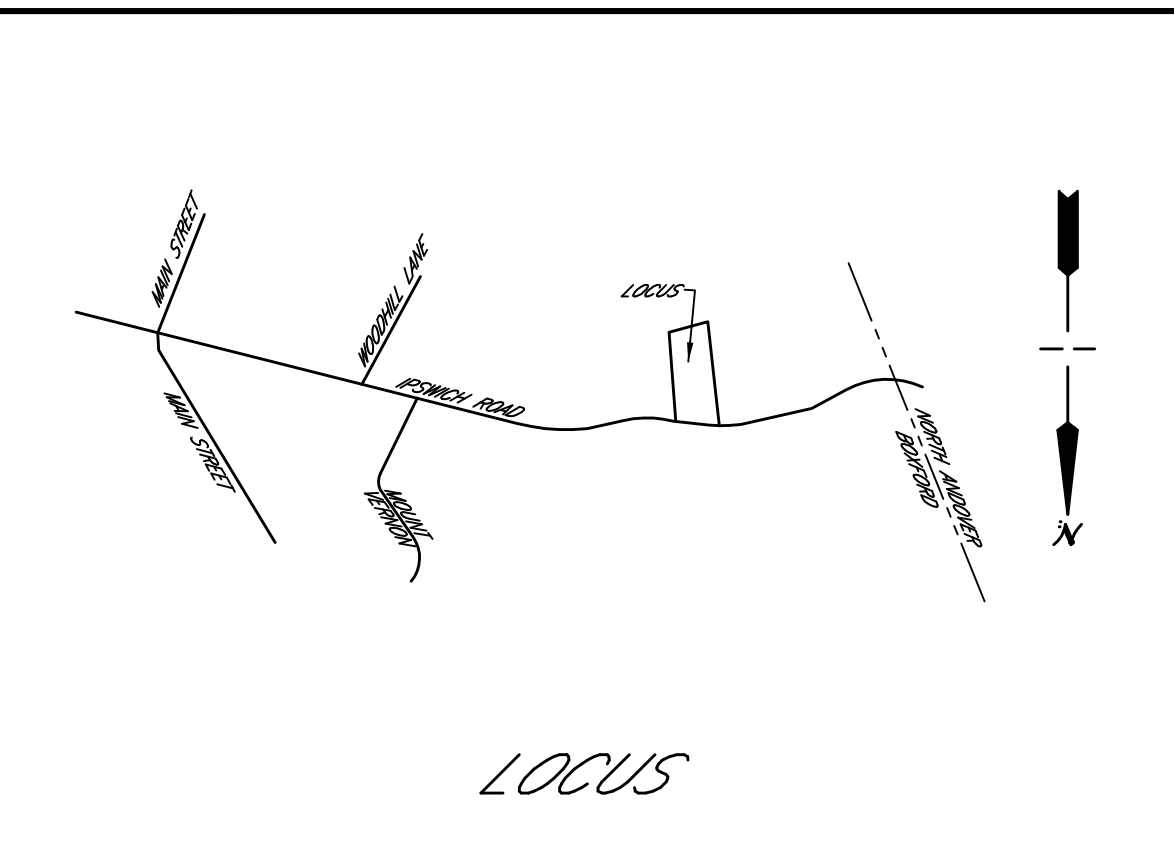


EMERGENCY STORAGE

1000 Gallon Monolithic Pump Chamber	
Pump Chamber Volume	1000 Gals
Drawdown Volume (DV)	- 75 Gals
Gallons/Gross	
Pipe Back Drainage Volume (PBDV)	
3.14 x 1.125 ² x 7.48	
3.14 x 1.125 ² x 100 x 7.48	- 16 Gals
Remaining Volume At Pump Off (RPVO)	
(Pump Inlet Height + 12" x Floor Area x 7.48	
6.12 x 36.86 x 7.48	- 132 Gals
Emergency Storage Volume Provided	771 Gals
Emergency Storage Volume Required	495 Gals
Emergency Storage Capacity	1.5 Days
Depth Per Cycle	
(DV) + (PBDV)	75 + 16
Floor Area x 7.48	36.86 x 7.48
	4 in
Pump On	
Distance Above Chamber Floor	
(DV + PBDV + RPVO) / Floor Area	(75 + 16 + 132) / 36.86
	10 in
Pump Off	
Distance Above Chamber Floor	6 in



PERCOLATION TEST AND SOIL LOGS

Soil Evaluator: Gregory P. Bernard
Observed By: Randall Longo
Date of Tests: June 26, 2014

#1 Hole - 3 Minutes/Inch at 63" Deep

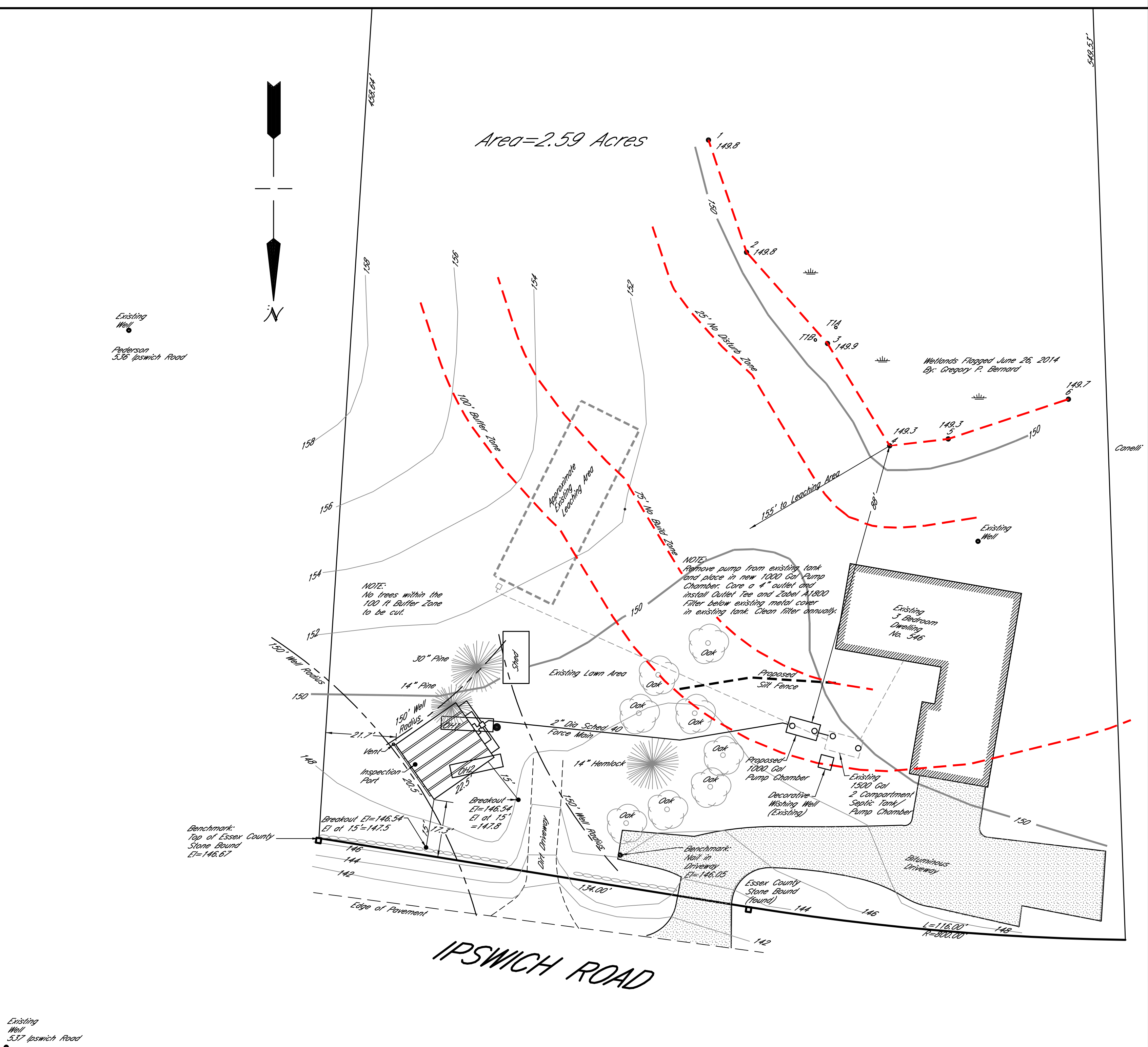
Surface Elevation	148.7'
0-2' DI	SI 100% 2 Granular, Friable
2-4' DI	SI 100% 3 Massive, Friable
4-6' DI	SI 100% 3 Massive, Friable
6-8' DI	SI 100% 3 Massive, Friable
8-10' DI	SI 100% 3 Massive, Friable
10-12' DI	SI 100% 3 Massive, Friable
12-14' DI	SI 100% 3 Massive, Friable
14-16' DI	SI 100% 3 Massive, Friable
16-18' DI	SI 100% 3 Massive, Friable
18-20' DI	SI 100% 3 Massive, Friable
20-22' DI	SI 100% 3 Massive, Friable
22-24' DI	SI 100% 3 Massive, Friable
24-26' DI	SI 100% 3 Massive, Friable
26-28' DI	SI 100% 3 Massive, Friable
28-30' DI	SI 100% 3 Massive, Friable
30-32' DI	SI 100% 3 Massive, Friable
32-34' DI	SI 100% 3 Massive, Friable
34-36' DI	SI 100% 3 Massive, Friable
36-38' DI	SI 100% 3 Massive, Friable
38-40' DI	SI 100% 3 Massive, Friable
40-42' DI	SI 100% 3 Massive, Friable
42-44' DI	SI 100% 3 Massive, Friable
44-46' DI	SI 100% 3 Massive, Friable
46-48' DI	SI 100% 3 Massive, Friable
48-50' DI	SI 100% 3 Massive, Friable
50-52' DI	SI 100% 3 Massive, Friable
52-54' DI	SI 100% 3 Massive, Friable
54-56' DI	SI 100% 3 Massive, Friable
56-58' DI	SI 100% 3 Massive, Friable
58-60' DI	SI 100% 3 Massive, Friable
60-62' DI	SI 100% 3 Massive, Friable
62-64' DI	SI 100% 3 Massive, Friable
64-66' DI	SI 100% 3 Massive, Friable
66-68' DI	SI 100% 3 Massive, Friable
68-70' DI	SI 100% 3 Massive, Friable
70-72' DI	SI 100% 3 Massive, Friable
72-74' DI	SI 100% 3 Massive, Friable
74-76' DI	SI 100% 3 Massive, Friable
76-78' DI	SI 100% 3 Massive, Friable
78-80' DI	SI 100% 3 Massive, Friable
80-82' DI	SI 100% 3 Massive, Friable
82-84' DI	SI 100% 3 Massive, Friable
84-86' DI	SI 100% 3 Massive, Friable
86-88' DI	SI 100% 3 Massive, Friable
88-90' DI	SI 100% 3 Massive, Friable
90-92' DI	SI 100% 3 Massive, Friable
92-94' DI	SI 100% 3 Massive, Friable
94-96' DI	SI 100% 3 Massive, Friable
96-98' DI	SI 100% 3 Massive, Friable
98-100' DI	SI 100% 3 Massive, Friable

No Refusal
No Observed Groundwater
Aborts to 92"
Floor of 92"
LSHW of 92".....140.95

CHP
Surface Elevation.....148.4
0-10' DI SI 100% 2 Granular, Friable.....147.57
10-12' DI SI 100% 3 Massive, Friable.....148.58
12-14' DI SI 100% 3 Massive, Friable.....146.53
14-16' DI SI 100% 3 Massive, Friable.....148.07
16-18' DI SI 100% 3 Massive, Friable.....144.07
18-20' DI SI 100% 3 Massive, Friable.....138.98
20-22' DI SI 100% 3 Massive, Friable.....138.98
22-24' DI SI 100% 3 Massive, Friable.....138.98
24-26' DI SI 100% 3 Massive, Friable.....138.98
26-28' DI SI 100% 3 Massive, Friable.....138.98
28-30' DI SI 100% 3 Massive, Friable.....138.98
30-32' DI SI 100% 3 Massive, Friable.....138.98
32-34' DI SI 100% 3 Massive, Friable.....138.98
34-36' DI SI 100% 3 Massive, Friable.....138.98
36-38' DI SI 100% 3 Massive, Friable.....138.98
38-40' DI SI 100% 3 Massive, Friable.....138.98
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42-44' DI SI 100% 3 Massive, Friable.....138.98
44-46' DI SI 100% 3 Massive, Friable.....138.98
46-48' DI SI 100% 3 Massive, Friable.....138.98
48-50' DI SI 100% 3 Massive, Friable.....138.98
50-52' DI SI 100% 3 Massive, Friable.....138.98
52-54' DI SI 100% 3 Massive, Friable.....138.98
54-56' DI SI 100% 3 Massive, Friable.....138.98
56-58' DI SI 100% 3 Massive, Friable.....138.98
58-60' DI SI 100% 3 Massive, Friable.....138.98
60-62' DI SI 100% 3 Massive, Friable.....138.98
62-64' DI SI 100% 3 Massive, Friable.....138.98
64-66' DI SI 100% 3 Massive, Friable.....138.98
66-68' DI SI 100% 3 Massive, Friable.....138.98
68-70' DI SI 100% 3 Massive, Friable.....138.98
70-72' DI SI 100% 3 Massive, Friable.....138.98
72-74' DI SI 100% 3 Massive, Friable.....138.98
74-76' DI SI 100% 3 Massive, Friable.....138.98
76-78' DI SI 100% 3 Massive, Friable.....138.98
78-80' DI SI 100% 3 Massive, Friable.....138.98
80-82' DI SI 100% 3 Massive, Friable.....138.98
82-84' DI SI 100% 3 Massive, Friable.....138.98
84-86' DI SI 100% 3 Massive, Friable.....138.98
86-88' DI SI 100% 3 Massive, Friable.....138.98
88-90' DI SI 100% 3 Massive, Friable.....138.98
90-92' DI SI 100% 3 Massive, Friable.....138.98
92-94' DI SI 100% 3 Massive, Friable.....138.98
94-96' DI SI 100% 3 Massive, Friable.....138.98
96-98' DI SI 100% 3 Massive, Friable.....138.98
98-100' DI SI 100% 3 Massive, Friable.....138.98

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, experience 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 forms, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Gregory P. Bernard
Approval No. SE20062
Exam date: November 9, 2004



PUMP CHAMBER DESIGN CALCULATIONS

COMPUTE MAXIMUM STATIC HEAD = 14.0'

Proposed 2" Dia Inlet Invert E1 146.23
Proposed Pump Off E1 142.25
Loss = 3.98'

PIPINGS USE 2" DIA SCH 40 PVC PIPE WITH PRESSURE JOINTS

COMPUTE FRICTION LOSS THROUGH FITTINGS OF PUMP CHAMBER

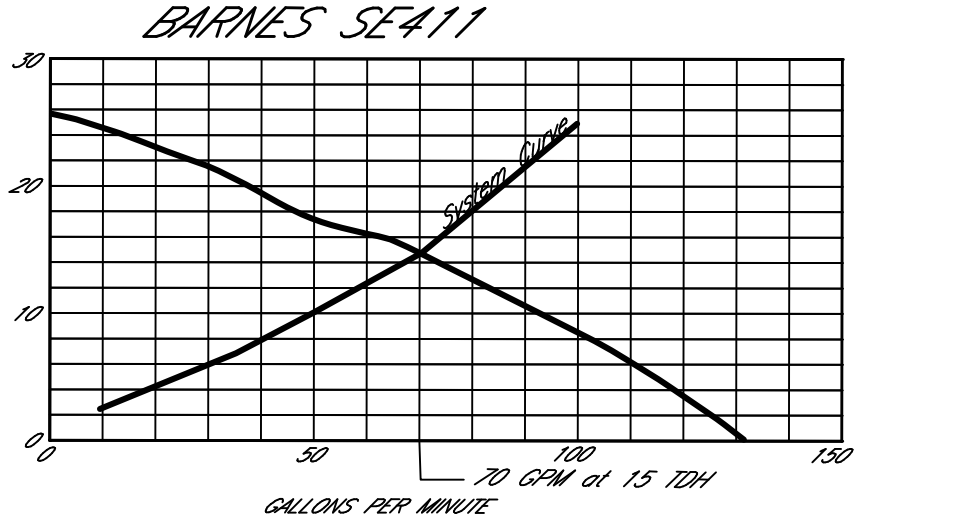
1 - 2" 90° Elbow	= 5'
1 - 2" Ball Valve	= 2'
1 - 2" Check Valve	= 2'
2" Miscellaneous Pipe	= 5'
	74"

COMPUTE FRICTION LOSS THROUGH BENDS IN RUN TO D-BOX

3 - 2" 45° Elbows	= 7.5'
0 - 2" 90° Elbows	= 0'
1 - 2" Tee	= 5'
	12.5'

TOTAL EQUIVALENT LENGTH OF PIPE

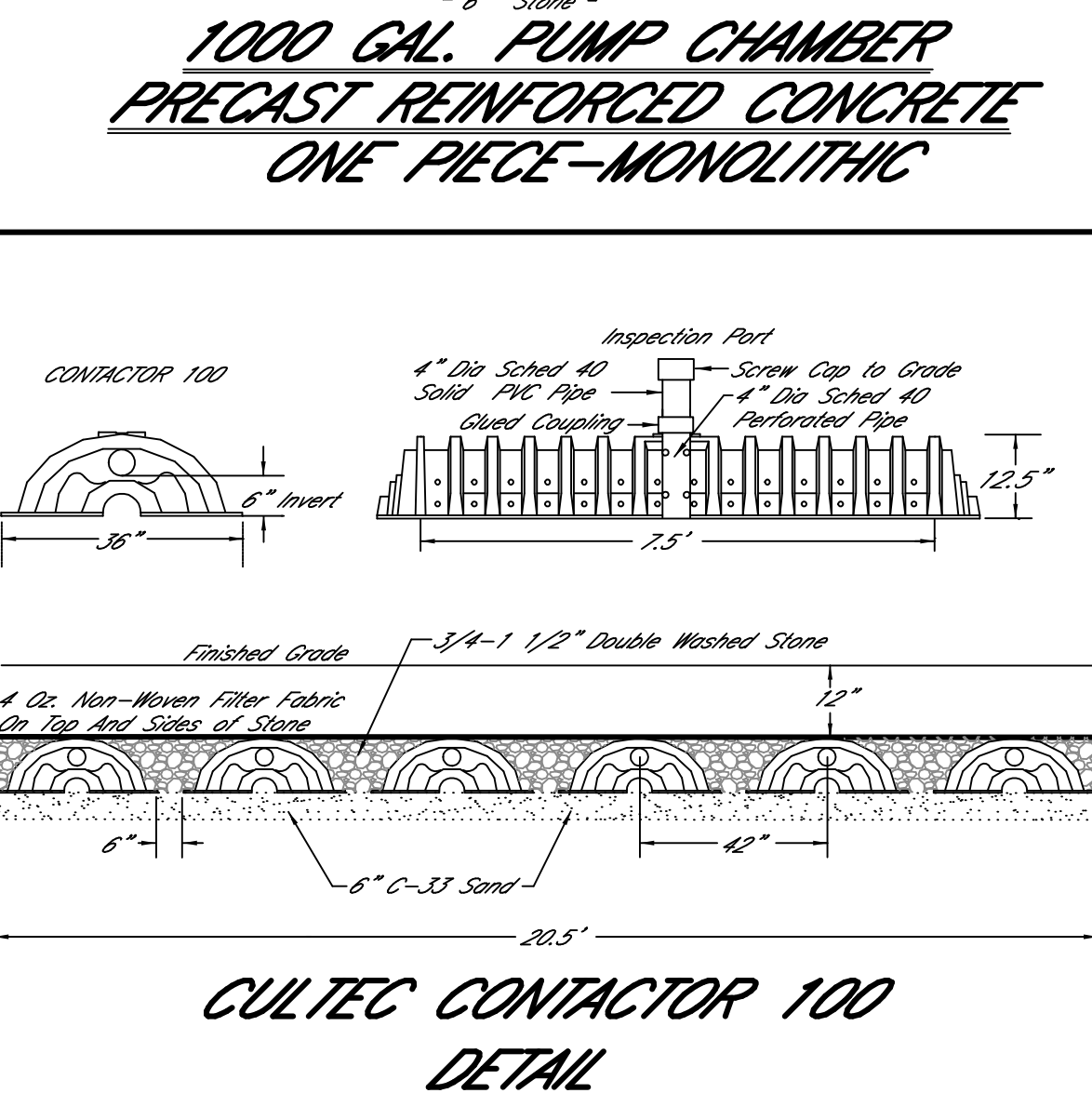
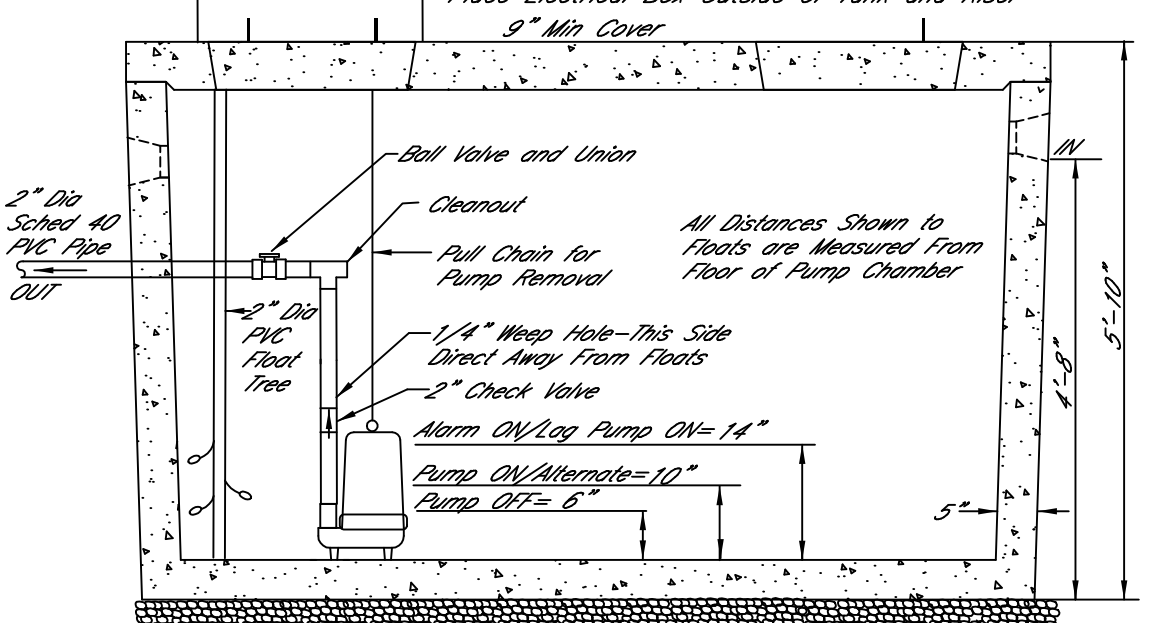
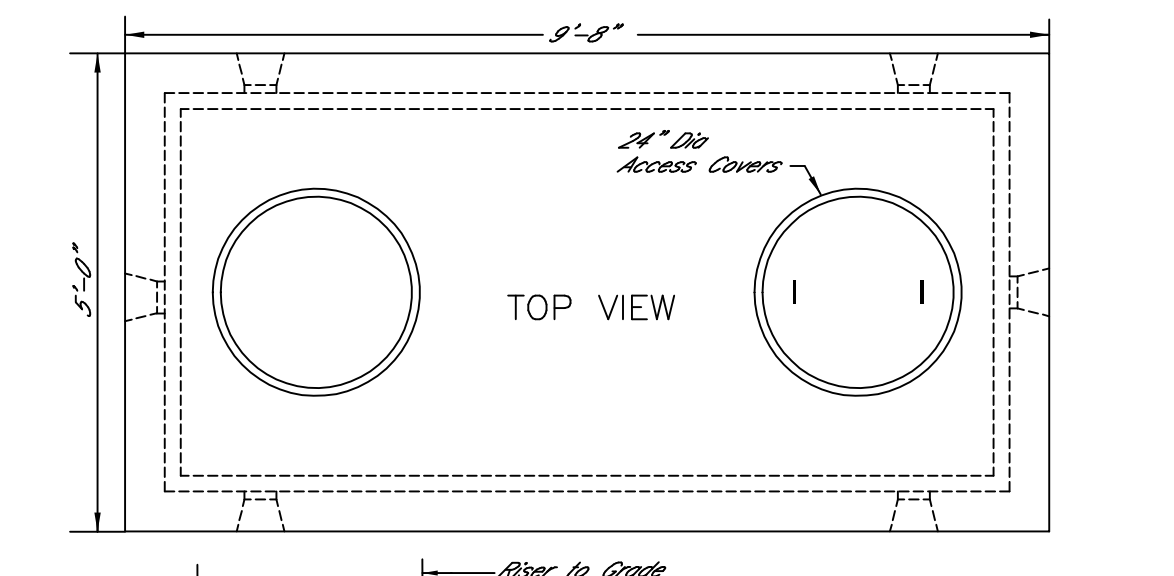
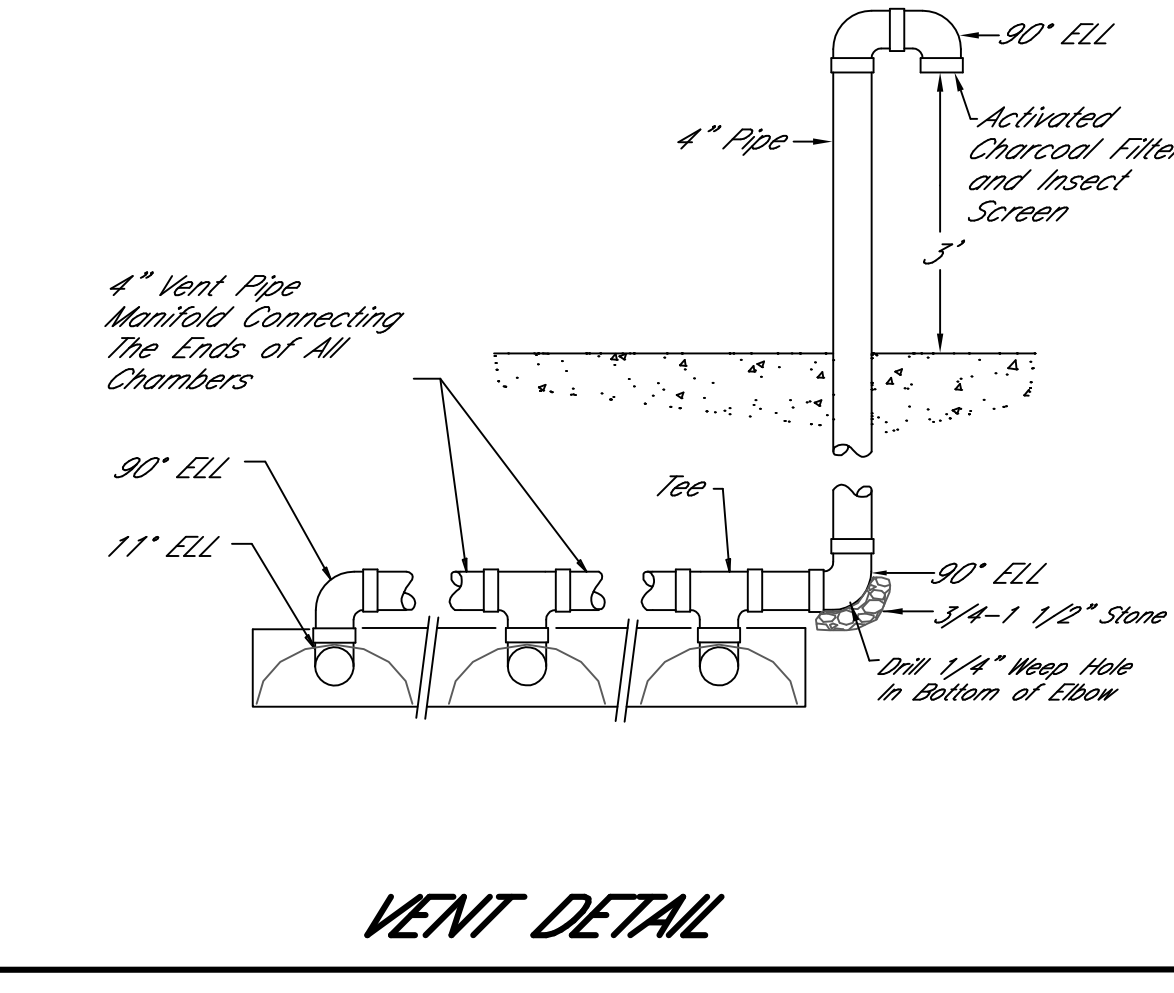
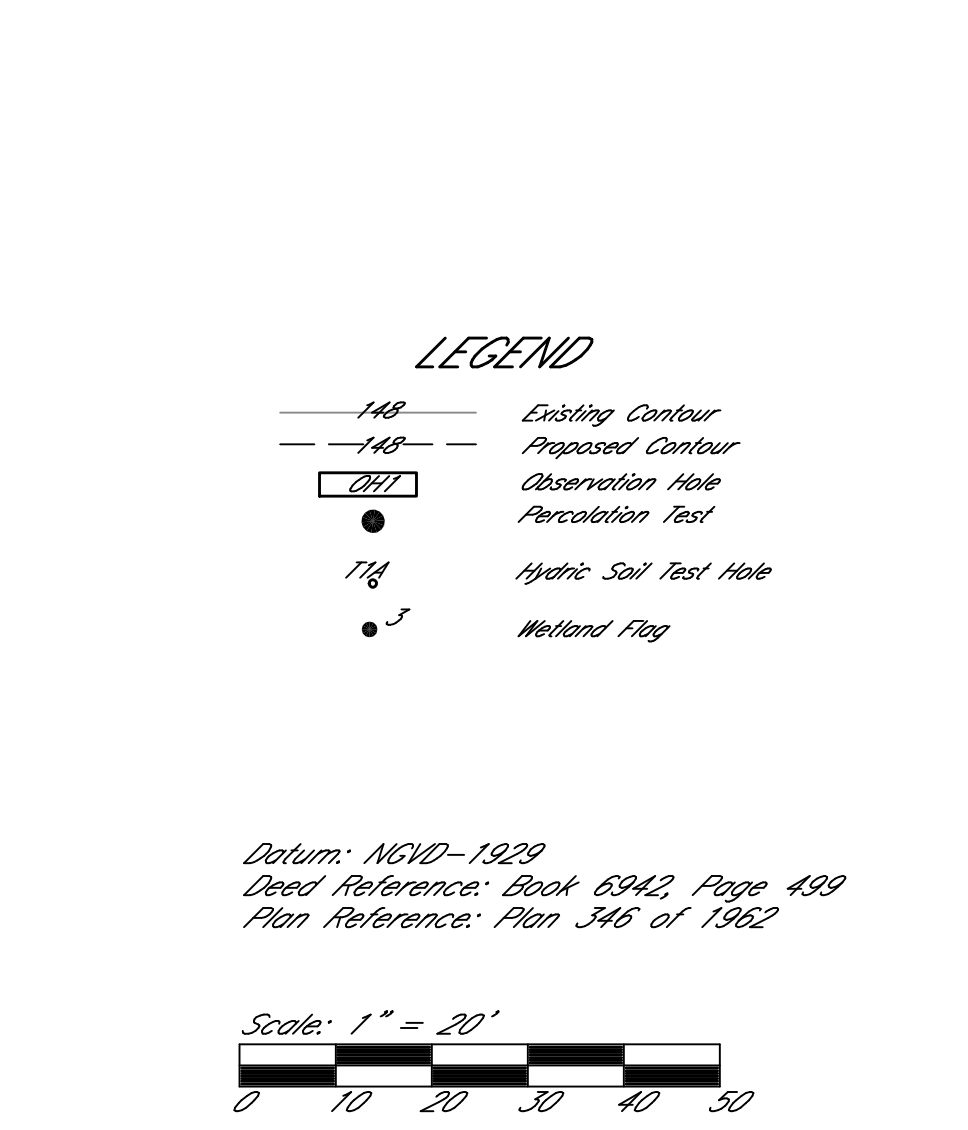
Length Of Run to D-Box	= 100'
Loss Due To Pump Chamber Fittings	= 14'
Loss Due To Bends	= 12.5'
	126.5'



PUMP SPECIFICATIONS

BARNES SE411 Pump
Impeller Diameter 3.44"
4 Hertzpower
1700 RPM
115 Volt
1 Phase

Install Alarms 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 Bar Not to Impede Pump Removal From Manhole.

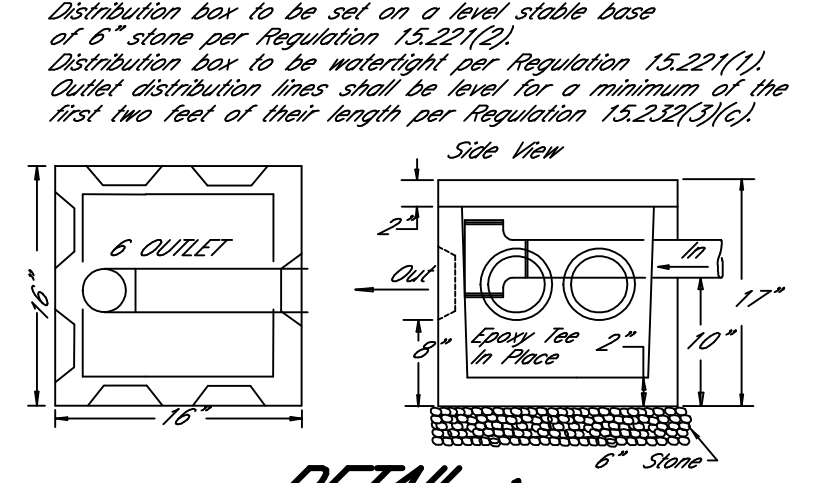


- #### NOTES
- All work to comply with the Commonwealth of Massachusetts Department of Environmental Protection State Sanitary Code 716.0 and Local Board of Health Supplementary Regulations.
 - This plan is to show the design of the Subsurface Sewage Disposal System only and is not to be used for any other purpose.
 - Excavation must be inspected by the Health Agent prior to installing Leaching System.
 - There are no wells or Bartering Vegetated Wetlands within 150' of the proposed Leaching Area.
 - No part of the proposed septic system lies within an area noted by the DEP as an Estimated Subleak Area for Title V.
 - All system components shall be marked with magnetic marking tape or a comparable means in order to locate them once buried.
 - Clean filter annually.
 - This system is designed to handle a garbage grinder but is not recommended.

SEWAGE FLOW DESIGN

Design Flow
185 Gals. per Bedroom per Day x 3 = 495 GPD
.74 Gals per square foot
Required Area = 668.9 sf

State Allowance for CULTEC Contactor 100 = 5 SF/ft
Linear Feet of System Required = 668.9 / 5 = 133.78 ft
Number of Chambers Needed: 133.78 / 7.5 = 17.8
Number of Chambers Provided: 18 (6 Lines of 3)



SEWAGE DISPOSAL SYSTEM

Assessors Map 13-01-02
546 IPSWICH ROAD BOXFORD, MA
For: William Sallis
546 Ipswich Road
Boxford, MA 01921
978-352-7841
Date: July 18, 2014

By: Gregory P. Bernard
Danvers Industrial Park
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Danvers, MA 01923
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