

RAIN GARDEN SECTION DETAIL
NOT TO SCALE

ROOF RAIN GARDEN SIZING CALCULATIONS

- Impervious Roof Area = 1,423 s.f.
- Soil type: Sand
- Design Coefficient of Permeability = 3.5 ft/day
- Intensity = 1-inch
- Water Quality Volume Needed: 1,423 s.f. x 0.083 (1") = 118 c.f.
- Proposed Rain Garden Depth = 8-inches or 0.7-feet

Surface Area at Bottom of the Garden:
 $A(f) = (WQ_v)(dt) / [(k)(hf + dt)(f)]$

Where:
 A(f) = surface area of the filter bed (ft²)
 dt = Filter bed depth (ft) = 1.0 ft
 k = coefficient of permeability of the filter media (use 3.5 ft/day)
 hf = Average height of water above the RAIN GARDEN (ft) (use 0.7 ft)
 f = design filter bed drain time (assume 1 day for design purposes)

$A(f) = (118)(1.0) / [(3.5)(0.7 + 1.0)(1.0)]$
 $A(f) = 20$ s.f. use 55 s.f.

GENERAL NOTES

1. THE OWTs INSTALLER SHALL INSTALL AND MAINTAIN ALL EROSION CONTROL MEASURES DEPICTED ON THIS PLAN.
2. THE INSTALLER SHALL NOTIFY THIS DESIGNER 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
3. THE DESIGNER SHALL BE CONTACTED IF ANY DISCREPANCIES ARE FOUND IN THE FIELD.
4. THE INSTALLER SHALL CONTACT THE DESIGNER AT LEAST 24 HOURS IN ADVANCE FOR BOTTOM AND COVER INSPECTIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING DURING EXCAVATION OF ALL COMPONENTS OF THE OWTs.

OPA DRAINAGE Maintenance Notes:

1. OPA'S ARE TO REMAIN IN NATURAL VEGETATION OR ARE TO BE VEGETATED WITH LOW MAINTENANCE GRASSES.

OPA SIZING CALCULATIONS

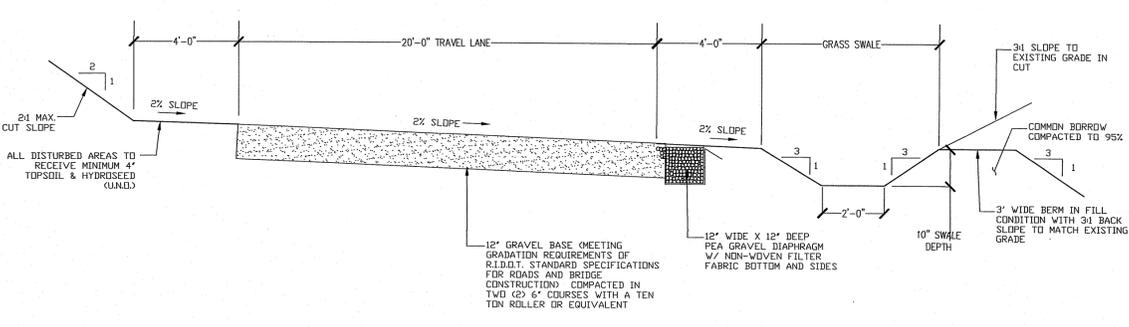
ROOF TOPS
 LENGTH - OPA-#1A = 1,423 SF / 13.3 = 107' LONG
 WIDTH - OPA-#1A = ROOF LENGTH = 62'
 LENGTH - OPA-#1B = 1,423 SF / 13.3 = 107' LONG
 WIDTH - OPA-#1B = ROOF LENGTH = 62'
 LENGTH - OPA-#2A = 1,423 SF / 13.3 = 107' LONG
 WIDTH - OPA-#2A = ROOF LENGTH = 62'
 LENGTH - OPA-#2B = 1,423 SF / 13.3 = 107' LONG
 WIDTH - OPA-#2B = ROOF LENGTH = 62'
 LENGTH - OPA-#3B = 1,423 SF / 13.3 = 107' LONG
 WIDTH - OPA-#3B = ROOF LENGTH = 62'

DRIVEWAYS
 OPA-#D-1A = 40' LONG X 20' WIDE
 OPA-#D-1B = 88' LONG X 30' WIDE
 OPA-#D-1C = 226' LONG X 20' WIDE
 OPA-#D-3A = 85' LONG X 30' WIDE

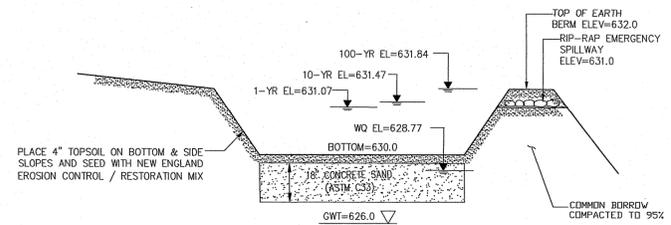
OPA DESIGN DATA TABLE

OPA #	GRADE ELEV.	SOIL EVAL #	SHWT ELEV
#1A	637.0	TH-1	635.0
#1B	639.0	TH-2	637.0
#2A	642.0	TH-4	640.0
#2B	638.0	TH-4	636.0
#3B	629.0	TH-6	627.0

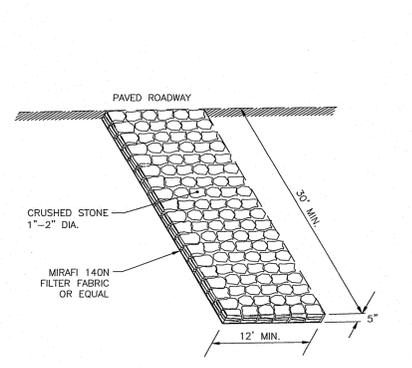
* ALL SHWT MEASURED FROM O.G.



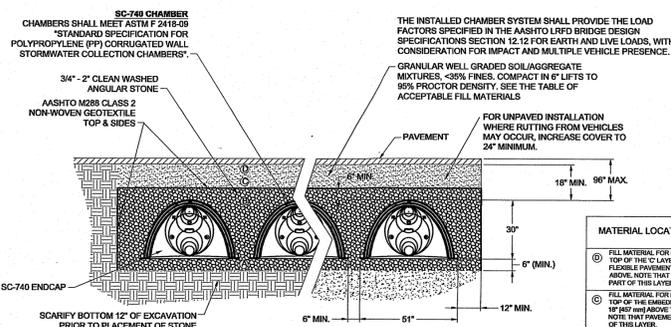
DRIVEWAY CROSS SECTION
NOT TO SCALE



SAND FILTER CROSS SECTION
NOT TO SCALE

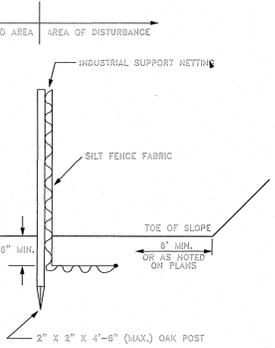


STONE CONSTRUCTION ENTRANCE
NOT TO SCALE

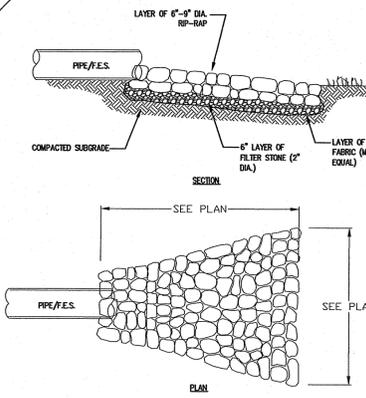


UNDERGROUND INFILTRATION SYSTEM
TYPICAL CROSS SECTION
NOT TO SCALE

MATERIAL LOCATION	DESCRIPTION
① FILL MATERIAL FOR LAYER 12 STARTS FROM THE TOP OF THE 12" LAYER TO THE BOTTOM OF THE 12" LAYER. FILL WITH GRANULAR WELL-GRADED SOIL AGGREGATE MIXTURES, <30% FINES, MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	ANY SOLID ROCK MATERIALS, NATIVE SOILS, OR FILL FROM EXISTING PAVEMENT OR UNPAVED AREAS ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THIS LAYER.
② EMBLEMMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (IF LAYED TO THE 12" LAYER ABOVE).	CLEAN WASHED ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4" - 2" (19 - 51 mm)
③ FOUNDATION STONE BELOW CHAMBERS FROM THE SURFACE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN WASHED ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4" - 2" (19 - 51 mm)



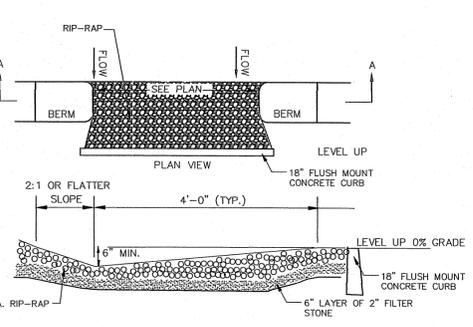
SILT FENCE DETAIL
NOT TO SCALE



RIP-RAP APRON DETAIL
NOT TO SCALE

TRENCH LEVEL SPREADER SIZING CALCULATIONS

- Impervious Roof Area = 1,423 s.f.
- Soil type: Sand
- 10 YR DESIGN STORM FLOW = 0.15 CFS
- THEREFOR MIN DEPTH = 0.5', WIDTH = 6' & LENGTH = 10'



TRENCH LEVEL SPREADER DETAIL
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.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED FEB 01 2022 FILE # 21-0260
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE
 Nicholas L. Freeman

PRAY HILL PINES
4 LOT RESIDENTIAL COMPOUND
DETAIL SHEET
 A.P. 9 LOT 36
 PRAY HILL ROAD GLOCESTER, RI
 PREPARED FOR APPLICANT:
 RPA SERVICES LLC
 189 HYDE STREET CRANSTON, RI 02920

ADVANCED CIVIL DESIGN, INC.
 CIVIL ENGINEERS
 88 PEEPTOAD ROAD
 SCITUATE, RI 02857

NICHOLAS J. PIAMPANO
 No. 6512
 REGISTERED PROFESSIONAL ENGINEER (CIVIL)

DATE: MARCH, 2021
 SCALE: 1"=80'
 DESIGN/CHECK BY: C.S.R./N.J.P.
 SHEET NO. 4 OF 4

PH 1: (401) 644-8656
 PH 2: (401) 473-4404

NOTES:

1. ALL MATERIAL TO MEET FILTEREXX(R) SPECIFICATIONS
2. FILTER MEDIA(TM) FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE AS DETERMINED BY ENGINEER
4. STAKES ARE NOT TO BE USED IN PAVEMENT AREAS.
5. SELF WEIGHT OF FILTEREXX SYSTEM IS ADEQUATE TO PREVENT SYSTEM OF MOVEMENT ONCE POSITIONED ALONG AREA SHOWN IN PLAN ABOVE.
6. CONTRACTOR TO PLACE FILTEREXX SEDIMENT CONTROL OR EQUAL AROUND ALL CURB INLET LOCATIONS AS SPECIFIED ON PLANS.

STRAW WATTLE or Approved Equal
NOT TO SCALE

SITWORK CONTRACTOR NOTES

1. CONTRACTOR SHALL NOTIFY "DIG-SAFE" (1-888-344-7233) AT LEAST 72 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. ACCESSIBLE ROUTES, PARKING SPACES, RAMP, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
4. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE LOAM AND SEED. SEE LANDSCAPE PLANS.
5. ALL CONSTRUCTION WITHIN THE STATE RIGHT-OF-WAY SHALL CONFORM TO PROCEDURES AND SPECIFICATIONS DELINEATED IN THE "STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND STANDARD DETAILS" INCLUDING ALL REVISIONS AS APPROVED BY THE DEPARTMENT AT THE TIME OF THE PHYSICAL ALTERATION PERMIT SUBMISSION.
6. TRAFFIC CONTROL, SIGNAGE, AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) 2003 INCLUDING ALL REVISIONS.
7. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND PDST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
8. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACATORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
9. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
10. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
11. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.

SOIL EROSION AND SEDIMENT CONTROL NOTES:

1. SLOPES SHALL NOT BE LEFT UNPROTECTED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON.
2. ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED OR PROTECTED.
3. PLANTABLE SOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS, AND SHALL CONFORM WITH RHODE ISLAND'S STANDARD SPECIFICATIONS, AS AMENDED.
4. THE DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	LBS/ACRE
CREeping RED FESCUE	75
KENTUCKY BLUE GRASS	15
COLONIAL BENT GRASS	5
PERENNIAL RUE GRASS	5
5. EARLY SPRING OR LATE SUMMER SEEDING IS RECOMMENDED. LIME AND FERTILIZER AS REQUIRED BY SOIL TESTING TO COMPLEMENT OR UPGRADE EXISTING CONDITIONS. THE SEED MIX SHALL BE INCULCATED WITHIN 24 HOURS BEFORE MIXING AND PLANTING WITH APPROPRIATE INOCULUM FOR EACH VARIETY. THE RECOMMENDED SEEDING DATES ARE APRIL 1ST THROUGH JUNE 15TH AND AUGUST 15TH THROUGH SEPTEMBER 30TH.
6. TEMPORARY TREATMENTS SHALL CONSIST OF NORTH AMERICAN GREEN S150 EROSION CONTROL BLANKET OR EQUAL. THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
7. ALL TEMPORARY EROSION PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
8. ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
9. STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR ANY WATERWAYS. THEY SHALL HAVE SLOPE PROTECTION NO GREATER THAN 3:1 AND SHALL BE TEMPORARILY SEEDED OR STABILIZED.
10. THE CONSTRUCTION SUPERINTENDENT SHALL HAVE THE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PERMIT. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN A PERIOD OF SIX (6) MONTHS AND SHALL DO SO AT NO ADDITIONAL EXPENSE.
11. MAXIMUM GRADED SLOPE TO BE 3:1 UNLESS NOTED OTHERWISE ON THE PLANS.
12. REFERENCE THE "RHODE ISLAND EROSION AND SEDIMENTATION CONTROL HANDBOOK" PREPARED BY USDA SOIL CONSERVATION SERVICE AS A GUIDE.