

RECORD OWNERSHIP

MARY ANNE ANNIE WABREK
MICHAEL WABREK

DEED REFERENCE

ESSEX COUNTY REGISTRY OF DEEDS
BOOK 37686 PAGE 191

PLAN REFERENCE

ESSEX COUNTY REGISTRY OF DEEDS
PLAN BOOK 173 PAGE 91



CONTRACTOR TO USE CAUTION WHEN EXCAVATING AS THIS PROPERTY IS SERVICED BY UNDERGROUND UTILITIES. LOCATIONS SHOWN HEREON COME DIRECTLY FROM UTILITY COMPANY PLANS AND, WHERE POSSIBLE, FROM MEASUREMENTS TAKEN IN THE FIELD. CONTRACTOR RESPONSIBLE FOR CONTACTING DIGSAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION AND SHALL MAINTAIN ALL DIGSAFE MARKINGS DURING CONSTRUCTION.

IMPERVIOUS MEMBRANE

AN IMPERVIOUS MEMBRANE HAS BEEN PROVIDED, PURSUANT TO 310 CMR 15.255(2), TO REDUCE THE RECOMMENDED FILL EXTENSION FROM 15' TO 5'. THE PROPOSED MEMBRANE SHALL EXTEND DOWN A MINIMUM OF 12" INTO NATURALLY OCCURRING PERVIOUS MATERIAL. IT SHALL BE INSTALLED UP TO 3" BELOW FINISHED GRADE. IT SHALL BE BACK-FILLED WITH CLEAN, GRANULAR SAND, FREE OF STONES, DEBRIS AND ANGULAR FRAGMENTS EQUALLY ON EACH SIDE OF THE MEMBRANE. IT SHALL BE INSTALLED VERTICALLY AND CONFORM TO THE DIMENSIONS DEPICTED ON THE SYSTEM PLAN. LOAM AND SEED SHALL COVER THE TOP EDGE AT FINISH GRADE. 40 OR 60 MIL HDPE IS RECOMMENDED. THE CONTRACTOR SHALL FURNISH CERTIFICATION THAT THE MEMBRANE IS IMPERVIOUS AND CAN BE BURIED IN SOIL WITHOUT DEGRADATION.

ALTERNATIVE DESIGN STANDARDS

THE FOLLOWING ALTERNATIVE DESIGN STANDARDS HAVE BEEN USED IN THIS DESIGN IN ACCORDANCE WITH THE PRESBY "REMEDIAL USE APPROVAL" DATED DECEMBER 29, 2016 AND THE "STANDARD CONDITIONS FOR ALTERNATIVE SOIL ABSORPTION SYSTEMS WITH GENERAL USE CERTIFICATION AND/OR APPROVED REMEDIAL USE" DATED FEBRUARY 3, 2016:

A REDUCTION IN THE MINIMUM REQUIRED FIVE FOOT SEPARATION BETWEEN THE BOTTOM OF THE SOIL ABSORPTION SYSTEM AND HIGH GROUNDWATER ELEVATION TO THREE FEET.

LOCAL UPGRADE APPROVAL REQUEST

A LOCAL UPGRADE APPROVAL IS REQUESTED, PURSUANT TO 310 CMR 15.405 1(J), TO ELIMINATE THE REQUIRED TWELVE INCH SEPARATION FROM THE OUTLET OF THE SEPTIC TANK/PUMP CHAMBER TO THE ESHWT.

DESIGNER CERTIFICATIONS:

I HEREBY CERTIFY THAT THIS DESIGN CONFORMS TO THE TITLE 5 I/A TECHNOLOGY APPROVAL, ANY PRESBY ENVIRONMENTAL DESIGN GUIDANCE, AND 310 CMR 15.000.

ERIC W. BOTTERMAN, P.E.
PRESBY ENVIRONMENTAL CERTIFICATION # 3313MAES
DATE 8/30/2019

PROPERTY OWNER CERTIFICATIONS:

I HEREBY ACKNOWLEDGE THAT I HAVE RECEIVED A COPY OF AND AGREE TO THE TERMS AND CONDITIONS LISTED IN THE TITLE 5 I/A TECHNOLOGY APPROVAL, THE OWNER'S MANUAL, AND THE OPERATION AND MAINTENANCE MANUAL.

THAT THE SYSTEM WAS NOT DESIGNED WITH THE USE OF A KITCHEN SINK GARBAGE DISPOSAL AND THAT I WILL NOT INSTALL ONE IN THE FUTURE WITHOUT FIRST OBTAINING APPROVAL FROM THE LOCAL BOARD OF HEALTH.

WHETHER OR NOT COVERED BY A WARRANTY, I ACKNOWLEDGE THE REQUIREMENT TO REPAIR, REPLACE, MODIFY, OR TAKE ANY OTHER ACTION AS REQUIRED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION(DEP) OR THE LOCAL APPROVING AUTHORITY(LAA), IF DEP OR THE LAA DETERMINES THE SYSTEM TO BE FAILING TO PROTECT PUBLIC HEALTH, SAFETY, AND THE ENVIRONMENT AS DEFINED IN 310 CMR 15.303

MICHAEL WABREK
DATE 29 AUG 2019

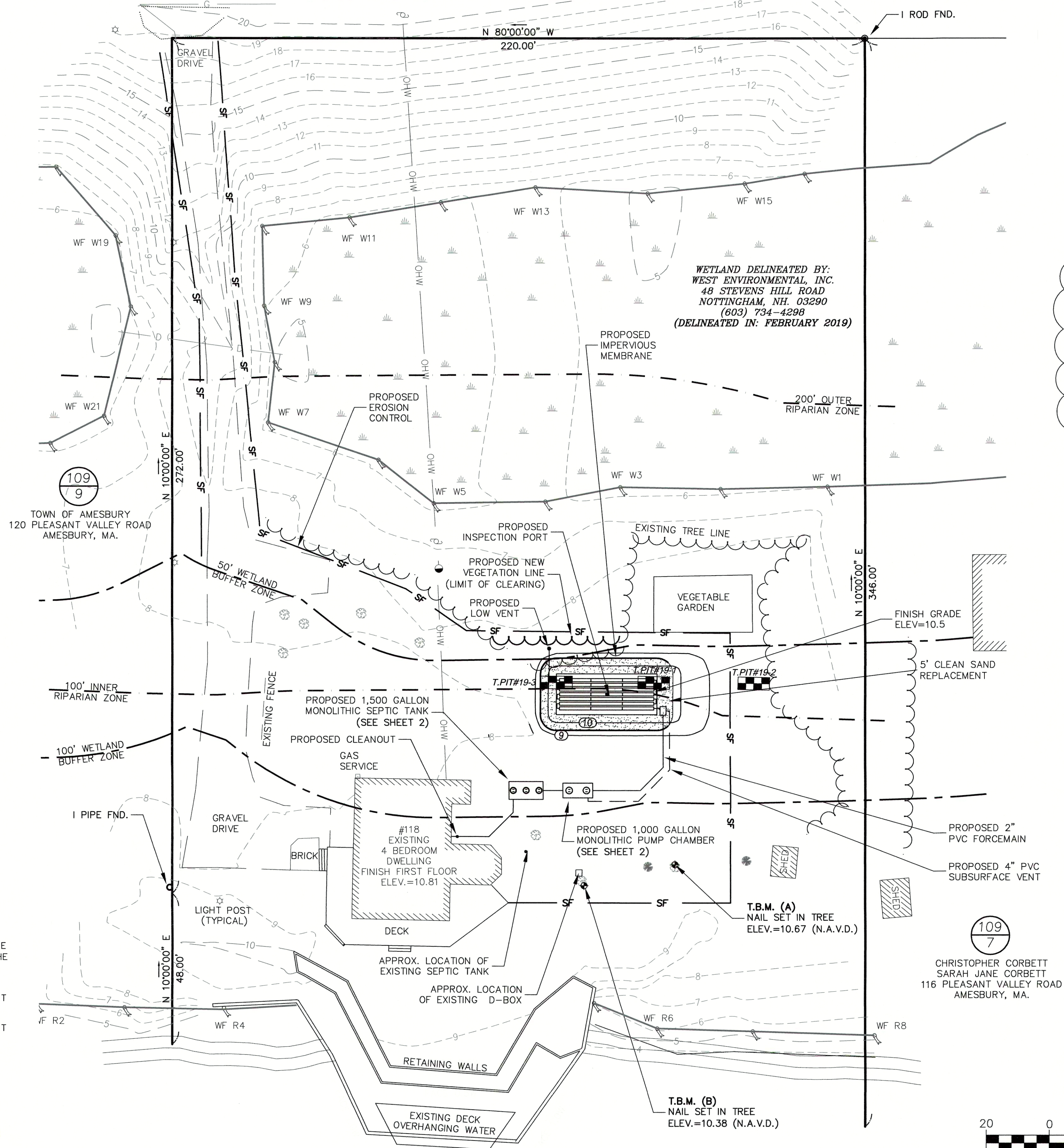
NOT DESIGNED FOR VEHICULAR TRAFFIC

THE OWNER IS HEREBY ADVISED THAT THE SEPTIC SYSTEM, AS SHOWN, WAS NOT DESIGNED TO BE DRIVEN OVER OR PARKED ON BY ANYTHING HEAVIER THAN TYPICAL HOUSEHOLD LAWN MAINTENANCE EQUIPMENT. DOING SO WITH ANYTHING HEAVIER WILL VERY LIKELY RESULT IN DAMAGE TO THE LEACH FIELD.

NOT DESIGNED FOR USE WITH A GARBAGE DISPOSAL

THE OWNER IS HEREBY ADVISED THAT THE USE OF A GARBAGE DISPOSAL IN THE KITCHEN SINK IS NOT PERMITTED WITH THE SEPTIC SYSTEM AS SHOWN. NO GARBAGE DISPOSAL SHALL BE INSTALLED WITHOUT PRIOR APPROVAL FROM THE BOARD OF HEALTH.

PLEASANT VALLEY ROAD



SYSTEM TIES

N.T.S.

#118
EXISTING
4 BEDROOM
DWELLING
FINISH FIRST FLOOR
ELEV.=10.81

	A	B	C	D
1	12.1'	14.2'	21.0'	24.3'
2	13.5'	12.3'	15.6'	18.6'
3	22.9'	24.2'	26.1'	27.5'
4	23.7'	23.1'	22.0'	27.5'
5	29.2'	30.1'	30.1'	30.6'
6	29.7'	29.4'	27.3'	27.2'
7	38.7'	39.4'	37.9'	37.4'
8	39.1'	38.8'	35.7'	34.6'

NOTE:

IT IS **RECOMMENDED** THAT THE PROPOSED LEACH FIELD, PUMP CHAMBER, AND SEPTIC TANK SHOWN BE STAKED ON THE GROUND BY THE DESIGN ENGINEER PRIOR TO CONSTRUCTION TO INSURE THAT THE SYSTEM CONFORMS TO REQUIRED SETBACKS.

NOTES:

1) PLEASE BE ADVISED THAT THESE PLANS SHOULD BE CONSIDERED TO BE A PROGRESS PRINT UNLESS STAMPED BY THE LOCAL BOARD OF HEALTH AS APPROVED. CONTRACTOR SHOULD OBTAIN A COPY STAMPED APPROVED FROM THE LOCAL BOARD OF HEALTH TO USE DURING CONSTRUCTION.

2) HOMEOWNER SHALL BE RESPONSIBLE FOR CONTACTING THE LOCAL BOARD OF HEALTH TO DETERMINE THE LENGTH OF TIME THE APPROVAL IS VALID FOR. EXTENSIONS TO THE APPROVAL EXPIRATION DATE MAY BE GRANTED BY THE BOARD OF HEALTH, AT THEIR DISCRETION, IF REQUESTED IN WRITING PRIOR TO THE DATE OF EXPIRATION.

3) IN THE EVENT OF SYSTEM FAILURE, SYSTEM SHALL BE REDESIGNED AND BUILT IN PLACE.

4) THIS PLAN IS FOR THE INSTALLATION OF THE PROPOSED SEPTIC SYSTEM ONLY AND SHOULD NOT BE USED TO ESTABLISH LINES OF OWNERSHIP ON THE GROUND. A BOUNDARY LINE SURVEY IS RECOMMENDED TO ESTABLISH LINES OF OWNERSHIP.

5) THE EXISTING SEPTIC TANK SHALL BE REMOVED; OR PUMPED, PUNCTURED, AND FILLED WITH SAND.

6) IF EXISTING LEACH FIELD MATERIAL IS REMOVED FROM SITE, ITS DOCUMENTED DESTINATION SHALL BE GIVEN TO THE LOCAL BOARD OF HEALTH.

7) ALL WORK SHALL COMPLY WITH THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION TITLE V REGULATIONS AND ALL LOCAL REGULATIONS.

8) CONTRACTOR SHALL NOTIFY DESIGN ENGINEER FOR A BED BOTTOM INSPECTION.

9) SEPTIC TANK CORNERS, PUMP CHAMBER CORNERS, LEACH LINES AND ALL CONNECTING PLUMBING SHALL BE LEFT EXPOSED UNTIL AS-BUILT MEASUREMENTS ARE OBTAINED. CONTRACTOR SHALL NOTIFY DESIGN ENGINEER AFTER BACKFILLING AND SPREADING OF LOAM AND SEED SO THAT FINISHED TOPOGRAPHY MAY BE OBTAINED FOR AS-BUILT DRAWING.

10) PROPOSED CONSTRUCTION IS WITHIN AN AREA SUBJECT TO THE WETLANDS PROTECTION ACT. IT IS STRONGLY RECOMMENDED BY THE DESIGN ENGINEER THAT NO DISPOSAL SYSTEM CONSTRUCTION PERMIT BE ISSUED PRIOR TO THE REVIEW AND APPROVAL OF ALL APPROPRIATE ENVIRONMENTAL PERMITTING AUTHORITIES. **EROSION CONTROL MEASURES SHALL BE ESTABLISHED PRIOR TO THE START OF WORK.**

11) ALL SYSTEM COMPONENTS SHALL BE INSPECTED IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS. IT IS HIGHLY RECOMMENDED THAT THE INSPECTIONS ARE COMPLETED ONCE ANNUALLY OR MORE FREQUENTLY AS RECOMMENDED BY THE COMPONENT MANUFACTURER. ALL INSPECTIONS SHALL BE COMPLETED ON AN OFFICIAL REPORT FORM AND INSPECTION REPORTS SHALL BE SUBMITTED TO THE LOCAL BOARD OF HEALTH.

12) ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE PRIOR TO BACKFILLING, IN ACCORDANCE WITH 310 CMR 15.221(12), TO ALLOW FOR EASIER LOCATING OF COMPONENTS DURING FUTURE MAINTENANCE.

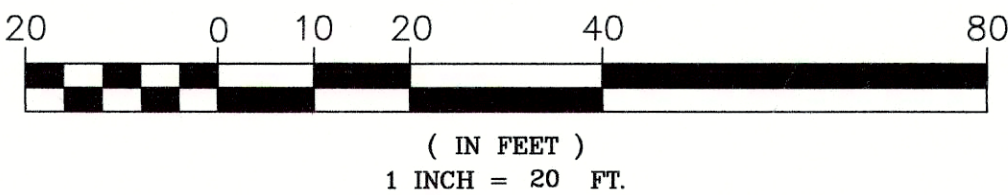
13) CONTRACTOR SHALL PROVIDE BOTH THE BOARD OF HEALTH AND THE DESIGN ENGINEER WITH A SIEVE ANALYSIS INDICATING THAT THE ENVIRO-SEPTIC SYSTEM SAND MEETS THE REQUIREMENTS OF ASTM C-33.

14) PRIOR TO THE ISSUANCE OF A CERTIFICATE OF COMPLIANCE, A NOTICE SHALL BE RECORDED ON THE DEED STATING THAT AN ALTERNATIVE SEPTIC SYSTEM IS LOCATED ON THE PROPERTY AND A COPY OF THE REMEDIAL USE APPROVAL.

LEGEND

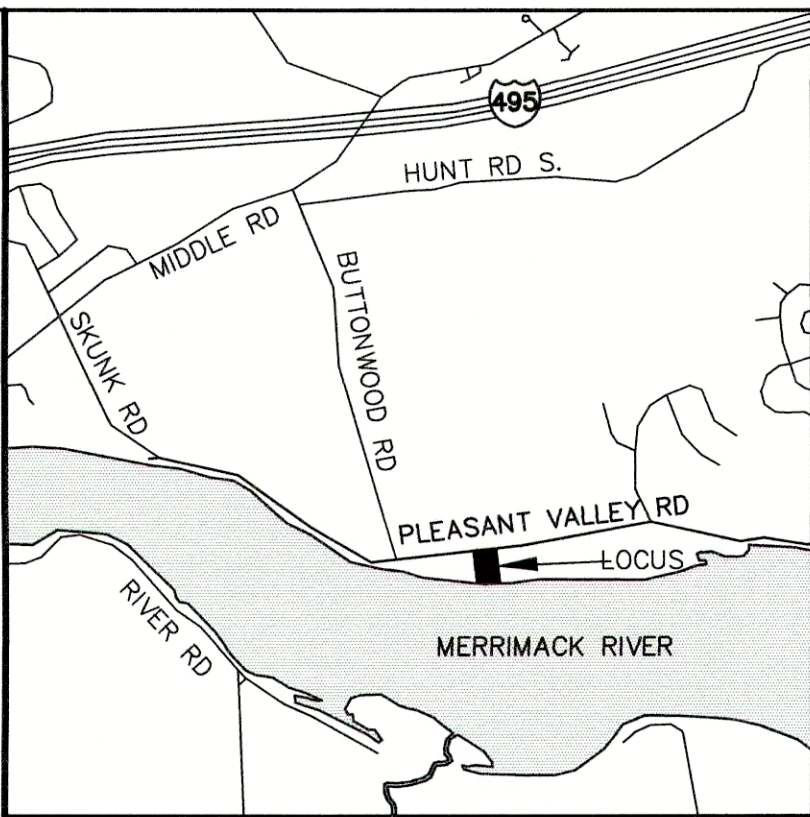
- IRON PIPE
- IRON ROD/DRILL HOLE
- SOIL TEST PIT
- UTILITY POLE
- BENCHMARK
- MARSH/WETLAND
- PROPOSED CONTOURS
- EXISTING CONTOURS
- OVERHEAD WIRES
- SUBSURFACE GAS LINE

GRAPHIC SCALE



LOCUS MAP

N.T.S.



SEPTIC SYSTEM DESIGN

IN

AMESBURY, MA

PREPARED FOR

MICHAEL & MARY WABREK
118 PLEASANT VALLEY ROAD
AMESBURY, MA 01913

SHOWING

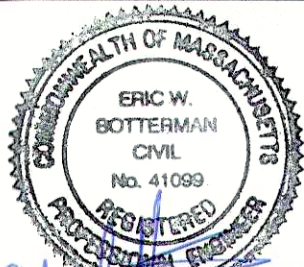
PROPOSED SEPTIC
118 PLEASANT VALLEY ROAD
(MAP 109, LOT 8)

SCALE: 1" = 20'	CALC. BY: Z.T.J.	PROJECT: M193517
DATE: APR. 8, 2019	CHKD. BY: E.W.B.	SHEET: 1 OF 3



MILLENNIUM ENGINEERING, INC.

ENGINEERING AND LAND SURVEYING
62 ELM ST. SALISBURY, MA 01952 (978) 463-8980
13 HAMPTON RD., P.O. BOX 745 EXETER, NH 03833 (603) 778-0528



NO.	DATE	DESCRIPTION	BY
1.	8-21-19	EDIT DESIGN FOR INCREASED DESIGN FLOW	Z.T.J.

DESIGN DATA

LOT AREA	(PER RECORD PLAN)
NO. OF BEDROOMS	30,486± S.F.
DESIGN FLOW	4 EXISTING
DAILY FLOW	110 GPD/BDRM
SEPTIC TANK USED	440 GALLONS
PUMP CHAMBER USED	1,500 GALLONS
	1,000 GALLONS

INVERT DATA

PROPOSED INVERT AT HOUSE	7.25
SEPTIC TANK INLET INVERT	6.50
SEPTIC TANK OUTLET INVERT	6.25
PUMP CHAMBER INLET INVERT	5.92
PUMP CHAMBER OUTLET INVERT	5.67
D-BOX INLET INVERT	9.45
D-BOX OUTLET INVERT	9.28
TOP OF ADV. ENVIRO-SEPTIC SAND BED	10.00
TOP OF ADV. ENVIRO-SEPTIC PIPE	9.50
BOTTOM OF ADV. ENVIRO-SEPTIC PIPE	8.50
BOTTOM OF ADV. ENVIRO-SEPTIC SAND BED	8.00

FIELD CALCULATIONS

A 4 BEDROOM DWELLING HAS A LOADING RATE = 440 GPD. WITH A PERCOLATION RATE OF 2 MIN./INCH IN A CLASS 1 SOIL, THE LEACHING AREA REQUIRED = 440 GPD / 0.74 (LTAR) = 595 S.F. SYSTEM WAS SIZED FOR A PRESBY ADVANCED ENVIRO-SEPTIC LEACH FIELD. IN ACCORDANCE WITH THE APPROVED DESIGN MANUAL A 4 BEDROOM DWELLING WITH A PERC RATE OF 2 MIN./INCH IN A CLASS 1 SOIL WILL REQUIRE 200 LINEAR FEET OF ADVANCED ENVIRO-SEPTIC PIPE AND A MINIMUM OF A 400 S.F. SYSTEM SAND LEACH FIELD.

LINEAR FEET OF PIPE PROVIDED = 210 L.F.
SIZE PROVIDED IS 32"(L) X 13"(W) = 416 S.F.

MATERIAL NOTES

1) TANKS, DISTRIBUTION BOXES, & CONCRETE STRUCTURE MATERIALS:

ALL TANKS, DISTRIBUTION BOXES, AND CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH 310 CMR 15.000 AND SHALL HAVE REINFORCED WALLS. MONOLITHIC TANKS AND STRUCTURES SHALL BE USED WHENEVER POSSIBLE. ALL JOINTS SHALL BE SEALED UTILIZING BUTYL RESIN OR ROPE TAR TO PROVIDE WATER TIGHTNESS. ANY TIME THE TANK OR STRUCTURE IS TO BE INSTALLED IN THE ESHWT IT IS RECOMMENDED THAT ALL PIPE CONNECTIONS BE MADE USING PRE-CAST RUBBER PIPE CONNECTIONS, AND THAT THE OUTSIDE OF THE TANK BE SPRAYED WITH A WATERPROOFING TAR TO ENSURE WATER TIGHTNESS. IN SITUATIONS WHERE RUBBER CONNECTIONS ARE NOT USED, ALL PIPE CONNECTIONS SHALL BE SEALED USING A HYDRAULIC CEMENT.

2) PVC PIPE MATERIAL:

IN AREAS WHERE NO VEHICLE TRAFFIC SHALL TAKE PLACE ALL PIPE SHALL BE SCH. 40 PVC PIPE. WHEN VEHICLE TRAFFIC IS ANTICIPATED ALL PIPE SHALL BE UPGRADES TO SCH. 80 PVC PIPE.

3) FILL MATERIAL:

CLEAN SAND REPLACEMENT SHALL MEET THE REQUIREMENTS OF 310 CMR 15.255(3) AND SHALL CONSIST OF CLEAN GRANULAR SAND FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES. REMEDIATION WASTE, AS DEFINED BY 310 CMR 40.000 SHALL NOT BE USED. THE SYSTEM SAND, ALSO KNOWN AS THE ENVIRO-SEPTIC SAND, SHALL BE ASTM C-33 CONCRETE SAND AND SHALL MEET THE REQUIREMENTS LISTED IN THE APPROVED ENVIRO-SEPTIC DESIGN AND INSTALLATION MANUAL.

GENERAL NOTES

1) THE GENERAL CONTRACTOR IS RESPONSIBLE FOR HORIZONTAL AND VERTICAL CONTROL OF ALL SYSTEM COMPONENTS.

2) THIS PLAN IS TO SHOW THE DESIGN OF THE SUBSURFACE SEWAGE DISPOSAL SYSTEM ONLY. THE SYSTEM IS DESIGNED FOR FLOWS ESTIMATED UNDER DESIGN CONDITIONS IN ACCORDANCE WITH TITLE 5.

3) SYSTEM IS DESIGNED ONLY TO ACCOMMODATE SANITARY SEWAGE ASSOCIATED WITH NORMAL DOMESTIC USAGE AND CONSISTING OF WATER-CARRIED PUTRESCIBLE WASTE.

4) THE SYSTEM SHALL BE VENTED THROUGH THE BUILDING PLUMBING AS REQUIRED BY BUILDING CODE AND THROUGHOUT THE PROPOSED HIGH AND LOW VENT.

5) PROPERTY LINES AND BUILDING LOCATION ARE GRAPHIC ONLY. PROPERTY LINES NOT HAVING BEEN VERIFIED, NO REPRESENTATION OR CERTIFICATION AS TO THE ACCURACY OF THOSE SHOWN IS IMPLIED OR INTENDED.

6) LOCATION OF ALL UTILITIES AND SUBSURFACE STRUCTURES ARE FROM SURVEY AND RECORDS OF THE TOWN OR PRIVATE UTILITY COMPANIES AND ARE CONSIDERED APPROXIMATE BOTH AS TO SIZE AND LOCATION, AND ARE INDICATED ON THESE PLANS TO GIVE CONTRACTORS A GENERAL IDEA OF EXISTING CONDITIONS TO BE INVESTIGATED BY THE CONTRACTOR. IT IS UNDERSTOOD AND AGREED THAT EACH CONTRACTOR WILL NOT RELY UPON THESE PLANS FOR SUCH INFORMATION, BUT THAT EACH CONTRACTOR SHALL MAKE EXAMINATIONS IN THE FIELD BY VARIOUS AVAILABLE RECORDS, UTILITY CORPORATIONS, AND INDIVIDUALS AS TO THE LOCATION OF ALL SUBSURFACE STRUCTURES. THE CONTRACTOR SHALL OBTAIN A "DIGSAFE" AT 1-888-344-7233 PRIOR TO ALL EXCAVATION.

7) PRIOR TO INSTALLATION THE INSTALLER OF THIS SYSTEM SHALL BE LICENSED BY BOTH THE LOCAL BOARD OF HEALTH AND PRESBY ENVIRONMENTAL, INC. 1-800-473-5298

8) THERE ARE NO KNOWN EXISTING WELLS WITHIN 100 FEET OF THE PROPOSED SEWAGE DISPOSAL SYSTEM EXCEPT AS SHOWN.

9) AFTER EXCAVATION THE DISPOSAL SYSTEM AREAS ARE TO BE RAKED (SCARIFIED) BEFORE INSTALLATION OF SEPTIC SAND. ALL STONES EXCEEDING 2 INCHES IN DIAMETER, AND ALL LOAM, OR FOREIGN MATERIAL ENCOUNTERED DURING EXCAVATION SHALL BE REMOVED.

10) FINISHED GRADE OF THE LEACHING AREA SHALL BE GRADED TO ASSURE WATER RUN-OFF.

11) ALL DISTURBED AREAS SHALL BE LOAMED, SEEDED, AND MAINTAINED TO PREVENT EROSION.

12) THE SEPTIC TANK SHOULD BE PERIODICALLY INSPECTED AND MAINTAINED AND SHOULD BE PUMPED WHEN SLUDGE IN THE BOTTOM EXCEEDS 1/4 OF THE DEPTH.

13) ALTERNATE MANUFACTURERS FOR ALL SEPTIC COMPONENTS SHOWN ON THESE PLANS MAY BE USED UPON THE WRITTEN APPROVAL OF THE DESIGN ENGINEER. ALTERNATE MANUFACTURERS SHALL NOT BE USED IF THE USE OF THEIR EQUIPMENT REQUIRES DESIGN CHANGES.

14) IF ANY PART OF THIS DESIGN IS TO BE ALTERED IN ANY WAY, THE DESIGN ENGINEER, AS WELL AS, THE APPROVING AUTHORITIES SHALL BE NOTIFIED IN WRITING PRIOR TO CONSTRUCTION.

15) THE LOCAL BOARD OF HEALTH AGENT WILL CONDUCT PERIODIC INSPECTIONS AS NEEDED.

16) THE DESIGN ENGINEER AND THE LOCAL BOARD OF HEALTH SHALL BE GIVEN AT LEAST 48 HOURS NOTICE BY THE GENERAL CONTRACTOR PRIOR TO COMMENCEMENT OF THE ABOVE CONSTRUCTION OPERATIONS.

17) THESE PLANS AND SPECIFICATIONS ARE INTENDED TO BE EXPLANATORY OF THE WORK TO BE DONE AND OF EACH OTHER, BUT SHOULD ANY OMISSION, ERRORS, OR DISCREPANCIES APPEAR, THEY SHALL BE SUBJECT TO CORRECTION AND INTERPRETATION BY THE DESIGN ENGINEER, THEREBY DEFINING AND FULFILLING THE INTENT OF THE PLANS.

18) THE DESIGN ENGINEER SHALL BE NOTIFIED PRIOR TO BACK-FILLING SUCH THAT ARRANGEMENTS CAN BE MADE TO OBTAIN AS-BUILT INFORMATION.

19) THE DESIGN ENGINEER SHALL PERFORM ON SITE INSPECTIONS DURING CONSTRUCTION IN ACCORDANCE WITH LOCAL & STATE REGULATIONS.

PUMP CHAMBER DESIGN CALCULATIONS

1) CALCULATING TOTAL DYNAMIC HEAD

STATIC HEAD	6.78
FRICTION HEAD	+ 2.33
USE TDH =	9.11

COMPUTING STATIC HEAD

PROPOSED D-BOX INLET ELEV.	9.45
PROPOSED PUMP OFF	- 2.67
STATIC HEAD =	6.78

COMPUTING FRICTION HEAD

1 - 2" 90° ELBOW	5.2
4 - 2" 45° ELBOW	11.2
1 - 2" GATE VALVE	+ 17.2
EQUIVALENT LENGTH OF PIPE =	33.6

LENGTH OF 2" DISCHARGE PIPE	42.0
EQUIVALENT LENGTH OF PIPE	+ 33.6
TOTAL LENGTH OF PIPE =	75.6

NUMBER OF (2") 100' INCREMENTS	0.756
FRICTION HEAD LOSS AT 40 GPM	x 3.10
FRICTION HEAD =	2.34

2) DETERMINE THE NETWORK VOLUME

$$3.14 \times \left(\frac{1.00}{12} \right)^2 \times 42.0' \times 7.48 = 6.85 \text{ GALLONS}$$

3) DETERMINE PUMP DRAW DOWN

DAILY FLOW = 440 GALLONS
NUMBER OF DOSES PER DAY = 8
NUMBER OF GALLONS PER DOSE = (440 / 8) + 6.85 = 61.9 GALLONS
WITH 1,000 GALLON PUMP CHAMBER, EACH VERTICAL FOOT = 264 GAL.
DRAW DOWN = (61.9 GALS/DOSE) / (264 GALS/FOOT) = 0.23 FEET

4) CHECK DOSAGE TIME

$$\frac{(61.9 \text{ GALS/DOSE})}{(40 \text{ GALLONS/MINUTE})} = 1.5 \text{ MINUTES}$$

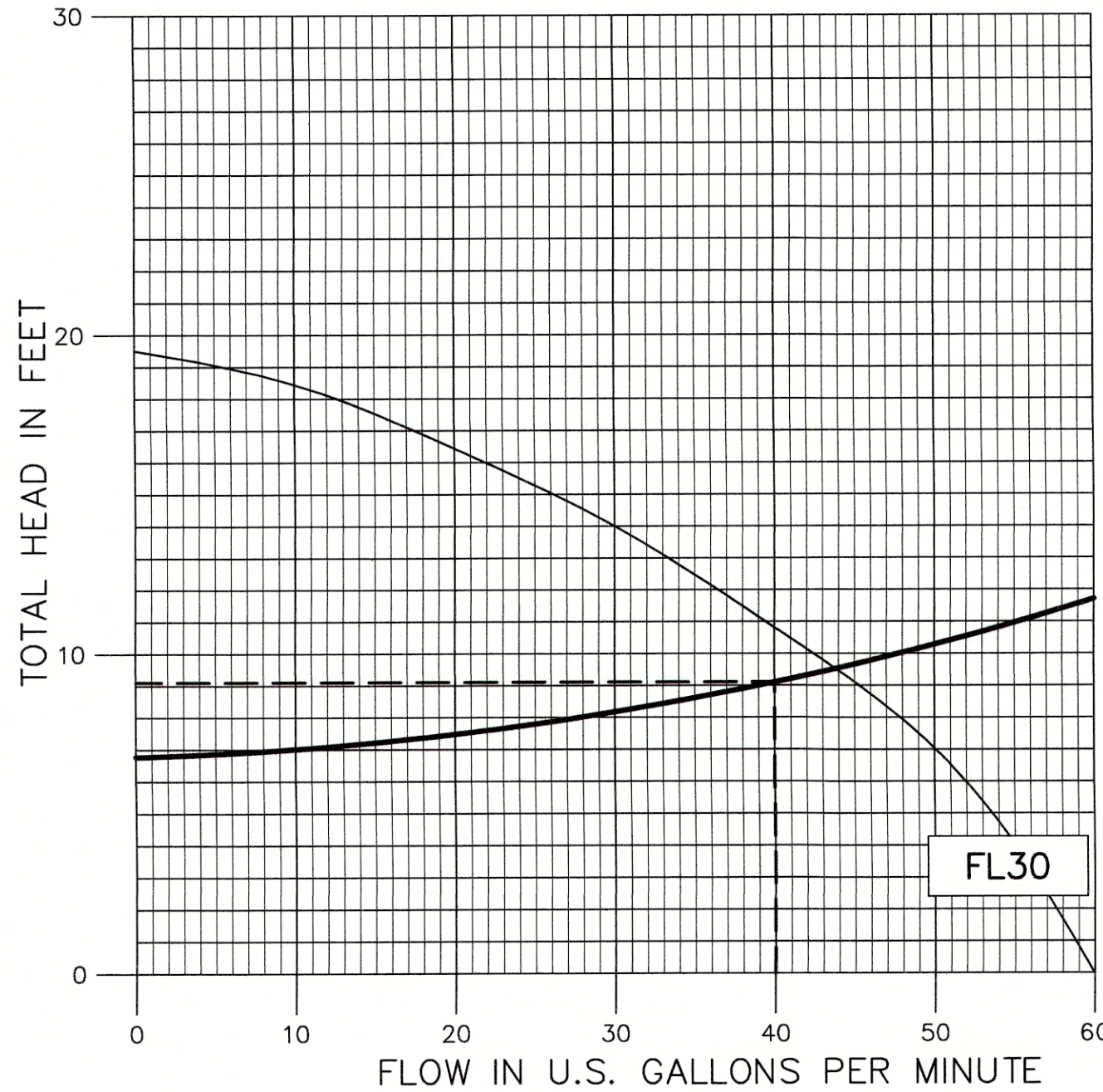
5) DETERMINE EMERGENCY STORAGE CAPACITY

$$(5.92 - 3.34) \times 264 \text{ GALS/V.F.} \times 1 \text{ DAY/440 GALS} = 1.5 \text{ DAYS}$$

6) DEVELOP CURVE USING 2" DIA. SCH. 40 PVC PIPE

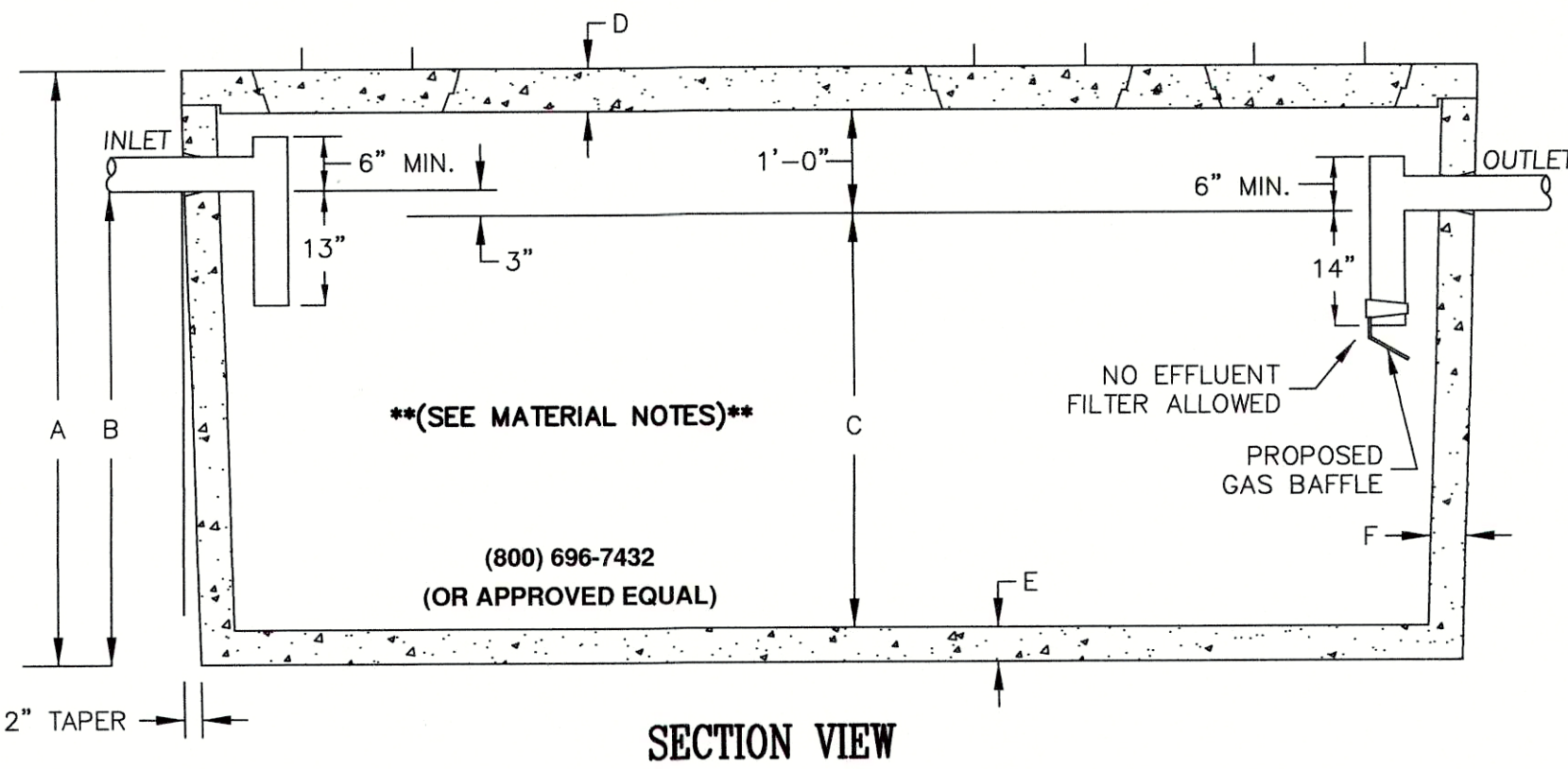
FLOW (USGPM)	L _d (FT.)	D _d (IN.)	H _L (FT.)	H _s (FT.)	TDH (FT.)
10	75.6	2	0.18	6.78	6.96
15	75.6	2	0.38	6.78	7.16
20	75.6	2	0.65	6.78	7.43
25	75.6	2	0.98	6.78	7.76
30	75.6	2	1.37	6.78	8.15
35	75.6	2	1.82	6.78	8.60
40	75.6	2	2.33	6.78	9.11
45	75.6	2	2.89	6.78	9.67
50	75.6	2	3.52	6.78	10.30
55	75.6	2	4.20	6.78	10.98

USE LIBERTY SERIES FL30 PUMPS



SHEA SEPTIC TANK DETAIL

1,500 GALLON MONOLITHIC SEPTIC TANK

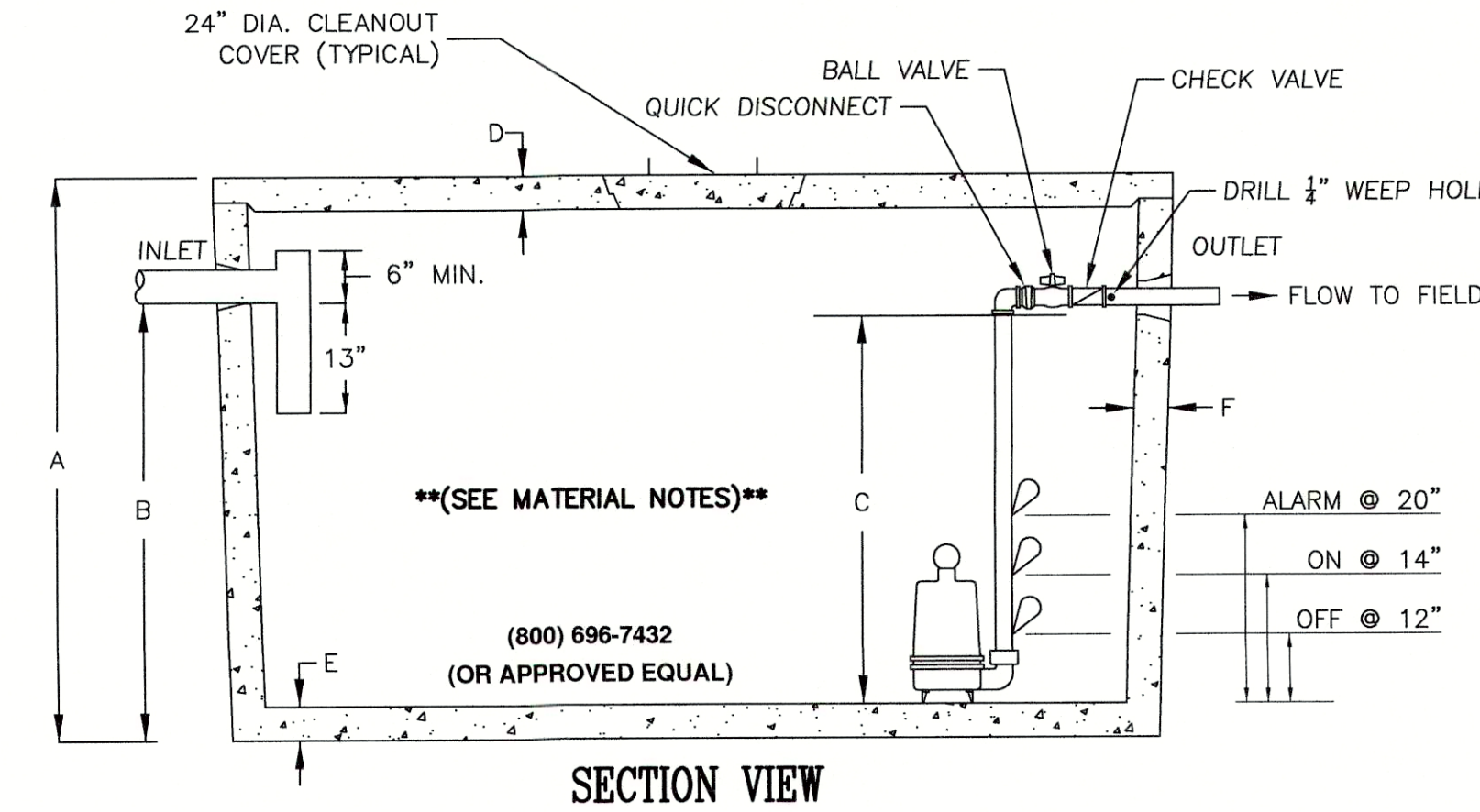


TANK NOTES:

- 1) CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
- 2) DESIGN CONFORMS WITH 310 CMR 15.00, DEP TITLE 5 REGS, FOR SEPTIC TANKS.
- 3) ALL REINFORCEMENT PER ASTM C1227-93.
- 4) TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
- 5) THE SEPTIC TANK IS TO HAVE PVC TEES. TRANSVERSE CONCRETE BAFFLES ARE NO LONGER ACCEPTABLE UNDER THE REVISED TITLE V REQUIREMENTS.
- 6) ACCESS COVERS OVER OUTLET, OVER INLET, AND OVER ANY FILTERS OR TEES ARE TO BE BROUGHT TO FINISH GRADE WITH RISERS AND MADE SECURE FROM UNAUTHORIZED OR ACCIDENTAL ACCESS. ALL RISERS TO BE MADE WATER TIGHT BEFORE BACKFILLING. RISERS IN OR ADJACENT TO PAVED AREAS SHALL HAVE CAST IRON COVERS.
- 7) IT IS RECOMMENDED THAT THE INLETS AND OUTLETS TO THE PROPOSED SEPTIC TANK AND PUMP CHAMBER HAVE PRE-CAST RUBBER BOOT CONNECTIONS TO ENSURE WATER TIGHTNESS. IF PRE-CAST BOOTS ARE NOT USED, ALL PIPES SHALL BE SEALED USING A HYDRAULIC CEMENT COMPOUND.

SHEA PUMP CHAMBER DETAIL

1,000 GALLON MONOLITHIC PUMP CHAMBER
USE LIBERTY SERIES FL30 PUMP (40 GPM AT 9.11± TDH)



GALLONS	A (HEIGHT)	B (INLET)	C (LIQUID)	D (CAP)	E (FLOOR)	F (WALL)	(LENGTH)	(WIDTH)	WEIGHT (LBS)	ITEM NO.
1,000	68"	55"	48"	4"	4"	4"	114"	56"	10,800	M1000

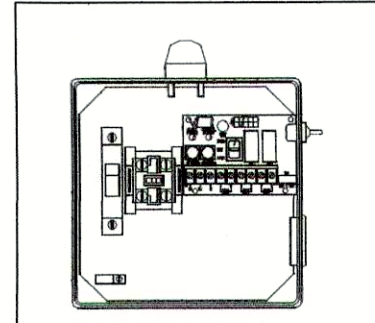
PUMP INFORMATION

LIBERTY EFFLUENT SEWAGE PUMP
MODEL#: FL30
SOLIDS HANDLING: 3/4"
HORSE POWER: 0.33HP
HEAD: 0-19.5 FEET
FLOW: 0-59 GPM
IMPELLER: VORTEX

ELEVATION DATUM

INLET EL. = 5.92
OUTLET EL. = 5.67
ALARM ON = 3.34 (20" FROM CHAMBER BOTTOM)
PUMP ON = 2.84 (14" FROM CHAMBER BOTTOM)
PUMP OFF = 2.67 (12" FROM CHAMBER BOTTOM)
BOTTOM CHAMBER (INSIDE) = 1.67

ALARM PANEL DETAIL

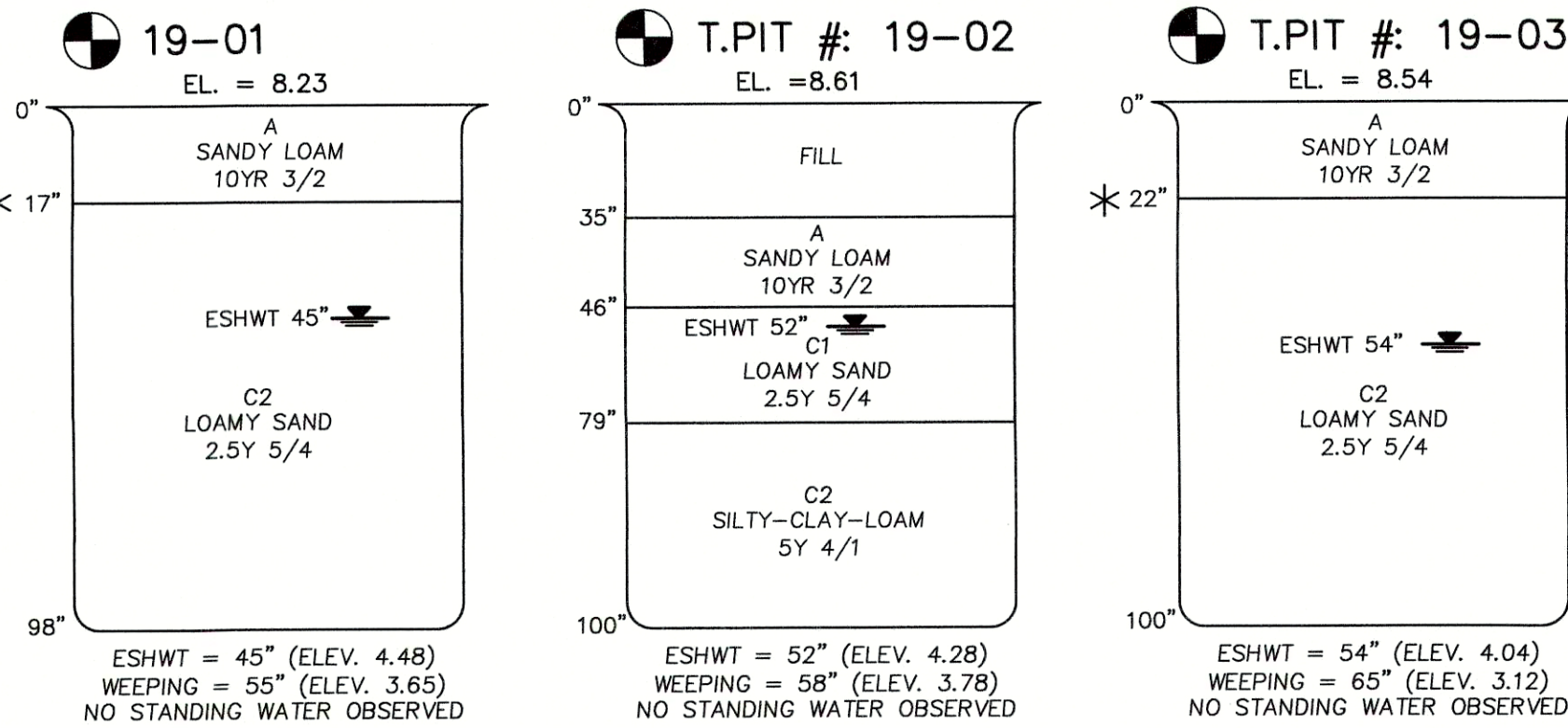


SJE-RHOMBUS MODEL 112 CONTROL PANEL OR APPROVED EQUAL. IF ALTERNATIVE PANEL USED THE CONTACTOR SHALL ENSURE IT HAS ABILITY TO OPERATE USING 3 FLOATS (ALARM FLOAT, ON FLOAT, OFF FLOAT) WITH RED LIGHT, AND AUDIBLE BUZZER AND MEETS ALL TITLE 5 REQUIREMENTS.

TANK NOTES:

- 1) CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
- 2) DESIGN CONFORMS WITH 310 CMR 15.00, DEP TITLE 5 REGS, FOR SEPTIC TANKS.
- 3) ALL REINFORCEMENT PER ASTM C1227-93.
- 4) TONGUE & GROOVE JOINT SEALED WITH BUTYLE RESIN.
- 5) THE PUMP SYSTEM IS TO BE EQUIPPED WITH A HIGH WATER ALARM LOCATED IN THE BUILDING SERVED WHICH IS POWERED BY A CIRCUIT SEPARATE FROM THE CIRCUIT TO THE PUMP. ALARM SHALL CONSIST OF A AUDIBLE BUZZER AND VISUAL LIGHT.
- 6) THE PUMP SYSTEM IS TO BE EQUIPPED WITH A 3 FLOAT SYSTEM: ONE FOR THE PUMP ON, ONE FOR THE PUMP OFF, AND ONE FOR THE ALARM.
- 7) ALL ACCESS COVERS TO BE BROUGHT TO FINISH GRADE WITH A CONCRETE RISER. ALL RISERS TO BE MADE WATER TIGHT BEFORE BACKFILLING. RISERS ABOVE OUTLET SHALL HAVE CAST IRON COVERS.
- 8) IT IS RECOMMENDED THAT THE INLETS AND OUTLETS TO THE PROPOSED SEPTIC TANK AND PUMP CHAMBER HAVE PRE-CAST RUBBER BOOT CONNECTIONS TO ENSURE WATER TIGHTNESS. IF PRE-CAST BOOTS ARE NOT USED, ALL PIPES SHALL BE SEALED USING A HYDRAULIC CEMENT COMPOUND.

SOILS INFORMATION



PERC. DATA 19-01
DEPTH: 24" + 18" = 44"
RATE: 2 MIN./INCH
DATE: MAR. 21, 2019
WITNESS: J.MORRIS
SOIL EVALUATOR: A.PARKER
SOIL EVALUATOR #: 1848

* EXISTING SOIL TO BE REMOVED TO THIS LAYER AND REPLACED WITH MATERIAL AS SHOWN ON THE SYSTEM PROFILE.

SEPTIC SYSTEM DESIGN IN AMESBURY, MA

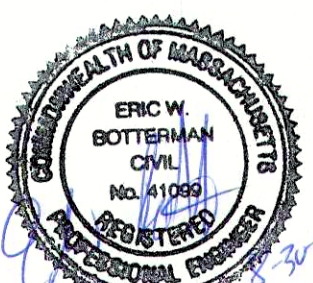
PREPARED FOR

MICHAEL & MARY WABREK
118 PLEASANT VALLEY ROAD
AMESBURY, MA 01913

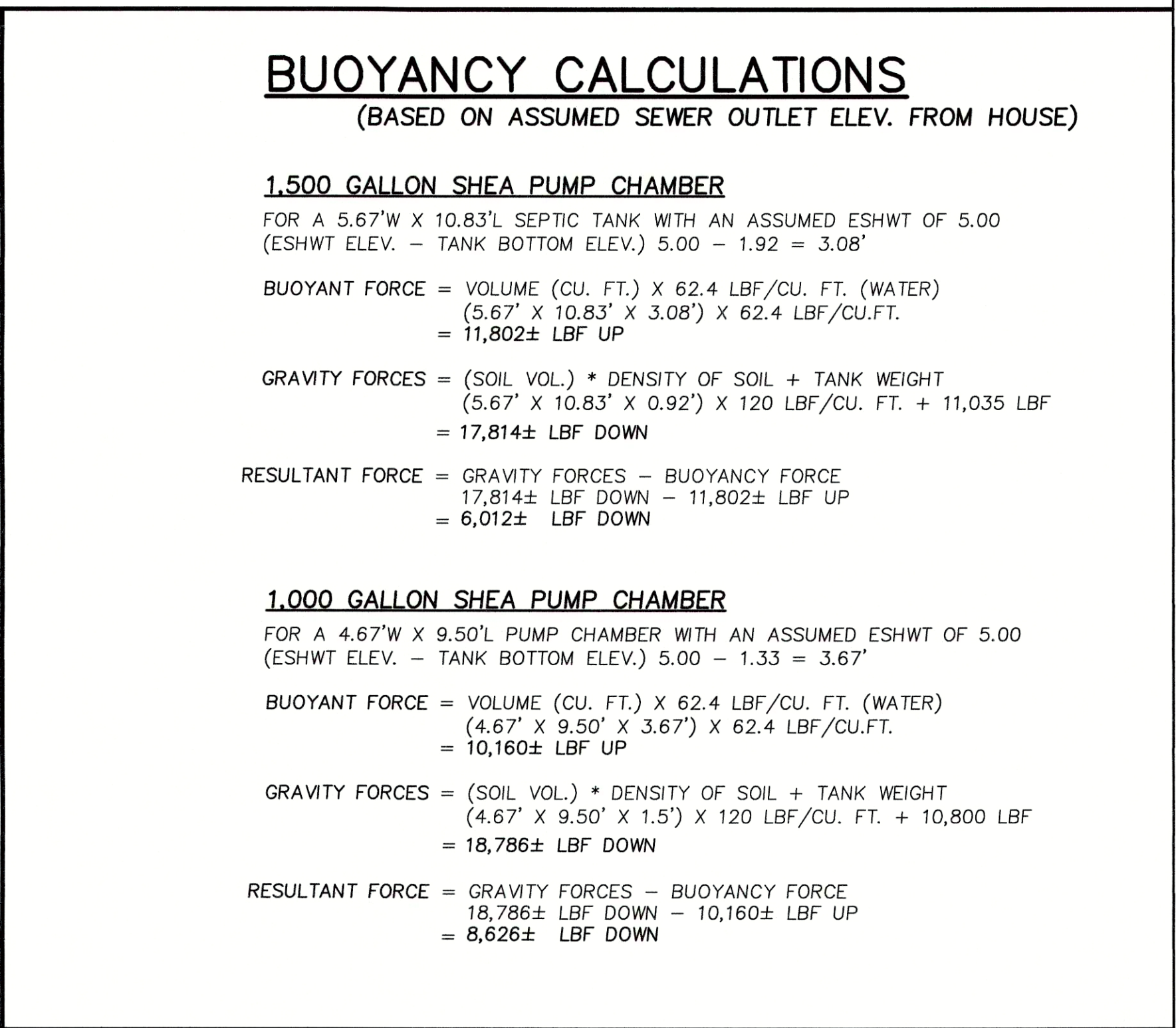
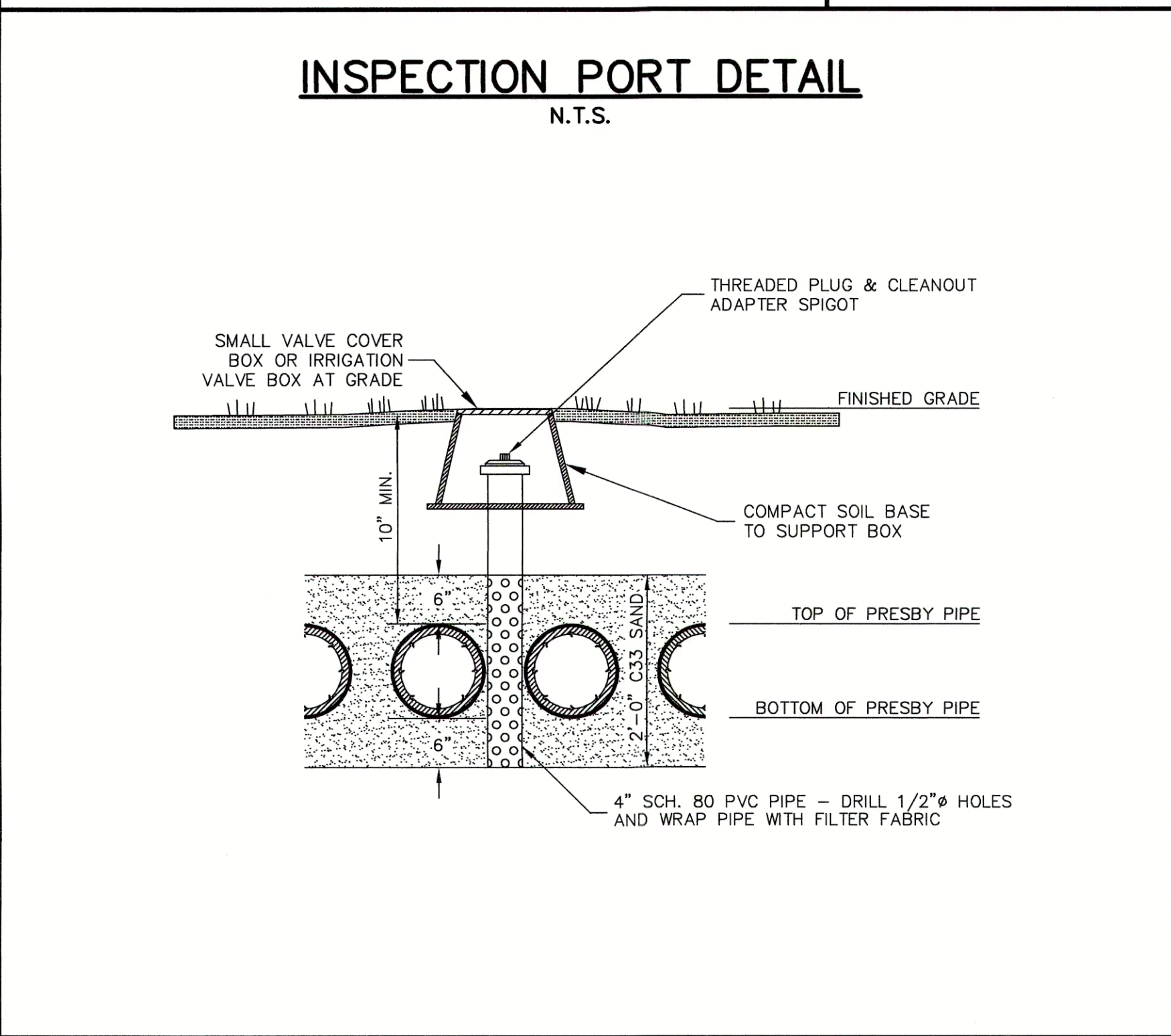
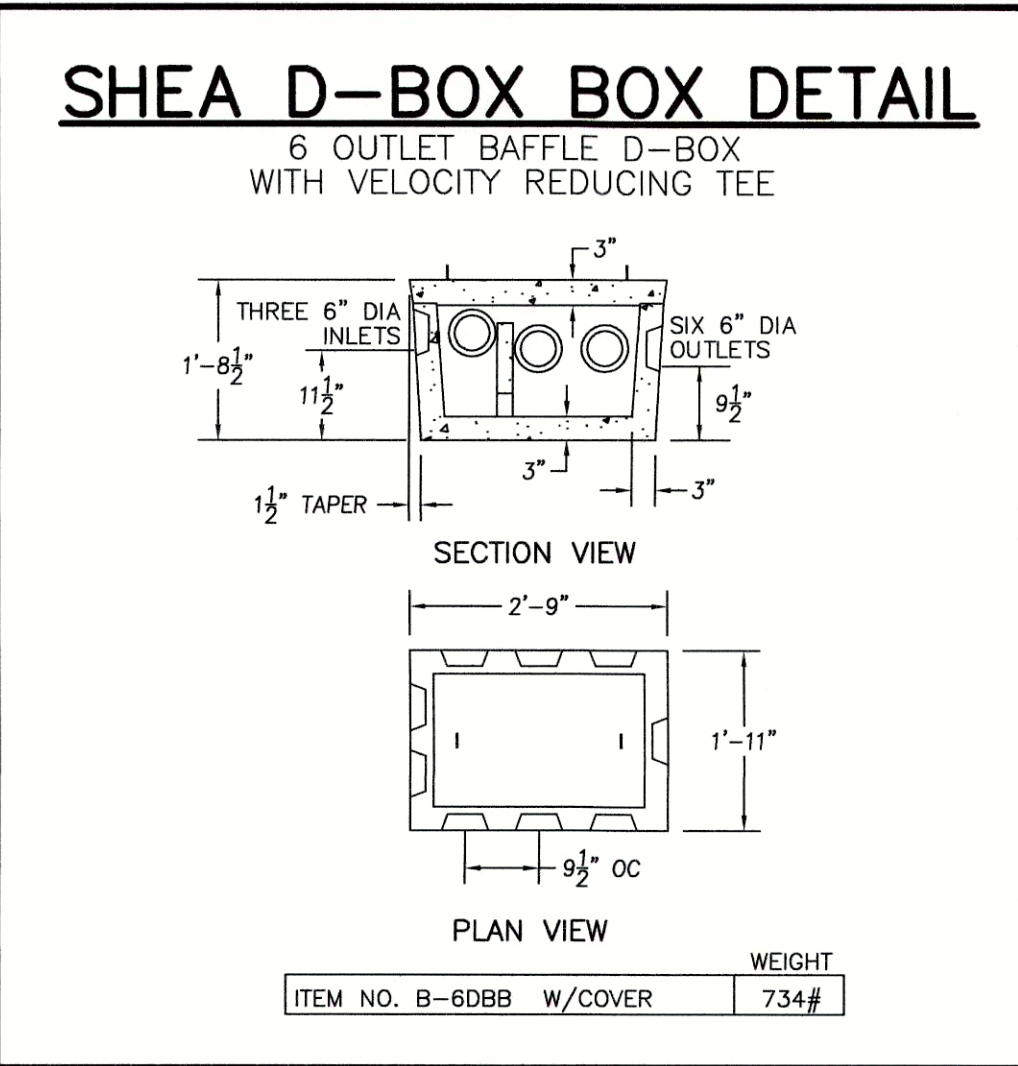
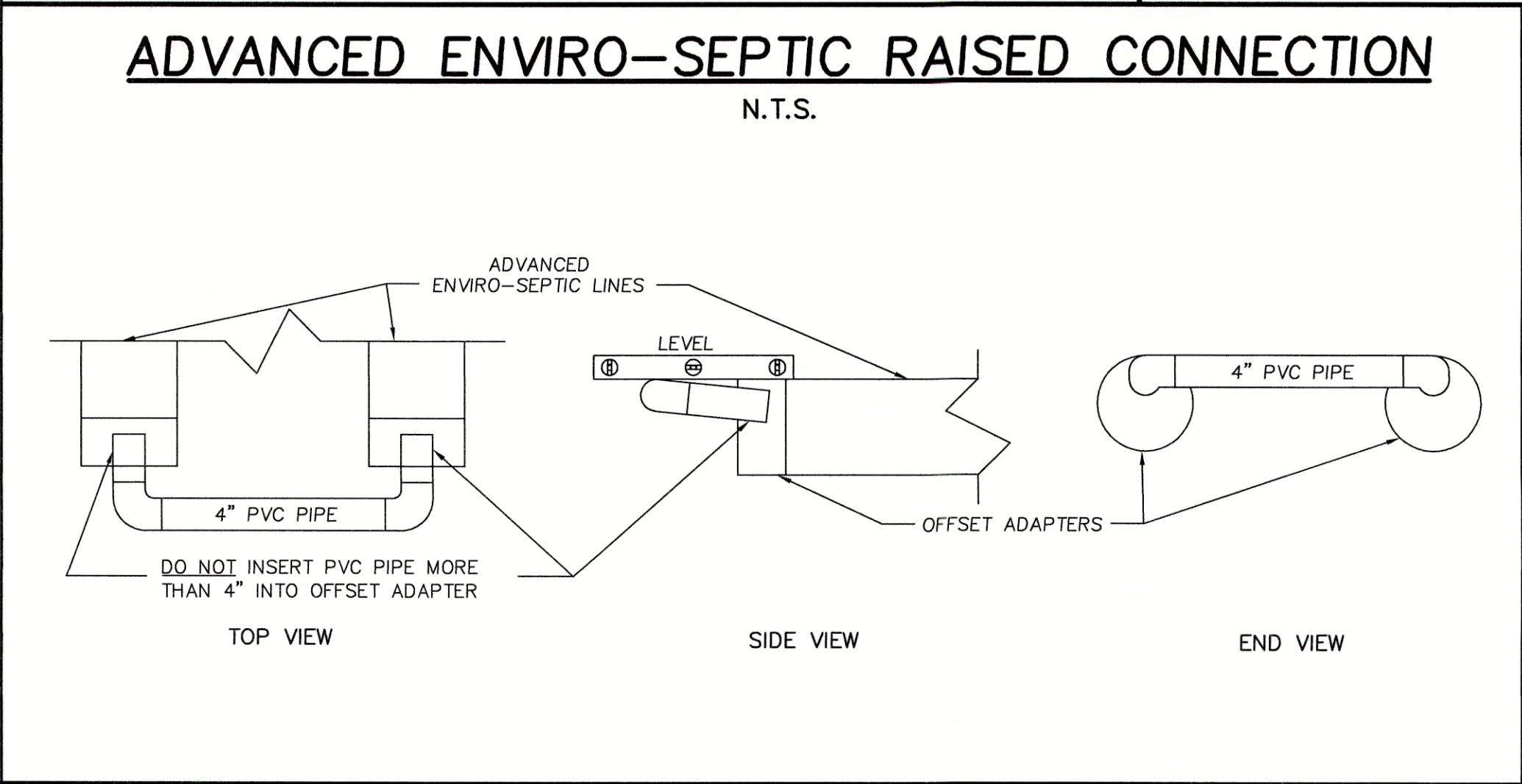
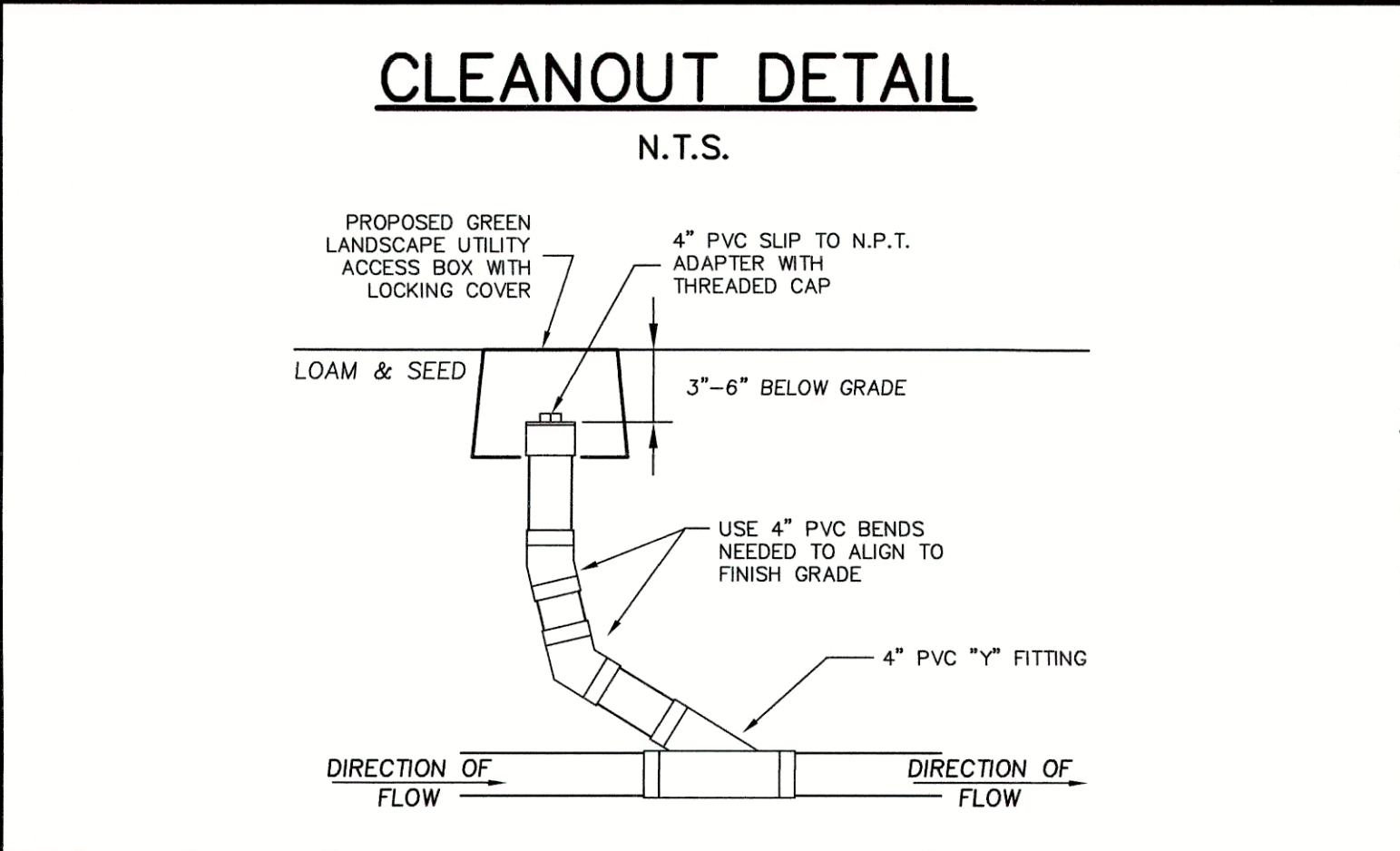
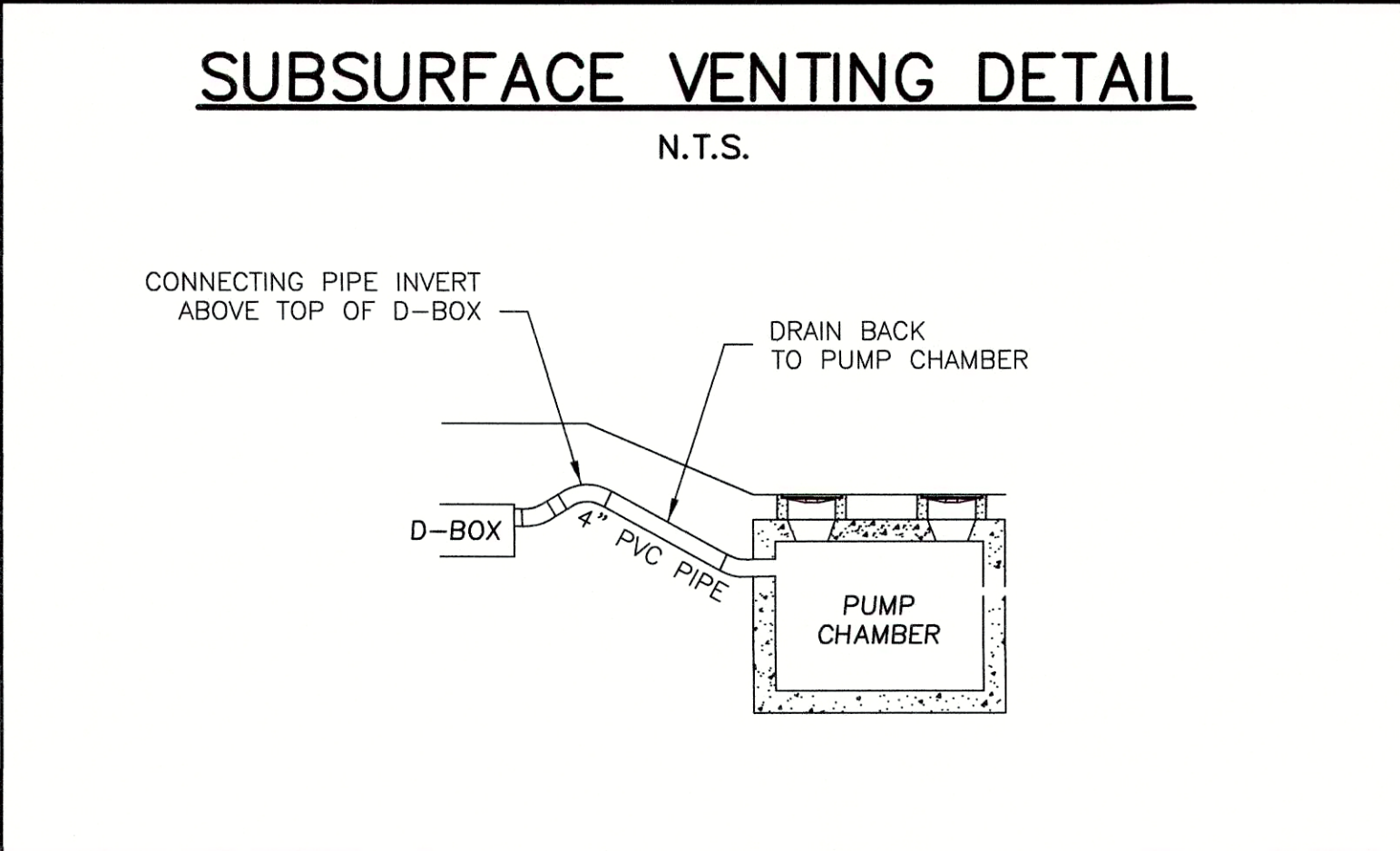
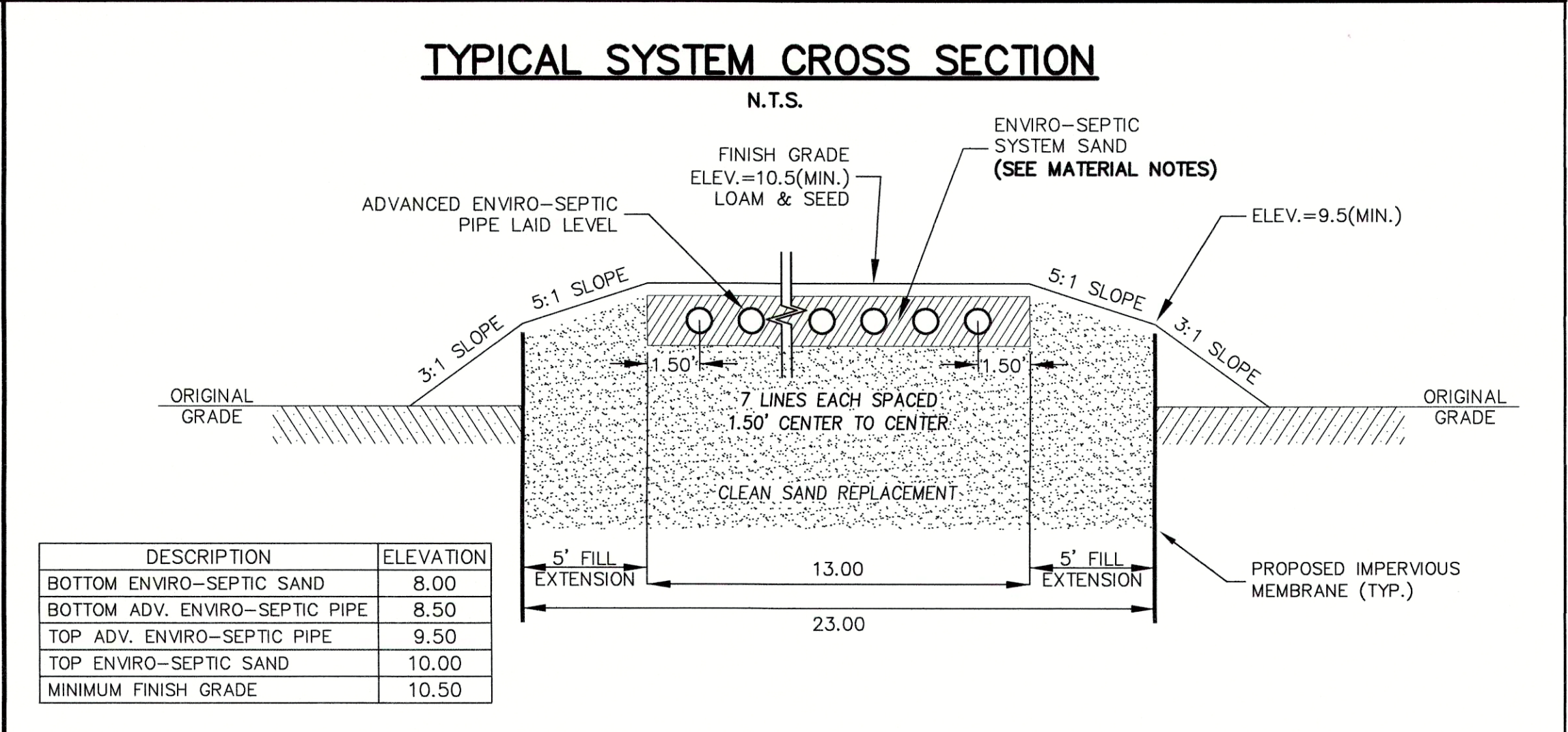
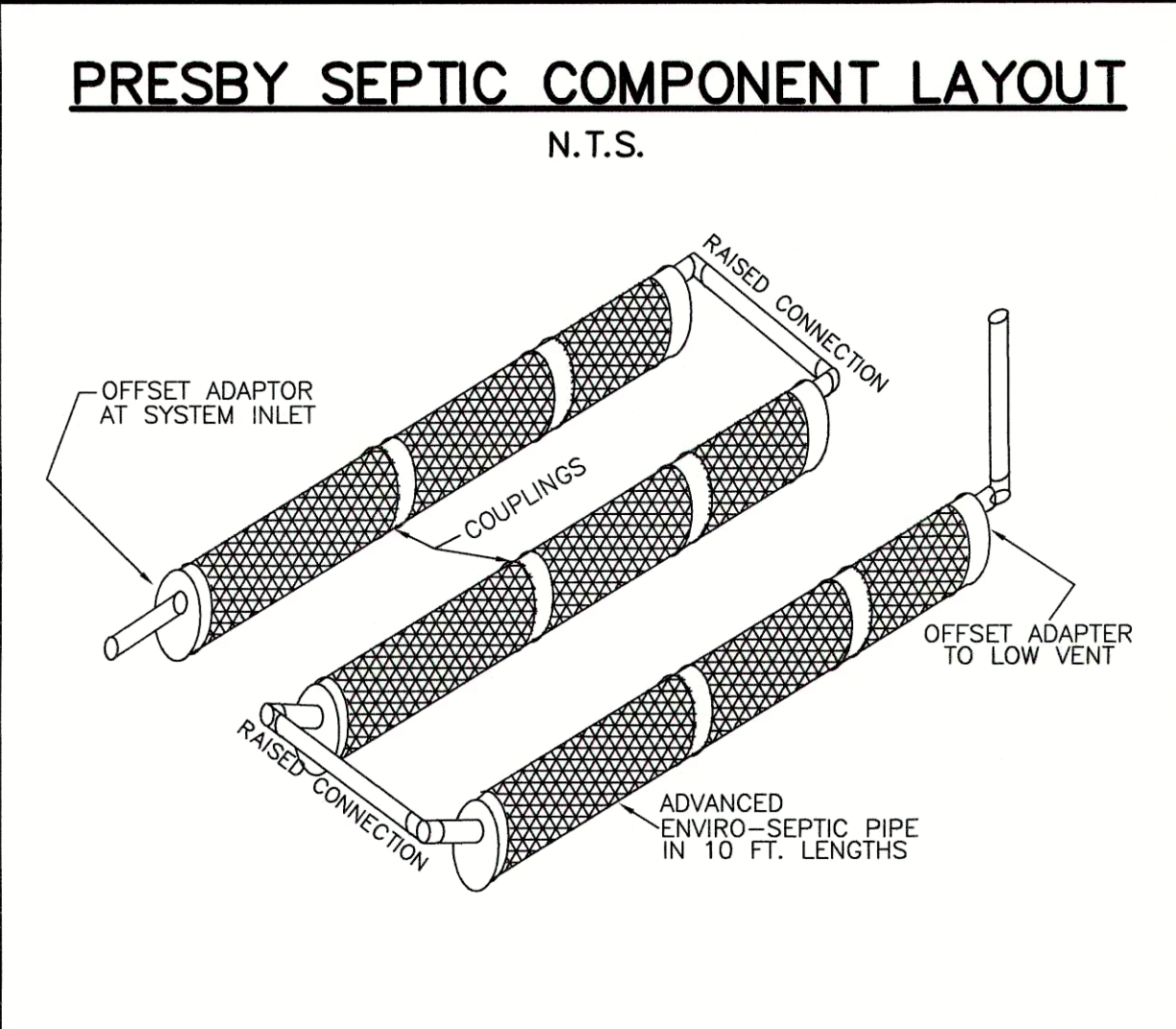
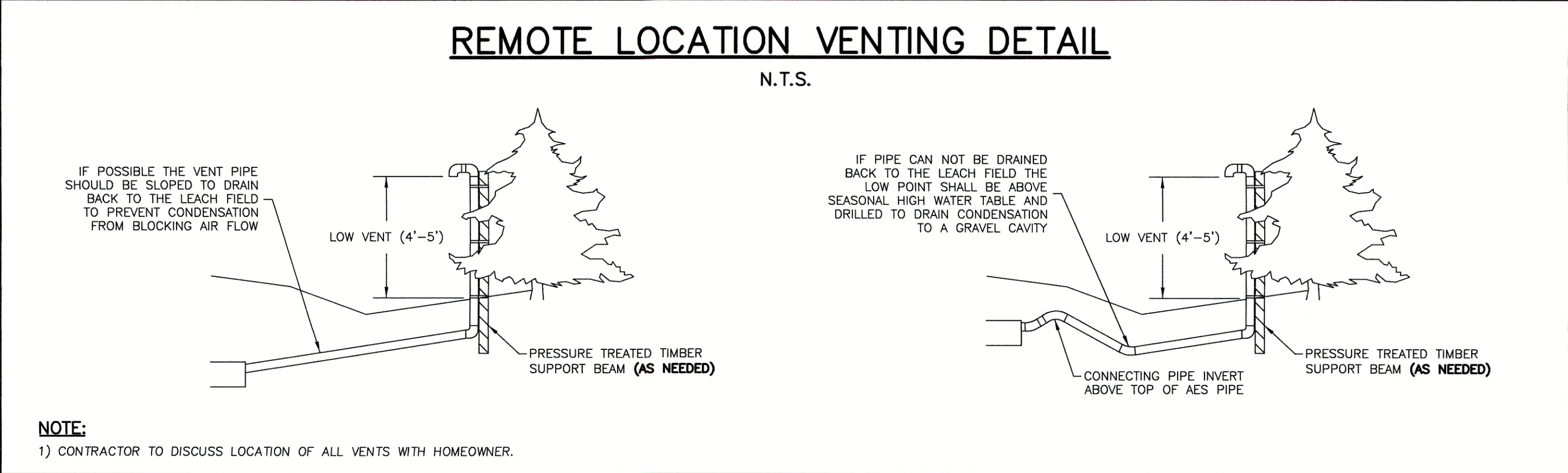
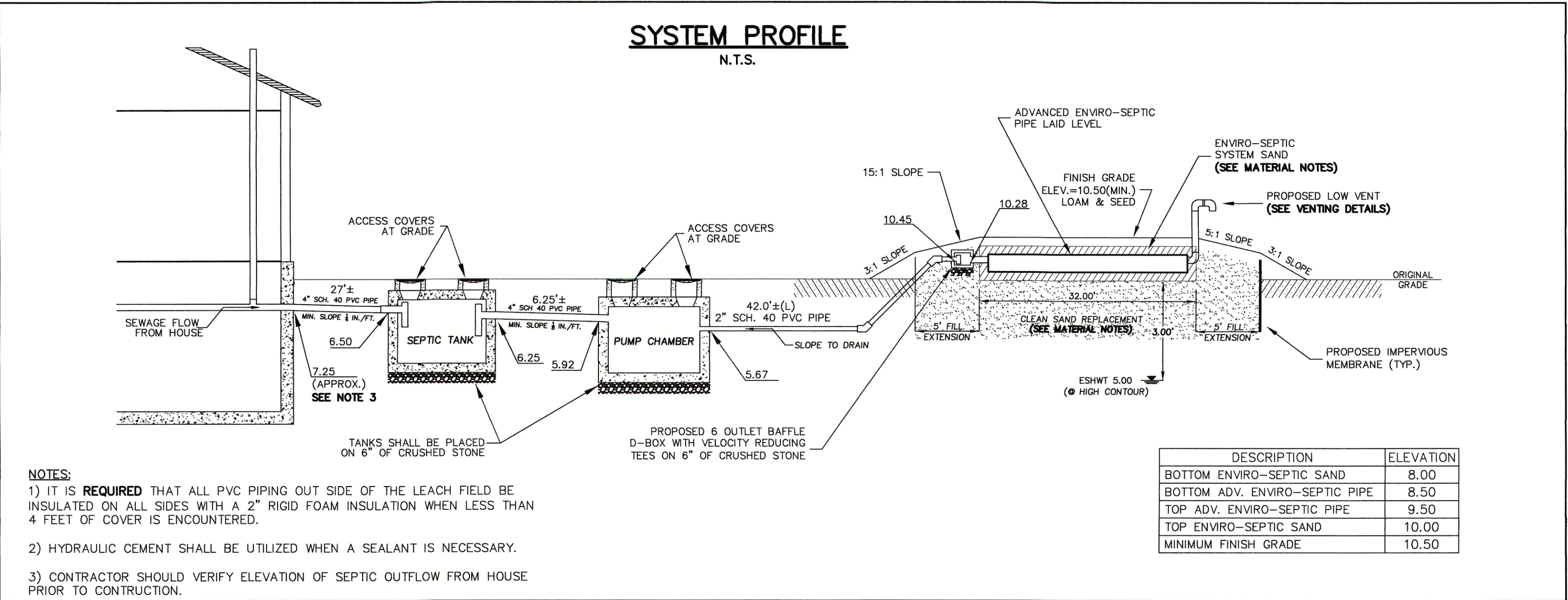
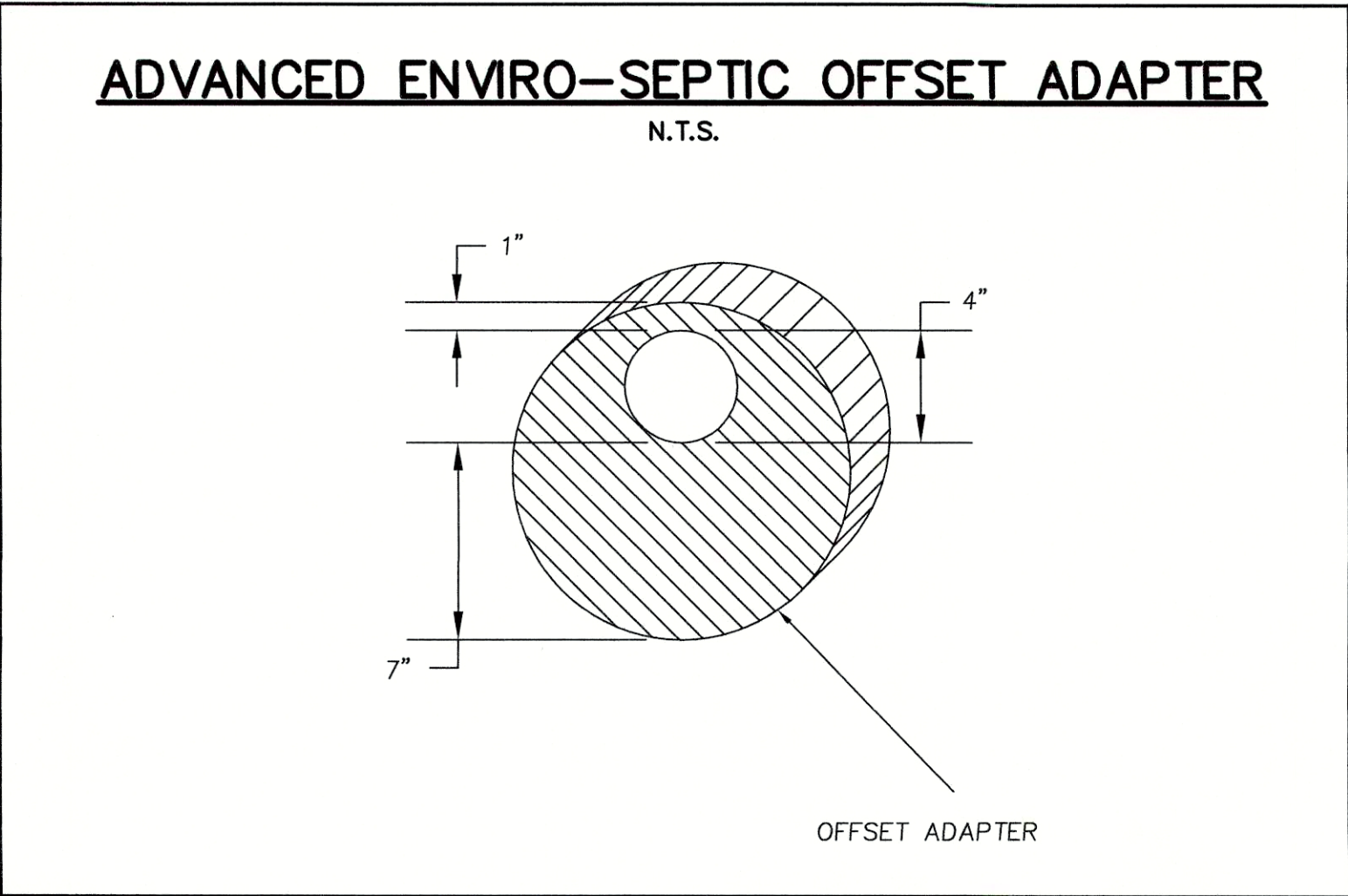
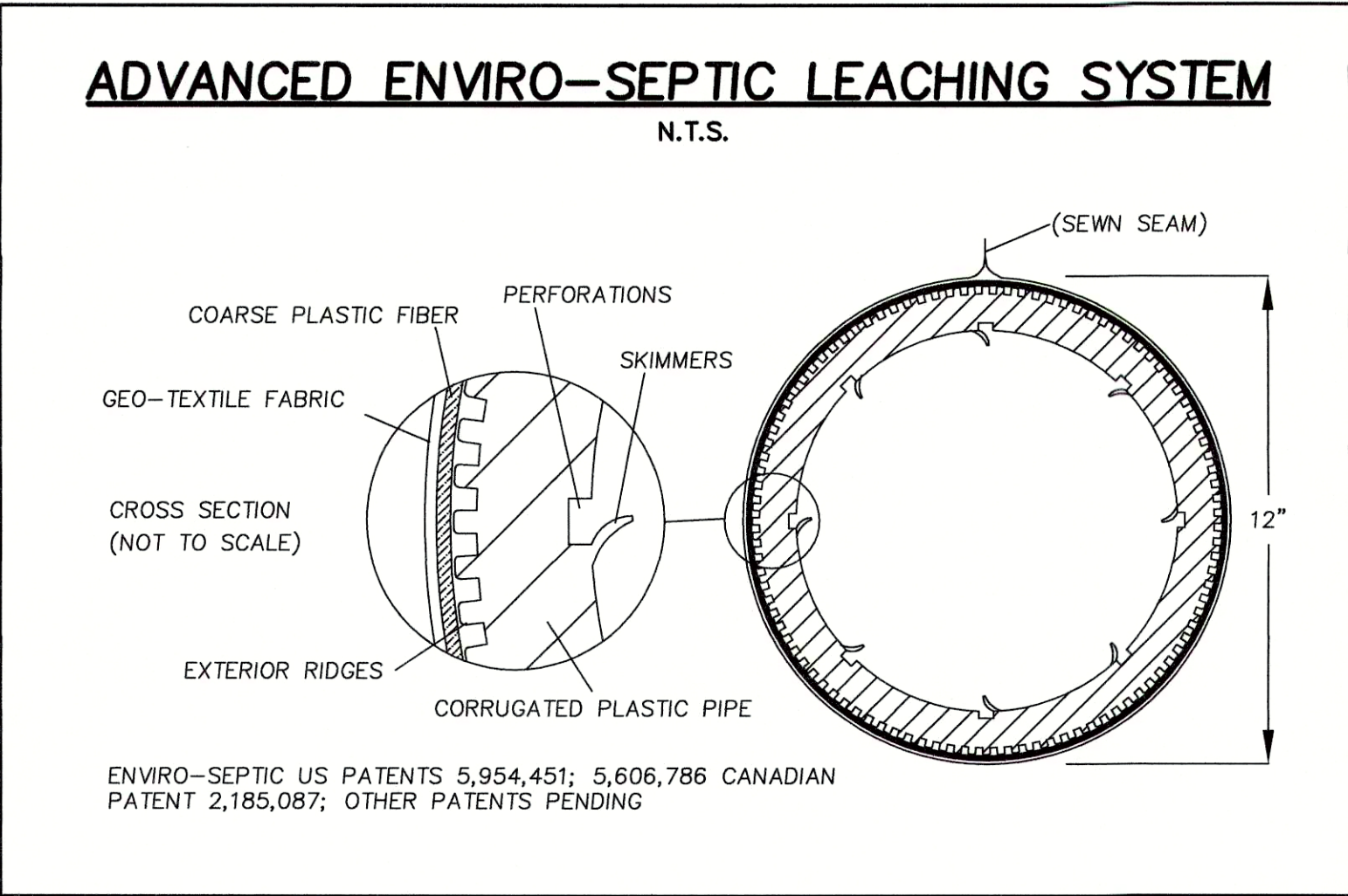
SHOWING

PROPOSED SEPTIC
118 PLEASANT VALLEY ROAD
(MAP 109, LOT 8)

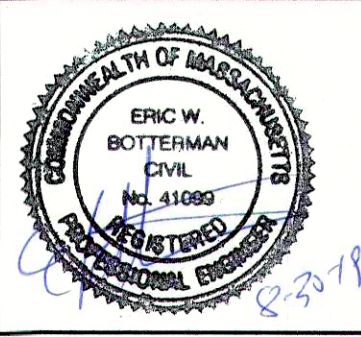
SCALE: AS NOTED	CALC. BY: Z.T.J.	PROJECT: M193517
DATE: APR. 8, 2019	CHKD. BY: E.W.B.	SHEET: 2 OF 3



MILLENNIUM ENGINEERING, INC.
ENGINEERING AND LAND SURVEYING
62 ELM. ST. SALISBURY, MA 01952 (978) 463-8980
13 HAMPTON RD., P.O. BOX 745 EXETER, NH 03833 (603) 778-0528



1.	8-21-19	EDIT DESIGN FOR INCREASED DESIGN FLOW	Z.T.J.		
NO.	DATE	DESCRIPTION	BY		



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SEPTIC SYSTEM DESIGN
IN
AMESBURY, MA

PREPARED FOR
MICHAEL & MARY WABREK
118 PLEASANT VALLEY ROAD
AMESBURY, MA 01913

SHOWING
PROPOSED SEPTIC
118 PLEASANT VALLEY ROAD
(MAP 109, LOT 8)

SCALE: AS NOTED	CALC. BY: Z.T.J.	PROJECT: M193517
DATE: APR. 8, 2019	CHKD. BY: E.W.B.	SHEET: 3 OF 3