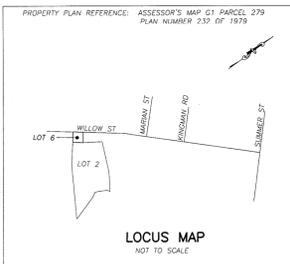


GENERAL NOTES:

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.
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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 (1-888-344-7233) 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). WATERTIGHT RISERS TO WITHIN 6" OF FINAL GRADE ARE REQUIRED ON ALL TANK AND D-BOX ACCESS PORTS WHEN COVER EXCEEDS 9". SEPTIC TANK PORT OVER OUTLET TO BE TO FINAL GRADE.
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 WITHIN 6 INCHES OF FINAL GRADE AS SHOWN ON PLAN, OR SHALL HAVE 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. ALL BACKFILL SHALL BE CLEAN EARTHEN MATERIALS FREE OF LARGE STONES AND FROZEN MATERIALS SHALL BE PLACED TO SUPPORT THE SYSTEM, INSURE PROPER RUNOFF AND BE STABILIZED TO PREVENT EROSION.
13. COVER OVER STRUCTURES AND LEACHING WORKS SHALL BE A MINIMUM OF 9 INCHES AND A MAXIMUM OF 36 INCHES.
14. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE, OR APPROVED EQUAL.
15. SEPTIC TANK EFFLUENT TEE SHALL HAVE A DEP-APPROVED EFFLUENT FILTER WITH HANDLE EXTENDING TO WITHIN 3" OF C.I. FRAME AND COVER EXTENDED TO GRADE OVER OUTLET.
16. SEPTIC SYSTEM COMPONENTS TO BE STAKED BY PROFESSIONAL LAND SURVEYOR PRIOR TO CONSTRUCTION.
17. EXISTING SEPTIC COMPONENTS SHALL BE PUMPED, CRUSHED, AND BACKFILLED AND ABANDONED ACCORDING TO 310 CMR 15.354.



OWNER OF RECORD:
STANLEY J. SPERO

APPLICANT:
STANLEY J. SPERO

SOIL TESTS

SOIL EVALUATOR:
MARK T. DONOHUE
BOARD OF HEALTH AGENT:
EVAN CARLOW

1. PERCOLATION RATES: (MIN/IN)
#1 RATE DEPTH DATE
114-A CNS 50" 1/7/14

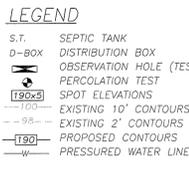
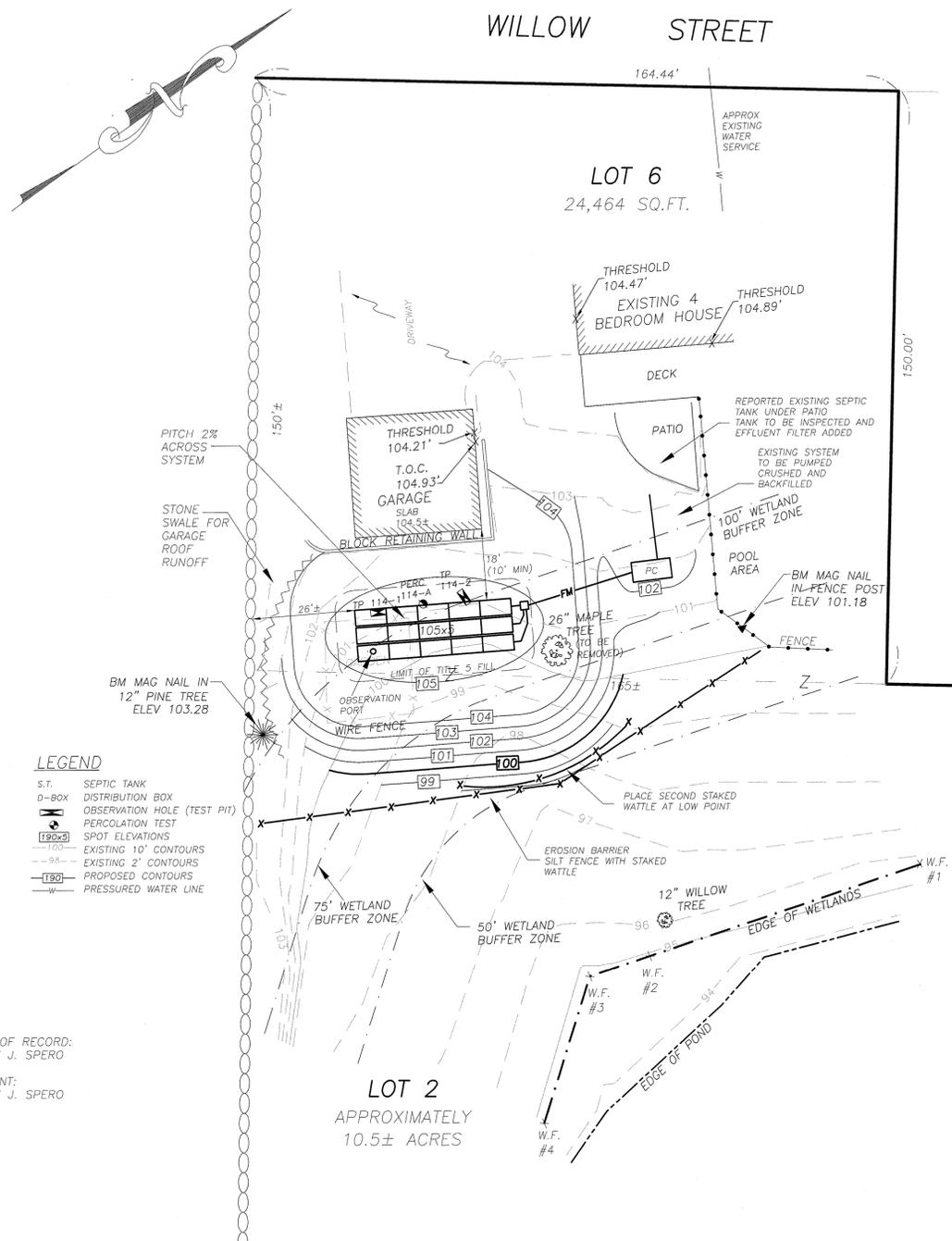
2. OBSERVATION HOLE DATA

DEEP HOLE #	Horizon	Texture	Color	Soil Matting	DEEP HOLE #	Horizon	Texture	Color	Soil Matting
114-1	Ap	SL	10YR3/2	-	114-2	Ap	SL	10YR3/2	-
9-28"	Bw	LS	10YR5/4	-	7-25"	Bw	LS	10YR5/4	-
28-81"	C1	MS	2.5Y4/2	7.5YR5/8 @31"	25-78"	C1	MS	2.5Y4/2	7.5YR5/8 @28"
81-84"	C2	MS	2.5Y5/3		78-92"	C2	MS	2.5Y5/3	

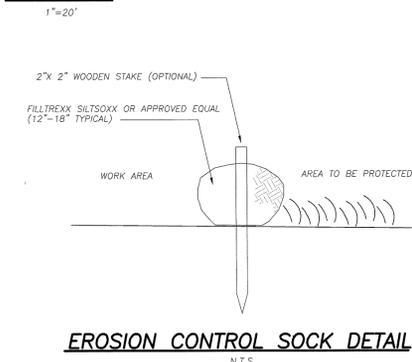
DEPTH TO:
Bedrock: >84"
Standing Water: NONE
Weeping Sides: 53"
Seasonal High Ground Water: 31" (98.6)

DEPTH TO:
Bedrock: >92"
Standing Water: NONE
Weeping Sides: 57"
Seasonal High Ground Water: 28" (98.8)

WILLOW STREET



SITE PLAN



EROSION CONTROL

GENERAL

A well planned and executed construction program shall be the primary erosion control method utilized at this site.

Of equal importance is precluding driveway runoff becoming concentrated and flowing across disturbed surfaces. Given the coarse sand available below the topsoil provisions should be made to allow driveway runoff to recharge in a shallow depression between the house and garage.

EROSION BARRIER

The erosion barrier is to serve more as a limit of work than a method to entrap products of erosion as with timely and properly executed construction products of erosion should not be generated.

The barrier shall be installed prior to any other site activities and the Conservation Commission notified of its presence and the expected start and finish of construction.

Runoff could concentrate at the low point of the barrier and a second barrier consisting of a staked silt sock or straw wattle shall be placed as a fail safe.

The barrier shall be maintained until all tributary surfaces are erosion resistant and any products of erosion entrapped by them shall be promptly removed and the source abated.

EXCAVATION OF SYSTEM AREA

All topsoil shall be stockpiled to be used in establishing an erosion resistant surface when the system is backfilled.

The stockpile shall be located between the house and garage and allow for driveway runoff.

Any unsuitable materials shall be placed directly in trucks and removed from the site on the day generated.

An area beyond the gravel fill may be over excavated to allow for storage and recharge of runoff if heavy precipitation is predicted for the immediate future during construction.

PLACEMENT OF FILL

Fill shall be placed from the downhill, or wetlands, side towards Willow Street so that the majority of the area during placement is sloped towards Willow Street. This will limit the runoff from disturbed surfaces towards the wetlands. Runoff from the driveway must be routed around the fill and the construction area and if heavy precipitation is predicted the runoff route should be hardened by placing crushed stone or sand bags should be placed to for check dams that will provide small settling basins and/or disperse runoff.

The outslope on the wetland side should be stabilized as soon as possible and not be delayed until final landscaping.

Tracking of slopes with grousers to form short horizontal grooves perpendicular to the slope will decrease erosion potential and aid in the retention of soil, moisture and seeds.

PLACEMENT OF STRUCTURES

Excavations for and placement of structures shall be performed in a single workday.

The structures are required to be placed with minimum cover - see building sewer note - to limit excavations below the groundwater table. Prior to making the excavations required for the structure a test hole should be excavated to allow the depth to groundwater to be determined. Adjustments might be required to the location of the structure to mitigate impacts and reduce the cost of installations.

If dewatering is required pumping shall be to a shallow basin sized to maximum recharge. Pumping to the pond or areas tributary to surfaces tributary to the wetlands shall not be allowed.

SOIL ABSORPTION SYSTEM

The SAS shall be installed and backfilled with emphasis being given to minimizing the extent of disturbed areas directly tributary to the wetlands.

STABILIZATION

Stabilization with vegetation shall occur as soon as possible with the method and seed type utilized being appropriate for the season and expected conditions.

Mulching with hay or other methods of retaining seed, soil and moisture shall be utilized to assure that stabilization occurs as rapidly as possible.

Loam has a high erosion potential and should only be placed when stabilization is assured.

Swales and other areas where runoff could concentrate should have staked straw wattles installed across them, as deemed necessary.

COMPLETION OF PROJECT

The project will not be deemed complete until all surfaces are erosion resistant and the erosion barriers are removed.

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: 4 BEDROOMS @ 110 GPD = 440 GPD
4. SEPTIC TANK: 2 x FLOW REQUIRED, 1500 GALLON SINGLE COMPARTMENT TANK - MINIMUM SIZE
5. LEACHING AREA:
 - A. PERCOLATION RATE USED: 2 MIN/IN
 - B. SOIL CLASS: 1
 - C. APPLICATION RATE: 0.74 GPD/SF
 - D. AREA REQUIRED: 440 GPD / 0.74 = 595 SF
 - E. ACTON BOARD OF HEALTH REGULATION 11-8, TABLE 1 REQUIRES 800 SF MIN. FOR 440 GPD.
6. MINIMUM GROUNDWATER OFFSET PROVIDED: 5' (GWFD #3)
 1. 15 CHAMBERS = 3 x 5 x 8 LF = 120 LF
 2. EFFECTIVE AREA PER LF = 6.7 SF
 3. TOTAL EFFECTIVE AREA = 804 SF
7. CAPACITY PROVIDED: 0.74 x 804 SF = 595 GPD
8. *MAVER REQUESTED FROM ACTON BOARD OF HEALTH REGULATIONS TABLE 16-6
9. SITE IS NOT IN A NITROGEN SENSITIVE AREA.

DESIGN ELEVATIONS

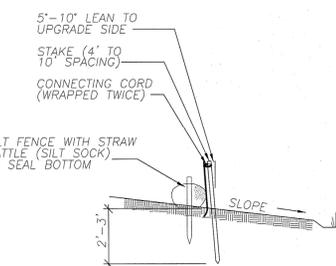
TOP OF FOUNDATIONS	SEE PLAN
AT FOUNDATION	EXISTING
AT SEPTIC TANK INLET	EXISTING
AT SEPTIC TANK OUTLET	EXISTING *
AT PUMP CHAMBER	100.90
AT D-BOX INLET	104.35
AT D-BOX OUTLET	104.18
INVERT OF CHAMBERS	104.05
TOP OF CHAMBERS/BREAKOUT	104.51
BOTTOM OF CHAMBERS	103.80
ESHGW	98.8
GW OFFSET	5'

* TO BE DETERMINED PRIOR TO INSTALLATION OF PUMP CHAMBER

EXISTING SEPTIC TANK TO BE UTILIZED IF FOUND SUITABLE BY BOARD OF HEALTH AND DESIGN ENGINEER. EFFLUENT FILTER IS REQUIRED.

OWNER OF RECORD:
STANLEY J. SPERO

APPLICANT:
STANLEY J. SPERO



NOTES:

1. FENCES SHALL BE LOCATED AT LIMIT OF WORK, OR AS SHOWN ON PLANS.
2. PENETRATE OR "SNUG" GROUND WITH BOTTOM FOR ENTIRE LENGTH.
3. DO NOT INSTALL IN A MANNER WHICH WILL CONCENTRATE RUNOFF.
4. BACK FENCE WITH STAKED HAYBALES IN HIGH RISK AREAS.
5. MAINTAIN AND REMOVE FENCE AS REQUIRED.
6. REMOVE PRODUCTS OF EROSION FREQUENTLY.

EROSION CONTROL BARRIER DETAIL

N.T.S.

148 WILLOW STREET
ACTON, MA 01720

PREPARED FOR:

STANLEY SPERO

148 Willow Street
Acton, Massachusetts 01720



Civil Engineers
Land Surveyors
Landscape Architects
Environmental Consultants

97 GREAT ROAD, PO BOX 666, ACTON, MA 01720
VOICE (978) 263-3666, FAX (978)-635-0218
WWW.ACTONSURVEY.COM
WWW.HANCOCKASSOCIATES.COM



BY	APP	DATE	ISSUE/REVISION	DESCRIPTION

DATE: 1/15/14 DESIGN BY: MTD
SCALE: 1" = 20' DRAWN BY: SBD
APPRVD. BY: MTD CHECK BY: JDP

PROPOSED
SUBSURFACE
SEWAGE DISPOSAL
SYSTEM PLAN

DWG: 18024

LAYOUT: SDS

SHEET: 1 OF 2

PROJECT NO.: 18024

SDS

148 WILLOW STREET
ACTON, MA
01720

PREPARED FOR:

STANLEY SPERO

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Handwritten signature and date:
1/30/14

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PROPOSED
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SEWAGE DISPOSAL
SYSTEM DETAILS

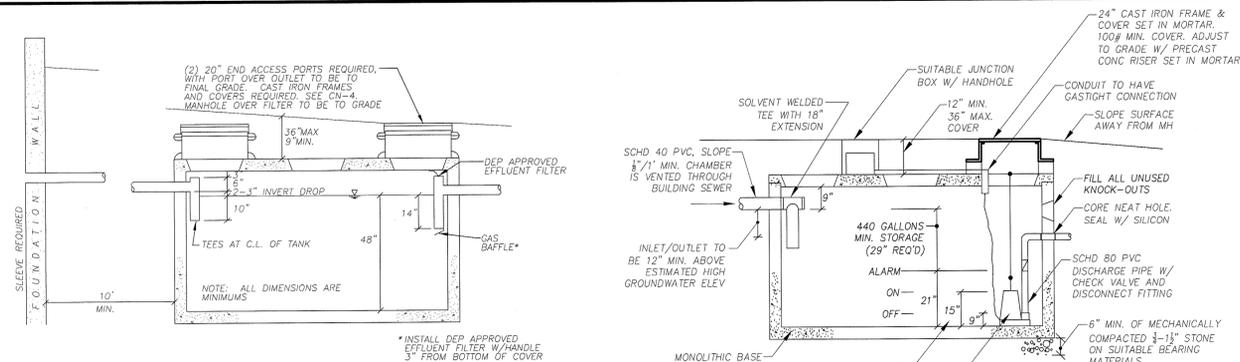
DWG: 18024

LAYOUT: SDS DETAIL

SHEET: 2 OF 2

PROJECT NO.: 18024

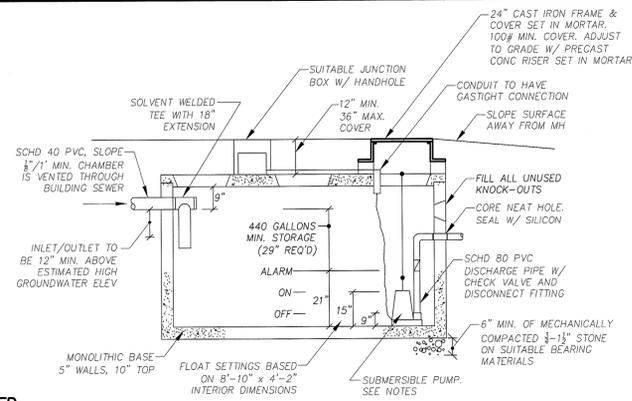
SDS



1500 GALLON SEPTIC TANK

EXISTING TANK TO BE INSPECTED AND EFFLUENT FILTER ADDED
UTILIZE MONOLITHIC TANK IF TANK IS TO BE REPLACED

USE NEOPRENE BOOTS OR SEAL ANY PENETRATIONS WITH HYDRAULIC CEMENT



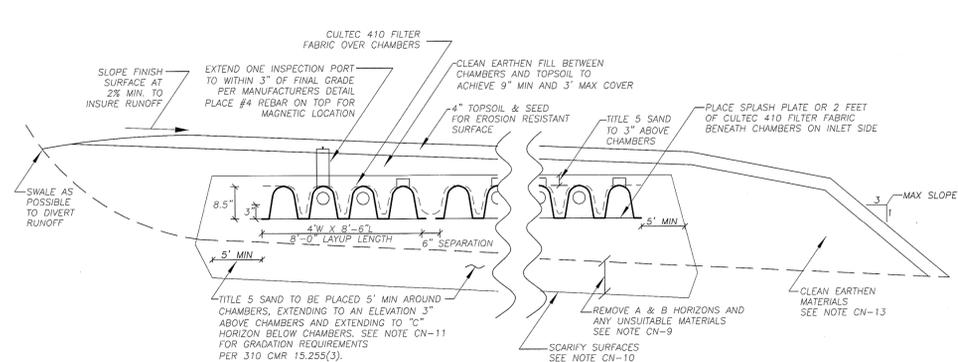
1000 GALLON MONOLITHIC RESIDENTIAL PUMP CHAMBER

PROFILE

N.T.S.

PROFILE

N.T.S.



CULTEC CONTACTOR C-4 HD (HEAVY DUTY)
BED CROSS SECTION

N.T.S.

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PUMP CHAMBER NOTES - SINGLE FAMILY HOME

CHAMBER

- Chamber shall be precast concrete for HS-10 loading unless its location makes exposure to vehicle traffic possible. Chamber shall be installed so that all pipe openings are a minimum of 1 foot above estimated high groundwater elevation.
- Chamber capacity shall allow adequate flooding of pump intake, shall provide operating depth [pump on to pump off] that insures successive pumps starts in excess of 1/2 hour apart, and shall provide a storage volume equal to the design flow above the start level.
- Chamber shall have a monolithic base, set on 6 inches [minimum] of mechanically compacted crushed stone over suitably compacted bearing materials. Cover shall have a minimum thickness of 10 inches and be set on a seal provided by the manufacturer. All knock-outs shall be filled with mortar.
- Chamber shall be backfilled with clean earthen materials with no stones over 3 inches. Cover shall be 12 inches minimum, 36 inches maximum. Finished surface shall slope away from manhole.
- Inlet shall utilize manufacturer's plastic pipe sleeve and force main shall be through a minimum sized cored opening sealed with flexible silicon grout or other suitable sealant that will shield against abrasion.
- A 24 inch cast iron manhole with a 100 pound [minimum] cover shall be installed over the pump [size shall be increased if required for pump removal] as required for access to the pump and controls.
- Manhole to be adjusted to final grade with precast concrete risers set in mortar, with bottom cut to accommodate conduit, float support, and suitable attachment for lifting cable/chain.
- Septic tank outlet tee shall have a DEP-approved effluent filter, with a handle extended to within 3 inches of the required to-grade manhole

PUMP AND CONTROLS

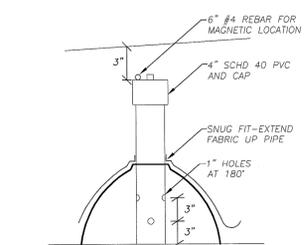
- Pump, motor, and controls shall be furnished by a single manufacturer and installed in accordance with manufacturer's requirements.
- Pump shall be suitable for pumping settled sewage and for the operating conditions shown. Pump supplier shall verify operating curve data and adequacy of motor size designated on pump/system curve.
- Installer shall verify suitability of electric service and make all necessary adjustments necessary for compatibility.
- Pump and alarm shall be signaled by self-contained float switches accessible and visible through manhole.
- Alarm shall be on a separate circuit and signal an audible alarm with reset [not silence] button. Alarm shall have permanent sign indicating source and who to notify. Manufacturer's literature shall be placed next to alarm and shall designate circuit breakers for pump and alarm.
- All wiring shall conform to applicable codes. Splices and junction boxes shall not be allowed within chamber.
- Control panel shall be housed in a NEMA enclosure for its placement and any exterior panel shall be lockable.
- If pump is furnished with a lifting ring, a suitable corrosion-resistant cable/chain shall be installed and connected to a suitable eye bolt or other attachment secured under riser ring. Disconnects shall be installed on both ends.

PIPING

- Discharge piping, within chamber, shall be equal to pump discharge size and shall be solvent welded Schedule 80 PVC with a quick disconnect fitting accessible from manhole.
- Check valve shall be of the type and installed as required by manufacturer. If not specified, non-spring loaded ball check valve set for vertical installation should be utilized.
- Piping shall be braced against movement and shielded against abrasion.
- A 3/8 inch weep hole located above check valve may be installed if force main cannot be protected against freezing by cover or insulation.
- Drop inlet tee required if inlet is within 4 feet of pump/controls.

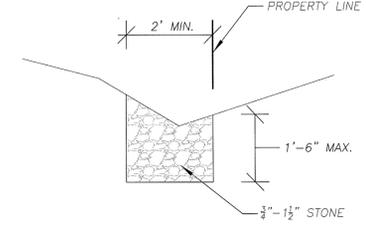
FORCE MAIN

- Force main shall be for 150 psi [minimum] operating pressure and be installed in strict accordance with manufacturer's recommendations. Pipe size shall be 2 inches minimum.
- Force main may be HDPE, Schedule 40 PVC with solvent welded joints, or SDR 21 with push-on joints. Other pipes may be utilized with permission of Engineer and Board of Health Agent.
- Force main shall be covered a minimum of 4 feet unless shown otherwise on plan or otherwise protected against freezing, and shall be bedded in a 6 inch envelope of suitable materials to protect against abrasion.
- Force main shall be marked for its full length with magnetic tape buried 6 to 12 inches above the pipe and as shown on the plan.
- Force main is to be sleeved 10 feet on either side of any waterline or drain crossing and as shown on the plan.



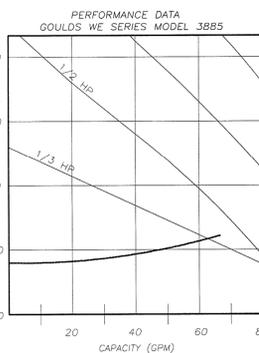
ALTERNATE OBSERVATION PORT

N.T.S.



STONE SWALE DETAIL

N.T.S.



USE 1/3hp PUMP