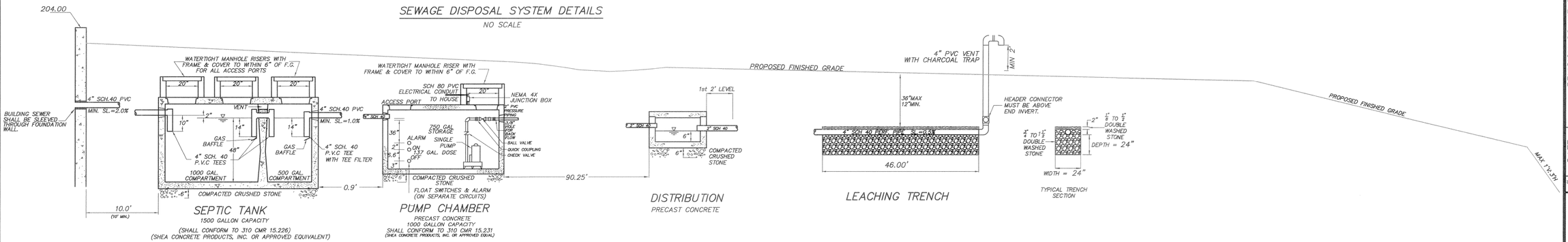
SEWAGE DISPOSAL SYSTEM DETAILS

NO SCALE



DESIGN CALCULATIONS

SYSTEM SEWAGE FLOW DESIGN CRITERIA	
TYPE OF ESTABLISHMENT :	SINGLE FAMILY DWELLING
FLOW PER UNIT:	110 GPD/BEDROOM
NO. UNITS:	4 BEDROOMS
SYSTEM DESIGN FLOW:	440 GPD
SOIL ABSORBTION SYSTEM (SAS) SIZING CRITERIA	
PERCOLATION RATE:	25 MPI
SOIL CLASS:	II
EFFLUENT LOADING RATE:	0.40 GPD/S.F.
REQUIRED SAS SIZE:	1100 S.F. (FOR TITLE V)
REQUIRED SAS SIZE:	800 S.F. (MIN. FOR ACTON BOH)
SOIL ABSORBTION SYSTEM (SAS) AREA PROVIDED	
SAS TRENCH DIMENSIONS:	46' L X 2' W X 2' D
NUMBER OF TRENCHES:	4 SPACED 6' APART
AREA PROVIDED:	1104 S.F.
HYDRAULIC LOADING CAPACITY OF SAS:	441 GPD

PRIMARY TRENCH DESIGN ELEVATIONS

	EXIST. GRADE	ESHW	TRENCH BOT.	INVERT END	INVERT BEGIN	BREAK OUT
1	202.00	198.00	202.00	204.00	204.23	204.73
2	202.00	198.00	202.00	204.00	204.23	204.73
3	201.00	197.00	201.00	203.00	203.23	203.73
4	201.00	197.00	201.00	203.00	203.23	203.73

SCHEDULE OF ELEVATIONS

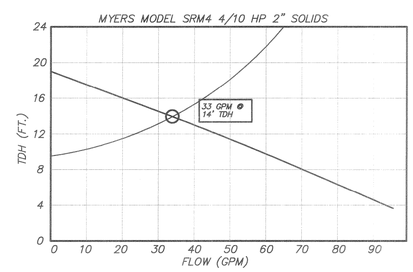
TOC	204.00
BUILDING SEWER INVERT	199.95
SEPTIC TANK INLET INVERT	199.75
SEPTIC TANK OUTLET	199.50
PUMP CHAMBER INLET	199.40
PUMP CHAMBER SUMP	195.15
DISTRIBUTION BOX INLET INVERT	204.57
DISTRIBUTION BOX OUTLET INVERT	204.40

EFFLUENT PUMP CALCULATIONS

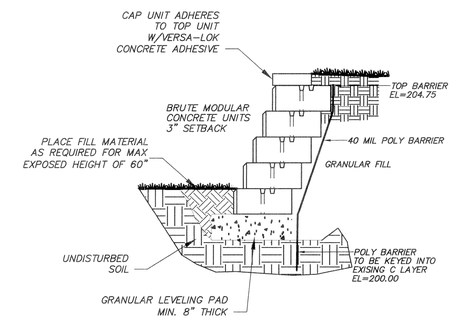
PUMP CHAMBER SUMP	195.15
DISTRIBUTION BOX INLET INVERT	204.57
ELEVATION HEAD LOSS	9.42'
FRICTIONAL HEAD LOSS	4.58'
MYERS MODEL SRM4	
0.4 HP SINGLE PHASE	
1 1/2" SOLIDS HANDLING CAPACITY	
OPERATING POINT	
FLOW RATE	33 GPM
TOTAL DYNAMIC HEAD	14'
PUMP RUN TIME	
DOSES PER DAY	5
VOLUME PER DOSE	88 GAL
PUMP RUN TIME	2.6 MIN.

PUMP NOTES

1. THE SPECIFIED PUMP MAY ONLY BE SUBSTITUTED WITH WRITTEN APPROVAL OF THE DESIGN ENGINEER. FAILURE TO PROVIDE CORRECT PUMP WILL VOID CERTIFICATION.
2. PUMPS SHALL BE CAPABLE OF PASSING A MINIMUM SOLID SIZE OF 1 1/4" DIAMETER AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
3. PVC FORCEMAIN FROM PUMP CHAMBER TO D-BOX SHALL BE A MINIMUM OF 2" IN DIAMETER, HAVE WATER TIGHT JOINTS AND LAID TO ENSURE FULL BACKFLOW TO PUMP CHAMBER.
4. IN LOCATIONS THAT THE FORCEMAIN CANNOT DRAIN COMPLETELY TO THE PUMP CHAMBER, A MINIMUM OF 4' COVER SHALL BE LAID OVER THE PIPE.
5. ALL PUMPS MUST BE EQUIPPED WITH AN ALARM LOCATED IN THE BUILDING SERVED WHICH IS POWERED BY A CIRCUIT SEPARATE FROM THE CIRCUIT TO THE PUMPS.

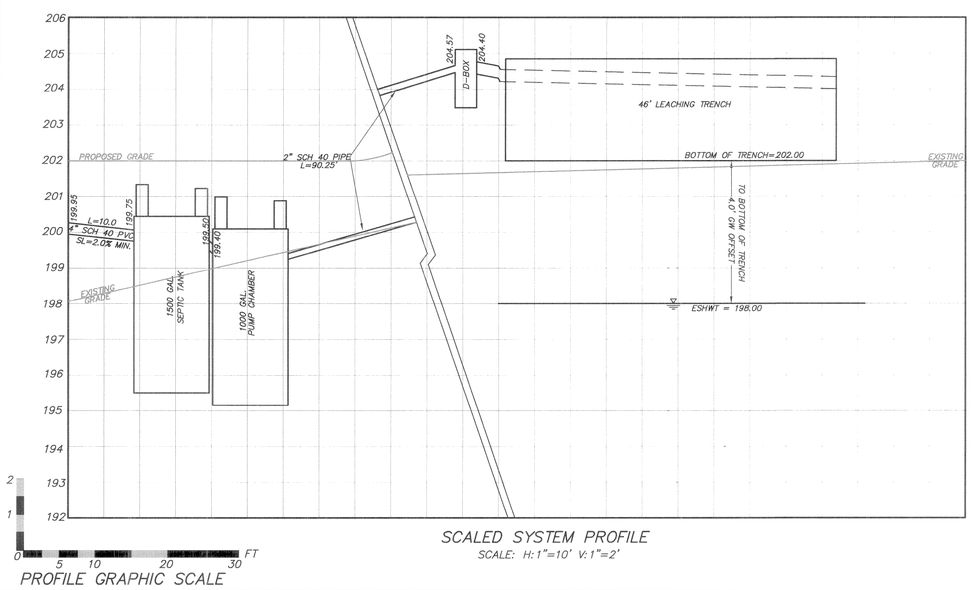


PUMP CURVE



UNREINFORCED RETAINING WALL

NO SCALE



PROFILE GRAPHIC SCALE

SCALED SYSTEM PROFILE

SCALE: H:1"=10' V:1"=2'

SOIL SUITABILITY ASSESSMENT

DEEP HOLE OBSERVATION NUMBER: B13-1 DATE: 8/8/13 — SOIL EVALUATOR: RUSS WILSON, PLS — B.O.H. AGENT: EVAN CARLONI A.BOH

DEPTH	SOIL HORIZON	SOIL COLOR	REDOX FEATURES DEPTH	REDOX FEATURES COLOR	REDOX FEATURES %	SOIL TEXTURE	COARSE FRAGMENTS GRAVEL	COARSE FRAGMENTS STONES	SOIL STRUCT.	SOIL CONSIST.	OTHER
0-16"	A	10YR3/2	---	---	---	SL	---	---	---	---	---
16-30"	B	7.5YR5/6	---	---	---	SL	---	---	---	---	---
30-108"	C	3Y4/4	---	---	---	SL	---	---	---	---	---

ADDITIONAL NOTES:

BEDROCK: N/A
STANDING WATER: 92"
SEEPAGE: 88"

ESTIMATED DEPTH TO HIGH GROUNDWATER: 48"

DEEP HOLE OBSERVATION NUMBER: B13-3 DATE: 8/8/13 — SOIL EVALUATOR: RUSS WILSON, PLS — B.O.H. AGENT: EVAN CARLONI A.BOH

DEPTH	SOIL HORIZON	SOIL COLOR	REDOX FEATURES DEPTH	REDOX FEATURES COLOR	REDOX FEATURES %	SOIL TEXTURE	COARSE FRAGMENTS GRAVEL	COARSE FRAGMENTS STONES	SOIL STRUCT.	SOIL CONSIST.	OTHER
0-10"	A	10YR3/2	---	---	---	SL	---	---	---	---	---
10-24"	B	7.5YR5/6	---	---	---	SL	---	---	---	---	---
24-114"	C	3Y4/4	---	---	---	SL	---	---	---	---	---

ADDITIONAL NOTES:

BEDROCK: N/A
STANDING WATER: 114"
SEEPAGE: 90"

ESTIMATED DEPTH TO HIGH GROUNDWATER: 48"

DEEP HOLE OBSERVATION NUMBER: B13-2 DATE: 8/8/13 — SOIL EVALUATOR: RUSS WILSON, PLS — B.O.H. AGENT: EVAN CARLONI A.BOH

DEPTH	SOIL HORIZON	SOIL COLOR	REDOX FEATURES DEPTH	REDOX FEATURES COLOR	REDOX FEATURES %	SOIL TEXTURE	COARSE FRAGMENTS GRAVEL	COARSE FRAGMENTS STONES	SOIL STRUCT.	SOIL CONSIST.	OTHER
0-8"	A	10YR3/2	---	---	---	SL	---	---	---	---	---
8-26"	B	7.5YR5/6	---	---	---	SL	---	---	---	---	---
26-108"	C	3Y4/4	---	---	---	SL	---	---	---	---	---

ADDITIONAL NOTES:

BEDROCK: N/A
STANDING WATER: 106"
SEEPAGE: 88"

ESTIMATED DEPTH TO HIGH GROUNDWATER: 48"

DEEP HOLE OBSERVATION NUMBER: B13-4 DATE: 8/8/13 — SOIL EVALUATOR: RUSS WILSON, PLS — B.O.H. AGENT: EVAN CARLONI A.BOH

DEPTH	SOIL HORIZON	SOIL COLOR	REDOX FEATURES DEPTH	REDOX FEATURES COLOR	REDOX FEATURES %	SOIL TEXTURE	COARSE FRAGMENTS GRAVEL	COARSE FRAGMENTS STONES	SOIL STRUCT.	SOIL CONSIST.	OTHER
0-12"	A	10YR3/2	---	---	---	---	---	---	---	---	---
12-26"	B	7.5YR5/6	---	---	---	---	---	---	---	---	---
26-120"	C	3Y4/4	---	---	---	---	---	---	---	---	---

ADDITIONAL NOTES:

BEDROCK: N/A
STANDING WATER: 120"
SEEPAGE: 86"

ESTIMATED DEPTH TO HIGH GROUNDWATER: 46"

PERC TEST	B13-A	B13-B
DATE	8/8/13	8/8/13
DEPTH	46"	48"
RATE (MPI)	25	19

#	DATE	REVISION COMMENT

DATE: 11/11/13

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COMMONWEALTH OF MASSACHUSETTS — CHRISTIAN A. MARKEY — CIVIL — No. 38837 — REGISTERED PROFESSIONAL ENGINEER

11-11-13

SUBSURFACE SEWAGE DISPOSAL DESIGN DETAIL SHEET

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ACTON, MASSACHUSETTS

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