FARLAND CORP.

ENGINEERING A BETTER TOMORROW

ENGINEERING | SITE WORK | LAND SURVEYING

September 18, 2018

Conservation Commission
New Bedford City Hall
133 Williams Street
New Bedford, MA 02740

RE: Response Letter
Notice of Intent – Milhench Supply Co. (SE49-0809)
127 Duchaine Blvd. – New Bedford, Massachusetts 02745

Dear Members of the Commission:

We have enclosed a response letter, a revised Site Plan set and supporting documents in response to the comment letter prepared by Nitsch Engineering dated August 29, 2018, as well as the memorandum prepared by Sarah Porter also dated August 29, 2018 in regards to their review of the Site Plans and attached documents.

We trust the attachments noted above and included herewith will provide the necessary documentation to address their comments. If you should have any questions, please feel free to contact us.

Very Truly Yours,

FARLAND CORPORATION, INC.

Christian A. Farland

Christian A. Farland , P.E., LEED AP
Principal Engineer and President

Nitsch Engineering Review Comments

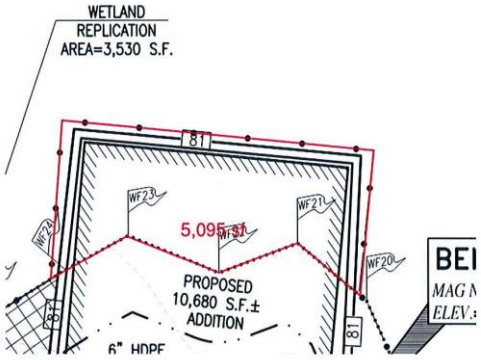
Comment #1:

The Stormwater checklist states that the project is a mix of new development and redevelopment. All of the proposed work occurs on unpaved areas, including the construction of the proposed building in the wetlands. Since there is no proposed work on unpaved areas, we interpret the project as a new development project.

The stormwater checklist has been revised to show that this is a new development project.

Comment #2:

The project includes the construction of a 10,680-square-foot building addition. Much of the building addition is proposed to be within wetlands. The limit of work within the wetlands is very close to the wall of the building. Also, since there are no contours shown in the wetland areas, additional grading may be needed to meet existing grade. The Notice of Intent describes 4,900 square feet of wetlands alteration. We are concerned that the actual amount of wetlands to be disturbed during construction will be greater than shown on the plans and described in the Notice of Intent. Nitsch Engineering scaled the amount of wetlands fill shown on the plans to the haybale line and measured the amount of fill to be 5,095 square feet (see below). We recommend that the Applicant verify that the building, and the grading adjacent to the building, can be constructed within the limit of work shown on the plans and the amount of wetlands alteration is accurate.



The area of proposed wetland alteration has been reviewed, and the total amount of disturbance is 4,912 S.F., up to and including the outer limits of the proposed erosion controls. The proposed replication areas (7,600 S.F. Total) have also been revised to provide the amount of mitigation as requested by the Conservation Commission. Please note that the foundation wall will also act as a retaining wall therefore the existing grades within the resource area will remain the same.

Comment #3:

The proposed project recharges virtually all of the runoff generated by the roof of the proposed building. There are no other stormwater management improvements proposed on site other than the building addition and the proposed infiltration basin.

Farland Corp. agrees with this statement.

Comment #4:

The top of the infiltration basin is at elevation 82. The 100-year flood elevation in the basin 81.76. We recommend the top of the basin be elevated to provide one-foot of freeboard consistent with the Stormwater Management Guidelines.

The proposed basin has been revised to allow for the adequate amount of storage while allowing for at least one-foot of freeboard.

Comment #5:

We recommend that a detail of the infiltration basin with the overflow structure be added to the plans.

This detail has been added to the plan set, as requested.

Comment #6:

We recommend that a detail of the rip-rap pad at the discharge point into the infiltration basin be added to the plans.

This detail has been added to the plan set, as requested.

Conservation Commission Memorandum Comments

Comment #1:

Landscape debris has been placed in the wetland in the vicinity of flag 6R. The debris shall be removed prior to the construction of the wetland replication area. The Conservation Agent shall inspect the wetland following removal of the landscape debris.

Farland Corp. and the client agree to this condition.

Comment #2:

Please provide a cross section through each of the wetland replication areas including the depth of over-excavation, the seasonal high water elevation, the final elevation of the wetland replication area and plantings.

This detail and requested information has been added to the plan set.

Comment #3:

Revise the Watering & Monitoring language on Sht. 6 to state that the Conservation Agent shall conduct inspections at the following times: after installation of the erosion controls and prior to excavation of the wetland replication areas; when the subgrade of the wetland replication areas have been excavated; and when the final grade and plantings are completed.

These notes have been revised, as requested.

Comment #4:

Remove Note 5 under Watering & Monitoring Notes (Sht. 6) and replace with the following: In compliance with 310 CMR 10.55(4), the wetland professional shall submit monitoring reports documenting the success of the wetland replication areas. These reports shall document the establishment of at least 75% coverage of indigenous wetland plants within the replication area. These reports shall be provided at the end of construction and once a year for two years. The Conservation Commission reserves the right to request additional seeding or planting to guarantee the success of the replication areas. Proposed shrub and tree plantings that die during this time period shall be replaced. The reports shall also document the presence of invasive species within the replication area and recommend controls methods.

This note has been revised, as requested.

Comment #5:

The applicant shall be required to control the invasive species in the wetland replication areas as recommended by the wetland professional for each of the two monitoring years and thereafter annually so that the replication areas never have greater than 25% invasive species.

Farland Corp. and the client agree to this condition.

Comment #6:

Place the following notes on the plan under the Construction Sequence & Notes (Sht 6):

a. The final elevations of the wetland replication area shall be shown on an as-built plan (0.50' contours) and stamped by a Massachusetts Professional Land Surveyor. A copy of the stamped as-built shall be provided to the New Bedford Conservation Commission for acceptance prior to the wetland plantings.
b. The seasonal high groundwater elevation in the wetland replication area shall be verified by a Certified Soil Scientist, Wetland Professional or Professional Civil Engineer prior to backfilling the replication area. The elevation of the seasonal high groundwater elevation shall be provided to the Conservation Agent along with verification that it will support the proposed wetland plantings.

These notes have been added to the plan set, as requested.

If you have any questions or require any further information please contact this office at (508) 717-3479.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

9/13/14

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☒ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☒ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☒ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

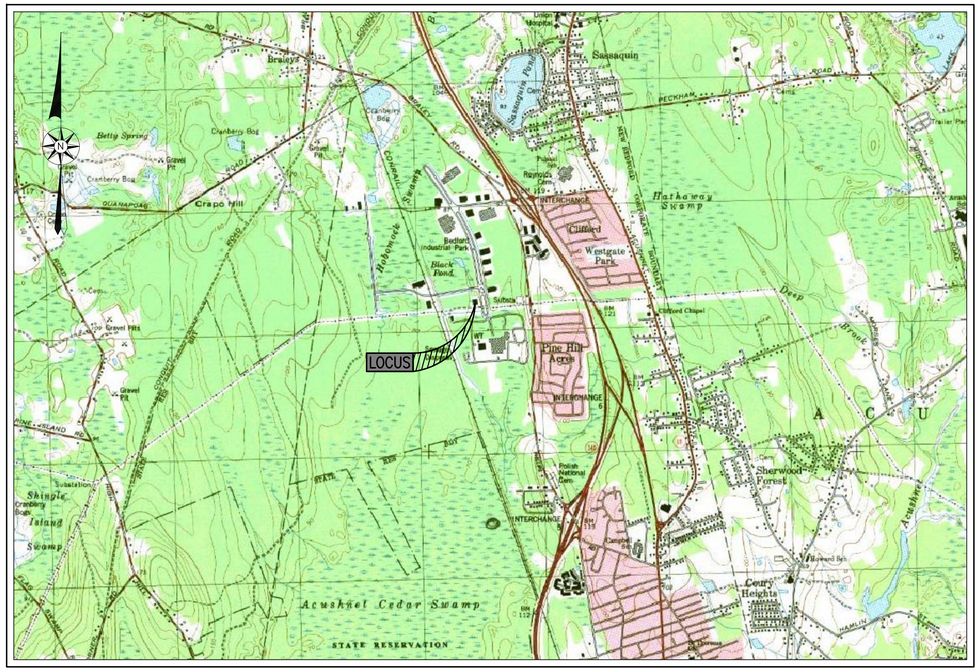
☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

SITE PLAN

Milhench
SUPPLY COMPANY, SINCE 1932

127 DUCHAINE BLVD
ASSESSORS MAP 133 LOT 21
NEW BEDFORD, MA 02745



AREA MAP

SCALE: 1"=1,000'±

– ZONING DATA –

DISTRICT: INDUSTRIAL C

DESCRIPTION	REQUIRED	EXISTING	PROVIDED
LOT SIZE	0 S.F.	217,289± S.F.	217,289± S.F.
LOT FRONTAGE	0 FT	929.79 FT	929.79 FT
FRONT SETBACK	25 FT	59.9± FT	59.9± FT
SIDE SETBACK	25 FT	50.8± FT	50.8± FT
REAR SETBACK	25 FT	207.0± FT	97.3± FT
BUILDING HEIGHT	100 FT	30± FT	30± FT
BUILDING COVERAGE	50 %	18.6± %	18.5± %
GREEN SPACE	20 %	71.7± %	66.8± %

– PARKING REQUIREMENT –

PRINCIPAL USE: WAREHOUSE

REQUIREMENT	REQUIRED	PROVIDED
ONE (1) SPACE PER 1500 SQ. FT. OF GROSS FLOOR AREA UP TO 15,000 SQ. FT. THEREAFTER, ONE (1) ADDITIONAL SPACE FOR EACH 5,000 SQ. FT. OR PORTION THEREOF IN EXCESS OF 15,000 SQ. FT., PLUS ONE (1) SPACE FOR EACH VEHICLE UTILIZED IN THE BUSINESS	16 SPACES	24 SPACES
TWO (2) LOADING SPACES FOR EACH BUILDING CONTAINING 10,000 SQ. FT. OF GROSS FLOOR AREA. THEREAFTER, ONE (1) ADDITIONAL LOADING SPACE SHALL BE REQUIRED FOR EACH ADDITIONAL 25,000 SQ. FT. OF GROSS FLOOR AREA OR FOR EACH FIFTEEN (15) FEET OF DOCK, PLATFORM OR OPENING IN THE BUILDING WHERE THE LOADING OR UNLOADING OF COMMODITIES IS INTENDED TO OCCUR, WHICHEVER IS THE GREATEST	4 SPACES	6 SPACES
WHEN 1–25 TOTAL PARKING SPACES ARE PROVIDED, 2 MUST BE ACCESSIBLE SPACES. ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, SHALL BE VAN ACCESSIBLE	2 ACCESSIBLE 1 VAN	2 ACCESSIBLE 2 VAN

– INDEX –

RECORD OWNER:
ASSESSORS MAP 133 LOT 21
ARTHUR L. MILHENCH, TRUSTEE
127 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745
DEED BOOK 4877 PAGE 287

REVISIONS

1	9/18/18	PEER REVIEW COMMENTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER

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- WARWICK, RI

DRAWN BY: SC/MJW
DESIGNED BY: SC/MJW
CHECKED BY: CAF

SITE PLAN
127 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 21
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: MILHENCH SUPPLY COMPANY
121 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

AUGUST 6, 2018
SCALE: AS NOTED
JOB NO. 15–1077
LATEST REVISION: SEPTEMBER 18, 2018

COVER SHEET

SHEET 1 OF 7

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIG SAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. TOPOGRAPHIC AND PROPERTY LINE SURVEY PERFORMED BY FARLAND CORP. IN OCTOBER OF 2015 AND DECEMBER OF 2016.
3. VERTICAL ELEVATIONS REFER TO AN ASSUMED DATUM AND HORIZONTAL LOCATIONS REFER TO AN ASSUMED DATUM.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL STANDARDS AND REGULATIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
6. ALL BENCHMARKS SHOWN ON THIS PLAN ARE TO BE CHECKED FOR CONSISTENCY BY THE CONTRACTOR. ANY DISCREPANCIES MUST BE RESOLVED BY THIS OFFICE PRIOR TO CONSTRUCTION.
7. WHERE PROPOSED PAVEMENT AND WALKS ARE TO MEET EXISTING, THE CONTRACTOR SHALL SAWCUT A NEAT LINE AND MATCH GRADE. SEAL ALL JOINTS WITH HOT BITUMINOUS ASPHALT JOINT SEALER.
8. CURBING TO BE AS INDICATED ON THE PLANS.
9. ALL EXISTING TREES, SHRUBS AND GROUND COVER WHERE NATURAL GRADE IS TO BE RETAINED SHALL BE KEPT IN THEIR EXISTING STATE UNLESS REMOVAL IS REQUIRED FOR CONSTRUCTION PURPOSES.
10. ALL AREAS DISTURBED BY CONSTRUCTION AND NOT TO BE PAVED OR OTHERWISE TREATED AS NOTED ON PLAN SHALL BE TREATED WITH 4" OF LOAM, SEEDED AND HAY MULCHED FOR EROSION CONTROL.
11. SITE IMPROVEMENTS SHALL CONFORM TO A.D.A. SPECIFICATIONS.
12. LIGHTING SHALL BE DIRECTED ON SITE AND AWAY FROM TRAFFIC INTERFERENCE.
13. TEST PITS AND/OR BORINGS WERE TAKEN FOR THE PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY. THEY DO NOT NECESSARILY SHOW THE NATURE OF ALL MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL PROTECT AND/OR CAP OFF ALL EXISTING ON-SITE UTILITY SERVICES ACCORDING TO THE LOCAL AUTHORITY'S SPECIFICATIONS. SERVICES SHALL BE CAPPED OFF WHERE SAME ENTER THE PERIMETER OF THE PROPERTY LINE.
15. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
16. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
17. THESE PLANS ARE PERMITTING PLANS AND SHALL NOT TO BE USED FOR CONSTRUCTION. A FINAL SET OF STAMPED PLANS FOR CONSTRUCTION WILL BE ISSUED AFTER RECEIVING FINAL APPROVAL FROM THE LOCAL AND/OR STATE DEPARTMENTS.

CONSTRUCTION SEQUENCING NOTES

1. CONSTRUCT TEMPORARY AND PERMANENT EROSION CONTROL FACILITIES. EROSION CONTROL FACILITIES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING.
2. TREE PROTECTION FENCE SHALL BE INSTALLED AND APPROVED BY THE OWNER REPRESENTATIVE PRIOR TO ANY EARTH MOVING.
3. ALL PERMANENT DITCHES AND SWALES ARE TO BE STABILIZED WITH VEGETATION OR RIP RAP PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR CUT, DEMOLISH AND DISPOSE OF EXISTING SITE ELEMENTS NOT TO REMAIN.
5. STORMWATER SHALL NOT BE DIRECTED TOWARDS THE INFILTRATION BASINS UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
6. GRADE AND GRAVEL ALL PAVED AREAS. ALL PROPOSED PAVED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
7. BEGIN ALL PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND MULCH AND SEED AS REQUIRED.
9. FINISH PAVING ALL HARD SURFACE AREAS.
10. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12. REMOVE TEMPORARY EROSION CONTROL MEASURES.
13. THE CONSTRUCTION SEQUENCE SHALL BE CONFINED TO THE LIMIT OF WORK AS SHOWN ON THE DRAWINGS.
14. UPON COMPLETION OF CONSTRUCTION THE OWNER SHALL AGREE TO MAINTAIN AND CLEAN ALL DRAINAGE STRUCTURES AS REQUIRED.

SITE PREPARATION NOTES

1. WITHIN THE LIMIT OF WORK LINE AS NOTED ON THE SITE PLANS, REMOVE AND DISCARD ALL CONCRETE PAVEMENT, BITUMINOUS CONCRETE PAVEMENT, BRICK PAVEMENT, TOP SOIL, MULCH, TRASH, DEAD TREES AND STUMPS, SHRUBBERY, CHAIN LINK FENCE POSTS, RAILS, FABRIC, GATES, FOOTINGS AND ALL APPURTENANCES, BOLLARDS, POSTS, CONCRETE FOOTINGS AND FOUNDATIONS, WALLS AND CURBS UNLESS OTHERWISE NOTED.
2. THE OWNER'S REPRESENTATIVE SHALL BE CONSULTED AND WILL REVIEW THE WORK ON SITE WITH THE CONTRACTOR BEFORE ANY WORK SHALL COMMENCE.
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING CONDITIONS TO REMAIN THAT ARE DUE TO CONTRACTOR OPERATIONS.
5. ALL ITEMS TO BE REMOVED THAT ARE NOT STOCKPILED FOR LATER REUSE ON THE PROJECT OR DELIVERED TO THE OWNER SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS EFFORTS OF THE DEMOLITION WITH ALL TRADES.
7. THE CONTRACTOR SHALL COORDINATE ALL ADJUSTMENT OR ABANDONMENT OF UTILITIES WITH THE RESPECTIVE UTILITY COMPANY.
8. THE CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISH GRADES AS NECESSARY ALL UTILITY AND SITE STRUCTURES SUCH AS LIGHT POLES, SIGN POLES, MANHOLES, CATCH BASINS, HAND HOLES, WATER AND GAS GATES, HYDRANTS, ETC., FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED OR DIRECTED BY THE OWNER'S REPRESENTATIVE.

UTILITY AND GRADING NOTES

1. ALL ON-SITE STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE PIPE (HDPE) OR RCP, UNLESS NOTED OTHERWISE.
2. HDPE PIPE SHALL CONFORM WITH AASHTO DESIGNATIONS M294 AND M252, SHALL BE MANUFACTURED WITH HIGH DENSITY POLYETHYLENE PLASTIC AND SHALL BE ADS N-12 PIPE AS MANUFACTURED BY ADVANCE DRAINAGE SYSTEM, INC. OR HANCOR HI Q PIPE AS MANUFACTURED BY HANCOR, INC. OR APPROVED EQUAL UNLESS OTHERWISE NOTED OR DETAILED.
3. A MINIMUM OF 18" VERTICAL CLEARANCE SHALL BE MAINTAINED WHERE WATER SERVICES CROSS STORM DRAIN LINES.
4. BEFORE THE DEVELOPMENT SITE IS GRADED, THE AREA OF THE DRAINAGE BASINS SHOULD BE FENCED OFF TO PREVENT HEAVY EQUIPMENT FROM COMPACTING THE UNDERLYING SOIL.
5. WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ALLOWED.
6. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS AND STRUCTURES.
7. MAXIMUM SLOPE IN DISTURBED AREAS SHALL NOT EXCEED 3:1 , UNLESS OTHERWISE NOTED.
8. CONTRACTOR SHALL VERIFY EXISTING GRADES AND NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
9. CONTRACTOR SHALL ADJUST UTILITY ELEMENT MEANT TO BE FLUSH WITH GRADE THAT IS AFFECTED BY SITE WORK OR GRADE CHANGES, WHETHER SPECIFICALLY NOTED ON PLANS OR NOT.
10. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
11. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ALL GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
12. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY AND APPROVED BY THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE AND ELECTRICAL). FINAL DESIGN AND LOCATIONS AT THE BUILDING WILL BE PROVIDED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE UTILITY CONNECTIONS WITH THE RESPECTIVE COMPANIES PRIOR TO ANY UTILITY CONSTRUCTION.

LAYOUT AND MATERIAL NOTES

1. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
2. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
3. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND ALL DETAILS CONTIGUOUS TO THE BUILDING INCLUDING SIDEWALKS, RAMPS, UTILITY ENTRANCE LOCATIONS, WALL PACKS, CONCRETE DOOR PADS, ROOF DRAINS, ETC.
4. ACCESSIBLE CURB RAMPS SHALL BE PER THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AND THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES, WHICHER IS MORE STRINGENT.
5. THE FOLLOWING LAYOUT CRITERIA SHALL CONTROL UNLESS OTHERWISE NOTED ON THE PLAN:
   ALL DIMENSIONS ARE TO OUTSIDE FACE OF BUILDING.
   ALL DIMENSIONS ARE TO FACE OF CURB AT GUTTER LINE.
   ALL DIMENSIONS ARE TO CENTER OF PAVEMENT MARKINGS.
   ALL TIES TO PROPERTY LINES ARE PERPENDICULAR TO THE PROPERTY LINE UNLESS OTHERWISE NOTED.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONSERVATION COMMISSION SHALL BE NOTIFIED, AT LEAST 72 HOURS PRIOR TO ANY LAND DISTURBANCE.
2. A COPY OF THE SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE MAINTAINED ON THE PROJECT SITE DURING CONSTRUCTION.
3. SOIL EROSION AND SEDIMENT CONTROL PRACTICES IN THE PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
4. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO ANY DEMOLITION GRADING OPERATIONS AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES.
5. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND/OR THE AREA IS STABILIZED.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS AND AFTER EVERY STORM EVENT.
7. THE MAINTENANCE OF SOIL EROSION AND SEDIMENT CONTROL MEASURES AND FACILITIES DURING AND IMMEDIATELY AFTER CONSTRUCTION RESTS WITH THE GENERAL CONTRACTOR. UPON ACCEPTANCE OF THE PROJECT, THE OWNER SHALL BECOME RESPONSIBLE FOR MAINTENANCE OF ANY REMAINING MEASURES AND FACILITIES.
8. OFF SITE SEDIMENT DISTURBANCE MAY REQUIRE ADDITIONAL CONTROL MEASURES TO BE DETERMINED BY THE ENGINEER.
9. THE CONSERVATION COMMISSION AND/OR ENGINEER MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DIRECTED BY THE DISTRICT INSPECTOR.
10. ADJOINING PROPERTIES SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS AT ALL TIMES.
11. THE CONTRACTOR SHALL UTILIZE ALL METHODS NECESSARY TO PREVENT BLOWING AND MOVEMENT OF DUST FROM THE EXPOSED SOIL SURFACES.
12. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
13. A CRUSHED STONE TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ENTRANCE EXISTS. SEE LOCATION DETAIL ON PLAN.
14. ALL CATCH BASIN INLETS SHALL BE PROTECTED DURING CONSTRUCTION AS DETAILED ON THE PLAN, IF APPLICABLE.
15. ALL STORM DRAINAGE OUTLETS SHALL BE PROTECTED AS REQUIRED HEREON BEFORE DISCHARGE POINTS BECOME OPERATIONAL.
16. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORMWATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
17. LAND AREAS EXPOSED AT ANY ONE TIME AND THE LENGTH OF EXPOSURE SHALL BE KEPT TO A PRACTICAL MINIMUM. THEY SHALL BE LEFT IN A NEAT AND FINISHED APPEARANCE AND PROTECTED FROM EROSION.
18. ANY DISTURBED AREA THAT WILL BE LEFT EXPOSED FOR MORE THAN SIXTY (60) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND FERTILIZATION. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTRIBUTED AREAS SHALL BE MULCHED.
19. ALL CRITICAL AREAS SUBJECT TO EROSION SHALL RECEIVE A TEMPORARY SEEDING AND BE MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS IMMEDIATELY FOLLOWING ROUGH GRADING.
20. IMMEDIATELY AFTER COMPLETION OF STRIPPING AND STOCKPILING OF TOPSOIL, SEED THE STOCKPILE WITH ANNUAL RYE GRASS. STABILIZE TOPSOIL STOCKPILES WITH STRAW MULCH FOR PROTECTION IF THE SEASON DOES NOT PERMIT THE APPLICATION AND ESTABLISHMENT OF TEMPORARY SEEDING.
21. SOIL STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY (50) FEET OF WETLANDS, THE FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITIES. THE BASE OF ALL STOCKPILES SHALL BE PROTECTED BY A HAY BALE BARRIER OR SEDIMENT FENCE. LOCATIONS ARE DELINEATED ON THE PLAN.
22. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE DISTRICT.
23. ALL AREAS NOT STABILIZED BY CONSTRUCTION, SODDING OR LANDSCAPING SHALL BE SEEDED AND STABILIZED IN ACCORDANCE WITH THE SEEDING AND MULCHING SPECIFICATIONS.
24. MULCHING IS REQUIRED ON ALL SEEDED AREAS TO INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED TO PROMOTE EARLIER VEGETATIVE COVER.
25. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTRATION DEVICE. THE SEDIMENT FILTER MUST BE CAPABLE OF FILTERING THE SEDIMENT AND BE PLACED SO AS NOT TO CAUSE EROSION OF THE DOWNSTREAM AREA.

GENERAL PLANTING NOTES

1. ALL PLANT MATERIAL SHALL CONFORM TO THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN OR THE PLANT MATERIAL WILL BE UNACCEPTABLE. ALL PLANT MATERIAL SHALL BE TRUE TO SPECIES, VARIETY, SIZE AND BE CERTIFIED DISEASE AND INSECT FREE. THE OWNER AND/OR THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO APPROVE ALL PLANT MATERIAL ON SITE PRIOR TO INSTALLATION.
2. ALL PLANT MATERIAL SHALL BE PROPERLY GUYED, STAKED, WRAPPED, AND PLANTED IN CONFORMANCE WITH THE TYPICAL PLANTING DETAILS. GUY WIRES SHALL BE ATTACHED TO THE TREE AT A HEIGHT OF TWO-THIRDS THE HEIGHT OF THE TREE AND SHOULD BE LOCATED AT POINTS SO AS NOT TO SPLIT THE TRUNK OF MULTI-STEMMED TREES. PROVIDE THREE STAKES PER TREE UNLESS NOTED OTHERWISE INSTALL ALL PLANT MATERIAL ON UNDISTURBED GRADE. PROVIDE BURLAP WRAPPING WITH A 50% OVERLAP. CUT AND REMOVE BURLAP FROM TOP ONE-THIRD OF THE ROOT BALL.
3. PROVIDE PLANTING PITS AS INDICATED ON PLANTING DETAILS. BACKFILL PLANTING PITS WITH ONE PART EACH OF TOP SOIL, PEAT MOSS, AND PARENT MATERIAL. IF WET SOIL CONDITIONS EXIST THEN PLANTING PITS SHALL BE EXCAVATED AN ADDITIONAL 12" AND FILLED WITH SAND.
4. NEWLY INSTALLED PLANT MATERIAL SHALL BE WATERED AT THE TIME OF INSTALLATION AND SHALL BE SUBSEQUENTLY FLOODED TWICE WITHIN TWENTY-FOUR (24) HOURS OF PLANTING. REGULAR WATERING SHALL BE PROVIDED TO ENSURE THE ESTABLISHMENT, GROWTH AND SURVIVAL OF ALL PLANTS.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE. ANY PLANT MATERIAL THAT DIES WITHIN THAT TIME PERIOD SHALL BE REMOVED, INCLUDING THE STUMP, AND REPLACED WITH MATERIAL OF SIMILAR SIZE AND SPECIES AT THE EXPENSE OF THE DEVELOPER. THE REPLACED PLANT MATERIAL SHALL BE GUARANTEED FOR ONE YEAR AFTER THE REPLACEMENT DATE.
6. THE LANDSCAPE CONTRACTOR SHALL PROVIDE A MINIMUM 4" LAYER OF TOPSOIL IN ALL LAWN AREAS AND A MINIMUM OF 6" OF TOPSOIL IN ALL PLANTING AREAS. A FULL SOIL ANALYSIS SHALL BE CONDUCTED AFTER CONSTRUCTION AND PRIOR TO PLANTING TO DETERMINE THE EXTENT OF SOIL AMENDMENT REQUIRED.
7. ALL DISTURBED LAWN AREAS SHALL BE STABILIZED WITH EITHER SOD OR SEED AS INDICATED ON THE LANDSCAPE PLANS. SEED SHALL CONSIST OF THE MIXTURE LISTED IN THE GENERAL SEEDING NOTES. ALL DISTURBED LAWN AREAS SHALL BE TOP SOILED, LIMED, FERTILIZED, AND FINE GRADED PRIOR TO LAWN INSTALLATION.
8. ALL PLANTING BEDS SHALL RECEIVE 3" OF SHREDDED PINE, CEDAR OR HEMLOCK BARK.
9. ALL SHRUB MASSES SHALL BE PLANTED IN CONTINUOUS MULCHED BEDS.
10. ALL TREES ARE TO BE GUYED, 3 EACH, UNLESS OTHERWISE NOTED ON PLAN.
11. ALL DECIDUOUS TREES ARE TO BE WRAPPED, WITH TREE WRAP, UP TO THE FIRST BRANCHING AND SECURED.
12. THE LANDSCAPE CONTRACTOR IS TO PERFORM ALL CONTRACTED WORK IN A REASONABLE PERIOD OF CONTINUOUS WORK.
13. THE LANDSCAPE CONTRACTOR IS TO MAINTAIN PLANT MATERIAL WHILE THE PROJECT IS UNDERWAY AND FOR A PERIOD OF TWO WEEKS AFTER THE COMPLETION OF THE PROJECT UNLESS OTHERWISE SPECIFIED.
14. THE CONTRACTOR IS TO CLEAN UP AND REMOVE ANY DEBRIS FROM THE SITE, CAUSED BY THE LANDSCAPE CONTRACTOR.

LEGEND

EXISTING		PROPOSED
	CONTOUR LINE	101
101	SPOT GRADE	+101.1
X X	CHAIN LINK FENCE	
W W	STAKED STRAW WATTLE	
	WATER LINE	
	FIRE HYDRANT	
	POST INDICATOR VALVE	
	WATER GATE	
	WATER METER PIT	
	IRRIGATION HAND HOLE	
	WELL	
S S	SEWER LINE	
	SEWER MANHOLE	
G G	GAS LINE	
	GAS METER	
	GAS GATE	
D D	DRAIN LINE	
	DRAIN MANHOLE	
	CATCH BASIN	
OHW OHW	OVERHEAD WIRES	
ETC ETC	ELECTRIC, TELEPHONE & CABLE	
	UTILITY POLE	
	GUY WIRE	

REVISIONS

1	9/18/18	PEER REVIEW COMMENTS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

FARLAND CORP.
www.FarlandCorp.com
401 COUNTY STREET
NEW BEDFORD, MA 02740
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OFFICES IN:
•TAUNTON
•MARLBOROUGH
•WARWICK, RI

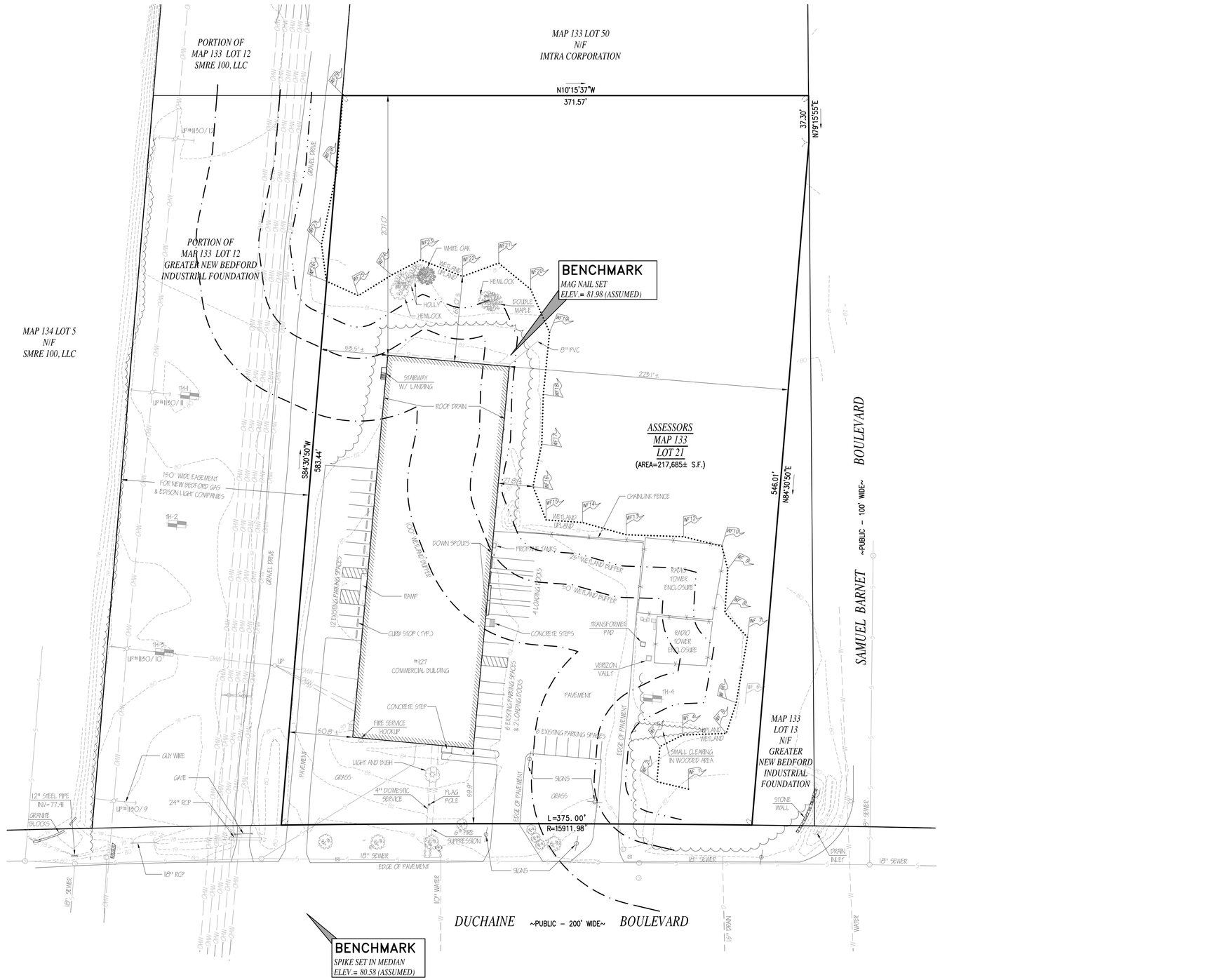
DRAWN BY: SC/MJW
DESIGNED BY: SC/MJW
CHECKED BY: CAF

SITE PLAN

127 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 21
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: MILHENCH SUPPLY COMPANY
121 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

AUGUST 6, 2018
SCALE: AS NOTED
JOB NO. 15-1077
LATEST REVISION: SEPTEMBER 18, 2018



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PREPARED FOR: MILHENCH SUPPLY COMPANY
121 DUCHAINE BOULEVARD
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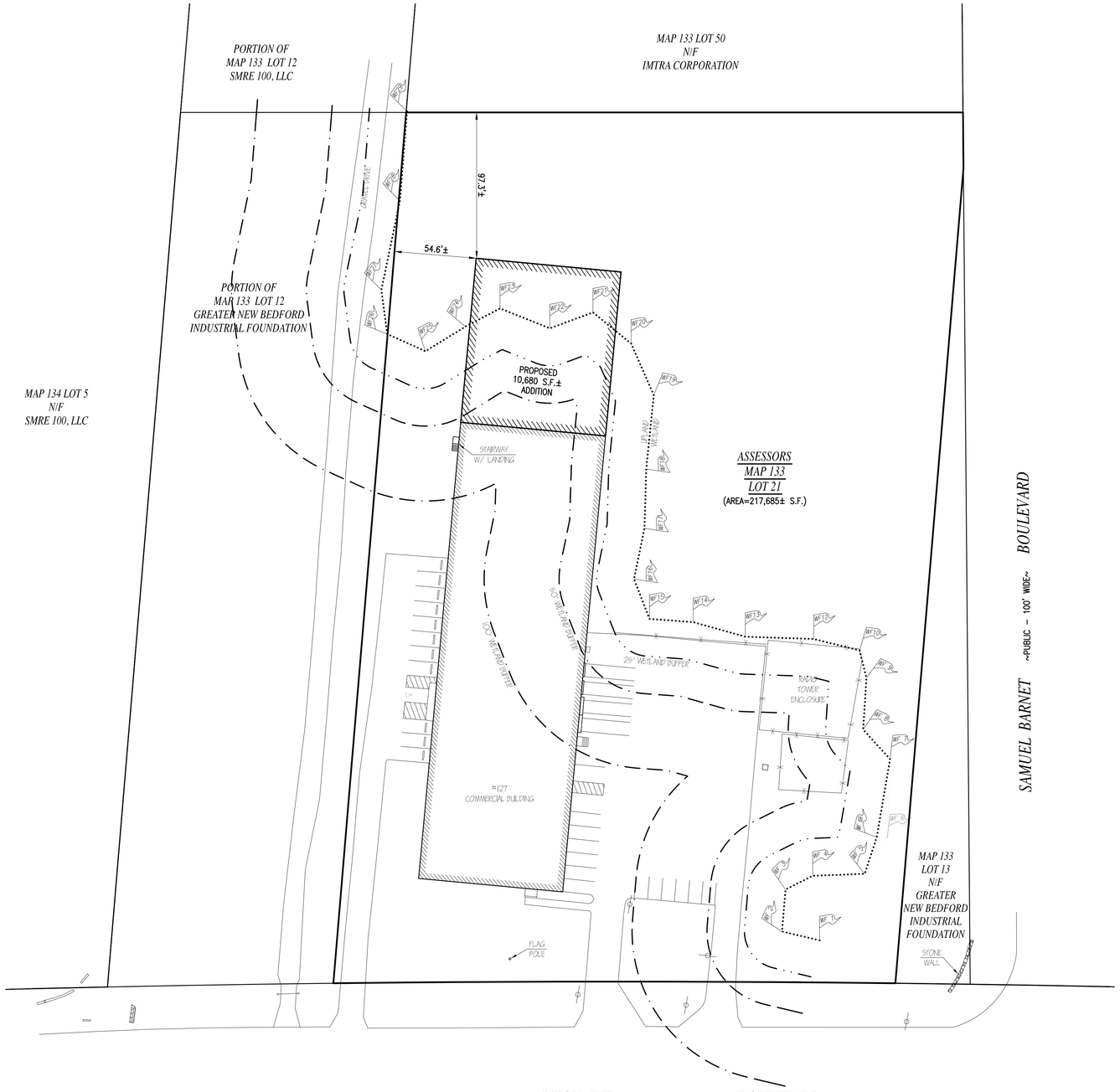
AUGUST 6, 2018
SCALE: 1"=40'
JOB NO. 15-1077
LATEST REVISION:
SEPTEMBER 18, 2018

EXISTING CONDITIONS

PL BK 116 PG 110



0' 40' 80' 120'
1" = 40'

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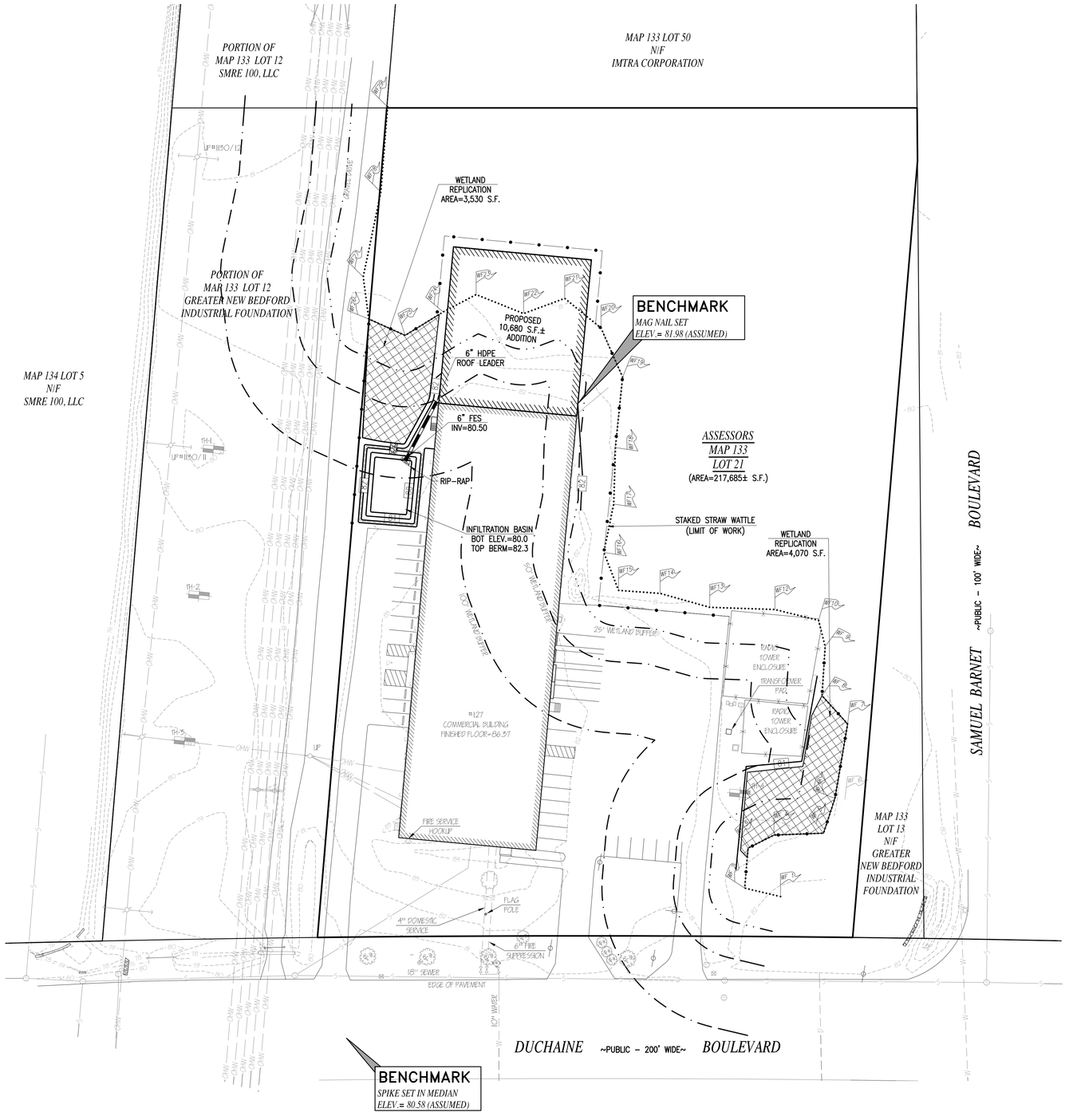
SEPTEMBER 18, 2018

LAYOUT

SHEET 4 OF 7

PL BK 116 PG 110



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GRADING & UTILITIES

REPLICAITON PLANTING TABLE

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY
TREES				
	ACER RUBRUM	RED MAPLE	3 INCH CALIPER	2
SHRUBS				
	CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	36 INCH	24
	VACCINUIM CONYMBOSIUM	HIGHBUSH BLUEBERRY	36 INCH	27
GROUND				
	ONOCLEA SENSIBILIS	SENSITIVE FERN	1 GALLON	15
	OSMUNDA CINNAMOMEA	CINNAMON FERN	1 GALLON	18

WATERING & MONITORING NOTES:

1. DEPENDING UPON THE WEATHER, THE REPLICATION AREA MAY NEED DAILY WATERING FOR APPROXIMATELY ONE MONTH, OR UNTIL THE PLANTINGS HAVE TAKEN ROOT AND GROWTH IS OBSERVED. IT IS RECOMMENDED THAT PLANTING BE PERFORMED IN APRIL/MAY OR SEPTEMBER/OCTOBER, TO AVOID PLANT MORTALITY DURING SUMMER MONTHS. PLANTINGS SHALL BE WATERED AS NECESSARY TO ENSURE SURVIVAL FOR A MINIMUM TWO-YEAR PERIOD.
2. THE CITY OF NEW BEDFORD CONSERVATION COMMISSION SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF THE COMMENCEMENT OF WETLAND REPLICATION CONSTRUCTION.
3. THE CONSERVATION AGENT OF THE NEW BEDFORD SHALL BE NOTIFIED SO AS TO CONDUCT INSPECTIONS AT THE FOLLOWING MILESTONES OF CONSTRUCTION OF THE REPLICATION AREA: AFTER THE INSTALLATION OF THE EROSION CONTROLS, PRIOR TO THE EXCAVATION OF THE REPLICATION AREAS, AFTER THE SUBGRADE OF THE REPLICATION AREA HAS BEEN EXCAVATED AND AFTER THE FINAL GRADING AND PLANTINGS HAVE BEEN DONE.
4. A WETLAND SCIENTIST OR OTHER QUALIFIED PROFESSIONAL SHALL CONDUCT A PRE-CONSTRUCITON MEETING WITH THE CONTRACTOR, AND SHALL INSPECT THE CONSTRUCTION OF THE REPLICATION AREA UPON EXCAVATION TO THE SUBGRADE, WHEN WETSOIL MIX IS APPLIED AT FINISH GRADE, AND ONCE PLANTING HAVE BEEN INSTALLED.
5. IN COMPLIANCE WITH 310 CMR 10.55(4), THE WETLAND PROFESSIONAL SHALL SUBMIT MONITORING REPORTS DOCUMENTING THE ESTABLISHMENT OF AT LEAST 75% COVERAGE OF INDIGENOUS WETLAND PLANTS WITHIN THE REPLICATION AREA. THESE REPORTS SHALL BE PROVIDED AT THE END OF CONSTRUCTION AND ONE A YEAR FOR TWO YEARS. THE CONSERVATION COMMISSION RESERVES THE RIGHT TO REQUEST ADDITIONAL SEEDING OR PLANTING TO GUARANTEE THE SUCCESS OF THE REPLICATION AREAS. PROPOSED SHRUB AND TREE PLANTINGS THAT DIE DURING THIS TIME PERIOD SHALL BE REPLACED. THE REPORTS SHALL ALSO DOCUMENT THE PRESENCE OF INVASIVE SPECIES WITHIN THE REPLICATION AREA AND RECOMMEND CONTROL METHODS.
6. AFTER THE SECOND GROWING SEASON, A REPORT SHALL BE SUBMITTED TO THE CONSERVATION COMMISSION, STATING THE SUCCESS OF THE WETLAND REPLICATION AREA. IN ACCORDANCE WITH THE PERFORMANCE STANDARDS FOUND IN 310 CMR 10.55(4)(B)(6), IF THE 75% AERIAL COVERAGE CRITERIA IS NOT ACHIEVED, A MITIGATION PLAN SHALL BE SUBMITTED TO THE CONSERVATION COMMISSION AND THE MONITORING PERIOD SHALL BE EXTENDED.

SURROUNDING UPLAND PLANT SPECIES

Tree layer
Red maple (Acer rubrum)
White pine (Pinus strobus)
Gray birch (Betula populifolia)
White oak (Quercus alba)
Eastern hemlock (Tsuga canadensis)

Shrub layer
White pine (Pinus strobus)
Gray birch (Betula populifolia)
Black gum (Nyssa sylvatica)
Sweet pepperbush (Clethra alnifolia)
American holly (Ilex opaca)
American beech (Fagus grandifolia)

Climbing woody vines
Round-leaved greenbrier (Smilax rotundifolia)

Herbaceous
Broom sedge (Andropogon virginicus)
Little bluestem (Schizachyrium scoparium)
Unspecified sedge species (Carex sp.)
Trailing raspberry (Rubus sp.)

SURROUNDING WETLAND PLANT SPECIES

Tree layer
Gray birch (Betula populifolia)

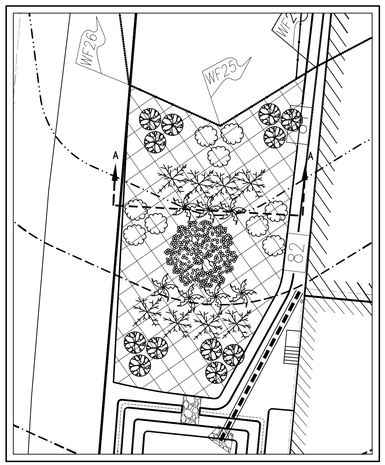
Shrub layer
Red maple (Acer rubrum)
Sweet pepperbush (Clethra alnifolia)
Multiflora rose (Rosa multiflora)
Highbush blueberry (Vaccinium corymbosum)
Maleberry (Lyonia ligustrina)
Arrowwood (Viburnum recognitum)

Climbing woody vines
Oriental bittersweet (Celastrus orbiculatus)

Herbaceous layer
Sensitive fern (Onoclea sensibilis)
Cinnamon fern (Osmunda cinnamomea)
Soft rush (Juncus effusus)
Reed canary-grass (Phalaris arundinacea)
Pennsylvania smartweed (Polygonum pensylvanica)
Arrow-leaved tearthumb (Polygonum cuspidatum)

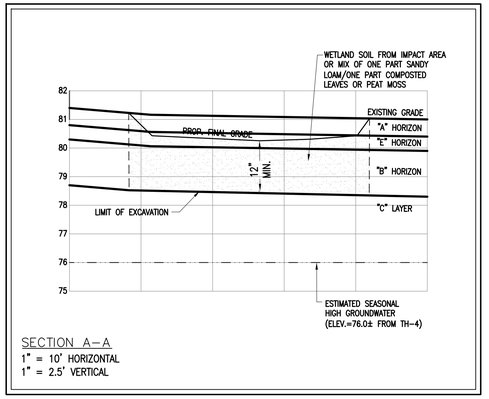
CONSTRUCTION SEQUENCE & NOTES

1. THE WETLAND REPLICATION AREA SHALL BE CONSTRUCTED PRIOR TO ANY EARTH DISTURBANCE REQUIRED FOR THE PROPOSED PROJECT.
2. WETLAND REPLICATION SHALL BE PERFORMED UNDER THE DIRECTION AND GUIDANCE OF A QUALIFIED BOTANIST. THE RESUME OF THE WETLAND PROFESSIONAL WHO SHALL OVERSEE THE CONSTRUCTION OF THE WETLAND REPLICATION AREA IS TO BE SUBMITTED TO THE CONSERVAITON COMMISSION OR ITS DESIGNATED AGENT FOR ACCEPTANCE TWO WEEKS PRIOR TO THE INITIATION OF REPLICATION ACTIVITIES.
3. PRIOR TO THE COMMENCEMENT OF WORK, THE LIMITS OF THE EXISTING WETLAND BOUNDARY SHALL BE STAKED OR FLAGGED AT 15' INTERVALS IN THE VICINITY OF THE REPLICATION AREAS, AND AN EROSION CONTROL BARRIER (STRAW WATTLE AND/OR SILT FENCE) SHALL BE INSTALLED ALONG THE PERIMETER OF THE REPLICATION AREA, AS SHOWN ON THE SITE PLAN, TO SERVE AS A LIMIT OF WORK, SUCH THAT NO ACTIVITIES ARE TO OCCUR ON THE WETLAND SIDE OF THE BARRIER.
4. ACCESS TO THE WETLAND REPLICATION AREA SHALL OCCUR FROM UPLAND AREAS AND SHALL NOT RESULT IN IMPACT TO EXISTING WETLANDS..
5. CONSTRUCTION SHALL COMMENCE WITH REMOVAL OF EXISTING VEGETATION WITHIN THE REPLICATION AREA. EXISTING MATURE UPLAND TREES THAT ARE FACULTATIVE OR WETTER MAY BE LEFT ON HUMMOCKS WITHIN THE REPLICATION AREA, AS THEY MAY PROVIDE SHADING TO THE PLANTINGS INSTALLED AROUND THESE HUMMOCKS. EXISTING BOULDERS WITHIN THE REPLICATION AREA ARE ALSO TO REMAIN. BOULDERS SHALL NOT COMPRISE MORE THAN 15% OF THE COVERAGE OF THE REPLICATION AREA.
6. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR REUSE ELSEWHERE ON-SITE. EXCAVATION SHALL EXTEND TO APPROXIMATELY 12" BELOW THE PROPOSED FINAL GRADE ELEVATION. IF DENSE SOILS ARE ENCOUNTERED, IT IS RECOMMENDED TO EXCAVATE AN ADDITIONAL 6" TO ACCOMMODATE WETLAND SOIL MIX.
7. THE EXCAVATED REPLICATION AREA FLOOR SHALL BE GRADED TO BLEND WITH UNDISTURBED WETLAND AREAS AND REMAINING HUMMOCKS WHERE EXISTING TREES ARE TO REMAIN. THE REPLICATION AREA SHALL NOT HAVE FINISHED TOPOGRAPHY WHICH RESULTS IN COMPLETELY FLAT TOPOGRAPHY. THE FINISH GRADING SHOULD RESULT IN A SHALLOW PIT AND MOUND TOPOGRAPHY THROUGHOUT THE REPLICATION AREA.
8. A WET SOIL MIX SHALL BE COMPRISED OF THE "O" AND "A" HORIZON SOILS STRIPPED FROM THE WETLAND DISTURBANCE AREA. SHOULD THESE SOILS BE OF INSUFFICIENT QUANTITY OR QUALITY, A CREATED BLEND CONSISTING OF ONE PART SANDY LOAM AND ONE PART COMPOSTED LEAVES OR PEAT MOSS SHALL BE USED.
9. TREE, SHRUB, AND GROUND COVER PLANTINGS SHALL BE INSTALLED PER PLAN IMMEDIATELY FOLLOWING THE EXCAVATION AND PLACEMENT OF ORGANIC SOILS WITHIN THE REPLICATION AREA. DUE TO HIGH PLANT MORTALITY, PLANTING SHOULD BE AVOIDED DURING THE SUMMER MONTHS. LOCATION OF PLANTS MAY BE ADJUSTED IN THE FIELD TO ACCOMMODATE EXISTING TREES AND/OR BOULDERS WHICH ARE TO REMAIN. TREES ARE TO BE PLANTED AT NO MORE THAN 25 FEET ON-CENTER. SHRUBS PLANTED AT 5-6 FEET ON CENTER, AND FERNS AT 3-5 FEET ON CENTER. ALL WETLAND PLANTING IS TO BE PERFORMED BY HAND.
10. AFTER PLANTING IS COMPLETED, THE REPLICATION AREA SHALL BE HAND RAKED TO ELIMINATE ANY DEPRESSIONS GREATER THAN FOUR INCHES IN DEPTH WHICH MAY HAVE BEEN CREATED DURING DIGGING, AND TO ELIMINATE COMPACTION AS MUCH AS POSSIBLE.
11. THE WETLAND FLOOR (UP TO ELEVATION 81.0 +/-) SHALL BE SEEDED WITH COMMERCIALLY AVAILABLE SEED MIX (NEW ENGLAND WETLAND PLANTS, INC. "NEW ENGLAND WETMIX", OR EQUAL), APPLIED AT A RATE OF 1 LB PER 2,500 S.F.
12. THE FINAL ELEVATIONS OF THE WETLAND REPLICATION AREA SHALL BE SHOWN ON AN AS-BUILT PLAN (0.50' CONTOURS) AND STAMPED BY A MASSACHUSETTS PROFESSIONAL LAND SURVEYOR. A COPY OF THE STAMPED AS-BUILT PLAN SHALL BE PROVIDED TO THE NEW BEDFORD CONSERVATION COMMISSION FOR ACCEPTANCE PRIOR TO THE WETLAND PLANTINGS.
13. THE SEASONAL HIGH GROUNDWATER ELEVATION IN THE WETLAND REPLICATION AREA SHALL BE VERIFIED BY A CERTIFIED SOIL SCIENTIST, WETLAND PROFESSIONAL OR PROFESSIONAL CIVIL ENGINEER PRIOR TO BACKFILLING THE REPLICATION AREA. THE ELEVATION OF THE SEASONAL HIGH GROUNDWATER SHALL BE PROVIDED TO THE CONSERVATION AGENT ALONG WITH VERIFICATION THAT IT WILL SUPPORT THE PROPOSED PLANTINGS.

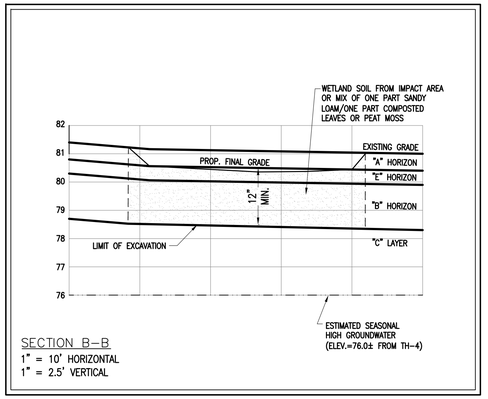


WETLAND REPLICATION (TOTAL AREA=7,600 S.F.)

SCALE: 1"=20'



SECTION A-A
1" = 10' HORIZONTAL
1" = 2.5' VERTICAL



SECTION B-B
1" = 10' HORIZONTAL
1" = 2.5' VERTICAL

TH-1 ELEV.=79.6± 10/18/17		TH-2 ELEV.=79.3± 10/18/17		TH-3 ELEV.=80.0± 10/18/17		TH-4 ELEV.=81.4± 3/1/18	
0"-22" E HORIZON SANDY LOAM 10YR7/1	77.8	0"-18" A HORIZON LOAMY SAND 10YR2/1	77.8	0"-11" A HORIZON LOAMY SAND 10YR2/1	79.1	0"-7" A HORIZON SANDY LOAM 10YR2/1	80.8
22"-24" A HORIZON LOAMY SAND 10YR2/1	77.6	18"-46" B HORIZON LOAMY SAND 10YR5/6	75.5	11"-47" B HORIZON LOAMY SAND 10YR5/6	76.1	7"-13" E HORIZON LOAMY SAND 10YR6/2	80.3
24"-36" B HORIZON LOAMY SAND 10YR5/6	76.6	46"-120" C HORIZON MEDIUM SAND 5YR4/6	69.3	47"-120" C HORIZON MEDIUM SAND 5YR4/6	70.0	13"-32" B HORIZON SANDY LOAM 2.5Y5/3	78.7
36"-47" C1 HORIZON SANDY LOAM 7.5YR6/2	75.7	REDOX @ 46" ELEV.=75.5±		REDOX @ 48" ELEV.=76.0±		32"-80" C HORIZON COARSE SAND 5YR4/6	74.7
47"-120" C2 HORIZON MEDIUM SAND 5YR4/6	69.6					REDOX @ 65" ELEV.=76.0±	
REDOX @ 48" ELEV.=75.6±							

SOIL LOGS

NOT TO SCALE

REVISIONS

1	9/18/18	PEER REVIEW COMMENTS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

FARLAND CORP.
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401 COUNTY STREET
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OFFICES IN:
•TAUNTON
•MARLBOROUGH
•WARWICK, RI

DRAWN BY: SC/MJW
DESIGNED BY: SC/MJW
CHECKED BY: CAF

SITE PLAN

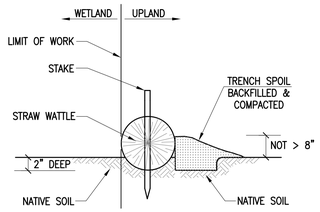
127 DUCHAINE BOULEVARD

ASSESSORS MAP 133 LOT 21
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: MILHENCH SUPPLY COMPANY
121 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

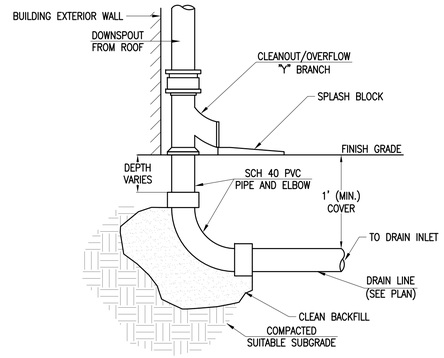
AUGUST 6, 2018
SCALE: AS NOTED
JOB NO. 15-1077
LATEST REVISION: SEPTEMBER 18, 2018

DETAILS



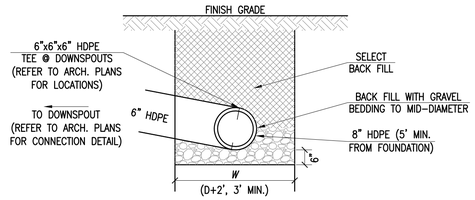
STAKED STRAW WATTLE

NOT TO SCALE



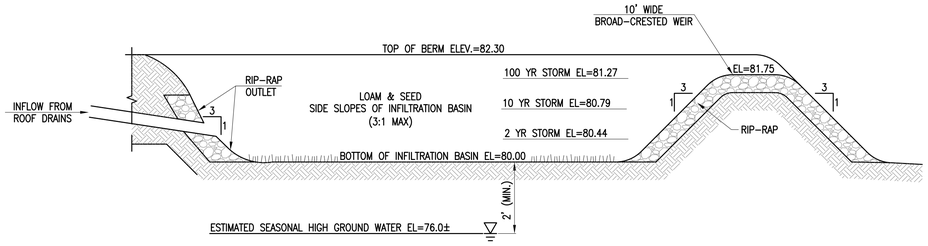
DOWNSPOUT CONNECTION FROM ROOF

NOT TO SCALE



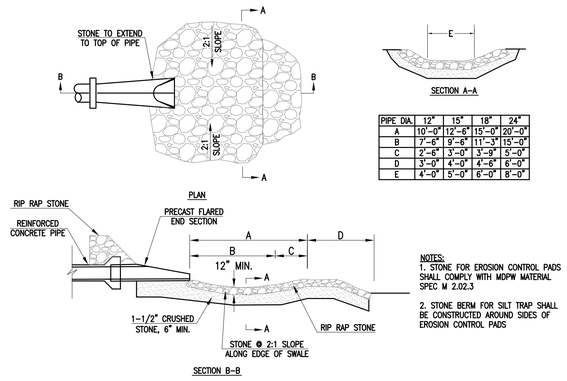
ROOF DRAIN TRENCH

NOT TO SCALE



INFILITRATION BASIN

NOT TO SCALE



PIPE DIA.	12"	15"	18"	24"
A	10'-0"	12'-6"	15'-0"	20'-0"
B	7'-6"	9'-6"	11'-3"	15'-0"
C	2'-6"	3'-0"	3'-0"	5'-0"
D	3'-0"	4'-0"	4'-6"	6'-0"
E	4'-0"	5'-0"	6'-0"	8'-0"

FLARED END OUTLET

NOT TO SCALE

REVISIONS

1	9/18/18	PEER REVIEW COMMENTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
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CIVIL
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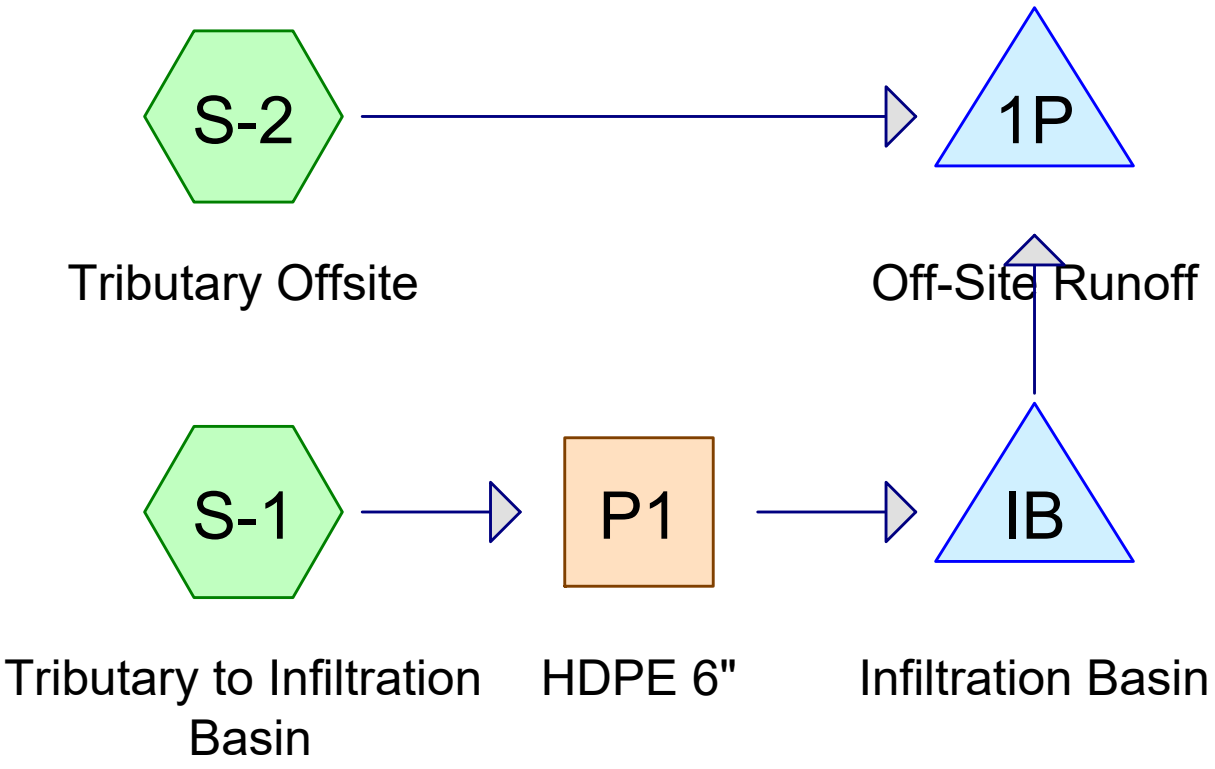
SITE PLAN
127 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 21
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: MILHENCH SUPPLY COMPANY
121 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

AUGUST 6, 2018
SCALE: AS NOTED
JOB NO. 15-1077
LATEST REVISION:
SEPTEMBER 18, 2018

DETAILS CONT.



Subcat Reach Pond Link

Drainage Diagram for 151077POST
Prepared by Farland Corp.

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
8,855	39	>75% Grass cover, Good, HSG A (S-2)
10,680	98	Rooftop (S-1)
19,535		**TOTAL AREA**

Summary for Subcatchment S-1: Tributary to Infiltration Basin

Runoff = 0.81 cfs @ 12.08 hrs, Volume= 2,818 cf, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.40"

	Area (sf)	CN	Description
*	10,680	98	Rooftop
	10,680		Impervious Area

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

Summary for Subcatchment S-2: Tributary Offsite

Runoff = 0.00 cfs @ 23.42 hrs, Volume= 3 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=3.40"

Area (sf)	CN	Description
8,855	39	>75% Grass cover, Good, HSG A
8,855		Pervious Area

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

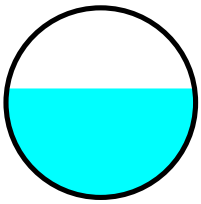
Summary for Reach P1: HDPE 6"

Inflow Area = 10,680 sf,100.00% Impervious, Inflow Depth = 3.17" for 2 year event
Inflow = 0.81 cfs @ 12.08 hrs, Volume= 2,818 cf
Outflow = 0.81 cfs @ 12.08 hrs, Volume= 2,818 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.95 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.37 fps, Avg. Travel Time= 0.3 min

Peak Storage= 5 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 0.50', Capacity at Bank-Full= 1.29 cfs

6.0" Diameter Pipe, n= 0.013 Corrugated PE, smooth interior
Length= 47.1' Slope= 0.0531 '/'
Inlet Invert= 83.00', Outlet Invert= 80.50'



Summary for Pond 1P: Off-Site Runoff

Inflow Area = 19,535 sf, 54.67% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 23.42 hrs, Volume= 3 cf
Primary = 0.00 cfs @ 23.42 hrs, Volume= 3 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond IB: Infiltration Basin

Inflow Area = 10,680 sf,100.00% Impervious, Inflow Depth = 3.17" for 2 year event
Inflow = 0.81 cfs @ 12.08 hrs, Volume= 2,818 cf
Outflow = 0.22 cfs @ 12.43 hrs, Volume= 2,819 cf, Atten= 72%, Lag= 20.5 min
Discarded = 0.22 cfs @ 12.43 hrs, Volume= 2,819 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 80.44' @ 12.43 hrs Surf.Area= 1,166 sf Storage= 517 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 10.8 min (766.2 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	3,425 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.00	984	126.0	0	0	984
81.00	1,403	150.0	1,187	1,187	1,529
82.00	1,894	174.0	1,642	2,830	2,169
82.30	2,075	182.0	595	3,425	2,401

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	81.75'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.22 cfs @ 12.43 hrs HW=80.43' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=80.00' TW=0.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment S-1: Tributary to Infiltration Basin

Runoff = 1.15 cfs @ 12.08 hrs, Volume= 4,062 cf, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.80"

	Area (sf)	CN	Description
*	10,680	98	Rooftop
	10,680		Impervious Area

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

Summary for Subcatchment S-2: Tributary Offsite

Runoff = 0.00 cfs @ 13.66 hrs, Volume= 119 cf, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=4.80"

Area (sf)	CN	Description
8,855	39	>75% Grass cover, Good, HSG A
8,855		Pervious Area

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

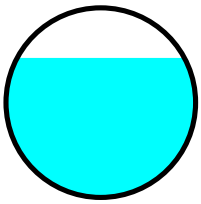
Summary for Reach P1: HDPE 6"

Inflow Area = 10,680 sf,100.00% Impervious, Inflow Depth = 4.56" for 10 year event
Inflow = 1.15 cfs @ 12.08 hrs, Volume= 4,062 cf
Outflow = 1.15 cfs @ 12.08 hrs, Volume= 4,062 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.44 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.64 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.08 hrs, Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 0.50', Capacity at Bank-Full= 1.29 cfs

6.0" Diameter Pipe, n= 0.013 Corrugated PE, smooth interior
Length= 47.1' Slope= 0.0531 '/'
Inlet Invert= 83.00', Outlet Invert= 80.50'



Summary for Pond 1P: Off-Site Runoff

Inflow Area = 19,535 sf, 54.67% Impervious, Inflow Depth = 0.07" for 10 year event
Inflow = 0.00 cfs @ 13.66 hrs, Volume= 119 cf
Primary = 0.00 cfs @ 13.66 hrs, Volume= 119 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond IB: Infiltration Basin

Inflow Area = 10,680 sf,100.00% Impervious, Inflow Depth = 4.56" for 10 year event
Inflow = 1.15 cfs @ 12.08 hrs, Volume= 4,062 cf
Outflow = 0.25 cfs @ 12.49 hrs, Volume= 4,062 cf, Atten= 78%, Lag= 24.2 min
Discarded = 0.25 cfs @ 12.49 hrs, Volume= 4,062 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 80.79' @ 12.49 hrs Surf.Area= 1,314 sf Storage= 936 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 19.8 min (768.7 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	3,425 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.00	984	126.0	0	0	984
81.00	1,403	150.0	1,187	1,187	1,529
82.00	1,894	174.0	1,642	2,830	2,169
82.30	2,075	182.0	595	3,425	2,401

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	81.75'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.25 cfs @ 12.49 hrs HW=80.79' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=80.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment S-1: Tributary to Infiltration Basin

Runoff = 1.68 cfs @ 12.08 hrs, Volume= 6,017 cf, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=7.00"

	Area (sf)	CN	Description
*	10,680	98	Rooftop
	10,680		Impervious Area

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

Summary for Subcatchment S-2: Tributary Offsite

Runoff = 0.09 cfs @ 12.14 hrs, Volume= 567 cf, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=7.00"

Area (sf)	CN	Description
8,855	39	>75% Grass cover, Good, HSG A
8,855		Pervious Area

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

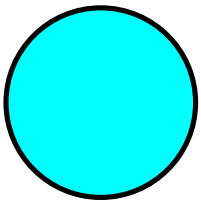
Summary for Reach P1: HDPE 6"

Inflow Area = 10,680 sf,100.00% Impervious, Inflow Depth = 6.76" for 100 year event
Inflow = 1.68 cfs @ 12.08 hrs, Volume= 6,017 cf
Outflow = 1.34 cfs @ 12.03 hrs, Volume= 6,017 cf, Atten= 20%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.50 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.96 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.04 hrs, Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 0.50', Capacity at Bank-Full= 1.29 cfs

6.0" Diameter Pipe, n= 0.013 Corrugated PE, smooth interior
Length= 47.1' Slope= 0.0531 '/'
Inlet Invert= 83.00', Outlet Invert= 80.50'



Summary for Pond 1P: Off-Site Runoff

Inflow Area = 19,535 sf, 54.67% Impervious, Inflow Depth = 0.35" for 100 year event
Inflow = 0.09 cfs @ 12.14 hrs, Volume= 567 cf
Primary = 0.09 cfs @ 12.14 hrs, Volume= 567 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond IB: Infiltration Basin

Inflow Area = 10,680 sf,100.00% Impervious, Inflow Depth = 6.76" for 100 year event
Inflow = 1.34 cfs @ 12.03 hrs, Volume= 6,017 cf
Outflow = 0.29 cfs @ 12.54 hrs, Volume= 6,018 cf, Atten= 78%, Lag= 30.3 min
Discarded = 0.29 cfs @ 12.54 hrs, Volume= 6,018 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 81.27' @ 12.54 hrs Surf.Area= 1,537 sf Storage= 1,636 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 33.8 min (777.1 - 743.3)

Volume	Invert	Avail.Storage	Storage Description
#1	80.00'	3,425 cf	**Custom Stage Data (Irregular)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
80.00	984	126.0	0	0	984
81.00	1,403	150.0	1,187	1,187	1,529
82.00	1,894	174.0	1,642	2,830	2,169
82.30	2,075	182.0	595	3,425	2,401

Device	Routing	Invert	Outlet Devices
#1	Discarded	80.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	81.75'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.29 cfs @ 12.54 hrs HW=81.27' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.29 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=80.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)