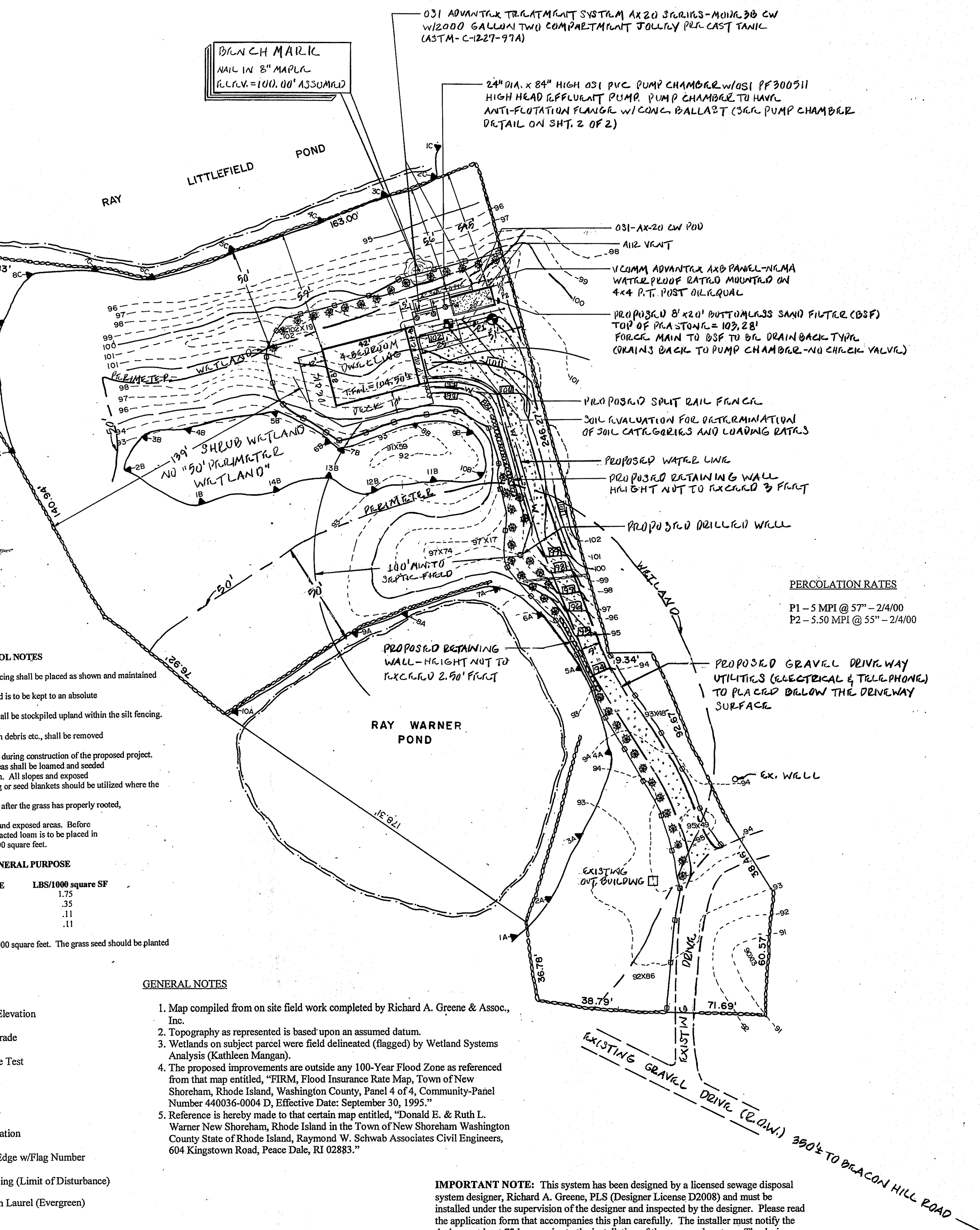
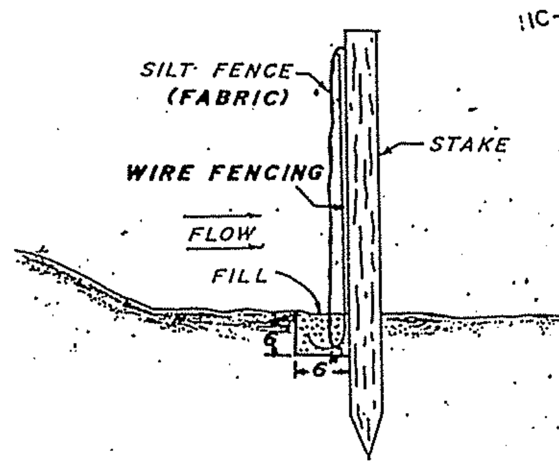
PLANTING SCHEME

1. Mountain laurel (Kalmia latifolia) will be planted along the limits of disturbance where indicated. Mountain laurel will be planted 6 to 8 feet on center, 4-6 feet in height after planting. Mountain laurel selected due local deer population which feeds on other evergreens particularly those with needles.
2. Mountain laurel to be planted during the growing season (April – June and August – October).
3. Any plantings not surviving at least one growing season will be replaced.





SILT FENCE

EROSION CONTROL NOTES

1. Prior to any construction or earthwork activity silt fencing shall be placed as shown and maintained throughout the construction process.
2. All disturbance is to be limited to the areas shown, and is to be kept to an absolute minimum.
3. All excavated materials (soil) to be used as backfill shall be stockpiled upland within the silt fencing. Silt fencing should surround this stockpiled material.
4. All excess unwanted excavated materials, construction debris etc., shall be removed from the site and disposed of in a proper manner.
5. No disturbances shall occur outside of the silt fencing during construction of the proposed project.
6. All disturbed areas including backfilled and graded areas shall be loamed and seeded as soon as possible upon completion of all construction. All slopes and exposed areas shall be stabilized with straw mulch. Jute netting or seed blankets should be utilized where the slope is 3:1 or greater.
7. All silt fencing and mulch are to remain in place until after the grass has properly rooted, approximately six to eight weeks.
8. The following seed mix is to be used in all disturbed and exposed areas. Before seeding, however, a minimum of four inches of compacted loam is to be placed in the affected areas at a rate of 12.4 cubic yards per 1000 square feet.

SEED MIXTURE-GENERAL PURPOSE

SEED MIXTURE	LBS/ACRE	LBS/1000 square SF
Red Fescue	75	1.75
Kentucky Bluegrass	15	.35
Colonial Bentgrass	5	.11
Perennial Ryegrass	5	.11

The straw mulch is to be applied at a rate of 90 lbs. per 1000 square feet. The grass seed should be planted between April 1-June 15 and August 15-September 30.

LEGEND

101 — — — — —	Existing Contour Elevation
[101]	Proposed Finish Grade
⊕	Groundwater Table Test
●	Percolation Test
∞∞∞∞∞∞	Existing Stonewall
102x19	Existing Spot Elevation
▲ 58	Flagged Wetland Edge w/Flag Number
⊖———⊖———⊖	Proposed Silt Fencing (Limit of Disturbance)
❁	Proposed Mountain Laurel (Evergreen)

GENERAL NOTES

1. Map compiled from on site field work completed by Richard A. Greene & Assoc., Inc.
2. Topography as represented is based upon an assumed datum.
3. Wetlands on subject parcel were field delineated (flagged) by Wetland Systems Analysis (Kathleen Mangan).
4. The proposed improvements are outside any 100-Year Flood Zone as referenced from that map entitled, "FIRM, Flood Insurance Rate Map, Town of New Shoreham, Rhode Island, Washington County, Panel 4 of 4, Community-Panel Number 440036-0004 D, Effective Date: September 30, 1995."
5. Reference is hereby made to that certain map entitled, "Donald E. & Ruth L. Warner New Shoreham, Rhode Island in the Town of New Shoreham Washington County State of Rhode Island, Raymond W. Schwab Associates Civil Engineers, 604 Kingstown Road, Peace Dale, RI 02883."

PERCOLATION RATES

P1 – 5 MPI @ 57" – 2/4/00
P2 – 5.50 MPI @ 55" – 2/4/00

IMPORTANT NOTE: This system has been designed by a licensed sewage disposal system designer, Richard A. Greene, PLS (Designer License D2008) and must be installed under the supervision of the designer and inspected by the designer. Please read the application form that accompanies this plan carefully. The installer must notify the designer at least 72 hours prior to the installation of the approved system. The designer will contact RIDEM to give notification of the installation date at least 24 hours prior to installation of the system. The designer may be contacted at (401)–364-9405.

SEPTIC SYSTEM ELEVATION SCHEDULE (FT.)

House Sanitary Invert = 99.05

Septic Tank/Advantex System:

Septic Tank Inv. In = 98.75

Top of Advantex Pod = 102.78
Bottom of Advantex Pod = 100.20
RSV Inv. = 99.83

High Water Alarm/Override Timer = 98.75
Override Timer = 98.58
Top of RSV Cage = 98.61
Top of Filter Cartridge = 97.50
Normal Low Liquid Level = 98.19
Low Water Alarm/Redundant Off = 97.77

Pump Chamber:
Invert In = 99.68 (From Advantex Pod Unit)
Invert Out = 100.60± (To BSF)

Distribution Laterals: (BSF – Level Pipes)
Pipe Invert = 102.95

Field Design Depth: Wt = 72" (6.0') TH 1-99 excavated @ El. 102.17';
Water Table El. 96.17

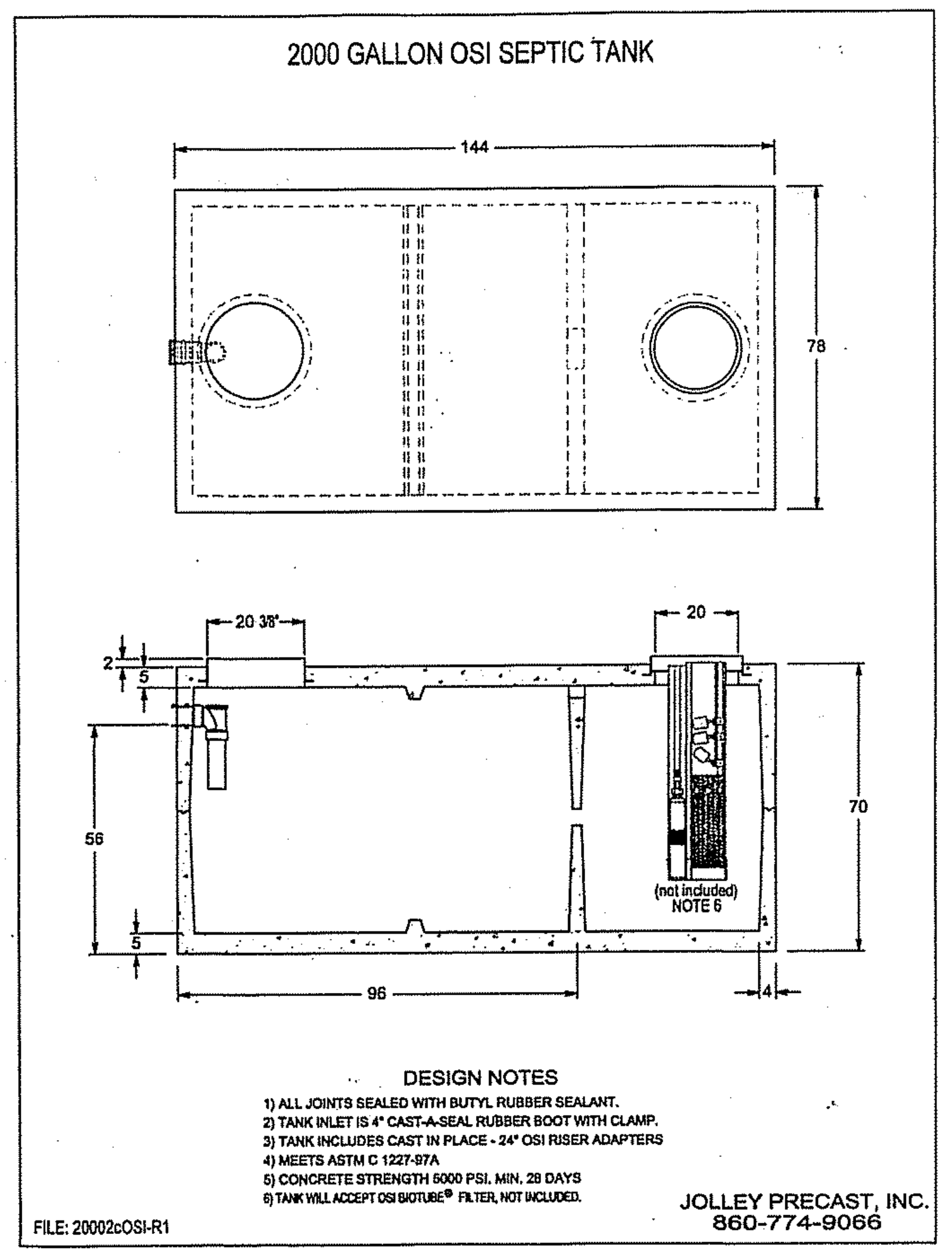
Interface of Top of Concrete Sand/Bottom of Pea Stone Layer = 102.70'
This Elevation Provides 6.53' of Vertical Separation to the Water Table.
Top of Pea Stone = 103.28'; Bottom of Concrete Sand = 100.70'
BSF Set at Existing Average Grade El. 102.50'±.

PROPOSED SYSTEM:
ADVANTEX TREATMENT SYSTEM
AX 20 SERIES – MODE 3B CW – OSI
PUMP CHAMBER 24" DIA., 84" (7.0') HT, OSI
CONTROL PANEL VCOM ADVANTEX AXB PANEL, 115V
RECIRCULATING PUMP PF 300511
8' X 20' – BOTTOMLESS SAND FILTER (BSF). SEE SHEET 2 FOR DETAILS.

SIZING OF BOTTOMLESS SAND FILTER (BSF)

4 BEDROOMS X 115 GALS. PER BEDROOM = 460 GALS. (DAILY FLOW RATE)
460 GALLONS PER DAY ÷ 3.1 GALS/SF/DAY (CATEGORY 1) = 148.39 SF (MIN. REQ'D)
PROPOSED BSF AREA = 160 SF (8' W X 20' L)

2000 GALLON OSI SEPTIC TANK



DESIGN NOTES
1) ALL JOINTS SEALED WITH BUTYL RUBBER SEALANT.
2) TANK INLET IS 4" CAST-A-SEAL RUBBER BOOT WITH CLAMP.
3) TANK INCLUDES CAST IN PLACE - 24" OSI RISER ADAPTERS
4) MEETS ASTM C 1227-97A
5) CONCRETE STRENGTH 5000 PSI. MIN. 28 DAYS
6) TANK WILL ACCEPT OSI BIOTUBE® FILTER, NOT INCLUDED.

FILE: 20002cOSI-R1

JOLLEY PRECAST, INC.
860-774-9066

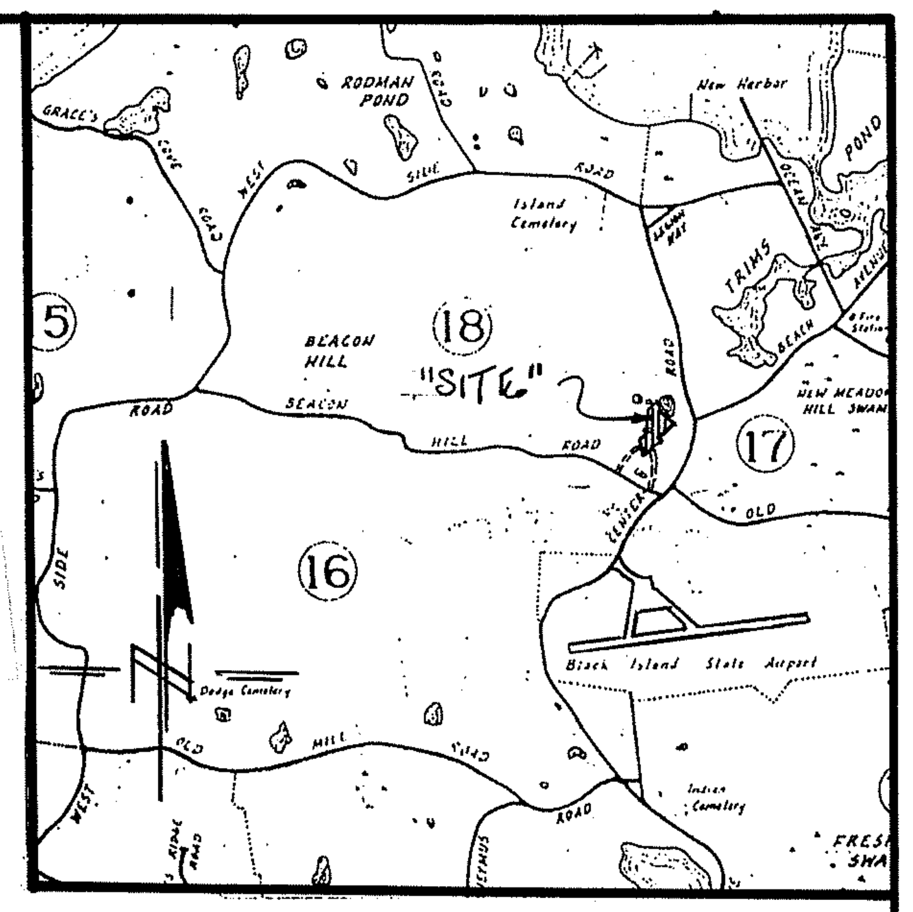
NOTE: THE OWTS PERMIT ISSUED BY RIDEM-OWTS PROGRAM FOR THE INSTALLATION OF THE SEPTIC SYSTEM INCLUDING AN OPERATION AND MAINTENANCE SERVICE CONTRACT WITH A CERTIFIED VENDOR MUST BE RECORDED IN THE LAND EVIDENCE RECORDS OF THE TOWN OF NEW SHOREHAM IN ORDER TO RECEIVE A CERTIFICATE OF CONFORMANCE FOR THE INSTALLED SEPTIC SYSTEM FROM RIDEM-OWTS PROGRAM. A COPY OF THE ABOVE REFERENCED RECORDED DOCUMENTS SHOULD BE FORWARDED TO THE SYSTEM DESIGNER SO AS TO SUBMIT RECORDED DOCUMENTS IN CONJUNCTION WITH THE CERTIFICATE OF CONSTRUCTION TO RIDEM-OWTS PROGRAM.

MAINTENANCE & WARRANTY NOTES: The installer shall provide the owner and designer with copies of the Advantex System components warranty and maintenance requirements. The owner shall be responsible for maintaining all system components in accordance with the manufacturer' s recommendations. The effluent filter media and system components shall be maintained as required for the System to properly operate.

I hereby certify that this map meets class IV Survey Standards and conforms to Procedural and Technical Standards for the practice of Land Surveying in the State of Rhode Island and Providence Plantations as prepared by the Rhode Island Society of Professional Land Surveyors, Inc., May 1992 as amended.

RICHARD A. GREENE
NO. 1731
PROFESSIONAL LAND SURVEYOR

RECEIVED
DEC - 4 2009
ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES



Location Map

GENERAL NOTES:

1. THE GENERAL VICINITY IS SUPPLIED BY PRIVATE WELLS. THERE IS NO EXISTING OR PROPOSED PRIVATE WELLS WITHIN 100' OF THE PROPOSED OWTS. THERE ARE ALSO NO EXISTING OR PROPOSED PUBLIC WELLS WITHIN 500' OF THE PROPOSED OWTS OR RESERVOIRS WITHIN 200' OF THE PROPOSED OWTS. ALL WELLS WITHIN 200' OF THE PROPOSED OWTS ARE AS REFERENCED. THERE ARE NO PROPOSED OR EXISTING SEPTIC SYSTEMS WITHIN 100' OF THE PROPOSED WELL.

2. THERE IS A FRESHWATER WETLAND 54' FROM THE PROPOSED ISDS. THERE IS NO COASTAL WETLAND OR FEATURE (BLUFF, DUNE, ETC.) WITHIN 200' OF THE SUBJECT PROPERTY.

3. THE PROPOSED SEPTIC TANK SHALL BE A 2000 GAL. (MIN.) 2-COMPARTMENT PRECAST TANK AND BE EQUIPPED WITH AN ADVANTEX TREAMENT SYSTEM – AX 20 SERIES – MODE 3B CW SYSTEM BY ORENCO SYSTEMS, INC. REFER TO ATTACHED DETAIL SHEET (S) FOR ADDITIONAL INFORMATION AND TYPICAL DETAILS. THE SEPTIC TANK MUST MEET ASTM STANDARD C-1227-97A. IT IS REQUIRED THAT THE SEPTIC TANK BE ACQUIRED FROM JOLLEY PRECAST, TEL: 860-774-9066. IT IS RECOMMENDED THAT THE BOTTOM OF THE SEPTIC TANK HOLE BE EXCAVATED TO A DEPTH TO ALLOW FOR A MINIMUM 6" BASE OF PEA STONE TO PREVENT SETTLING (BEFORE PLACING AGGREGATE COMPACT BOTTOM OF HOLE).

4. GRADE SYSTEM AREA PROPERLY TO ENSURE SURFACE WATER RUN-OFF. DO NOT LOAM AND SEED OVER THE BSF AS THIS IS NOT ALLOWED. PARKING OR VEHICULAR TRAFFIC OVER SYSTEM IS PROHIBITED. CLEAR ALL TREES WITHIN 10 FEET.

5. THE HOUSE SANITARY LATERAL PIPING SHALL BE 4" SCH-40 PVC OR BETTER SPECIFICATION OR AS NOTED ON THESE PLANS. ALL BSF LATERAL PIPING SHALL BE 3/4" PRESSURE SCH-40 PVC. THE MANIFOLD IN THE BSF SHALL BE 1-1/4" PRESSURE SCH 40 PVC. THE TRANSPORT LINE (FORCE MAIN) FROM THE PUMP CHAMBER TO THE BSF SHALL BE 1-1/4" PRESSURE SCH 40. ALL ADVANTEX SYSTEM PIPING IS PREDETERMINED OR AS SPECIFIED BY OSI. ALL ADVANTEX COMPONENTS MAYBE ACQUIRED FROM WASTEWATER TECHNOLOGIES, INC. (WTI); TEL: 401-737-7810 OR ATLANTIC SOLUTIONS, INC., TEL: 401-293-0176.

6. TWO (2) MAN-HOLE RISERS (ORENCO RIBBED PVC RISERS) WITH COVERS SHALL BE INSTALLED OVER THE SEPTIC TANK ENDS AND SHALL BE RAISED ABOVE THE FINISHED GRADE BY 1"±. FIBERGLASS INSULATED GASKETED COVERS WITH STAINLESS STEEL BOLTS ARE TO BE UTILIZED. TO PREVENT FROST HEAVE AROUND PVC RISERS BACK FILL WITH PEA GRAVEL.

7. THERE ARE NO SUBSURFACE DRAINS, INCLUDING FOUNDATION DRAINS EXISTING OR PROPOSED WITHIN 25 FEET UP GRADIENT OR 50' DOWN GRADIENT OF THE PROPOSED SEWAGE DISPOSAL SYSTEM.

8. THE BOUNDARY LINES REPRESENT A CLASS IV STANDARD.

9. THE ENTIRE SITE IS LOCATED OUTSIDE THE "CRITICAL RESOURCE AREA" AS DEFINED BY RIDEM – ISDS SECTION.

10. THE SEPTIC TANK SHALL BE PUMPED OF CONTENTS WHEN THE SLUDGE DEPTH BECOMES GREATER THAN ¼ THE LIQUID DEPTH. THE TIME BETWEEN PUMPINGS WILL VARY, BUT IT IS SUGGESTED THAT THE SEPTIC TANK BE PUMPED OF CONTENTS AND INSPECTED AT LEAST EVERY TWO YEARS AND MORE FREQUENTLY WHEN EXTENDED PERIODS OF HIGH FLOW RATES ARE EXPERIENCED.

11. THE ORENCO REPRESENTATIVE PRIOR TO INSTALLATION MUST VERIFY ALL SYSTEM COMPONENTS TO BE IN COMPLIANCE. THE DESIGNER SHALL SUPERVISE THE ISDS INSTALLATION AS REQUIRED.

12. WHEN CONSTRUCTING THE BOTTOMLESS SAND FILTER REMOVE ALL EXISTING VEGETATION, ORGANIC MATTER, TOPSOIL AND SUBSOIL TO A DEPTH OF **100.20'±** WITHIN THE SAND FILTER AREA. THE BOTTOM OF THIS EXCAVATION AREA MUST BE SCARIFIED. MIX 3" OF SAND MEDIA (ASTM-C33) WITH 3" OF NATIVE SOIL. WHEN CONSTRUCTING THE BOTTOMLESS SAND FILTER PARTICULARLY DURING THE INSTALLATION OF THE PRESSURE TREATED TIMBERS OR OTHER APPROVED RETAINING STRUCTURE IN CONJUNCTION WITH THE MIXING OF THE SAND MEDIA AND NATIVE SOIL THE INSTALLER MUST ENSURE THAT THE BOTTOM REMAIN SCARIFIED BEFORE THE PLACEMENT OF CONCRETE SAND (ASTM-C33). IT IS IMPERATIVE THAT THE BOTTOM DOES NOT BECOME COMPACTED FROM THE USE OF EQUIPMENT OR FOOT TRAFFIC. IF WARRANTED THE BOTTOM MUST BE RE-SCARIFIED BEFORE THE PLACEMENT OF CONCRETE SAND. THE CONCRETE SAND IS TO BE ACQUIRED FROM THE HOLLISTON SAND COMPANY, INC., SLATERSVILLE, RI OR DRY BRIDGE SAND & GRAVEL, PEACEDALE, RI.

13. A BENCHMARK MUST BE SET WITHIN 150' OF THE PROPOSED SEPTIC SYSTEM AND DWELLING, PRIOR TO THE START OF ANY CONSTRUCTION.

14. PRIOR TO ANY CONSTRUCTION IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE BENCHMARK ELEVATION. IF ANY DISCREPANCIES ARE NOTED; PLEASE CONTACT DESIGNER IMMEDIATELY.

15. PRIOR TO ANY CONSTRUCTION ALL EROSION CONTROL STRUCTURES MUST BE IN PLACE (REFER TO "EROSION CONTROL NOTES).

16. ALL WARRANTIES OF THE SYSTEM COMPONENTS ARE AS PRESENTED BY THE COMPANIES INVOLVED.

17. LOW WATER VOLUME FIXTURES SHALL BE USED IN THE PLUMBING AND A GARBAGE DISPOSAL UNIT IS NOT ALLOWED TO DISCHARGE INTO THE PROPOSED OWTS. ALSO, BACKWASH OR DISCHARGE FROM A WATER TREATMENT SYSTEM IS PROHIBITED FROM ENTERING THE PROPOSED SEPTIC SYSTEM.

18. REFERENCE IS HEREBY MADE TO RIDEM FRESHWATER WETLANDS APPLICATION # 00-0202 AND OWTS PROGRAM APPLICATION # 9922-819.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JAN - 8 2010 FILE # 06-0125
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

PLAN SHOWING PROPOSED ON-SITE WASTEWATER TREATMENT SYSTEM AND SITE IMPROVEMENTS FOR:

MARK & MARY FAGAN

NORTH OF BEACON HILL ROAD
ASSESSOR'S PLAT 18, LOT 63
TOWN OF NEW SHOREHAM, RHODE ISLAND
SCALE: 1" = 30' OCTOBER 2009

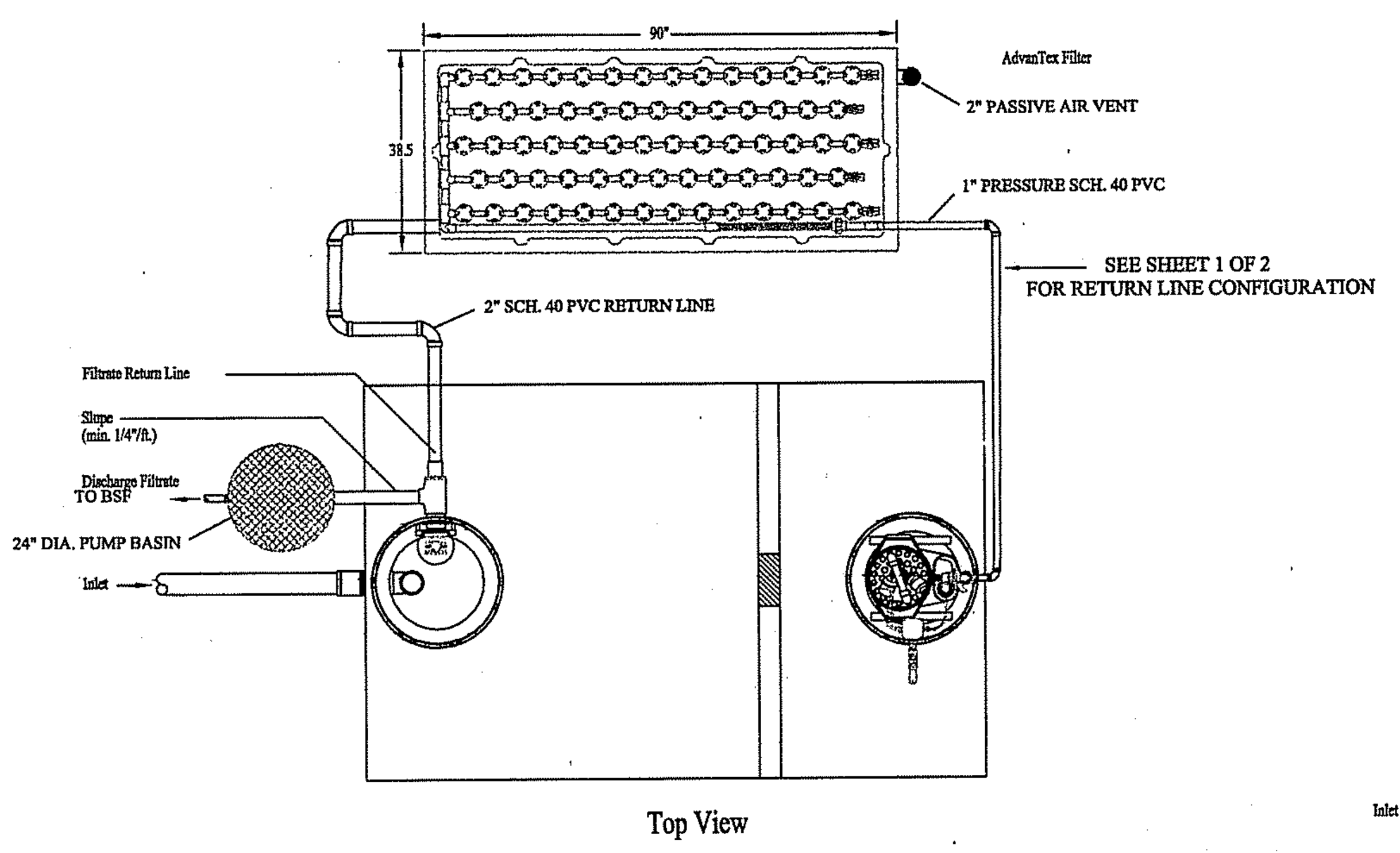
RICHARD A. GREENE & ASSOCIATES, INC.
220 RICHMOND TOWNHOUSE ROAD
CAROLINA, RHODE ISLAND 02812
Tel. 401-364-9405 Fax 401-364-9403

SHEET 1 OF 2

F4 D2 #70

AdvanTex™ Treatment System
AX 20 Series - Mode 3b CW
N.T.S.

AvanTex-AX20 Mode 3B CW
Anti Flotation Flanges are required
on the Advantex Pod Unit



Top View

NOTE: PRECAST CONCRETE SEPTIC TANK SHALL BE A TWO COMPARTMENT TANK, SHALL HAVE A 2000 GALLON MINIMUM CAPACITY AND SHALL BE COMPLETELY WATERTIGHT (ASTM- C1227-97A).

ADVANTEX TREATMENT SYSTEM GENERAL NOTES:

1. VENDOR INFORMATION: TECHNICAL INFORMATION OR VENDOR SERVICE MAY BE OBTAINED FROM THE FOLLOWING ORENCO SYSTEMS INC. 814 AIRWAY AVENUE SUTHERLIN, OR 97479 TEL. 1-800-348-9843 FAX 1-541-459-2884, or ATLANTIC SOLUTIONS, INC., PORTSMOUTH, RI TEL. 1-401-737-7810. FOR START-UP AND MAINTENANCE SERVICE CONTACT ATLANTIC SOLUTIONS, INC. AT THE NUMBER NOTED ABOVE.

2. THE TREATMENT SYSTEM PROVIDED (ADVANTEX TREATMENT SYSTEM -AX20 SERIES) MEETS THE REQUIREMENTS OF A CATEGORY 1 SYSTEM: ADVANCED TREATMENT UNIT THAT IS TIMED DOSED AND HAS BEEN CLASSIFIED BY RIDEM AS MEETING EFFLUENT STANDARDS LESS THAN OR EQUAL TO 20 mg/L FOR BOTH BOD AND TSS; AND FOG OF LESS THAN OR EQUAL TO 5 mg/L.

3. THE SEPTIC TANK AND PUMP CHAMBER FOR THE ADVANTEX TREATMENT SYSTEM SHALL CONSIST OF WATER TIGHT CONSTRUCTION AND SHALL BE PROVIDED WITH WATERTIGHT PLASTIC OR FIBERGLASS RISERS ABOVE FINISHED GRADE. THE INLET PIPE TO THE CONCRETE SEPTIC TANK SHALL HAVE A FLEXIBLE RUBBER SEAL SECURED BY STAINLESS STEEL BAND TO FORM A WATERTIGHT CONNECTION. WATERTIGHT RUBBER GROMMETS SHALL BE USED AT INLET AND OUTLET PIPES TO PLASTIC OR FIBERGLASS PUMP CHAMBERS/BASINS.

4. THE PUMP CHAMBER SPECIFIED AFTER THE TREATMENT SYSTEM DISCHARGING TO THE BSF SHALL PROVIDE A MINIMUM STORAGE VOLUME EQUAL TO THE DESIGN VOLUME DOSED ONTO THE BSF DURING ONE PUMP RUN TIME AS INDICATED ON THIS SHEET.

5. A LICENSED ELECTRICIAN SHALL INSTALL ALL ELECTRICAL COMPONENTS, WIRING, CIRCUITS, CONTROL & ALARM PANELS, AND ELECTRONIC CONTROL PANELS PER STATE/NATIONAL ELECTRIC CODE REQUIREMENTS.

6. THE ADVANTEX TREATMENT SYSTEM SHALL INCLUDE A PROGRAMMABLE TIMER TO PROVIDE SMALL DESIGN DOSES OF TREATED EFFLUENT TO THE BSF THROUGHOUT THE DAY. THE SYSTEM DESIGN DOSE WILL TYPICALLY OCCUR TWICE PER HOUR, BUT WILL VARY BASED ON ACTUAL FLOW. THE DESIGNER SHALL VERIFY THAT INSTALLER HAS FIELD-SET THE TIMER AND PUMP CHAMBER FLOAT SWITCHES AT THE TIME OF SYSTEM START-UP. THE SERVICE/MAINTENANCE PROVIDER SHALL INSPECT THE SYSTEM AFTER SUFFICIENT USE HAS OCCURRED (4 WEEKS±) TO ENSURE THAT THE PROGRAMMABLE TIMER IS RESET, AS NEEDED, AND ADJUSTED FOR ACTUAL FLOW CONDITIONS ANY CHANGES ARE TO BE FORWARDED TO THE SYSTEM DESIGNER.

7. THE INSTALLER SHALL PROVIDE A HIGH LEVEL WATER ALARM AND LOW WATER ALARM/REDUNDANT OFF FLOAT SWITCHES AS PART OF THE ADVANTEX SYSTEM TO OVERRIDE THE PROGRAMMABLE TIMER IN THE EVENT OF TIMER MALFUNCTIONS OR TEMPORARY EXCESSIVE WATER USE. THE PUMP CHAMBER SHALL PROVIDE A HIGH LEVEL WATER ALARM, PUMP ON/OFF AND A LOW WATER ALARM /REDUNDANT OFF FLOAT SWITCHES AS INDICATED. THE PUMP ON RUN TIME INTERVAL MAY BE PROGRAMMED THROUGH THE VCOM CONTROL PANEL UPON ACTIVATION OF THE ON FLOAT SWITCH (SEE PUMP CALCULATIONS FOR GPM ON THIS SHEET).

8. AN IMPULSE COUNTER SHALL BE PROVIDED ON THE TIMER OVERRIDE OR HIGH WATER ALARM FLOAT (WHICHEVER IS APPLICABLE BASED ON ESTIMATED FLOW CONDITIONS) FOR THE ADVANTEX TREATMENT SYSTEM AND PUMP CHAMBER/BASIN PUMP.

9. PUMP CONTROL PANELS SHALL BE PROVIDED WITH AN ELAPSED TIME RUN METER AND A DOSING EVENT COUNTER (PUMP IMPULSE COUNTER) FOR EACH PUMP IN THE SYSTEM. THE ELAPSED TIME RUN METER AND DOSING EVENT COUNTER SHALL BE NON-RESETTABLE. PUMP CONTROL PANELS SHALL BE MOUNTED ON A 4 X 4 PRESSURE TREATED POST AWAY FROM THE DWELLING FOR EASE OF SERVICE OF THE SYSTEM. IT IS RECOMMENDED THAT THE PANEL BOX(ES) BE PLACED IN A MANNER WITHIN VIEW OF THE SYSTEM LOCATION IF POSSIBLE TO HELP FACILITATE OPERATION AND MAINTENANCE.

10. INSTALLATION OF THE ADVANTEX TREATMENT SYSTEM SHALL BE PERFORMED IN ACCORDANCE WITH THE ADVANTEX TREATMENT SYSTEM INSTALLATION GUIDE.

11. IF THE ADVANTEX-AX FILTER IS PLACED OVER THE TOP OF THE TANK, A MINIMUM 5" THICK LAYER OF COMPACTED PEA STONE OR GRAVEL MUST BE PLACED ON TOP OF THE TANK IN ORDER TO ACHIEVE THE REQUIRED SLOPE ON THE FILTRATE RETURN LINE (MIN. 2" DROP TO RSV). REFER TO INSTALLATION GUIDELINES FOR SPECIAL LENGTH REQUIREMENTS. THE ADVANTEX FILTER SHOULD BE SLOPED ½" TO 1" TOWARDS THE DISCHARGE TO MINIMIZE PONDING IN THE BOTTOM OF THE FILTER. DO NOT SLOPE EXCESSIVELY, AS THIS WILL MAKE THE TOP OF THE FILTER LOOK "OUT OF KILTER."

12. RISER TANK ADAPTERS AND ACCESS RISERS SHALL BE CONSTRUCTED TO BE WATERTIGHT. CARE SHALL BE TAKEN TO ORIENT RISERS TO CORRECT POSITIONS BEFORE REQUIRED ADHESIVE CURES. RISER-ADAPTER JOINTS SHALL ALSO BE SEALED BETWEEN THE ADAPTER AND RISER JOINT WITH A CONTINUOUS FILLET OF ADHESIVE SEALER. INSTALLER SHALL WATER TEST TANK AND RISER CONNECTIONS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND SAFETY GUIDELINES. INSULATED LIDS OR COVERS SHALL BE UTILIZED OVER THE RISERS AND ARE AVAILABLE THROUGH ORENCO SYSTEMS, INC OR LICENSED VENDOR.

13. INSTALLATION OF THE RECIRCULATING SPLITTER VALVE (RSV) SHALL BE INSTALLED WITHIN THE RISER OVER THE SEPTIC TANK'S INLET AND MUST BE INSTALLED SO AS NOT TO INTERFERE WITH THE INLET TEE.

14. THE HIGH-HEAD PUMP AND RESPECTIVE FLOAT LEVELS FOR THE ADVANTEX FILTER POD WITH THE TWO COMPARTMENT SEPTIC TANK SHALL BE INSTALLED PER THE INSTALLATION GUIDELINES DOCUMENT AND MANUFACTURER'S SPECIFICATIONS.

15. CONTROL PANEL, ELECTRICAL JUNCTION BOXES, AND WIRING RUNS SHALL BE INSTALLED BY A LICENSED ELECTRICIAN.

16. PUMPS AND FLOAT LEVELS SHALL BE MANUALLY AND AUTOMATICALLY TESTED. DESIGNER SHALL BE PRESENT DURING TESTING OF SYSTEM COMPONENTS. MANUAL AND AUTOMATIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.

17. WHENEVER AN ALARM CONDITION OCCURS, THE RED LIGHT ON THE FRONT OF THE ALARM PANEL WILL COME ON, ALONG WITH THE AUDIBLE HORN. THE AUDIBLE PORTION OF ALL ALARMS CAN BE SILENCED BY PUSHING THE ILLUMINATED LIGHT.

ADVANTEX TREATMENT SYSTEM OPERATION & MAINTENANCE (O&M) REQUIREMENTS

1. WARNING - BEFORE DOING ANY WORK ON EITHER THE WIRING TO THE LEVEL CONTROL FLOATS AND PUMPS IN THE VAULT, TANKS, OR ON THE CONTROL PANEL, PULL THE FUSE AND/OR SWITCH ALL THE CIRCUIT BREAKERS SERVING THE CONTROL PANEL TO THE "OFF" POSITION. DO NOT ENTER A CONFINED SPACE WITHOUT USING PROPER EQUIPMENT AND FOLLOWING STANDARD CONFINED SPACE SAFETY PRECAUTIONS.

2. THE INSTALLER AND SYSTEM SERVICE PROVIDER SHALL BE FAMILIAR WITH THE ADVANTEX TREATMENT SYSTEM O&M MANUAL REQUIREMENTS AND PROCEDURES FOR THE SYSTEM TO BE INSTALLED.

3. THE OWNER (S) SHALL BE PROVIDED WITH A 3-YEAR LIMITED WARRANTY FOR THE ADVANTEX TREATMENT SYSTEM FROM ORENCO SYSTEMS, INC. OR A LICENSED VENDOR. THIS WARRANTY REQUIRES THE OWNER (S) OF THE SYSTEM TO OBTAIN A 3-YEAR SERVICE CONTRACT BY AN ORENCO AUTHORIZED SERVICE PROVIDER, AS SPELLED OUT IN THE SALES CONTRACT.

4. THE INSTALLER SHALL PROVIDE THE OWNER (S) WITH PUMP WARRANTY INFORMATION - TYPICALLY 5 YEARS FOR THE OSI PUMPS.

5. REGULAR INSPECTION AND MAINTENANCE OF THE ADVANTEX TREATMENT SYSTEM COMPONENTS SHALL BE PERFORMED TWO (2) MONTHS AFTER SYSTEM START-UP AND THEN EVERY 12 MONTHS THEREAFTER, OR MORE FREQUENTLY, IF NECESSARY. PUMP OPERATIONS, CONTROL PANELS, PUMP ALARMS AND TIMER SETTINGS SHALL BE TESTED IN ACCORDANCE WITH THE O&M MANUAL REQUIREMENTS. ALL OUTLINED SAFETY PRECAUTIONS SHALL BE TAKEN DURING TESTING AND SERVICING OF THE SYSTEM.

6. MEASUREMENT OF SOLIDS ACCUMULATION SHOULD BE PERFORMED SO THAT THE PROCESSING TANK (SEPTIC TANK) PUMPING RECOMMENDATIONS CAN BE GIVEN TO THE OWNER (S). A RECOMMENDATION FOR PUMPING SHALL BE MADE WHEN THE BOTTOM OF THE SCUM LAYER IS WITHIN 3" OF THE FLOW-THROUGH PORTS OF THE PUMP VAULT (2nd TANK COMPARTMENT) OR WHEN THERE IS AN ACCUMULATION OF SLUDGE WITHIN 6" BELOW THE FLOW-THROUGH PORTS.

7. TEXTILE FILTER MEDIA (AX - HANGING SHEETS) WITHIN THE RECIRCULATING FILTER POD SHALL BE CLEANED/REPLACED AS NECESSARY IN ACCORDANCE WITH THE ADVANTEX O&M MANUAL AND MANUFACTURER'S RECOMMENDATIONS.

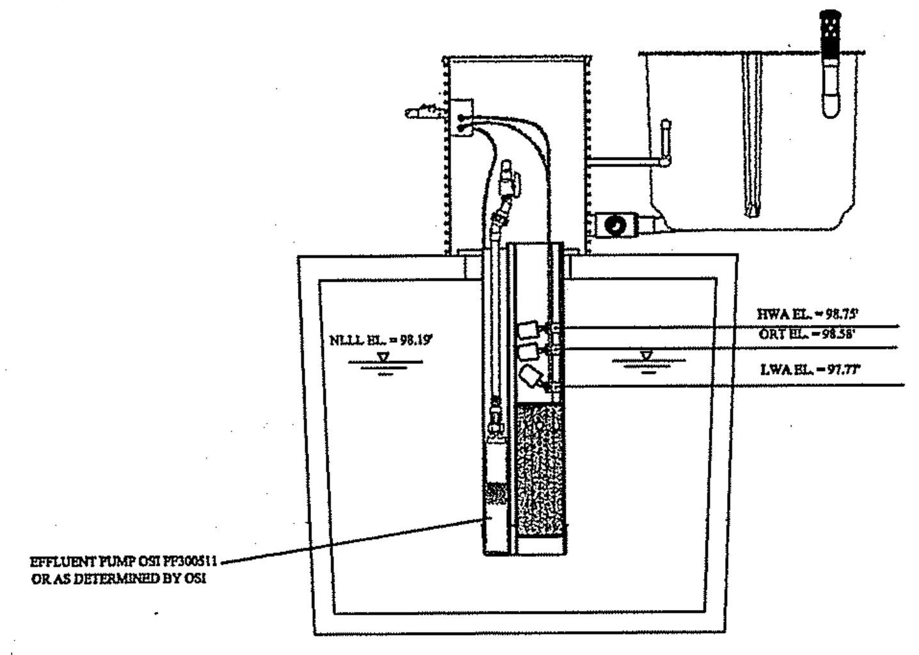
8. THE BIOTUBE SHALL BE HOSED OFF ON A YEARLY BASIS, AND WHENEVER THE SEPTIC TANK IS PUMPED. SYSTEMS OPERATING ABOVE THEIR DESIGN FLOWS MAY REQUIRE MORE FREQUENT CLEANING. WHEN CLEANING THE BIOTUBE COMPLETE THE FOLLOWING:
Turn circuit breaker off at service panel
Switch MOA and circuit breakers in control panel to "Off"
Slide cartridge out of vault
If necessary, the RSV2Q valve may be removed to allow room in the riser for cleaning the Biotube
Pull RSV2Q out of its Quick Disconnect holster and place it in a plastic trash can
Hose off trash can into the tank after replacing the RSV2Q
Hold Biotube cartridge over open inlet of tank or primary compartment
Carefully spray build-up into tank with garden hose
If there are significant solids in vault, remove and clean it too
Pull pump; place it on a clean riser lid and clean as needed be sure to check intake screen; wash off particles as necessary.

9. ALL TANKS AND BASINS SHALL BE VISUALLY INSPECTED FOR WATER-TIGHTNESS AND STRUCTURAL SOUNDNESS WHEN MAINTENANCE IS PERFORMED.

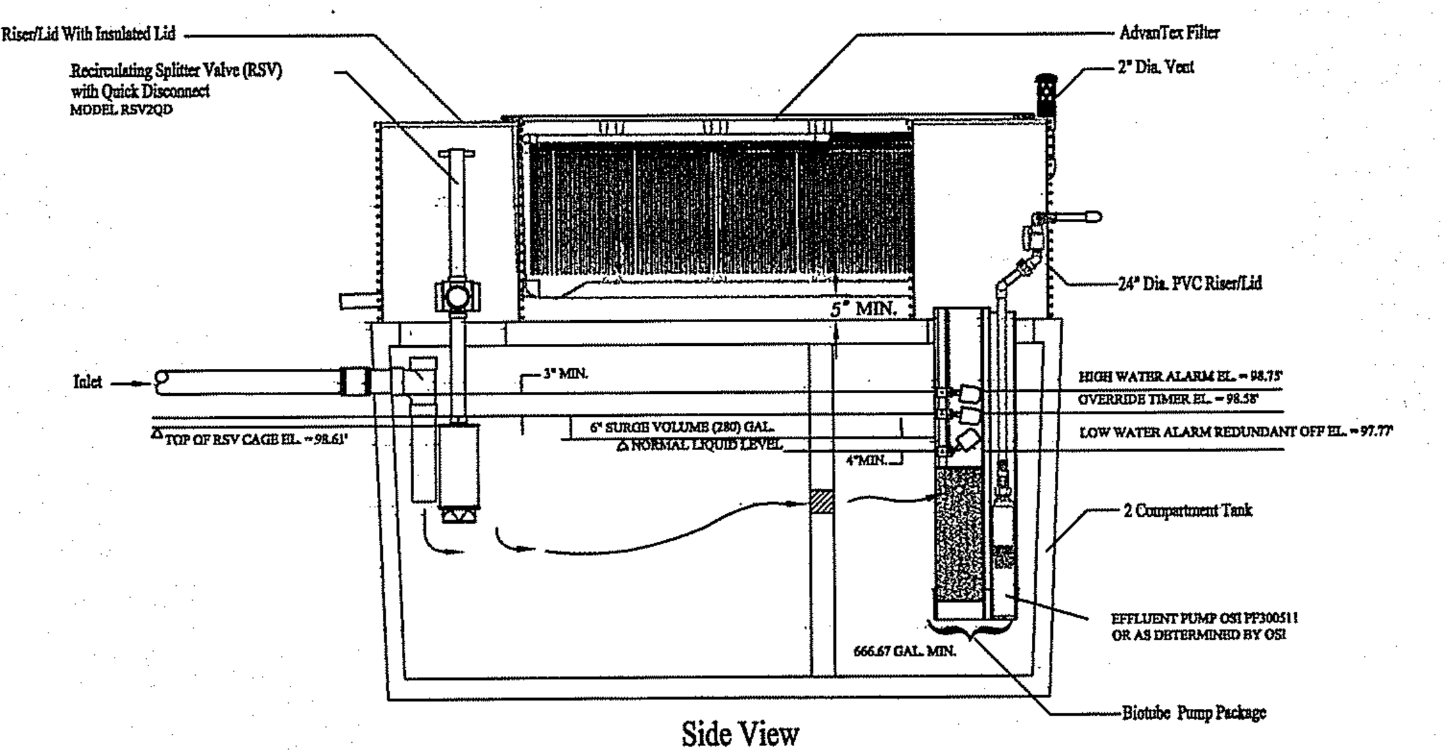
10. WHEN PERFORMING MAINTENANCE WORK REVIEW THE "ADVANTEX O & M MANUAL" FOR SPECIFIC DETAILS. ALL MAINTENANCE IS TO BE PERFORMED BY AN AUTHORIZED VENDOR.

BOTTOMLESS FILTER/ ADVANTEX SYSTEM CONTROL PANEL REQUIREMENTS

NOTE: CONTROL PANEL SHALL BE OSI VCOM ADVANTEX AXB PANEL, 115V AND SHALL BE CAPABLE OF CONTROLLING TWO (2) PUMPS, CONTROL PANEL SHALL ALSO BE CAPABLE OF RUNNING ELASPED TIME METERS, DIGITAL FLOAT SWITCH DATA AND USE ONE FLOAT TYPE FOR ALL FUNCTIONS.



End View



Side View
NOT TO SCALE

PUMP BASIN FOR TREATED EFFLUENT - ELEVATION SCHEDULE DATA

Chamber Top = 102.75'
Chamber Height = 84"(7.0') Depth
Chamber Diameter = 24" (2')
Chamber Inv. In = 99.68'
Chamber Invert Out = 100.60'±
High Water Alarm/Override Timer = 99.17'±
Pump On = 98.82' ; Pump Off = 98.00'
Low Water Alarm/Redundant Off = 97.75'
Dosing Per Cycle = 19.24 Gallons
Chamber Bottom = 95.75'

PUMP BASIN DOSING CALCULATIONS AUTOCALCS V 3.0– BSF PUMP CYCLE WORKSHEET

Pump Chamber: 19.24 gals. per cycle (24" diameter basin)
24" Diameter Basin Volume Capacity per 1" of Basin Height = 1.95 gals./inch
On/Off Differential = 19.24gals. ÷ 1.95 gals./inch = 9.87 inches or (0.82')
Pump Run Time = 19.24 gals. ÷ 39.1 gpm = 0.49 mins/dose or 29.52 sec.

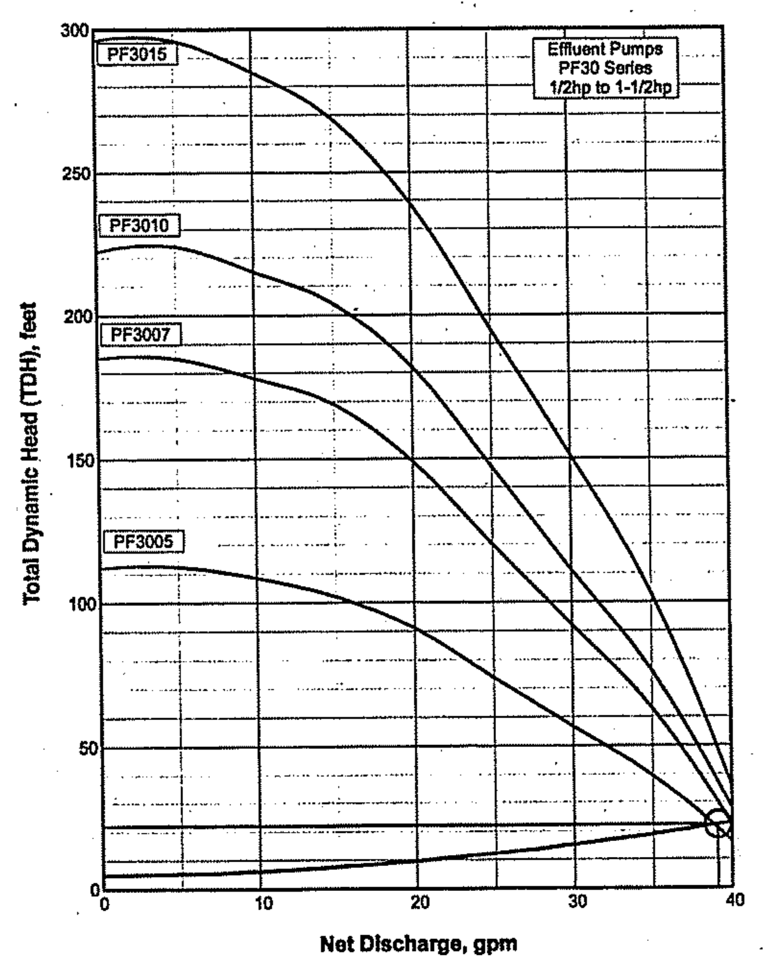
Pump Selection for a Pressurized System

Input Parameters

Orifice Size	1/8	inches
Residual Head at Last Orifice	4.9	feet
Orifice Spacing	1.33	feet
Number of Laterals per Cell	6	
Lateral Length	18.7	feet
Lateral Line Size	0.75	inches
Lateral Pipe Class/Schedule	40	
Distributing Valve Model	None	
Manifold Length	6.7	feet
Manifold Line Size	1.25	inches
Manifold Pipe Class/Schedule	40	
Lift to Manifold	5.0	feet
Transport Length	20.0	feet
Transport Line Size	1.25	inches
Transport Pipe Class/Schedule	40	
Discharge Assembly Size	1.25	inches
Flow Meter	None	inches
'Add-on' Friction Losses	0.0	feet

Calculations

Minimum Flow Rate per Orifice	0.43	gpm
Number of Orifices per Zone	90	
Total Actual Flow Rate	39.1	gpm
Number of Lines per Zone	6	
% Flow Differential 1st and Last Orifice	5.1	%
Lift to Manifold	5.0	feet
Residual Head at Last Orifice	4.9	feet
Head Loss in Laterals	0.6	feet
Head Loss Through Distributing Valve	0.0	feet
Head Loss in Manifold	0.3	feet
Head Loss in Transport Pipe	3.7	feet
Head Loss Through Discharge	7.6	feet
Head Loss Through Flow Meter	0.0	feet
'Add-on' Friction Losses	0.0	feet
Total Flow Rate	**39.1**	**gpm**
TDH	**22.2**	**feet**



Orenco Systems® Incorporated
814 AIRWAY AVENUE
SUTHERLIN, OREGON
97479
TOLL FREE:
(800) 348-9843
TELEPHONE:
(541) 459-4449
FACSIMILE:
(541) 459-2884
www.orenco.com

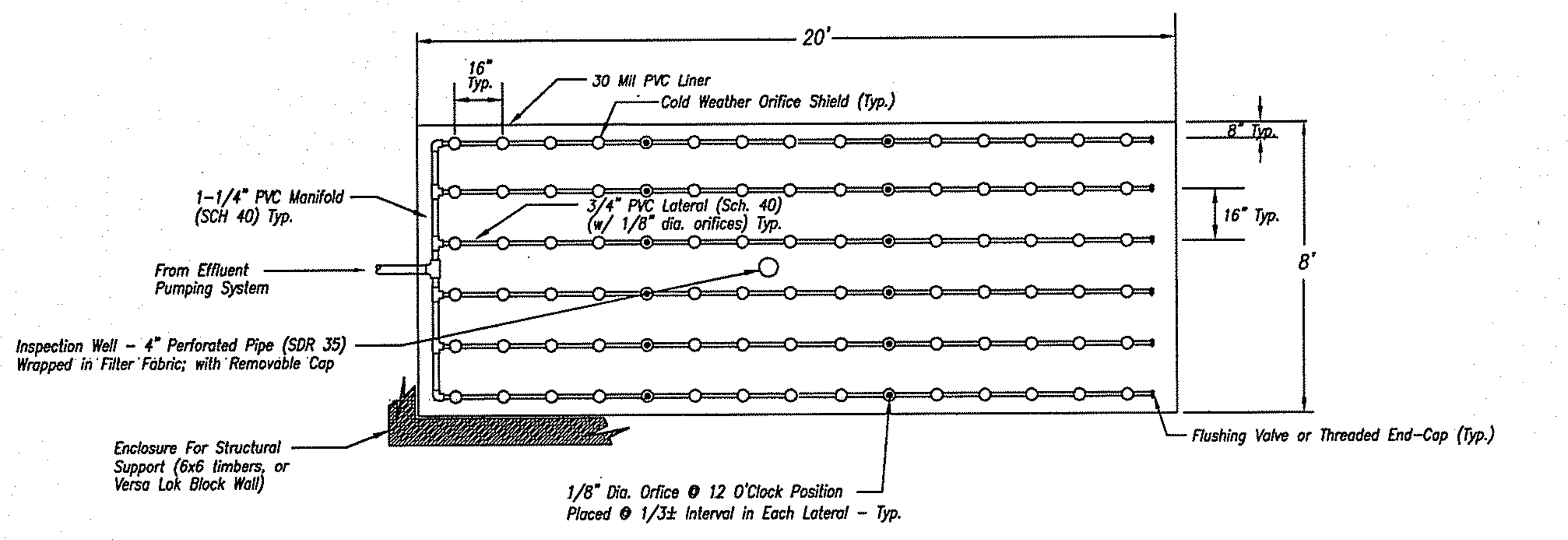
PUMP CURVE FOR BOTTOMLESS SAND FILTER (BSF)

8'x 20' Bottomless Intermittent Sand Filter Detail

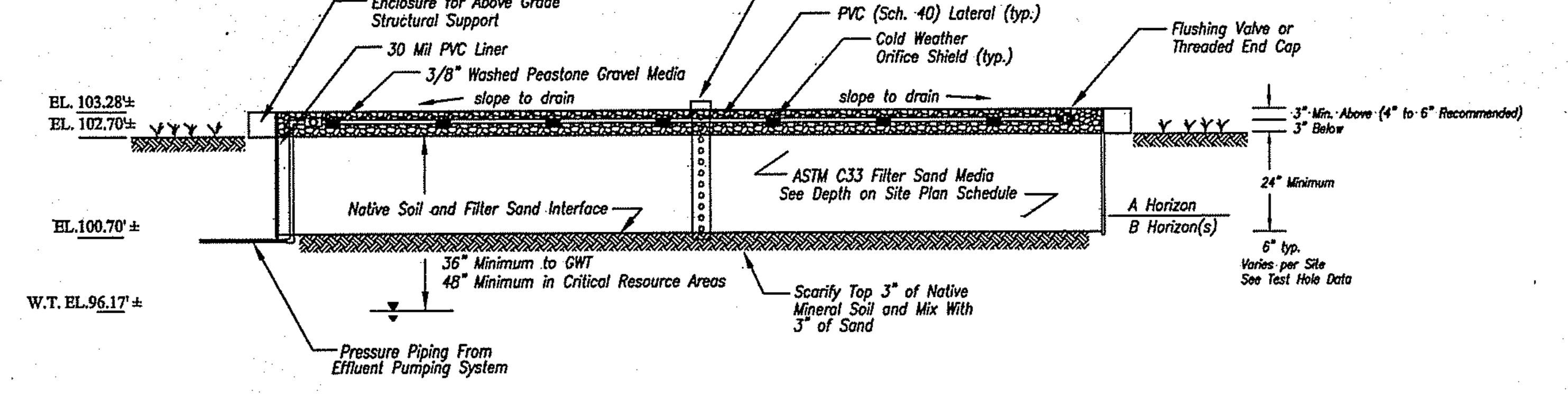
DESIGN APPLICATION LOADING RATE = 3.1 GPD/FT.²

SIZING OF BOTTOMLESS INTERMITTENT SAND FILTER

460 gallons per day ÷ 3.1 gallons/sf day (loading rate) = 148.39 sf
Required Dimensions of Sand Filter Area = 8' W x 18.55' L
Provided Dimensions of Sand Filter Area = 8' W x 20' L



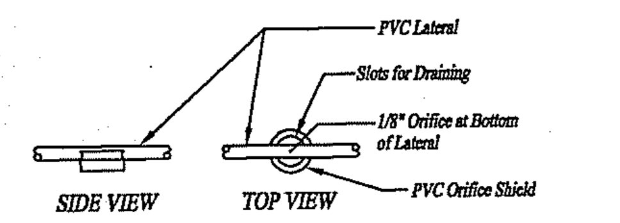
TOP VIEW - 8'X 20' BOTTOMLESS INTERMITTENT SAND FILTER
SCALE: NOT TO SCALE



CROSS SECTION - BOTTOMLESS INTERMITTENT SAND FILTER
SCALE: NOT TO SCALE

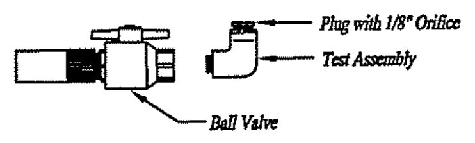
BOTTOMLESS SAND FILTER (BSF) OPERATION & MAINTENANCE (O&M) REQUIREMENTS:

1. WARNING – BEFORE DOING ANY WORK ON EITHER THE WIRING TO THE LEVEL CONTROL FLOATS AND PUMPS IN THE VAULT, TANKS, OR ON THE CONTROL PANEL, PULL THE FUSE AND/OR SWITCH ALL THE CIRCUIT BREAKERS SERVING THE CONTROL PANEL TO THE "OFF" POSITION. DO NOT ENTER A CONFINED SPACE WITHOUT USING PROPER EQUIPMENT AND FOLLOWING STANDARD CONFINED SPACE SAFETY PRECAUTIONS.
2. TO REMOVE ACCUMULATED SOLIDS IN LATERALS, FIRST OPEN THE LATERAL END BALL VALVE OR THREADED END CAP, ENGAGE THE PUMP AND FLUSH OUT ANY SOLIDS. A BOTTLE BRUSH (SIZED APPROPRIATELY FOR THE LATERAL) ATTACHED TO A PLUMBERS SNAKE IS THEN PUSHED DOWN EACH LATERAL TO UNPLUG THE ORIFICES. WITH THE BOTTLE BRUSH REMOVED, THE PUMP SHOULD AGAIN BE MANUALLY ENGAGED AND EACH LATERAL LINE FLUSHED OUT THROUGH THE LATERAL END ONTO THE PEASTONE. PARTICULARLY DIRTY OR MAINTENANCE–NEGLECTED LATERALS SHOULD BE FLUSHED DIRECTLY INTO A BUCKET BY USING A GARDEN HOSE OR PRESSURED PORTABLE WATER SUPPLY AND THREADED FITTING ASSEMBLY. NOTE: IF A HOSE BIB OR DWELLING WATER SUPPLY IS USED SERVICE PROVIDER SHALL INSTALL A PROPER BACKFLOW PREVENTION DEVICE TO PREVENT CROSS CONTAMINATION. A BSF IN CONTINUOUS USE WILL REQUIRE LATERAL FLUSHING/BOTTLE BRUSH TREATMENT ONCE A YEAR ON AVERAGE. BSF'S OPERATING ABOVE THEIR DAILY DESIGN FLOWS MAY REQUIRE MORE FREQUENT LATERAL FLUSHING. SEASONALLY–USED BSFs MAY NOT NEED YEARLY LATERAL FLUSHING, BUT THEIR LATERAL HEAD (pressure) SHOULD BE CHECKED ONCE PER YEAR, AND MAINTENANCE PEFORMED AS NEEDED.
3. THE PEASTONE SURFACE SHALL BE KEPT FREE OF DEBRIS, WEEDS, AND GRASSES. THE SURFACE SHALL BE LIGHTLY RAKED TO REMOVE ANY LEAVES. WEEDS AND GRASSED SHALL BE REMOVED BY HAND WHEN THEY FIRST APPEAR.
4. ONCE A YEAR ALL ELECTRICAL COMPONENTS SHOULD BE CHECKED FOR FUNCTION. ALL FLOAT SWITCHES SHOULD BE ACTIVATED AND TIMERS SHOULD BE CHECKED AGAINST THEIR DESIRED SETTINGS. ALL FLOAT SWITCHES SHOULD BE HOSED DOWN TO PREVENT SCUM ACCUMULATION. ALL WIRING SHALL BE NEATLY BUNDLED AND PLACED OUT OF THE OPERATING PATH OF THE FLOAT SWITCHES.

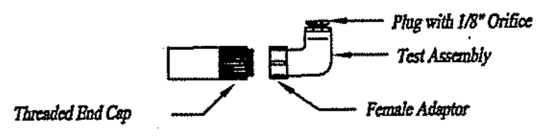


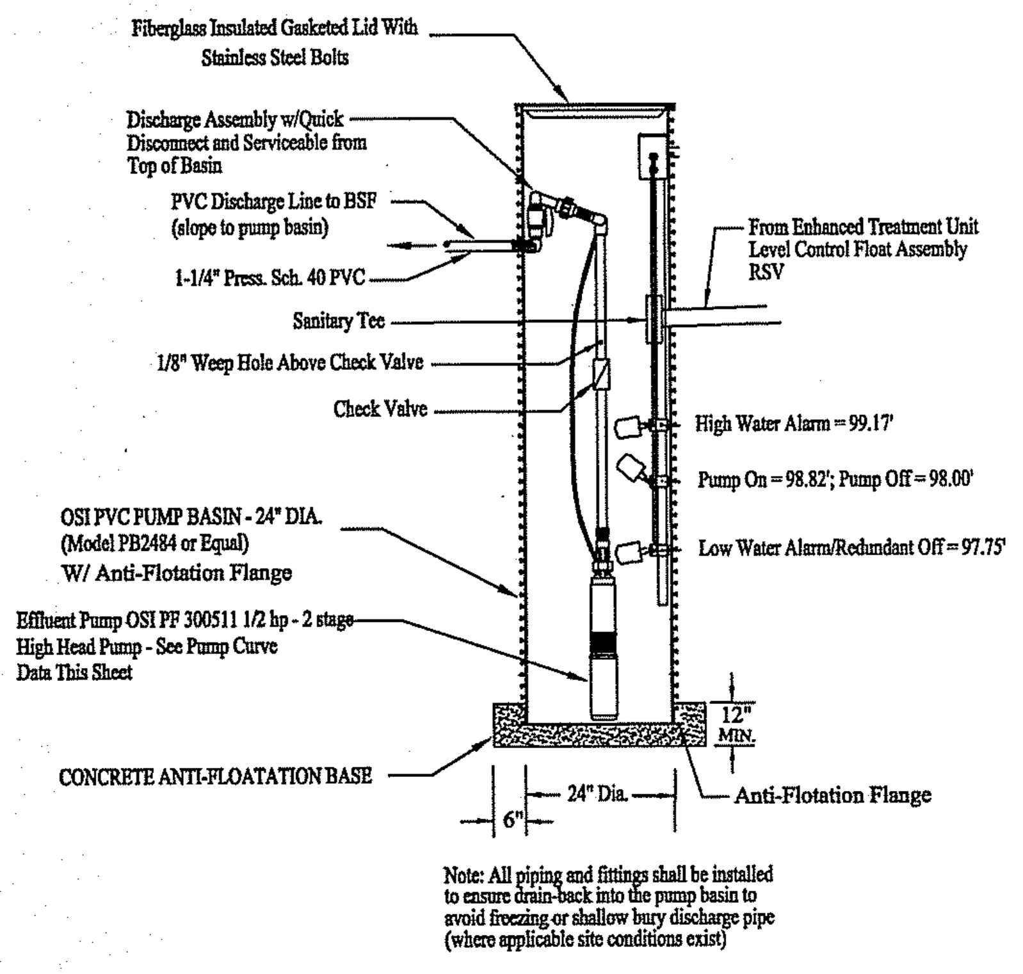
COLD WEATHER ORIFICE SHIELD DETAIL
SCALE: NOT TO SCALE

FLUSHING VALVE DETAIL



THREADED END CAP DETAIL





Note: All piping and fittings shall be installed to ensure drain-back into the pump basin to avoid freezing or shallow bury discharge pipe (where applicable site conditions exist)

PUMP CHAMBER DETAIL
N.T.S.

BOTTOMLESS SAND FILTER GENERAL NOTES

1. THE BOTTOMLESS SAND FILTER (BSF) SHALL BE INSTALLED BY A QUALIFIED LICENSED INSTALLER. THE INSTALLER SHALL BE FAMILIAR WITH THE REQUIREMENTS AND INFORMATION OF THE "GUIDELINES FOR THE DESIGN AND USE OF BOTTOMLESS SAND FILTERS" REFERED TO AS THE SAND FILTER GUIDANCE DOCUMENT ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM) ISSUED NOVEMBER 2001 AND AS AMENDED.

2. THE DESIGNER SHALL BE GIVEN ADEQUATE NOTIFICATION FROM THE INSTALLER TO PROVIDE PROPER INSPECTION OF THE BSF STRUCTURAL SUPPORT SYSTEM, 30 MIL PVC LINER MEMBRANE, ASTM C-33 SAND MEDIA MATERIALS, SYSTEM PIPING, AND COARSE PEASTONE GRAVEL MEDIA.

3. PRIOR TO DELIVERY OF SAND AND PEASTONE GRAVEL MEDIA MATERIALS, THE INSTALLER SHALL PROVIDE THE DESIGNER WITH INFORMATION OF THE MATERIAL SOURCE AND SIEVE ANALYSIS DATA TO ASSURE THAT THE MATERIALS MEET THE REQUIRED GRADATION AND SPECIFICATIONS. THE SAND FILTER MEDIA MATERIALS SHALL MEET THE REQUIREMENTS OF THE GRADATION SPECIFICATIONS SHOWN ON THIS DETAIL SHEET WHICH CONFORMS TO FIGURE 9 OF THE BSF GUIDANCE DOCUMENT. ALL MEDIA WITHIN THE STRUCTURAL ENCLOSURE AND BELOW THE PEASTONE MUST MEET THE REQUIREMENTS OF ASTM C-33 SAND WITH AN EFFECTIVE SIZE (D10) OF 0.3MM AND UNIFORMITY COEFFICIENT (D60/D10) OF 3.0 TO 4.0. THE MAXIMUM ALLOWABLE FINES PASSING THROUGH A NO. 200 SIEVE ANALYSIS PERFORMED SHALL BE 1%. THE DESIGNER AND/OR PROPERTY OWNER SHALL HAVE THE RIGHT TO REQUEST SIEVE ANALYSIS TESTS OF SAND FILTER MATERIALS WHICH APPEAR NOT TO MEET THE ASTM C-33 SPECIFICATIONS. SIEVE ANALYSIS PERFORMED SHALL MEET THE REQUIREMENTS OF ASTM D-136 AND ASTM C-117. THE METHOD SPECIFIED IN SOIL SURVEY LABORATORY METHODS AND PROCEDURES FOR COLLECTING SOIL SAMPLES, SOIL SURVEY INVESTIGATION REPORT #1, U.S. DEPARTMENT OF AGRICULTURE, 1984. THE CONCRETE SAND AND PEASTONE GRAVEL MAY BE OBTAINED FROM THE HOLLISTON SAND COMPANY, INC. SLATERSVILLE, RI. OR DRY BRIDGE SAND & GRAVEL, PEACEDALE, RI.

4. THE BOTTOMLESS SAND FILTER (BSF) MUST BE USED IN CONJUNCTION WITH THE REQUIRED ADVANCED PRETREATMENT SYSTEM INDICATED ON THE APPROVED DESIGN.

5. THE PREPARED BOTTOM OF BED EXCAVATION FOR THE BSF SHALL BE INSPECTED BY THE DESIGNER PRIOR TO CONSTRUCTION OF THE STRUCTURAL ENCLOSURE AND PLACEMENT OF SAND FILTER MEDIA MATERIALS.

6. THE LANDSCAPE AREA IMMEDIATELY ADJACENT TO THE BSF SYSTEM SHALL BE PROTECTED FROM HEAVY VEHICLE TRAFFIC AND EXCESSIVE WEIGHT LOADS, BEFORE, DURING AND POST-CONSTRUCTION. THE SITE CONTRACTOR WITH DIRECTION OF THE DESIGNER SHALL INSTALL A PROTECTIVE PERIMETER BARRIER TO KEEP VEHICLE TRAFFIC OFF THE LEACHFIELD AREA. WHERE REQUIRED ON THE SITE PLAN, THE INSTALLER SHALL INSTALL REQUIRED TIMBER TIE BARRIERS, FENCING OR WALLS TO PROTECT THE BSF AFTER SYSTEM CONSTRUCTION IS COMPLETED.

7. THE FINISHED GRADE OF ANY BOTTOMLESS SAND FILTER SHALL BE A MINIMUM OF 6 INCHES ABOVE THE ELEVATION OF THE SURROUNDING FINISH GRADE TO PREVENT SURFACE WATER FROM FLOWING ONTO THE BSF FILTER AREA. LANDSCAPING TIMBERS SHALL BE PRESSURE TREATED AND SHALL BE SECURED IN PLACE WITH IRON PINS, STEEL REBARS, OR GALVANIZED SPIKES TO THE SUPPORT WALLS TO PREVENT MOVEMENT. CONCRETE LANDSCAPING BLOCKS SUCH AS VERSA-LOK RETAINING WALL BLOCKS MAY BE SUBSTITUTED FOR THE SUPPORT STRUCTURE. SEGMENTAL BLOCK UNITS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONSAND CONSTRUCTION METHODS. IN EITHER CASE THE OUTER LIMITS OF THE SAND FILTER ARE TO BE FORMED WITH PLYWOOD NEEDED TO SUPPORT THE 30 MIL LINER.

8. THE LAND SURFACE ELEVATION 2 FEET BELOW THE PEASTONE/SAND FILTER MEDIA INTERFACE SHALL BE MAINTAINED FOR A DISTANCE OF 5 FEET FROM THE EDGE OF THE BSF - SEE APPLICABLE DETAIL THIS SHEET. LAND SURFACE REGRADING ADJOINING THIS 5-FOOT PERIMETER MUST MAINTAIN A MINIMUM OF 3:1 SLOPE DOWN GRADIENT.

9. THE DESIGNER WILL AID IN THE STAKEOUT OF THE PROTECTED BSF AREA PRIOR TO ANY SITE PREPARATION ACTIVITIES.

10. A MINIMUM BUFFER OF TEN (10) FEET SHOULD BE MAINTAINED BETWEEN BSFs AND NEIGHBORING TREES AND SHRUBS. AT LOCATIONS WHERE A 10-FOOT BUFFER IS NOT MAINTAINED FROM EXISTING TREES OR NEW SHRUB PLANTINGS TO SCREEN THE BSF SYSTEM, THEN A ROOT BARRIER FABRIC SHALL BE PLACED BETWEEN THE TREES AND THE FILTER.

11. PUMPS SPECIFIED AFTER THE ADVANCED TREATMENT SYSTEM SHALL BE SIZED TO PROVIDE A MINIMUM OF TWO (2) FEET OF HEAD (i.e. pressure) AT THE DISTAL END OF EACH DISTRIBUTION LATERAL IN THE BSF. A PUMP SIZING DIAGRAM HAS BEEN PROVIDED ON THIS SHEET. THE INSTALLER CAN ONLY SUBSTITUTE AN EQUAL PUMP AFTER RECEIVING DESIGNER APPROVAL FIRST. THE DESIGNER WILL BE PRESENT TO VERIFY DISTAL END PRESSURES WITH THE INSTALLER AFTER CONSTRUCTION OF THE BSF. PUMP CALCULATIONS PROVIDED INCLUDE DISTAL END PRESSURES OF 4.9 FEET OF HEAD.

12. EFFLUENT TRANSPORT LINES FROM THE PUMP TO THE BSF SHALL BE SCH. 40 PRESSURE PVC MINIMUM PIPE OF SIZE SPECIFIED ON THE ATTACHED SITE PLAN. THE TRANSPORT LINE SHALL BE SLOPED BACK TOWARD THE PUMP CHAMBER/BASIN TO CLEAR THE LINE AFTER EACH DOSE. CHECK VALVES SHALL NOT BE INSTALLED AT THE PUMP CHAMBER/BASIN TO PREVENT FREEZING WITHIN THE TRANSPORT LINES. IF TRANSPORT LINES CANNOT BE DRAINED, THE INSTALLER WILL BE REQUIRED TO INSTALL THE TRANSPORT LINES WITH A 1.50 -FOOT MINIMUM BURIAL WITH A 2" THICK BY 24" WIDE EXPANDED RIGID POLYSTYRENE PLASTIC INSULATION ABOVE THE TRANSPORT LINE.

13. WALLS OF THE BSF ENCLOSURE SHALL BE LINED WITH A 30 MIL PVC LINER WITH ALL BOOTS, PATCHES, REPAIRS, AND SEAMS HAVING THE SAME FINISHED PHYSICAL PROPERTIES OF THE LINER MATERIAL. ALL PENETRATIONS THROUGH THE PVC LINER WALL SHALL BE DONE WITH A PVC BOOT ATTACHMENT GLUED TO THE LINER WITH THE APPROPRIATE RESILIENT SEALER. DESIGNER WILL INSPECT PVC LINER AND PENETRATIONS PRIOR TO BACKFILLING WITH SAND/PEASTONE FILTER MATERIALS. BELOW GRADE LINER WALLS SHALL BE CONSTRUCTED OF PLYWOOD AND 2X4 SUPPORTS. A PERMANENT TOP FRAME STRUCTURE (6x6 PRESSURED TREATED TIMBERS OR VERSA LOK BLOCK WALL) SHALL BE PROVIDED ON ANY PORTION OF THE BSF ABOVE FINISH GRADE.

14. THE DISTRIBUTION MANIFOLD PIPING AND DISTRIBUTION PIPING SHALL CONFORM TO THE SIZES, MATERIALS AND PRESSURE CLASSIFICATION SPECIFICATIONS AS INDICATED ON THE DETAILS OF THIS SHEET. INDIVIDUAL LATERALS SHALL BE NO LONGER THAN 50 FEET IN LENGTH. A SERIES OF 1/8 INCH DIAMETER HOLES (ORIFICES) SHALL BE DRILLED IN THE DISTRIBUTION LATERALS AT SPACE INCREMENTS NOTED ON THE DETAIL OF THIS SHEET. THE LATERALS SHALL BE INSTALLED WITH ALL ORIFICE HOLES POINTING DOWN (6 o'clock position) EXCEPT THOSE AT 1/3 INTERVAL SPACING WHERE THE ORIFICES ARE TO BE INSTALLED AT THE 12 O'CLOCK POSTION. ALL ORIFICES ARE TO BE COVERED BY ORIFICE SHIELDS (USUALLY REFERRED TO AS COLD WEATHER ORIFICE SHIELDS). LATERALS SHALL BE INSTALLED AT ON CENTER SPACINGS NOTED ON THE DETAILS OF THIS SHEET. EACH DISTRIBUTION LATERAL WITHIN THE BSF SHALL BE EQUIPPED WITH A BALL VALVE OR A THREADED END CAP AT ITS DISTAL END. AN INSPECTION WELL SHALL BE INSTALLED IN THE APPROXIMATE CENTER OF THE BSF AND SHALL EXTEND DOWN TO THE SAND AND NATIVE SOIL INTERFACE. THE INSPECTION WELL SHALL BE MADE OF 4-INCH DIAMETER PERFORATED OR SLOTTED PVC (SDR 35 MINIMUM) WRAPPED IN FILTER FABRIC AND TOPPED WITH REMOVABLE TOP AT FINISH GRADE.

15. SOD, VEGETATION, OR DEAD OR DECAYING ORGANIC LITTER AND SOIL SHALL BE REMOVED FROM THE BSF AREA. THREE (3) INCHES OF THE NATIVE SOIL MATERIAL SHALL BE SCARIFIED AND MIXED WITH 3 INCHES OF SAND MEDIA. NOTE: PERIMETER STRIPPING AND EXCAVATION OF SOIL BENEATH THE NATIVE SOIL/FILTER SAND INTERFACE IS PROHIBITED.

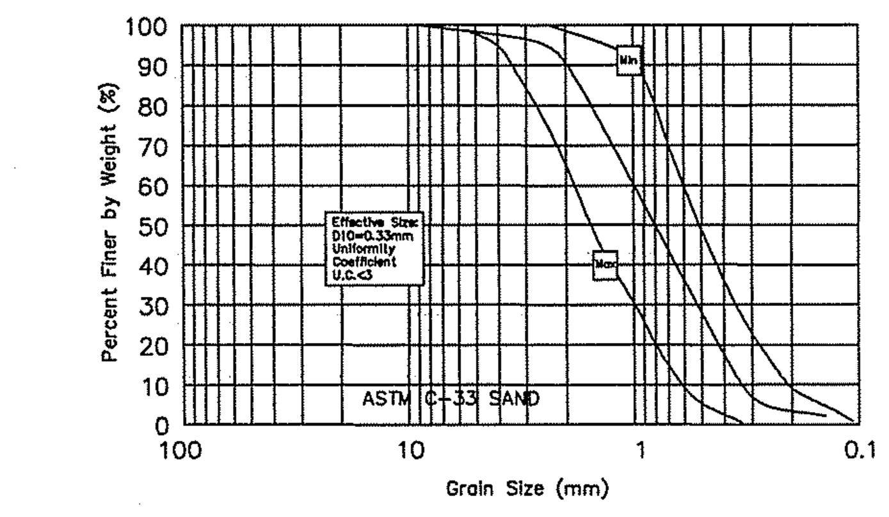
16. ALL EQUIPMENT USED BY THE INSTALLER TO PLACE SAND & PEASTONE MATERIALS INTO THE BSF SHALL BE FREE OF MUD OR SILT FINES PRIOR TO LOADING. THE SAND FILTER MEDIA SHALL BE PLACED IN LEVEL EIGHT (8) INCH LIFTS IN THE FILTER ENCLOSURE AND WETTED SLIGHTLY DURING INSTALLATION TO PROMOTE EVEN SETTLING. OVER WETTING THE SAND SHALL BE AVOIDED TO ENSURE THAT PARTICLE STRATIFICATION DOES NOT OCCUR. THE INSTALLER SHALL "WALK DOWN" THE EDGES OF THE FILTER TO MAKE SURE THE SAND MEDIA IS TIGHT ALONG THE FILTER PERIMETER, AND NO VOIDS EXIST. THE PVC LINER SHALL BE PROTECTED DURING THESE OPERATIONS TO AVOID TEARING OR STRETCHING OF THE LINER. WHEN THE PROPER DEPTH OF CONCRETE SAND IS INSTALLED PLACE 3" OF PEASTONE ON TOP PRIOR TO INSTALLING THE LATERALS. ONCE THE LATERALS ARE INSTALLED PLACE ANOTHER 3" OF PEASTONE OVER THE LATERALS.

17. IMMEDIATELY AFTER INSTALLATION OF THE BSF, THE HEAD OR "SQUIRT HEIGHT" OF THE DISTRIBUTION LATERALS SHALL BE DETERMINED, RECORDED IN THE MAINTENANCE RECORD LOG, AND LEFT ON SITE. THE MINIMUM DISTAL END PRESSURES SHALL BE 2-FEET OF HEAD.

18. DURING OPERATIONAL AND MAINTENANCE VISITS, READINGS FROM ELAPSED RUN TIME METERS, EVENT COUNTERS, WATER METERS AND DISTAL END PRESSURES SHALL BE RECORDED ON THE DATA CARDS (USUALLY STORED IN THE ELECTRICAL CONTROL PANEL). ALSO, AT EACH SITE VISIT, A SAMPLE OF THE BSF INFLUENT SHOULD BE COLLECTED AT THE PUMP CHAMBER OR LATERAL END OF THE BSF TO VISUALLY CHECK THE CLARITY ACHIEVED BY THE ADVANCED TREATMENT UNIT. THE SAMPLE SHOULD BE CLEAR OF FINES AND/OR ORGANIC MATTER AND BE RELATIVELY FREE OF SEPTIC ODORS. SAMPLES DEVIATING FROM THE LATTER CONDITIONS WILL INDICATE THAT THE SYSTEM NEEDS MAINTENANCE OR SYSTEM SETTINGS NEED TO BE MODIFIED.

19. IMPORTANT NOTE: IF FIBERGLASS OR POLYETHYLENE TANKS ARE USED, IT IS IMPORTANT TO MONITOR GROUNDWATER LEVELS BEFORE PUMPING SEPTAGE OR TO SCHEDULE PUMPING OF TANKS LATE SUMMER OR EARLY FALL TO AVOID TANKS FLOATING. PUMPING OF CONCRETE TANKS DURING PERIODS OF HIGH GROUNDWATER MAY ALSO CAUSE TANK FLOATATION PROBLEMS. CAREFUL CONSIDERATION SHALL BE PAID TO TANKS CLOSE TO TIDAL ZONES, WHERE GROUNDWATER LEVELS MAY FLUCTUATE DAILY DUE TO TIDAL INFLUENCE. ALL TANKS SHALL BE FILLED WITH TAP WATER IMMEDIATELY AFTER SEPTAGE PUMP OUT.

20. WHEN CONSTUCTING THE BOTTOMLESS SAND FILTER REMOVE ALL EXISTING VEGETATION, ORGANIC MATTER, TOPSOIL AND SUBSOIL TO A DEPTH OF 100.20' WITHIN THE SAND FILTER AREA. THE BOTTOM OF THIS EXCAVATION AREA MUST BE SCARIFIED. MIX 3" OF SAND MEDIA (ASTM-C33) WITH 3" OF NATIVE SOIL. WHEN CONSTUCTING THE BOTTOMLESS SAND FILTER PARTICULARLY DURING THE INSTALLATION OF THE PRESSURE TREATED TIMBERS OR OTHER APPROVED RETAINING STRUCTURE IN CONJUNCTION WITH THE MIXING OF THE SAND MEDIA AND NATIVE SOIL THE INSTALLER MUST ENSURE THAT THE BOTTOM REMAIN SCARIFIED BEFORE THE PLACEMENT OF CONCRETE SAND (ASTM-C33). IT IS IMPERATIVE THAT THE BOTTOM DOES NOT BECOME COMPACTED FROM THE USE OF EQUIPMENT OR FOOT TRAFFIC. IF WARRANTED THE BOTTOM MUST BE RE-SCARIFIED BEFORE THE PLACEMENT OF CONCRETE SAND. THE CONCRETE SAND IS TO BE ACQUIRED FROM THE HOLLISTON SAND COMPANY, INC., SLATERSVILLE, RI. OR DRY BRIDGE SAND & GRAVEL, PEACEDALE, RI.



BOTTOMLESS SAND FILTER MEDIA SPECIFICATIONS
SCALE: NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JAN - 8 2010 FILE # 06-0125
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Nancy L. Freeman

DATE	REVISION

RICHARD A. GREENE
NO. 1731
PROFESSIONAL LAND SURVEYOR

DETAIL SHEET & CONSTRUCTION NOTES
FOR PROPOSED ON-SITE WASTEWATER
TREATMENT SYSTEM
PREPARED FOR:
MARK & MARY FAGAN
ASSESSOR'S PLAT 18, LOT 63
NORTH OF BEACON HILL ROAD
NEW SHOREHAM, RHODE ISLAND
SCALE: NOT TO SCALE DATE: OCTOBER 2009

RICHARD A. GREENE & ASSOCIATES, INC.
220 RICHMOND TOWNHOUSE ROAD
CAROLINA, R.I. 02812
TEL: 401-364-9405
FAX: 401-364-9403

SHEET 2 OF 2