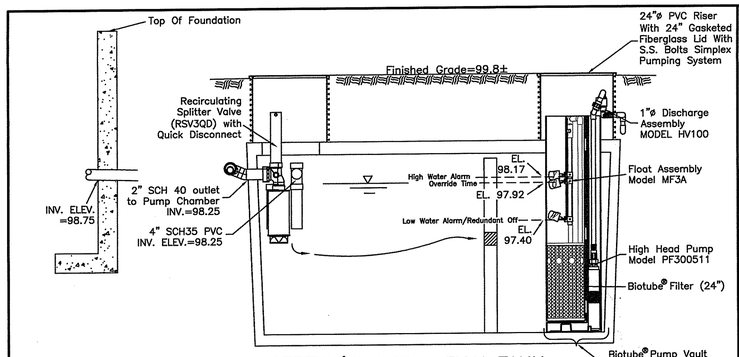
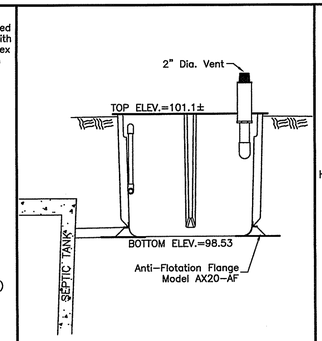


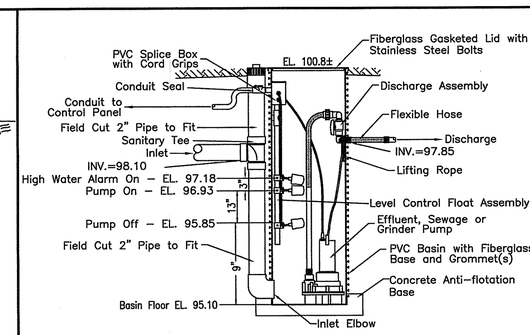
SEPTIC/RECIRCULATION TANK

2 COMPARTMENT-1500 GALLON CONCRETE TANK
NOT TO SCALE



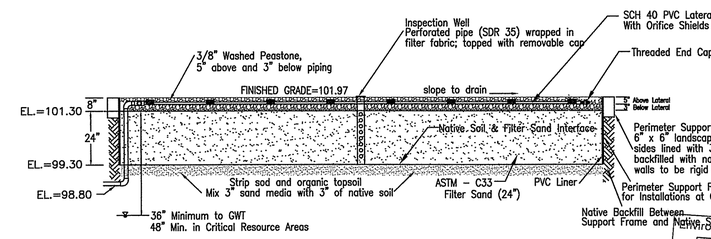
ADVANTEX AX20 MODE 3B

NOT TO SCALE



2.5' DIA. PUMP CHAMBER

PFEF50-B CENTRIFUGAL PUMP
NOT TO SCALE

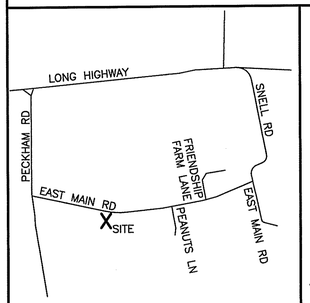


TYPICAL BOTTOMLESS SAND FILTER

NOT TO SCALE

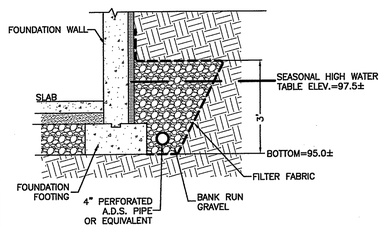
In cold weather applications, slope entire transport line and manifold system to drain back into tank. If draining back is not possible, refer to non-drainback orifice detail.

Environmental Management
APR 24 2012
Office of Water Resources



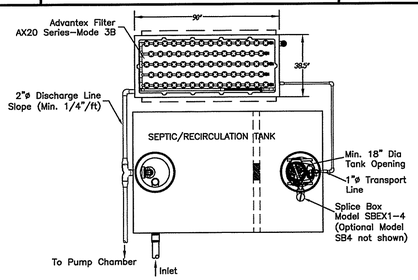
LOCUS MAP

NOT TO SCALE



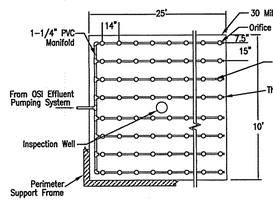
FOUNDATION DRAIN DETAIL

N.T.S.



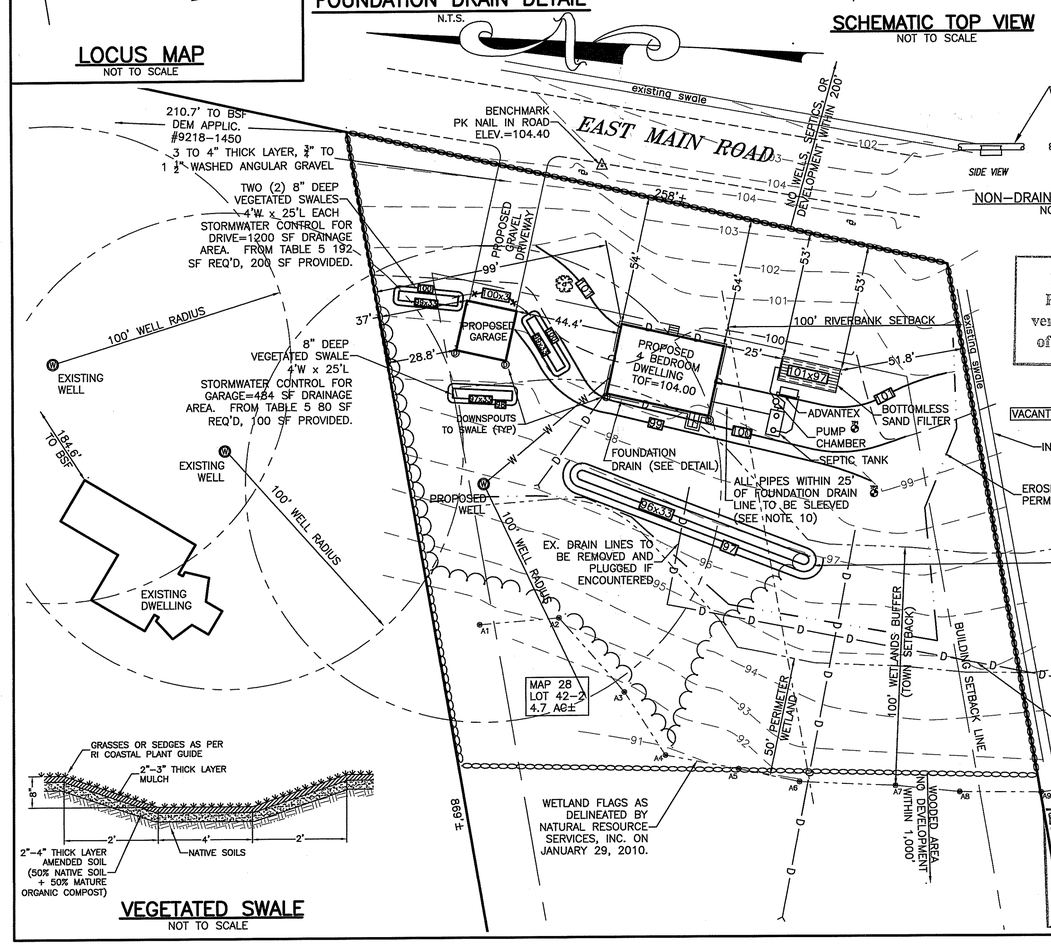
SCHEMATIC TOP VIEW

NOT TO SCALE



TOP VIEW 10'X25' BOTTOMLESS SAND FILTER

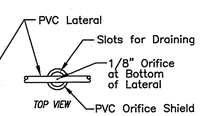
NOT TO SCALE



Kindly be advised that this Permit is not equivalent to a verification of the type or extent of freshwater wetlands on site.

VEGETATED SWALE

NOT TO SCALE



NON-DRAINBACK ORIFICE DETAIL

NOT TO SCALE

TEST PIT DATA

PERFORMED BY: NICOLE LETENDRE
DATE PERFORMED: NOVEMBER 16, 2009

TEST PIT #1

GROUND ELEV. = 99.8
GROUND WATER ELEV. = 18" (DEM)
BOTTOM OF TEST PIT = 90.3
PERC TEST ELEV. = SOIL EVAL.
PERC RATE = 30 MIN./INCH

0"	
SIL	
6"	
SIL	
12"	
SIL	
22"	
GSIL	
46"	
GLS	
114"	

TEST PIT DATA

PERFORMED BY: NICOLE LETENDRE
DATE PERFORMED: NOVEMBER 16, 2009

TEST PIT #2

GROUND ELEV. = 98.9
GROUND WATER ELEV. = 21" (DEM)
BOTTOM OF TEST PIT = 90.4
PERC TEST ELEV. = SOIL EVAL.
PERC RATE = 30 MIN./INCH

0"	
FSL	
6"	
SL	
18"	
FSL	
24"	
GSL	
30"	
GSL	
48"	
VGLS	
102"	

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL.
DATED MAY 09 2012 FILE # 12-0027
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

SPECIFICATIONS

CONCRETE TANKS:

1. Walls, bottom and top of reinforced concrete tanks shall be designed across the shortest dimension using one-way slab analysis. Stresses in each face of monolithically constructed tanks may be determined by analyzing the tank cross-section as a continuous fixed frame.
2. The walls and bottom slab shall be poured monolithically; alternatively, water stops may be provided.
3. Reinforcing steel shall be ASTM A-615 Grade 60, fy = 60,000 psi. Details and placement shall be in accordance with ACI 315 and ACI 318.
4. Concrete shall be ready-mix with cement conforming to ASTM C150, Type II. It shall have a cement content of not less than six (6) sacks per cubic yard and maximum aggregate size of 3/4". Water/cement ratio shall be kept low (0.35±), and concrete shall achieve a minimum compressive strength of 4000 psi in 28 days. The Contractor shall submit a concrete mix design to the Engineer for review and approval. Three (3) concrete sample cylinders shall be taken and tested for each tank manufactured until the manufacturer and Engineer are satisfied that the minimum compression strength is being obtained. To ensure compliance, the manufacturer shall then make and set three (3) sample cylinders for a minimum of 20% of the remaining tanks at the discretion of the Engineer. If the minimum compressive strength is not being obtained, the manufacturer shall be required to make and test sample cylinders for each tank manufactured. Calcium chloride will not be allowed in the mix design. The cost of testing cylinders shall be the tank manufacturer's responsibility. The tank manufacturer may supply a Swiss hammer for compressive testing in the field in lieu of sample cylinders.
5. Tanks may be protected by applying a heavy cement-base waterproof coating (Thoroseal or approved equal), on both inside and outside surfaces, in compliance with Council of American Building Officials (CABO) report #NRB-168; 6181; however, the tank should be watertight without the addition of seal coatings.
6. Form release used on tank molds shall be Nox Crete or approved equal. Diesel or other petroleum products are not acceptable.
7. Tanks shall not be moved from the manufacturing site to the job site until the tank has cured for seven (7) days or has reached two-thirds of the design strength.
8. Tanks shall be manufactured and furnished with access openings of the size and configuration to accommodate individual packaged pump systems. For 24" diameter access risers, the tank manufacturer shall cast in place a flanged tank adapter to facilitate the bonding of a 24" diameter access riser. The flanged tank adapter shall be made of 1/4" thick ABS and shall have an outside diameter of 27" and an inside diameter of 22-3/4". The flanged adapter shall be Orenco Systems?, Inc. Model FRTA24 or engineer-approved equal. The adapter must have an overall height of no less than 3" to allow 1-1/2" exposed for sufficient bonding area once the adapter is installed in the tank. For 21" and 30" diameter access risers, either a grooved tank adapter plate (Model RRFTA or RRFTA30) or a flanged tank adapter (Model FRTA30) may be installed in the tank. The adapter shall be manufactured of fiberglass or ABS and shall accommodate either a 21" or 30" diameter access riser.
9. The septic tank and the top slab shall be sealed with a preformed flexible plastic gasket. The flexible plastic gasket shall be equal to the flexible butyl resin sealant congeal CS-102 or CS-202 as manufactured by Concrete Sealants, Inc. of New Carlisle, Ohio, and shall conform to federal specification SS-S-00210(2DA) and AASHTO M-198. A mechanical fastening method shall be used if the seasonal groundwater level may reach the top slab seam of the tank.
10. In order to demonstrate watertightness, tanks shall be tested twice prior to acceptance. Inlets to the septic tank will be watertight pipe seal Cost-A-Seal (Manufactured by Press-Seal Gasket Corporation) or approved equal. Each tank shall be tested at the factory, prior to shipping, by filling with water to the soffit and letting stand. After 24 hours, the tank shall be refilled to the soffit and the exfiltration rate shall be determined by measuring the water loss during the next two (2) hours. Any leakage shall be cause for rejection. After installation is completed, each tank shall be filled with water to a point 2" into the access riser and retested as previously described (the field test period may be reduced to not less than two (2) hours). Backfill of a depth equal to the water height in the riser must be in place over the tank to prevent damage due to hydrostatic uplift. No tank will be accepted if there is any leakage over the two (2) hour period.

RISERS & LIDS:

1. Risers shall be required for access to internal vaults and access into the septic tanks for septage pumping. All risers shall be constructed watertight. The risers shall be attached to the tanks such that a watertight seal is provided. Risers shall extend 3" above original grade to allow for settlement and to ensure positive drainage away from the access. Risers for inspection ports shall be a minimum of 18" in nominal diameter. Risers containing pumping assemblies or electrical splice boxes shall be a minimum of 24" in diameter and shall be of sufficient diameter to allow removal of internal vaults without removing splice boxes, etc. Risers shall be a minimum of 30" in nominal diameter when the depth of bury is 36" or greater. All other risers shall be a minimum of 24" in nominal diameter and shall vary in height depending on the depth of bury on the various tanks. Adhesive required to adhere the PVC or fiberglass risers to either fiberglass or ABS tank adapter shall be either a two-part epoxy, Model MA320 or approved equal, or a single component adhesive Model ADH100 or approved equal. To ensure product compatibility, risers, lids, and attachment components shall be supplied by a single manufacturer.
2. One lid shall be furnished with each access riser. Lids shall be Orenco Systems, Inc. Model FL18G-4BU, FL21G, FL24-4B, FL24G-4BU, or FL30G or engineer-approved equal, as appropriate, fiberglass with green non-skid finish, and provided with stainless steel bolts, and wrench. Lids shall be waterproof, corrosion resistant and UV resistant. Lids shall be flat, with no noticeable upward dome. A crown or dome of no more than 1/8" is allowable. Lids shall not allow water to pond on them. Lids shall have a green non-skid finish. Self-lubricating plastics, such as polyethylene, shall not be considered non-skid without addition of a non-skid coating. Lids shall form a watertight seal with the top of riser. Lids shall be capable of withstanding a truck wheel load (36 square inches) of 2500 pounds for 60 minutes with a maximum vertical deflection of 1-1/2". Lids shall be provided with tamper-resistant stainless steel fasteners and a tool for fastener removal.
3. Traffic bearing lid: The traffic bearing lid shall be a cast iron frame and cover, part number 6024, 3060, 4036, as manufactured by Sather Manufacturing Co., Inc., or approved equal, which will fit over a standard lid. The cover shall have the word SEWER cast into it.
4. Insulation (if required) Rigid closed-cell foam insulation of 2" or 4" thickness shall be mechanically attached to the underside of the lid. All fasteners shall be made of corrosion resistant stainless steel. The insulation shall have an R-value of no less than 10 per 2" increment.
5. Riser installation: shall be accomplished according to the manufacturer's instructions.

SEPTIC TANK EFFLUENT PUMPING ASSEMBLIES:

1. Screened Pump Vault: Orenco Systems, Inc. Model PVU57-1819, Universal Biotube Pump Vault or engineer-approved equal, installed in conformance with the engineer's plans. The filter shall have a minimum effective screen area of no less than 15.5 square feet. (Note: Commercial and multiple-user tanks may require a larger or duplex Biotube Pump Vault, the sizes of which must be individually determined and spelled out in the specifications.) The Biotube Pump Vault shall consist of a 12" diameter, 57" deep HDPE vault with eight (8) 2" diameter holes evenly spaced around the perimeter, located appropriately to allow for maximum sludge and scum accumulation before requiring pumping (approximately 70% of minimum liquid level). Housed inside the polyethylene vault shall be the Biotube assembly consisting of 1/8" mesh polypropylene tubes. Attached to the vault is a flow inducer to accept one or two high-head effluent pumps.
2. VariComm Remote Telemetry Float Control System: Orenco Systems, Inc. Model MF3A with three switch floats mounted on a PVC stem attached to the filter cartridge. The floats must be adjustable and must be removable without removing the pump vault. The high- and low-level alarms and on/off function shall be preset as shown in the engineer's plans. Each float lead shall be secured with a nylon strain relief bushing at the splice box. The floats shall be UL or CSA listed and shall be rated for a minimum of 5.0A @ 120 VAC.
3. High-Head Effluent Pump: Must be approved for use in pump vault as described in D2. For most applications, an Orenco Systems, Inc. Model P100511, 1/2 hp, 115 VAC, single phase, 60 Hz, two-wire motor, with 10 foot long extra heavy duty (SO) electrical cord with ground. Pump shall be capable of providing a flow rate of 5 gpm against a head of 200 feet, or 10 gpm against a head of 135 feet. When used in conjunction with a flow controller, the pump shall be capable of providing 5 gpm against a head of 160 feet. Pump shall be UL and CSA listed as an effluent pump. Pump shall be provided with a non-prorated five-year warranty. Larger horsepower units are available (3/4 to 1-1/2 hp, 230 VAC).
4. Electrical Splice Box: Orenco Systems, Inc. Model SB4, UL approved for wet locations, equipped with four electrical cord grips and a 3/4" outlet fitting. Also included shall be UL listed waterproof butt splice connectors. The use of a UL-approved conduit seal kit shall be required to prevent the passage of gases, vapors, or flames through the conduit.

DESIGN CRITERIA:

TYPE OF ESTABLISHMENT: PROPOSED 4 BEDROOM SINGLE FAMILY DWELLING
NO ADDITIONAL CAPACITY HAS BEEN PROVIDED FOR GARBAGE GRINDERS
DESIGN FLOW: 4 BDRM X 115 GPD/BDRM = 460 GPD
SEPTIC TANK CAPACITY REQUIRED: 1500 GALLONS (2 COMPARTMENT)
SEPTIC TANK CAPACITY PROVIDED: 1500 GALLONS (2 COMPARTMENT)
DESIGN PERCOLATION RATE: 30 MIN./INCH
BOTTOMLESS SAND FILTER
CATEGORY 1 SYSTEM LOADING RATE: 1.9 GPD/SF
LEACHING CAPACITY REQUIRED: 460 GPD / 1.9 GPD/SF = 242 SF
LEACHING CAPACITY PROVIDED: 10' x 25' = 250 SF

GENERAL NOTES

1. ALL CHANGES TO THIS PLAN MUST BE APPROVED BY THE RI DEM AND MOUNT HOPE ENGINEERING.
2. ALL WORK AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE STATE ENVIRONMENTAL CODE AND ANY APPLICABLE LOCAL RULES AND REGULATIONS.
3. ANY CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFERING FROM THOSE SHOWN HEREON SHALL BE REPORTED TO MOUNT HOPE ENGINEERING, BEFORE CONSTRUCTION CONTINUES.
4. ALL ELEVATIONS BASED ON ASSUMED DATUM.
5. PER RI DEM REGULATIONS (JANUARY 2008) AND IN ACCORDANCE WITH SOUND CONSTRUCTION PRACTICE, THE FOLLOWING INSPECTIONS SHALL BE MADE:
   A. THE CONTRACTOR/HOMEOWNER SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF ANY CONSTRUCTION.
   B. THE ENGINEER SHALL BE NOTIFIED UPON EXCAVATION OF THE LEACHING FIELD BOTTOM.
   C. THE ENGINEER SHALL BE NOTIFIED UPON INSTALLATION OF ALL REQUIRED STRUCTURES. SAND AND AGGREGATE SHALL MEET THE SPECIFICATION BELOW AND SHALL BE APPROVED BY THE ENGINEER.
   D. THE ENGINEER SHALL BE NOTIFIED UPON COMPLETION AND PRIOR TO FINAL COVER OF THE SYSTEM.
   E. THE ENGINEER SHALL BE NOTIFIED AFTER ALL BACKFILL AND FINAL GRADING HAS BEEN COMPLETED, INCLUDING REQUIRED FILL PERIMETER.
   F. THE CONTRACTOR SHALL SUPPLY A LIST OF ALL MATERIALS USED, SOURCE OF MATERIAL, AND DATES DELIVERED TO THE SITE.
   THE ENGINEER SHALL NOT BE RESPONSIBLE FOR DELAY OR ANY AND ALL ADDITIONAL EXCAVATION, LABOR, OR OTHER WORK FOR THE FAILURE OF THE CONTRACTOR AND/OR HOMEOWNER TO ADHERE TO THE ABOVE INSPECTION SCHEDULE.
6. REMOVE ALL UNSUITABLE MATERIAL WITHIN THE LIMITS OF EXCAVATION AND REPLACE WITH THE FOLLOWING:
   FILL MATERIAL AROUND LEACHING FACILITIES SHALL BE FREE OF CLAY, FINES,DUST,ORGANIC MATTER, AND OTHER DELETERIOUS MATERIAL, AND SHALL HAVE A PERCOLATION RATE OF 2 MIN/IN OR LESS.
   IT SHALL BE GRADED SUCH THAT, OF THE MATERIAL PASSING THE #4 SIEVE, LESS THAN 7% SHALL PASS THE #100 SIEVE AND LESS THAN 3% SHALL PASS THE #200 SIEVE. MATERIAL SHALL BE REMOVED TO ELEV.=98.5
7. THERE ARE NO WELLS, EXISTING OR PROPOSED, WITHIN 200' OF SYSTEM EXCEPT AS SHOWN. NO PUBLIC WELLS EXISTING OR PROPOSED, WITHIN 500'. NO DRAINS WITHIN 25'.
8. HOMEOWNER SHALL OBTAIN REQUIRED O&M AGREEMENT FOR TREATMENT TECHNOLOGY MAINTENANCE THROUGH THE EQUIPMENT VENDOR. EXECUTED AGREEMENT SHALL BE RECORDED AT THE LOCAL TOWN HALL BY THE OWNER. RECORDED AGREEMENT TO BE PROVIDED TO THE ENGINEER FOR SUBMITTAL TO DEM FOR FINAL COMPLIANCE.
9. PROPERTY LINE INFORMATION TAKEN FROM ASSESSORS MAP. NOT FROM AN ACTUAL PROPERTY LINE SURVEY.
10. BUILDING SEWER AND ALL EFFLUENT PIPING WITHIN 25' OF FOUNDATION DRAIN LINE SHALL BE SLEEVED. THE SLEEVE SHALL BE SEAMLESS OR SCHEDULE 40 PVC OR EQUIVALENT WITH WATERTIGHT JOINTS, AND IT SHALL HAVE A WATERTIGHT SEAL THAT IS FASTENED TO THE PIPES WITH A STAINLESS STEEL RETRACTABLE CLAMP.

LEGEND

56	EXISTING CONTOURS
56	PROPOSED CONTOURS
D	DRAIN LINE
W	WATER LINE
	TEST PIT
56x5	EXISTING SPOT GRADE
56x5	PROPOSED SPOT GRADE

REVISED 04/23/12: PER WETLANDS COMMENTS
REVISED 03/26/12: PER WETLANDS COMMENTS
REVISED 02/02/12: PER DEM COMMENTS

ONSITE WASTEWATER TREATMENT SYSTEM

PREPARED FOR: RICHARD HEGEMAN
361 SOUTH MAIN STREET
PROVIDENCE, RI 02903
OWNED BY: RICHARD HEGEMAN
LOCATION: MAP 28, LOT 42-2
51 EAST MAIN ROAD, LITTLE COMPTON

SCALE: 1" = 30'
DATE: 01/10/12
DRAWN: AB
DESIGN: TC
CHECKED: TC

TODD CHAPLIN No. 5535 REGISTERED PROFESSIONAL ENGINEER

MOUNT HOPE ENGINEERING
CIVIL/ENVIRONMENTAL SERVICES
Post Office Box 943
Portsmouth, Rhode Island 02871
(401) 683-1934/(508) 379-1234

PROJECT NO. 11-304
SHEET NO. 1 OF 1