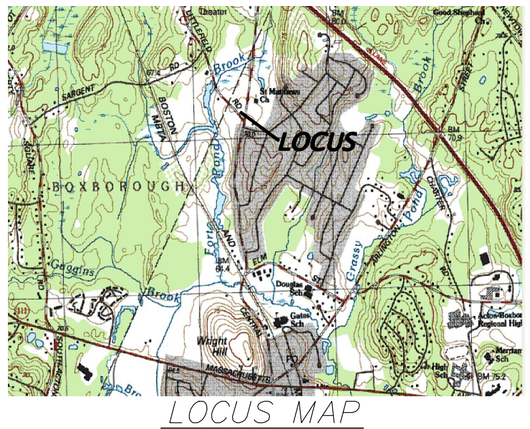
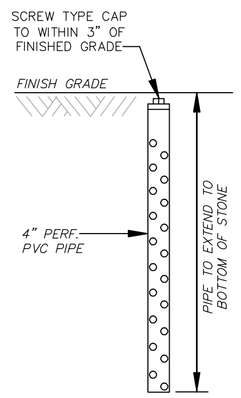


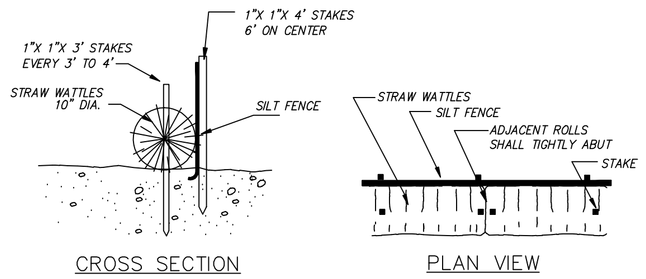
LOCUS MAP

N.T.S.



INSPECTION PORT

NOT TO SCALE



CROSS SECTION

PLAN VIEW

NOTES:

1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.

2. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFATURERS RECOMMENDATIONS.

EROSION BARRIER

NOT TO SCALE

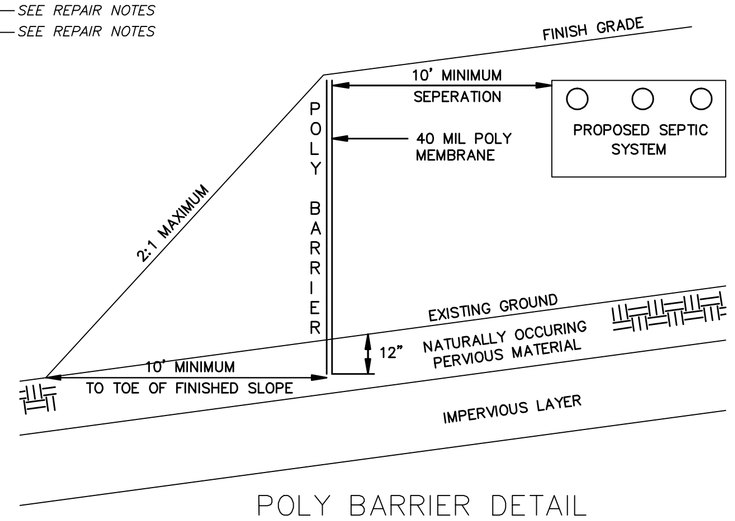
SCHEDULE OF ELEVATIONS

TOP OF FOUNDATION T.C. =	202.8±	
BASEMENT FLOOR FIN. C.F. =	195.3±	
INVERT OF PIPE AT FOUNDATION =	198.32*	SEE REPAIR NOTES
INVERT AT SEPTIC TANK INLET =	196.80*	SEE REPAIR NOTES
INVERT AT SEPTIC TANK OUTLET =	196.63	
INVERT AT PUMP TANK INLET =	196.53	
INVERT AT PUMP TANK OUTLET =	196.36	
INVERT AT DISTRIBUTION BOX INLET =	199.97	
INVERT AT DISTRIBUTION BOX OUTLET =	199.80	
INVERT AT LEACHING LINES (BEGINNING) =	199.70	
INVERT AT LEACHING LINES (END) =	199.50	
ELEVATION OF BED BOTTOM =	199.00	
FINISH GRADE OVER LEACHING AREA =	201.2±	

DESIGN CRITERIA

1. ESTIMATED FLOW = 3 BDRMS X 110 GPD/BR=330 GPD
2. DESIGN PERCOLATION RATE = 15.0 MPI
3. LEACHING AREA CALCULATION =

BA=(15'X40') = 600 SF— 600 SF(0.56 GPD/SF)=336 GPD



POLY BARRIER DETAIL

NOT TO SCALE

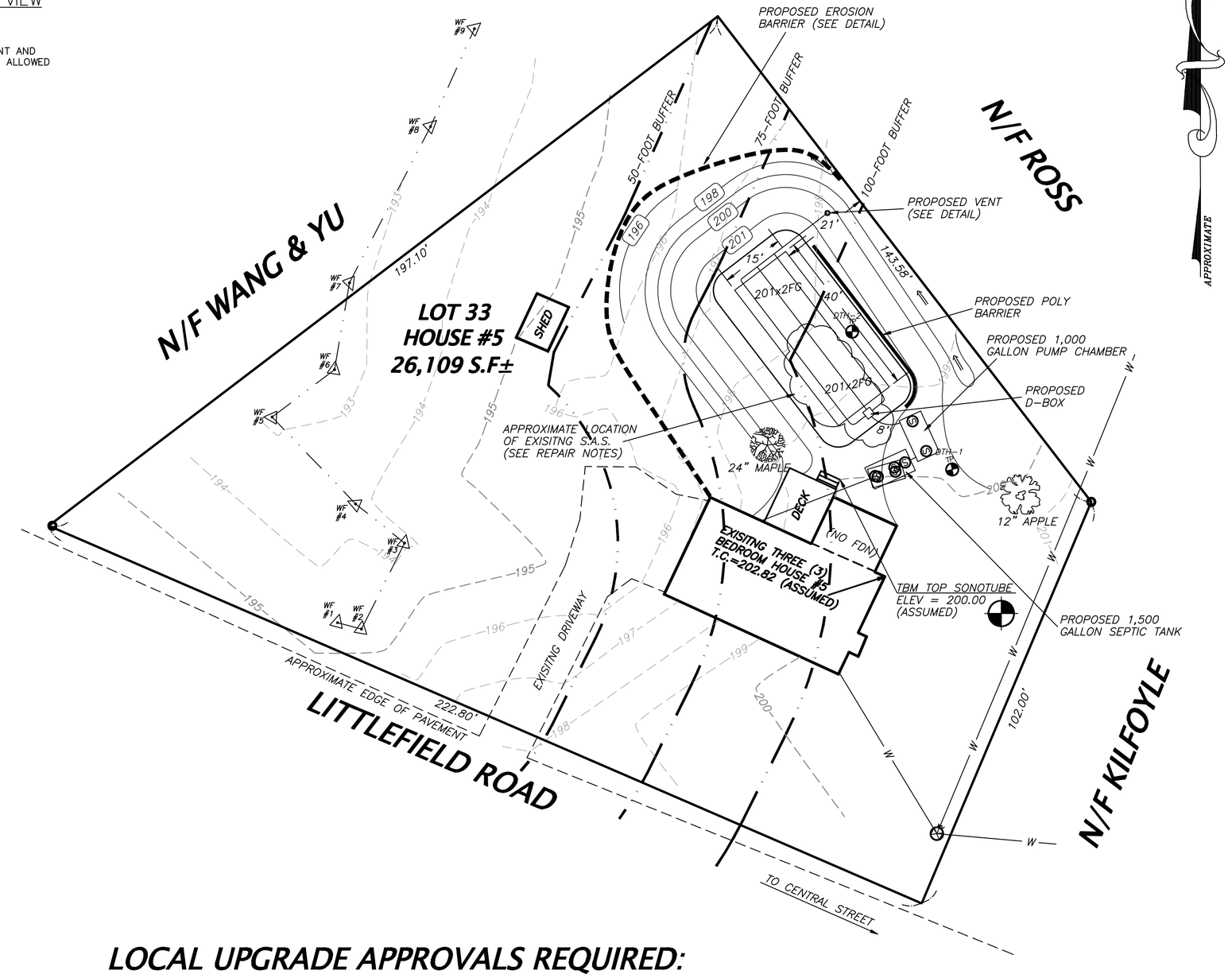
PUMP NOTES:

1. THE PUMP CHAMBER SHALL BE A 1,000 GALLON SEPTIC TANK AS PRODUCED BY: E.F. SHEA INC. OR ITS APPROVED EQUAL. ALL JOINTS SHALL BE MORTARED, AND THE TANK WATER TIGHT.
2. THE PUMP SHALL BE A MYERS SRM-4, 4/10 HP PUMP OR EQUAL WITH A 2" INCH DISCHARGE LINE AND SHALL BE EQUIPPED WITH 115 VOLT SINGLE PHASE POWER, SM 15NO FLOATS, AND A CE 11S CONTROL PANEL THAT IS EQUIPPED WITH AN AUDIBLE ALARM.
3. HIGH WATER ALARM TO CONSIST OF A MERCURY FLOAT SWITCH (CE 11S ALARM CONTROL) WITH A POWER CIRCUIT SEPERATE OF THE PUMP POWER CIRCUIT, SET TO ACTIVATE ALARM IN THE HOUSE WHEN WATER REACHES THE ELEVATION OF 193.73
4. ALL WIRING TO BE PLACED OUTSIDE OF HOUSE TO BE WATERPROOF AND INSTALLED ACCORDING TO APPLICABLE CODES.
5. THE DISTRIBUTION BOX SHALL BE EQUIPPED WITH A TEE.
6. ANY BAFFLE OR TEE THAT OBSTRUCTS THE DISCHARGE LINE SHALL BE REMOVED.
7. THE ALARM IS TO HAVE AN ALTERNATIVE SUPPLY IN CASE OF POWER FAILURE.
8. WEEPHOLE MUST BE IN 2" INCH FORCE MAIN. THE HOLE SHOULD BE LOCATED BETWEEN THE CHECK VALVE AND INSIDE OF TANK.
9. CONTROL PANEL TO BE EQUIPPED WITH ON-OFF AND MANUAL SWITCHING POSITIONS.
10. CHECK VALVE SHALL BE OF BALL TYPE, INSTALLED VERTICALLY WITH A 3/8" WEEP LOCATED ON THE DISCHARGE SIDE OF THE CHECK VALVE BETWEEN VAVLE AND INSIDE WALL OF TANK.
11. ALL PRESSURE PIPING SHALL BE SECURED AND SHIELDED FROM ABRASION, AND SHALL BE COUPLED WITH HIGH PRESSURE PVC COUPLINGS.

REPAIR NOTES:

1. CONTRACTOR TO VERIFY ELEVATIONS (*) PRIOR TO THE START OF CONSTRUCTION AND REPORT TO ENGINEER ANY VARIATIONS IN ELEVATIONS TO THOSE SHOWN ON THIS PLAN.
2) EXISTING SYSTEM MAY BE ENCOUNTERED DURING INSTALLATION OF NEW SOIL ABSORPTION SYSTEM, (S.A.S.). REMOVAL, DISPOSAL AND UTILIZATION OF MATERIAL SHALL BE IN ACCORDANCE WITH THE TOWN OF ACTON'S BOARD OF HEALTH RULES AND REGULATIONS.

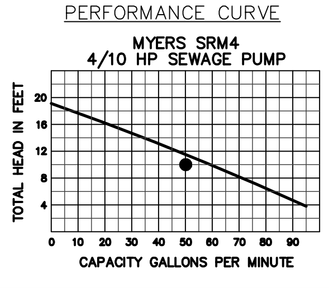
3) EXISTING SEPTIC TANK TO BE PUMPED, CRUSHED AND BACKFILLED WITH CLEAN GRANULAR MATERIAL AND/OR IN ACCORDANCE WITH THE TOWN OF ACTON'S BOARD OF HEALTH RULES AND REGULATIONS.



LOCAL UPGRADE APPROVALS REQUIRED:

15.405(1)(h) REDUCTION OF THE 4-FOOT SEPARATION BETWEEN BOTTOM OF SYSTEM AND E.S.H.W.T. (3-FOOT SEPARATION PROVIDED)

PERFORMANCE CURVE



TOTAL DYNAMIC HEAD CALCULATION:

LINEAL FEET OF PIPE-2 INCH.	= 8'
EQUIVALENT FEET OF PIPE FOR FITTINGS	= 35'
TOTAL LINEAL FEET OF PIPE	= 43'
FRICTION HEAD LOSS PER 100' AT 50 GPM	= 4.68'
STATIC HEAD	= 6.94'
EQUIVALENT HEAD = 43/100 x 4.68	= 2.01'
TOTAL DYNAMIC HEAD	= 8.95'

PUMP DISCHARGE CALCULATIONS

DOSES / DAY = 3 DOSES
1000 GAL. TANK = 8'x4.6'x0.45' =
16.56 C.F. x 7.48 GAL. / C.F.= 123.87 GAL. SUPPLIED DOSE
PUMP CAPACITY AT 8.95 FT. OF HEAD =50 GAL. / MIN.
DOSE TIME = 2.48 MIN. / DOSE

GRAPHIC SCALE: 1"=20'

0 5 10 15 20 25 30 40 50 75 100 FEET
0 1 2 3 4 5 10 15 20 25 30 METERS

SITE PLAN

SCALE: 1" = 20'

THIS PLOT PLAN IS PREPARED FROM LINES OF OCCUPATION. THE TIES TO THE LOT LINES ARE NOT TO BE USED IN THE SETTING OF FENCES, HEDGES, ETC. AND IS NOT TO BE CONSIDERED A PROPERTY LINE SURVEY.

GENERAL NOTES:

1. Contractor shall call Digsafe at (888) 344-7233 a minimum of 72 hours prior to commencing any construction activities on site.
2. Inspections by Design Engineer and Board of Health are as required by the Board of Health.
3. This plan was prepared for the design of the subsurface sewage disposal system only and is based on the subsurface explorations and percolation tests listed below.
4. System was designed only to accomodate sanitary sewage associated with normal domestic usage, consisting of water carried putrescible waste, and for flows indicated in the design criteria.
5. The system must be vented through the buildings plumbing in accordance with the state building code.
6. Owner shall verify effective zoning regulations prior to construction.
7. Plans show only features that were visually apparent on the date of the topographic survey, and the absence of subsurface structures, utilities, etc. is not guaranteed.
8. Contractor to determine if site conditions are suitable for construction of proposed system, and must promptly notify the Design Engineer and Owner, in writing, of any plan deficiencies, unforseen subsurface conditions, or required changes.
9. There are no wells located within 100' feet of the proposed leaching area or within 100' feet of the proposed septic tank (except as shown).
10. The subject property is not located within a Zone II of a public drinking water supply well.
11. All construction is to conform to the requirements of the Massachusetts Environmental Code, Title V, and the town of ACTON Board of Health regulations.
12. There are no bordering vegetated wetlands, inland banks, or surface waters within 100' of the proposed system.
13. There are no surface or subsurface drains which are used to lower the ground water.
14. All elevations refer to TBM TOP SONOTUBE-ELEVATION=200.00 (ASSUMED)
15. For proper performance, septic tank should be pumped annually.
16. System cannot be backfilled or concealed until design firm and board of health have inspected the system and permission to backfill has been given.
17. Design firm must prepare and submit "As-Built" plan to Board of Health. This plan must certify that the system was installed in accordance with state and local regulations and that it complies with the proposed plan.
18. Property lines are approximate and are not to be used for boundary survey purposes. Surface features and topography outside of work area are approximate.
19. System is not designed to accomodate a garbage grinder.

TECHNICAL NOTES:

1. Building sewer shall be in accordance with state plumbing code and have a minimum of 4" of cover in landscaped areas. A minimum of 12" of cover and/or appropriate sleeving shall be used in areas subject to vehicular traffic.
2. All tanks, including septic tanks, distribution boxes, dosing chambers, and grease traps shall be either watertight through manufacturer's specification and warranty, or made watertight by the manufacturer or other individual by means and persons as approved in 310 CMR 15.221. Septic tank shall be constructed and placed in accordance with 310 CMR 15.223 through 310 CMR 15.228.
3. Septic tanks shall have at least three (3) 20" manholes with at least one (1) of these manholes located no more than 6" below finish grade. (Systems over 1,000 gpd shall have access ports at both the inlet and outlet tees.)
4. Distribution box ("d-box") shall be of watertight construction, installed level on a firm base, and installed in accordance with 310 CMR 15.232.
5. Septic tank covers and d-box are to be brought within 6" and 12" of finish grade respectively by the use of riser sections.
6. When the soil absorption system (SAS) is to be dosed or the slope of the inlet pipe exceeds 0.08 feet per foot, an inlet tee, baffle or splash plate extending to one inch above the outlet invert elevation shall be provided to dissipate velocity of the influent.
7. When the SAS is installed within the top and subsoil layers or above natural grade, all topsoil and subsoil shall be removed below and laterally a minimum of 5 feet surrounding the SAS. Removed material shall be replaced with clean granular material in accordance with 310 CMR 15.255(3).
8. All disturbed areas shall be loamed, seeded, and maintained so as to prevent erosion.
9. All native soil interfaces which will contact the SAS shall be scarified prior to placement of stone.

PERCOLATION TESTS

HOLE NO. & DATE	TOP ELEVATION	DEPTH (In.)	SATURATION (Min.)	12"-9" DROP (Min.)	9"-6" DROP (Min.)	PERC. RATE (Min./In.)
PT-A 6/5/63	198.5±	48"	15 MIN	39 MIN	39 MIN	13 MIN/IN

DEEP OBSERVATION HOLE LOG

NO., DATE & ELEV.	DEPTH (In.)	SOIL HORIZON	TEXTURE (USDA)	COLOR (MUNSELL)	SOIL MOTTLING	OTHER
DTH-1	0-16"	Ap	SANDY LOAM	10 YR 3/3	NONE	CRUMB, FRIABLE
5/22/14	16-30"	Bw	SANDY LOAM	10 YR 5/6	NONE	BLOCKY, FRIABLE
199.8±	30-96"	C	LOAMY SAND	10 YR 5/4	@42"	MASSIVE, FRIABLE
PARENT MATERIAL: ABLATION TILL	DEPTH TO BEDROCK: N/A	STANDING WATER: 60"	WEEPING FROM PIT FACE: 60"	ESHWT: @ 42"		
DTH-2	0-14"	Ap	SANDY LOAM	10 YR 3/3	NONE	CRUMB, FRIABLE
5/22/14	14-24"	Bw	SANDY LOAM	10 YR 5/6	NONE	BLOCKY, FRIABLE
198.5±	24-90"	C	LOAMY SAND	10 YR 5/4	@36"	MASSIVE, FRIABLE
PARENT MATERIAL: ABLATION TILL	DEPTH TO BEDROCK: N/A	STANDING WATER: 42"	WEEPING FROM PIT FACE: 42"	ESHWT: @ 36"		

TESTS CONDUCTED BY: WILLIAM J. "JACK" MALONEY, JR. (SE #13704)
TESTS OBSERVED BY: EVAN CARLONI, ACTON BOH AGENT

I certify that I have passed the examination approved by the department of Environmental Protection and that the above analysis has been performed by me consistent with the required training, expertise, and experience described in 310 CMR 15.018(2).

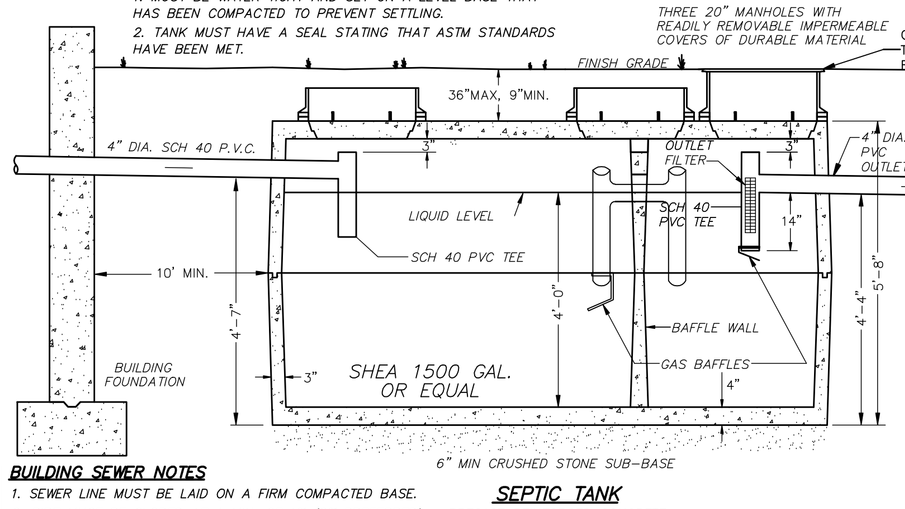
Certified: July 2013

SYSTEM PROFILE

NOT TO SCALE

SEPTIC TANK NOTES

1. MUST BE WATER TIGHT AND SET ON A LEVEL BASE THAT HAS BEEN COMPACTED TO PREVENT SETTLING.
2. TANK MUST HAVE A SEAL STATING THAT ASTM STANDARDS HAVE BEEN MET.

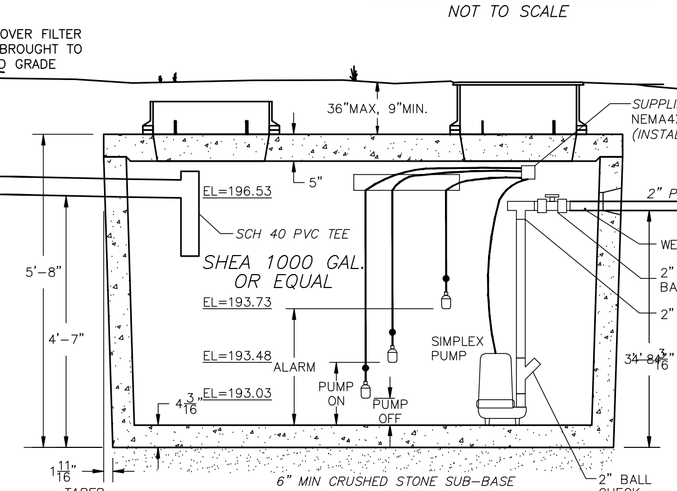


BUILDING SEWER NOTES

1. SEWER LINE MUST BE LAID ON A FIRM COMPACTED BASE.
2. PIPE MUST BE SLOPED AT A MIN. OF 1% (2% PREFERRED)
3. PIPE MUST BE LAID ON A CONTINUOUS UNIFORM GRADIENT.

SEPTIC TANK

PRECAST REINFORCED CONCRETE
CAPACITY OF TANK = 1500 GAL.

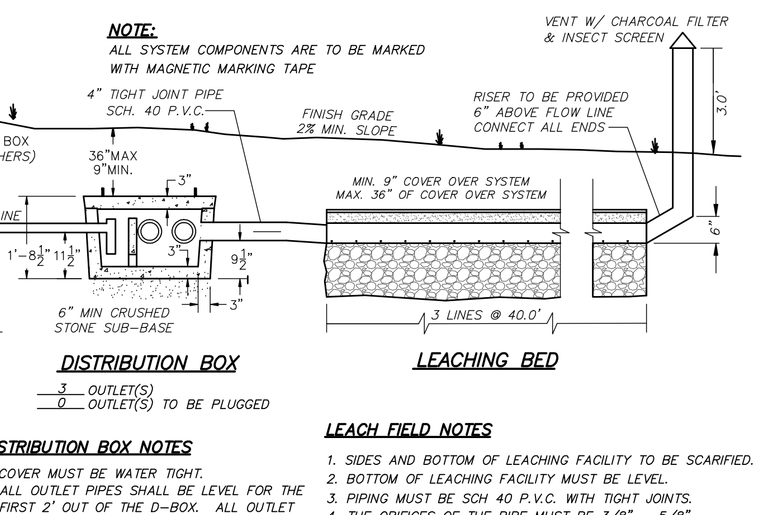


PUMP CHAMBER

PRECAST REINFORCED CONCRETE
CAPACITY OF TANK = 1000 GAL.

NOTE:

ALL SYSTEM COMPONENTS ARE TO BE MARKED WITH MAGNETIC MARKING TAPE



DISTRIBUTION BOX

3 OUTLET(S)
0 OUTLET(S) TO BE PLUGGED

DISTRIBUTION BOX NOTES

1. COVER MUST BE WATER TIGHT.
2. ALL OUTLET PIPES SHALL BE LEVEL FOR THE FIRST 2' OUT OF THE D-BOX. ALL OUTLET PIPES TO BE AT THE SAME ELEVATION.
3. SOIL MUST BE COMPACTED UNDER "D" BOX TO PREVENT SETTLING.

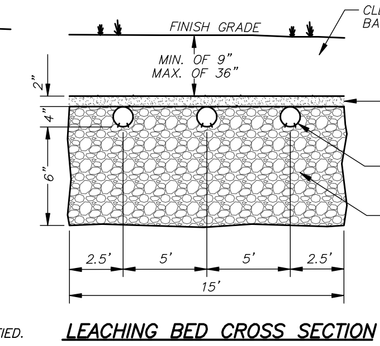
LEACHING BED

LEACH FIELD NOTES

1. SIDES AND BOTTOM OF LEACHING FACILITY TO BE SCARIFIED.
2. BOTTOM OF LEACHING FACILITY MUST BE LEVEL.
3. PIPING MUST BE SCH 40 P.V.C. WITH TIGHT JOINTS.
4. THE ORIFICES OF THE PIPE MUST BE 3/8" - 5/8".
5. VENT REQUIRED IF LEACH LINES ARE GREATER THAN 50'.

FINAL GRADING NOTES

1. 2% SLOPE MUST BE PROVIDED OVER AND AROUND SYSTEM.
2. SURFACE DRAINAGE MUST BE AWAY FROM SYSTEM.
3. GRADING MUST BE DONE TO PREVENT PONDING.



LEACHING BED CROSS SECTION

APPLICANT	LOCATION
MICHAEL & JOLENE SMALL	5 LITTLEFIELD RD. ACTON, MA ASSESSORS MAP: D2 & PARCEL: 52

DIG SAFE 1-888-344-7233

NO.	DATE:	REVISION:	BY:

PROPOSED SEWAGE DISPOSAL SYSTEM

SULLIVAN, CONNORS AND ASSOCIATES
LAND SURVEYING AND CIVIL ENGINEERING
121 BOSTON POST RD. SUDBURY, MA. 01776
PHONE: 978-443-9566 FAX: 978-443-8915

DATE: 6/2/14 SHEET 1 OF 1