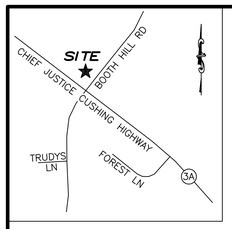


VICINITY MAP
NO SCALE

DIG SAFE
MA - RI - ME - NH - VT
CALL TOLL FREE
1-888-344-7233
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

SOIL TEST DATA

SOIL TESTING AND EVALUATION BY: JAMES GARFIELD, SE#14162
SOIL TESTING WITNESSED BY: RALPH H. COLE, P.L.S.
DATE: AUGUST 10, 2020

TP–1	APPROX. GRADE EL. 45.5	
	A HORIZON SANDY LOAM 10YR 3/2	19"
EL. 43.9	B HORIZON SANDY LOAM 10YR 5/6	32"
EL. 42.8	C HORIZON SANDY LOAM 2.5Y 5/4	120"
EL. 35.5		

WEEPING OBSERVED: 77" (EL. 39.1)
MOTTLING OBSERVED: 25" (EL. 43.4)
PERC. RATE: <2 MPI @ 42–60"
ESHGW: 25" (EL. 43.4)

TP–2	APPROX. GRADE EL. 46.5	
	A HORIZON SANDY LOAM 10YR 3/2	12"
EL. 45.5	B HORIZON SANDY LOAM 10YR 5/6	26"
EL. 44.3	C HORIZON SANDY LOAM 2.5Y 5/4	120"
EL. 36.5		

WEEPING OBSERVED: NONE
MOTTLING OBSERVED: 34" (EL. 43.7)
PERC. RATE: NONE
ESHGW: 34" (EL. 43.7)

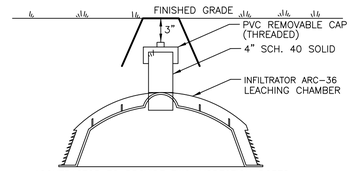
TP–3	APPROX. GRADE EL. 46.4	
	A HORIZON SANDY LOAM 10YR 3/2	18"
EL. 44.9	B HORIZON SANDY LOAM 10YR 5/6	27"
EL. 44.2	C HORIZON SANDY LOAM 2.5Y 5/4	120"
EL. 36.4		

WEEPING OBSERVED: NONE
MOTTLING OBSERVED: 32" (EL. 43.7)
PERC. RATE: NONE
ESHGW: 32" (EL. 43.7)

LOCAL UPGRADE APPROVAL REQUESTS

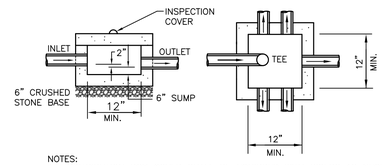
310 CMR 15.405(e): TO ALLOW A REDUCTION FROM 50' (REQ'D) TO 33.7' (PROP.) BETWEEN THE SAS AND BORDERING VEGETATED WETLANDS.

INSPECTION PORT

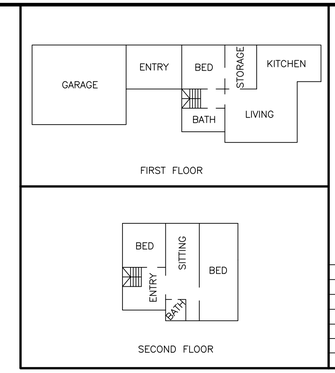


*CONTRACTOR TO PROVIDE TWO INSPECTION PORTS

5 OUTLET DISTRIBUTION BOX

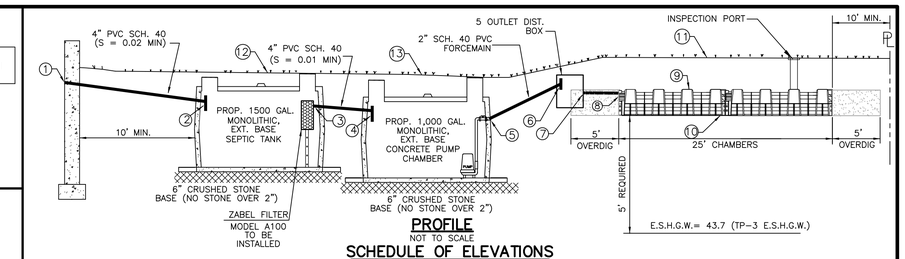


NOTES:
1. DISTRIBUTION BOX COVER SHALL BE EQUIPPED WITH RISERS AS NECESSARY TO BRING THE COVER TO WITHIN 6" OF FINISHED GRADE.
2. ALL PIPE CONNECTION AND CONSTRUCTION JOINTS SHALL BE SEALED WITH HYDRAULIC CEMENT.
3. DISTRIBUTION BOX TO BE INSTALLED ON A LEVEL 6" CRUSHED STONE BASE.
4. THE FIRST 2 FT. OF PIPE EXITING THE DISTRIBUTION BOX SHALL BE INSTALLED LEVEL.
5. THE INLET SHALL BE EQUIPPED W/2" PVC TEE



FLOOR PLAN

NOT TO SCALE



PROFILE

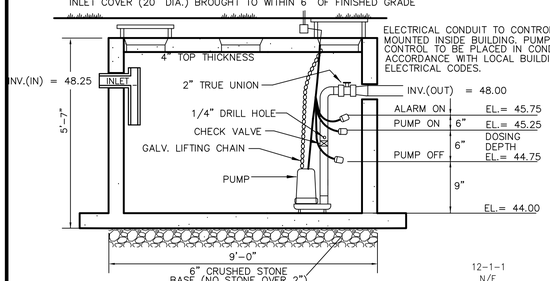
NOT TO SCALE

SCHEDULE OF ELEVATIONS

1. INV. OF PIPE AT FOUNDATION = 49.5± (CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION)
2. INV. OF PIPE AT SEPTIC TANK INLET = 48.55
3. INV. OF PIPE AT SEPTIC TANK OUTLET = 48.30
4. INV. OF PIPE AT PUMP CHAMBER INLET = 48.25
5. INV. OF PIPE AT PUMP CHAMBER OUTLET = 48.00
6. INV. OF 2" FORCEMAIN AT DIST. BOX INLET = 49.52
7. INV. OF 4" PIPE AT DIST. BOX OUTLET = 49.35
8. INV. OF 4" PIPE @ CHAMBER INLET = 49.29
9. TOP OF CHAMBER (BREAKOUT) = 49.78
10. BOTTOM OF CHAMBER = 48.70
11. FINISHED GRADE OVER LEACHING CHAMBERS = 50.8(MIN.) – 52.8(MAX.)
12. FINISHED GRADE OVER SEPTIC TANK = 50.3(MIN.) – 52.6(MAX.)
13. FINISHED GRADE OVER PUMP CHAMBER = 50.0(MIN.) – 52.3(MAX.)

1,000 GAL. PUMP CHAMBER (MONOLITHIC EXT. BASE) DETAIL

NOTE: OUTLET COVER (20" DIA.) BROUGHT TO FINISHED GRADE.
INLET COVER (20" DIA.) BROUGHT TO WITHIN 6" OF FINISHED GRADE



ELECTRICAL CONDUIT TO CONTROL PANEL (SIMPLEX OR EQUAL) MOUNTED INSIDE BUILDING. PUMP POWER CABLE AND FLOAT CONTROL TO BE PLACED IN CONDUIT IN ACCORDANCE WITH LOCAL BUILDING AND ELECTRICAL CODES.

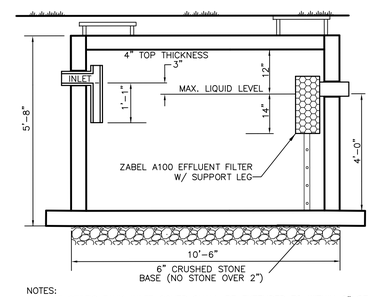
PUMP DESIGN NOTES:

1. THE PUMP CONTROLS SHALL BE DESIGNED TO ALLOW THE FIELD TO BE DOSED WITH 125 GAL. PER DOSE (APPROX. 2.8 TIMES IN A 24–HOUR PERIOD UNDER NORMAL OPERATING CONDITIONS).
2. USE GOULDS SUBMERSIBLE EFFLUENT PUMP WS03B, 1/3 hp, 2" DISCHARGE, 2" SOLIDS CAPACITY T.D.H. = 12.8 FT.± @ 15 GPM OR APPROVED EQUAL.
3. INSTALL HIGH WATER MERCURY FLOAT LEVEL CONTROL IN PUMP CHAMBER WITH VISIBLE FLASHING AND AUDIBLE ALARMS. CONTRACTOR TO COORDINATE LOCATIONS WITH HOMEOWNER. PUMP POWER SHALL BE LOCATED ON SEPARATE CIRCUIT FROM THE ALARM CIRCUIT. ALL ELECTRICAL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICIAN WITH A VALID ELECTRICAL PERMIT AND TO BE INSPECTED BY THE TOWN OF SCITUATE WIRING INSPECTOR.

24–HOUR EMERGENCY STORAGE (330 GAL. MIN)

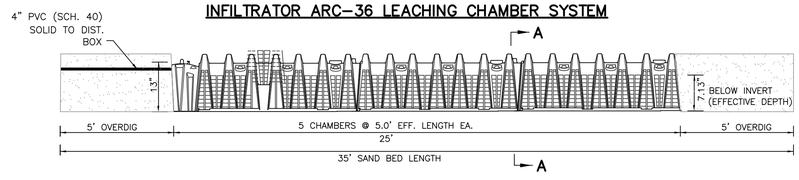
EL.= 48.25 INVERT IN
EL.= 45.75 ALARM ON
2.50" AVAILABLE STORAGE
x 250 GAL./VERT. FOOT = 562.5 GALLONS

1,500 GAL. SEPTIC TANK (MONOLITHIC EXT. BASE) DETAIL

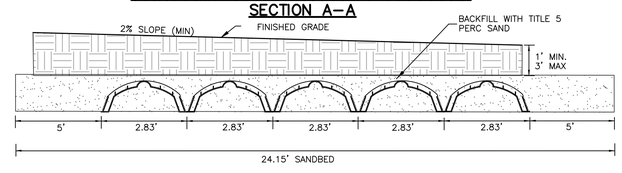


NOTES:
1. THE SEPTIC TANK INLET COVER SHALL BE EXTENDED TO WITHIN 6" OF FINISHED GRADE. THE SEPTIC TANK OUTLET COVER SHALL BE EXTENDED TO FINISHED GRADE & BE EQUIPPED WITH A FRAME & COVER (20" DIA.).
2. ALL PIPE CONNECTION AND CONSTRUCTION JOINTS SHALL BE SEALED WITH HYDRAULIC CEMENT.
3. SEPTIC TANK SHALL BE INSTALLED ON A LEVEL 6" CRUSHED STONE BASE.
4. OUTLET SHALL BE EQUIPPED WITH A ZABEL A100 EFFLUENT FILTER (OR APPROVED EQUAL).

INFILTRATOR ARC–36 LEACHING CHAMBER SYSTEM



INFILTRATOR ARC 36 LEACHING CHAMBERS SECTION A–A



NOTES :
1.) NO STONE BELOW OR AROUND CHAMBERS IS REQUIRED.
2.) BACKFILL CHAMBERS WITH CLEAN COARSE SAND IN ACCORDANCE WITH 310 CMR 15.255 (3) TO THE TOP OF THE CHAMBER.
3.) DO NOT BACKFILL WITH ANY STONES 3" OR LARGER AGAINST CHAMBERS.
4.) CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

GENERAL NOTES

1. SEPTIC SYSTEM INSTALLATION CONTRACTORS SHALL BE LICENSED BY THE BOARD OF HEALTH AND MUST COMPLY WITH ALL REQUIREMENTS OF THE BOARD OF HEALTH DISPOSAL WORKS CONSTRUCTION PERMIT AND ANY CONDITIONS, IF ISSUED BY THE CONSERVATION COMMISSION.
2. ALL CONSTRUCTION MUST COMPLY WITH TITLE 5 OF THE STATE ENVIRONMENTAL CODE 310 CMR 15 & THE ANY LOCAL BOARD OF HEALTH SUPPLEMENTAL REGULATIONS.
3. THERE SHALL BE NO CHANGES MADE IN THIS PLAN WITHOUT THE WRITTEN PERMISSION OF THE BOARD OF HEALTH AND DESIGN ENGINEER.
4. ANY CHANGE IN SITE CONDITIONS, DISCREPANCIES, ERRORS OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF MORSE ENGINEERING PRIOR TO THE COMMENCEMENT OF WORK.
5. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH TITLE 5 (310 CMR 15) AND THE LOCAL BOARD OF HEALTH REQUIREMENTS TO THE FULLEST EXTENT PRACTICABLE. NO GUARANTEE TO THE SYSTEMS PERFORMANCE IS EXPRESSED OR IMPLIED.
6. SOIL TEST DATA SHOWN IS LIMITED TO THE CONDITIONS EXISTING AT THE SUBJECT TEST PIT LOCATION ONLY. IF DIFFERENT SOIL CONDITIONS ARE FOUND IN THE AREA OF THE PROPOSED SOIL ABSORPTION SYSTEM THEY SHALL BE BROUGHT TO THE ATTENTION OF MORSE ENGINEERING IMMEDIATELY.
7. THE CONTRACTOR SHALL NOTIFY DIGSAFE PRIOR TO ANY EXCAVATION AT THE SUBJECT PROPERTY. IT IS SPECIFICALLY CAUTIONED THAT THE SUBSURFACE UTILITIES SHOWN ARE APPROXIMATE ONLY AND HAVE BEEN COMPILED FROM AVAILABLE RECORDS AND OBSERVABLE SITE FEATURES. UTILITIES OTHER THAN THOSE SHOWN MAY BE PRESENT AT THIS LOCATION.
8. THIS PLAN HAS BEEN PREPARED SPECIFICALLY AS A SEPTIC SYSTEM DESIGN AND IS NOT TO BE USED TO ESTABLISH PROPERTY LINES OR BUILDING SETBACKS. PROPERTY LINES AND BUILDING LOCATIONS ARE GRAPHIC ONLY, PROPERTY LINES NOT HAVING BEEN VERIFIED. NO REPRESENTATION OR CERTIFICATION AS TO THE ACCURACY OF THOSE SHOWN IS IMPLIED.
9. CONTRACTOR TO VERIFY AND ENSURE THAT ALL INTERIOR PLUMBING IS DIRECTED INTO PROPOSED SEPTIC SYSTEM. ANY VARIATIONS FROM THE DESIGN AS SHOWN SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER.

CONSTRUCTION NOTES

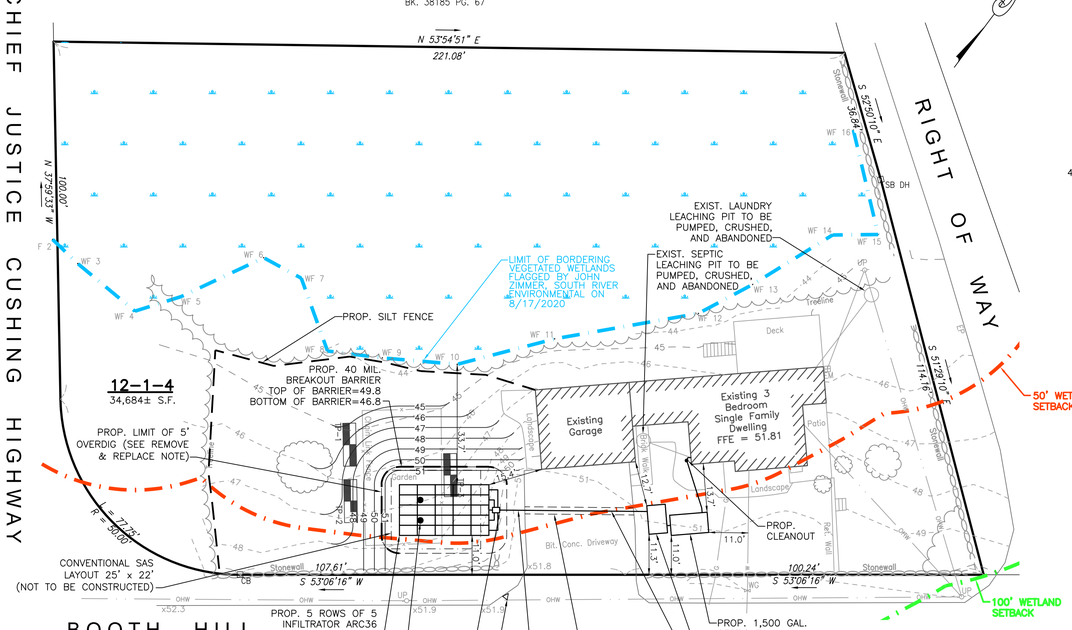
1. CONTRACTOR SHALL COORDINATE INSPECTION TIMES WITH THE LOCAL BOARD OF HEALTH AND DESIGN ENGINEER 24–HOURS IN ADVANCE OF THE FOLLOWING INSPECTIONS:
   1. AFTER EXCAVATION OF ALL UNSUITABLE MATERIAL FROM SOIL ABSORPTION AREA.
   2. PRIOR TO COVERING THE CONSTRUCTED SYSTEM.
   3. AFTER SYSTEM BACKFILL AND FINAL GRADING.
2. ALL CONSTRUCTION MUST COMPLY WITH TITLE 5 OF THE STATE ENVIRONMENTAL CODE 310 CMR 15 & THE ANY LOCAL BOARD OF HEALTH SUPPLEMENTAL REGULATIONS.
3. ALL TIGHT–JOINT PLUMBING SHALL BE CONSTRUCTED OF SCH. 40 PVC PIPE WITH CLEANED AND CEMENTED FITTINGS, UNLESS OTHERWISE NOTED.
4. ALL PRECAST/PIPE CONSTRUCTION JOINTS AND FITTINGS SHALL BE MADE WATERTIGHT BY PARGING WITH HYDRAULIC CEMENT.
5. THE CONTRACTOR SHALL PROVIDE A SIEVE ANALYSIS OF THE TITLE 5 PERC SAND UTILIZED FOR FILL TO VERIFY THAT IT MEETS THE REQUIREMENTS OF 310 CMR 15.255(3). TITLE 5 SAND FILL SHALL COMPLY WITH THE FOLLOWING:

SIEVE SIZE	PARTICLE SIZE
#4	4.75 mm
#50	0.30 mm
#100	0.15 mm
#200	0.075 mm

6. THE CONTRACTOR SHALL PREVENT ANY HEAVY CONSTRUCTION MACHINERY AND/OR TRUCKS FROM DRIVING OVER THE PROPOSED SOIL ABSORPTION SYSTEM LOCATION UNTIL FINISHED GRADE IS ESTABLISHED.
7. THE CONTRACTOR SHALL INSTALL MAGNETIC TAPE OVER SYSTEM PIPING & COMPONENTS
8. THE DESIGN ENGINEER SHALL CERTIFY AND PREPARE AN "AS–BUILT" PLAN FOR SUBMITTAL TO THE BOARD OF HEALTH UPON SEPTIC SYSTEM COMPLETION.
9. ALL DISTURBED AREAS SHALL BE RESTORED WITH 4" LOAM & SEED POST CONSTRUCTION.
10. CONTRACTOR SHALL ABANDON EXISTING SEPTIC COMPONENTS IN ACCORDANCE WITH 310 CMR SEC. 15.354 OF TITLE 5 AND LOCAL REGULATIONS BY PUMPING DRY, CRUSHING AND ABANDONING.

SITE NOTES

1. LOCUS DOES NOT LIE WITHIN A DEP DESIGNATED ZONE II RESOURCE AREA.
2. ALL WETLANDS OBSERVED WITHIN 100' OF PROPOSED WORK ARE SHOWN.
3. PROPERTY LINE DATA WAS OBTAINED FROM LOCUS DEED (BK. 48071, PG. 68) AND RECORD PLANS ON FILE AT THE PLYMOUTH COUNTY REGISTRY OF DEEDS.
4. THERE WERE NO ACTIVE/POTABLE WELLS OBSERVED WITHIN 100' OF THE PROPOSED SYSTEM.
5. LOCUS LIES IN FEMA FLOOD ZONE "X" AS SHOWN ON FEMA COMMUNITY MAP PANEL 25023C 0108K DATED NOVEMBER 4, 2016. ZONE X IS DESCRIBED AS AN AREA OF MINIMAL FLOODING ABOVE THE 100–YR. FLOOD BOUNDARY.



SEPTIC LAYOUT

20' 0 10' 20'
SCALE: 1" = 20'

*INTERIOR PLUMBING TO LAUNDRY PIT IN REAR YARD TO BE REROUTED BY LICENSED PLUMBER AND CONNECTED INTO PROPOSED SEPTIC SYSTEM.

BENCHMARK
MAG NAIL
EL=52.08(NAVD88)

REMOVE & REPLACE

CONTRACTOR TO EXCAVATE ALL UNSUITABLE MATERIAL TO A DEPTH OF 27"± (TO C HORIZON) & REPLACE WITH CLEAN TITLE 5 PERC SAND TO EL.= 49.78 DIRECTLY UNDER AND WITHIN 5–FT. HORIZONALLY OF THE PROPOSED SOIL ABSORPTION SYSTEM.
(APPROX. SAND VOL. = 1.2% x 35'L x 24.15'W x (49.78–44.2) / 27 = 210 C.Y. ±

DESIGN DATA

1. BUILDING TYPE: RESIDENTIAL
2. NO. OF BEDROOMS: 3
3. DESIGN FLOW: 3 BEDROOMS x 110 G.P.D./BED = 330 G.P.D.
4. DESIGN PERCOLATION RATE: <2 MPI (TP–1)
5. GARBAGE DISPOSAL: NO
6. SEPTIC TANK DESIGN REQUIREMENT: 200% DESIGN FLOW 330 X 2 = 660 GAL. (USE 1500 GAL. SEPTIC TANK)
7. LEACH AREA REQUIREMENTS GALLONS/SQ. FT. (CLASS II SOILS)
   BOTTOM: 0.60 GAL./S.F. SIDE: 0.60 GAL./S.F.
8. TOTAL LEACH AREA REQUIRED:
   TITLE 5: 330 GPD / (0.60 GPD/S.F.) = 550 S.F.
   PROVIDED: 5 ROWS OF 5 INFILTRATOR ARC–36 LEACHING CHAMBERS
   25 CHAMBERS x 5'L (EA.) x 4.8 S.F./L.F.* = 600 S.F.
   CAPACITY: 600 S.F. x 0.60 GPD/S.F. = 360 GPD
   *EFFECTIVE AREA PER GENERAL USE CERTIFICATION ISSUED BY DEP.

CONTRACTOR TO BE INFILTRATOR CERTIFIED

COMMONWEALTH OF MASSACHUSETTS
JEFFREY M. HASSETT
CIVIL
No. 49293
REGISTERED PROFESSIONAL ENGINEER

PREPARED BY:
MORSE ENGINEERING CO., INC.
10 NEW DRIFTWAY
SUITE 303
SCITUATE, MA 02066
T: 781-545-0895

PROJECT: SEPTIC SYSTEM DESIGN PLAN 66 BOOTH HILL ROAD ASSESSOR'S PARCEL: 12-1-4 SCITUATE, MASSACHUSETTS	DESIGN: JDG CHECK: JMH JOB NO: 20–290
PREPARED FOR: ADELISA L. BARBOSA 66 BOOTH HILL ROAD SCITUATE, MA 02066	DATE: 8/25/2020 REV: –
PLAN TITLE: SEPTIC SYSTEM DESIGN PLAN	SHEET: 1

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