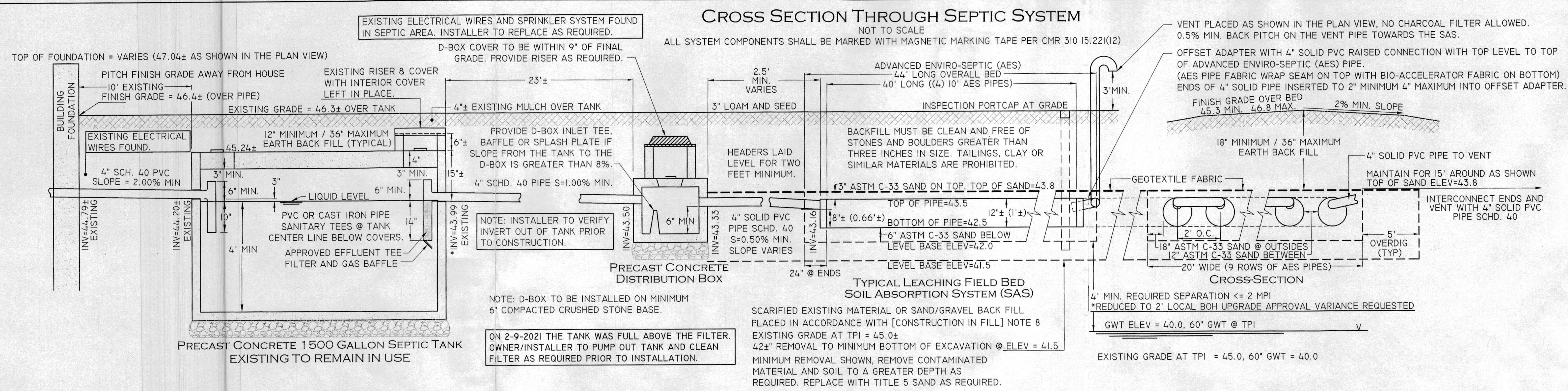
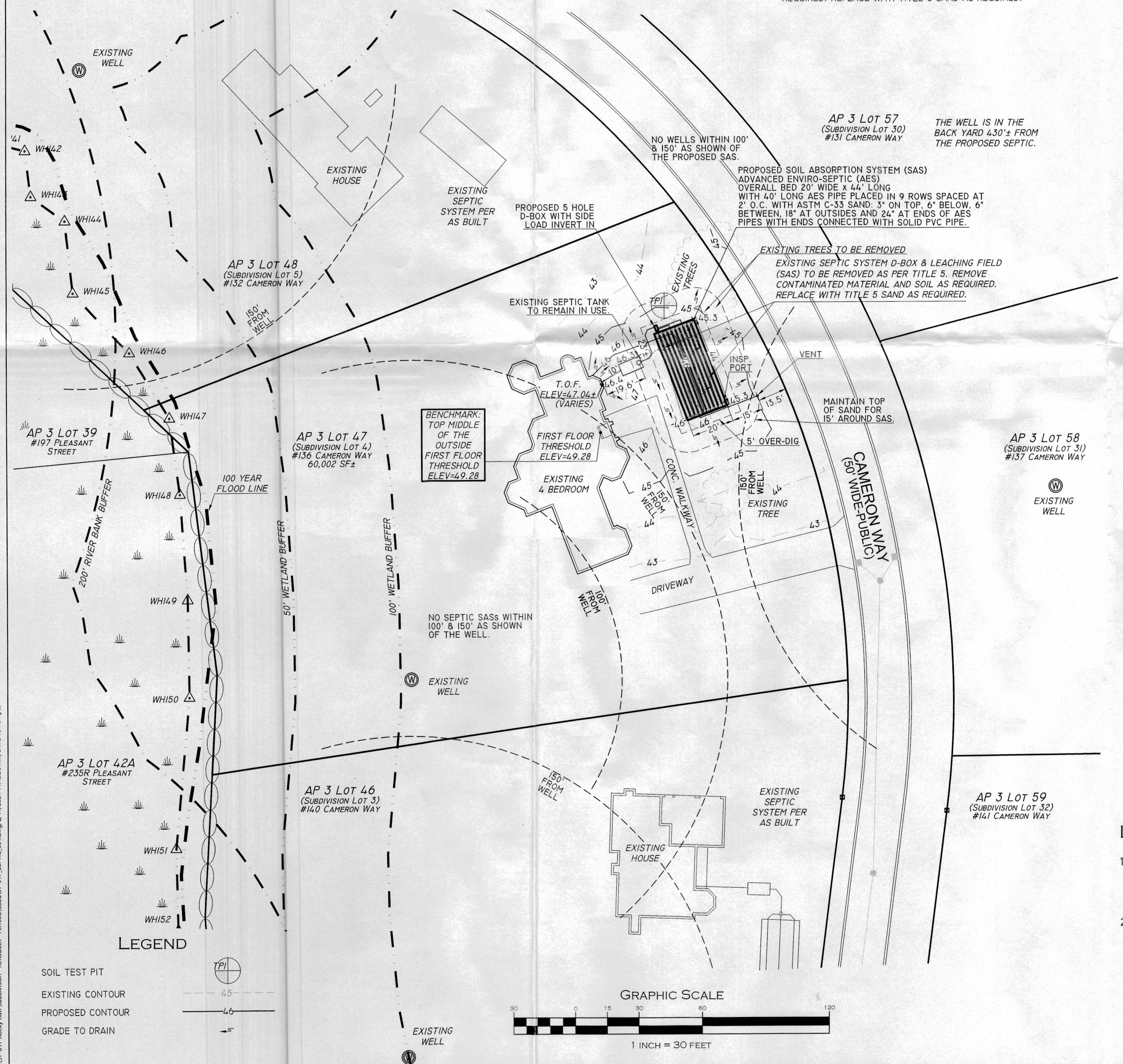
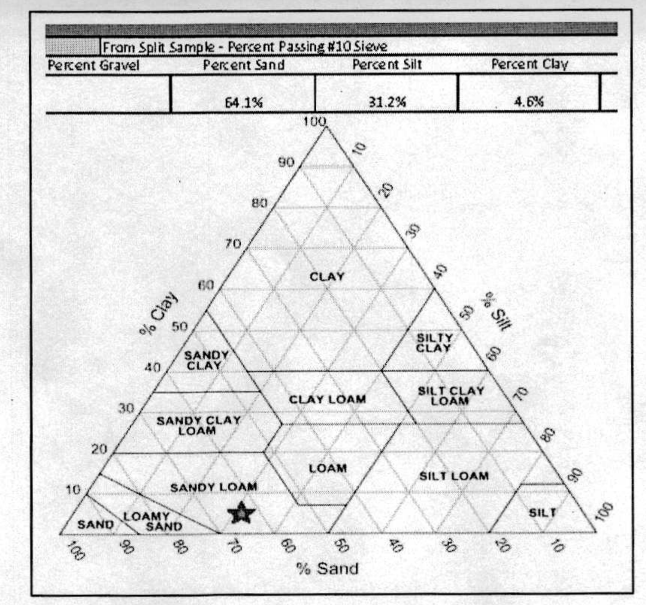
Cross Section Through Septic System





DEEP OBSERVATION HOLE LOG TP1					12-30-2020
BY: MICHAEL S. FARIA			WITNESSED BY: KARL DROWN		
Depth (in.)	Horizon	Soil Texture	Color	Mottling	Comments
0 - 36	FILL	-	-	-	-
36 - 120	C	SL	10YR6/2	60"	SATURATED SOILS
60" ESTIMATED GROUND WATER, 84" WEEPING, 90" STANDING					
PERC TEST NOT PERFORMED, SIEVE SAMPLE TAKEN @ 60"±					

From Split Sample - Percent Passing #10 Sieve			
Percent Gravel	Percent Sand	Percent Silt	Percent Clay
	64.1%	31.2%	4.6%



Repair Soil Evaluation & Sieve Analysis

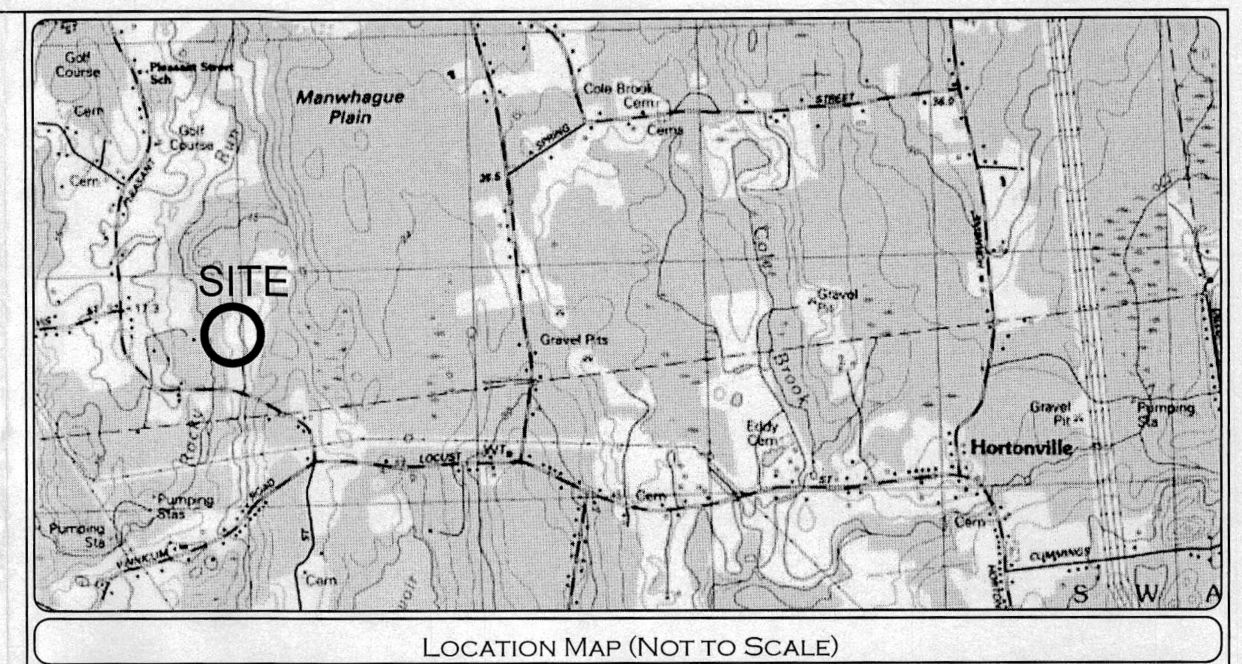
Local BOH Upgrade Approval Variances Requested

1. 310 CMR 15.212.1.A Depth to Ground Water

"THE MINIMUM VERTICAL SEPARATION DISTANCE OF THE BOTTOM OF THE STONE UNDERLYING THE SOIL ADSORPTION SYSTEM ABOVE THE HIGH GROUND-WATER ELEVATION SHALL BE (A) FOUR FEET (REDUCED TO 2 FEET) IN SOILS WITH A RECORDED PERCOLATION RATE OF MORE THAN TWO MINUTES PER INCH"

2. 310 CMR 15.104.4 Percolation Testing

"AT LEAST ONE PERCOLATION TEST SHALL BE PERFORMED AT EVERY DISPOSAL AREA, ONE IN THE PRIMARY AREA IN WHICH THE SOIL ABSORPTION SYSTEM IS TO BE LOCATED..."
(SIEVE ANALYSIS USED DUE TO SATURATED SOIL CONDITIONS AS PER DEP DOCUMENT POLICY# BRP/DWM/PeP-P00-4 "ALTERNATIVE TO PERCOLATION TESTING POLICY FOR SYSTEM UPGRADES")



Location Map (Not to Scale)

Notes & Specifications

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF 310 CMR 15 (TITLE V) OF THE COMMONWEALTH OF MASSACHUSETTS AND THOSE OF THE TOWN BOARD OF HEALTH.
2. THE REQUIRED INSPECTION SCHEDULE DURING THE PROCESS OF CONSTRUCTION SHALL BE ARRANGED BY THE CONTRACTOR WITH THE BOARD OF HEALTH & DESIGN ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. THE DISTRIBUTION BOX SHALL BE STANDARD DUTY (H-10) OR HEAVY DUTY (H-20) IF LOCATED UNDER A DRIVEWAY.
4. ALL PIPING SHALL BE 4" DIA. SCHD. 40 NSF PVC, WITH ALL JOINTS SEALED WATERTIGHT.
5. ALL STONE SHALL BE DOUBLE WASHED AND FREE OF IRONS, CLAY OR FINES AND SHALL BE SATISFACTORY TO THE TOWN BOARD OF HEALTH.
6. THIS SYSTEM IS NOT DESIGNED TO ACCOMMODATE A GARBAGE DISPOSAL OR OTHER HIGH WATER USE UNITS.
7. THE PROPOSED SEPTIC SYSTEM IS NOT LOCATED WITHIN THE CONE OF INFLUENCE OF ANY MUNICIPAL WELL NOR ARE THERE ANY PRIVATE WELLS LOCATED WITHIN 100 FEET (RADIAL) AS SHOWN OF THE PROPOSED SYSTEM. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.
8. EXCAVATE ALL TOP, SUB AND ANY OTHER SOILS ENCOUNTERED DOWN TO THE BOTTOM OF EXCAVATION (SEE CROSS SECTION) FOR A HORIZONTAL DISTANCE OF 5' ON ALL SIDES OF THE PROPOSED SYSTEM. BACK FILL TO TOP OF SAND ELEVATION WITH SELECT ON SITE OR IMPORTED SOIL MATERIAL CONSISTING OF CLEAN GRANULAR SAND, FREE OF ORGANIC MATTER OR OTHER DELETERIOUS SUBSTANCES AND MEETING THE SIEVE SIZE REQUIREMENTS OF 310 CMR 15.255(3) & (5) [CONSTRUCTION IN FILL]. (AS REQUIRED)
9. ELEVATIONS SHOWN ON THIS PLAN ARE BASED ON NAVD88.
10. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO THE CONTINUATION OF CONSTRUCTION.
11. WATER TABLE FLUCTUATES ANNUALLY, NO WARRANTEE OF A DRY BASEMENT IS EXPRESSED OR IMPLIED.
12. THE PROPOSED WORK DOES NOT LIE IN A CRITICAL FLOOD HAZARD ZONE.
13. THE PROPOSED WORK IS IN AN OVERLAY DISTRICT FOR GROUNDWATER AQUIFER PROTECTION.
14. THE CONTRACTOR IS TO VERIFY THE BENCHMARK WITH THE SURVEYOR PRIOR TO CONSTRUCTION.
15. MAINTAIN 10' MINIMUM SEPARATION FROM WATER SERVICE TO PROPOSED SEPTIC COMPONENTS.
16. CONTRACTOR TO CONTACT DIG-SAFE AND LOCATE BURIED UTILITIES PRIOR TO CONSTRUCTION.
17. CONTRACTOR TO FOLLOW MANUFACTURER'S INSTALLATION SPECIFICATIONS AND AVOID DAMAGING, DEFORMING, SHIFTING AND SETTLING OF SYSTEM COMPONENTS. NO ADDITIONAL LOADS (PEOPLE, VEHICLES, CONSTRUCTION EQUIPMENT, STOCK PILES, ETC...) ALLOWED OVER SYSTEM COMPONENTS OTHER THAN LIGHT WEIGHT LAWN MOWER, LANDSCAPER AND MAINTENANCE INDIVIDUAL.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE GRADING. FINAL GRADING SHALL BE DIRECTED AWAY FROM HOUSES, SEPTIC SYSTEMS AND ABUTTING PROPERTIES TO ELIMINATE PONDING, PUDDLING OR PROPERTY DAMAGE TO THE SITE AND ABUTTERS.
19. DUE TO DATUM CHANGE AND ADJUSTED ELEVATIONS, DO NOT REFERENCE PREVIOUS SEPTIC SYSTEM DESIGN PLAN, FOUNDATION AS-BUILT AND SEPTIC AS BUILT FOR THIS SITE TO AVOID CONFUSION. THE PREVIOUS PLANS WERE ON A DIFFERENT DATUM AND THE SEPTIC TANK SETTLED 0.11'±. INSTALLER TO USE THIS PLAN ONLY FOR INSTALLATION OF NEW D-BOX AND SAS.
20. CONTRACTOR TO FOLLOW MANUFACTURER'S (PRESBY ENVIRONMENTAL, INC.) "ADVANCED ENVIRO-SEPTIC DESIGN AND INSTALLATION MANUAL" AND SPECIFICATIONS AS SPECIFIED IN THE DEP MODIFIED REMEDIAL APPROVAL LETTER AVAILABLE ON LINE AT THE DEP INTERNET SITE: HTTPS://WWW.MASS.GOV/GUIDES/APPROVED-TITLE-5-INNOVATIVEALTERNATIVE-TECHNOLOGIES. SYSTEM SAND IS THE MATERIAL IN DIRECT CONTACT WITH ALL AES PIPES AND MUST BE CLEAN, GRANULAR SAND FREE OF ORGANIC MATTER AND MUST ADHERE TO ASTM C-33 (CONCRETE SAND) PROVIDING THAT NO MORE THAN 3% CAN PASS A #200 SIEVE (VERIFIED BY WASHING SAMPLE PER REQUIREMENTS OF ASTM C-117 AS NOTED IN THE ASTM C-33 SPECIFICATION).

Design Calculations

Average Daily Sewage Flow (gallons per day)
4 BEDROOM (PER TAX CARD TOWN RECORD) @ 110 GPD PER BEDROOM = 440 GPD

Septic Tank Sizing (gallons)
200% AVERAGE DAILY FLOW = 2 (440) = 880 GALLONS
REQUIRES 1,500 GALLON TANK (MINIMUM), USE EXISTING 1,500 GALLON TANK *VERIFY INVERT OUT OF TANK.

Design Soil Type and Percolation Rate
DESIGN SOIL CLASS II (UNCOMPACTED SANDY LOAM)
**LOCAL BOH UPGRADE APPROVAL VARIANCE REQUESTED FOR SEIVE ANALYSIS
PER SIEVE ANALYSIS: 64.1% SAND, 31.2% SILT, 4.6% CLAY
DESIGN FOR 0.33 GPD/SF PER TITLE V ALTERNATIVE TO PERCOLATION TESTING POLICY FOR SYSTEM UPGRADES POLICY# BRP/DWM/PeP-P00-4

Required Minimum Leaching Area
SAS DESIGN DAILY FLOW = 440 GPD x 1.25 = 550 GPD
REQUIRED AREA = 550 GPD / 0.33 GPD / SF = 1,667 SF MINIMUM
PRESBY ENVIRONMENTAL, INC. "ADVANCED ENVIRO-SEPTIC" (AES):
MAXIMUM 500 GPD FOR SERIES FEED, USE 3 PARALLEL FEEDS
REQUIRED MINIMUM AES PIPE LENGTH = 5 BEDROOMS x 70 LF/BEDROOM = 350 FT
PROPOSED AES PIPE LENGTH = 9 ROWS x 40'/ROW = 360 FT > 350 FT O.K.
REQUIRED MINUMUM BED AREA = 400 SF PER DEP APPROVED AES DESIGN AND INSTALLATION MANUAL
OVERALL INFILTRATOR BED AREA = 20' x 44' = 880 SF > 400 SF O.K.
CHECK DEP APPROVAL ALLOWED 50% REDUCTION: 1 - (880 SF / 1,667 SF) = 47% < 50% O.K.

RECEIVED
FEB 17 2021
21-0021
Board of Health

Septic System Repair Design Plan

"Cameron Way"
#136 Cameron Way, Rehoboth, MA 02769
AP 3 Lot 47 (Subdivision Lot 4)

Applicant: Joseph Paiva
#136 Cameron Way, Rehoboth, MA 02769

COMMONWEALTH OF MASSACHUSETTS
ROBERT L. DAVIS
CIVIL
NO. 37147
REGISTERED PROFESSIONAL ENGINEER

Professional Seal

Job #	Scale:	Designed By:	Date:
97-017-4	1" = 30'	MSF	February 11, 2021

Revised:

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