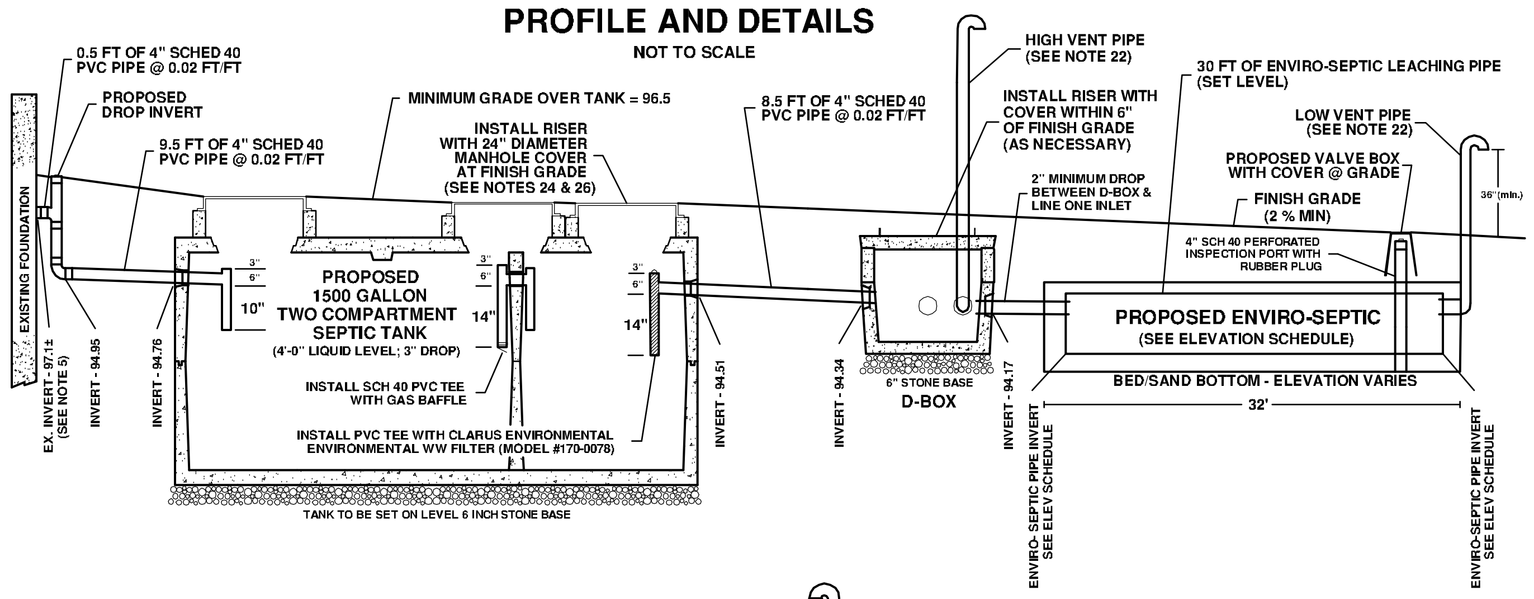
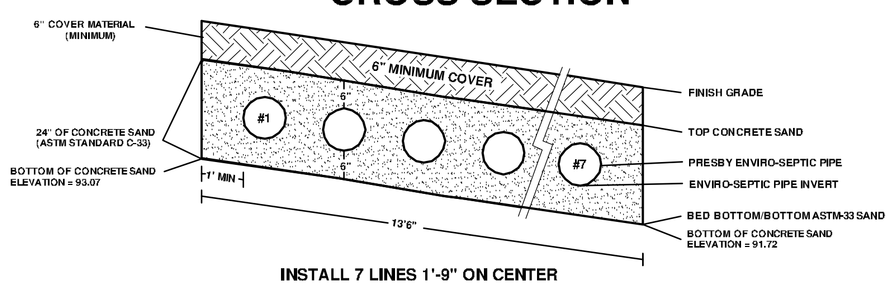
PROFILE AND DETAILS

NOT TO SCALE



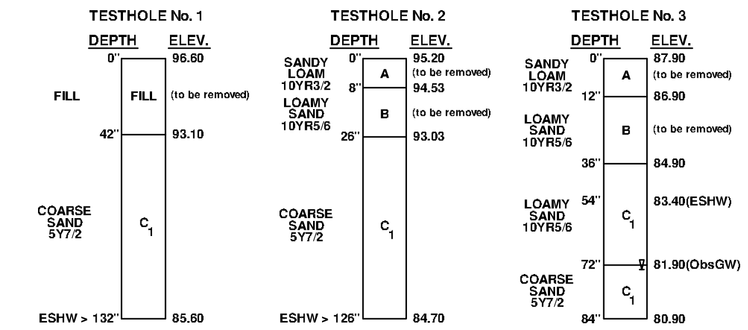
CROSS SECTION



INSTALL 7 LINES 1'-9" ON CENTER

SCHEDULE OF ELEVATIONS			4 INCH INLET INVERT	PRESBY PIPE INVERT	BOTTOM OF CONCRETE SAND	FINISH GRADE
TOP OF FOUNDATION	100.0±	PRESBY PIPE				
OUT OF FOUNDATION	97.1±	LINE #1	94.00	93.42	92.92	97.00
IN DROP INVERT	97.09	LINE #2	93.83	93.25	92.75	96.50
OUT DROP INVERT	94.95	LINE #3	93.65	93.07	92.57	96.10
IN SEPTIC TANK	94.76	LINE #4	93.48	92.90	92.40	95.60
OUT SEPTIC TANK	94.51	LINE #5	93.30	92.72	92.22	95.20
IN DISTRIBUTION BOX	94.34	LINE #6	93.13	92.55	92.05	94.70
OUT DISTRIBUTION BOX	94.17	LINE #7	92.95	92.37	91.87	94.20

SOIL PROFILE DATA



DATE: 10/20/2020	DATE: 10/20/2020	DATE: 10/20/2020
ENG: K. RITCHIE, CSI	ENG: K. RITCHIE, CSI	ENG: K. RITCHIE, CSI
AGENT: R. METCALF, NABOH	AGENT: R. METCALF, NABOH	AGENT: R. METCALF, NABOH

THE SOIL EVALUATOR FOR THIS SITE IS KEVIN RITCHIE.
HE PASSED THE MA SOIL EVALUATOR EXAM SUMMER 1995.

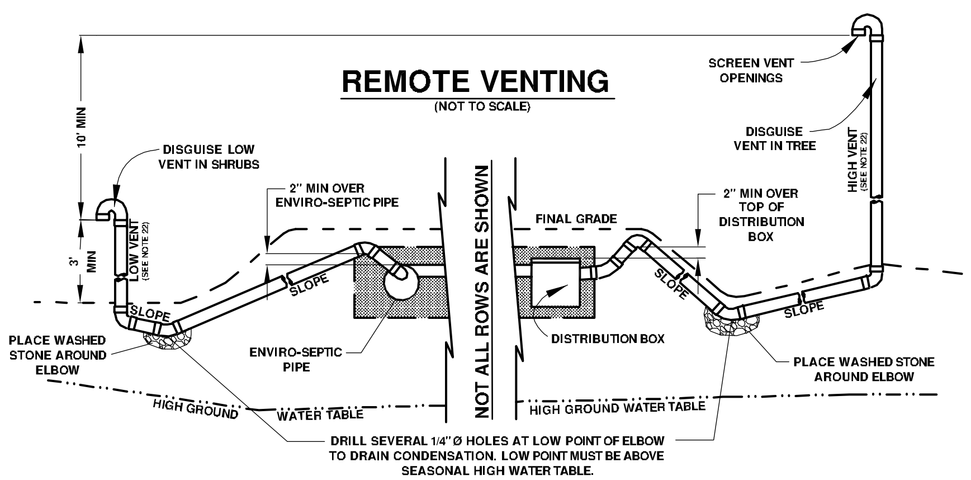
PERCOLATION TEST DATA

PERC No.	DATE:	DEPTH:	RATE:
A	10/20/2020	68 INCHES	2 MPI

PERCOLATION TEST PERFORMED BY: K. RITCHIE, CSI
WITNESSED BY: R. METCALF, NABOH

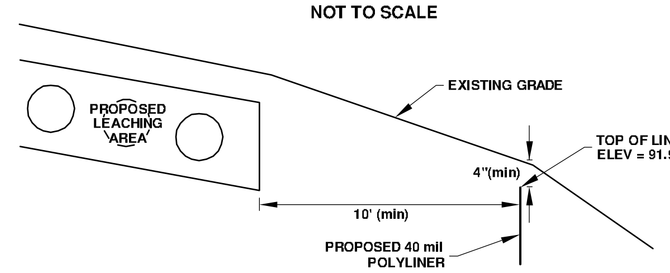
REMOTE VENTING

(NOT TO SCALE)



POLY-LINER DETAIL

NOT TO SCALE



CONSTRUCTION NOTES:

1. POLYLINER IS TO BE KEYED A MINIMUM OF 2 FEET INTO THE EXISTING MATERIAL.
2. POLYLINER IS TO BE A MINIMUM OF 40 mil IN THICKNESS. LINER CAN BE OBTAINED FROM GRAVES CONSTRUCTION IN LITTLETON, MA (978) 486-3563.
3. POLY LINER IS TO BE ONE CONTINUOUS LENGTH WITH NO SEAMS.
4. BACKFILL AROUND POLYLINER IS TO BE CLEAN SAND WITH NO ROCKS LARGER THAN 2" IN DIAMETER.

SAND SPECIFICATIONS

ENVIRO-SEPTIC SYSTEM SAND
35% OR LESS OF THE TOTAL SAND MAY BE GRAVEL. 40% TO 90% OF THE TOTAL SAND IS TO BE COARSE TO VERY COARSE SAND. NO GRAVEL SHALL EXCEED 3/4" IN DIAMETER. NO GRAVEL SHALL PASS A #10 SIEVE. NO COARSE SAND SHALL PASS A #35 SIEVE. NO MORE THAN 2% OF THE TOTAL SAND MAY PASS THROUGH A #200 SIEVE. ASTM C-33 (CONCRETE SAND) MEETS THESE REQUIREMENTS.

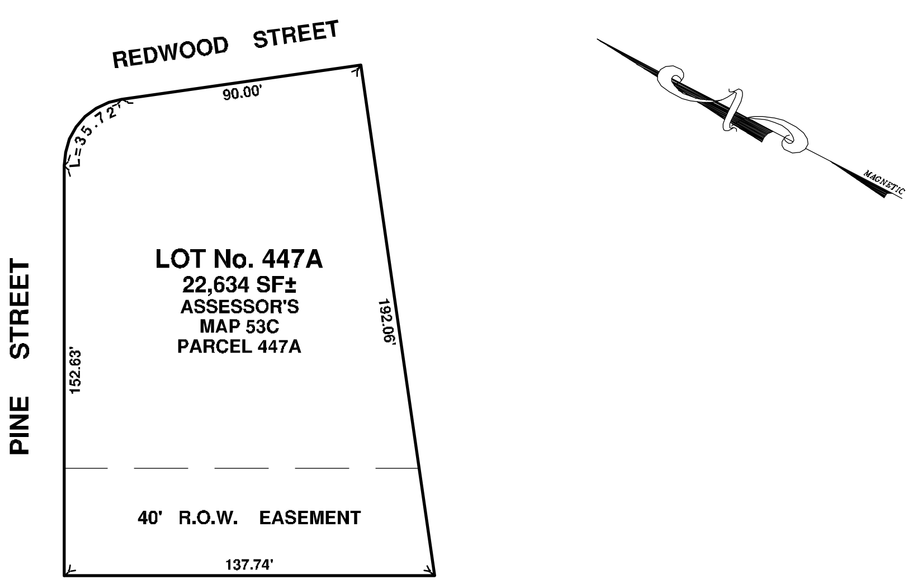
TITLE V SURROUNDING SAND
TITLE V SAND SHALL MEET THE REQUIREMENTS OF 310 CMR 15.255(3). SAND SHALL BE COMPRISED OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES. FILL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN 2 INCHES. UP TO 45% BY WEIGHT OF FILL MATERIAL MAY BE RETAINED ON THE #4 SIEVE. FOR THE PORTION OF MATERIAL PASSING THE #4 SIEVE: 10% TO 100% MUST PASS THE # 50 SIEVE, 0% TO 20% MUST PASS THE #100 SIEVE AND 0% TO 5% MUST PASS THE #200 SIEVE.

NOTES AND SPECIFICATIONS

1. BOUNDARY LINE INFORMATION TAKEN FROM A "PLAN OF LAND IN TOWNSEND, MASS" BY DANA F. PERKINS & SONS, INC., DATED DECEMBER 6, 1976, RECORDED IN THE M.S.D.R.D. AS PLAN No. 1449 OF 1976.
2. TOPOGRAPHICAL INFORMATION TAKEN FROM A FIELD SURVEY PERFORMED BY THIS OFFICE.
3. CONTRACTOR SHALL NOTIFY DIGSAFE (888) 344-7233 AT LEAST 72 HOURS PRIOR TO INITIATING WORK. IT SHALL BE THE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ANY UTILITIES NOT DELINEATED BY DIGSAFE.
4. CONTRACTOR SHALL NOTIFY THIS OFFICE 24 TO 48 HOURS PRIOR TO REQUIRED CONSTRUCTION INSPECTIONS.
5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING SITE CONDITIONS AND ELEVATIONS PRIOR TO INITIATING CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER OF RECORD PRIOR TO THE ONSET OF CONSTRUCTION.
6. CONTAMINATED SOIL WITHIN THE VICINITY OF THE PROPOSED LEACHING AREA SHOULD BE REMOVED BY THE CONTRACTOR. LOCATION OF EXISTING LEACHING AREA SHOWN HEREON IS APPROXIMATE.
7. WHERE FILL IS REQUIRED TO REPLACE UNSUITABLE OR IMPERVIOUS MATERIAL, THE EXCAVATION OF THE UNSUITABLE MATERIAL SHALL EXTEND A MINIMUM OF 5 FEET LATERALLY IN ALL DIRECTIONS BEYOND THE OUTER PERIMETER OF THE SOIL ABSORPTION SYSTEM TO A DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL.
8. FILL MATERIAL SHALL MEET THE SPECIFICATIONS ESTABLISHED IN 310 CMR 15.255.
9. EXISTING DWELLING IS SERVICED BY A MUNICIPAL WATER SUPPLY.
10. THIS SYSTEM IS NOT DESIGNED TO ACCOMMODATE GARBAGE DISPOSAL UNITS.
11. RETURN WATER FROM HOME WATER FILTRATION SYSTEM SHALL NOT BE PIPED INTO THE SEPTIC SYSTEM.
12. TANKS AND DISTRIBUTION BOX SHOWN HEREON ARE GRAPHICAL REPRESENTATIONS OF THE CONCRETE STRUCTURES REQUIRED, AND SHOULD NOT BE CONSIDERED CONSTRUCTION DRAWINGS. MANUFACTURER OF TANKS AND BOXES SHALL BE APPROVED BY THE ENGINEER OF RECORD AND THE BOARD OF HEALTH.
13. ANY ALTERATION OF WETLANDS OR DISTURBANCE WITHIN THE 100 FOOT BUFFER ZONE SHALL REQUIRE A FILING WITH THE LOCAL CONSERVATION COMMISSION AND THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
14. THIS PLAN MAY ONLY BE REVISED WITH THE CONSENT OF THE LOCAL BOARD OF HEALTH AND ENGINEER OF RECORD.
15. BASED ON AVAILABLE RECORD INFORMATION AND A VISUAL SITE INSPECTION, THERE ARE NO KNOWN WELLS WITHIN 100 FEET OF THE PROPOSED SEWAGE DISPOSAL SYSTEM.
16. THE EXISTING SEPTIC SYSTEM SHALL BE ABANDONED IN ACCORDANCE WITH 310 CMR 15.354 OR REMOVED AS NECESSARY.
17. THIS PLAN WAS CREATED FOR THE PURPOSES OF SHOWING A PROPOSED SEWAGE DISPOSAL SYSTEM AND IS NOT INTENDED TO BE USED FOR THE REPRODUCTION OF PROPERTY LINES.
18. SUBJECT PROPERTY IS NOT LOCATED IN A NITROGEN SENSITIVE AREA AS SHOWN ON A THE MASS GIS WEBSITE "DEP TITLE 5 SETBACK AREA" TOWN OF TOWNSEND.
19. A FOUR INCH SCHEDULE 40 PERFORATED PIPE INSPECTION PORT IS TO BE INSTALLED IN THE LEACHING AREA. PIPE SHALL EXTEND TO THE BOTTOM OF THE ASTM C-33 SAND AND BE FITTED WITH A RUBBER PLUG IN THE TOP. PIPE SHALL BE WRAPPED IN FILTER FABRIC TO PREVENT SAND INFILTRATION INTO THE INSPECTION PORT. INSPECTION PORT SHALL BE LOCATED WITHIN A VALVE BOX WITH THE COVER SET AT FINISH GRADE.
20. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.
21. PRESBY ENVIRO-SEPTIC PIPE SHALL HAVE A MINIMUM OF 6" OF CONCRETE SAND SURROUNDING THE CIRCUMFERENCE OF THE PIPE. CERTIFICATION SHALL BE PROVIDED TO THE BOARD OF HEALTH AND ENGINEER PRIOR TO PLACEMENT SHOWING THAT THE SAND MEETS ASTM STANDARD C-33.
22. THE OPENING OF THE HIGH VENT IS TO BE A MINIMUM OF 10 VERTICAL FEET ABOVE THE OPENING OF THE LOW VENT. HIGH VENT IS TO BE SECURED TO PREVENT IT FROM FALLING OVER. WHERE THE LOCATIONS OF THE PROPOSED VENT PIPES ARE VARIABLE, THE CONTRACTOR SHOULD CONSULT THE HOMEOWNER TO DETERMINE THE PREFERRED LOCATIONS. VENT PIPES SHALL BE PAINTED FLAT BLACK.
23. THIS PLAN UTILIZES A PRESBY ENVIRO-SEPTIC LEACHING SYSTEM WHICH WAS APPROVED FOR REMEDIAL USE BY DEP (PERMIT #X233355) REVISED OCTOBER 30, 2019 AND STANDARD CONDITIONS FOR ALTERNATIVE SOIL ABSORPTION SYSTEMS APPROVED FOR REMEDIAL USE, DATED (REVISED) MARCH 5, 2018.
24. THIS OFFICE REQUIRES THE USE OF CAST IRON MANHOLE COVERS ON THE SEPTIC TANK. PLASTIC COVERS ARE NOT ALLOWED. ALL COVERS ARE REQUIRED TO BE SET AT FINISH GRADE.
25. THE OUTLET TEE OF THE SEPTIC TANK SHALL BE EQUIPPED WITH A CLARUS ENVIRONMENTAL WW EFFLUENT FILTER (MODEL #170-0078) AVAILABLE FROM ZOELLER 1-800-928-7867 OR EQUIVALENT.
26. COVERS OVER THE INLET AND OUTLET OF THE SEPTIC TANK SHALL BE MARKED TO INDICATE THAT AN EFFLUENT FILTER HAS BEEN INSTALLED IN THE OUTLET TEE. ALL COVERS ARE REQUIRED TO BE SET AT FINISH GRADE.
27. THE DEPARTMENT OF ENVIRONMENTAL PROTECTION REQUIRES THAT THE EFFLUENT FILTER IN THE OUTLET TEE OF THE SEPTIC TANK BE SERVICED AT LEAST ONCE PER YEAR.
28. CIVIL SOLUTIONS SHALL NOT BE HELD RESPONSIBLE FOR THE LOCATIONS OF ANY SUBSURFACE UTILITIES. LOCATIONS OF SUBSURFACE UTILITIES SHOWN HEREON WERE PROVIDED BY OTHERS. SUBJECT PROPERTY MAY CONTAIN OTHER SUBSURFACE UTILITIES NOT SHOWN HEREON. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO THE ONSET OF CONSTRUCTION.
29. ALL TREES WITHIN 10 FEET OF THE PROPOSED LEACHING AREA ARE REQUIRED TO BE REMOVED.
30. NO PERMANENT BUILDINGS OR STRUCTURES SHALL BE CONSTRUCTED IN THE AREA DESIGNATED AS THE CONVENTIONAL FOOTPRINT.
31. THIS DESIGN REQUIRES THE RECORDING OF A NOTICE ON THE DEED OF RECORD FOR THE USE OF AN ALTERNATIVE LEACHING SYSTEM WITH REMEDIAL USE APPROVAL.

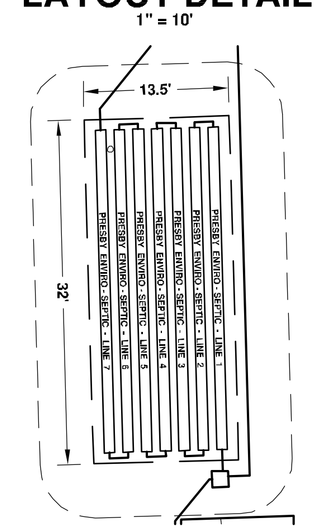
PLOT PLAN

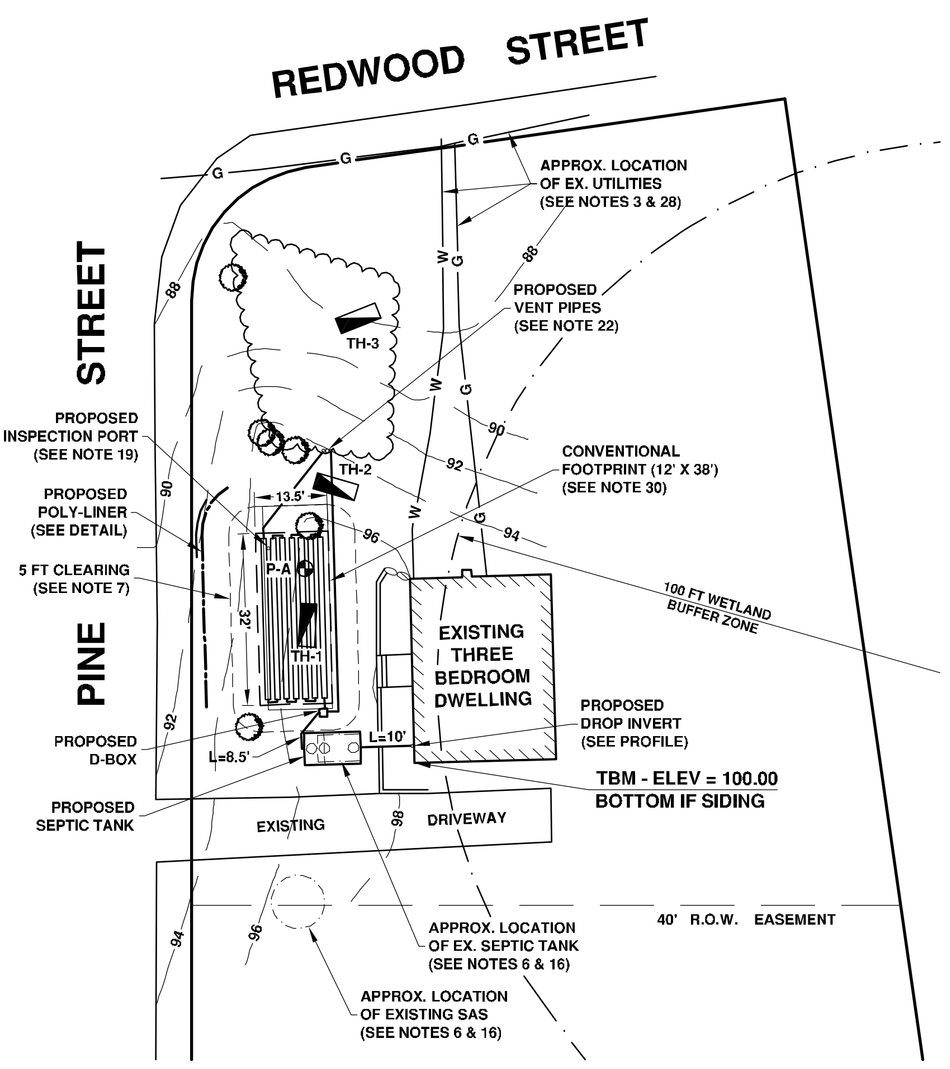
1" = 40'



LAYOUT DETAIL

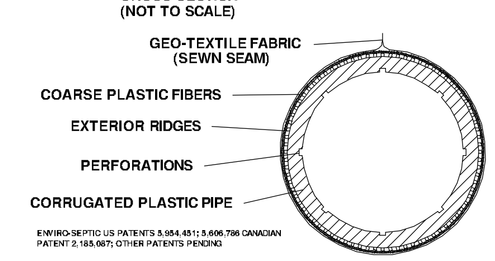
1" = 10'





ENVIRO - SEPTIC LEACHING SYSTEM

CROSS SECTION
(NOT TO SCALE)



ENVIRO-SEPTIC US PATENTS 5,454,651; 5,606,796 CANADIAN PATENT 2,185,087; OTHER PATENTS PENDING

SYSTEM CALCULATIONS

TITLE 5 DESIGN CAPACITY PROVIDED:
3 BEDROOMS X 110 GAL/BEDROOM = 330 GALLONS/DAY

PROVIDED:
PERCOLATION RATE: 2 MINUTES/INCH
APPLICATION RATE: 0.74 GAL/SF

MIN. REQUIRED LEACHING AREA: 330 GAL/DAY / 0.74 GPD/SF = 446 SF
MIN. REQUIRED LEACHING AREA USING PRESBY ENVIRO-SEPTIC:
60% X 446 SF = 268 SF
MIN. ALLOWABLE PRESBY ENVIRO-SEPTIC LEACHING AREA = 400 SF

ENVIRO-SEPTIC PIPE REQUIRED = 210 LF
ENVIRO-SEPTIC PIPE PROVIDED = 210 LF

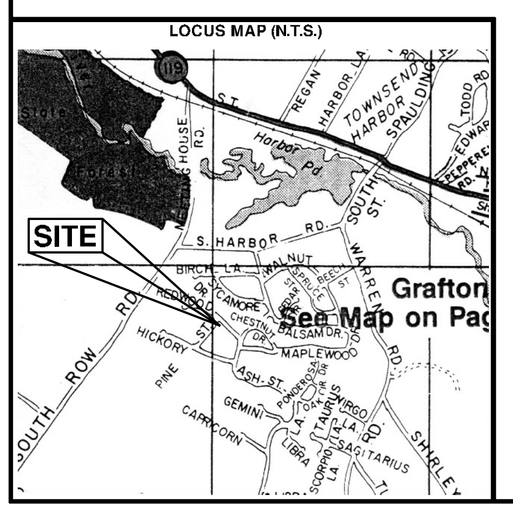
INSTALL 7 LINES OF ENVIRO-SEPTIC PIPE @ 30 FT LONG @ 1.75 FT O.C.
LEACHING AREA PROVIDED = 13.5 FT(W) X 32 FT (L) = 432 SF > 400 SF

SEPTIC TANK(S) SIZING:
200% X 330 GPD = 660 GALLONS
INSTALL NEW 1500 GALLON TWO COMPARTMENT SEPTIC TANK

APPROVALS REQUIRED

1. APPROVAL IS SOUGHT UNDER 310 CMR 15.405(1)(b) TO REDUCE THE REQUISITE OFFSET FROM A LEACHING AREA TO A FOUNDATION FROM 20 FEET TO 15 FEET.

LOCUS MAP (N.T.S.)



LEGEND

	EXISTING TREE
	UTILITY POLE
80 x	EXISTING SPOT GRADE
80.00	PROPOSED SPOT GRADE
	SOIL PROFILE TEST
	PERCOLATION TEST
80	EXISTING CONTOUR
80	PROPOSED CONTOUR
W	WATER LINE
G	GAS LINE
T	BURIED TELEPHONE/CABLE LINE
	BRUSHLINE/TREELINE
	FENCE LINE

SEWAGE DISPOSAL SYSTEM PLAN

2 PINE STREET
TOWNSEND, MASSACHUSETTS

OCTOBER 30, 2020

ASSESSOR'S MAP 53C, PARCEL 447A

CIVIL SOLUTIONS, INC.
P.O. BOX 107, 285 LITTLETON ROAD, UNIT 2, WESTFORD, MA
PHONE: (978) 692-5000 FAX: (978) 692-0386
E-MAIL: civilsolutions@verizon.net
WEBSITE: www.civil-solutions.net

11/23/2020

DESIGN: KCF
DRAWN: KCF
CHECK: KJR

SHEET	SCALE	JOB NO.	DWG. NO.
1 OF 1	1"=20'	20-099	20-099PR

OWNER OF RECORD:
PATRICK & LAURA MACFARLANE
2 PINE STREET
TOWNSEND, MA 01469

PLAN PREPARED FOR:
R.L. LEGACY & SON
34 GROTON ROAD
WESTFORD, MA 01886

#	DATE	REVISION	BY
1	11/23/2020	NABOH REVIEW COMMENTS	KCF