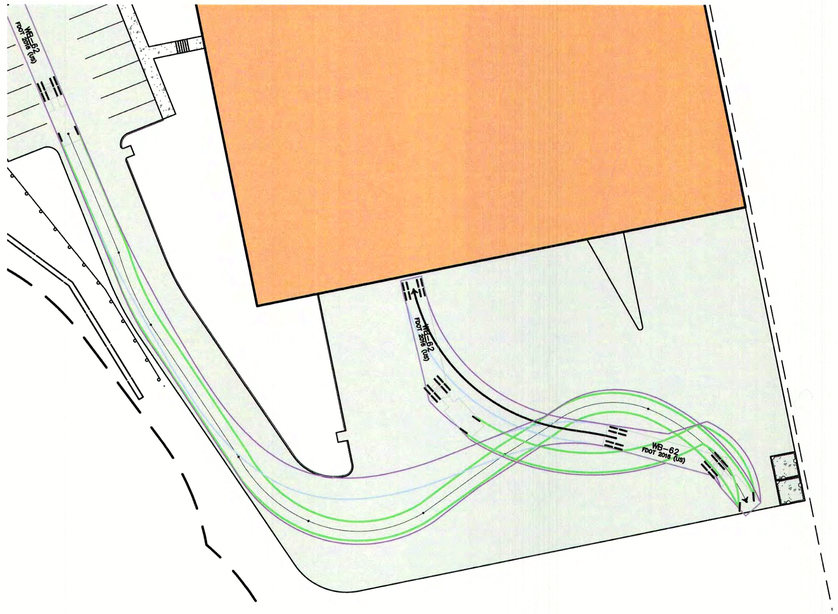
DRAWING No.

T2

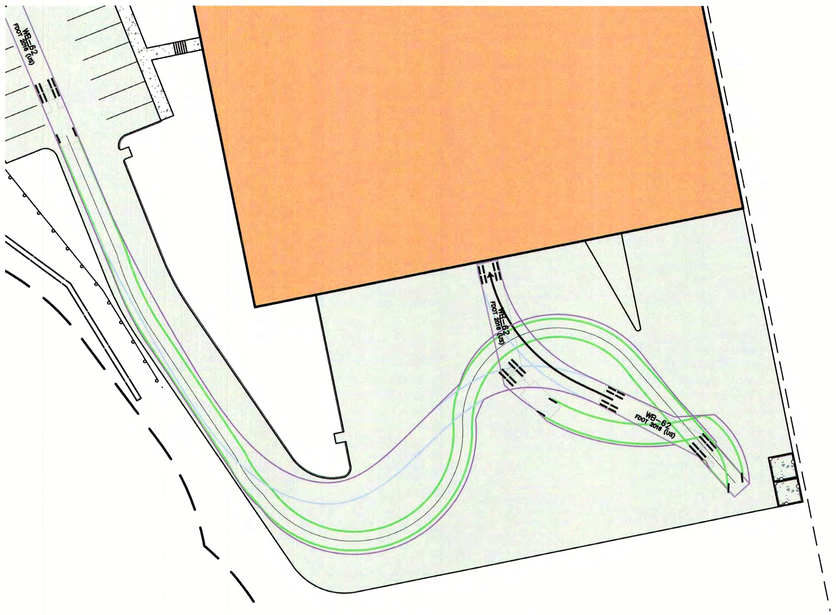
SHEET 21 OF 24
JBE PROJECT NO. 19190.2



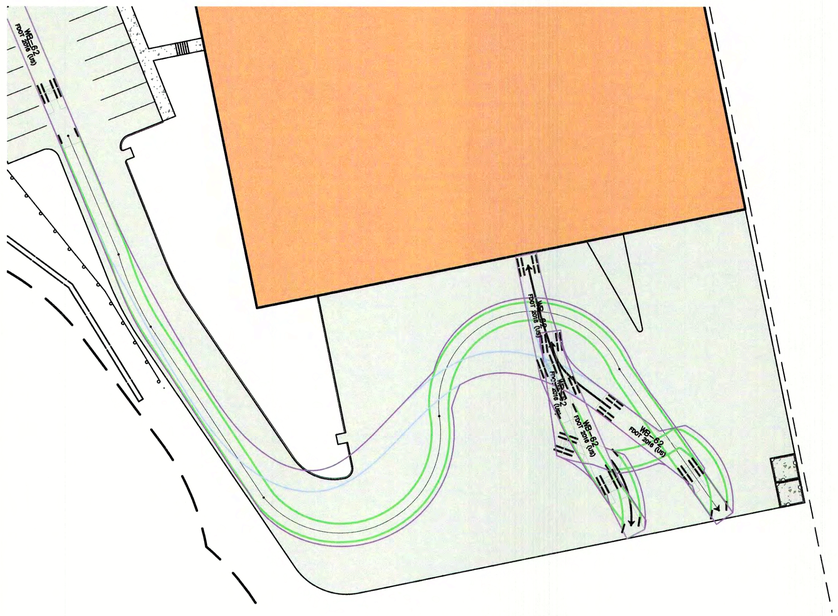
POTENTIAL LOADING AREA #1



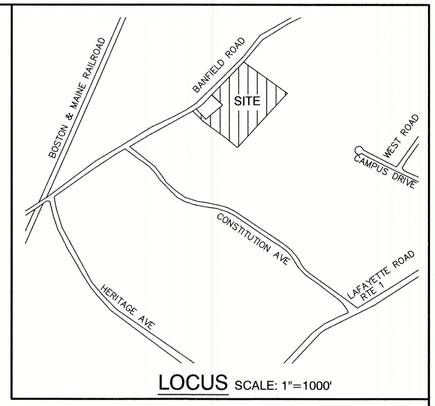
POTENTIAL LOADING AREA #2



POTENTIAL LOADING AREA #3



POTENTIAL LOADING AREA #4



LOCUS SCALE: 1"=1000'

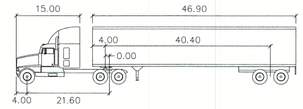
LEGEND

= FRONT TIRES

= REAR TIRES

= VEHICLE BODY

REFERENCE



WB-62

feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 31.9
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50 feet

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE
MICHAEL J. KERIVAN No. 9546 LICENSED PROFESSIONAL ENGINEER
4/21/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

Designed and Produced in NH
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

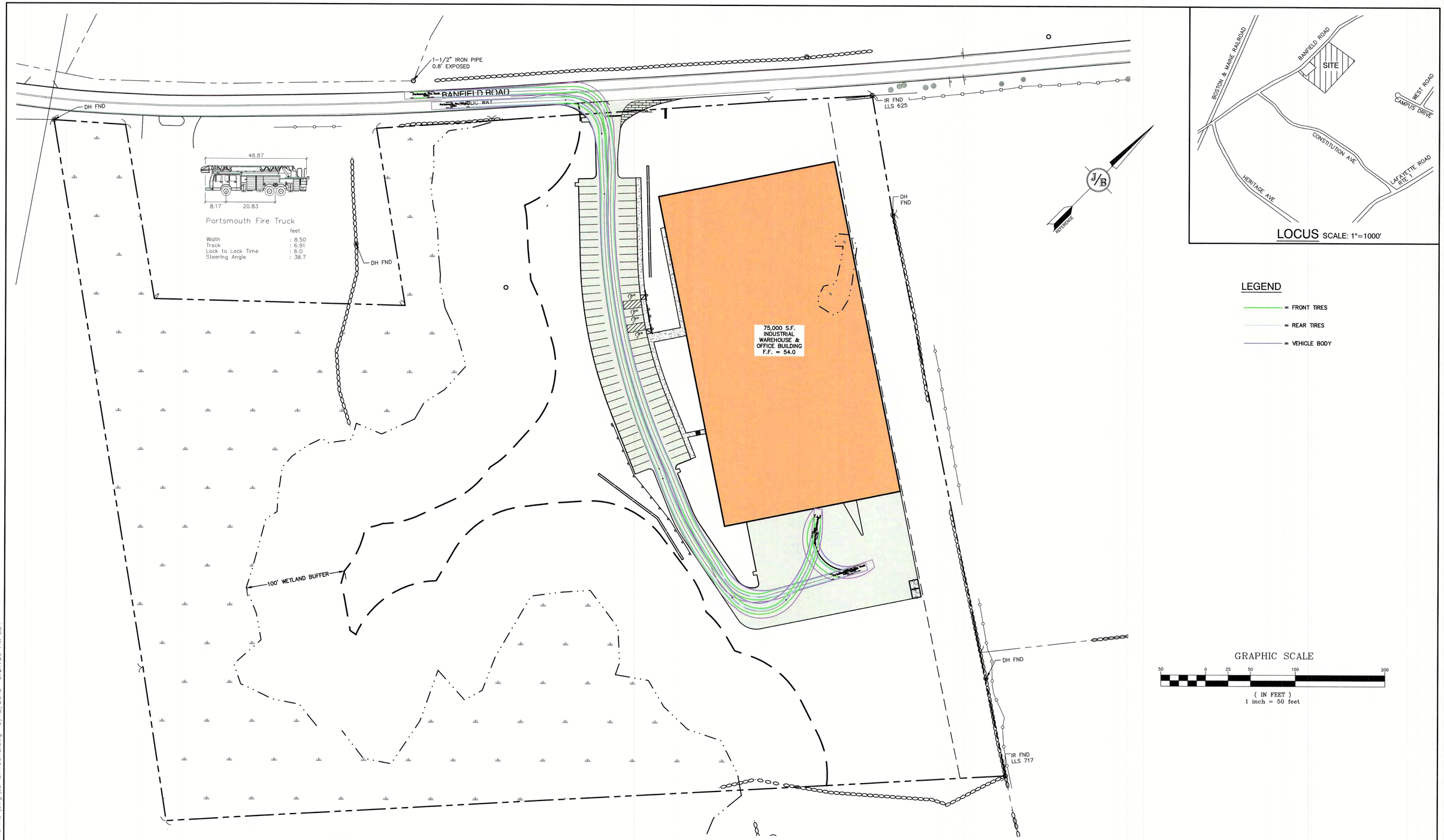
Plan Name:	REAR TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

T3

SHEET 22 OF 24

JBE PROJECT NO. 19190.2



LOCUS SCALE: 1"=1000'

LEGEND

= FRONT TIRES

= REAR TIRES

= VEHICLE BODY

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9649 LICENSED PROFESSIONAL ENGINEER – 8/12/2021

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

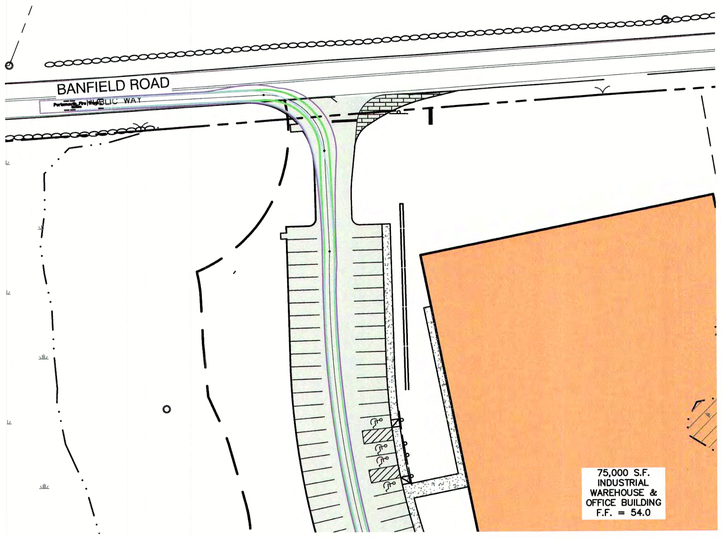
Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name:	OVERVIEW TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

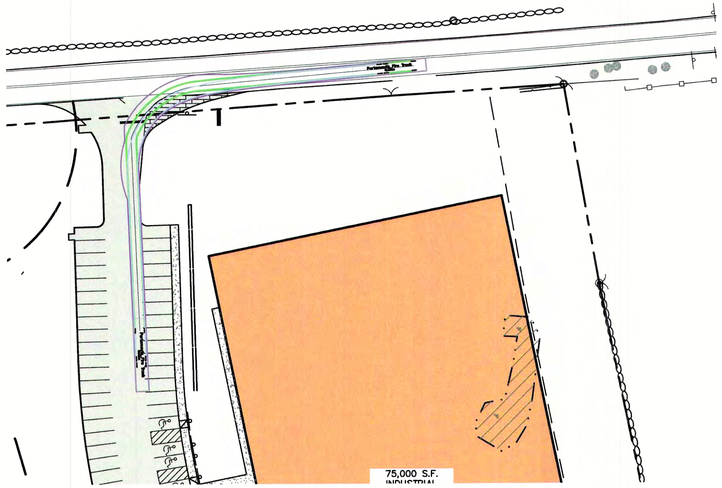
DRAWING No.

T4

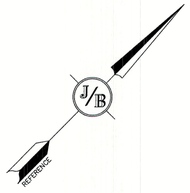
SHEET 23 OF 24
JBE PROJECT NO. 19190.2

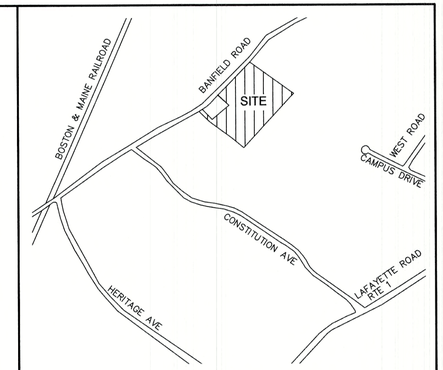


RIGHT TURN IN PLAN



RIGHT TURN OUT PLAN

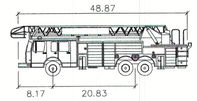




LOCUS SCALE: 1"=1000'

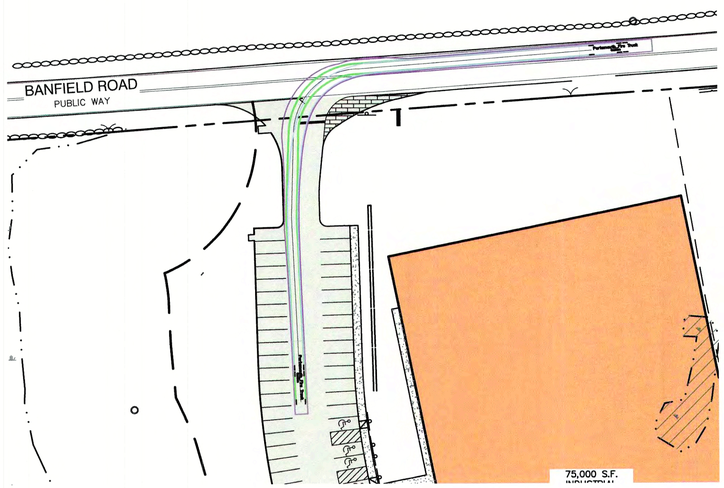
LEGEND

- = FRONT TIRES
- = REAR TIRES
- = VEHICLE BODY

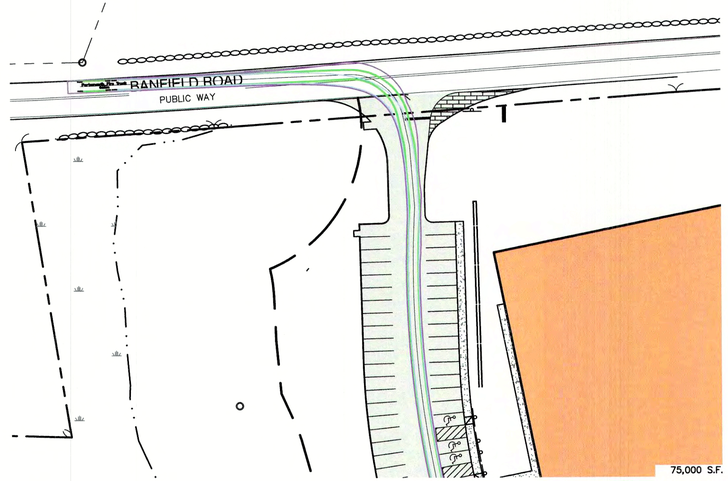


Portsmouth Fire Truck

	feet
Width	: 8.50
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



LEFT TURN IN PLAN



LEFT TURN OUT PLAN

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 feet

Design: JAC	Draft: DJM	Date: 04/21/20
Checked: JAC	Scale: AS-NOTED	Project No.: 19190.2
Drawing Name: 19190-PLAN-NEW-LAYOUT.dwg		

STATE OF NEW HAMPSHIRE – MICHAEL J. KERIVAN No. 9846 – LICENSED PROFESSIONAL ENGINEER – 12/18/18

REV.	DATE	REVISION	BY
16	8/18/21	REVISED PER CITY COMMENTS	DJM
15	7/30/21	REVISED PER AOT COMMENTS	DJM
14	7/9/21	REVISED SEPTIC PLAN FOR SUBMISSION	DJM
13	6/23/21	REVISED PER CITY COMMENTS	DJM
12	5/18/21	REVISED PLANTINGS PER NHB	DJM

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:	DETAIL TRUCK TURNING PLAN
Project:	INDUSTRIAL WAREHOUSE 375 BANFIELD ROAD, PORTSMOUTH, NH 03801
Owner of Record:	BANFIELD REALTY LLC 304 MAPLEWOOD AVENUE, PORTSMOUTH, NH 03801

DRAWING No.

T5

SHEET 24 OF 24
JBE PROJECT NO. 19190.2

F:\CADD\MASTER STANDARD\dwg\JB-LAYOUTS.dwg 3/12/2015 3:27:29 PM EDT

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: Banfield Realty, LLC Date Submitted: 12/30/2020

Phone Number: (603) 479-3666 E-mail: rob@graham-consult.com

Site Address: 375 Banfield Road Map: 266 Lot: 7

Zoning District: Industrial Lot area: 651,747 sq. ft.

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Fully executed and signed Application form. **(2.5.2.3)**		N/A
☒	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			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**		
☒	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**		N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	C1 & C2	N/A
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	C1 & C2	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	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)**	COVER SHEET	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	COVER SHEET	N/A
☒	List of reference plans. **(2.5.3.1G)**	C1	N/A
☒	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			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. 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
☒	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☒	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**		N/A
☒	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
☒	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	ALL SHEETS	N/A
☒	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	C1	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	COVER SHEET	N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	ALL SHEETS	N/A
☒	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☒	Source and date of data displayed on the plan. **(2.5.4.2D)**	C1	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	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 NOTE #15	N/A
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	C2 NOTES #16 & 17	N/A
☒	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)**	L1 NOTES # 19, 20, & 21	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
	1. Existing Conditions: (2.5.4.3A)		
☒	a. Surveyed plan of site showing existing natural and built features;	C1	
☒	b. Zoning boundaries;	C1	
☒	c. Dimensional Regulations;	C1	
☒	d. Wetland delineation, wetland function and value assessment;	C1	
☒	e. SFHA, 100-year flood elevation line and BFE data.	N/A	
	2. Buildings and Structures: (2.5.4.3B)		
☐	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;		x
☐	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;		x
☒	c. Total Floor Area;	C2	
☐	d. Number of Usable Floors;		x
☐	e. Gross floor area by floor and use.		x
	3. Access and Circulation: (2.5.4.3C)		
☒	a. Location/width of access ways within site;	C2	
☒	b. Location of curbing, right of ways, edge of pavement and sidewalks;	C2	
☒	c. Location, type, size and design of traffic signing (pavement markings);	C2	
☒	d. Names/layout of existing abutting streets;	C2	
☒	e. Driveway curb cuts for abutting prop. and public roads;	C2	
☒	f. If subdivision; Names of all roads, right of way lines and easements noted;	N/A	
☒	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	T1-T2	
	4. Parking and Loading: (2.5.4.3D)		
☒	a. Location of off street parking/loading areas, landscaped areas/buffers;	C2	
☒	b. Parking Calculations (# required and the # provided).	C2	
	5. Water Infrastructure: (2.5.4.3E)		
☒	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	C2	
☒	b. Location of wells and monitoring wells (include protective radii).	C1	
	6. Sewer Infrastructure: (2.5.4.3F)		
☒	a. Size, type and location of sanitary sewage facilities & Engineering data.	S1	
	7. Utilities: (2.5.4.3G)		
☒	a. The size, type and location of all above & below ground utilities;	C2	
☒	b. Size type and location of generator pads, transformers and other fixtures.	C2	

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	**8. Solid Waste Facilities: (2.5.4.3H)**		
☒	a. The size, type and location of solid waste facilities.	C2	
	9. Storm water Management: (2.5.4.3I)		
☒	a. The location, elevation and layout of all storm-water drainage.	C3	
	10. Outdoor Lighting: (2.5.4.3J)		
☒	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	L2	
☒	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	L2	
	12. Landscaping: (2.5.4.3K)		
☒	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	L1	
☒	**b.** Location of any irrigation system and water source.	TBD	
	13. Contours and Elevation: (2.5.4.3L)		
☒	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	C3	
	14. Open Space: (2.5.4.3M)		
☒	a. Type, extent and location of all existing/proposed open space.	C2	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	C1	
☒	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	C2	
☒	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	N/A	
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Traffic Impact Study or Trip Generation Report, as required. (*Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application*) **(3.2.1-2)**	Provided by Steven Pernaw	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	DRAINAGE REPORT	
☒	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)**	NOT LOCATED IN EITHER	
☒	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**		
☒	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**		
☒	Stormwater Management and Erosion Control Plan. (*Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application*) **(7.4.4.1)**		

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**		
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**		

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	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	
☒	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	C2 PERMITS PENDING	

Applicant's Signature: Joseph Coronati HR **Date:** 12/29/2020