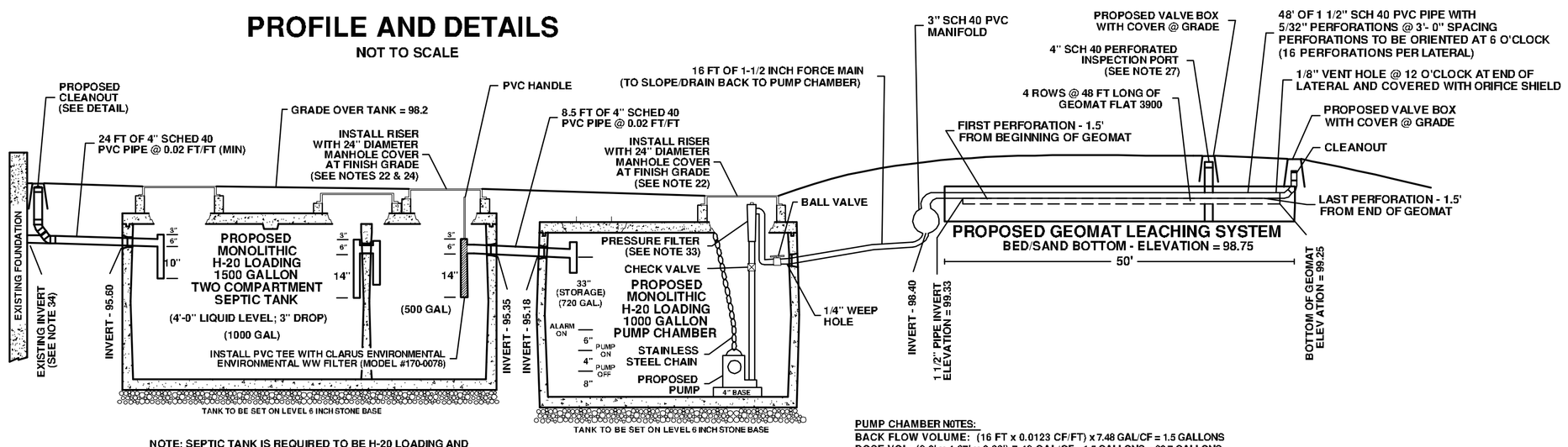
PROFILE AND DETAILS

NOT TO SCALE



NOTE: SEPTIC TANK IS REQUIRED TO BE H-20 LOADING AND MONOLITHIC.

TANK IS TO BE ORDERED WITH RUBBER BOOTS.
RISERS ARE TO BE SEALED TO THE TOPS OF THE TANKS.

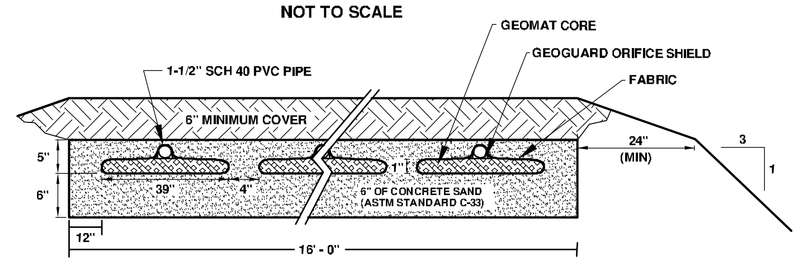
NOTE: PUMP CHAMBER IS REQUIRED TO BE H-20 LOADING AND MONOLITHIC.

TANK IS TO BE ORDERED WITH RUBBER BOOTS.
RISERS ARE TO BE SEALED TO THE TOPS OF THE TANKS.

PUMP CHAMBER NOTES:
BACK FLOW VOLUME: (16 FT x 0.0123 CF/FT) x 7.48 GAL/CF = 1.5 GALLONS
DOSE VOL: (8.0' x 4.67' x 0.33') 7.48 GAL/CF - 1.5 GALLONS = 90.7 GALLONS

CROSS SECTION

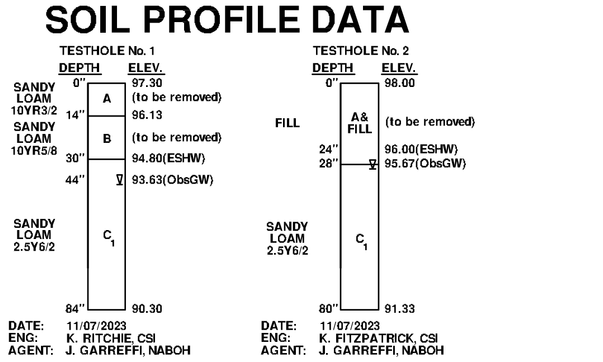
NOT TO SCALE



INSTALL 4 ROWS OF GEOMAT FLAT 3900 @ 3' - 7" ON CENTER

SCHEDULE OF ELEVATIONS			
TOP OF FOUNDATION	100.0±	GEOMAT LEACHING SYSTEM	
OUT OF FOUNDATION	EXISTING	FINISH GRADE	100.15
INTO SEPTIC TANK	95.60	TOP SYSTEM SAND	99.65
OUT SEPTIC TANK	95.35	1 1/2" LATERAL INVERT	99.33
IN PUMP CHAMBER	95.18	BOTTOM OF GeoMAT	99.25
		BOTTOM SYSTEM SAND	98.75

SOIL PROFILE DATA



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

PERCOLATION TEST DATA

A PERCOLATION TEST COULD NOT BE CONDUCTED ON SITE DUE TO GROUNDWATER INTERFERENCE. THE DESIGN OF THIS SYSTEM IS BASED ON A LABORATORY PARTICLE SIZE ANALYSIS WHICH DETERMINED THE SOIL TO BE A USDA CLASSIFICATION - SANDY LOAM. THE SOIL WAS DETERMINED TO BE UNCOMPACTED IN PLACE 11/07/2023.

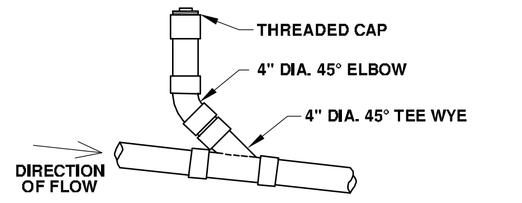
SAND SPECIFICATIONS

GEOMAT 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 FOM 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.

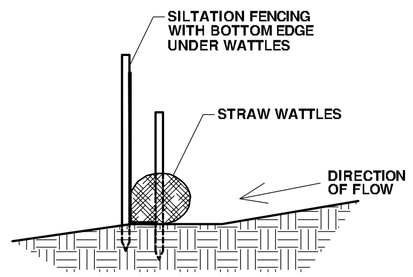
IN-LINE CLEANOUT DETAIL

(NOT TO SCALE)



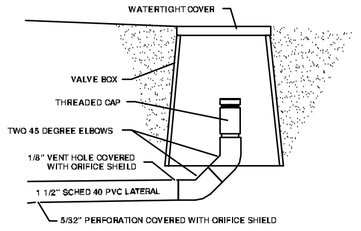
SEDIMENT AND EROSION CONTROL DETAIL

NOT TO SCALE



CLEANOUT DETAIL

NOT TO SCALE

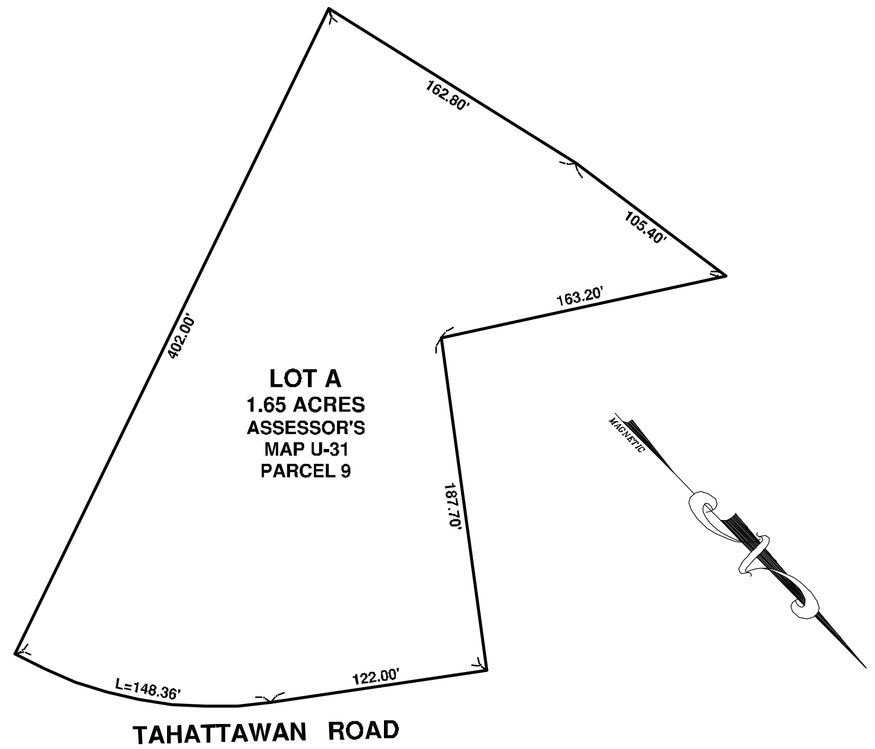


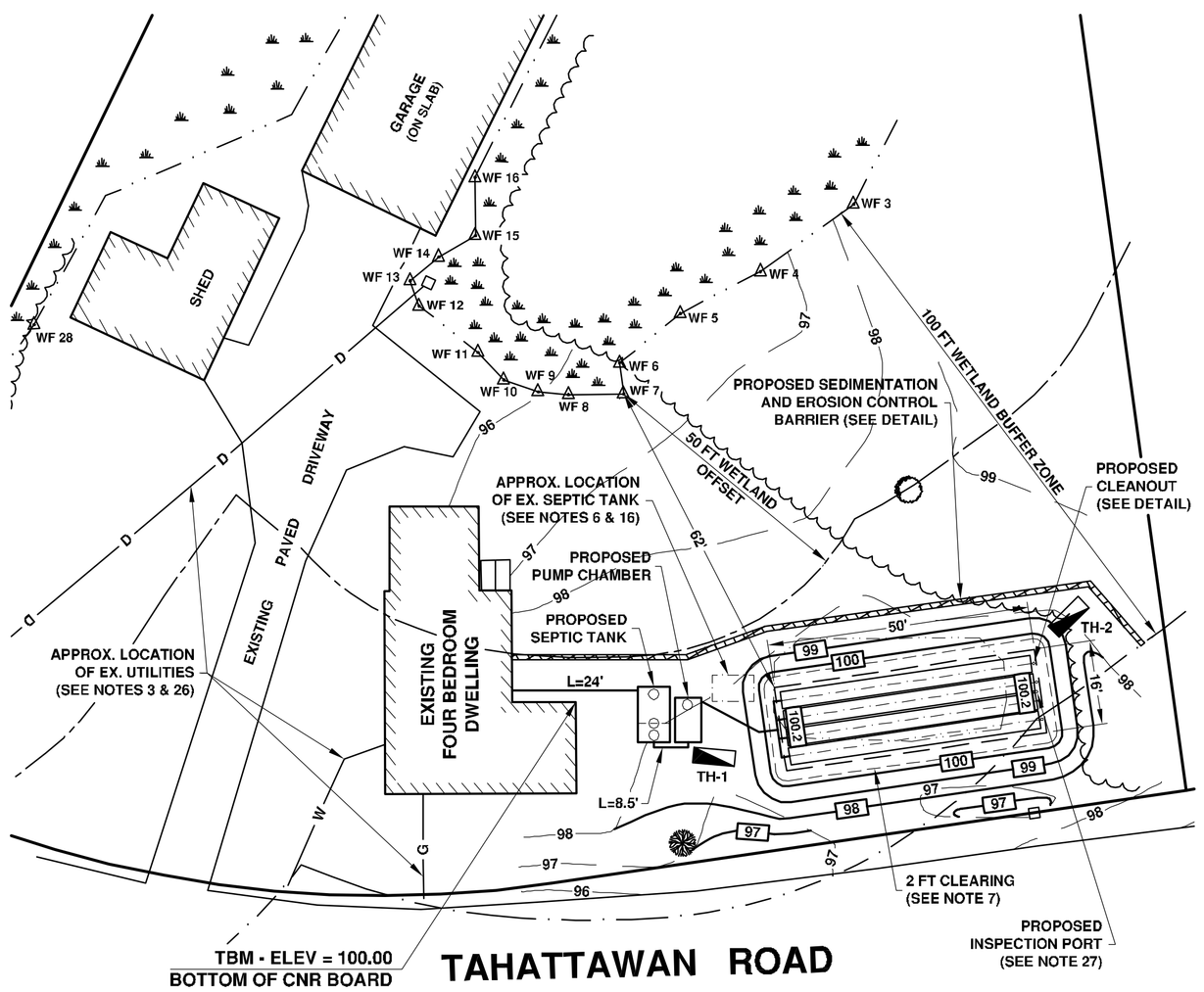
NOTES AND SPECIFICATIONS

1. BOUNDARY LINE INFORMATION TAKEN FROM A PLAN ENTITLED "LAND IN LITTLETON SURVEYED FOR ESTATE OF ALBERT E. ROBBINS" BY HORACE F. TUTTLE, DATED DECEMBER 30, 1952. RECORDED IN THE M.S.D.R.D. AS PLAN No. 36 OF 1953.
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 SYSTEM IS APPROXIMATE AND WAS NOT FIELD LOCATED.
7. WHERE FILL IS REQUIRED TO REPLACE UNSUITABLE OR IMPERVIOUS MATERIAL, THE EXCAVATION OF THE UNSUITABLE MATERIAL SHALL EXTEND A MINIMUM OF 2 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 THE MASS GIS WEBSITE.
19. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.
20. THE GEOMAT LEACHING SYSTEM SHALL HAVE A MINIMUM OF 6" OF CONCRETE SAND (ASTM C-33) BELOW THE UNITS AND EXTENDING ONE FOOT BEYOND THE PERIMETER OF THE UNITS. SYSTEM SHALL BE BACKFILLED ABOVE THE TOPS OF THE DISTRIBUTION PIPES WITH SAME SAND. CERTIFICATION SHALL BE PROVIDED TO THE BOARD OF HEALTH PRIOR TO PLACEMENT SHOWING THAT THE SAND MEETS ASTM STANDARD C-33.
21. THIS PLAN UTILIZES THE GEOMAT LEACHING SYSTEM WHICH WAS APPROVED FOR REMEDIAL USE BY DEP (PERMIT #X267926) REVISED AUGUST 14, 2015 AND ATTACHED CONDITIONS FOR ALTERNATIVE 5.06, ABSORPTION SYSTEMS APPROVED FOR REMEDIAL USE, DATED (REVISED) MARCH 5, 2015. THE GEOMAT LEACHING SYSTEM IS BEING UTILIZED TO REDUCE THE GROUNDWATER OFFSET FROM 4 FEET TO 3 FEET AS ALLOWABLE THROUGH THE REMEDIAL USE APPROVAL.
22. THIS OFFICE AND THE LITTLETON BOARD OF HEALTH REQUIRE THE USE OF CAST IRON MANHOLE COVERS ON THE SEPTIC TANK. PLASTIC COVERS ARE NOT ALLOWED.
23. 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.
24. 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.
25. 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. THIS OFFICE RECOMMENDS THAT THE FILTER BE CHECKED AND CLEANED A MINIMUM OF EVERY 6 MONTHS OR AS NECESSARY.
26. 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.
27. A FOUR INCH SCHEDULE 40 PERFORATED PIPE INSPECTION PORT IS TO BE INSTALLED IN THE LEACHING AREA. PIPE SHALL BE WRAPPED IN FILTER FABRIC, EXTEND TO THE BOTTOM OF THE ASTM C-33 SAND, AND BE FITTED WITH A RUBBER PLUG IN THE TOP. INSPECTION PORT SHALL BE LOCATED WITHIN A VALVE BOX WITH THE COVER AT GRADE.
28. NO PORTION OF THE PROPOSED SYSTEM IS TO BE DRIVEN ON DURING OR AFTER CONSTRUCTION.
29. INFORMATION PERTAINING TO THE PURCHASE AND INSTALLATION REQUIREMENTS OF THE GEOMAT LEACHING SYSTEM CAN BE OBTAINED BY CONTACTING GEOMATRIX AT (860) 510-0730.
30. PUMP IS TO BE MANUFACTURED BY MYERS PUMP, MODEL ME40, 4/10 HP, 1600 RPM, SINGLE PHASE 115 VOLT. ANY SUBSTITUTION SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. PUMP PROVIDES 44.5 GAL/MIN AT A TDH OF 20 FEET. BALL VALVE WITHIN THE PUMP CHAMBER SHALL BE ADJUSTED TO PROVIDE A DISTAL HEAD AT THE END OF THE DISTRIBUTION LINES OF 2 TO 3 FEET.
31. PUMP ALARM SHALL BE ON AN ELECTRICAL CIRCUIT SEPARATE FROM THE CIRCUIT SERVING THE PUMP. ALARM SHALL BE BOTH READILY VISIBLE AND AUDIBLE FOR FACILITY OCCUPANTS.
32. 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.
33. A PRESSURE FILTER IS REQUIRED TO BE INSTALLED IN THE FORCE MAIN WITHIN THE PUMP CHAMBER. GEOMATRIX RECOMMENDS THE USE OF THE SIMTECH STF-100. ANY SUBSTITUTION IS REQUIRED TO BE APPROVED BY GEOMATRIX (860) 510-0730 PRIOR TO CONSTRUCTION. PRESSURE FILTER REQUIRES REGULAR MAINTENANCE.
34. ELEVATION OF THE EXISTING BUILDING SEWER IS INDETERMINATE DUE TO ITS LOCATION BEHIND A BASEMENT WALL. BUILDING SEWER SHOULD BE EXCAVATED ON THE EXTERIOR OF THE FOUNDATION AT THE ONSET OF CONSTRUCTION FOR VERIFICATION OF COMPLIANCE WITH THIS DESIGN AND ANY DISCREPANCIES REPORTED TO THIS OFFICE.

PLOT PLAN

1" = 60'

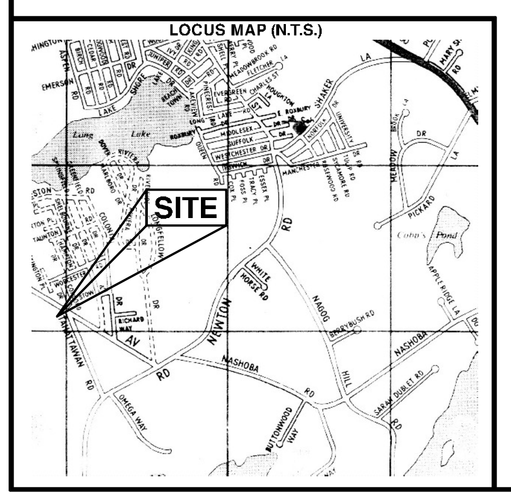




SCALE: 1" = 20'

0 20 40 60

LOCUS MAP (N.T.S.)



LEGEND

	EXISTING BOULDER
	EXISTING STUMP
(T.B.R.)	TO BE REMOVED
	EXISTING TREE
	UTILITY POLE
80	EXISTING SPOT GRADE
80.00	PROPOSED SPOT GRADE
	SOIL PROFILE TEST
	PERCOLATION TEST
80	EXISTING CONTOUR
80	PROPOSED CONTOUR
W	WATER LINE
OHW	OVER HEAD WIRES
	EDGE OF GARDEN
	FENCE LINE
	STONE WALL

GEOMAT LEACHING SYSTEM

NOT TO SCALE

PERFORMANCE CURVE

SUMMARY

THE INTENT OF THIS PLAN IS TO SHOW THE SUBSURFACE SEWAGE DISPOSAL SYSTEM UP-GRADE DESIGN TO REPLACE THE EXISTING SYSTEM WHICH HAS FAILED. THERE IS NO INCREASE IN FLOW OR ADDITION TO THE DWELLING ASSOCIATED WITH THE DESIGN OF THIS REPLACEMENT SYSTEM.

SYSTEM CALCULATIONS

TITLE 5 DESIGN CAPACITY PROVIDED:
4 BEDROOMS X 110 GAL/BEDROOM = 440 GALLONS/DAY

PROVIDED:
PERCOLATION RATE: SIEVE ANALYSIS - CLASS II
APPLICATION RATE: 0.33 GAL/SF

MIN. REQUIRED LEACHING AREA: 440 GAL/DAY / 0.33 GPD/SF = 1333 SF
MIN. REQUIRED LEACHING AREA USING GEOMAT LEACHING SYSTEM:
60% X 1333 SF = 800 SF
MIN. ALLOWABLE GEOMAT LEACHING AREA = 400 SF

SF OF GEOMAT REQUIRED = 440 GAL/DAY / 0.67 GPD/SF = 656.7 SF
LENGTH OF GEOMAT FLAT 3900 REQUIRED = 656.7 SF / 3.42 SF/FT = 192 LF
LENGTH OF GEOMAT 3900 PROVIDED = 4 ROWS X 48 FT = 192 LF

INSTALL 4 ROWS OF GEOMAT FLAT 3900 @ 48 FT LONG @ 3'- 7" O.C.
LEACHING AREA PROVIDED = 16.0 FT(W) X 50 FT(L) = 800 SF

SEPTIC TANK(S) SIZING:
200% X 440 GPD = 880 GALLONS
USE A 1500 GALLON TWO COMPARTMENT SEPTIC TANK

APPROVALS REQUIRED

1. APPROVAL IS REQUESTED FROM THE LITTLETON BOARD OF HEALTH TO ALLOW A REDUCTION IN THE REQUISITE GROUNDWATER OFFSET FROM 4 FEET TO 3 FEET WITH THE USE OF THE GEOMAT LEACHING SYSTEM.
2. APPROVAL IS SOUGHT UNDER 310 CMR 15.405(1)(i) TO ALLOW THE USE OF A SIEVE ANALYSIS WHERE A PERCOLATION TEST COULD NOT BE PERFORMED DUE TO GROUNDWATER INTERFERENCE.
3. APPROVAL IS SOUGHT UNDER 310 CMR 15.405(1) (i) TO ALLOW LESS THAN A 12 INCH SEPARATION BETWEEN THE INLETS AND OUTLETS OF THE TANKS AND THE HIGH GROUNDWATER. 6 INCHES IS PROVIDED. SEPTIC TANK AND PUMP CHAMBER ARE REQUIRED TO BE ORDERED WITH BOOTS AND RISERS ARE TO BE SEALED TO THE TOPS OF THE TANKS.
4. A VARIANCE IS REQUESTED FROM THE LITTLETON BOARD OF HEALTH REGULATION 27 TO ALLOW FILL REQUIRED TO MEET MINIMUM BREAKOUT GRADING REQUIREMENTS WITHIN 10 FEET OF A PROPERTY LINE.

SEWAGE DISPOSAL SYSTEM PLAN

219 TAHATTAWAN ROAD
LITTLETON, MASSACHUSETTS

NOVEMBER 15, 2023

ASSESSOR'S MAP U-31, PARCEL 9

CIVIL SOLUTIONS, INC.
P.O. BOX 107, 285 LITTLETON ROAD, UNIT 2, WESTFORD, MA
PHONE: (978) 692-5000 FAX: (978) 692-0386
E-MAIL: civilsolutionsinc@outlook.com

DESIGN: KCF
DRAWN: KCF
CHECK: KJR

SHEET	SCALE	JOB NO.	DWG. NO.
1 OF 1	1"=20'	23-051	23-051PD

OWNER OF RECORD:
LOIS A. MUELLER
219 TAHATTAWAN ROAD
LITTLETON, MA 01460

PLAN PREPARED FOR:
LOIS A. MUELLER
219 TAHATTAWAN ROAD
LITTLETON, MA 01460

#	DATE	REVISION	BY