

**LANDSCAPING REQUIREMENTS:**

- EVERGREEN SCREEN**  
STAGGER PLANTINGS 7' O.C.
- EVERGREEN TREES:**  
5' TALL BALLED AND BURLAPPED TREES  
THUJA OCCIDENTALIS NIGRA - ARBORVITAE  
OR JUNIPERUS VIRGINIANA - EASTERN RED CEDAR
- NATIVE SHRUBS (EVERGREEN AND/OR BERRY PRODUCING)**  
3' TALL BALLED AND BURLAPPED  
MYRICA PENNSYLVANICA - NORTHERN BAYBERRY  
VACCINIUM CORYMBOSUM - HIGH BUSH BLUEBERRY  
ILEX VERTICILLATA - WINTERBERRY  
VIBURNUM DENTATUM - SOUTHERN ARROWWOOD

**ZONING REGULATIONS**

ZONING DISTRICT: RESIDENTIAL A-3  
SUBSTANDARD LOT OF RECORD

	REQUIRED
MINIMUM LOT AREA	3 ACRES
MINIMUM LOT FRONTAGE	300 FT
MINIMUM YARD SETBACKS:	
PRIMARY STRUCTURE *	
FRONT	30 FT
SIDE	10 FT
REAR	10 FT

**O.W.T.S. DESIGN DATA:**

PROPOSED USE:	RESIDENTIAL DWELLING
NUMBER OF UNITS:	3 BEDROOMS
DESIGN FLOW PER UNIT:	115 GPD/BEDROOM
TOTAL DESIGN FLOW:	345 GALLONS PER DAY
TREATMENT PROVIDED:	ADVANTEK AX-20
RAINFIELD REQUIREMENTS:	
DESIGN LOADING RATE:	2.3 GAL/DAY/SF (SOIL CATEGORY 6)
REQUIRED SQUARE FOOTAGE =	$\frac{345 \text{ GPD}}{2.3 \text{ GPD/SF}} = 150 \text{ SF}$
PROVIDED SQUARE FOOTAGE =	PRESSURIZED SHALLOW NARROW DRAINFIELD GEOMAT 3.9 (150/3.25 SF/LF) = 46.1 LF REQUIRED 46.1 LF / 2 TRENCHES = 23.05' TRENCH LENGTH PROVIDED AREA = 47' TRENCH X 3.25 SF/LF = 152.75 S.F.

**GENERAL NOTES:**

- THIS SITE IS NOT LOCATED WITHIN A CRITICAL RESOURCE AREA AS DEFINED BY CRMC & RIDEM. IT IS LOCATED WITHIN A NATURAL HERITAGE AREA.
- ACCORDING TO THE FEMA NATIONAL FLOOD INSURANCE RATE MAP, COMMUNITY PANEL # 44007 C0145G, REVISED 3/2/2009. THE PARCEL LIES OUTSIDE OF ANY FLOOD ZONE. THE SITE IS CLASSIFIED AS ZONE X, UNSHADED, WHICH IS DEFINED AS "THE AREAS OF MINIMAL FLOOD HAZARD - AREAS WHICH ARE OUTSIDE THE SPECIAL FLOOD HAZARD AREA (SFHA) AND HIGHER THAN THE ELEVATION OF THE 0.2-PERCENT-ANNUAL-CHANCE FLOOD (1:500 YEAR EVENT).
- ONSITE SOILS ARE CLASSIFIED BY THE RHODE ISLAND SOIL SURVEY AS CANTON AND CHARLTON VERY STONY FINE SANDY LOAMS, 3 TO 8% SLOPES (ChB) - SOILS SUITABLE FOR DEVELOPMENT; SOIL CATEGORY B
- THIS PARCEL WILL BE SERVICED BY PRIVATE WELL WATER; PRIVATE SEWER; ELECTRIC POWER & TELECOMMUNICATIONS OF CHOICE. NO PUBLIC WASTEWATER SYSTEM LIES WITHIN 200' OF THE PROPOSED WORK.
- ALL STORM & SUBSURFACE DRAINS WITHIN 200' OF THE PROPOSED OWTS HAVE BEEN SHOWN. ALL WETLANDS WITHIN 100' ARE SHOWN.
- ALL PRIVATE DRINKING WATER WELLS WITHIN 200' OF THE PROPOSED OWTS HAVE BEEN SHOWN. ALL PUBLIC WELLS WITHIN 500' OF THE SITE HAVE BEEN SHOWN. PUBLIC WATER SERVICE IS NOT PROVIDED IN THIS NEIGHBORHOOD. PUBLIC SEWERS ARE NOT AVAILABLE AT THIS TIME TO THE SITE.

**LEGEND**

— ELEV. —	EXISTING CONTOURS	— ELEV. —	PROPOSED CONTOUR
—	EXISTING SITE CONDITIONS	—	PROPOSED SITE CONDITIONS
—	EXISTING PROPERTY LINE	—	PROPOSED PROPERTY LINE
—	BUILDING SETBACKS	—	USDA SOIL BOUNDARIES
—	EXISTING FIELD STONEWALLS	—	PROPOSED RETAINING WALLS
—	EXISTING WELLS	—	PROPOSED WELLS
—	EXISTING WATERLINE	—	PROPOSED WATERLINE
—	EXISTING ROOF DRAIN	—	PROPOSED ROOF DRAIN
—	EXISTING UTILITY POLE	—	PROPOSED UTILITY POLE
—	TEST HOLES/LEDGE PROBES	—	WOOD OR BRUSH LINE
—	BIOLOGICAL WETLANDS	—	L.O.D. —
—	50' WETLANDS SETBACK	—	EROSION CONTROLS
—	STREAM CHANNEL		

**ONSITE WASTEWATER TREATMENT PLAN**  
SINGLE FAMILY LOT DEVELOPMENT  
ASSESSOR'S PLAT CVB/ LOT 19  
LAKE VIEW DRIVE  
GLOCESTER, RHODE ISLAND

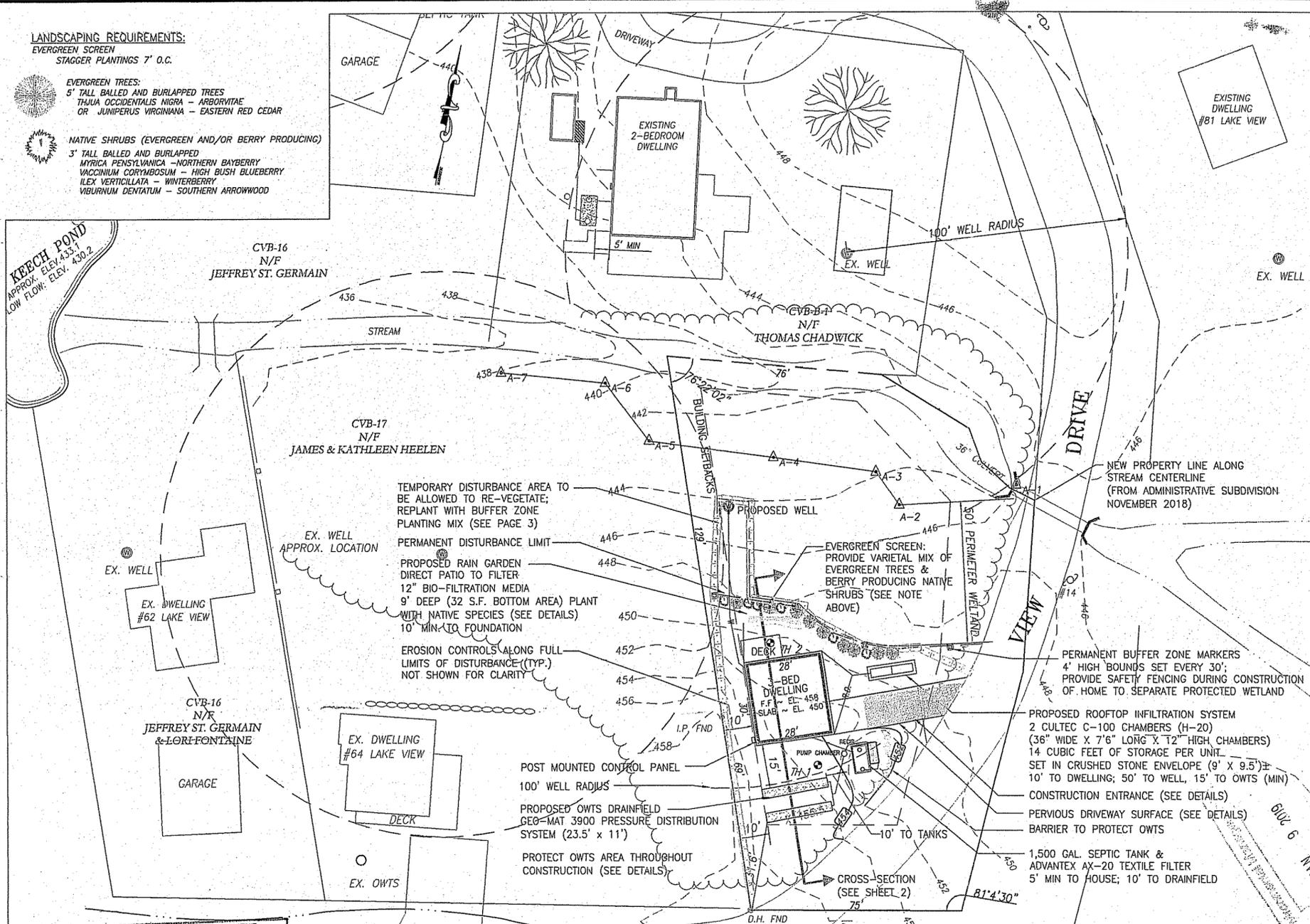
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JEFFREY J. CAMPOPIANO  
REGISTERED PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	DATE: 10/1/18
1	1/4/18	DWELLING SIZE, RIDEM COMMENTS	SCALE: NTS

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**O.W.T.S. ELEVATION SCHEDULE**

<b>BUILDING SEWER INVERTS:</b>	
MAIN DWELLING INVERT:	ELEV. 450.50
<b>TANK ELEVATIONS:</b>	
1,500 GAL. SEPTIC TANK	
TOP OF TANK:	ELEV. 451.00
BASE OF TANK:	ELEV. 445.50
4" PVC INLET INV.:	ELEV. 450.16
1 1/2" PRESS. OUT INV.:	ELEV. 451.50
2" RECIRC IN.:	ELEV. 450.16
<b>ADVANTEK AX-20</b>	
AX-20 LID ELEVATION	ELEV. 452.80
AX-20 BASE	ELEV. 450.30
AX-20 PRESSURE INLET	ELEV. 452.30
GRAVITY 2" TO S.T.	ELEV. 450.30
<b>PUMP CHAMBER</b>	
P.C. LID ELEVATION	ELEV. 453.0
P.C. BASE	ELEV. 447.0
P.C. INLET	ELEV. 450.0
P.C. TO DRAINFIELD	ELEV. 451.5±
<b>DRAINFIELD</b>	
DRAINFIELD INVERT:	ELEV. 453.50
DESIGN ELEVATION:	ELEV. 454.00
GROUNDWATER:	ELEV. 449.00
COVER OVER SYSTEM MIN.	ELEV. 454.00
COVER OVER SYSTEM MAX.	ELEV. 454.50

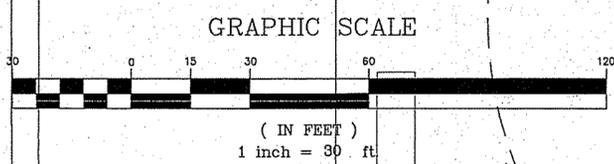
NOTE: GARBAGE DISPOSALS & LARGE (100 GALLON OR MORE) BATHTUBS SHALL NOT BE UTILIZED AT THIS HOMESITE.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
OWTS & FRESHWATER WETLANDS  
JOINT PERMIT APPROVAL

OWTS# 183-0859 FWW# 18-0274

APPROVED: [Signature] DATE 2/1/19

No Changes Allowed Without RIDEM Approval  
Approved Plans/Permit Must Be Kept at Construction Site



**GENERAL OWTS NOTES:**

1. ALL DESIGN, CONSTRUCTION AND MAINTENANCE REQUIREMENTS SHALL BE IN CONFORMANCE WITH THE LATEST AMENDED VERSION (JULY 2016) OF THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OFFICE OF WATER RESOURCES, "RULES ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION, AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS (OWTS)," HEREIN REFERRED TO AS THE "REGULATIONS."
2. ALL STORM & SUBSURFACE DRAINS WITHIN TWO HUNDRED FEET (200') OF THE PROPOSED OWTS HAVE BEEN SHOWN. ALL WETLANDS WITHIN 100' ARE SHOWN
3. ALL PRIVATE DRINKING WATER WELLS WITHIN 200' OF THE PROPOSED OWTS HAVE BEEN SHOWN. ALL PUBLIC WELLS WITHIN 500' OF THE SITE HAVE BEEN SHOWN. PUBLIC WATER SERVICE IS PROVIDED IN THIS NEIGHBORHOOD. PUBLIC SEWERS ARE NOT AVAILABLE AT THIS TIME TO THE SITE.

**IMPORTANT CONSTRUCTION NOTES:**

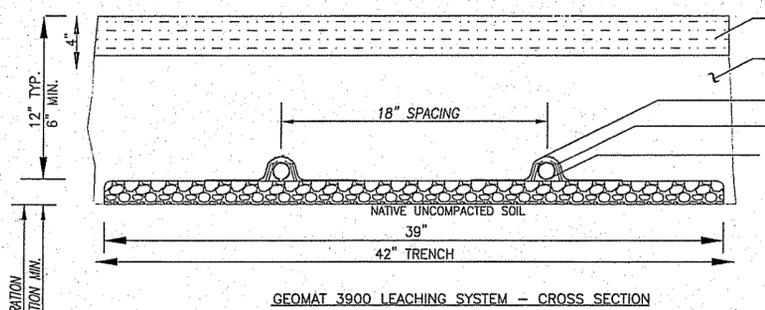
1. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITH DIG-SAFE OR OTHER APPROPRIATE UTILITY PROVIDER PRIOR TO CONSTRUCTION.
2. CLEAR ALL TREES AND STUMPS WITHIN 10' OF THE SYSTEM. STRIP ALL TOPSOIL, SUBSOIL, AND/OR UNSUITABLE MATERIAL WITHIN THE PROPOSED FIELD. BOTTOM AND SIDES OF LEACHING FIELD SHALL NOT BE SMEARED OR COMPACTED, SCARIFY PRIOR TO PLACING STONE.
3. A FIVE (5') PERIMETER STRIP IS NOT REQUIRED FOR THIS INSTALLATION.
4. TO PREVENT FREEZING IN THE TRANSPORT LINE, THE CONTRACTOR SHALL ENSURE FREE DRAINBACK FROM THE DRAINFIELD TO THE PUMP CHAMBER, AS SUCH; PROVIDE ADEQUATE (95% MAXIMUM DRY DENSITY) COMPACTION OF THE TRANSPORT LINE TRENCH; AND ENSURE THE PUMP QUICK DISCONNECT IS POSITIONED HORIZONTALLY TO ALLOW FREE DRAINING OF THE TRANSPORT LINE. CHECK VALVE SHOULD NOT BE USED ON THE PUMP.
5. ALL BACKFILL AROUND THE TANKS SHALL BE CLEAN AND FREE OF FINES TO ALLOW FOR DISPERSAL OF STORMWATER AWAY FROM THE TANKS & TREATMENT UNITS.

**CONSTRUCTION PROCEDURE:**

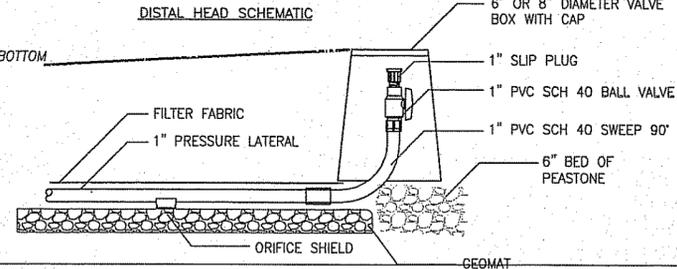
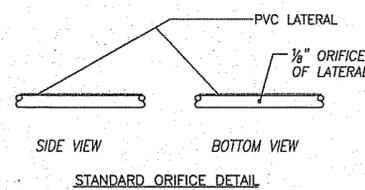
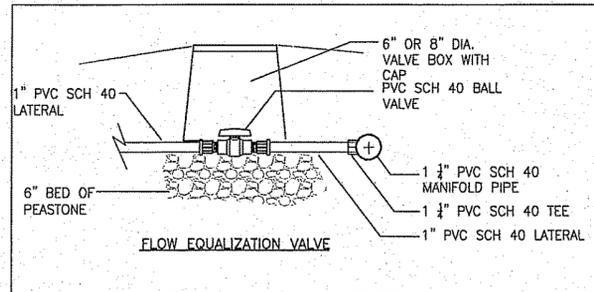
1. THE INSTALLER MUST NOTIFY THE LICENSED DESIGNER AT LEAST 10 DAYS PRIOR TO THE START OF CONSTRUCTION WITH A VALID INSTALLER'S LICENSE NUMBER. A PRE-CONSTRUCTION MEETING WITH THE ENGINEER, INSTALLER, AND HOMEOWNER SHALL THEN BE SCHEDULED PRIOR TO COMMENCING ANY WORK.
2. THE INSTALLER SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES WITH DIGSAFE OR OTHER APPROPRIATE UTILITIES PRIOR TO CONSTRUCTION. UTILITIES ARE SHOWN APPROXIMATE FOR PLANNING PURPOSES. ALL EXISTING INVERTS ELEVATIONS SHALL BE CONFIRMED PRIOR TO CONSTRUCTION. DAMAGE TO ANY UNDERGROUND UTILITIES BY THE CONTRACTOR SHALL BE THE CONTRACTORS RESPONSIBILITY.
3. THE INSTALLER SHALL PROVIDE THE DESIGNER WITH A LIST OF ALL MATERIALS USED, THEIR SOURCE, AND THE DATE DELIVERED TO THE SITE.
4. THE INSTALLER SHALL NOTIFY THE ENGINEER OF HIS/HER PROGRESS SO THAT THE ENGINEER CAN INSPECT AND MAKE MEASUREMENTS AND INSPECTIONS PRIOR TO BACKFILL.
5. IF CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION WHICH INDICATE THE SYSTEM CAN NOT BE INSTALLED IN ACCORDANCE WITH THE APPROVED PLANS, THE INSTALLER SHALL NOTIFY THE ENGINEER AS SOON AS POSSIBLE AND SUSPEND CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL ITEMS & TERMS LISTED ON THE APPROVED OWTS APPLICATION.

**DRAINFIELD DETAILS**

**GEOMAT 3900 LEACHING SYSTEM**



GEOMAT 3900 LEACHING SYSTEM - CROSS SECTION



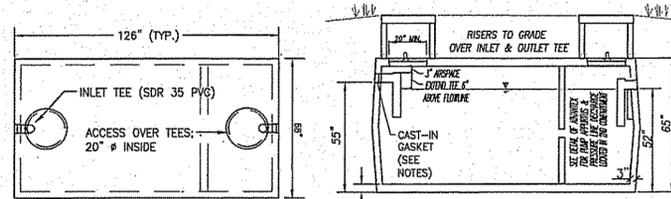
**BUILDING SEWER REQUIREMENTS**

1. THE BUILDING SEWER SHALL BE CONSTRUCTED OF DOMESTICALLY PRODUCED RIGID POLYVINYL CHLORIDE (PVC) SOLID WALL, SCHEDULE 40 PIPE. ALL PIPE SHALL MEET THE REQUIREMENTS OF ASTM D2665.
2. ALL JOINTS SHALL BE FIRMLY CONNECTED AND GLUED WATERTIGHT WITH PVC SOLVENT CEMENT MEETING THE REQUIREMENTS OF ASTM D2564.
3. THE BUILDING SEWER SHALL BE LAID IN STRAIGHT LINE WHERE POSSIBLE. CHANGES IN DIRECTION GREATER THAN 45° SHALL REQUIRE THE INSTALLATION OF MANHOLE, UNLESS A 36" SWEEP RADIUS IS UTILIZED. CLEANOUTS ARE REQUIRED FOR BUILDING SEWERS GREATER THAN 75' AND AT JUNCTIONS OF TWO OR MORE PIPES.
4. THE SLOPE OF THE BUILDING SEWER TO THE SEPTIC TANK SHALL NOT BE LESS THAN 1% NOR GREATER THAN 5%.

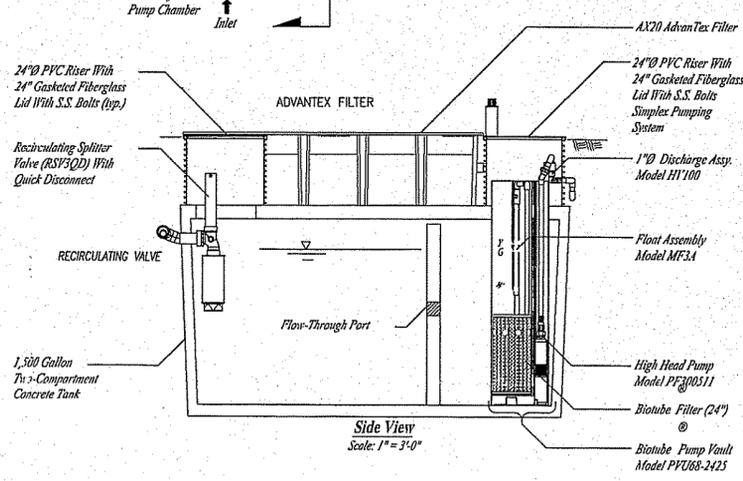
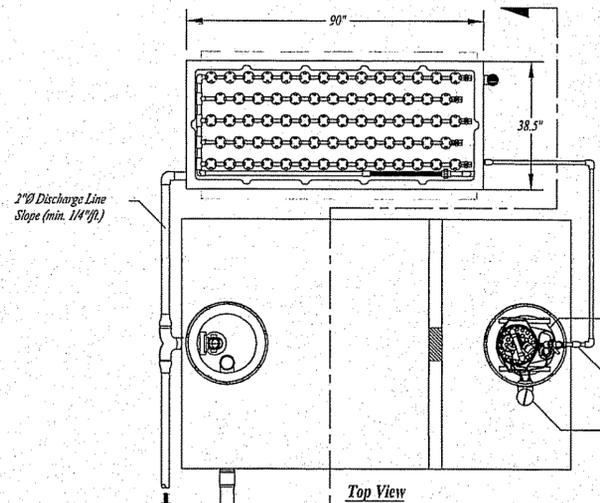
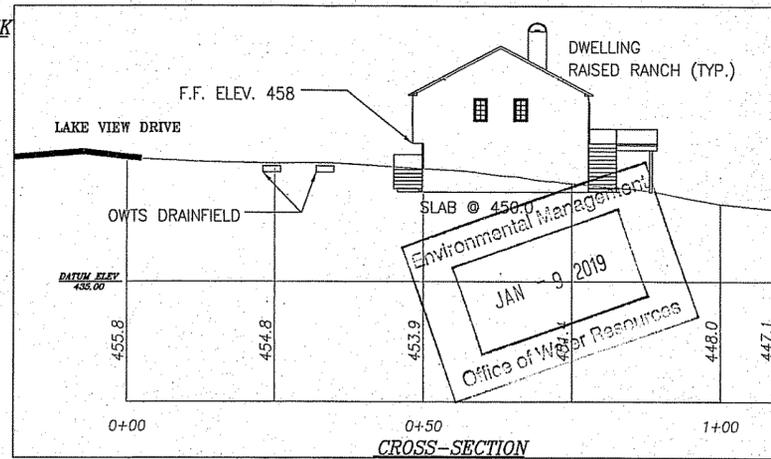
**SEPTIC TANK REQUIREMENTS**

1. ALL TANKS & APPURATUS SHALL BE WATERTIGHT, TWO-COMPARTMENT, & MEET THE REQUIREMENTS IN RULE 24-27 OF THE REGULATIONS. TANKS ASSEMBLED ONSITE SHALL BE CERTIFIED WATERTIGHT VIA EITHER A 24-HOUR WATER PRESSURE TEST OR A VACUUM TEST IN ACCORDANCE WITH THE REGULATIONS.
2. MANUFACTURING STANDARDS: CONCRETE TANKS SHALL BE MANUFACTURED IN ACCORDANCE WITH THE ASTM STANDARD SPECIFICATIONS FOR PRECAST CONCRETE SEPTIC TANKS C-1227-02 OR THE LATEST AMENDED VERSION.
3. CONCRETE TANKS SHALL BE SEALED WITH BUTYL RUBBER MASTIC BETWEEN SECTIONS AND WRAPPED WITH A 6" OF BUTYL MASTIC WRAP AROUND EXTERIOR OF SEAM.
4. **INLET & OUTLET PIPES:** TANK SHALL BE SUPPLIED WITH RUBBER CAST-IN GASKET AT INLET/OUTLET. USE STAINLESS STEEL RETRACTABLE CLAMPS TO FASTEN GASKET AROUND PIPE.
5. **SDR 35 PVC TEES:** INLET TEE DEPTH: EXTEND TO 12" BELOW FLOW LINE. OUTLET TEE DEPTH: EXTEND TO 1/2 TANK DEPTH. TOP OF TEES: 6" ABOVE FLOW LINE. VENTILATION: TEES TO BE LEFT OPEN; ENSURE A 3" MIN. AIR SPACE BETWEEN TOP OF TEE & TANK.
6. **ACCESS OPENINGS & RISERS** MINIMUM SIZE: TWENTY INCH (20") INSIDE DIAMETER. LOCATION: OVER INLET & OUTLET TEE. RISER COVERS: GASKETED, FIBERGLASS LIDS W/ STAINLESS STEEL BOLTS OR CONCRETE OR METAL LID W/ A MINIMUM WIEGHT OF 59 (LBS). PROVIDE LABEL STATING "ENTRANCE TO TANK COULD BE FATAL".
7. **INSTALLATION:** ALL BACKFILL AROUND THE TANK & APPARATUS SHALL BE CLEAN AND FREE OF FINES TO ALLOW FOR DISPERSAL OF STORMWATER AWAY FROM THE TANK. MAX BURIAL: 3'.

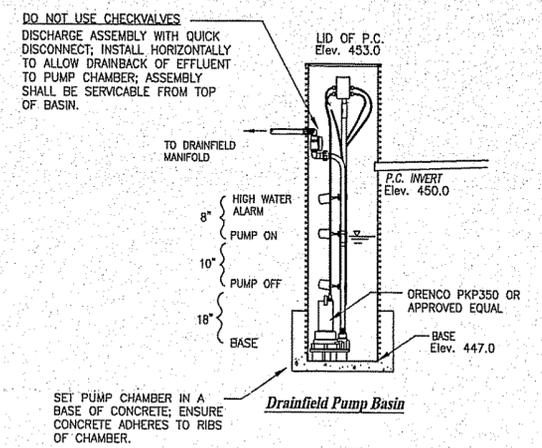
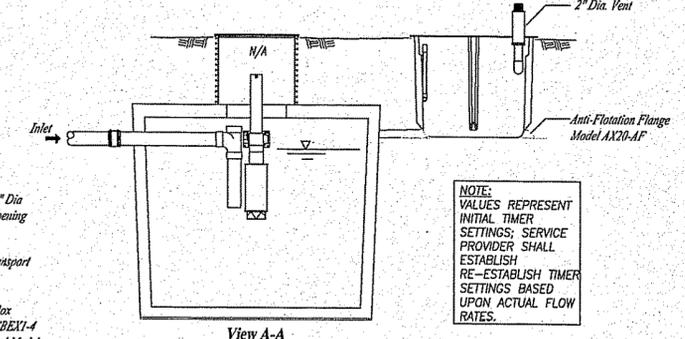
NOTE: GARBAGE DISPOSALS & LARGE (100 GALLON OR MORE) BATHTUBS SHALL NOT BE UTILIZED AT THIS HOMESITE.



1500 GALLON 2-COMPARTMENT SEPTIC TANK NOT TO SCALE



Function	Setting
High Level Alarm	N/A
Override Timer ON/OFF	LLARO



**DRAINFIELD DOSING REQUIREMENTS:**

- # OF ORIFICES IN DRAINFIELD: 23.5' TRENCH / 2' SPACING X 4 LATERALS = 47 ORIFICES
- REQUIRED DOSE PER ORIFICE: 0.25 TO 0.50 GAL/ORIFICE/DOSE
- REQUIRED DOSE TO FIELD: 11.75 GALLONS - 23.5 GALLONS PER DOSE
- VOLUME OF WATER IN TRANSPORT LINE: 1 GAL PER 10' OF 1 1/2" TRANSPORT LINE
- ANTICIPATED DRAINBACK FROM TRANSPORT LINE: 1 GALLON
- TOTAL REQUIRED VOLUME TO BE DOSE TO FIELD: 13-25 GALLONS
- VOLUME PER INCH OF 24 DIA. PUMP CHAMBER: 2 GALLONS PER INCH
- REQUIRED SEPARATION BETWEEN ON & OFF FLOATS: 10" (20 GALLON DOSE)

**ONSITE WASTEWATER TREATMENT DETAILS**  
SINGLE FAMILY LOT DEVELOPMENT  
ASSESSOR'S PLAT CVB/ LOT 19  
LAKE VIEW DRIVE  
GLOCESTER, RHODE ISLAND

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**BIO-RETENTION CONSTRUCTION NOTES:**

- ALL BIORETENTION AREAS SHALL BE CONSTRUCTED FOLLOWING THE COMPLETION AND STABILIZATION OF OTHER SITE WORK. COMPACTION OF THE BIO-RETENTION AREA PRIOR TO AND DURING CONSTRUCTION MUST BE AVOIDED. EXCAVATION SHALL BE COMPLETED USING LIGHT EQUIPMENT WITH WIDE TRACKS. IF THE AREA DOES BECOMES COMPACTED, SOIL MUST BE TILLED TO A MINIMUM DEPTH OF 12".
- IF SPECIFIED, UNDERDRAINS SHALL BE PLACED ON A MINIMUM OF 3'0" WIDE SECTION OF FILTER CLOTH, OVERLAIN BY GRAVEL BEDDING FREE FROM FINES. PIP SHALL BE SLOPED A MINIMUM OF 0.5%.
- PLANTING MEDIA SHALL BE PLACED IN 12" LIFTS.

**MATERIALS**

PLANTING MEDIA - THE MATERIAL TO BE FURNISHED SHALL BE A UNIFORM MIX FREE OF SUBSOIL, REFUSE, STUMPS, ROOTS, ROCKS, BRUSH, WEEDS OR OTHER MATERIAL WHICH WOULD PREVENT THE FORMATION OF A SUITABLE SEED BED. THE MEDIA SHALL CONSIST OF THE 4 PARTS PLANTING SOIL & 1 PART WELL AGED, AERATED, LEAF COMPOST.

GRADATION OF BIORETENTION MIX.			
US STANDARD SIEVE SIZE	SIEVE SIZE (IN.)	MATERIAL	% PASSING
NO. 4	0.0187	GRAVEL	100
NO. 10	0.075	VERY COARSE SAND	95
NO. 40	0.017	SAND	40
NO. 200	0.003	SILT	20
NO. > 200	> 0.001	CLAY	5

A TEXTURAL ANALYSIS IS REQUIRED TO ENSURE THE BIORETENTION SOIL MEETS THE SPECIFICATION LISTED ABOVE. THE BIORETENTION SOIL SHOULD ALSO BE TESTED FOR THE FOLLOWING CRITERIA:

- PH RANGE 5.2 - 7.0
- SOLUBLE SALTS NOT TO EXCEED 500 PPM
- SOIL INFILTRATION RATE = MIN. 8" PER HOUR

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

**MULCH LAYER SPECIFICATIONS.**  
A FINELY SHREDDED, WELL-AGED ORGANIC HARDWOOD MULCH IS THE PREFERRED ACCEPTED MULCH. A FINELY SHREDDED, WELL-AGED ORGANIC DARK FINE MULCH MAY BE ACCEPTED ON A CASE-BY-CASE BASIS. BARK DUST MULCHES AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE.

SHREDDED MULCH MUST BE WELL AGED (6-12 MONTHS) FOR ACCEPTANCE. MIX APPROXIMATELY 1/3 THE SPECIFIED MULCH LAYER INTO THE PLANTING SOIL TO A DEPTH OF APPROXIMATELY 4 INCHES TO HELP FOSTER A HIGHLY ORGANIC SURFACE LAYER.

**INSTALLATION**

- IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION AREA IS EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES ARE NOT ACCEPTABLE.
- COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE PERFORMED TO REFRACTURE THE SOIL PROFILE THROUGH THE 12-IN COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.
- WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12IN OR GREATER. DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

**PLANT INSTALLATION**

- THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE.
- ROOT STOCK OF THE PLANT MATERIAL SHOULD BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE DIAMETER OF THE PLANTING PIT SHOULD BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.
- TREES SHOULD BE BRACED USING 2 IN X 2 IN STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE TILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH.

**POROUS PAVEMENT CONSTRUCTION NOTES:**

**GENERAL:** THE ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO ALL POROUS PAVEMENT WORK.

**EXCAVATION:** EXCAVATE TO THE DEPTH OF THE PROPOSED SUB-BASE. IF "B" HORIZON SOILS ARE ENCOUNTERED BENEATH THIS DEPTH CONTINUE TO EXCAVATE UNTIL A SUITABLE BASE MATERIAL IS ENCOUNTERED.

- PREPARATION:**
- KEEP AREA WHERE PAVEMENT IS TO BE CONSTRUCTED FREE FROM SEDIMENTS THROUGHOUT THE PROJECT.
  - BACKFILL REQUIRED TO MEET GRADES SHALL MEET THE MATERIAL REQUIREMENTS BELOW AND BE COMPACTED TO A DENSITY OF 95% USING A VIBRATORY COMPACTOR.
  - FILTER FABRIC IS ONLY RECOMMENDED FOR THE SLOPING SIDES OF THE POROUS ASPHALT SYSTEM EXCAVATION. IT SHALL BE MIRAFI 160N, OR APPROVED EQUAL.

**MATERIALS:** LAYERS FROM THE BOTTOM UP ARE AS FOLLOWS:

- RESERVOIR COURSE:** (3/4" CRUSHED STONE), 4" THICK, AASHTO No. 5  
RESERVOIR COURSE TO ACT AS CAPILLARY BARRIER FOR FROST HEAVE PROTECTION.
- FILTER COURSE:** (MEDIUM SAND) 8"-12" THICK, AASHTO NO. 57 OR WITH ENG. APPROVAL ASTM C-33  
FILTER COURSE PROVIDES WATER QUALITY TREATMENT
- CHOKER COURSE:** (3/8" PEA STONE) 4" THICK, MINIMUM AASHTO NO. 57.  
CHOKER BASE PROVIDES PAVEMENT STABILITY

US STANDARD SIEVE SIZE	PERCENT PASSING				
	AASHTO NO. 57 STONE	AASHTO NO. M-5 MEDIUM SAND	AASHTO NO. 2 2" STONE	AASHTO NO. 3 CRUSHED STONE	AASHTO NO. 5
3"	---	100	100		
2 1/2"	---	90-100	100		
2"	---	35-70	90-100		
1 1/2"	100	0-15	35-70	100	
1"	95-100	0-15	90-100	100	
3/4"	---	0-5	---	20-55	
1/2"	25-60	---	0-5	0-10	100
3/8"	---	100	---	0-5	85-100
#4	0-10	70-100	---	---	10-30
#8	0-5	---	---	---	0-10
#200	---	0-6	---	---	0-5

**INSTALLATION:** INSTALL CHOKER, GRAVEL, AND STONE BASE COURSE AGGREGATE TO A MAXIMUM OF 95% COMPACTION STANDARD PROCTOR (ASTM D698 / AASHTO 199). CARE NEEDS TO BE USED TO NOT OVER COMPACT MATERIALS. OVER-COMPACTION RESULTS WITH LOSS OF INFILTRATION CAPACITY.

**MAINTENANCE:** KEEP ADJACENT AREAS WELL MAINTAINED AND STABILIZED. REMOVE LEAVES/DEBRIS REGULARLY. RAKE & HOSE DOWN DRIVEWAY SEASONALLY TO PREVENT THE SURFACE FROM CLOGGING. SEDIMENTS SHALL BE REMOVED ONCE EVERY THREE MONTHS BY SWEEPING.

**SAMPLE BIORETENTION PLANT LIST FOR PART-SHADE - BMP #2**

CODE	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	SPREAD	NOTES
SP	Stewartia Psuedocamelia	Stewartia *	20'	20-30'	Deciduous (Morning Sun / Afternoon Shade)
CS	Cornus Stolonifera	Dwarf Red Osier Dogwood	36-60"	36-60"	Deciduous Shrub - Winter Interest
HA	Hydrangea Arborescens	Wild Hydrangea	48-60"	48-60"	Deciduous Shrub - White Flowers (S)
KA	Kalmia Angustifolia	Sheep Laurel	36-48"	36-40"	Evergreen Shrub - Pink Flowers (Sp)
PV	Rhododendron Ferrugineum	Rhododendron	48-72"	48-72"	Evergreen Shrub - Various Flowers (Sp)
BS	Buxus sempervirens	"North Star" Boxwood	24-36"	24-36"	Evergreen Shrub - Various Flowers (Sp)

\* Alternative Shade Trees: Red Maple (Acer Rubrum), Flowering Dogwood (Cornus Florida)

**PERENNIAL - PLANT LIST FOR RAIN-GARDENS**

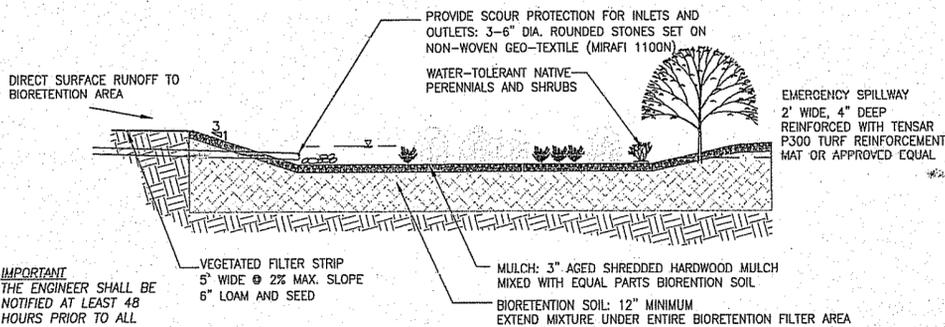
ALL PERENNIALS PLANTINGS TO BE PLANTED IN GROUPS OF THREE AND STAGGERED 18" O.C.

**RAIN GARDEN PERENNIALS - LOWER LEVEL PLANTS (MOST TOLERANT OF SATURATED CONDITIONS)**

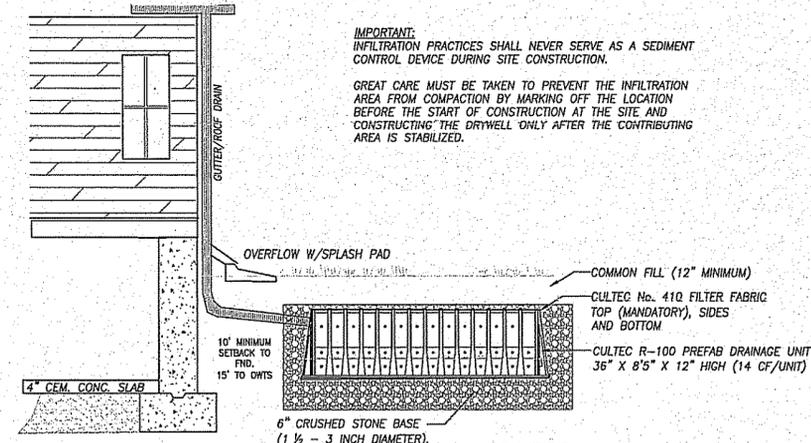
BOTANICAL NAME	COMMON NAME	HEIGHT	SPREAD	SIZE
Labella Cardinalis	Cardinal Flower (Sum.)	24"-30"	18"	1 Gallon
Labella Siphilitica	Blue Lobelia (Sum.)	18"-24"	15"	1 Gallon
Mertensia Virginica	Blue Bells (Spring)	15"-18"	15"	1 Gallon
Iris Versicolor	Blue Flag Iris (Spring)	18"-24"	15"	1 Gallon

**RAIN GARDEN PERENNIALS - UPPER LEVEL PLANTS (LESS TOLERANT OF SATURATED CONDITIONS)**

BOTANICAL NAME	COMMON NAME	HEIGHT	SPREAD	SIZE
Heuchera 'Black Beauty'	Black Beauty Coral Bells	10"-16"	24"	1 Gallon
Astible (Sp.)	Astible	12"-18"	6"-10"	1 Gallon



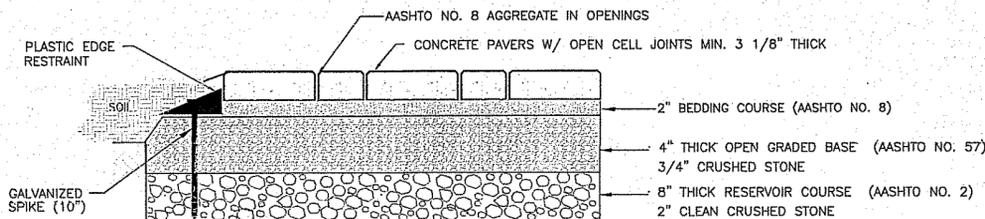
**TYPICAL BIORETENTION FILTER CROSS-SECTION**



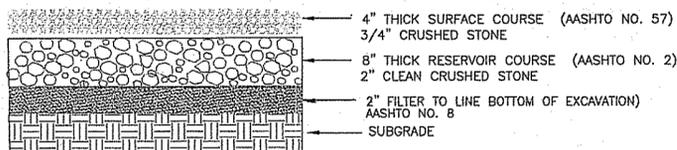
**ROOF DRYWELL INFILTRATION SYSTEM**

CULTEC C-100 PREFAB DRAINAGE UNIT  
36" X 8'5" X 12" HIGH (14 CF/UNIT)

DRAINFIELD	
DESIGN ELEVATION:	ELEV. 450.50
GROUNDWATER:	ELEV. 446.50
6" STONE BASE:	ELEV. 448.50
CULTEC INVERT:	ELEV. 449.00
CULTEC TOP CHAMBER:	ELEV. 450.00
COVER OVER SYSTEM:	ELEV. 451.00



**PERMEABLE DRIVEWAY PAVERS**



**GRAVEL DRIVEWAY DETAIL**

**INFILTRATION SYSTEM CONSTRUCTION NOTES**

- INFILTRATION TRENCH OR CHAMBER SYSTEMS MAY NOT RECEIVE RUN-OFF UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA TO THE INFILTRATION SYSTEM HAS RECEIVED FINAL STABILIZATION. CONSTRUCTION EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM TRAVELING OVER THE INFILTRATION TRENCH OR CHAMBER AREAS TO MINIMIZE COMPACTION OF THE SOIL.
- EXCAVATE THE INFILTRATION CHAMBER TO THE DESIGN DIMENSIONS. EXCAVATED MATERIALS SHALL BE PLACED AWAY FROM THE TRENCH/CHAMBER SIDES TO ENHANCE TRENCH WALL STABILITY. LARGE TREE ROOTS MUST BE TRIMMED FLUSH WITH THE TRENCH SIDES IN ORDER TO PREVENT FABRIC PUNCTURING OR TEARING OF THE FILTER FABRIC DURING SUBSEQUENT INSTALLATION PROCEDURES. THE SIDE WALLS OF THE TRENCH/CHAMBER SHALL BE ROUGHENED WHERE SHEARED AND SEALED BY HEAVY EQUIPMENT.
- INFILTRATION CHAMBERS SHOULD CONSIST OF CULTEC RECHARGER C-100 HD UNITS. ANY SUBSTITUTIONS MUST BE OF EQUAL SIZE AND COMPRISED OF HIGH MOLECULAR WEIGHT HIGH DENSITY POLYETHYLENE (HDPE) AND MEET AASHTO H10 AND H20 STANDARDS. (CULTEC, INC. OF BROOKFIELD, CT. (203-775-4416 OR 1-800-428-5832)
- A CLASS "C" GEOTEXTILE OR BETTER SHALL INTERFACE BETWEEN THE TRENCH/CHAMBER SIDE WALLS AND BETWEEN THE STONE RESERVOIR AND GRAVEL FILTER LAYERS. A PARTIAL LIST OF NONWOVEN FILTER FABRICS THAT MEET THE CLASS "C" CRITERIA IS CONTAINED INCLUDES (MIRAFI 180-N, AMOCO 4552, WEBTEC N70, GEOLON N70, CARTHAGE FX-80S)
- THE WIDTH OF THE GEOTEXTILE MUST INCLUDE SUFFICIENT MATERIAL TO CONFORM TO TRENCH/CHAMBER PERIMETER IRREGULARITIES AND FOR A 6-INCH MINIMUM TOP OVERLAP. THE FILTER FABRIC SHALL BE TUCKED UNDER THE SAND LAYER ON THE BOTTOM OF THE INFILTRATION TRENCH/CHAMBER FOR A DISTANCE OF 6 TO 12 INCHES.
- THE STONE AGGREGATE SHOULD BE PLACED IN LIFTS AND COMPACTED USING PLATE COMPACTORS. A MAXIMUM LOOSE LIFT THICKNESS OF 8 INCHES IS RECOMMENDED. THE GRAVEL STONE FOR THE INFILTRATION TRENCH/CHAMBER SHALL BE WASHED AND MEET ONE OF THE FOLLOWING AASHTO STD. M-43; SIZE NO. 2 OR NO. 3.
- CARE SHALL BE EXERCISED TO PREVENT NATURAL OR FILL SOILS FROM INTERMIXING WITH THE STONE AGGREGATE. ALL CONTAMINATED STONE AGGREGATE SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED STONE AGGREGATE.
- VOIDS CAN BE CREATED BETWEEN THE FABRIC AND THE EXCAVATION SIDES AND SHALL BE AVOIDED. REMOVING BOULDERS OR OTHER OBSTACLES FROM THE TRENCH WALLS IS ONE SOURCE OF SUCH VOID; THEREFORE, NATURAL SOILS SHOULD BE PLACED IN THESE VOID AT THE MOST CONVENIENT TIME DURING CONSTRUCTION TO ENSURE FABRIC CONFORMITY TO THE EXCAVATION SIDES.
- PVC SHOULD BE IN ACCORDANCE WITH RIDOT SPECIFICATION SECTION M.04 DRAINAGE AND THE FOLLOWING PROVISIONS, AS APPLICABLE. PVC DISTRIBUTION PIPES SHALL BE SCHEDULE 40 AND MEET ASTM STD. D 1784. ALL FITTINGS AND PERFORATIONS (1/2 INCH IN DIAMETER) SHALL MEET ASTM STD. D 2729.

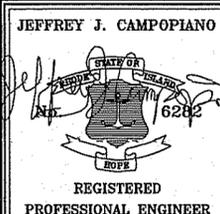
**IMPORTANT:** INFILTRATION PRACTICES SHALL NEVER SERVE AS A SEDIMENT CONTROL DEVICE DURING SITE CONSTRUCTION.

GREAT CARE MUST BE TAKEN TO PREVENT THE INFILTRATION AREA FROM COMPACTION BY MARKING OFF THE LOCATION BEFORE THE START OF CONSTRUCTION AT THE SITE AND "CONSTRUCTING" THE DRYWELL ONLY AFTER THE CONTRIBUTING AREA IS STABILIZED.

**STORMWATER DETAILS  
SINGLE FAMILY LOT DEVELOPMENT  
ASSESSOR'S PLAT CVB/ LOT 19  
LAKE VIEW DRIVE  
GLOCESTER, RHODE ISLAND**

PREPARED BY:  
**JEFFREY J. CAMPOPIANO P.E.**  
16 WEST MAIN STREET  
WICKFORD, RHODE ISLAND 02852  
jeff@campopiano-eng.com

PREPARED FOR:  
**THOMAS CHADWICK**  
88 LAKE VIEW DRIVE  
GLOCESTER, RHODE ISLAND 02814



REV.	DATE	DESCRIPTION	DATE: 10/1/18
			SCALE: NTS
			4