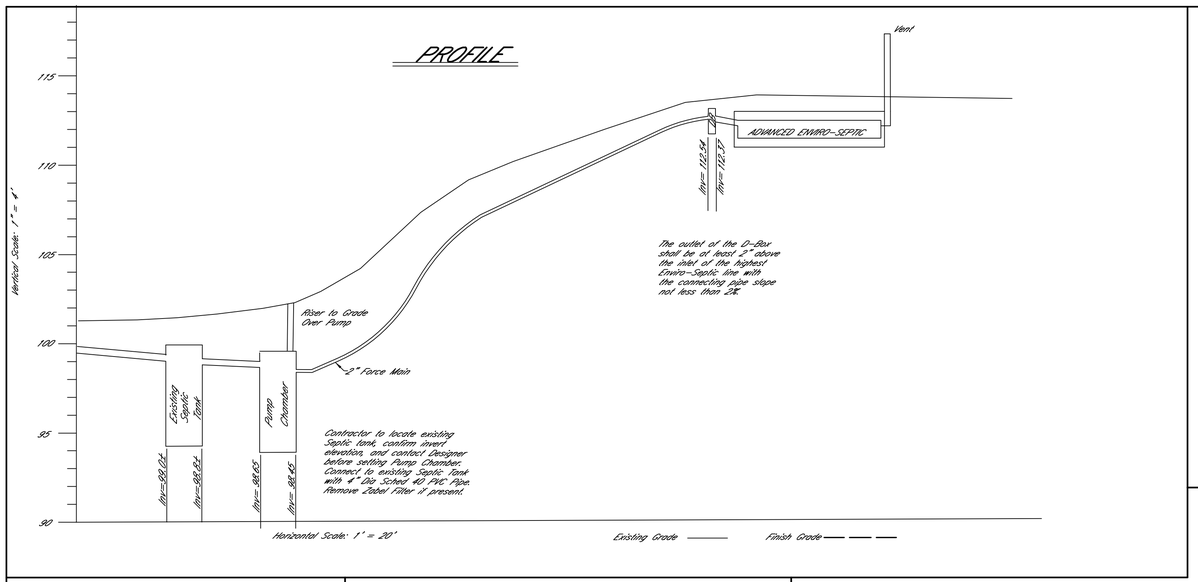
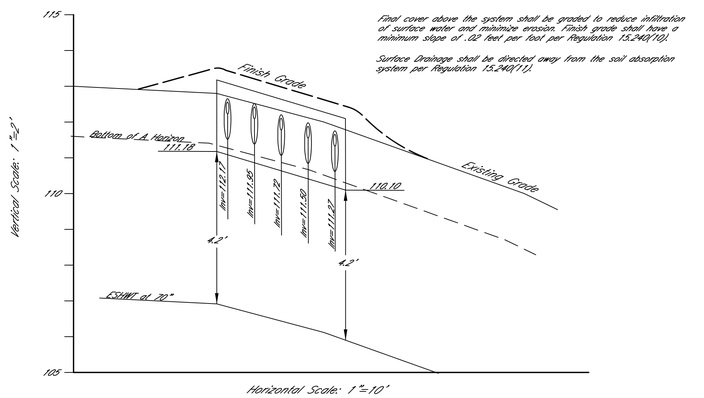




SECTION A-A

PERCOLATION TEST AND SOIL LOGS

Soil Evaluator: Gregory P. Bernard
Observed By: Kendell Longo
Date of Tests: May 1, 2018

#1 Rate=20 Minutes/Inch at 80" Deep
OHI
Surface Elevation..... 112.8

0–14"	Ap	SL	10YR3/3	Massive, Friable.....	111.63
14–17	Bw	FSL	10YR4/6	Blocky, Friable.....	111.38
17–67	C1	LS	2.5Y5/6	Blocky, Friable.....	107.23
67–112	C2	SL	10YR4/4	Massive, Friable.....	103.47

No Refusal
No Observed Groundwater
Redox Features at 70" 7.5YR5/6 and 2.5Y3/2
ESHWT at 70"

#2 Rate=15 Minutes/Inch at 80" Deep
OHI2
Surface Elevation..... 112.5

0–5"	A	SL	10YR3/3	Massive, Friable.....	112.08
5–13	Bw	VFS	10YR4/6	Blocky, Friable.....	111.42
13–67	C1	LS	2.5Y5/6	Blocky, Friable.....	107.25
67–102	C2	SL	10YR4/4	Massive, Friable.....	104.00

No Refusal
Observed Groundwater at 88"..... 105.17
No Redox Features
Roots to 75"
ESHWT at 75"

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated on the included soil evaluation form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Gregory P. Bernard
Approval No. SE2880
Exam date: November 9, 2004

NOTES

1. All work to comply with the Commonwealth of Massachusetts Department of Environmental Protection State Sanitary Code, Title V and Local Board of Health Supplementary Regulations.

2. This plan is to show the design of the Subsurface Sewage Disposal System only, and is not to be used for any other purpose.

3. Excavation must be inspected by Health Agent prior to installing Leaching System.

4. There are no wells or Bordering Vegetated Wetlands within 100' of the proposed Leaching Area.

5. No part of the proposed septic system lies within an area noted by the DEP as an Estimated Setback Area for Title V.

6. No installer shall install this system unless the installer has been trained by Pressby Environmental.

7. Installers shall complete the System Installation Form and forward a copy to Pressby Environmental and Raynham Board of Health.

8. The installer shall provide the System owner and the Raynham Board of Health with a bill of lading certifying that the sand fill meets ASTM C-33.

9. The System owner shall have the System inspected annually by an operator trained by Pressby Environmental and shall submit the results on a technology checklist to the Raynham Board of Health.

10. All system components shall be marked with magnetic marking tape or a comparable means in order to locate them once buried.

PUMP CHAMBER DESIGN CALCULATIONS:
COMPUTE MAXIMUM STATIC HEAD = Hsmax

Proposed D-Box Inlet Invert	(T) 112.54
Proposed Pump Off	(F) 98.65
	16.89

PIPING: USE 2" DIA SCH. 40 PVC PIPE WITH PRESSURE JOINTS

COMPUTE FRICTION LOSS THROUGH FITTINGS OF PUMP CHAMBER

1 – 2" 90° Elbow	= 5'
1 – 2" Ball Valve	= 2'
1 – 2" Check Valve	= 2'
2" Miscellaneous Pipe	= 5'
	14'

COMPUTE FRICTION LOSS THROUGH BENDS IN RUN TO D-BOX

1– 2" 45° Elbows	= 2.5'
0 – 2" 90° Elbows	= 0'
1 – 2" Tee	= 5'
	7.5'

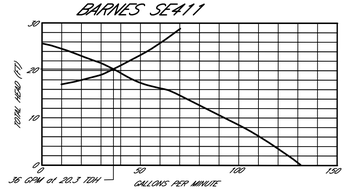
TOTAL EQUIVALENT LENGTH OF PIPE

Length Of Run to D-Box	= 115'
Loss Due To Pump Chamber Fittings	= 14'
Loss Due To Bends	= 7.5'
	136.5'

EMERGENCY STORAGE
1000 Gallon Monolithic Pump Chamber

Pump Chamber Volume	1000 Gals
Remaining Volume At Alarm On (Tank Inlet Height – Alarm Height)(Floor Area x 7.48) (51–24)/12 x 36.81 x 7.48	620 Gals
Emergency Storage Volume Required	440 Gals
Emergency Storage Capacity 620/440	1.4 Days
Drawdown Volume (DV) Gallons/Lease	–100 Gals
Pipe Back Drainage Volume (PBDV) 3.14r² L x 7.48 3.14(1/12)² 115 x 7.48	–19 Gals
Depth Per Cycle (DV) + (PBDV) / Floor Area x 7.48 — 100 + 19 / 36.81 x 7.48	5 in.
Pump Off Distance Above Chamber Floor	15 in.
Pump On Distance Above Chamber Floor	20 in.
Alarm On Distance Above Chamber Floor	24 in.

PUMP RATE (USGPM)	VELOCITY (FT/SEC)	HEAD LOSS PER 100' FT	TOTAL HEAD LOSS (FT)	STATIC HEAD (FT)	TOTAL DYNAMIC HEAD (FT)
10	0.97	0.24	0.33	16.89	17.22
15	1.46	0.51	0.70	16.89	17.59
20	1.95	0.87	1.19	16.89	18.08
25	2.43	1.31	1.79	16.89	18.68
30	2.92	1.83	2.51	16.89	19.40
35	3.41	2.44	3.34	16.89	20.23
40	3.89	3.13	4.29	16.89	21.18
45	4.38	3.89	5.33	16.89	22.22
50	4.87	4.72	6.47	16.89	23.36
60	5.84	6.62	9.07	16.89	25.96
70	6.81	8.81	12.07	16.89	28.96
75	7.30	10.01	13.71	16.89	30.60
80	7.79	11.28	15.45	16.89	32.34
90	8.76	14.03	19.22	16.89	36.11
100	9.73	17.05	23.36	16.89	40.25
125	12.16	25.78	35.32	16.89	52.21



PUMP SPECIFICATIONS

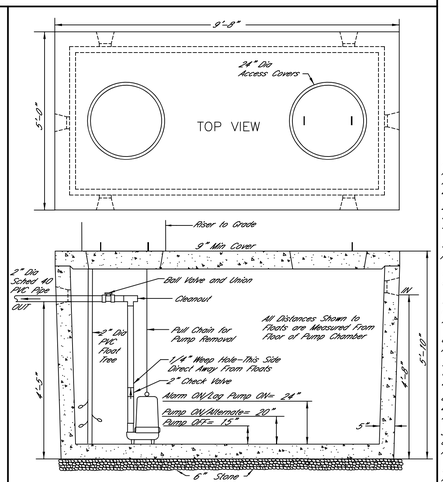
BARNES SE411 Pump
Impeller Diameter 5.44"
.4 Horsepower
1750 RPM
115 Volt
1 Phase

Install Rhombus Type 115 Control and Alarm (or equivalent) per Regulation 15.231.

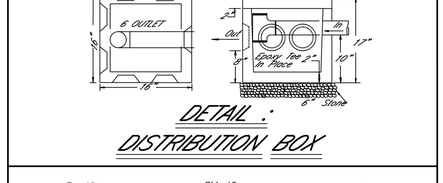
Locate alarm inside building and provide power on separate circuit from pump.

Alarm to be Audible and Visible.

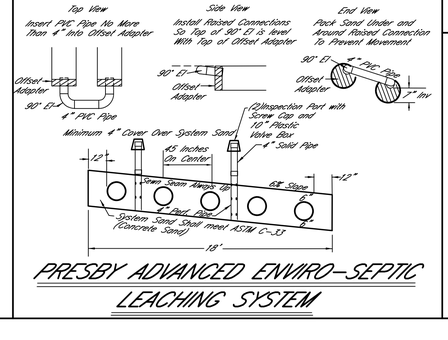
Electrical Box Not to Impede Pump Removal From Manhole.



1000 GAL. PUMP CHAMBER
PRECAST REINFORCED CONCRETE
ONE PIECE–MONOLITHIC



DETAIL :
DISTRIBUTION BOX



PRESSBY ADVANCED ENVIRO-SEPTIC
LEACHING SYSTEM

SEWAGE FLOW DESIGN

Lineal Feet of ADVANCED Enviro-Septic Pipe Required:

50 Feet/Bedroom
Percolation Rate = 20 Min/Inch
Existing 4 Bedroom Dwelling
Minimum Pipe Length = 4 x 50 = 200 feet

Install 5 Lines, 40 ft. Long, Spaced 45 inches Center to Center
Total Pipe Length Provided = 200 feet

Maximum 40% Reduction in Leaching Area Allowed
Leaching Area Required per Raynham Regulations:
(4 Bedrooms x 165 Gals/Bdrm)/ 5.3 GPD/sq. ft. = 1245.3 sf
Maximum Reduction Allowed = 1245.3 x 40% = 498.1 sf
Minimum Leaching Area = 1245.3 – 498.1 = 747.2 sf
Leaching Area Provided = 18 ft x 42 ft = 756 sf

SEWAGE DISPOSAL SYSTEM

Map 40–01–09
20 MOONPENNY DRIVE, RAYNHAM, MA
For: James Rybicki
131 McKay Street Apt. 2
Beverly, MA 01915
978–869–6140
Date: May 15, 2018

By: Gregory P. Bernard (Pressby MAES1136)
Danvers Industrial Park
3 Electronics Avenue
Danvers, MA 01923
(978)777–6390