OBSERVATION HOLE DATA

INDICATES SIEVE TEST — INDICATES OBSERVED GROUNDWATER

TEST PIT # 1 GROUND EL. 103.61 TEST BY: PATRICK H. CARRARA, III
ESHGW: 97.61 WITNESSED BY: TOM RYDER
DATE: 01/07/2020 CERTIFIED BY: PATRICK H. CARRARA, III
*APPROVED SOIL EVALUATOR NUMBER SE338

ELEVATION	SURFACE DEPTH (IN.)	SOIL HORZ.	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING	OTHER
103.61	0–55"	Fill				FILL, ROOTS
99.03	55–61"	Ab	SANDY LOAM	10YR2/2		BURIED A HORIZON, ROOTS
98.53	61–81"	Bw	SANDY LOAM	10YR5/6	REMOVE 72" 30% 7.5YR 5/8 5Y 6/2	MEDIUM
96.86	81–132"	C1	SANDY LOAM	5Y5/3		UNSORTED FINE COARSE, SATURATED, UNCOMPACTED.
92.61	SOIL SAMPLE FOR SIEVE ANALYSIS TAKEN AT 90"±					

WEEPING OBSERVED @ 81" EL.=96.86 PERC RATE N/A MIN/INCH
STANDING OBSERVED @ N/A PERC DEPTH N/A INCHES

STATE CODE LOCAL UPGRADE REQUESTS:

1. 310 CMR 15.405(1)(g) REDUCE THE 100 FT. SETBACK FROM THE S.A.S. TO A PRIVATE ON-SITE POTABLE WELL TO 76 FT. UPGRADE REQUESTED BASED ON THE LIMITED AREA AVAILABLE TO SIT S.A.S. DUE TO THE PROXIMITY OF THE WETLANDS, PROPERTY LINE, AND EXISTING DWELLING.

2. 310 CMR 15.405(1)(I) TO ALLOW SIEVE ANALYSIS TO ESTABLISH SOIL CLASSIFICATION AND A PERCOLATION RATE APPROPRIATE FOR THE SOIL CLASS.

3. 310 CMR 15.405(1)(b) REDUCE THE 20 FT. SETBACK FROM THE S.A.S. TO THE EXISTING DWELLING TO 10 FT.

4. 310 CMR 15.405(1)(e) REDUCE THE 50 FT. SETBACK OF THE S.A.S. TO THE B.V.W. TO 31 FT.

CONSERVATION NOTE:
1. THE PROPOSED WORK IS WITHIN THE JURISDICTION OF THE CONSERVATION COMMISSION. WORK SHALL NOT COMMENCE UNTIL A NEGATIVE DETERMINATION OR ORDER OF CONDITIONS IS ISSUED BY THE CONSERVATION COMMISSION. ANY REQUIREMENTS AND/OR WORK REQUIRED BY THE COMMISSION'S DECISION SHALL BE INCLUDED IN THE SCOPE OF WORK.

ELEVATION SCHEDULE	ELEVATION (Ft.)
TOP OF FOUNDATION	106.46
NEW SEWER INVERT AT FOUNDATION	103.35
SEWER INVERT INTO SEPTIC TANK	103.14
SEWER INVERT OUT OF SEPTIC TANK	102.89
SEWER INVERT INTO D-BOX	102.57
SEWER INVERT OUT OF D-BOX	102.40
SEWER INVERT INTO LEACHING SYSTEM	102.28
TOP OF CHAMBER (BREAKOUT)	102.78
BOTTOM OF LEACHING FIELD	101.70
WATER TABLE (TP)	97.61

DESIGN DATA

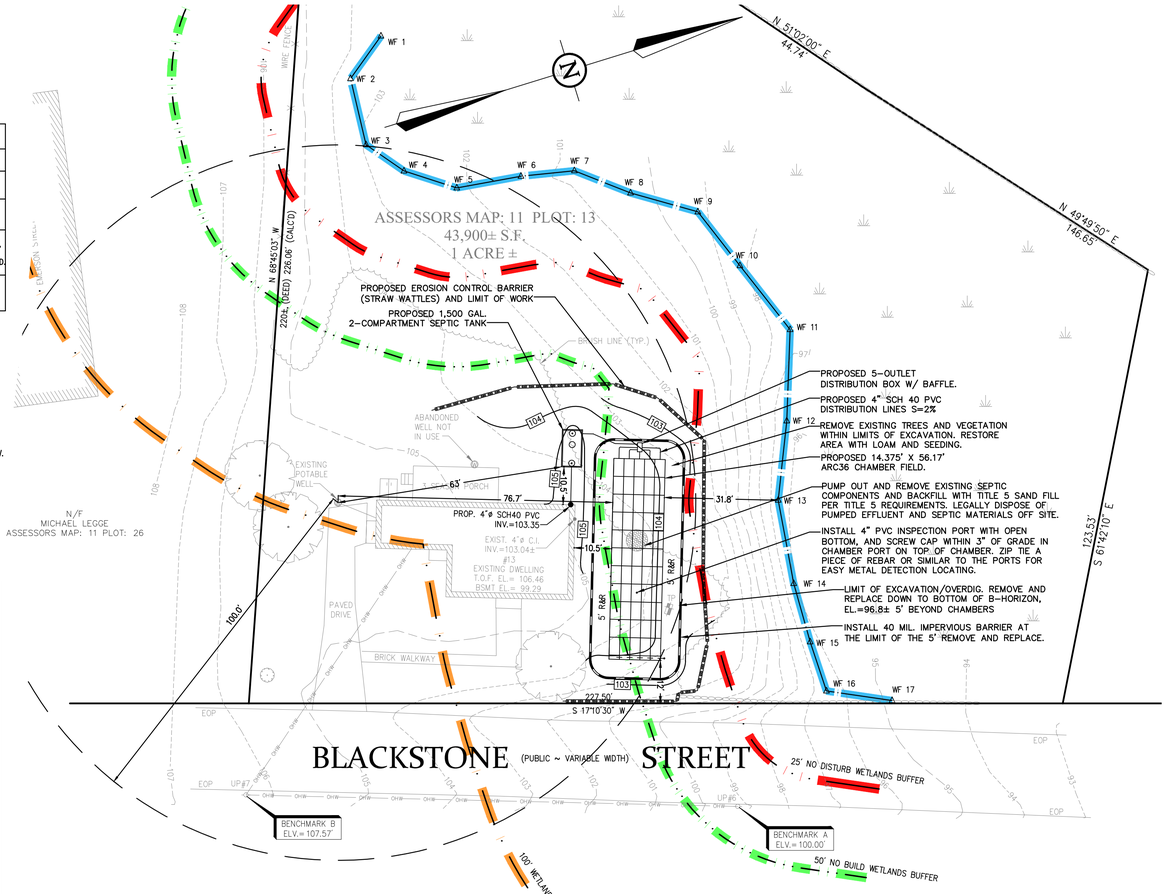
DESIGN FLOW: 4 BEDROOMS x 110 GPD/BEDROOM = 440 GPD

SEPTIC TANK REQUIRED: 440 GPD x 200% = 880 GALLONS.
MIN. 1,500 GALLON SEPTIC TANK REQUIRED
MULTIPLE COMPARTMENT TANKS
FIRST COMPARTMENT / TANK:
48 HRS. HYDRAULIC DETENTION = 880 GAL
CAPACITY PROVIDED = 1,000 GAL
SECOND COMPARTMENT / TANK:
24 HRS. HYDRAULIC DETENTION = 440 GAL
CAPACITY PROVIDED = 500 GAL

LEACHING AREA REQUIRED: SIEVE ANALYSIS: 77.7% SAND, 8.6% SILT & 13.7% CLAY; SANDY LOAM – CLASS II SOIL
USE EFFLUENT LOADING RATE OF 0.33* GPD/SF
440 GPD/0.33* GPD/SF=1,334 S.F.
* PER DEP POLICY "TITLE 5 ALTERNATIVE TO PERCOLATION TESTING GUIDANCE FOR SYSTEM UPGRADES"
EFFECTIVE DATE: MAY 3, 2006.

LEACHING AREA PROVIDED: 5 ROWS OF 11 ARC 36 CHAMBERS & 1 SIDE PORT COUPLER.
55 TOTAL CHAMBERS & 5 SIDE PORT COUPLERS.
5 ROWS @ 56.17' x 4.8* SF/LF= 1,348.08 S.F.
1348.08 S.F. x 0.33 GPD/S.F. = 444.87 GPD
SINCE 444.87 GPD > 440 GPD O.K.
* EFFECTIVE LEACHING AREA PER TABLE 3 OF CERTIFICATION FOR GENERAL USE ISSUED TO INFILTRATOR WATER TECHNOLOGIES, LLC. ON JUNE 12, 2015 (TRANSMITTAL # X264258)

NOTE : SYSTEM NOT DESIGNED FOR USE WITH A GARBAGE GRINDER.



NOTES

1. THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH TITLE 5 OF THE STATE SANITARY CODE, 310 CMR 15.000.
2. ALL SYSTEM COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH TITLE 5 OF THE STATE SANITARY CODE, 310 CMR 15.000, AS AMENDED AND IN EFFECT AS OF SEPTEMBER 9, 2016, AND ANY LOCAL RULES APPLICABLE.
3. ANY CHANGE TO THIS PLAN MUST BE APPROVED IN WRITING BY THE DESIGN ENGINEER AND BOARD OF HEALTH.
4. BENCHMARK SHOWN ON PLAN IS TO BE VERIFIED BY THE CONTRACTOR. ANY DISCREPANCIES MUST BE RESOLVED WITH THE ENGINEER PRIOR TO CONSTRUCTION.
5. THIS SYSTEM IS NOT DESIGNED TO ACCOMMODATE A GARBAGE GRINDER.
6. SOIL CONDITIONS CAN VARY. GROUNDWATER ELEVATION AND THE LIMITS OF ACCEPTABLE SOIL MUST BE VERIFIED PRIOR TO INSTALLATION OF THE SOIL ABSORPTION SYSTEM (SAS).
7. LOCATIONS OF UTILITIES ARE APPROXIMATE. CONTRACTORS SHALL NOTIFY DIG SAFE (DIAL 811 OR 1-888-344-7233) AT LEAST 72-HOURS PRIOR TO BREAKING GROUND TO HAVE ALL EXISTING UTILITIES LOCATED AND CLEARLY MARKED.
8. ALL SYSTEM COMPONENTS TO BE H-10 RATED (MINIMUM).
9. HEAVY EQUIPMENT SHALL NOT BE ALLOWED TO OPERATE OVER THE LIMITS OF THE SEWAGE DISPOSAL SYSTEM DURING THE COURSE OF CONSTRUCTION OF THE SYSTEM.
10. BACKFILL OVER SAS MUST BE CLEAN AND FREE OF STONES >6 IN AND TAILINGS, CLAY OR SIMILAR MATERIALS. PLACE IN LIFTS AND SUFFICIENTLY COMPACT TO PREVENT DEPRESSIONS DUE TO SETTLING. MINIMUM 2% SLOPE REQUIRED OVER LEACHING AREA IN FINAL GRADING.
11. DESIGN ENGINEER TO BE NOTIFIED AT LEAST 48 HOURS PRIOR TO REQUIRED INSPECTIONS.
12. AN AS-BUILT SURVEY OF THE SYSTEM IS REQUIRED. ENGINEER AND BOARD OF HEALTH SHALL BE NOTIFIED FOR INSPECTION OF FIELD LOCATION PRIOR TO BACKFILLING/COVERING THE SYSTEM COMPONENTS. INSTALLER SHALL PROVIDE ENGINEER WITH RESULTS OF FILL SOIL SIEVE ANALYSIS BEFORE THE AS-BUILT CERTIFICATION WILL BE RELEASED.
13. THIS PLAN IS THE RESULT OF AN ON THE GROUND FIELD SURVEY BY THIS FIRM ON & BETWEEN 1/1/2020 & 2/5/2020
14. SUBJECT SITE IS NOT LOCATED WITHIN AN AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC).
15. THERE ARE NO KNOWN OR PROPOSED WELLS WITHIN 100 FEET OF PROPOSED SAS EXCEPT AS INDCATED ON THIS PLAN.
16. WETLAND DELINEATION BY: ENVIRONMENTAL CONSULTING & RESTORATION, LLC. DELINEATION PERFORMED ON JANUARY 22, 2020.
17. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY APPLICABLE PERMITS.
18. CONTRACTOR SHALL MECHANICALLY COMPACT BASE UNDER SEPTIC TANK AND DISTRIBUTION BOX (IF INSTALLED IN FILL SOIL).
19. CONTRACTOR SHALL DECOMMISSION THE EXISTING SEPTIC SYSTEM COMPONENTS IN ACCORDANCE WITH 310 CMR 15.354, IF APPLICABLE.
20. CONTRACTOR SHALL RESTORE (LOAM & SEED) ALL AREAS DISTURBED DURING THE CONSTRUCTION.
21. LOCUS REFERENCE: DEED BOOK 54857, PAGE 324.
22. OWNER SHALL HAVE TANK INSPECTED AND/OR CLEANED ANNUALLY. ZABEL FILTERS SHALL BE CLEANED REGULARLY AND AT EACH TIME OF TANK PUMPING.
23. PROJECT BENCHMARK:
BENCHMARK A: NAIL IN UTILITY POLE-6 EL=100.00 ASSUMED DATUM
BENCHMARK B: NAIN IN UTILITY POLE-7 EL.=107.57 ASSUMED DATUM
24. THE PROPERTY IS SERVED BY A PRIVATE ONSITE WELL. THE LOCATION OF THE WELL IS SHOWN.
25. THE SITE IS NOT LOCATED IN A ZONE II TO A PUBLIC WATER SUPPLY.

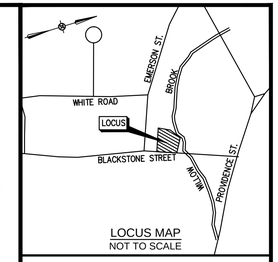
REQUIRED INSPECTIONS (CONTACT BOH)

1. BOTTOM OF EXCAVATION;
2. TANK, PIPING, DISTRIBUTION BOX AND LINES PRIOR TO BACKFILLING;
3. FINAL COVER AND GRADING.

REQUIRED TESTING

1. WITHIN AREAS SHOWN ON THE PLAN, ALL UNSUITABLE MATERIAL (E.G., TOPSOIL AND SUBSOIL) SHALL BE REMOVED AND REPLACED WITH FILL SOIL CONSIST OF SELECT ON-SITE OR IMPORTED MATERIAL. THE FILL SOIL SHALL BE COMPRISED OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES. MIXTURES AND LAYERS OF DIFFERENT CLASSES OF SOIL SHALL NOT BE USED. THE FILL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN TWO INCHES. A SIEVE ANALYSIS, USING A #4 SIEVE, SHALL BE PERFORMED ON A REPRESENTATIVE SAMPLE OF THE FILL. UP TO 45% BY WEIGHT OF THE FILL SAMPLE MAY BE RETAINED ON THE #4 SIEVE. SIEVE ANALYSES ALSO SHALL BE PERFORMED ON THE FRACTION OF THE FILL SAMPLE PASSING THE #4 SIEVE, SUCH ANALYSES MUST DEMONSTRATE THAT THE MATERIAL MEETS EACH OF THE FOLLOWING SPECIFICATIONS:

SIEVE SIZE	EFFECTIVE PARTICLE SIZE	% THAT MUST PASS SIEVE
# 4	4.75 MM	100%
# 50	0.30 MM	10% – 100%
#100	0.15 MM	0% – 20%
#200	0.075 MM	0% – 5%



LOCUS MAP
NOT TO SCALE

PERMITTING SET

REVISIONS

No.	DATE	DESCRIPTION

DRAWN BY: MPJ/ALL
CHECKED BY: GWD/EPJ
DESIGNED BY: GWD

SANITARY DISPOSAL SYSTEM DESIGN PLAN

13 BLACKSTONE STREET
IN
MENDON
(WORCESTER COUNTY)
MASSACHUSETTS

FEBRUARY 20, 2020

PREPARED FOR:

SIMAR HOUSE, INC
102 MAPLE SPRINGS RD
WAREHAM, MA
02571

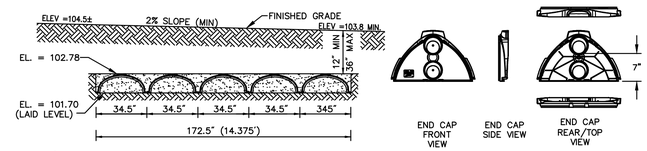
0 20' 40'
SCALE: 1" = 20'

PMP
PMP Associates
200 North Bedford Street
East Bridgewater, Massachusetts 02333
Phone: 508-378-3421
www.pmpassoc.com

COMMONWEALTH OF MASSACHUSETTS
GREGORY W. DRISCOLL JR.
CIVIL
NO. 49073
REGISTERED PROFESSIONAL ENGINEER
2/20/2020

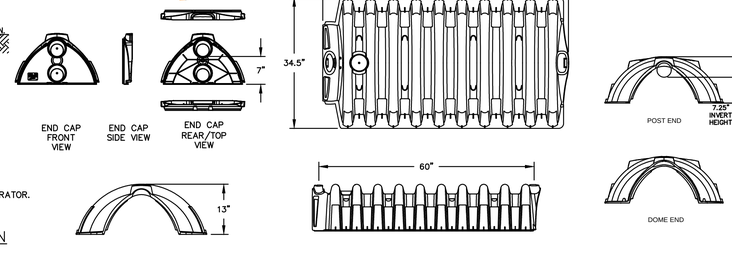
SHEET 1 OF 1
JOB NUMBER: 02-2019-047

INFILTRATOR SYSTEM CROSS SECTION



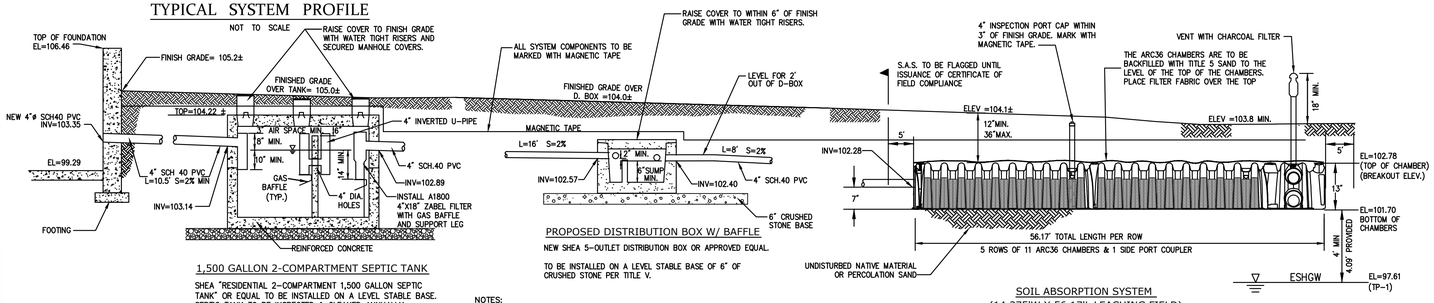
NOTES : 1.) NO STONE BELOW OR AROUND INFILTRATORS IS REQUIRED.
2.) BACKFILL INFILTRATORS WITH CLEAN COARSE SAND IN ACCORDANCE WITH 310 CMR 15.255 (3).
3.) DO NOT BACKFILL WITH ANY STONES 3" OR LARGER AGAINST INFILTRATOR.

ARC 36 CHAMBER, END CAP AND SIDE PORT COUPLER



TYPICAL SYSTEM PROFILE

NOT TO SCALE



1,500 GALLON 2-COMPARTMENT SEPTIC TANK

SHEA "RESIDENTIAL 2-COMPARTMENT 1,500 GALLON SEPTIC TANK" OR EQUAL TO BE INSTALLED ON A LEVEL STABLE BASE. SEPTIC TANK TO BE INSPECTED & CLEANED ANNUALLY.

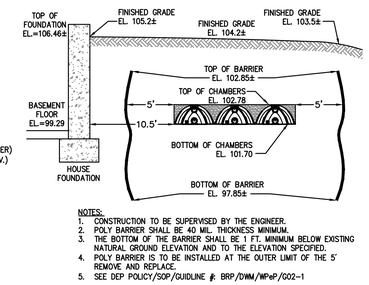
PROPOSED DISTRIBUTION BOX W/ BAFFLE

NEW SHEA 5-OUTLET DISTRIBUTION BOX OR APPROVED EQUAL.

TO BE INSTALLED ON A LEVEL STABLE BASE OF 6" OF CRUSHED STONE PER TITLE V.

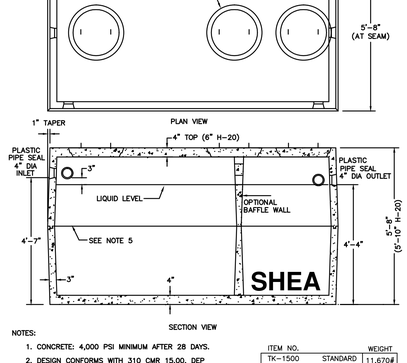
NOTES:
1. REMOVE AND REPLACE DOWN TO BOTTOM OF B-HORIZON (EL=96.8±). USE CLEAN TITLE V SAND FOR REPLACEMENT MATERIAL, IF NECESSARY.

SOIL ABSORPTION SYSTEM
(14.375'W X 56.17'L LEACHING FIELD)



NOTES:
1. CONSTRUCTION TO BE SUPERVISED BY THE ENGINEER.
2. POLY BARRIER SHALL BE 40 MIL. THICKNESS MINIMUM.
3. THE BOTTOM OF THE BARRIER SHALL BE 1 FT. MINIMUM BELOW EXISTING NATURAL GROUND ELEVATION AND TO THE ELEVATION SPECIFIED.
4. POLY BARRIER IS TO BE INSTALLED AT THE OUTER LIMIT OF THE 5' REMOVE AND REPLACE.
5. SEE DEP POLICY/SOP/GUIDLINE #: BRP/DWM/WPeP/G02-1

POLY BARRIER DETAIL
NOT TO SCALE

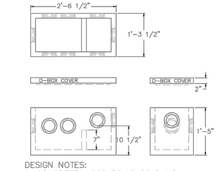


NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN CONFORMS WITH 310 CMR 15.00, DEP TITLE 5 REGS, FOR SEPTIC TANKS.
3. ALL REINFORCEMENT PER ASTM C1227-93.
4. BAFFLE WALL OPTIONAL FOR TWO COMPARTMENT TANKS.
5. TEES AND GAS BAFFLE SOLD SEPARATELY.
6. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
7. ALSO AVAILABLE IN H-20 LOADING.

ITEM NO.		WEIGHT
TK-1500	STANDARD	11,670#
TK-1500H	H-20	13,135#
TK-1502C	STANDARD	12,930#
TK-1502CH	H-20	14,395#

1,500 GALLON 2-COMPARTMENT SEPTIC TANK

5-OUTLET DISTRIBUTION BOX WITH BAFFLE



DESIGN NOTES:
1. CONCRETE 4,000 PSI @ 28 DAYS
2. KNOCK-OUT OPENINGS FOR 4" PVC
3. 15" RISER SECTION AVAILABLE
4. H-10 & H-20 LOADING AVAILABLE