

**SYSTEM GENERAL NOTES:**

- CONSTRUCTION SHALL CONFORM TO THE RHODE ISLAND SPECIFICATIONS SET FORTH IN THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF WATER RESOURCES RULES ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS. IN ADDITION TO THE MINIMUM STANDARDS CALLED FOR IN THE REGULATIONS, THE FOLLOWING SHALL ALSO APPLY:
  - ALL STONE SHALL BE DOUBLE WASHED, IF DOUBLE WASHED STONE IS NOT AVAILABLE THE CONTRACTOR SHALL BE ALLOWED TO WASH THE STONE ON-SITE ONCE. IN NO CASE SHALL THE STONE DELIVERED TO THE SITE NOT BE WASHED AT LEAST ONCE AND IN NO CASE SHALL THE INSTALLED STONE NOT BE DOUBLE WASHED PRIOR TO INSTALLATION.
  - THE FILL AROUND THE SYSTEM SHALL BE COURSE SAND, OR BANK RUN GRAVEL. IT SHALL CONTAIN NO MORE THE 5% FINES AND PREFERABLY NO MORE THEN 2%.
- THERE ARE NO KNOWN OR PROPOSED WELLS WITHIN 200' OF THE SYSTEM OTHER THEN THOSE SHOWN. THERE ARE NO EXISTING OWTS'S WITHIN 100' OF THE PROPOSED OR EXISTING WELLS, UNLESS OTHERWISE SHOWN. THERE ARE NO KNOWN OR EXISTING PUBLIC WELLS WITHIN 400' OF THE PROPOSED SYSTEM, UNLESS OTHERWISE SHOWN.
- THERE ARE NO KNOWN OR PROPOSED DRAINS WITHIN 25' OF THE PROPOSED OWTS.
- THESE PLANS AND SPECIFICATIONS ARE INTENDED TO BE EXPLANATORY OF THE WORK TO BE DONE AND OF EACH OTHER, BUT SHOULD ANY OMISSIONS, ERRORS OR DISCREPANCIES APPEAR THEY SHALL BE SUBJECT TO CORRECTION AND INTERPRETATION BY THE DESIGN ENGINEER.
- ALTERNATIVE MANUFACTURERS FOR MATERIALS SHOWN ON THESE PLANS MAY BE USED ONLY UPON WRITTEN APPROVAL BY THE DESIGN ENGINEER. ALTERNATE MANUFACTURERS WILL NOT BE APPROVED IF THE USE OF THEIR EQUIPMENT REQUIRES DESIGN CHANGES.
- IF ANY PART OF THIS DESIGN IS TO BE ALTERED IN ANY WAY, THE DESIGN ENGINEER AND THE APPROVING AGENCIES SHALL BE NOTIFIED IN WRITING AND THEIR APPROVAL OBTAINED PRIOR TO CONSTRUCTION.
- NO RAINWATER LEADER OR ANY DRAIN OTHER THAN SANITARY SEWAGE LINES SHALL DISCHARGE OR BE CONNECTED TO THE SANITARY SYSTEM. NO INDUSTRIAL WASTE SHALL BE DISCHARGED INTO THE SANITARY SYSTEM.
- THE INSTALLER SHALL CONTACT THE DESIGN ENGINEER AND RHODE ISLAND DEM AND PRIOR TO THE START OF CONSTRUCTION AND CONFORM TO ALL INSPECTION REQUIREMENTS OF THE DESIGN ENGINEER AND RHODE ISLAND DEM BEFORE, DURING AND AFTER CONSTRUCTION.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SEE THAT ALL PERMITS AND APPROVALS ARE OBTAINED. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY CODES IN THE CONSTRUCTION OF THIS ON-SITE WASTEWATER TREATMENT SYSTEM.
- THE LOCATION OF EXISTING UTILITIES IS APPROXIMATE, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. NOTIFY "DIG-SAFE" AT 1-888-344-7233 AT LEAST 48 HOURS PRIOR TO ANY SITE DEMOLITION OR EXCAVATION.
- NO WATER SUPPLY LINES OR DRAIN LINES ARE TO BE CONSTRUCTED WITHIN 25 FEET OF THE LEACHING AREA OR SEPTIC TANK.
- GRAVITY SEWER PIPING BELOW GRADE SHALL BE PVC PIPE, SCH. 35 AT A MINIMUM. JOINTS SHALL BE PUSH-ON BELL & SPIGOT WITH A RUBBER GASKET AND CONFORMING TO ASTM STANDARDS FOR THIS PIPE.
- PIPE CONNECTIONS AT INLET AND OUTLET OF SEPTIC TANKS AND PUMP CHAMBERS SHALL BE GROUTED WITH HYDRAULIC CEMENT GROUT FOR WATERTIGHTNESS.
- THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE DESIGN ENGINEER IMMEDIATELY IF CONDITIONS ENCOUNTERED DIFFER FROM THOSE SHOWN.
- SEPTIC TANK AND PUMP CHAMBER SHALL BE CONSTRUCTED TO WITHSTAND H-20 LOADING.
- THE SYSTEM AS DESIGNED IS NOT DESIGNED FOR USE OF GARBAGE GRINDERS.
- THE SEWER LINE SHALL BE CONSTRUCTED OF SIX (6) INCH DIAMETER SCH 40 PVC. PIPING SHALL BE WATERTIGHT AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. A CLEANOUT SHALL BE REQUIRED AT CHANGES OF LINE AND/OR GRADE.
- DISTRIBUTION LINES SHALL BE CONSTRUCTED OF CONSTRUCTED OF FOUR (4) INCH DIAMETER SCH 40 PVC. DISTRIBUTION LINES OUTSIDE THE LEACHING AREA SHALL BE UNPERFORATED WITH WATERTIGHT CONNECTIONS AND JOINTS. DISTRIBUTION LINES INSIDE THE LEACHING AREA SHALL PERFORATED AND LAID AT A SLOPE OF 0.0 FT/FT. DISTRIBUTION LINE ENDS SHALL BE VENTED.
- THE BOTTOM OF THE SOIL ABSORPTION SYSTEM SHALL BE AN EXCAVATED TO A LEVEL GRADE AND SCARIFIED. IF THE REMOVAL OF STONES OR BOULDERS IS REQUIRED, CREATING LOCALIZED DEPRESSIONS, FILLING TO GRADE WITH EXCAVATED SOIL IS NOT ACCEPTABLE.
- ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.
- THE SOIL PLACED AS BACKFILL OVER THE SYSTEM SHALL BE A MINIMUM OF NINE (9) INCHES, EXCLUDING TOPSOIL, PLACED IN LIFTS AND SUFFICIENTLY COMPACTED TO PREVENT DEPRESSIONS DUE TO SETTLING WHICH MAY INTERCEPT OR COLLECT SURFACE WATER RUNOFF ABOVE THE SYSTEM. BACKFILL MUST BE CLEAN AND FREE OF STONES AND BOULDERS GREATER THAN SIX (6) INCHES IN SIZE.
- THE INSTALLER SHALL STRIP TOPSOIL AND SUBSOIL OF THE LEACHING GALLEY AREA DOWN TO SUBSTRATA 1' ON ALL SIDES. AN ADDITIONAL 6 INCHES MAY BE NEEDED IF FINES ARE ENCOUNTERED IN THE SUBSTRATA AS DETERMINED BY THE DESIGN ENGINEER OR DEM. THE AREA BETWEEN THE LEACHING GALLEYS SHALL NOT BE DISTURBED OR COMPACTED DURING CONSTRUCTION. ALL TREES AND SHRUBS SHALL BE REMOVED FROM AN AREA WITHIN 10' OF THE PROPOSED LEACHING AREA.

**SLOPE STABILIZATION AND VEGETATION:**

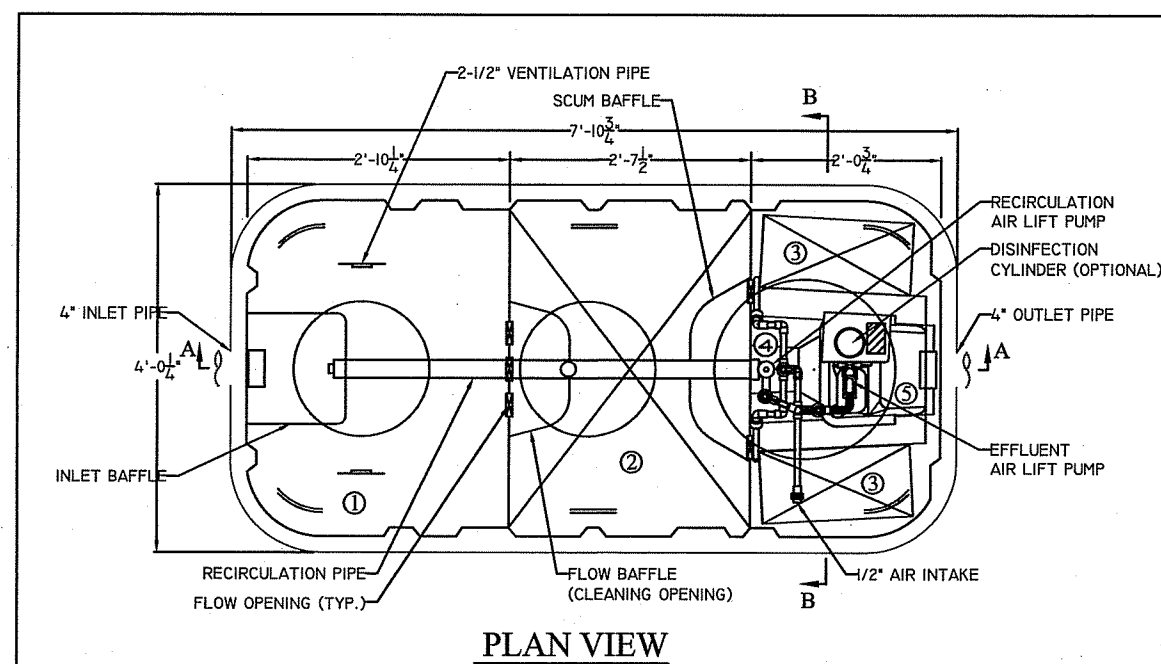
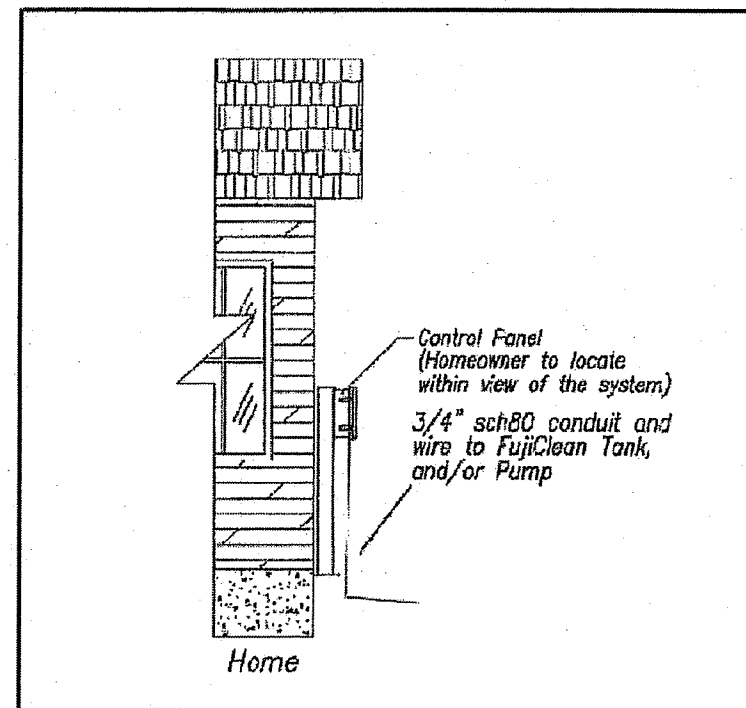
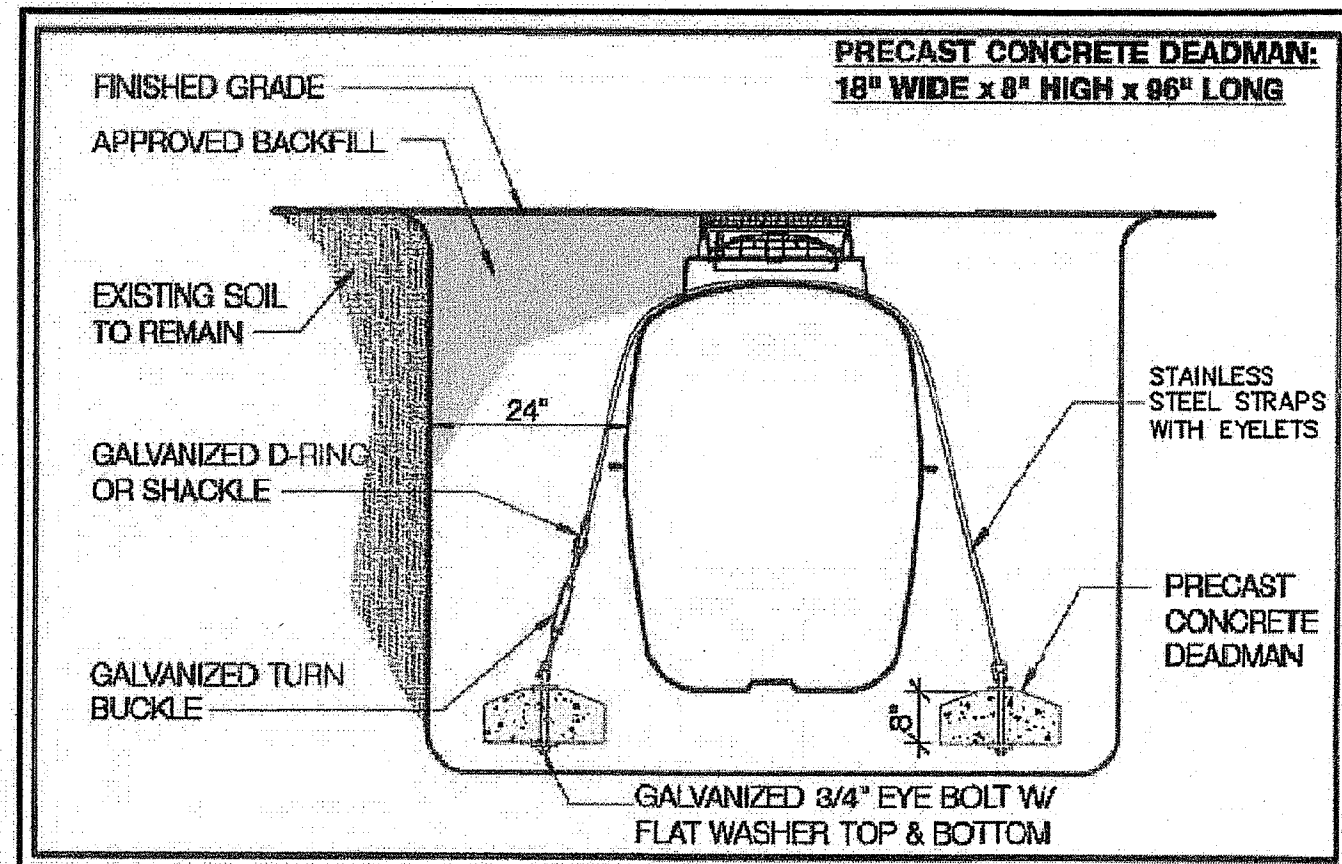
- THE SILT FENCE OR HAY BALES SHALL BE PLACED AT THE TOE OF ALL DISTURBED SLOPES. THIS SHALL BE MAINTAINED AS A SEDIMENT BARRIER UNTIL THE SLOPES ARE STABILIZED WITH GRASS.
- THE DISTURBED SLOPES (CUT OR FILL) SHALL BE IMMEDIATELY MULCHED AS AN EROSION PROTECTION MEASURE.
- MAINTAIN MULCH UNTIL THE SLOPES ARE STABILIZED WITH A SATISFACTORY GROWTH OF GRASS.
- VEGETATION REMOVED MAY BE SHREDDED AND CHIPPED ON SITE FOR USE AS MULCH, OR IT MAY BE REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL MANNER.
- THE RESEEDING OF THE DISTURBED SLOPES SHALL BE CONDUCTED WITH SEED MATERIALS SELECTED FOR PRODUCTION OF A QUICK COVER AND HARDY STAND. PARTICULARLY A CONSERVATION GRASS SEED OR COMPARABLE. THE SEEDING SHALL BE IN ACCORDANCE WITH COMMON NURSERY PRACTICE IN THE RHODE ISLAND AREA.
- PROVIDED THAT THE PROVISIONS OF THE SEDIMENTATION & EROSION CONTROL PLAN ARE IMPLEMENTED, THERE WILL BE NO ADVERSE ENVIRONMENTAL EFFECTS FROM THE PROPOSED CONSTRUCTION.

**SIZING CALCULATION FOR RAIN GARDEN PER RHODE ISLAND STORMWATER MANAGEMENT GUIDANCE DOCUMENT FOR INDIVIDUAL SINGLE-FAMILY RESIDENTIAL LOT DEVELOPMENT - TABLE 8: RAIN GARDEN SIZING GUIDANCE**

- RAIN GARDEN IS FOR RUN-OFF FROM THE PROPOSED DWELLING.
- PROPOSED IMPERVIOUS AREA = 1,692 S.F.
- RAIN GARDEN DEPTH = 8 INCHES
- SOIL TYPE: SANDY SOILS = 0.08 SIZING FACTOR (1-INCH STORM EVENT)
- 1,692 S.F. X 0.08 = 136 S.F. RAIN GARDEN REQUIRED
- PROPOSED RAIN GARDEN BOTTOM AREA = 144 S.F.

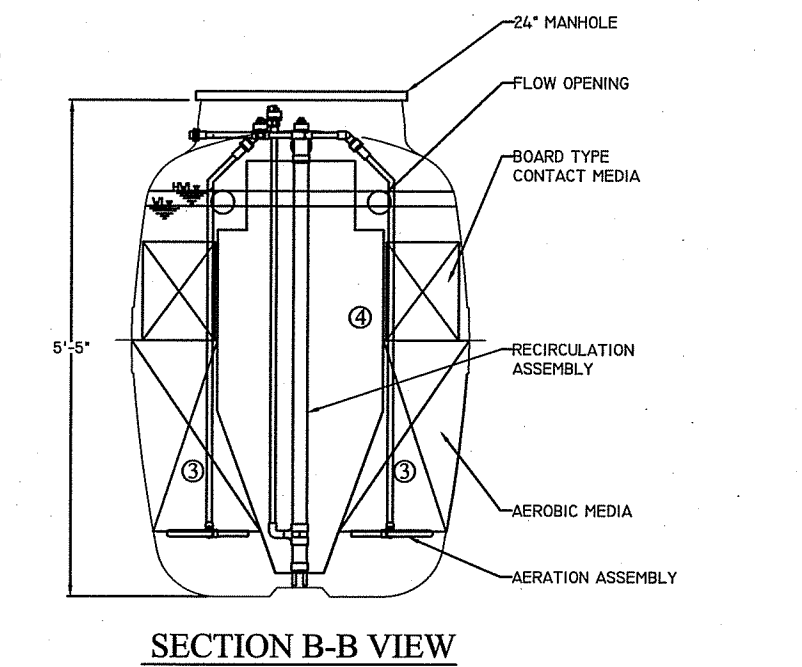
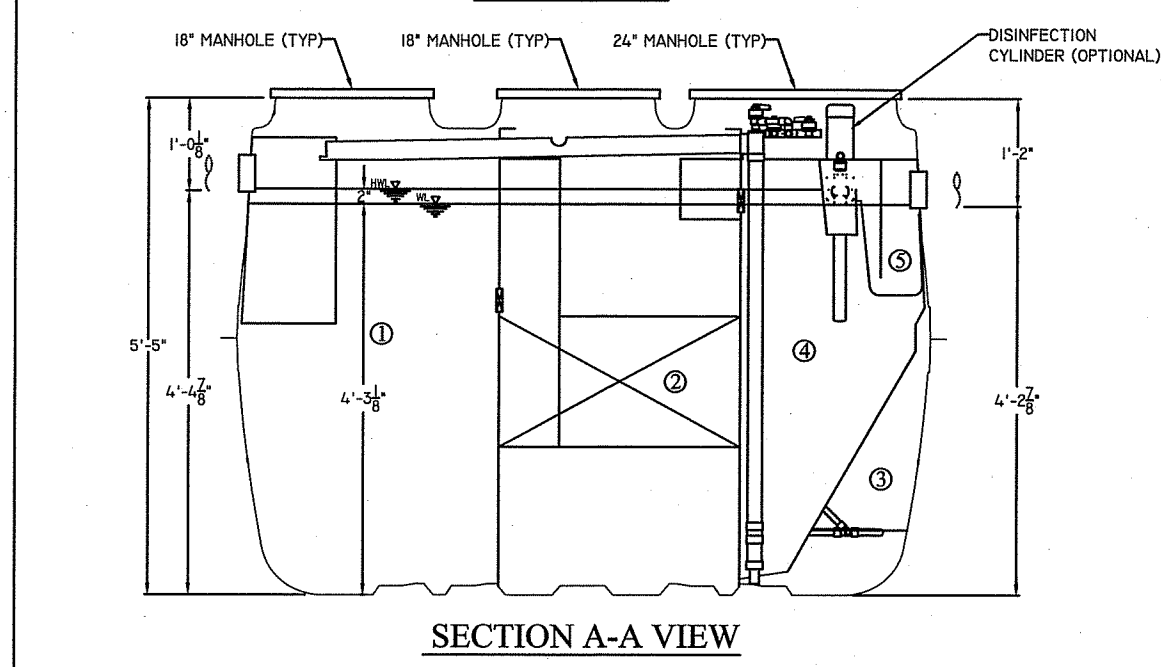
**RAIN GARDEN NOTES:**

- RAIN GARDEN SHALL BE INSPECTED FOLLOWING AT LEAST THE FIRST TWO (2) PRECIPITATION EVENTS OF AT LEAST 1.0 INCH TO ENSURE THAT THE SYSTEMS ARE FUNCTIONING PROPERLY. THEREAFTER, THE RAIN GARDENS SHALL BE MONITORED AND MAINTAINED TO ASSURE PROPER FUNCTIONING PLANT GROWTH AND SURVIVAL. PLANTS SHALL BE REPLACED ON AN AS-NEEDED BASIS DURING THE GROWING SEASON.
- SILT/SEDIMENT SHALL BE REMOVED FROM THE RAIN GARDEN WHEN THE ACCUMULATED SEDIMENT EXCEEDS ONE (1) INCH, OR WHEN WATER PONDS FOR MORE THAN 48 HOURS. THE TOP FEW INCHES OF MATERIAL SHALL BE REMOVED AND REPLACED WITH FRESH SOIL MIXTURE AND MULCH.
- PRUNING OR REPLACEMENT OF WOODY VEGETATION SHALL OCCUR WHEN DEAD OR DYING VEGETATION IS OBSERVED.
- SOIL EROSION GULLIES SHALL BE REPAIRED WHEN THEY OCCUR.
- FERTILIZER OR PESTICIDES SHALL NOT BE APPLIED TO PLANTS WITHIN THE RAIN GARDEN.
- PERENNIAL PLANTS AND GROUND COVERS SHALL BE REPLACED AS NECESSARY TO MAINTAIN AN ADEQUATE VEGETATED GROUND COVER. ANNUAL PLANTS MAY ALSO BE USED TO MAINTAIN GROUND COVER.
- THE PROPOSED PLANTINGS FOR THE RAIN GARDEN SHALL BE SUITABLE NATIVE PLANTS USED IN ACCORDANCE WITH THE RHODE ISLAND COASTAL PLANT GUIDE, WHICH IS LOCATED AT CELLS.URI.EDU/TESTSITE/COASTAL\_PLANTS/COASTAL\_PLANTGUIDE.HTM. THE RAIN GARDEN SHALL BE PHYSICALLY DELINEATED PRIOR TO THE START OF CONSTRUCTION TO PREVENT ADDITIONAL COMPACT.

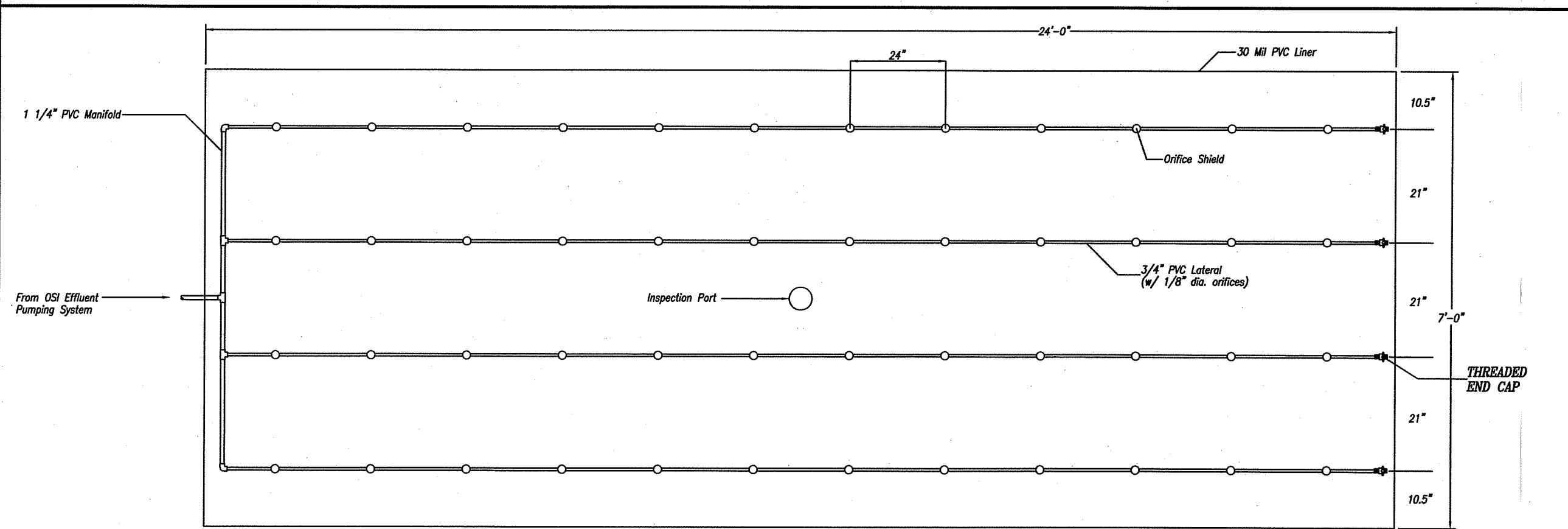


| CHAMBER                               | Volume (gal) |
|---------------------------------------|--------------|
| 1) Sedimentation Chamber              | 277          |
| 2) Anaerobic Filtration Chamber       | 278          |
| 3) Aerobic Contact Filtration Chamber | 127          |
| 4) Storage Chamber                    | 63           |
| 5) Disinfection Chamber               | 4            |
| <b>Total Volume</b>                   | <b>749</b>   |

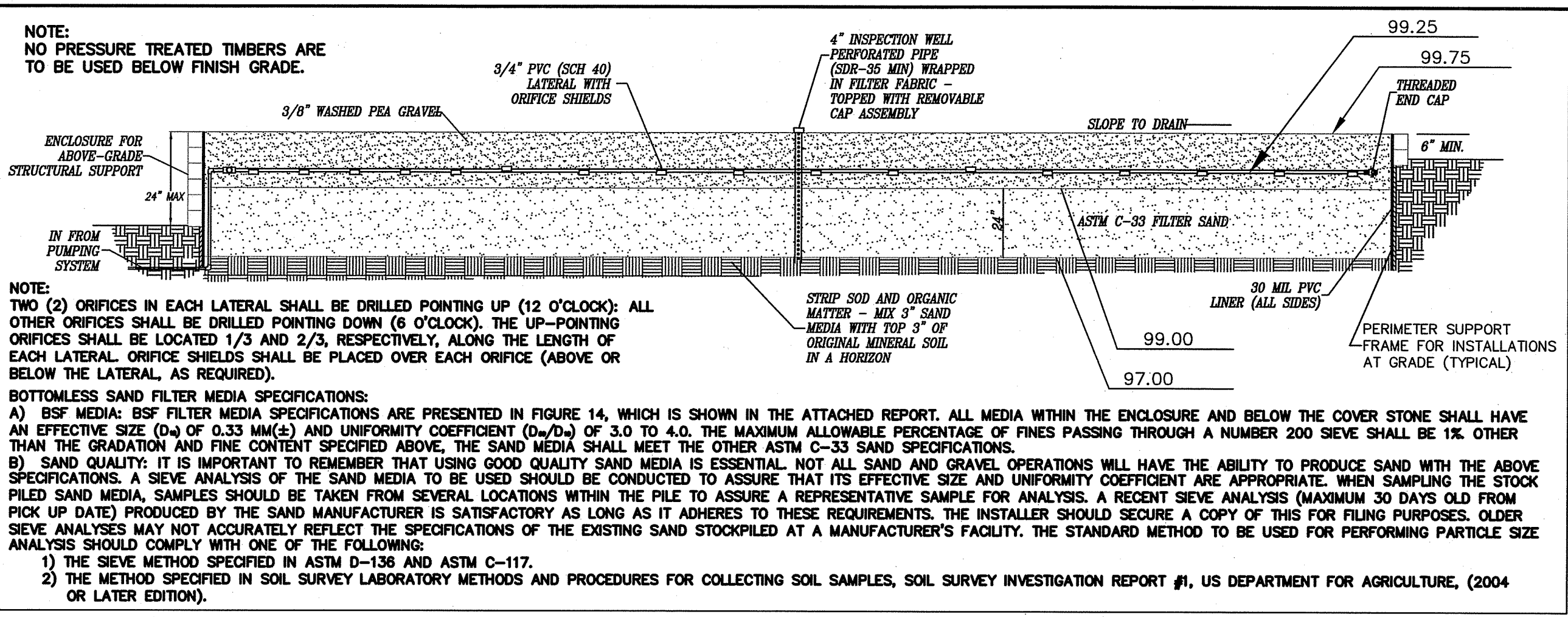
| SPECIFICATIONS           |                     | Filling Rate |
|--------------------------|---------------------|--------------|
| Anaerobic Media          | PP / PE             | 32%          |
| Board Type Aerobic Media | PVC / PP / PE       | 16%          |
| Aerobic Media            | PP / PE             | 57%          |
| Blower                   | 2.8 cfm             |              |
| Tank                     | FIB                 |              |
| Piping                   | PVC / PP / PE       |              |
| Access Covers            | Plastic / Cast Iron |              |
| Disinfectant (Optional)  | Chlorine Tablets    |              |



**24' BY 7' BOTTOMLESS SAND FILTER TOP VIEW - NOT TO SCALE**



**BOTTOMLESS SAND FILTER CROSS-SECTION DETAIL - NOT TO SCALE**



**Pump Selection for a Pressurized System - Single Family Residence Project**  
Narragansett Road / Cumberland, RI

**Parameters**

|                             |             |
|-----------------------------|-------------|
| Discharge Assembly Size     | 1.25 inches |
| Transport Pipe Class        | 40          |
| Transport Line Size         | 1.25 inches |
| Disinfecting Valve Model    | None        |
| Max Elevation LH            | 5 feet      |
| Manifold Length             | 49          |
| Manifold Pipe Class         | 40          |
| Manifold Pipe Size          | 1.25 inches |
| Number of Laterals per Cell | 4           |
| Lateral Length              | 33 feet     |
| Lateral Pipe Class          | 40          |
| Lateral Pipe Size           | 1.25 inches |
| Orifice Size                | 1/8 inches  |
| Orifice Spacing             | 2 feet      |
| Residual Head               | 0 feet      |
| Flow Meter                  | None        |
| Add-on Friction Losses      | 0 feet      |

**Calculations**

|                                      |          |
|--------------------------------------|----------|
| Minimum Flow Rate per Orifice        | 0.47 gpm |
| Number of Orifices per Zone          | 48       |
| Total Flow Rate per Zone             | 23.0 gpm |
| Number of Laterals per Zone          | 4        |
| % Flow Differential 1st/Last Orifice | 3.9 %    |
| Transport Velocity                   | 4.9 fps  |

**Frictional Head Losses**

|                        |          |
|------------------------|----------|
| Loss through Discharge | 3.7 feet |
| Loss in Transport      | 0.8 feet |
| Loss through Valve     | 0.0 feet |
| Loss in Manifold       | 0.1 feet |
| Loss in Laterals       | 0.6 feet |
| Loss through Flowmeter | 0.0 feet |
| Add-on Friction Losses | 0.0 feet |

**Pipe Volumes**

|                          |          |
|--------------------------|----------|
| Vol of Transport Line    | 0.8 gals |
| Vol of Manifold          | 0.4 gals |
| Vol of Laterals per Zone | 2.6 gals |
| Total Volume             | 3.9 gals |

**Minimum Pump Requirements**

|                    |           |
|--------------------|-----------|
| Design Flow Rate   | 23.0 gpm  |
| Total Dynamic Head | 17.2 feet |

**PumpData**  
FKP40 Effluent Pump  
1/2HP, 115V-1Ø

**Legend**  
System Detail  
Pump Curve  
Pump Optimal Range  
Operating Point  
Design Point

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

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: FEB 10 2025 FILE # 23-0058

NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Andy Clayton*

**Specifications**

| Model                      | MAC60R11   | MAC60R11   | MAC100R11  |
|----------------------------|------------|------------|------------|
| Air Flow Volume CFM        | 2.1        | 2.2        | 3.5        |
| Air Flow Volume L/min      | 60         | 60         | 100        |
| Normal Pressure PSI        | 2.2        | 2.2        | 2.6        |
| Rated Voltage V            | 15         | 15         | 18         |
| Rated Voltage Frequency Hz | 60         | 60         | 60         |
| Power Consumption W        | 37         | 51         | 74         |
| Weight lbs.                | Approx. 11 | Approx. 11 | Approx. 11 |
| Weight kg                  | Approx. 5  | Approx. 5  | Approx. 5  |
| Outlet Pipe Diameter Inch  | 3/4"       | 3/4"       | 3/4"       |
| Power Cord Length Inch     | 6'2"       | 6'2"       | 6'2"       |
| UL File Number             | E841220    | E841220    | E841220    |
| Country of Origin          | JSP09      | JSP09      | JSP09      |

**Installation / Operation & Maintenance Notes:**

- Install blower on levelled solid base. Ensure adequate ventilation and protect against direct sunlight.
- Inspect and clean lateral air filter once every 3 months.
- Recommend diaphragm / valve assembly replacement once every 12 months.
- (Note: In turn clockwise will trigger the Automatic-Stop Function.)
- Please make sure to follow the instruction manual.

**Environmental Management**

JAN 31 2025  
Office of Water Resources

ISSUE DATE: Aug 12 2020

11000921-14

11000921-14

| NO | DATE       | REVISIONS           |
|----|------------|---------------------|
| 1  | 09/17/2024 | DEM OWTS SUBMISSION |
| 2  | 10/17/2024 | DEM OWTS SUBMISSION |

SEAL

DANIEL R. CAMPBELL  
No. 8393  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

OWTS DESIGN DETAILS

DATE: SEPTEMBER 17, 2024  
DRAWN: DRC  
SCALE: AS SHOWN

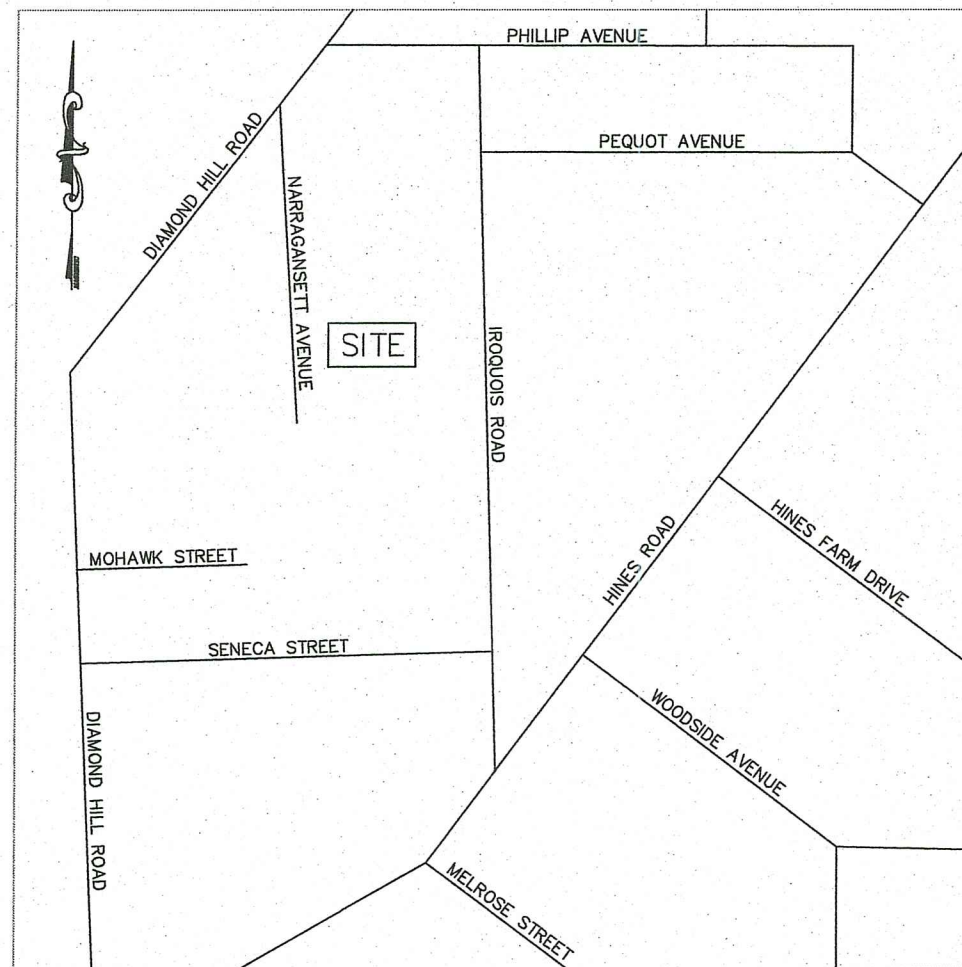
**MARTIN SINGLE FAMILY**  
AP 18, LOT 230 & 231  
ONSITE WASTEWATER TREATMENT SYSTEM DEM # 2108-1829  
SINGLE FAMILY HOUSE  
NARRAGANSETT ROAD  
CUMBERLAND, RHODE ISLAND

**LEVEL DESIGN GROUP**  
Civil Engineers & Land Surveyors  
249 SOUTH STREET, UNIT 1  
PLAINVILLE, MA 02762  
TEL. (508) 695-2221 FAX. (508) 695-2219

**OWTS DESIGN DETAILS**

**S-1.1**  
SHEET 2 OF 2

**1983.00**



LOCUS  
NOT TO SCALE

TEST HOLE DATA: DATE DUG - 1-21-22  
 TEST HOLE - SE#1  
 TEST HOLE - SE#2

GROUND WATER TABLE DATA: #2108-1830  
 DETERMINED BY: SOIL EVALUATION  
 WATER TABLE DEPTH = 28"  
 WATER TABLE DEPTH = 30"

\* PER SOIL EVALUATION FORM, DESIGN BASED ON 24" WATER TABLE

REQUIRED CAPACITY OF LEACHING SYSTEM:  
 3 BEDROOMS X 115 GALLONS PER BEDROOM = 345 GALLONS PER DAY

DESIGN RATE: 2.1 GAL/SF/DAY (CATEGORY 7 SOIL) FOR BSF  
 BOTTOMLESS SAND FILTER SIZE REQUIRED: 165 SQUARE FEET  
 BOTTOMLESS SAND FILTER SIZE PROPOSED: 168 SQUARE FEET

LEGEND

S.F. SQUARE FEET  
 SE SOIL EVALUATION  
 P LEDGE TEST HOLE  
 UP UTILITY POLE  
 GV GAS VALVE  
 A# WETLAND FLAG  
 O.W.T.S. ON-SITE WASTEWATER TREATMENT SYSTEM ELEVATION  
 ELEV. ELEVATION  
 T.O.F. TOP OF FOUNDATION  
 TYP. TYPICAL  
 T TOP OF WALL  
 B BOTTOM OF WALL

GENERAL NOTES:  
 1. THE PARCEL IS PLAT 18, LOTS 230 & 231.  
 2. THE TOTAL PARCEL AREA IS 10,000 S.F. OR 0.2296 ACRES.  
 3. THE PARCEL IS LOCATED WITHIN THE TOWN OF CUMBERLAND PUBLIC DRINKING WATER SUPPLY AREA.

NOTE:  
 NO FOUNDATION DRAINS ARE TO BE LOCATED WITHIN 25-FOOT OF THE PROPOSED SEPTIC SYSTEM.

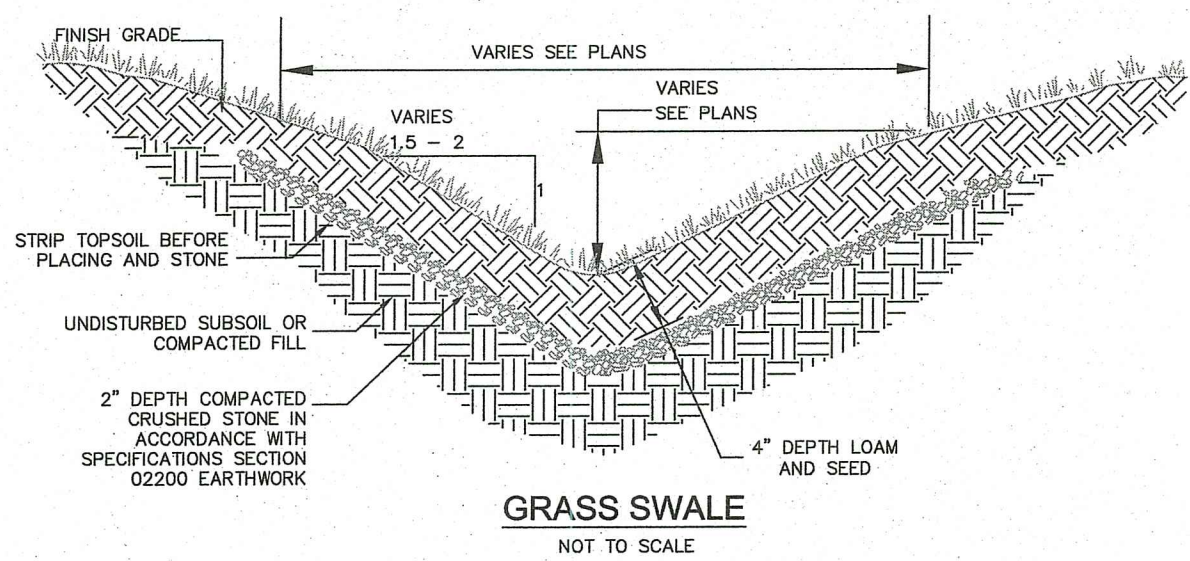
NOTE: THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE TAKEN FROM PLAN ENTITLED "EXISTING CONDITIONS PREPARED FOR BRETT MARTINS & ALEXANDER IWJC, SURVEY OF AP 18, LOT 230 & 231, NARRAGANSETT ROAD, POWHATAN STREET, CUMBERLAND, RI, ZONE R-1, 5/5/2022, REVISED: 11/22/22, SCALE: 1" = 20', BY MARSH & LONG SURVEYING, INC."

TABLE OF PROPOSED ELEVATIONS:

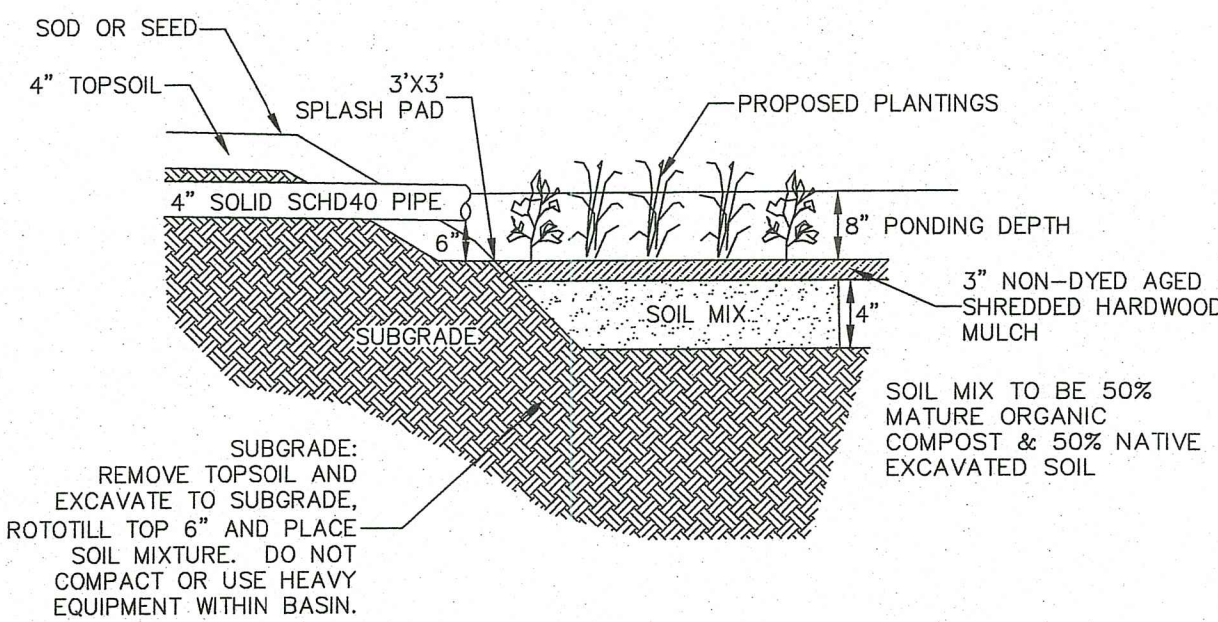
|   |            |
|---|------------|
| GROUND AT SE#1                          | 93.8       |
| WATER TABLE AT SE#1                     | 91.8       |
| LEDGE AT SE#1                           | 96.6       |
| GROUND AT SE#2                          | 92.8       |
| WATER TABLE AT SE#2                     | 90.8       |
| LEDGE AT SE#2                           | 84.6       |
| GROUND AT P1                            | 91.3       |
| LEDGE AT P1                             | 86.1       |
| GROUND AT P2                            | 94.7       |
| LEDGE AT P2                             | 89.2       |
| GROUND AT P3                            | 91.1       |
| LEDGE AT P3                             | 86.1       |
| INV. OUT HOUSE                          | 96.75      |
| FUJICLEAN CEN-5 SEPTIC TANK ELEVATIONS: |            |
| INV. IN SEPTIC TANK                     | 96.67      |
| INV. OUT SEPTIC TANK                    | 96.42      |
| TOP OF SEPTIC TANK RISERS               | 98.17      |
| 24" DIAMETER PUMP CHAMBER ELEVATIONS:   |            |
| TOP OF CHAMBER/FINISH GRADE             | 98.00      |
| BOTTOM OF CHAMBER                       | 93.00      |
| INVERT IN CHAMBER                       | 96.33      |
| INVERT OUT CHAMBER                      | 96.25      |
| PUMP "ON"                               | 94.51      |
| PUMP "OFF"                              | 94.00      |
| HIGH WATER ALARM/TIMER OFF              | 93.00      |
| BOTTOMLESS SAND FILTER ELEVATIONS:      |            |
| SAND/PEA STONE INTERFACE                | 99.00      |
| INV. ELEVATION OF LATERALS              | 99.25      |
| TOP OF PEA STONE                        | 99.75      |
| TOP OF ENCLOSURE                        | 99.75      |
| FINISH GRADE AROUND B.S.F.              | 99.25-99.0 |

GENERAL NOTES:

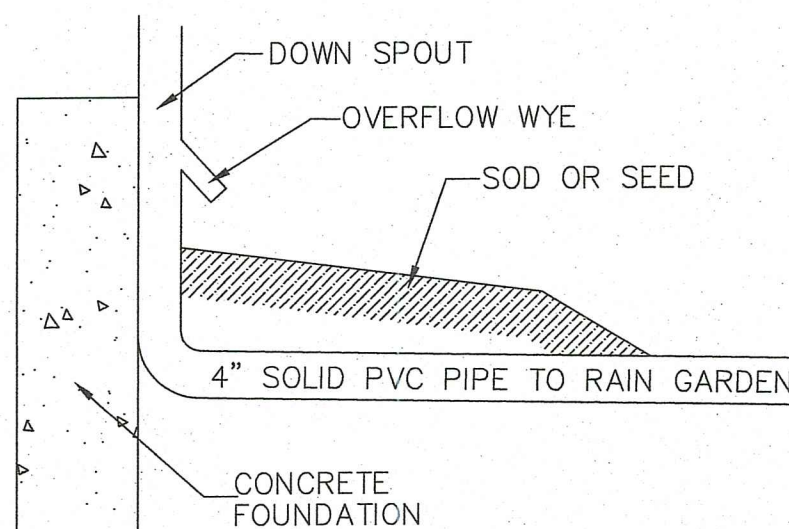
1. PROPOSED SEPTIC SYSTEM AND RELATED IMPROVEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANS PREPARED BY DARVEAU LAND SURVEY AND ATTACHED HEREIN FOR REFERENCE.
2. DRAINAGE SHALL BE INSTALLED IN ACCORDANCE WITH THIS PLAN SHEET.
3. SWALES AND BIORETENTION HAVE BEEN DESIGNED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE STATE OF RHODE ISLAND STORMWATER MANAGEMENT GUIDANCE FOR INDIVIDUAL SINGLE-FAMILY RESIDENTIAL LOT DEVELOPMENT
4. DRIVEWAY DRAINAGE SIZED FOR SILTY SOILS, 1,400 S.F., TOTAL REQUIRED TREATMENT AREA IS 224 S.F. BOTTOM AREA REQUIRED IN 8" DEEP SWALE. 225 S.F. PROVIDED.



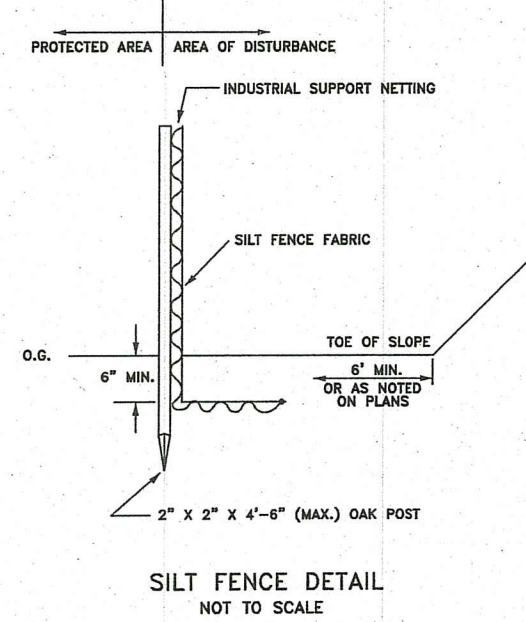
GRASS SWALE  
NOT TO SCALE



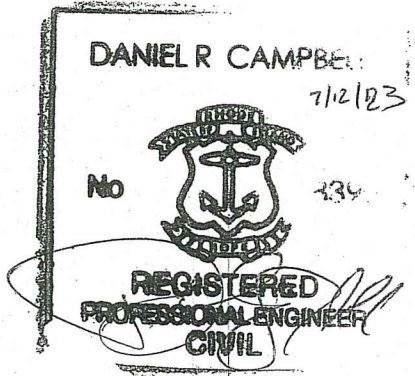
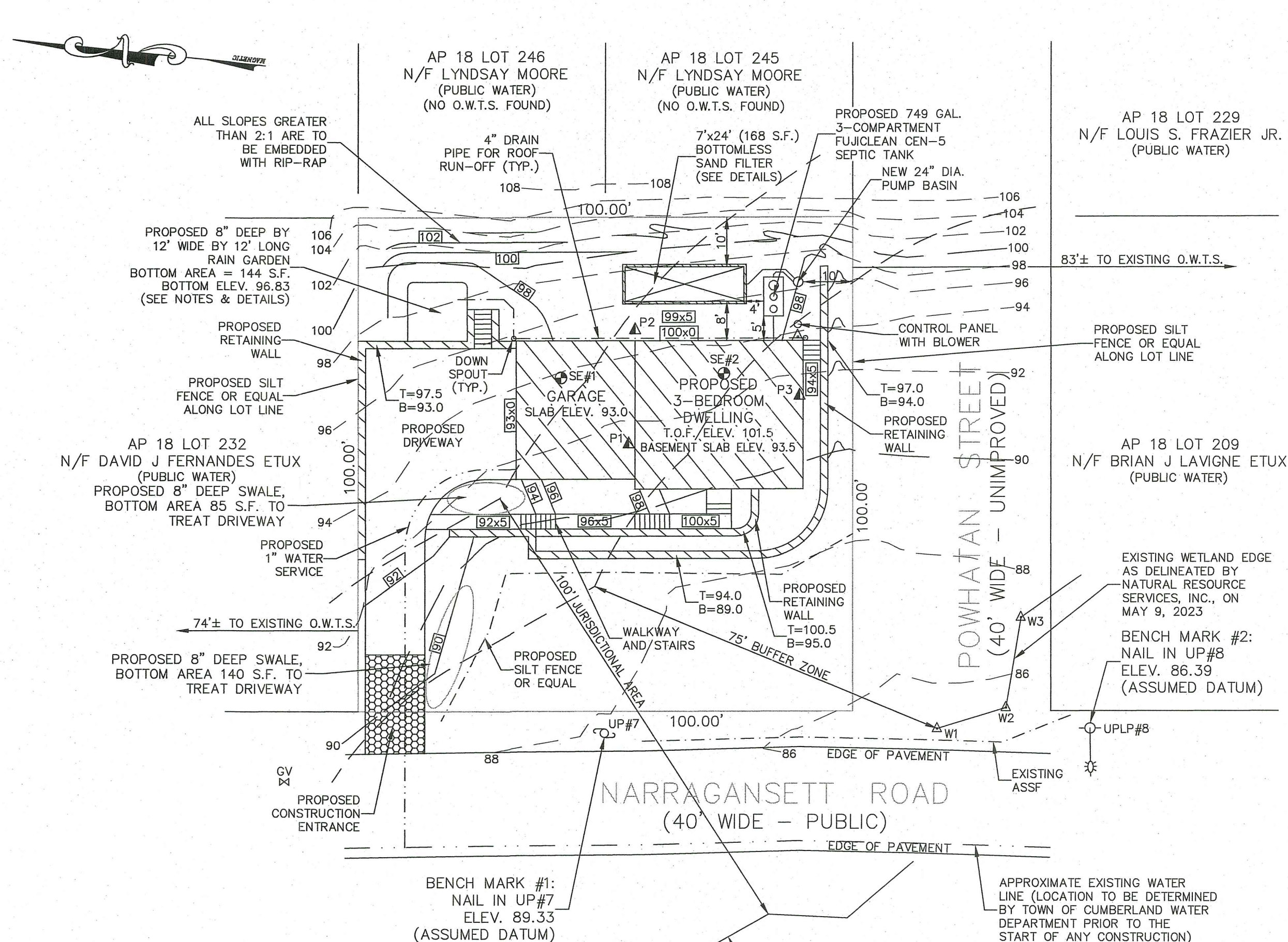
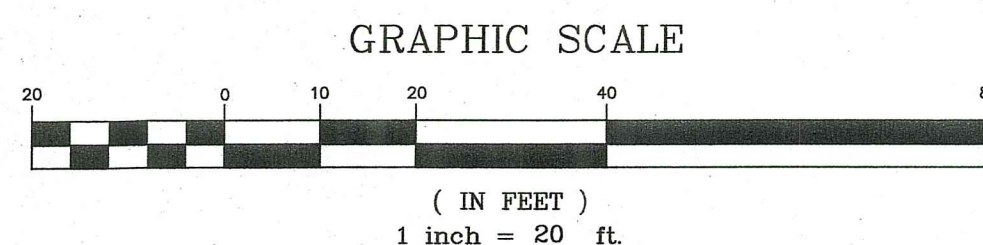
RAIN GARDEN CROSS-SECTION  
NOT TO SCALE



OVERFLOW WYE DETAIL  
NOT TO SCALE



SILT FENCE DETAIL  
NOT TO SCALE



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: JUL 19 2023 FILE #: 23-0058  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

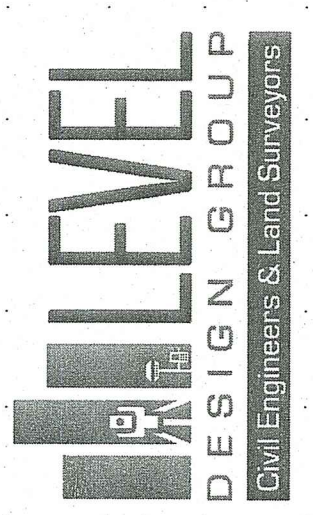
PROPOSED O.W.T.S. PLAN FOR RI DEM WETLANDS  
 BRETT MARTINS  
 PLAT 18, LOTS 230 & 231  
 NARRAGANSETT ROAD  
 CUMBERLAND, RHODE ISLAND

PROJECT NO: 2023\_002  
 SHEET NO: 1 OF 1

REVISIONS:  
 JUNE 13, 2023  
 DATE: FEB. 2, 2023

SCALE: 1" = 20'  
 DRAWN BY: S.A.K. / DRC

249 SOUTH STREET, UNIT 1  
 PLAINVILLE, MA 02762  
 TEL: (508) 695-2221 FAX: (508) 695-2219



Environmental Management  
 JUL 18 2023  
 Office of Water Resources

**O.W.T.S. NOTES:**

- THE SLOPE OF BUILDING SEWER FROM DWELLING TO SEPTIC TANK SHALL NOT BE LESS THAN 1 PERCENT AND NOT GREATER THAN 5 PERCENT.
- USE SCHED 40 PVC PIPING OR EQUIVALENT THROUGHOUT SEWAGE SYSTEM, EXCEPT AS NOTED.
- NO WELLS EXIST WITHIN 200 FEET OF THE PROPOSED SEWAGE SYSTEM EXCEPT AS SHOWN.
- IF A WELL IS PROPOSED, NO SEWAGE SYSTEM EXIST WITHIN 200 FEET OF THE PROPOSED WELL EXCEPT AS SHOWN.
- ALL WELLS, EXISTING AND PROPOSED, WITHIN 200 FEET OF THE SEWAGE SYSTEM ARE SHOWN. ALL PUBLIC WELLS, EXISTING AND PROPOSED, WITHIN 500 FEET OF THE SEWAGE SYSTEM AREA ARE SHOWN.
- IF A DRIVEWAY OR PAVEMENT IS TO BE NEAR THE SEWAGE SYSTEM, A PROTECTIVE BERM IS TO BE PLACED AROUND THE SEWAGE SYSTEM IN THE AREA OF THE DRIVEWAY OR PAVEMENT TO PREVENT VEHICULAR TRAFFIC TRAVEL OVER THE SEWAGE SYSTEM.
- INSTALLER TO MEET ALL O.W.T.S. SPECIFICATIONS AND REQUIREMENTS.
- NO DRAINS OF ANY KIND SHALL BE LOCATED WITHIN 25 FEET OF THE PROPOSED SEWAGE SYSTEM.
- THE FINISH GRADE AT 5 FEET FROM ALL SIDES OF LEACHING FIELD SHALL NOT BE LOWER THAN ELEVATION OF 97.00 WITH 1% SLOPE.
- OWNER AND/OR BUILDER IS RESPONSIBLE FOR BUILDING AND LEACHING FIELD MEETING LOCAL ZONING SETBACK REQUIREMENTS.
- ALL UNDERGROUND UTILITIES AND STRUCTURES ARE APPROXIMATE AND MUST BE FIELD VERIFIED BEFORE THE START OF ANY CONSTRUCTION OR EXCAVATION.
- THE PROPOSED SILT FENCE IS TO BE INSTALLED BEFORE THE START OF ANY CONSTRUCTION AND REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE REVEGETATED.
- THE SILT FENCE IS TO BE INSPECTED ONCE A MONTH OR AFTER ALL STORM EVENTS AND REPAIRED AS NEEDED.
- INSTALLER IS RESPONSIBLE FOR MEETING ALL FUJICLEAN SPECIFICATIONS AND REQUIREMENTS.
- REMOVAL OF ALL TREES, BRUSH, SHRUBS AND BOLLERS IS TO EXTEND 10-FEET BEYOND ALL SIDES OF THE PROPOSED BOTTOMLESS SAND FILTER.
- ALL EXISTING WELLS SHOWN ARE TAKEN FROM ACTUAL FIELD LOCATIONS.
- ALL LEACHING FIELDS SHOWN ARE TAKEN FROM FIELD SURVEY OR EXISTING PLANS.
- NO PRESSURE TREATED TIMBERS ARE TO BE USED BELOW FINISHED GRADE.
- THE PROPOSED FUJICLEAN TANK SHALL BE PROVIDED WITH TWO (2) 18-INCH AND ONE (1) 24-INCH ACCESS RISER TO GRADE. THE 18-INCH RISERS, SAFETY SCREENS AND COVERS SHALL BE POLYLOK MANHOLE 1 & 2; 3009-RP 20-INCH RISER PAN, 3009-20-INCH RISER, 3009-SS 20-INCH SAFETY SCREEN AND 3017-C20 20-INCH HD COVER. THE 24-INCH RISER, SAFETY SCREEN AND COVER SHALL BE POLYLOK MANHOLE 3; 3009-AR ADAPTER RING, (2) 3008-24-INCH RISER, 3008-SS 24-INCH SAFETY SCREEN AND 3008-24-INCH HD COVER.
- THE PROPOSED FUJICLEAN TANK SHALL BE A WATERTIGHT, 3-COMPARTMENT TANK WITH ACCESS RISERS AS DESCRIBED ABOVE. IT IS A COMBINED PROCESS WASTEWATER TREATMENT SYSTEM INCORPORATING FIXED MEDIA AND SUSPENDED GROWTH WASTEWATER TREATMENT IN A SINGLE PRE-ASSEMBLED UNIT. TREATED WASTEWATER CIRCULATION IS CONTINUOUS AND ADJUSTABLE TO MAXIMIZE TREATMENT PERFORMANCE. THE FUJICLEAN MAY BE PURCHASED THROUGH INTEGRATED SEPTIC SOLUTIONS AT 401-318-4300.
- THE CONTRACTOR SHALL MAINTAIN A COPY OF THE APPROVED PLAN ON-SITE AT ALL TIMES DURING CONSTRUCTION.
- THE CONTRACTOR MUST FOLLOW ALL ITEMS CIRCLED IN THE LOWER RIGHT CORNER OF THE O.W.T.S. APPLICATION FORM AND NOTIFY THE DESIGNER DURING THE DIFFERENT STAGES OF CONSTRUCTION TO ALLOW THE DESIGNER TO OBSERVE COMPLIANCE WITH THE APPROVED PLANS.
- THE CONTRACTOR MUST NOTIFY LICENSED DESIGNER 48 HOURS PRIOR TO THE START OF CONSTRUCTION WITH VALID INSTALLER'S LICENSE NUMBER AND CONTACT INFORMATION. DESIGNER IS TO NOTIFY RI DEM 24 HOURS PRIOR TO THE START OF CONSTRUCTION IN ACCORDANCE WITH RI DEM REGULATIONS.
- IF THE CONTRACTOR ENCOUNTERS UNANTICIPATED CONDITIONS DURING CONSTRUCTION WHICH INDICATE THAT THE SYSTEM CANNOT BE INSTALLED IN ACCORDANCE WITH THE APPROVED DESIGN, INSTALLER SHALL STOP CONSTRUCTION AND NOTIFY THE LICENSED DESIGNER RESPONSIBLE FOR WITNESSING AND INSPECTING THE INSTALLATION IN ACCORDANCE WITH RI DEM REGULATIONS.
- THE LICENSED DESIGNER SHALL WITNESS AND INSPECT ALL ASPECTS OF THE INSTALLATION, KEEP RECORDS, PREPARE THE CERTIFICATE OF CONFORMANCE AND PROVIDE O & M INFORMATION AND RECOMMENDATIONS TO THE OWNER, IN ACCORDANCE WITH RI DEM REGULATIONS.
- THE DESIGNER IS NOT RESPONSIBLE FOR ANY NEGLIGENT ACT OF OMISSION OF A USED OF THE O.W.T.S., INCLUDING BUT NOT LIMITED TO, FAILURE TO USE AND MAINTAIN THE SYSTEM WHICH CAUSES DAMAGE TO THE O.W.T.S.
- THE FUJICLEAN TANK IS DESIGNED FOR RESIDENTIAL STRENGTH WASTEWATER ONLY. INSTALLATION SHALL BE IN COMPLIANCE WITH THE RI DEM APPROVED FUJICLEAN INSTALLATION MANUAL.
- THE CONTROL PANEL MUST INCORPORATE AN EVENT COUNTER, ELAPSED-TIME METER AND A VISIBLE AND AUDIBLE PUMP/POWER FAILURE WARNING INDICATOR. SINCE CONSTANT AERATION IS KEY TO SYSTEM PERFORMANCE, THE BLOWER MUST BE OPERATIONAL 24 HOURS PER DAY. TO ENSURE OWNER/OPERATOR COMPLIANCE, ALL INSTALLATIONS OF THE SYSTEM SHALL BE EQUIPPED WITH AN HOUR METER AND A VISIBLE AND AUDIBLE BLOWER/PUMP/POWER FAILURE WARNING LIGHT MOUNTED ON A NEMA APPROVED CABINET ON THE EXTERIOR OF THE BUILDING.
- THE PUMP CHAMBER SHALL BE MANUFACTURED BY ORENCO SYSTEMS, INC., OR APPROVED EQUAL. THE PUMP SHALL BE WIRED TO THE SAME CIRCUIT AS THE BLOWER.
- THE PUMP SHALL BE EQUIPPED WITH A HIGH WATER LEVEL VISIBLE AND AUDIBLE ALARM POWERED BY A CIRCUIT SEPARATE FROM THE POWER PUMP. THE ALARM SHALL BE LOCATED IN A NORMALLY OCCUPIED AREA OF THE FACILITY OR SHALL BE INSTALLED AS SHOWN ON THE SITE PLANS.
- ALL TANKS AND APPURTENANCES SHALL BE CONSTRUCTED SUCH THAT ALL ELEMENTS ACT AS A SINGLE WATERTIGHT UNIT. THE SYSTEM SHALL BE CERTIFIED WATERTIGHT BY THE MANUFACTURER OR FIELD TESTED AND CERTIFIED WATERTIGHT USING PROCEDURES SET FORTH IN THE RI DEM O.W.T.S. RULES AND REGULATIONS.
- THE INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE RI DEM APPROVED FUJICLEAN INSTALLATION MANUAL AND SHALL ONLY BE PERFORMED BY A RHODE ISLAND LICENSED INSTALLER WHO HAS RECEIVED TRAINING AND IS AUTHORIZED IN WRITING BY FUJICLEAN USA TO INSTALL THE SYSTEM.
- THE CONTRACTOR SHALL PROVIDE DESIGNER WITH MATERIAL RECEIPTS FOR ALL CONSTRUCTION MATERIALS PRIOR TO THE DESIGNER ISSUING CERTIFICATE OF CONSTRUCTION.

**GENERAL TANK NOTES:**

- ONE INLET AND ONE OUTLET SHALL BE PROVIDED THROUGH THE APPROPRIATE END OR SIDE WALL OF EACH TANK. WHERE MORE THAN ONE INLET IS REQUIRED FOR MULTIPLE BUILDING SEWERS, THE TANK SHALL BE MANUFACTURED WITH THE APPROPRIATE NUMBER OF INLETS.
- THE INVERT ELEVATION OF THE OUTLET SHALL BE AT LEAST 2 INCHES BELOW THE INVERT ELEVATION OF THE INLET, AND ABOVE THE SEASONAL HIGH GROUNDWATER TABLE.
- THE OUTLET AND INLET PIPES SHALL BE CONNECTED TO THE SEPTIC TANK WITH A WATERTIGHT SEALED FLEXIBLE JOINT. THE PIPE GASKET SHALL BE AN INTEGRAL PART OF ALL TANKS AND THE PIPE GASKET SHALL BE FASTENED TO THE PIPE WITH A STAINLESS STEEL RETRACTABLE CLAMP. A FRICTION FIT CONNECTION IS ONLY ALLOWED IF THE TANK IS PERFORMANCE TESTED.
- SEPTIC TANKS SHALL BE PROVIDED WITH AN INLET SANITARY TEE AND OUTLET TEES OR OTHER NON-CORRODING EQUIVALENT DEVICE APPROVED BY THE DIRECTOR. THE INLET AND OUTLET TEES SHALL BE MINIMUM SDR 35 PVC SOLVENT WELDED. THE TOPS OF THE TEES SHALL EXTEND A MINIMUM OF 6 INCHES ABOVE THE FLOW LINE, AND SHALL BE LEFT OPEN TO PROVIDE VENTILATION. THERE SHALL BE AN AIR SPACE OF AT LEAST 3 INCHES BETWEEN THE TOP OF THE TEES AND TOP INTERIOR OF THE TANK.
- THE INLET SANITARY TEE SHALL EXTEND DOWNWARD AT LEAST 12 INCHES BELOW THE FLOW LINE.
- THE OUTLET TEE SHALL EXTEND DOWNWARD 1/3 OF THE DEPTH BELOW THE FLOW LINE. ALL OUTLET TEES OR OTHER APPROVED OUTLET DEVICES SHALL BE EQUIPPED WITH AN EFFLUENT SCREEN.
- SPECIFICATIONS FOR INLET TEES AND OUTLET TEES ARE FOR NORMAL, LOW-FLOW CONDITIONS. HIGH-FLOW CONDITIONS, CREATED WITH LIQUID IS PUMPED FROM ANOTHER TANK, MAY REQUIRE OTHER DIMENSIONS AND CONSIDERATIONS.
- A MINIMUM 20 INCHES INSIDE DIAMETER ACCESS OPENING SHALL BE LOCATED OVER BOTH THE INLET TEE AND OUTLET TEE. ALL SEPTIC TANK OPENINGS SHALL MEET THE FOLLOWING REQUIREMENTS:
- THE ACCESS OPENING OVER THE OUTLET TEE SHALL BE BROUGHT TO FINISHED GRADE. OTHER ACCESS OPENINGS SHALL EITHER BE BROUGHT TO FINISHED GRADE OR WITHIN 12 INCHES OF FINISHED GRADE. WHERE A RISER IS REQUIRED, IT SHALL BE WATERTIGHT.
- LIDS ON TOP OF THE SEPTIC TANK SHOULD REMAIN IN PLACE WHERE PRACTICAL. LIDS FOR THE OPENING AT FINISHED GRADE SHALL PREVENT UNAUTHORIZED ENTRY BY MEETING EITHER OF THE FOLLOWING: (A) LID SHALL WEIGH A MINIMUM OF 59 POUNDS AND FIT TIGHTLY ONTO THE RISER OR (B) LID SHALL BE TAMPER RESISTANT AND MECHANICALLY FASTENED.
- THE SEPTIC TANK MANUFACTURERS SHALL PROVIDE AND LICENSED O.W.T.S. INSTALLERS SHALL ATTACH A LABEL OF NON-CORROSIVE MATERIAL IN A PROMINENT LOCATION AT EACH ACCESS OPENING TO WARN THAT "ENTRANCE INTO THE TANK COULD BE FATAL."
- SURFACE WATER SHALL BE DIVERTED AWAY FROM THE SEPTIC TANK OPENING.
- ACCESSIBILITY TO SEPTIC TANKS SHALL BE LOCATED ON THE LOT AS TO BE ACCESSIBLE FOR SERVICING AND CLEANING.
- INSTALLATION OF ALL SEPTIC TANKS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S MINIMUM REQUIREMENTS. IN ADDITION, ALL SEPTIC TANKS MUST MEET THE INSTALLATION REQUIREMENTS SPECIFIED.
- THE SEPTIC TANK SHALL BE INSTALLED ON A LEVEL, STABLE BASE THAT WILL NOT SETTLE.
- BACKFILL SHALL BE PLACED AROUND THE SEPTIC TANK IN SUCH A MANNER AS TO AVOID DAMAGE TO IT. ALL BACKFILL PLACED AROUND THE SEPTIC TANK SHALL BE FREE OF LARGE STONES, STUMPS, WASTE, CONSTRUCTION MATERIAL AND RUBBISH.
- WHERE ANY PORTION OF A SEPTIC TANK IS INSTALLED BELOW THE SEASONAL HIGH GROUNDWATER TABLE, THE TANK'S SUSCEPTIBILITY TO FLOATION SHALL BE DETERMINED, AND PROVISIONS SHALL BE MADE TO PREVENT FLOATION, WHERE NECESSARY AS DETERMINED BY THE FLOATION CALCULATIONS.
- WHENEVER MORE THAN 25 PERCENT OF THE DAILY DESIGN FLOW IS PUMPED INTO A SEPTIC TANK, THE TANK CAPACITY SHALL BE INCREASED BY 50 PERCENT BEYOND THE MINIMUM CAPACITIES.
- THE MINIMUM COVER OVER THE INVERT OF THE OUTLET SHALL BE 18 INCHES. IF THE DEPTH OF COVER EXCEEDS 42 INCHES, THE O.W.T.S. APPLICATION SHALL INCLUDE DOCUMENTATION OF THE TANK'S ABILITY TO STRUCTURALLY WITHSTAND THE LOADING, AND THE TANK'S DESIGN SHALL ALLOW FOR PROPER MAINTENANCE AND ACCESS.
- THE SEPTIC TANK SHALL BE A MINIMUM OF 75 FEET FROM ALL WELLS.

**FUJICLEAN CONSTRUCTION NOTES**

**FUJICLEAN SEPTIC TANK**

- IT IS RECOMMENDED TO USE A FOUR-LEG HOISTING SLING OR CHAIN TO LIFT AND SET TANK. THE FOUR LIFTING FITTINGS ON TANK ARE PLACED TO KEEP TANK LEVEL WHEN SETTING.
- BOTTOM SHOULD BE ORIGINAL MATERIAL WITH ALL STONES REMOVED. BOTTOM MUST BE LEVEL. IF VERY STONY OR WET, DIG DOWN MINIMUM OF 6-INCHES AND REPLACE UP TO BOTTOM GRADE WITH PEA STONE, SAND OR SCREENED GRAVEL. MAKE SURE BOTTOM IS COMPACTED AND FIRM WITH NO POSSIBILITY OF SETTLING.
- IF BALLAST BLOCKS ARE NECESSARY, PLACE BLOCKS OUTSIDE OF THE WIDTH OF FLANGES TO AVOID CABLE OR STRAPS FROM CHAFING ON FLANGE. MAKE SURE TO COMPACT SOIL BETWEEN BLOCK AND SIDE OF TANK.
- TO AVOID TANK MOVEMENT WHILE BACKFILLING, BEGIN FILLING TANK WITH WATER BEFORE BACKFILLING. WATER SHOULD BE BROUGHT UP TO LOW WATER MARKINGS ON INSIDE SIDEWALL OF TANK. IN ORDER TO FILL TANK EVENLY AND COMPLETELY, ALTERNATE FILLING EACH COMPARTMENT.
- BACK FILL AROUND TANK IN 6-INCH LIFTS, USING FLOWABLE MATERIAL SUCH AS ORIGINAL SOIL WITHOUT STONE, SAND, PROCESSED GRAVEL, WITHOUT STONE, ROUNDED 1/2 TO 3/4 STONE, OR PEA STONE.
- DO NOT USE MECHANICAL COMPACTOR AROUND TANK; COMPACT WITH SHOVEL, HANDLE OR TAMPER, ESPECIALLY AROUND THE SIDE RADIUS.
- IN ORDER TO AVOID SETTLING AND POSSIBLE DAMAGE TO FITTINGS AND TANK, HAND COMPACT NEAR TANK ALL MATERIAL UNDER AIR CONDUIT AND FITTING WHERE IT ENTERS TANK.
- AIR CONDUIT FROM BLOWER TO UNIT SHOULD BE PLACED ON ORIGINAL SOIL, WHERE POSSIBLE AND ON COMPACTED SOIL OTHERWISE.
- IF HIGH WATER ALARM CONDUIT IS GOING TO TANK, MAKE SURE CONDUIT IS SET ON FIRM GROUND AND ENTERS TANK RISER THROUGH A WATERTIGHT GROMMET PLACED IN SECOND COMPARTMENT. FLOAT SHOULD BE SECURELY MOUNTED WITH CLAMP TO LENGTHWISE RECIRCULATION PIPE. COORD TETHER LENGTH SHOULD BE 3-INCHES FROM CLAMP.
- TO AVOID SETTLING AND DAMAGE TO TANK AND ASSURE PROPER WATER FLOW THROUGH UNIT, MAKE SURE INLET AND OUTLET PIPE ARE SECURELY GLEUED INTO TANK FITTINGS AND SIT ON COMPACTED SOIL WHEREVER SOIL WAS DISTURBED FOR TANK HOLE.
- ALL RISERS AND LIDS MUST BE WATERTIGHT.
- FINISH HEIGHT OF LIDS SHOULD ALLOW WATER TO DRAIN AWAY FROM TANK.

**BLOWER**

- BLOWER SHOULD BE LOCATED WITHIN 100-FOOT OF TREATMENT UNIT. CONDUIT CAN BE 3/4-INCH OR 1-INCH PVC CONDUIT OR FLEXIBLE IRRIGATION LINE (100 LB MAX PRESSURE). THERE SHOULD BE NO MORE THAN FIVE (5) 90-DEGREE FITTINGS IN THE LINE. ALL BLOWERS MUST BE LOCATED IN AREAS WITHOUT THE POSSIBILITY OF FLOODING OR EXCESSIVE RISE OFF. BLOWERS MUST BE LOCATED WHERE THEY CAN BE EASILY INSPECTED AND SERVICED AND SHOULD BE AS CLOSE TO CONTROL PANELS AS POSSIBLE.
- IF ABOVE GRADE, IT SHOULD BE IN PROTECTIVE ENCLOSURE WITH ADEQUATE VENTILATION AWAY FROM EXHAUST FANS. TRY NOT TO LOCATE UNDER BEDROOM WINDOWS. THE ENCLOSURE SHOULD BE PLACED ON POURED CONCRETE OR BLOCK PAD TO AVOID VIBRATION.
- IF THE BLOWER IS PLACED BELOW GRADE, THE ENCLOSURE AND ANY THROUGH FITTINGS MUST BE WATERTIGHT WITH A 2-INCH PVC AIR SUPPLY PIPE BROUGHT UP ABOVE POSSIBLE SNOW LINE. A GOOSENECK AT TOP OF PIPE IS NECESSARY TO PREVENT WATER FROM ENTERING BASIN. SUPPLY PIPE SHOULD NOT BE PLACED NEAR EXHAUST VENTS. TOP OF BLOWER ENCLOSURE SHOULD BE SLIGHTLY ABOVE SURROUNDING GRADE TO SIED WATER.

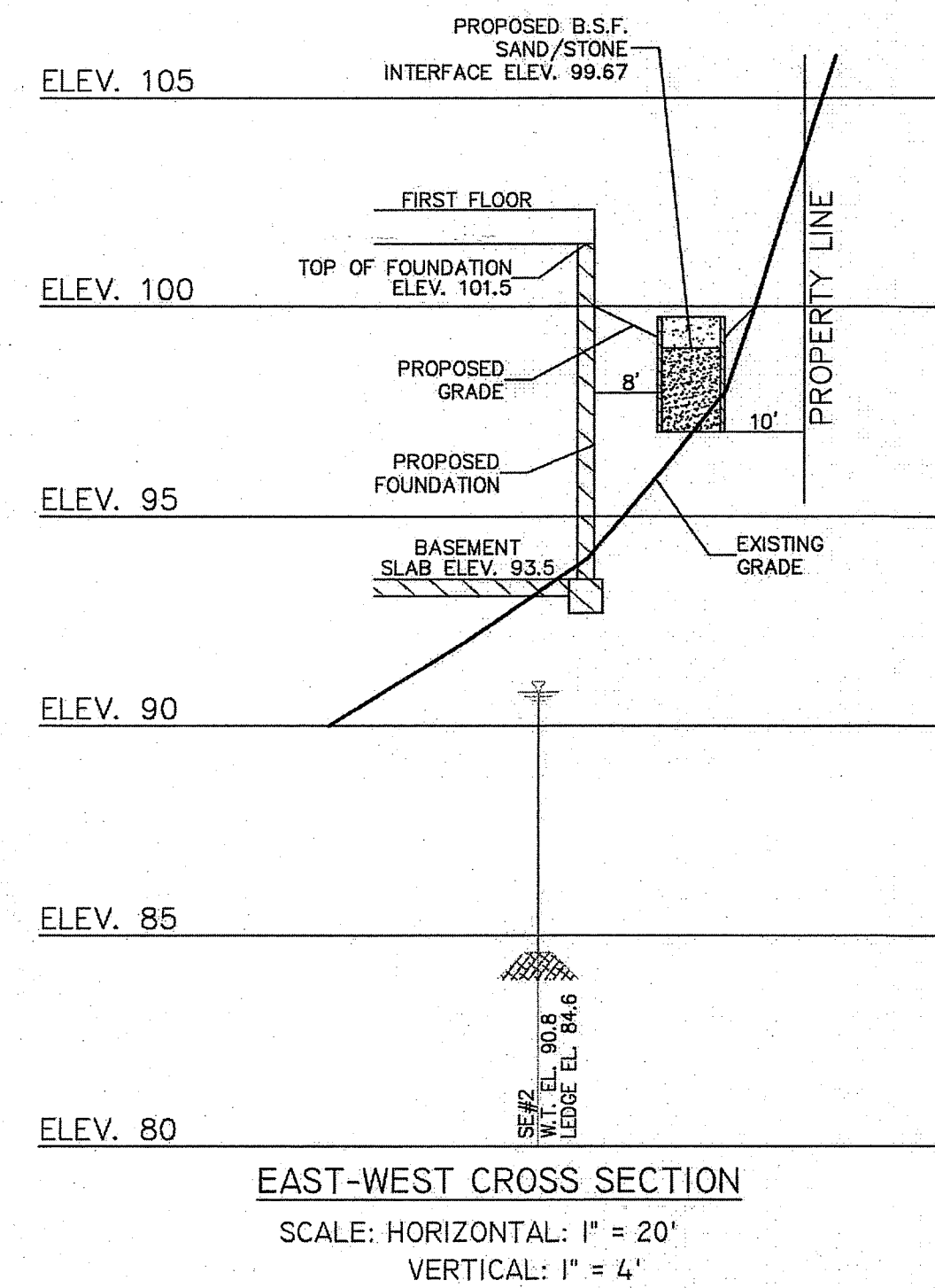
**CONTROL PANEL**

- CONTROL PANEL SHOULD BE SECURELY MOUNTED TO POST OR PEDESTAL AND NOT DIRECTLY ON SIDEWALL OF HOUSE. IT SHOULD BE PLACED HIGH ENOUGH TO AVOID ACCUMULATED SNOW AND FOR EASE OF SERVICING. IF THERE IS A PUMP STATION FOLLOWING FUJI UNIT, CONTROL PANEL SHOULD BE IN LINE OF SIGHT OF BASIN.
- ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL REGULATIONS.

**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

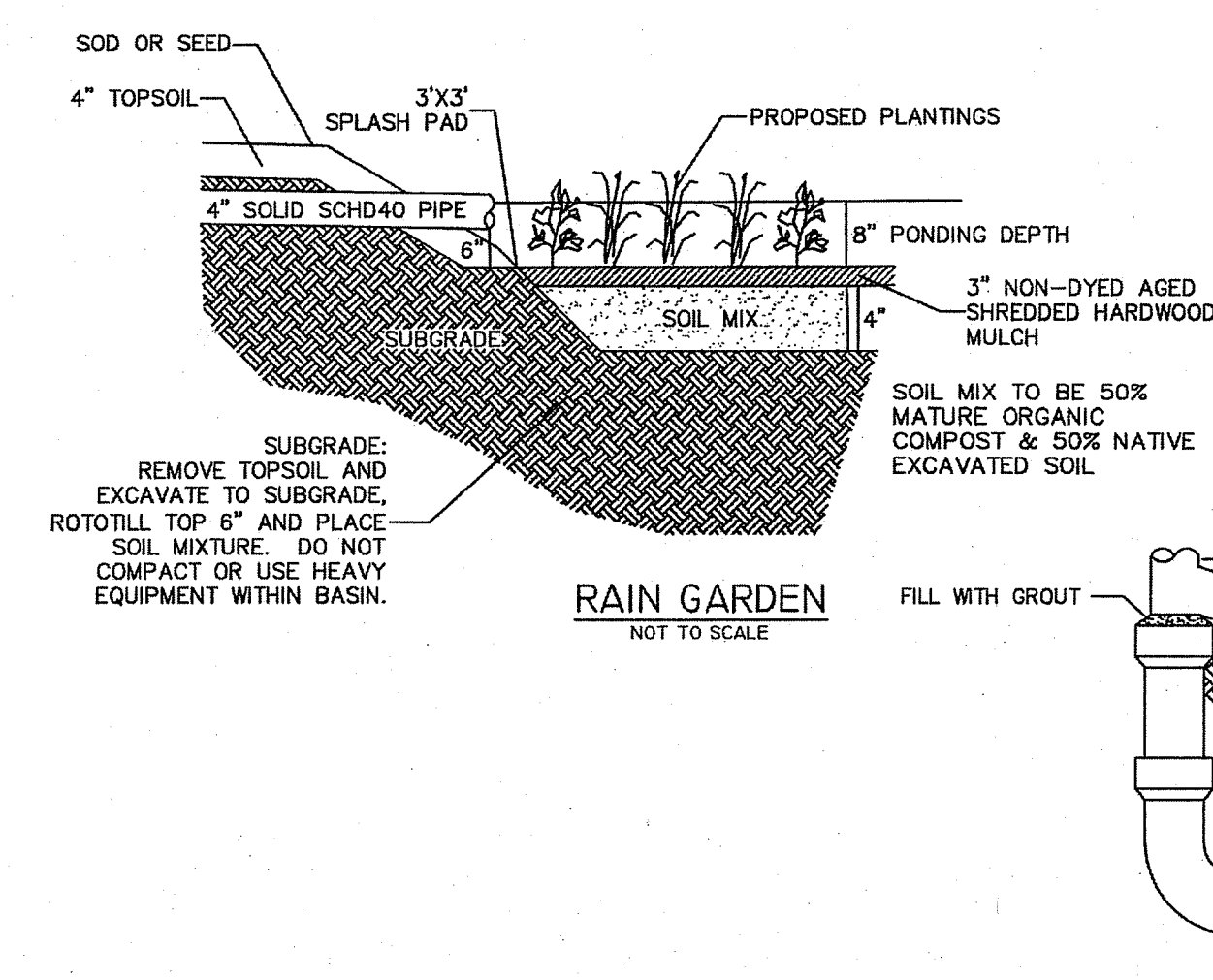


**EAST-WEST CROSS SECTION**

SCALE: HORIZONTAL: 1" = 20'  
VERTICAL: 1" = 4'

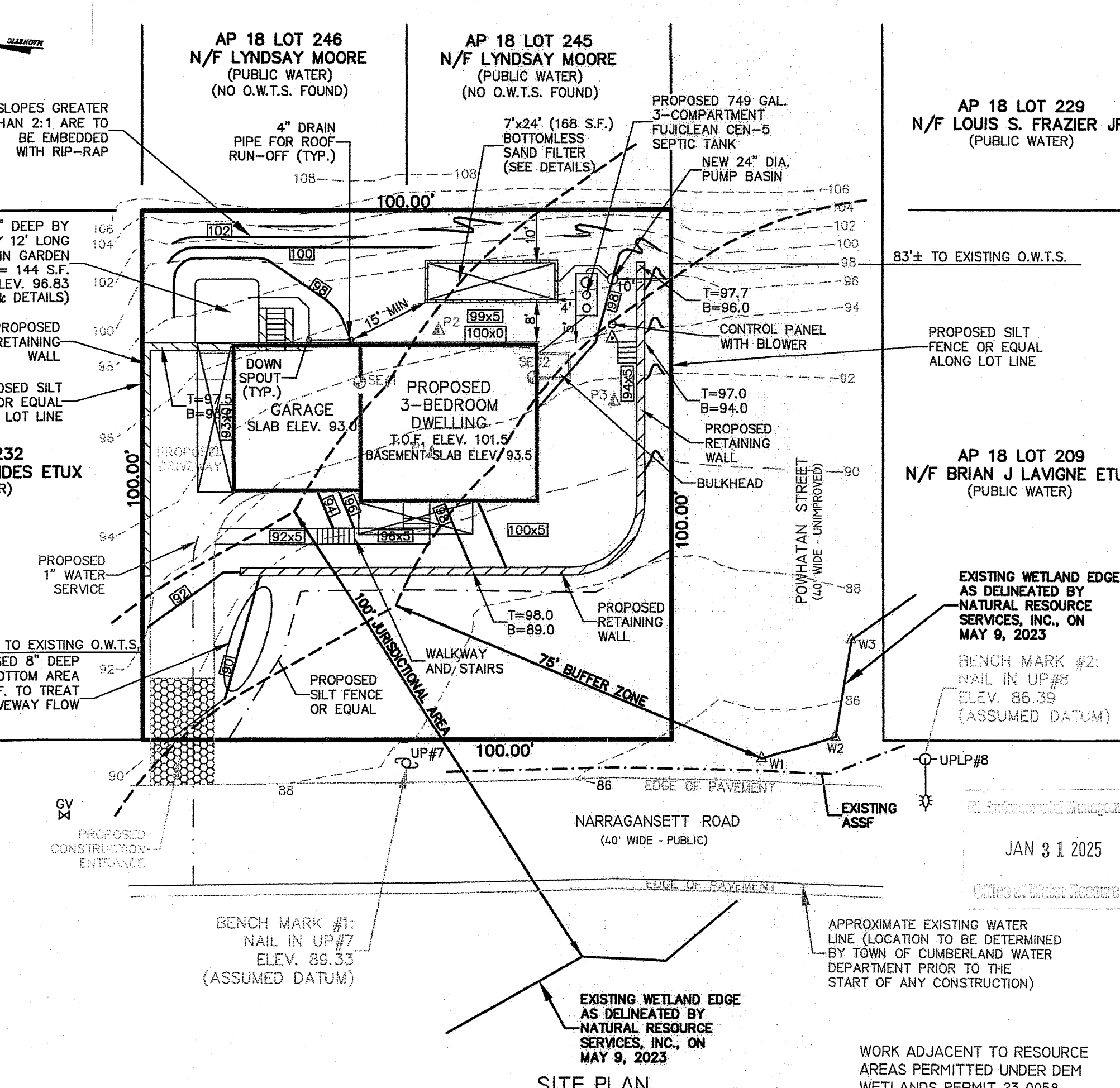
**GENERAL PLAN NOTES:**

- EXISTING CONDITIONS WERE OBTAINED FROM A PLAN ENTITLED CUMBERLAND, RI, EXISTING CONDITIONS PLAN FOR BRETT MARTINS & ALEXANDER IWUG, CLASS I SURVEY OF A.P. 18 LOTS 230 & 231, NARRAGANSETT ROAD, POWHATAN STREET, CUMBERLAND, RI, PREPARED BY MLC SURVEYING, INC., LINCOLN, RI, DATED MAY 5, 2022.
- THE LOCATION OF EXISTING UTILITIES IS APPROXIMATE, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. NOTIFY "DIG-SAFE" AT 1-888-344-7233 AT LEAST TWO BUSINESS DAYS PRIOR TO ANY SITE DEMOLITION OR EXCAVATION.
- CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES IN THE DESIGN PLANS PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING PAVEMENT SHALL BE SAWCUT PRIOR TO REMOVAL.
- ALL EXISTING PAVEMENT, CURB, WALKS, UTILITIES, LIGHT POLES, TREES, SHRUBS, ETC., SHALL BE REMOVED FROM THE AREAS TO BE DEVELOPED. ALL SUCH ITEMS NOT WITHIN THE WORK AREA SHALL BE PROTECTED AND UNDISTURBED.
- ALL DISTURBED AREAS NOT RECEIVING IMPROVEMENTS SHALL BE LOAMED AND SEEDED.
- ALL CONSTRUCTION AND CONSTRUCTION ACTIVITIES SHALL CONFORM TO STATE AND LOCAL REQUIREMENTS, INCLUDING BUT NOT LIMITED TO THE RHODE ISLAND DEM, TOWN OF CUMBERLAND, THE STATE OF RHODE ISLAND AND ANY OTHER AGENCIES HAVING JURISDICTION.
- THERE ARE NO WETLAND AREAS OR ASSOCIATED BUFFER ZONES LOCATED ON THE SUBJECT PROPERTY.
- SUBJECT PROPERTY IS NOT LOCATED WITHIN A NATURAL HERITAGE DISTRICT OR AN



**DOWNSPOUT CONNECTION TO DRAINAGE OUTLET**

NOT TO SCALE



**SITE PLAN**

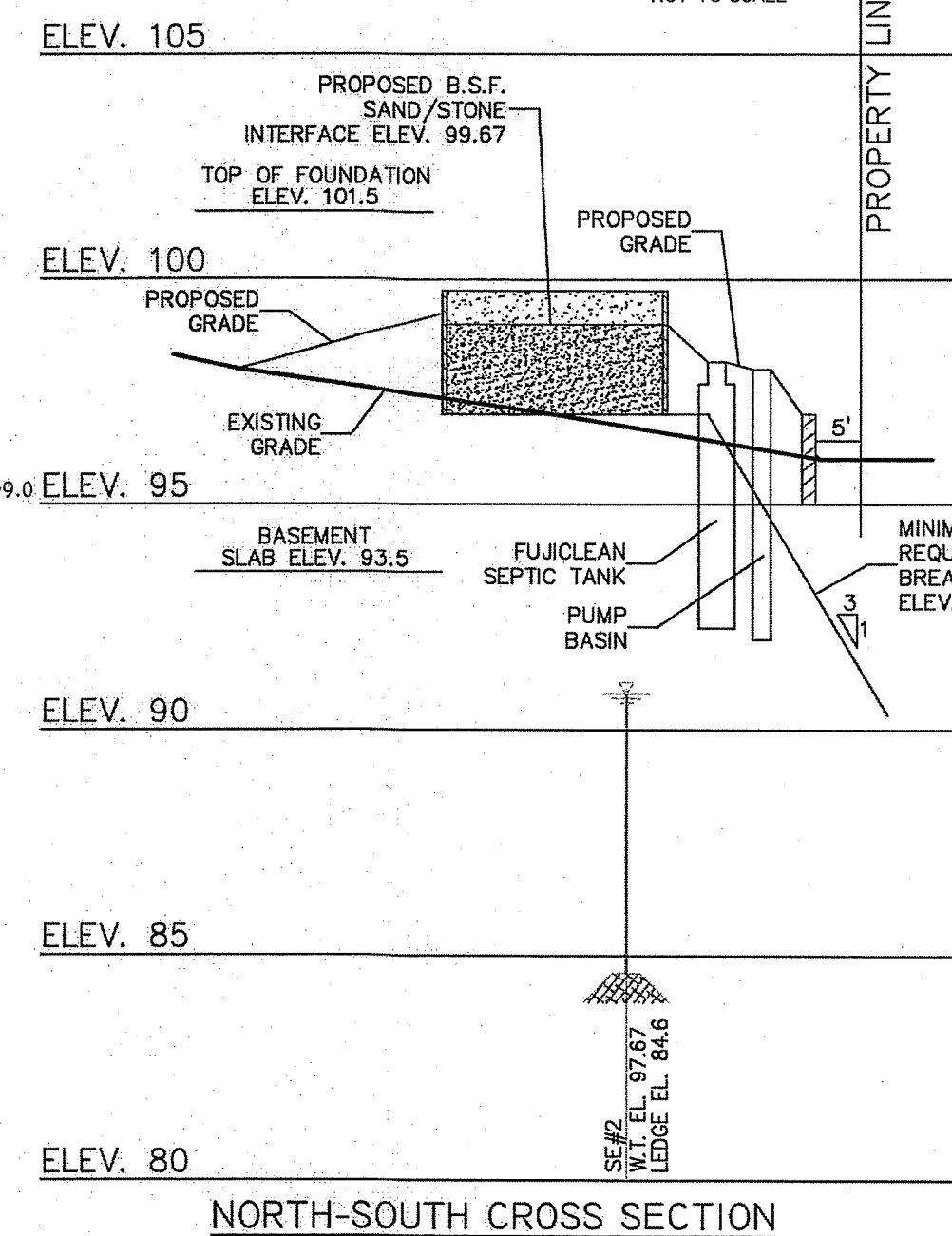
1" = 20'

TEST HOLE DATA: GROUND WATER TABLE DATA: #2108-1830  
DATE DUG - 1-21-22 DETERMINED BY: SOIL EVALUATION  
TEST HOLE - SE#1 WATER TABLE DEPTH = 28"  
TEST HOLE - SE#2 WATER TABLE DEPTH = 30"  
\* PER SOIL EVALUATION FORM, DESIGN BASED ON 24" WATER TABLE

REQUIRED CAPACITY OF LEACHING SYSTEM:  
3 BEDROOMS X 115 GALLONS PER BEDROOM = 345 GALLONS PER DAY  
DESIGN RATE: 2.1 GAL/SP/DAY (CATEGORY 7 SOIL) FOR BSF  
BOTTOMLESS SAND FILTER SIZE REQUIRED: 165 SQUARE FEET  
BOTTOMLESS SAND FILTER SIZE PROPOSED: 168 SQUARE FEET

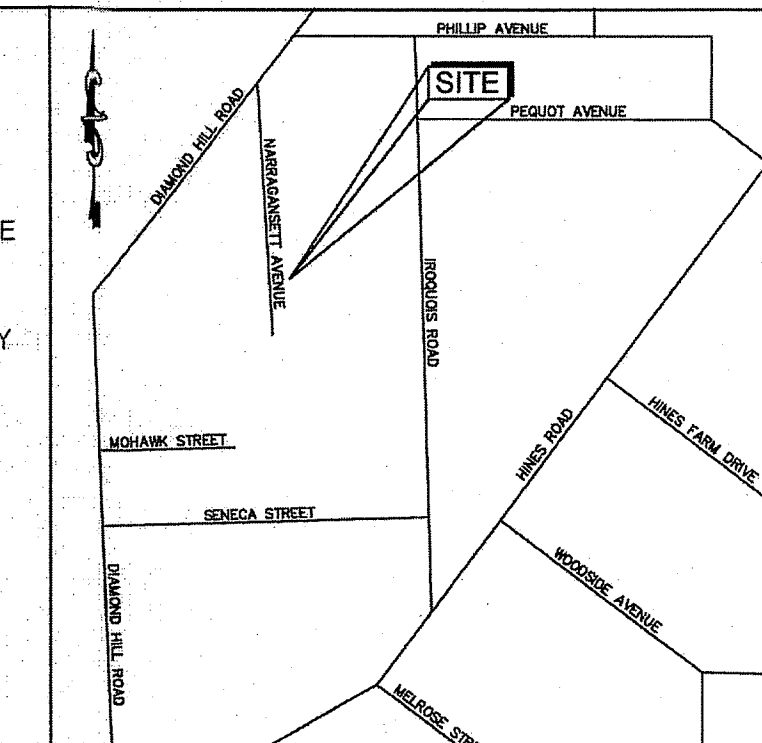
TABLE OF PROPOSED ELEVATIONS:

|   |             |
|---|-------------|
| GROUND AT SE#1                          | 93.8        |
| WATER TABLE AT SE#1                     | 91.8        |
| LEDGE AT SE#1                           | 86.6        |
| GROUND AT SE#2                          | 92.8        |
| WATER TABLE AT SE#2                     | 90.8        |
| LEDGE AT SE#2                           | 84.6        |
| GROUND AT P1                            | 91.3        |
| LEDGE AT P1                             | 86.1        |
| GROUND AT P2                            | 96.7        |
| LEDGE AT P2                             | 89.2        |
| GROUND AT P3                            | 91.1        |
| LEDGE AT P3                             | 86.1        |
| INV. OUT HOUSE                          | 96.75       |
| FUJICLEAN CEN-5 SEPTIC TANK ELEVATIONS: |             |
| INV. IN SEPTIC TANK                     | 96.63       |
| INV. OUT SEPTIC TANK                    | 96.46       |
| 98.17                                   |             |
| 24" DIAMETER PUMP CHAMBER ELEVATIONS:   |             |
| TOP OF CHAMBER/FINISH GRADE             | 98.00       |
| BOTTOM OF CHAMBER                       | 98.17       |
| INVERT IN CHAMBER                       | 96.33       |
| INVERT OUT CHAMBER                      | 96.25       |
| PUMP "ON"                               | 96.51       |
| PUMP "OFF"                              | 96.00       |
| HIGH WATER ALARM/TIMER OFF              | 93.00       |
| BOTTOMLESS SAND FILTER ELEVATIONS:      |             |
| SAND/PEA STONE INTERFACE                | 99.67       |
| INV. ELEVATION OF LATERALS              | 99.92       |
| TOP OF PEA STONE                        | 100.42      |
| TOP OF ENCLOSURE                        | 96.00       |
| FINISH GRADE AROUND B.S.F.              | 99.25-99.00 |



**NORTH-SOUTH CROSS SECTION**

SCALE: HORIZONTAL: 1" = 20'  
VERTICAL: 1" = 4'



| NO | DATE       | REVISIONS               |
|----|------------|-------------------------|
| 1  | 08/17/2024 | DEM O.W.T.S. SUBMISSION |
| 2  | 10/17/2024 | DEM O.W.T.S. SUBMISSION |
| 3  | 10/25/2024 | DEM RI MOD              |
| 4  | 01/13/2025 | DEM WET COMMENTS        |
| 5  | 01/29/2025 | DEM WET COMMENTS        |

**DANIEL R. CAMPBELL**  
No. 8393  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

DATE: SEPTEMBER 17, 2024  
DRAWN: DRC  
SCALE: 1" = 20'

**MARTIN SINGLE FAMILY**  
AP 18, LOT 230 & 231  
ONSITE WASTEWATER TREATMENT SYSTEM DEM # 2108-1829  
SINGLE FAMILY HOUSE  
NARRAGANSETT ROAD  
CUMBERLAND, RHODE ISLAND

**LEVEL DESIGN GROUP**  
Civil Engineers & Land Surveyors  
249 SOUTH STREET, UNIT 1  
PLAINVILLE, MA 02762  
TEL (508) 696-2221 FAX (508) 695-2219

**OWTS DESIGN & PROFILE**

**S-1.0**  
SHEET 1 OF 2  
1983.00

WORK ADJACENT TO RESOURCE AREAS PERMITTED UNDER DEM WETLANDS PERMIT 23-0058

APPROXIMATE EXISTING WATER LINE (LOCATION TO BE DETERMINED BY TOWN OF CUMBERLAND WATER DEPARTMENT PRIOR TO THE START OF ANY CONSTRUCTION)

BENCH MARK #1: NAIL IN UP#77 ELEV. 89.33 (ASSUMED DATUM)

BENCH MARK #2: NAIL IN UP#8 ELEV. 86.39 (ASSUMED DATUM)

EXISTING WETLAND EDGE AS DELINEATED BY NATURAL RESOURCE SERVICES, INC. ON MAY 9, 2023

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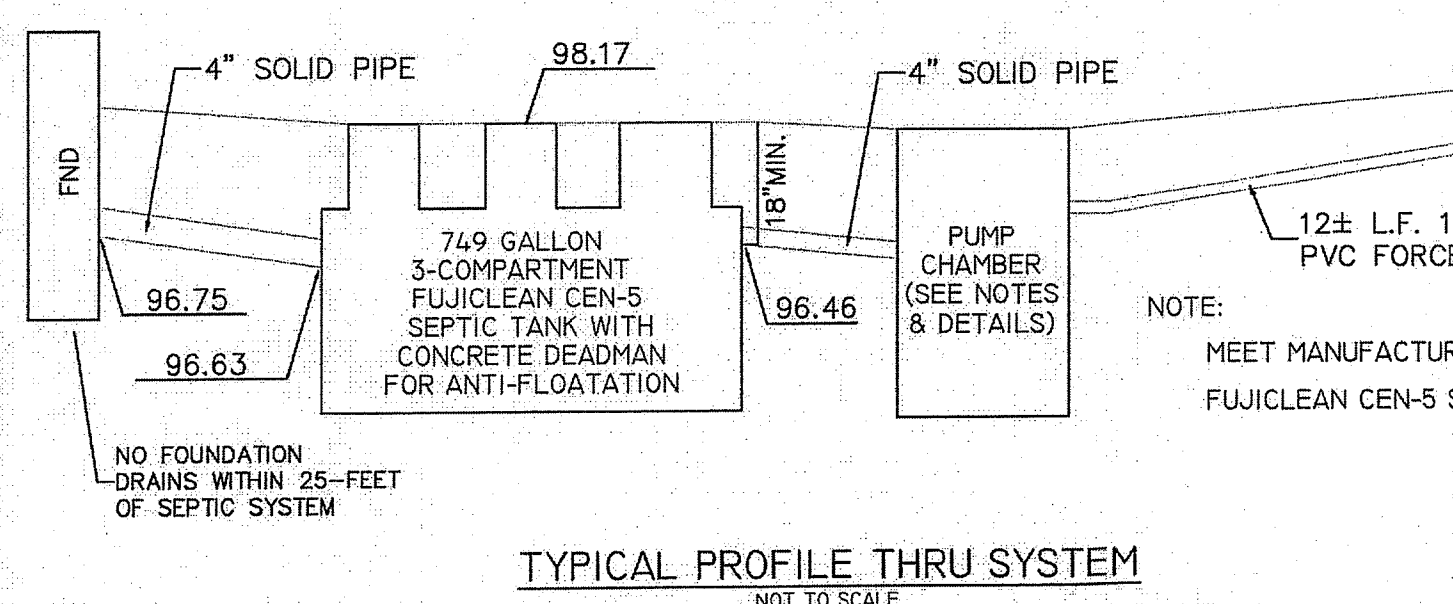
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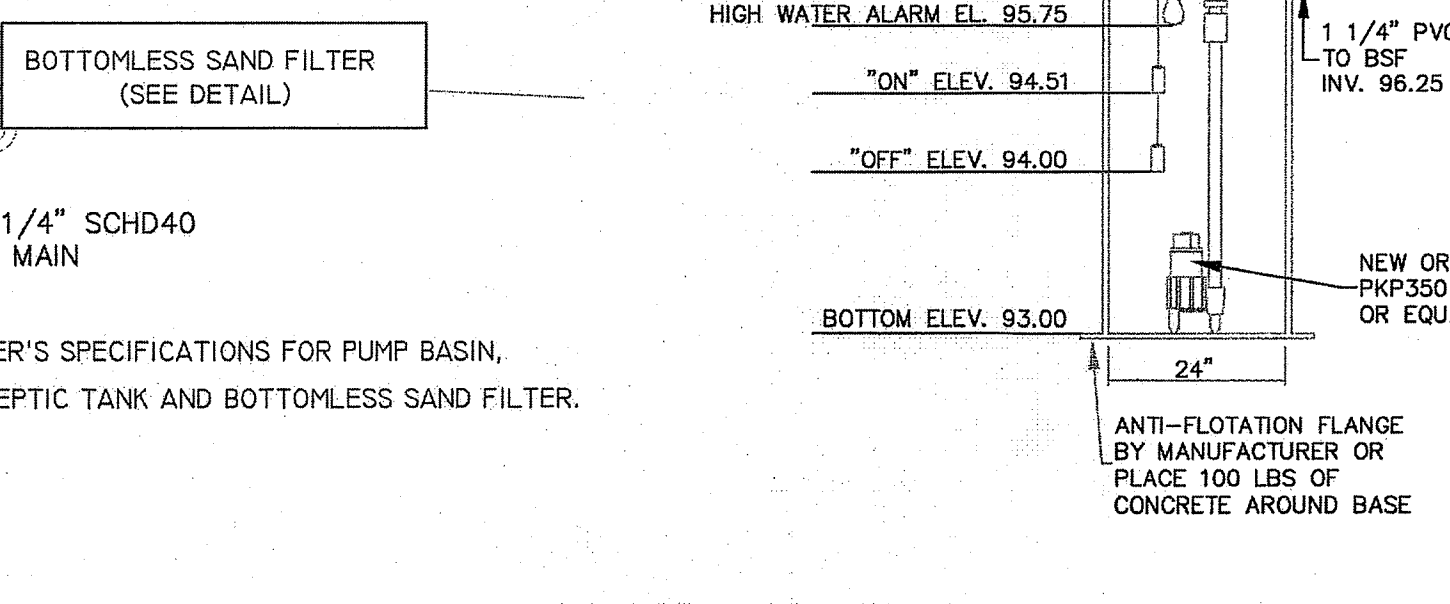
EXISTING WETLAND EDGE AS DELINEATED BY NATURAL RESOURCE SERVICES, INC. ON MAY 9, 2023

EXISTING WETLAND EDGE AS DELINEATED BY NATURAL RESOURCE SERVICES, INC. ON MAY 9, 2023



**TYPICAL PROFILE THRU SYSTEM**

NOT TO SCALE



NOTE:  
MEET MANUFACTURER'S SPECIFICATIONS FOR PUMP BASIN, FUJICLEAN CEN-5 SEPTIC TANK AND BOTTOMLESS SAND FILTER.

ANTI-FLOATION FLANGE BY MANUFACTURER OR PLACE 100 LBS OF CONCRETE AROUND BASE