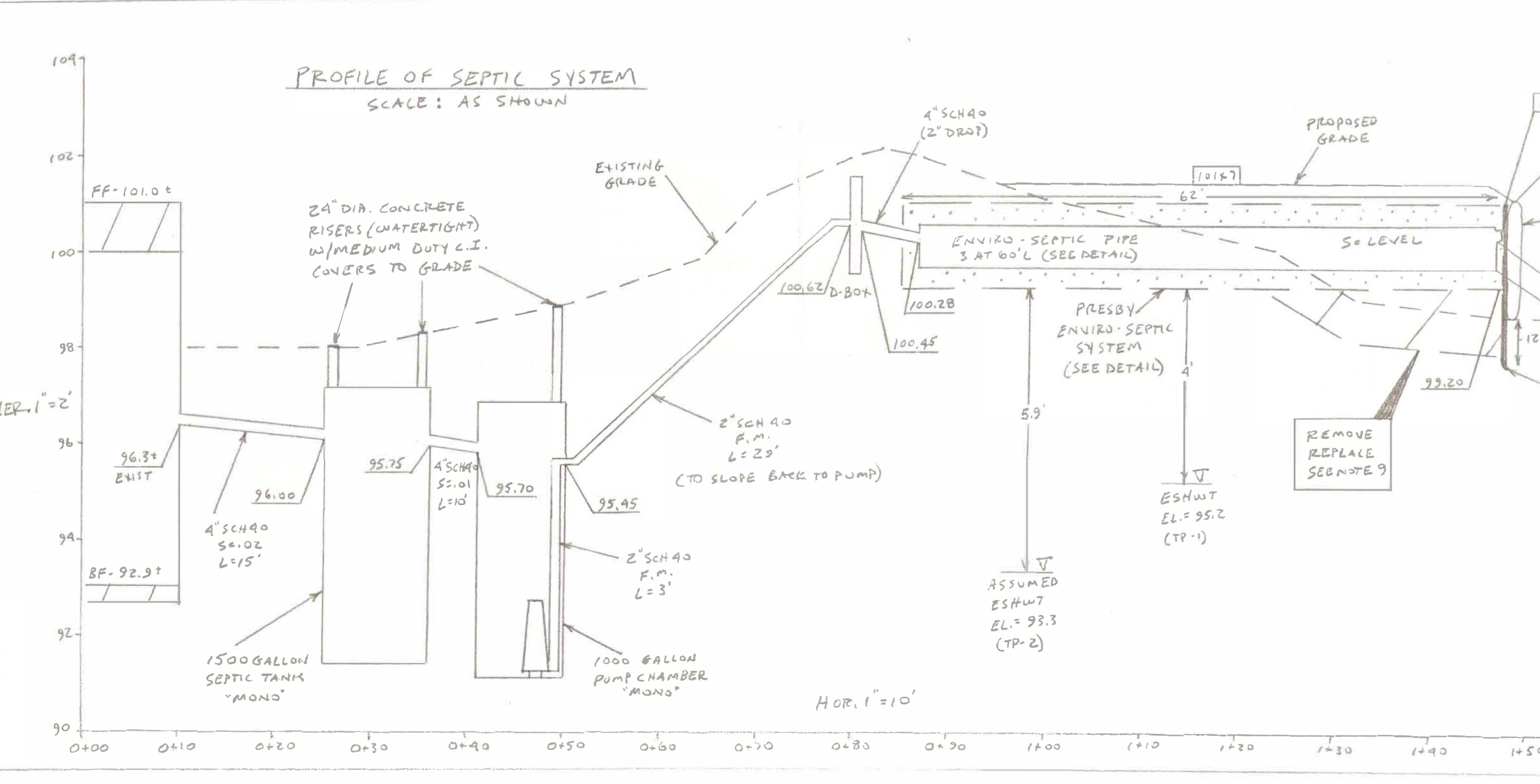
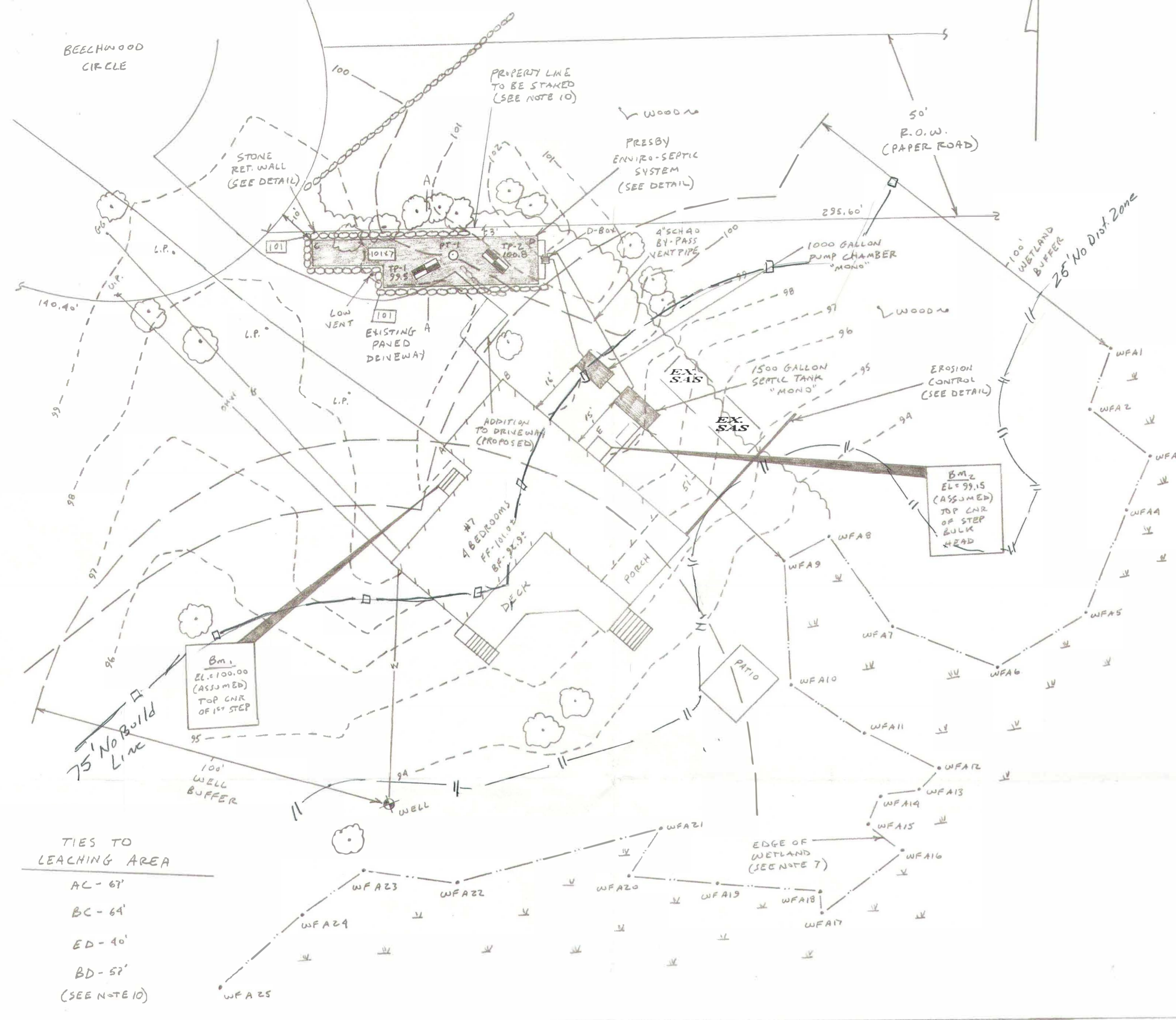


PLAN OF SEPTIC SYSTEM
SCALE: 1" = 20'
LOT AREA*



TEST PIT DATA	
Performed By: Daniel B. Johnson	
Witnessed By: Kendall Longo	
Date: March 30, 2023	
TP-1 (EL. = 99.5)	
(98.8) A,	0" - 8" 10YR4/3 Fine sandy loam
(98.2) Bw,	8" - 16" 5R5/8 Fine sandy loam
(95.2) B/C,	16" - 52" 2.5Y7/3 Fine sandy loam
(89.5) C1,	52" - 120" 10YR4/6 Gravelly loamy sand
(95.2)	52" Observed ESHWT (7.5YR5/8, 2.5Y6/2)
(92.5)	84" Observed Groundwater (weeping)
(91.5)	96" Observed Groundwater (standing)
TP-2 (EL. = 100.8)	
(99.5) A/Fill	0" - 16" Fine sandy loam
(99.0) Bwb,	16" - 22" 5R5/8 Fine sandy loam
(98.0) B/C,	22" - 34" 2.5Y7/3 Fine sandy loam
(93.3) C1,	34" - 90" 10YR4/6 Gravelly loamy sand
(93.3) R,	(boulder)
(93.3)	90" Assumed ESHWT
No Observed Groundwater/Mottling	
PERCOLATION TEST DATA	
Date: March 30, 2023	
Soil Class: Class II (0.60 G/SF)	
Perc Rate: 5.3 MPI (9" - 27" TP-1)	
SCHEDULE OF ELEVATIONS	
Inv. Out Foundation (existing)	96.3
Inv. In Septic Tank	96.00
Inv. Out Septic Tank	95.75
Inv. In Pump Chamber	95.70
Inv. Out Pump Chamber	95.45
Inv. In Distribution Box	100.62
Inv. Out Distribution Box	100.45
Inv. In Enviro-Septic Pipe (4" PVC)	100.28
Inv. Bottom Enviro-Septic Pipe	99.70
Bottom of C-33 System Sand	99.20
ESHWT (TP-1)	95.2
Assumed ESHWT (TP-2)	93.3

PUMP CALCULATIONS	
Static Head Loss: 100.62 - 91.45 = 9.17'	
Dynamic Head Loss: 32'L x 1.2/100' = 0.4' @ 25 GPM (2" SCH 40 F.M.)	
32'L x 8.8/100' = 2.8' @ 75 GPM	
32'L x 15.0/100' = 4.8' @ 100 GPM	
Total Dynamic Head Loss: 9.17' + 3.42' = 12.6' @ 83 GPM	
Model: Liberty LE41M (or equivalent)	
4/10 Hp, 115 Volt, 1 Phase, 2" solids	

FLOAT SWITCHES	
High Level Alarm:	18"
Pump On:	15"
Pump Off:	12"
- Reference elevations from bottom of tank	
- 24 Hr. Capacity: 727 Gallons	
- (8.83'L x 4.0'W x 2.75'H) x 7.48 G/SF = 727 Gallons	
- Back Flow: 5 Gallons	
- Dosing 6 Times/Day at 66 GPD	

LEGEND	
Existing Contour	--- 98 ---
Proposed Contour	--- 98 ---
Test Pit	--- 98 ---
Finished Floor Elev.	FFE
Basement Floor Elev.	BFE
Water Line	--- W ---
Over Head Wire	--- OHW ---
Gas Line	--- G ---

- NOTES**
- All construction methods shall conform to the Title V (310 CMR 15.000) and the Boxford Board of Health Regulations.
 - There are no known abutters private or public wells within 150 feet/400 feet, respectively of the proposed leaching area, nor is there any known surface water supplies within 400 feet of the proposed leaching area. The proposed leaching area is not within 100 feet of a wetland, nor is it within 200 feet of a river front or known tributaries to surface water supplies.
 - The proposed leaching area is 101 feet from the edge of the wetland.
 - The proposed pump chamber is 69 feet from the edge of the wetland.
 - The proposed septic tank is 51 feet from the edge of the wetland.
 - The existing leaching pits shall be pumped and backfilled with clean fill prior to installing the new septic tank.
 - No changes are to be made in the field without the approval of the Board of Health and the design engineer.
 - The proposed leaching area is not designed for use with a garbage disposal. Remove any existing garbage disposal.
 - Contractor to notify Dig Safe 72 hours prior to construction (800) 344-7233. All system components to be covered by magnetic tape.
 - Property line, topography, existing structures, wetland flags, etc. taken from actual ground survey. Also reference Deed, Book 6040, Page 175. The septic plan is not to be used as a property line survey.
 - The wetlands were flagged by William Manuell (Wetlands & Land Management) on March 27, 2023.
 - Prior to construction, the contractor shall verify all plumbing exiting the existing structure, as shown on this plan, can be connected to the new septic system. If any existing and/or proposed plumbing exiting the structure is found to be different than that shown on the approved septic system plan, the contractor shall notify the designer and corrections to the septic design will be made if applicable. All internal plumbing shall be connected to the new septic system, unless otherwise specified.

SIZING OF ENVIRO-SEPTIC LEACHING SYSTEM

4 Bedrooms x 165 GPD/Bedroom = 660 GPD (Boxford BOH)
660 GPD / 0.60 G/SF = 1100 SF

Using the Presby system allowance for up to 40% reduction in area, thus 1100 SF x 0.60 (40% reduction) = 660 SF

Percolation Rate: 5.3 MPI, Use 6 MPI (Class II, 0.60 G/SF)

Slope of Proposed Leaching Bed: Level = 0%

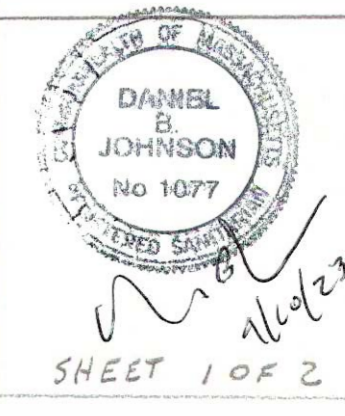
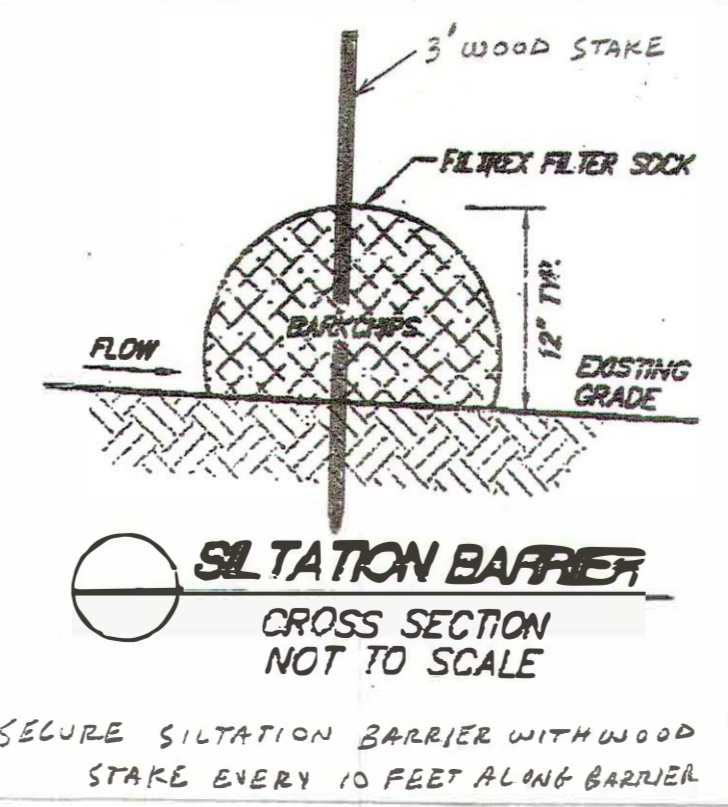
* The following size requirements were taken from "Enviro-Septic Wastewater Treatment System Massachusetts Design and Installation Manual."

Table A: 5.3 MPI with 4 Bedrooms = 280 LF (min.)
Table B: System Slope at 0% with 5.3 MPI = 1.5' (min.) spacing,
Table C: Use 50' long pipe at 300 LF (280 LF min.) with 1.5' (min.) spacing = 8.50' W (min.) with 6 lines,
Table D: 4 Bedrooms at 5.3 MPI with Soil Class II = 440 SF (min.)

Proposed Leaching Bed: 52'L x 13'W with 6 lines at 50'L each with 1.5'W (actual) spacing (center to center), with 1.5 center to outside edge of sand bed = 676 SF

Proposed sand bed size:
Use Non-Conventional Combination Serial Configuration with 3 Lines at 60'L and 3 Lines at 40'L:

Total Bottom of Bed of leaching area:
62'L x 6.5'W = 403 SF
42'L x 6.5'W = 273 SF
676 SF
Total Leaching Area = 676 SF (provided)
> 440 SF (required Presby), > 660 SF (required Boxford BOH)



SUBSURFACE SEWAGE DISPOSAL SYSTEM
7 Beechwood Circle, Boxford (Map 20, Blk 9 Lot 17)

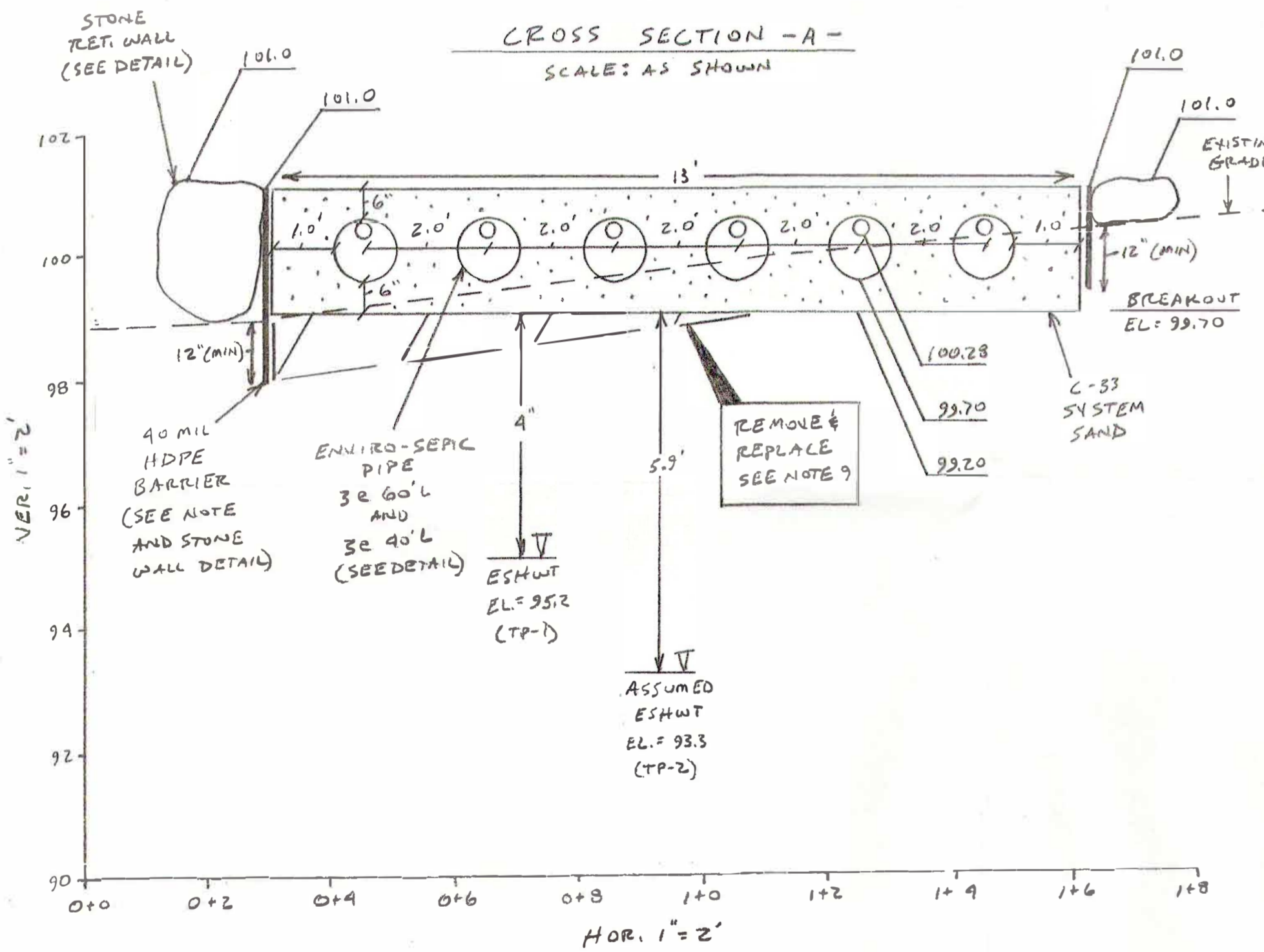
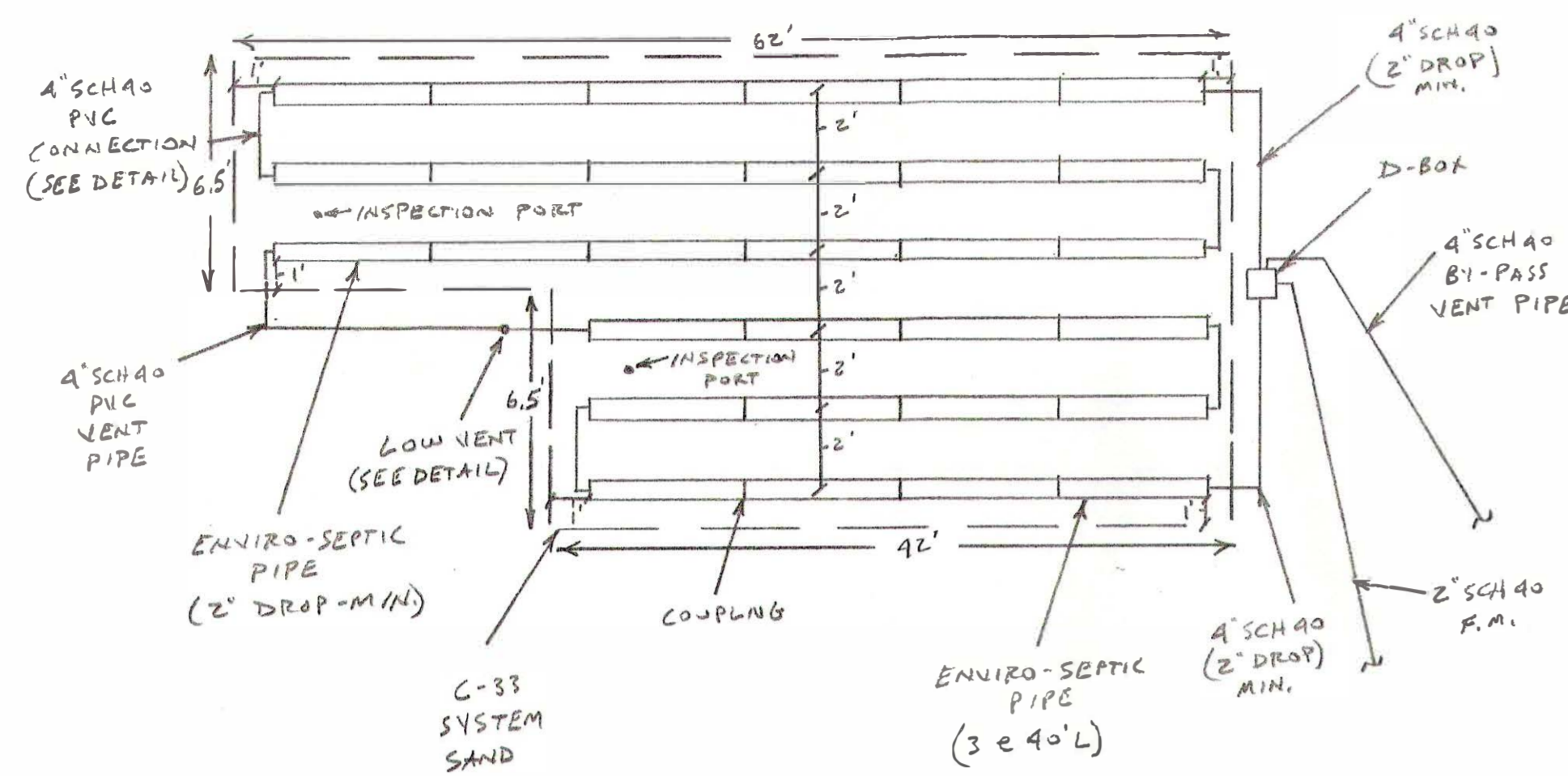
Date: 4/10/23
Prepared: Marshall Hudson
For: 7 Beechwood Circle, Boxford, MA 01921

Drawn By: Daniel B. Johnson
No. 1077

Prepared: DOMESTIC SEPTIC DESIGN, INC.
By: P.O. Box 2406, S. Hamilton MA 01982
Dwg: J-2821

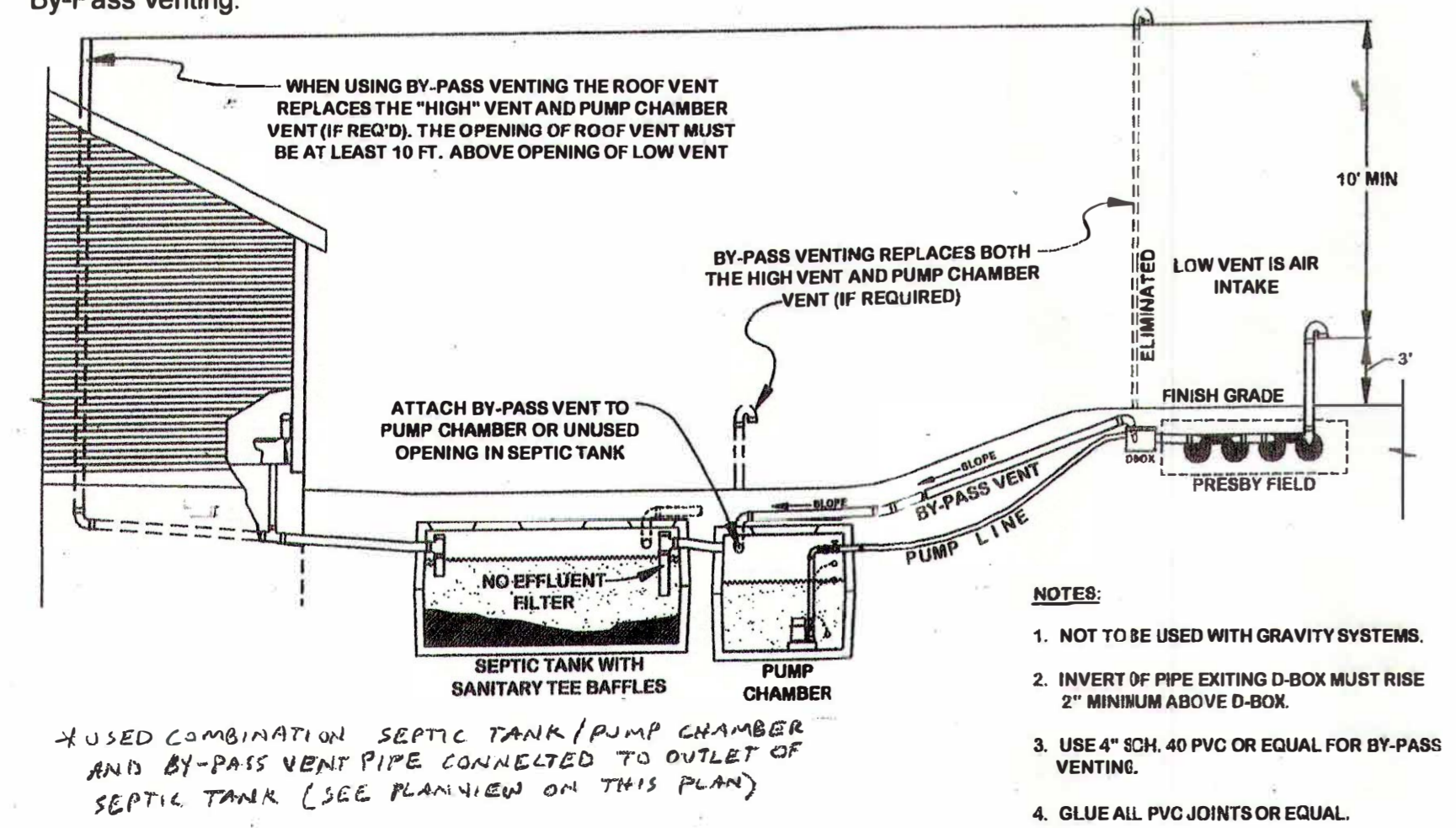
SHEET 1 OF 2

NON-CONVENTIONAL COMBINATION SERIAL CONFIGURATION
SCALE: NONE



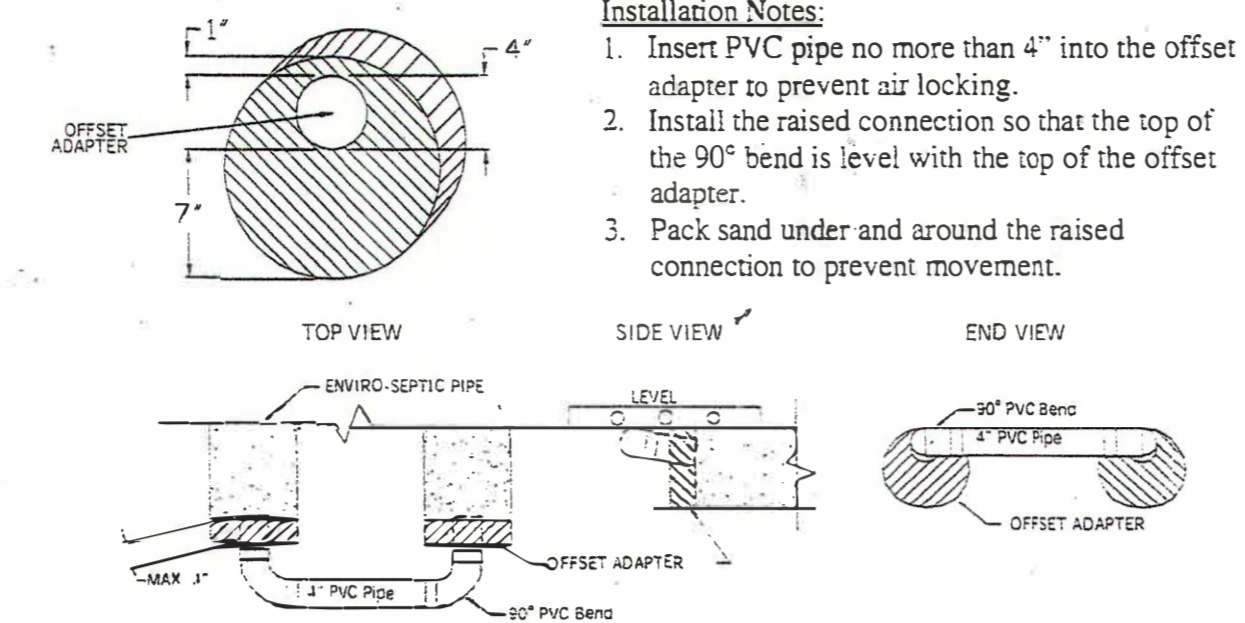
By-Pass Venting

By-Pass venting is used to eliminate the need for a High vent at the field and can also replace the need for a pump chamber vent. There must be at least 10 ft. of elevation between the roof stack and low vent openings. Illustration of By-Pass venting:

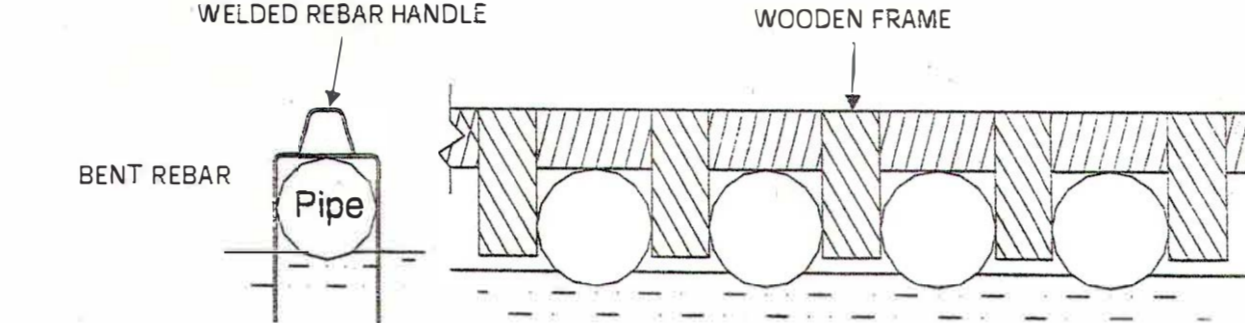


Erosion control Protect the site from erosion by proper grading, mulching, seeding, and control of runoff.

Use raised connections Raised connections consist of offset adapters, 4" PVC sewer and drain pipe, and 90° elbows. Use raised connections to connect lines of Enviro-Septic® pipe. They enable greater liquid storage capacity and increase the bacterial surfaces being developed. Here are some diagrams along with installation notes.

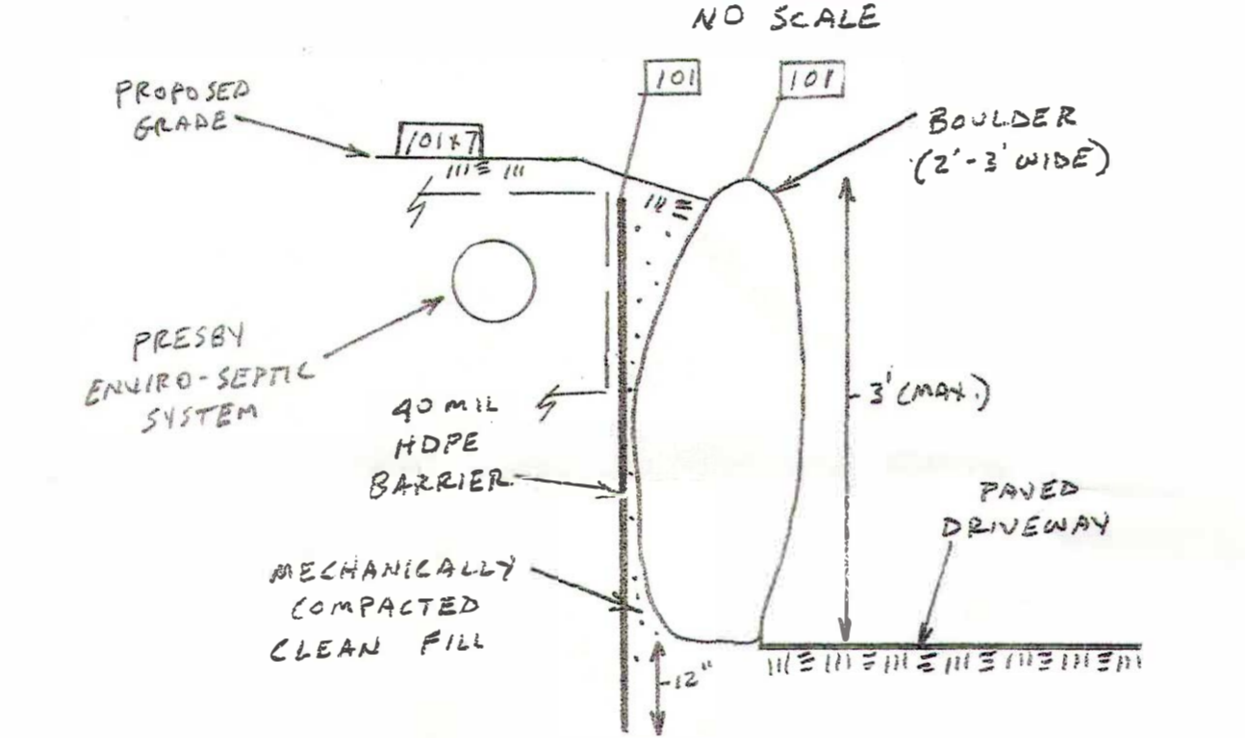


Line spacers Sand may be used to keep pipe in place while covering, but simple tools may also be constructed for this purpose. Here are two examples. One is made from rebar, the other from wood.

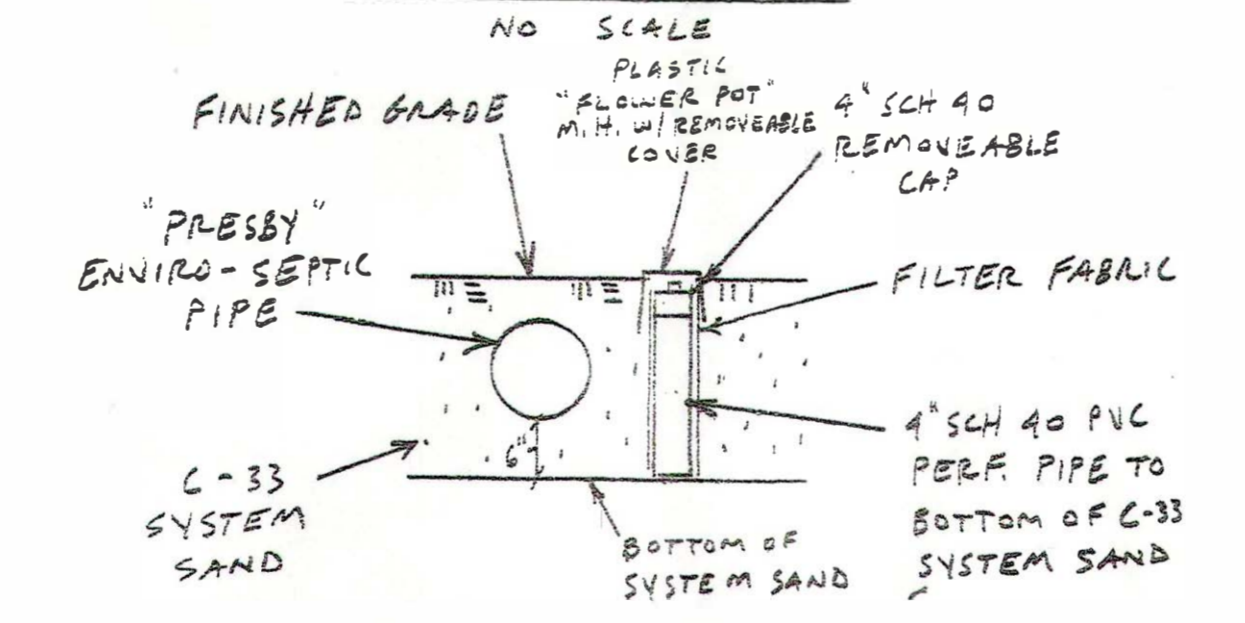


Caution: Remove all tools used as line spacers before final covering.

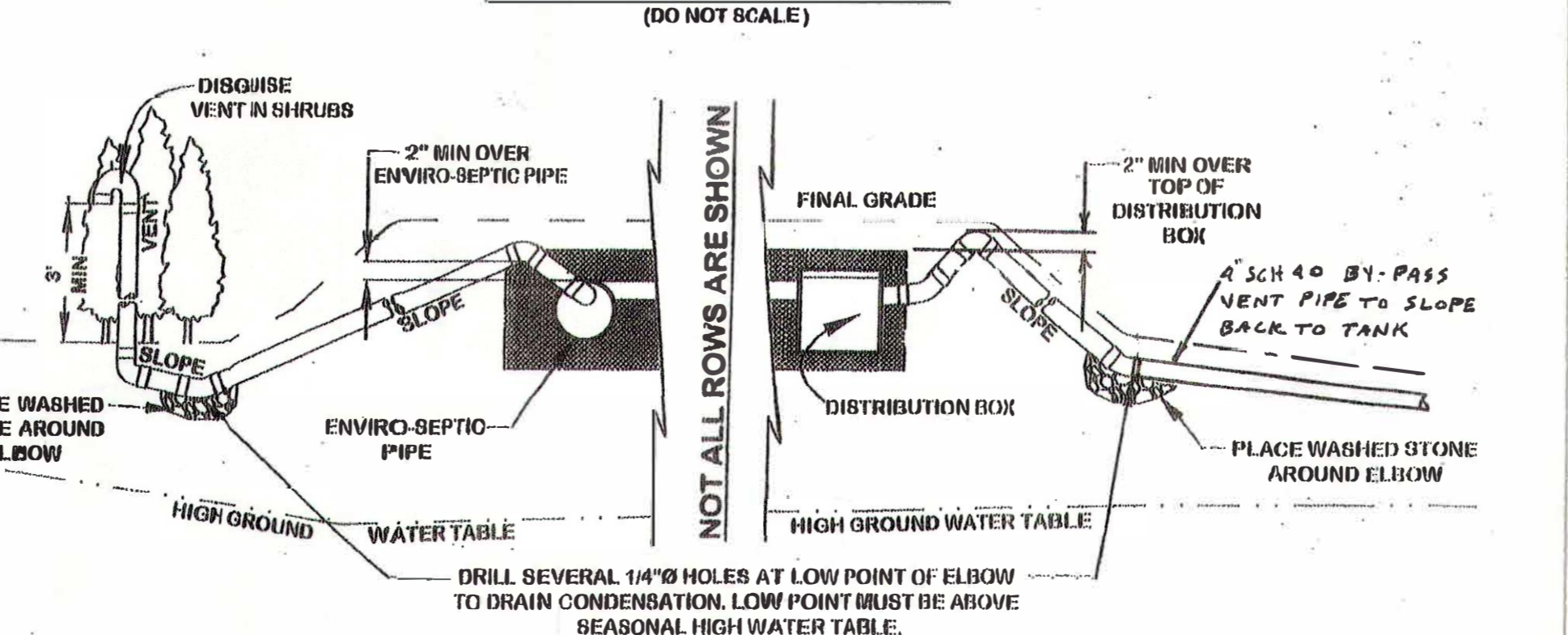
STONE RETAINING WALL
NO SCALE



INSPECTION PORT
NO SCALE



REMOTE VENTING
(DO NOT SCALE)



Sand Requirements

Introduction This page describes the sand requirements for the Enviro-Septic® wastewater treatment system.

System sand All configurations of Enviro-Septic® require a minimum of 6" of system sand surrounding the circumference of the pipe.

Percentage Restrictions 35% or less of the total sand may be gravel. 40%-90% of the total sand is to be coarse and very coarse sand.

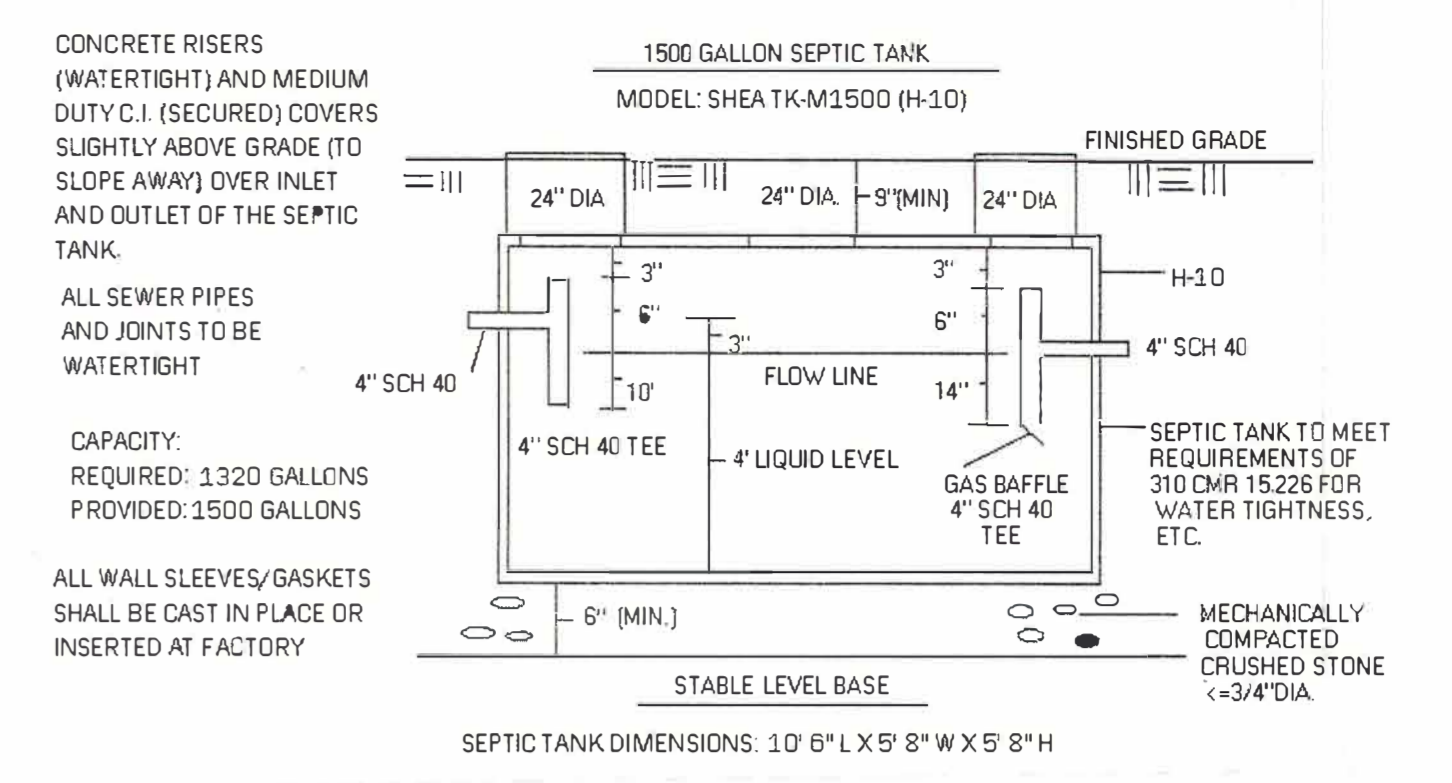
Gravel Quality Restrictions No gravel is to exceed 1/4" in diameter. No gravel is smaller than 2mm/0.0787" in diameter. (It must not pass through a #10 sieve.)

Coarse Sand Quality Restrictions No coarse sand is smaller than 0.5mm/0.0196" in diameter. (It must not pass through a #35 sieve.)

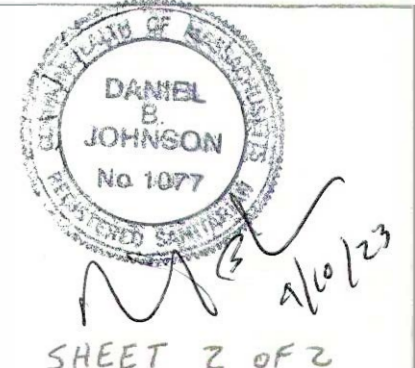
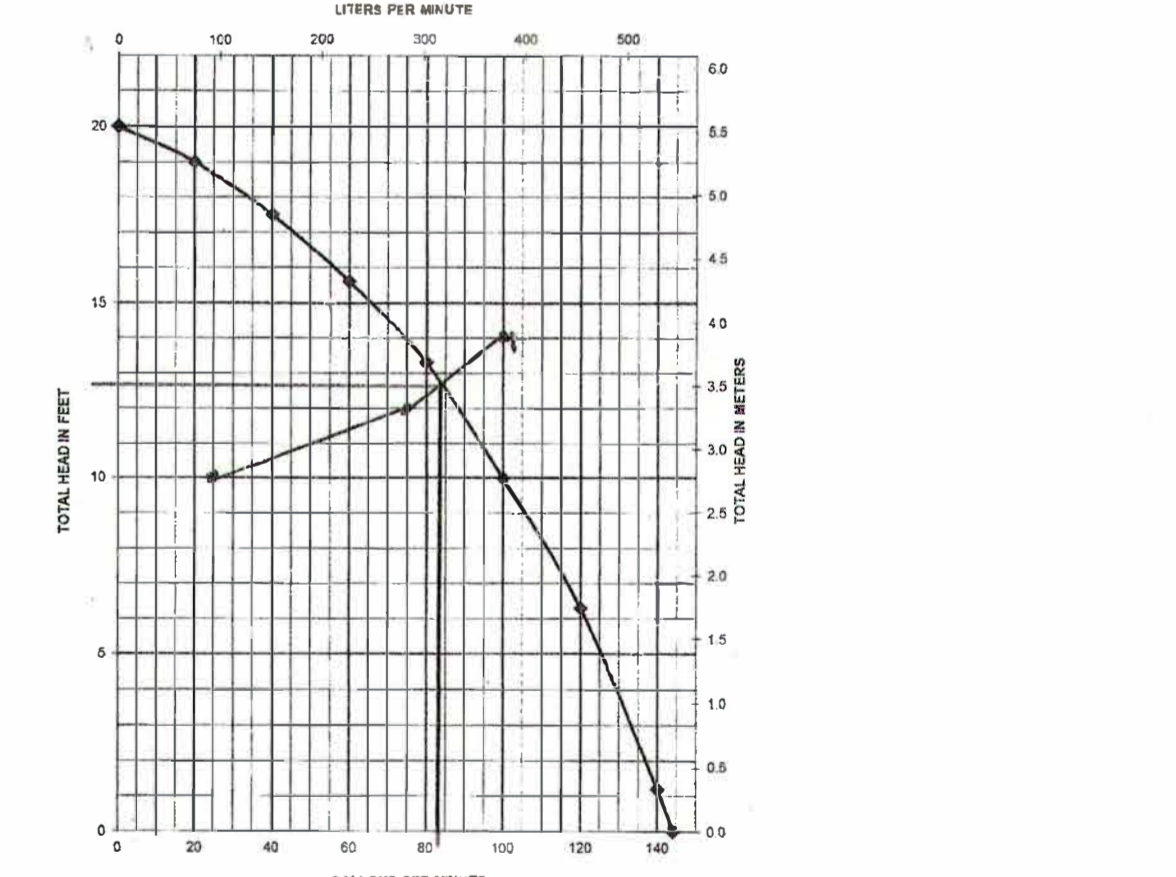
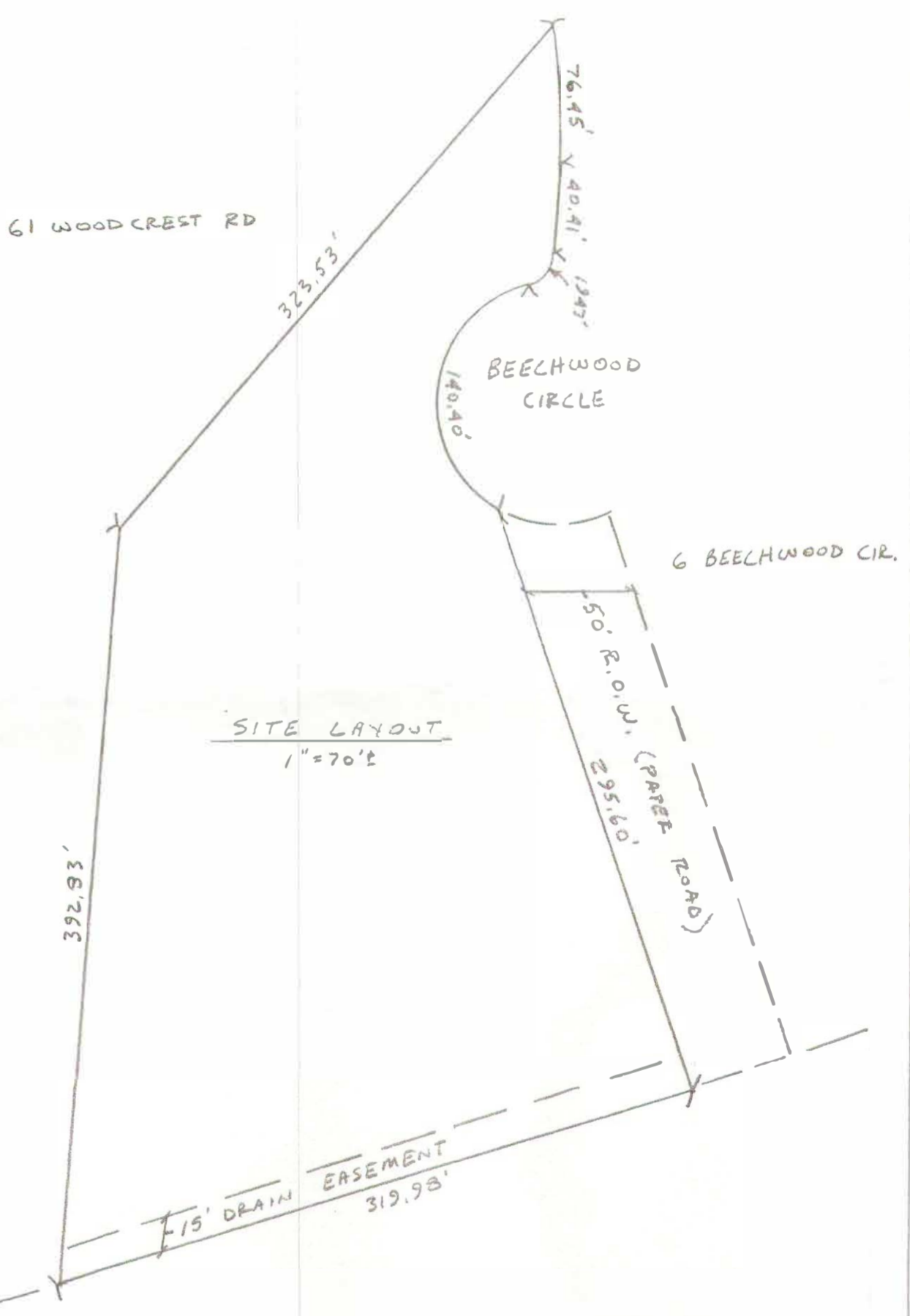
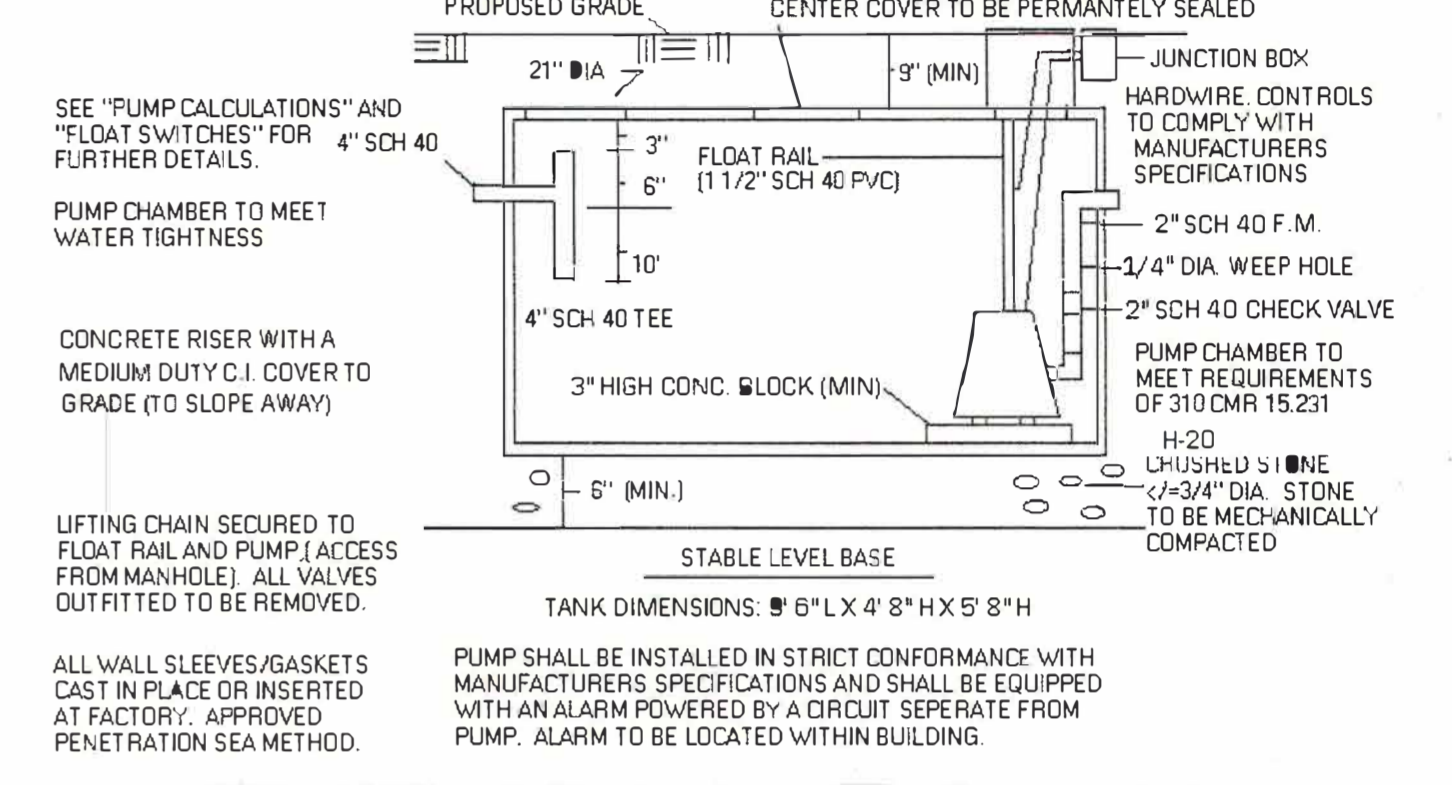
Fines Quality Restrictions No more than 3% of the total sand may pass through a #200 sieve.

ASTM Standard: C-33 (concrete sand) meets the above requirements.

Surrounding sand Surrounding sand should be either system sand or Title 5 fill. 310 CMR 15.255 (3). Only surrounding sand may be placed under raised systems or where top soil and soil horizons with organic matter have been removed.



1000 GALLON PUMP CHAMBER MODEL: SHEA M1000H. It shows a cross-section with a 21-inch diameter riser, a 4-inch SCH 40 tee, a float rail, and a junction box. Notes include: 'ALARM TO BE AUDIO AND VISUAL W/ LOCABLE CONTROL PANEL.', 'CENTER COVER TO BE PERMANENTLY SEALED.', 'JUNCTION BOX AT GRADE TO HAVE "QUICK DISCONNECT" PLUGS.', 'HARDWARE CONTROLS TO COMPLY WITH MANUFACTURER'S SPECIFICATIONS.', 'PUMP CHAMBER TO MEET WATER TIGHTNESS.', 'CONCRETE RISER WITH A MEDIUM DUTY C.I. COVER TO GRADE (TO SLOPE AWAY).', 'LIFTING CHAIN SECURED TO FLOAT RAIL AND PUMP (ACCESS FROM MANHOLE). ALL VALVES OUTFITTED TO BE REMOVED.', 'TANK DIMENSIONS: 6' L X 4' 8" H X 5' 8" H.', 'PUMP SHALL BE INSTALLED IN STRICT CONFORMANCE WITH MANUFACTURER'S SPECIFICATIONS AND SHALL BE EQUIPPED WITH AN ALARM POWERED BY A CIRCUIT SEPARATE FROM PUMP. ALARM TO BE LOCATED WITHIN BUILDING.'



SUBSURFACE SEWAGE DISPOSAL SYSTEM
7 Beechwood Circle, Boxford (Map 20, Blk 9 Lot 17)
Date: 4/10/23
Drawn By: Daniel B. Johnson
Prepared: Marshall Hudson
For: 7 Beechwood Circle, Boxford, MA 01921
Prepared: DOMESTIC SEPTIC DESIGN, INC.
By: P.O. Box 2406, S. Hamilton MA 01982 Dwg: J-2821
SHEET 2 OF 2