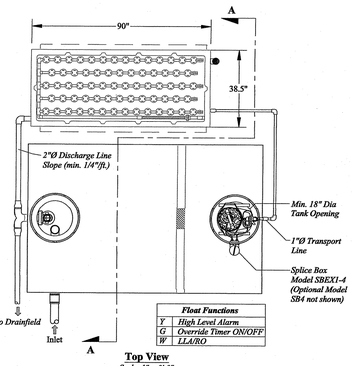
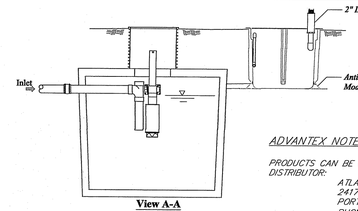
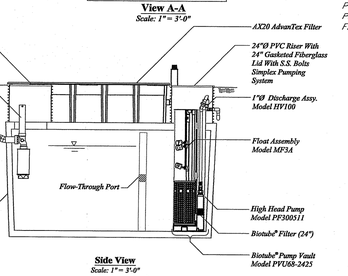


Top View
Scale: 1"= 3'-0"



View A-A
Scale: 1"= 3'-0"



Side View
Scale: 1"= 3'-0"

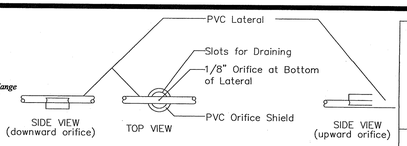
ADVANTEX AX20 DETAILS (SHALLOW GWT)

NOT TO SCALE

ADVANTEX NOTE:

PRODUCTS CAN BE OBTAINED FROM OSI PRODUCT DISTRIBUTOR:

ATLANTIC SOLUTIONS, LTD.
2417 EAST MAIN ROAD
PORTSMOUTH, RI 02871
PHONE (401) 293-0176
FAX (401) 293-0178



COLD WEATHER ORIFICE DETAIL

NOT TO SCALE

DESIGN CRITERIA

- PEAK FLOW = 2 BEDROOM (DESIGN) @ 115 GALLONS PER DAY / BEDROOM = 300 GPD
- CATEGORY 1 SYSTEM & SOIL CATEGORY 7 = 2.1 GAL/SF/DAY LOADING RATE
- SIZE BOTTOMLESS SAND FILTER (BSF):
  - 230 GPD / 2.1 GAL/SF/DAY = 110 S.F.
  - USE A 22' X 5' BOTTOMLESS SAND FILTER = 112 SF

INVERT SCHEDULE

OUT OF DWELLING	EL. 438.63
DESIGN G.W.T. BSF/TANK	EL. 438.0
SEPTIC TANK IN	EL. 440.30
TOP OF SEPTIC TANK	EL. 441.13
R.S.V. TO PUMP CHAMBER	EL. 440.30
AX20 FILTER POD INLET	EL. 442.50
TOP OF ADVANTEX FILTER	EL. 443.00
PUMP CHAMBER INLET	EL. 440.13
PUMP CHAMBER OUT	EL. 440.50
BOTTOM OF SAND	EL. 440.00
BOTTOM OF PEA GRAVEL	EL. 442.00
FLUSHING VALVE	EL. 442.50
BSF MANIFOLD	EL. 442.50
TOP OF PEA GRAVEL	EL. 442.70

PUMP CHAMBER

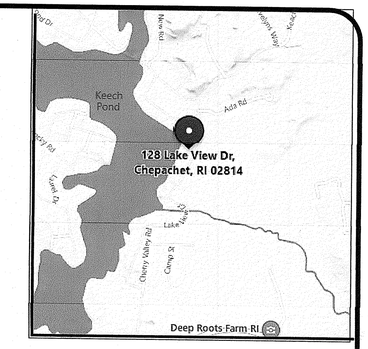
BOTTOM OF CHAMBER	EL. 437.00
REDUNDANT OFF	EL. 439.00
PUMP ON	EL. 439.75
HIGH WATER ALARM	EL. 439.90

ADVANTEX AX20 SYSTEM FLOAT LEVELS

HIGH WATER ALARM	EL. 440.01
TOP OF RSV CAGE	EL. 441.35
NORMAL LOW LIQUID LEVEL	EL. 440.88
LOW WATER ALARM/REDUNDANT OFF	EL. 439.09

LEGEND

- OHW — OVERHEAD WIRES
- ZONING SETBACK LINE
- EXISTING LOT LINE
- ADJOINING LOT LINE
- SEWER MANHOLE
- WELLHEAD
- UTILITY POLE
- 100' WELL SETBACK
- APPROX. EDGE OF POND
- STOCKADE FENCE



LOCUS MAP NOT TO SCALE

ROOF RAIN GARDEN SIZING CALCULATIONS

- Impervious Roof Area = 1,260 s.f.
- Soil type: Sand
- Design Coefficient of Permeabiltiy = 3.5 ft/day
- Intensity = 1-inch
- Water Quality Volume Needed:
  1260 s.f. x 0.083 (1") = 105 c.f.
- Proposed Rain Garden Depth = 8-inches or 0.7-feet

Surface Area at Bottom of the Garden:

$$A(f) = (WQv)(df) / [(k)(hf + df)(tf)]$$

Where:

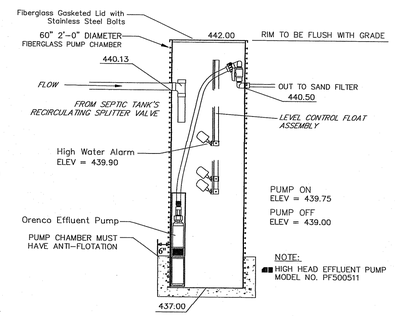
A(f) = surface area of the filter bed (ft²)
df = Filter bed depth (ft) = 1.5 ft
K = coefficient of permeability of the filter media (use 3.5 ft/day)
h(f) = Average height of water above the dry swale (ft) (use 0.7 ft)
tf = design filter bed drain time (assume 1 day for design purposes)

$$A(f) = (105)(1.5) / [(3.5)(0.7 + 1.0)(1.0)]$$

A(f) = 27 s.f. use 55 s.f.

STORMWATER TREATMENT PRACTICE				
IMPERVIOUS SURFACE	AREA	METHOD	AREA REQ'D	AREA PROVIDED
ROOF TOP	1,260 S.F.	RAIN GARDEN	27 S.F.	55 S.F.

* PER SOIL EVALS FSL



PUMP CHAMBER DETAIL - 24" DIA.

NOT TO SCALE

OWTS NOTES

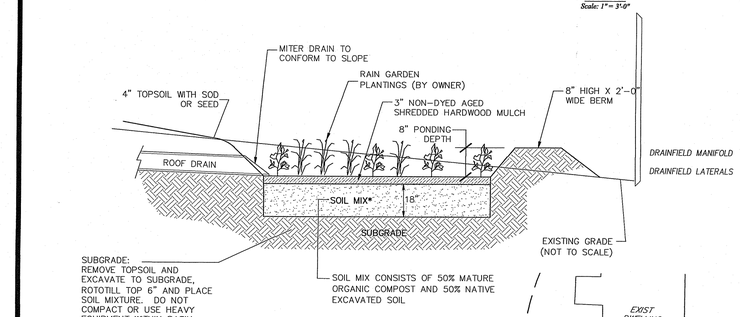
1. ALL DESIGN, CONSTRUCTION, AND MAINTENANCE REQUIREMENTS, WHETHER NOTED HEREON OR NOT, SHALL BE IN CONFORMANCE WITH RULES AND REGULATIONS ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS", JULY, 2010 AND ALL AMENDMENTS, BY THE RHODE ISLAND DEPT. OF ENVIRONMENTAL MANAGEMENT.
2. ALL TREES, STUMPS, AND BRUSH SHALL BE REMOVED WITHIN 10 FEET OF THE SYSTEM.
3. THERE ARE NO KNOWN PRIVATE WELLS OR DRAINS EXIST. OR PROPOSED LOCATED WITHIN 200 FEET OF THE OWTS EXCEPT AS SHOWN AND NO KNOWN PUBLIC WELLS (EXIST. & PROP.) LOCATED WITHIN 500 FEET OF THE PROPOSED ISDS.
4. THERE ARE NO KNOWN SUBSURFACE DRAINS, EXISTING OR PROPOSED, WITHIN 50 FEET OF THE PROPOSED OWTS.
5. NO VEHICULAR TRAFFIC IS ALLOWED OVER THE LEACHFIELD.

LIST OF VARIANCES

1. SEC 6.33E MIN. DEPTH TO GROUNDWATER
   REQUIRED 2' – PROVIDED 1' RELIEF = 1'

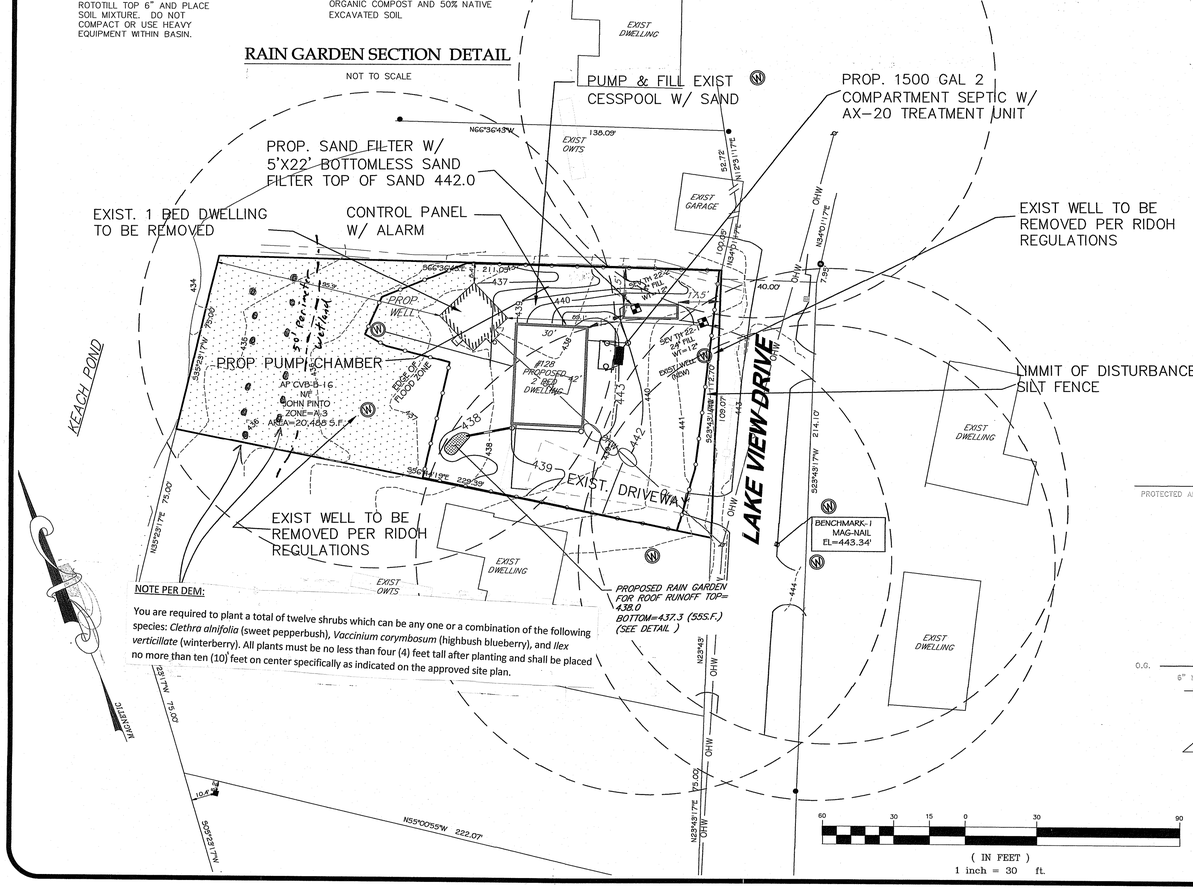
THE SUBJECT PARCEL LIES WITHIN A FLOOD ZONE X AREA AS SHOWN ON FEMA FLOOD INSURNACE RATE MAP NUMBER 44007C0255G, EFFECTIVE DATE MARCH 1 , 2009.

1. THE PROPOSED BOTTOMLESS SAND FILTER (BSF) SHALL BE STAKED OUT AND PROTECTED PRIOR TO ANY SITE PREPARATION ACTIVITIES. OVER DIGGING THE SAND FILTER SHOULD BE AVOIDED; MINIMAL BACKFILLING ON BOTTOM AND SIDES PROVIDES A MORE STABLE ENCLOSURE.
2. SOD, VEGETATION AND DEAD OR DECAYING ORGANIC LITTER SHALL BE REMOVED FROM THE AREA PLANNED FOR THE BSF INSTALLATION. THREE (3) INCHES OF THE NATIVE SOIL SHALL BE SCARIFIED AND MIXED WITH 3 INCHES OF SAND MEDIA. PERIMETER STRIPPING AND EXCAVATION OF SOIL BENEATH THE NATIVE SOIL/FILTER SAND INTERFACE IS PROHIBITED.
3. A PERIMETER SUPPORT FRAME OF PLYWOOD AND 2x4 CONSTRUCTION IS USED TO HOLD THE LINER IN PLACE DURING INSTALLATION. TREATED WOOD IS NOT NECESSARY. DURING CONSTRUCTION OF THE SAND FILTER, IT IS IMPORTANT THAT SAND BE PLACED BETWEEN THE EXCAVATED SOIL AND THE SUPPORT FRAME. ALL NAILS OR STAPLES USED MUST HAVE THEIR SHARP ENDS POINTED AWAY FROM THE LINER.
4. A PERMANENT TOP FRAME STRUCTURE (SUCH AS DECAY RESISTANT LANDSCAPE TIMBERS) MUST BE PROVIDED ON ANY PORTION OF A BSF THAT IS INSTALLED ABOVE GRADE. BELOW GRADE USE OF TIMBERS IS PROHIBITED TO PREVENT SOIL SLUMPING AFTER TIMBERS HAVE ROTTED.
5. MAINTAIN 5 FOOT LEVEL PERIMETER AROUND BSF.
6. THE 30 MIL PVC LINER IS UNFOLDED FROM THE CENTER OF THE EXCAVATION AND DRAPED OVER THE TOP EDGES OF THE PERIMETER SUPPORT FRAME. CARE MUST BE TAKEN TO ENSURE THAT THE LINER IS IN FULL CONTACT WITH SIDES AND THAT NO BRIDGING OCCURS.
7. FILTER SAND IS PLACED AND COMPACTED WHILE IT IS DAMP. IF THE SAND IS NOT DAMP, IT WILL NOT COMPACT WELL AND SETTLEMENT MAY CAUSE DISLOCATION AND BREAKAGE OF THE DISTRIBUTION LATERALS. THE SAND SURFACE MUST BE FLAT. SEE THE APPROPRIATE SAND GRADATION GRAPH FOR SPECIFICATIONS.
8. THREE INCHES OF 3/8 INCH PEA STONE IS PLACED ON TOP OF THE COMPACTED SAND, DISTURBING THE SAND AS LITTLE AS POSSIBLE. SEE PEA STONE SPECS. AFTER THE LATERALS ARE INSTALLED AND PRESSURE TEST IS PERFORMED, PLACE PEA STONE OVER THE DISTRIBUTION LATERALS TO PROVIDE 3 INCHES DEPTH OF PEA STONE OVER ALL UPPER ORIFICE SHIELDS. NO FILTER FABRIC OF ANY KIND SHOULD BE PLACED BETWEEN THE SAND AND OVERLYING PEA STONE.
9. THE LINER'S PVC BOOT PERMITS A WATERTIGHT PENETRATION OF THE LINER FOR THE TRANSPORT PIPE DELIVERING EFFLUENT TO THE SAND FILTER'S DISTRIBUTION SYSTEM. IN THE EVENT THE GROUND WATER REACHES THAT ELEVATION, THE BOOT WILL PREVENT INFILTRATION. THE MANUFACTURER'S GUIDE MUST BE FOLLOWED EXACTLY WHEN INSTALLING THE PVC BOOTS.
10. THE 1/8 INCH DIAMETER ORIFICES SHOULD BE DRILLED WITH A DRILL PRESS OR DRILL GUIDE USING A NEW 1/8 INCH DRILL BIT AND SHOULD NOT HAVE ANY VISIBLE BURRS. ALL PVC JOINTS SHOULD BE GLUED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
11. ORIFICE SHIELDS ARE PLACED ON THE LATERALS TO PREVENT THE PEA GRAVEL FROM BLOCKING THE FLOW OUT OF THE ORIFICES AND TO OBTAIN BETTER EFFLUENT DISTRIBUTION OVER THE SAND. COLD WEATHER ORIFICE SHIELDS SHOULD BE USED IN COLD WEATHER CLIMATES TO PREVENT THE FREEZING OF THE LATERALS.
12. AS PART OF THE COLD WEATHER REQUIREMENT, TWO (2) OF THE ORIFICES IN EACH DISTRIBUTION LATERAL MUST BE DRILLED POINTING UPWARD AND THE REST ARE DRILLED POINTING DOWNWARD. (UP-POINTING ORIFICES SHALL BE LOCATED AT POINTS APPROXIMATELY 1/3 AND 2/3 ALONG THE LENGTH OF EACH DISTRIBUTION LATERAL. INSTALL COLD WEATHER ORIFICE SHIELDS AT ALL ORIFICES (UPWARD AND DOWNWARD POINTING).
13. THE ELECTRICAL SPLICE BOX MUST BE UL OR CSA LISTED AND CORROSION-PROOF WITH THE PROPER NUMBER OF CORD GRIPS INSTALLED. HEAT SHRINK AND OR WATERTIGHT WIRE NUTS MUST BE USED ON THE INDIVIDUAL WIRE SPLICES WITHIN THE BOX TO ENSURE THE INTEGRITY OF THE SPLICES IF THE BOX BECOMES FLOODED. SUFFICIENT LENGTH OF WIRES MUST BE PROVIDED IN THE BOX TO ALLOW FOR FUTURE REPAIRS.
14. THE CONDUIT SEAL MUST BE UL OR CSA LISTED AND MUST BE INSTALLED USING PROPER CONDUIT SEALANT AS RECOMMENDED BY THE MANUFACTURER. SILICONE IS NOT ALLOWED. THE SEAL PREVENTS WATER FROM DRAINING INTO THE SPLICE BOX AND GASES FROM ESCAPING THE TANK.
15. THE ELECTRICAL CONDUIT MUST BE UL OR CSA LISTED. THERE ARE ELECTRICAL CODE RULES RESTRICTING THE NUMBER OF BENDS BETWEEN PANELS AND JUNCTION BOXES. REFER TO NEC 1993 SECTION 347-14.
16. INSTALL LID INSULATION ON ALL LIDS TO PREVENT FREEZING.
17. THE CLASS 200 TRANSPORT PIPE SHALL BE ALLOWED TO DRAIN BACK COMPLETELY TO PUMP CHAMBER. MAXIMIZE PITCH OF TRANSPORT PIPE TO ACHIEVE DRAINBACK AND PROVIDE FURTHER FREEZE PROTECTION AS CONDITIONS WARRANT.
18. IN AREAS WHERE THE BSF MAY BE ACCESSIBLE TO CHILDREN, THE PEA STONE SURFACE MAY BE COVERED WITH A BROAD WEAVE FILTER FABRIC AND AN ADDITIONAL LAYER OF PEA STONE OR LARGER WASHED STONE, NO GREATER THAN 2" IN THICKNESS. TO DISCOURAGE PHYSICAL DISTURBANCE TO OR CONTACT WITH THE TREATMENT ZONE.
19. PROVIDE A PERMANENT 10' MINIMUM BUFFER BETWEEN BSF AND ANY TREES OR SHRUBS.



RAIN GARDEN SECTION DETAIL

NOT TO SCALE



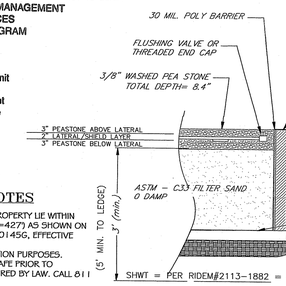
NOTE PER DEM:

You are required to plant a total of twelve shrubs which can be any one or a combination of the following species: *Clethra alnifolia* (sweet pepperbush), *Vaccinium corymbosum* (highbush blueberry), and *Ilex verticillate* (winterberry). All plants must be no less than four (4) feet tall after planting and shall be placed no more than ten (10) feet on center specifically as indicated on the approved site plan.

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM

NOTE PER DEM:

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



BOTTOMLESS SAND FILTER DETAIL - SECTION

NOT TO SCALE

BSF SAND MEDIA SPECIFICATIONS

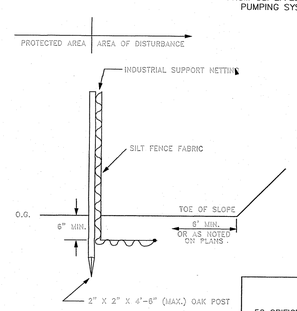
All media within the enclosure and below the cover stone shall have an effective size (D10) of 0.33 mm (+/-) and uniformity coefficient (D60/D10) of 2.0 to 4.0. The maximum allowable percentage of fines passing through a Number 200 sieve shall be one percent (1%). Other than the gradation and fine content specified above, the sand media shall meet the other ASTM C- 33 sand specifications.

GENERAL NOTES

1. PORTIONS OF THIS PROPERTY LIE WITHIN FLOOD ZONE AE (BFE=427) AS SHOWN ON FEMA FIRM #44007C0145G, EFFECTIVE 03/02/2009.
2. NOT FOR CONSTRUCTION PURPOSES. CONTACT WITH DIG SAFE PRIOR TO EXCAVATION IS REQUIRED BY LAW. CALL 811 OR 888-DIG-SAFE.
3. FIELDWORK PERFORMED DURING SEPTEMBER OF 2021.

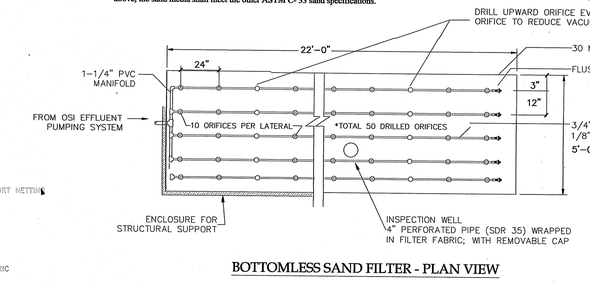
Martin D. Wenseck

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
DATED: JUN 28 2022 FILE #: 22-0166
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



SILT FENCE DETAIL

NOT TO SCALE



BOTTOMLESS SAND FILTER - PLAN VIEW

RI Environmental Management
MAY 11 2022
Office of Water Resources

SITE CONTRACTOR NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION.
2. CONTRACTOR SHALL CONTACT DIG-SAFE AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
3. INSTALL ALL EROSION CONTROLS AS DEPICTED PRIOR TO CLEARING & GRUBBING.

B.S.F. Demand Dosing

50 ORIFICE * 0.24 GAL PER ORIFICE = 12 GALLONS
33 LF 2" TRANSPORT LINE VOLUME = 6.0 GALLONS
TOTAL DOSED = 18 GALLONS PER DOSE
PUMP BASIN DRAWDOWN:
18 GAL PER DOSE / 2 GAL PER INCH = 9" = 0.75'
DESIGN CHECK:
230 GAL PER DAY / 18 GAL PER DOSE = 13 DOSE PER DAY
(O.K. – BETWEEN 12 AND 48 DOSE PER DAY)

OWTS SITE PLAN & DETAILS
OWTS ALTERATION
A.P. CVB LOT 16
128 LAKE VIEW DRIVE GLOCESTER, RI

PREPARED FOR:
JOHN PINTO

NICHOLAS J. PIAMPIANO
No. 6512
REGISTERED PROFESSIONAL ENGINEER (CIVIL)
D 3059

NO.	DATE	DESCRIPTION
1	3/24/22	PER RIDEM
2	4/24/22	PER RIDEM

DATE: MARCH 6, 2022
SCALE: AS NOTED
DESIGN/CHECK BY BY: C.S.R.
SHEET NO. 1 OF 1

ADVANCED CIVIL DESIGN, INC.
CIVIL ENGINEERS
88 PEEPTOAD ROAD
SCITUATE, RI 02857
P1: (401) 644-8656
P2: (401) 473-4404