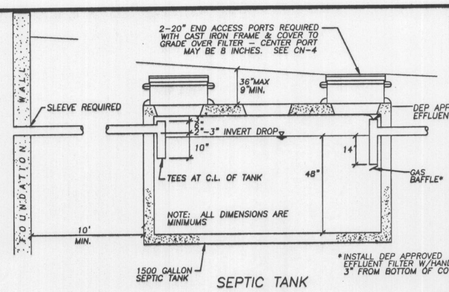
GENERAL NOTES:

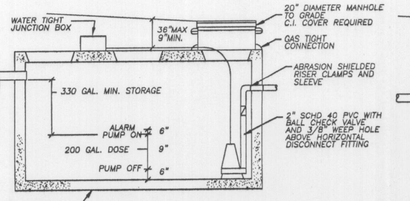
1. PLAN WAS PREPARED FOR NAMED CLIENT TO SHOW THE DESIGN OF THE SUBSURFACE SEWAGE DISPOSAL SYSTEM IN ACCORDANCE WITH TITLE 5 AND ANY MORE RESTRICTIVE REGULATIONS OF THE BOARD OF HEALTH.
2. DESIGN IS BASED UPON A TOPOGRAPHIC PLAN SHOWING THE VISUALLY APPARENT FEATURES OF THE SITE IN THE ENVIRONS OF THE SYSTEM AND THE SUBSURFACE EXPLORATIONS LISTED ON THIS PLAN.
3. PROPERTY LINES ARE BASED ON THE PLAN REFERENCED AND SHALL BE CONFIRMED AS BEING MOST RECENT PRIOR TO CONSTRUCTION.
4. PRIOR TO CONSTRUCTION, CONTRACTOR/OWNER SHALL REVIEW CURRENT ZONING, WETLANDS, AND ALL OTHER REGULATIONS THAT MAY AFFECT THIS PLAN.
5. THE BUILDINGS, DRIVEWAY, AND SEPTIC TANK CONFIGURATION MAY BE ALTERED WITH THE APPROVAL OF THE ENGINEER AND THE BOARD OF HEALTH.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY PLAN DEFICIENCIES PRIOR TO INITIATION OF CONSTRUCTION AND ALL DEFICIENCIES FOUND DURING CONSTRUCTION SHALL BE REPORTED ON THE DAY DISCOVERED.
7. ALL KNOWN DRINKING WATER WELLS WITHIN 200 FEET OF THE SEWAGE DISPOSAL SYSTEM, AND ALL KNOWN SEWAGE DISPOSAL SYSTEMS WITHIN 200 FEET OF THE WELL, ARE SHOWN OR INDICATED.
8. THE SEWAGE DISPOSAL SYSTEM SHALL BE OFFSET A MINIMUM OF 10 FEET FROM ANY DRAIN OR PROPERTY LINE, 50 FEET FROM ANY SURFACE WATERS OR WETLANDS, 100 FEET FROM DRINKING WATER WELLS, OR AS OTHERWISE REQUIRED BY STATE AND LOCAL REGULATIONS.
9. ANY ALTERATIONS WITHIN 100' OF WETLANDS REQUIRE A FILING WITH THE CONSERVATION COMMISSION.

CONSTRUCTION NOTES:

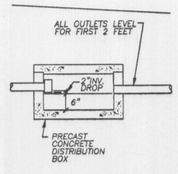
1. CONTRACTOR SHALL CALL DIG SAFE (1-888-322-4844) PRIOR TO CONSTRUCTION.
2. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THESE PLANS, TITLE 5, BOARD OF HEALTH REGULATIONS, AND ALL OTHER APPLICABLE REGULATIONS UNLESS SPECIFIED OTHERWISE IN WRITING.
3. STRUCTURES, PIPE, STONE AND FILL SHALL BE INSTALLED ON SUITABLE BEARING MATERIALS, FREE OF ORGANIC MATTER.
4. ALL STRUCTURES SHALL BE OF AN APPROVED DESIGN, SET LEVEL ON 6 INCHES OF CRUSHED STONE, AND BE MADE WATERTIGHT. SEPTIC TANK TEES SHALL BE OF LENGTH REQUIRED BY TITLE 5 (THOSE SHOWN ARE FOR FOUR FOOT LIQUID DEPTH). RISERS ARE REQUIRED ON ALL TANK OPENINGS WHEN COVER EXCEEDS 9".
5. ALL GRAVITY PIPING SHALL BE 4" AND LAID TRUE TO LINE AND GRADE WITH SECURE WATERTIGHT JOINTS AND BE BEDDED AND BACKFILLED AS REQUIRED BY MANUFACTURER.
   A. THE BUILDING SEWER SHALL BE SCHEDULE 40 PVC, CAST OR DUCTILE IRON, OR AN APPROVED EQUAL.
   B. SOLID AND PERFORATED PIPES UNDER PAVEMENT SHALL BE SCHEDULE 40 PVC, OR THE APPROVED EQUIVALENT.
   C. DISTRIBUTION LINES SHALL BE SCHEDULE 40 PVC/ABS, SDR 35 PVC, OR HDPE-ASTM D 3034.
6. GRAVITY LINES SHALL HAVE THE FOLLOWING MINIMUM SLOPES:
   A. BUILDING TO SEPTIC TANK: 0.02 FT/FT.
   B. SEPTIC TANK TO DISTRIBUTION BOX 0.01 FT/FT.
   C. DISTRIBUTION BOX TO LINES 0.005 FT/FT.
7. DISTRIBUTION BOX OUTLETS SHALL BE LEVEL FOR THE FIRST TWO FEET AND AN INLET TEE CUT OFF ONE INCH ABOVE OUTLETS SHALL BE INSTALLED IF INLET PIPE EXCEEDS 0.08 FT/FT OR IF PIPE IS A FORCE MAIN.
8. D-BOX SHALL BE EXTENDED BETWEEN 6 AND 9 INCHES OF FINAL GRADE WITH A PRECAST CONCRETE RISER FURNISHED BY D-BOX MANUFACTURER. PUDDLE 9" WIDE MORTAR RING 3 INCHES ABOVE AND BELOW JOINT.
9. ALL LARGE BOULDERS, ROOTS AND OTHER UNSUITABLE MATERIALS ENCOUNTERED IN EXCAVATIONS SHALL BE REMOVED.
10. ALL SURFACES SHALL BE SCARIFIED PRIOR TO THE PLACEMENT OF FILL OR STONE, TO ENHANCE INFILTRATIVE CAPABILITIES.
11. WHEN GRAVEL FILL IS REQUIRED, ALL ORGANIC MATERIALS SHALL BE REMOVED AND FILL CONFORMING TO REQUIREMENTS OF 310CMR 15.255 SHALL BE PLACED IN A MANNER TO INSURE SUPPORT AND PERCOLATION.
12. DOUBLE WASHED STONE SHALL BE DURABLE AND FREE FROM IRON, FINES AND DUST.
13. ALL BACKFILL SHALL BE CLEAN EARTHEN MATERIALS FREE OF LARGE STONES AND FROZEN MATERIALS. BACKFILL SHALL BE PLACED TO SUPPORT THE SYSTEM, INSURE PROPER RUNOFF AND BE STABILIZED TO PREVENT EROSION.
14. COVER OVER STRUCTURES AND LEACHING WORKS SHALL BE A MINIMUM OF 9 INCHES AND A MAXIMUM OF 36 INCHES.
15. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE, OR APPROVED EQUAL.
16. SEPTIC TANK EFFLUENT TEE SHALL HAVE A DEP EFFLUENT FILTER WITH HANDLE EXTENDING TO WITHIN 3" OF C.I. FRAME AND COVER EXTENDED TO GRADE OVER OUTLET.



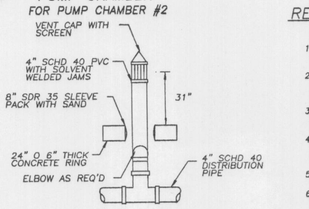
SEPTIC TANK



PUMP CHAMBER
FOR PUMP CHAMBER #2



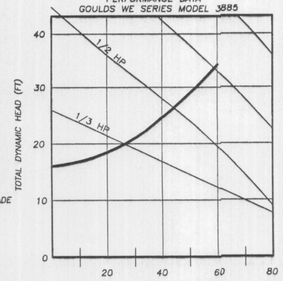
D-BOX



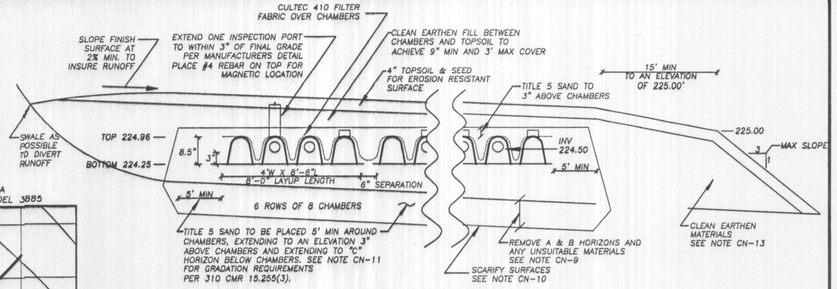
PROFILE
N.T.S.

RESIDENTIAL PUMP CHAMBERS
FOR PUMP CHAMBERS #2 & #3

1. STRUCTURES, PUMPS, AND CONTROLS SHALL CONFORM TO THE REQUIREMENTS OF TITLE 5 AND ALL APPLICABLE CODES.
2. CHAMBER SHALL BE WATERTIGHT, VENTED, AND ALL OPENINGS SHALL BE A MINIMUM OF 2 FEET ABOVE THE MAXIMUM GROUNDWATER ELEVATION.
3. THE CAST IRON ACCESS MANHOLE SHALL BE OF SUITABLE SIZE TO ALLOW PUMP REMOVAL, BE CHILD PROOF, AND EXTEND 1" ABOVE FINISHED GRADE
4. THE PUMP SHALL BE CAPABLE OF PASSING A 3/4" SPHERICAL SOLID, AND BE MADE FOR PUMPING RAW SEWAGE UNDER THE CONDITIONS SHOWN.
5. THE DISCHARGE SHALL BE A MINIMUM OF 25 GPM AGAINST A TDH OF 15 FT.
6. THE MOTOR SHALL HAVE A MINIMUM HP OF 1/3 AND BE SUITABLE FOR THE CURRENT AVAILABLE, AS DETERMINED BY THE CONTRACTOR.
7. THE CHAMBER SHALL BE OF SIZE THAT WILL ALLOW A TOTAL DISCHARGE DOSE OF 200 GAL. AND STORE 440 GAL. ABOVE THE PUMP ON FLOAT.
8. CONTROLS SHALL BE MERCURY SWITCH FLOATS INSTALLED TO BE VISIBLE FROM THE MANHOLE AND SET TO OPERATE AS SHOWN.
9. ALARM AND CONTROLS SHALL BE LOCATED WITHIN HOUSE AND NO SPLICES OR JUNCTION BOXES SHALL BE INSTALLED WITHIN CHAMBER.
10. MANUFACTURERS LITERATURE SHALL BE STAPLED NEXT TO CONTROLS. ALARM SHALL BE ON SEPARATE CIRCUITS.
11. THE CHECK VALVE SHALL BE BALL TYPE.
12. ALL PIPING SHALL BE SECURED AND SHIELDED FROM ABRASION.
13. FORCE MAIN SHALL SLOPE CONTINUALLY UPWARD, (UNLESS SHOWN OTHERWISE) BE PROTECTED FROM FROST AND FREEZING-BY COVER, INSULATION, OR A WEEP HOLE PLACED ABOVE THE CHECK VALVE.
14. FORCE MAIN SHALL BE 2" IPS HD POLYETHYLENE
15. SEPTIC TANK OUTLET TEE SHALL HAVE A DEP APPROVED FILTER WITH HANDLE EXTENDED TO 3" BELOW CI COVER



USE 1/3hp PUMP



NOTE: CONTACTORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS AND DEP APPROVAL

CULTEC CONTACTOR C-4 HD (HEAVY DUTY)
BED CROSS SECTION
N.T.S.

SOIL TESTS

SOIL EVALUATOR:
ROBERT ELLIOT
BOARD OF HEALTH AGENT:
BRETT REAGOR

1. PERCOLATION RATES: (MIN/IN)

P#	RATE	DEPTH	DATE
PT-A	CNS	54"	3-9-06
PT-B	12 MIN/IN	58"	3-9-06

2. OBSERVATION HOLE DATA

DEEP HOLE # 1		Date: 3-9-06		Elevation: 223.0
Depth to	Horizon	Texture	Color	Soil Mottling
0-8"	A	SL	10YR3/2	
8-15"	Bw1	SL	10YR5/6	
15-38"	Bw2	SL	10YR5/4	REDOX@38"
38-93"	C	SL	2.5Y5/2	
DEPTH TO:				
Bedrock:			>93"	
Standing Water:			NONE	
Weeping Sides:			55"	
Seasonal High Ground Water:			38" (219.8)	

DEEP HOLE # 2		Date: 3-9-06		Elevation: 223.4
Depth to	Horizon	Texture	Color	Soil Mottling
0-8"	A	SL	10YR3/2	
8-21"	Bw1	SL	10YR5/6	
21-38"	Bw2	SL	10YR5/4	REDOX@38"
38-105"	C	SL	2.5Y5/2	
DEPTH TO:				
Bedrock:			>105"	
Standing Water:			NONE	
Weeping Sides:			63"	
Seasonal High Ground Water:			38" (220.2)	

DEEP HOLE # 3		Date: 3-9-06		Elevation: 223.2
Depth to	Horizon	Texture	Color	Soil Mottling
0-8"	A	SL	10YR3/2	
8-24"	Bw1	SL	10YR5/6	
24-39"	Bw2	SL	10YR5/4	REDOX@39"
39-104"	C	SL	2.5Y5/2	
DEPTH TO:				
Bedrock:			>104"	
Standing Water:			NONE	
Weeping Sides:			72"	
Seasonal High Ground Water:			39" (220.0)	

DEEP HOLE # 4		Date: 3-9-06		Elevation: 222.6
Depth to	Horizon	Texture	Color	Soil Mottling
0-12"	A	SL	10YR3/2	
12-26"	Bw1	SL	10YR5/6	
26-40"	Bw2	SL	10YR5/4	REDOX@40"
40-108"	C	SL	2.5Y5/2	
DEPTH TO:				
Bedrock:			>108"	
Standing Water:			NONE	
Weeping Sides:			72"	
Seasonal High Ground Water:			40" (219.3)	

DEEP HOLE # 5		Date: 3-9-06		Elevation: 222.6
Depth to	Horizon	Texture	Color	Soil Mottling
0-12"	A	SL	10YR3/2	
12-27"	Bw1	SL	10YR5/6	
27-40"	Bw2	SL	10YR5/4	REDOX@40"
40-106"	C	SL	2.5Y5/2	
DEPTH TO:				
Bedrock:			>106"	
Standing Water:			NONE	
Weeping Sides:			77"	
Seasonal High Ground Water:			40" (219.3)	

DEEP HOLE # 6		Date: 3-9-06		Elevation: 223.1
Depth to	Horizon	Texture	Color	Soil Mottling
0-8"	A	SL	10YR3/2	
8-24"	Bw1	SL	10YR5/6	
24-39"	Bw2	SL	10YR5/4	REDOX@39"
39-100"	C	SL	2.5Y5/2	
DEPTH TO:				
Bedrock:			>100"	
Standing Water:			NONE	
Weeping Sides:			75"	
Seasonal High Ground Water:			39" (219.9)	

DESIGN ELEVATIONS

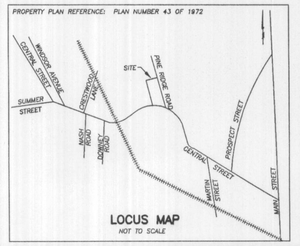
	UNIT	#1	#2	#3	#4
INVERTS	TOP OF CONC	226.5'	226.5'	232.5'	230.5'
	AT FOUNDATION	222.75'	222.75'	226.75'	225.75'
	S.T. INLET	222.50'	222.50'	226.50'	225.50'
	S.T. OUTLET	222.25'	222.25'	226.25'	225.25'
	AT P.C.	222.00'	222.00'	226.00'	225.00'

INVERTS

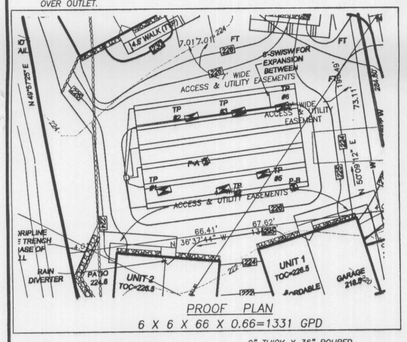
AT CLEANOUT	224.90
AT D-BOX INLET	224.80
AT D-BOX OUTLET	224.63
CHAMBER INVERT	224.50
TOP OF CHAMBERS/BREAKOUT	224.96
BOTTOM OF CHAMBERS	224.25

DESIGN CRITERIA

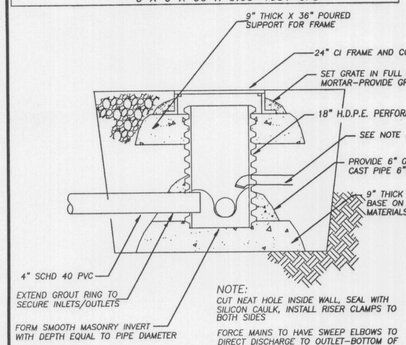
1. SYSTEM IS DESIGNED TO ACCOMMODATE SANITARY SEWAGE ASSOCIATED WITH DOMESTIC USAGE CONSISTING OF PUTRESCIBLE WASTE AND FOR THE FLOWS CALCULATED.
2. SYSTEM IS NOT DESIGNED FOR THE USE OF A GARBAGE GRINDER OR FOR WATER SOFTENER BACKWATER DISCHARGE.
3. FLOWS: 12 BEDROOMS @ 110 GPD = 1320 GPD
4. SEPTIC TANK: 2 x FLOW, REQUIRED 1,500 GALLON SINGLE COMPARTMENT TANK - MINIMUM SIZE-EACH UNIT
5. LEACHING AREA:
   A. PERCOLATION RATE USED: 12 MIN/IN
   B. SOIL CLASS: 2
   C. APPLICATION RATE: 0.56 GPD/SF
   D. AREAS PROVIDED:
      1. EFFECTIVE LEACHING AREA = 6X8X8 = 384 LF
      2. EFFECTIVE AREA PER LF = 6.7 SF
      3. EFFECTIVE AREA = 2572 SF
   E. CAPACITY PROVIDED: 0.56 x 2572 SF = 1440 GPD
6. MINIMUM GROUNDWATER OFFSET PROVIDED: 4'
7. FRONT PORTION OF SITE IS IN GROUND WATER PROTECTION DISTRICT #3
   REAR PORTION OF SITE IS IN GROUND WATER PROTECTION DISTRICT #4
8. SITE IS NOT NITROGEN SENSITIVE



LOCUS MAP
NOT TO SCALE



PROOF PLAN
6 X 6 X 66 X 0.66=1331 GPD



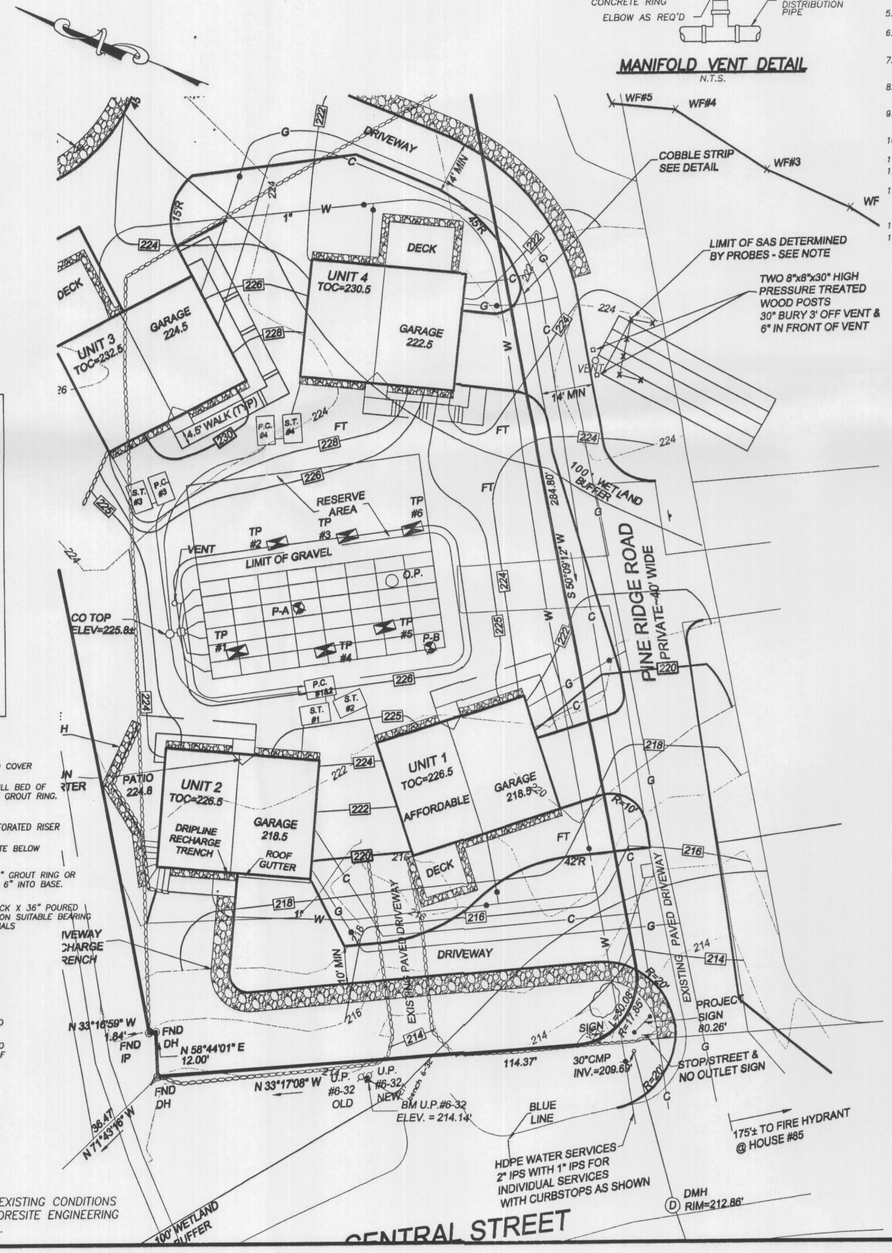
NOTE:
CUT NEAT HOLE INSIDE WALL, SEAL WITH SILICON CAULK, INSTALL RISER CLAMPS TO BOTH SIDES.

FORCE MAINS TO HAVE SWEEP ELBOWS TO DIRECT DISCHARGE TO OUTLET-BOTTOM OF ELBOWS TO BE ABOVE TOP OF PIPE

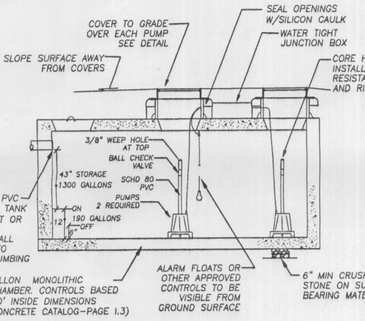
SEWER CLEANOUT DETAIL
N.T.S.

LEGEND

S.T.	SEPTIC TANK
D-BOX	DISTRIBUTION BOX
	OBSERVATION HOLE (TEST PIT)
	PERCOLATION TEST
190x5	SPOT ELEVATIONS
100	EXISTING 5' CONTOURS
98	EXISTING 1' CONTOURS
120	PROPOSED CONTOURS
W	PROPOSED PRESSURED WATER LINE

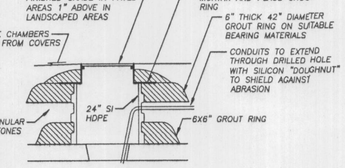


PROPERTY AND EXISTING CONDITIONS SURVEYED BY FORESITE ENGINEERING ASSOCIATES, INC.



DUPLEX PUMP CHAMBER
N.T.S.

FOR PUMP CHAMBER #1



PUMP CHAMBER RISER DETAILS
N.T.S.

RESIDENTIAL PUMP CHAMBERS
FOR PUMP CHAMBER #1

1. STRUCTURES, PUMPS, AND CONTROLS SHALL CONFORM TO THE REQUIREMENTS OF TITLE 5 AND ALL APPLICABLE CODES.
2. CHAMBER SHALL BE WATERTIGHT, VENTED, AND ALL OPENINGS SHALL BE A MINIMUM OF 2 FEET ABOVE THE MAXIMUM GROUNDWATER TABLE ELEVATION.
3. THE CAST IRON ACCESS MANHOLES SHALL BE OF SUITABLE SIZE TO ALLOW EACH PUMP TO BE REMOVED, TO BE CHILD PROOF, AND EXTEND 1" ABOVE FINISHED GRADE AN APPROVED LOCKABLE METAL HATCH OR HATCH RAIL SYSTEM BY PUMP MANUFACTURER MAY BE SUBSTITUTED.
4. PUMPS SHALL ALTERNATE ON SUCCESSIVE STARTS.
5. BOTH PUMPS SHALL BE THE SAME AND CAPABLE OF PASSING A 1 1/4" SPHERICAL SOLID, AND BE MADE FOR PUMPING RAW SEWAGE UNDER THE CONDITIONS SHOWN.
6. THE DISCHARGE SHALL BE A MINIMUM OF 40 GPM AGAINST A TDH OF 11 FEET.
7. THE MOTOR SHALL HAVE A MINIMUM HP OF 1/3 AND BE SUITABLE FOR THE CURRENT AVAILABLE, AS DETERMINED BY THE CONTRACTOR
8. CHAMBERS TO HAVE MANHOLES SUITABLE FOR REMOVAL OF PUMPS FROM GROUND SURFACE.
9. CONTROLS SHALL BE MERCURY SWITCH FLOATS INSTALLED TO BE VISIBLE FROM THE MANHOLE AND SET TO OPERATE AS SHOWN.
10. ALARM AND CONTROLS SHALL BE LOCATED WITHIN THE BUILDING AND HAVE A NEOPRENE SIGN INDICATING THE ALARM SOURCE AND WHO TO NOTIFY. NO SPLICES OR JUNCTION BOXES SHALL BE INSTALLED WITHIN THE CHAMBER.
11. CONTROLS SHALL BE IN A SUITABLE NEMA ENCLOSURE WITH EXTERIOR MOUNTED H-O-A SWITCHES AND RUNNING LIGHTS.
12. MANUFACTURER'S LITERATURE SHALL BE STAPLED NEXT TO THE CONTROLS. ALARM SHALL BE ON SEPARATE CIRCUIT.
13. THE CHECK VALVE SHALL BE BALL TYPE.
14. ALL PIPING SHALL BE SECURED AND SHIELDED FROM ABRASION.
15. FORCE MAIN SHALL SLOPE CONTINUALLY UPWARD, BE PROTECTED FROM FROST AND FREEZING, BY COVER, INSULATION, OR A WEEP HOLE PLACED ABOVE THE CHECK VALVE.
16. FORCE MAIN SHALL BE 2" IPS HD POLYETHYLENE
17. ENGINEER SHALL RECEIVE COMPLETE SHOP DRAWINGS FOR CHAMBERS, PUMPS AND CONTROLS PRIOR TO ORDERING.

COMMONWEALTH OF MASSACHUSETTS MARK REGISTERED PROFESSIONAL ENGINEER

ENDORSEMENT PERTAINS TO EXISTING CONDITIONS ONLY

COMMONWEALTH OF MASSACHUSETTS DOUGLAS W. ANDRYSICK #34036 PROFESSIONAL LAND SURVEYOR

Douglas W. Andrysick 1/6/10
PROFESSIONAL LAND SURVEYOR DATE

No.	DATE	DESCRIPTION
2	1/6/10	TOWN COMMENTS
1	11/2/09	ADJUST ELEVATIONS

REVISIONS

PROPOSED SUBSURFACE SEWAGE DISPOSAL SYSTEM

93 CENTRAL STREET- MARSH VIEW
ACTON, MASSACHUSETTS

PREPARED FOR:
MARSH VIEW, LLC
411 MASSACHUSETTS AVENUE, SUITE 304
ACTON, MA 01720

SCALE: 1'=20' DATE: DECEMBER 24, 2008

Acton Survey & Engineering, Inc.
Since 1967
97 GREAT ROAD
P.O. BOX 666
ACTON, MA 01720
PH. (978) 263-3666
FAX (978) 635-0218

6730W161-8/8

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