Construction Specifications

* The house, septic system and well must be staked out by LaRose Surveys, P.C.

1. Contact the Designer prior to any construction to schedule the stake out of the system and to review the design and details.

2. The Contractor shall submit a recent sieve analysis of the sand fill. The mound sand shall comply with the Specifications depicted on these plans.

3. Cut trees and above-ground vegetation to ground level within 10 feet of the mound toes.

4. The Contractor shall perform a pressure test on the forcemain per the Vermont Environmental Protection Rules.

5. The mound area shall be plowed to a depth of 7–8" by throwing the furrows uphill. The furrows shall run along the slope. This should be done by either a mold-board plow or chisel adapter on an excavator bucket. Inspection required at this point.

6. The mound area shall be graded to promote water running away from the mound system.

7. Place the sand fill on the plowed area while keeping wheeled traffic off this area as it will create compacted soil Move the fill material into place using a small track type tractor with a blade. Always keep a minimum of 12 inches of sand beneath tracks to prevent compaction of the natural soil.

8. Place the fill material to the required depth, which is the top of the trenches or bed. Shape sides to the desired slope.

9. Form the bed or trench by moving along it's length. Hand level the bottom of the bed. Make sure bottom is at the same elevation and level.

10. Place the coarse aggregate in the trenches or bed. Channel the stone for placement of the pipe. The stone should be 3/4" to 1½", washed, durable aggregate (i.e. not limestone or marble). Level aggregate to the design depth.

11. Place the distribution system on the aggregate. Connect the manifold to the force main from the pump chamber or siphon chamber. Slope manifold slightly toward distribution laterals. Lay laterals level, removing rises and dips. Place orifices downwards (orifices will need to be upwards for test). Inspection required at this point (to observe discharge rate and pressure testing).

12. Place shields on orifices and properly cement all components.

13. Place 2" of aggregate over the distribution pipe.

14. Place a synthetic non-woven filter fabric (Mirafi 140N or equivalent) over the entire stone bed. Overlap joints by 12" minimum.

15. Place an 8' x 8' mat of rigid polystyrene insulation, 2" thick, centered over force main riser. Place insulation in two layers (1" each) and stagger the joint pattern.

16. Place soil on top of the bed or trench to a depth of 12" in center and 6" at outer edge of bed or trenches. This may be a subsoil or topsoil.

17. Place 6" of topsoil over the entire mound surface. This will raise the elevation at the center of the mound to a minimum of 1.5' and the outside edges of bed or trenches 1'.

18. Landscape the mound by planting grass, using the best vegetation adaptable to the area. Shrubs can be planted around the base and up the sideslopes. They should be somewhat moisture tolerant since the toe of the mound may be somewhat moist during various times of the year. Keep all trees and shrubs away from the top of the mound, as root systems can destroy the distribution network.

19. This design must be inspected by LaRose Surveys, P.C., Bristol, Vermont, to ensure compliance with these plans. LaRose Surveys, P.C., waives any and all responsibility and liability for problems that arise from failure to follow specifications, and the design intent that the plans convey, and from failure to have been notified by the contractor for inspections.

Sewage Design Information

1. The proposed sewage disposal system shall be constructed in accordance with all applicable Town Regulations and the State of Vermont Environmental Protection Rules.

2. Basis of design:

Lot 1
Number of bedrooms = 3
Number of occupants = 6
Number of gallons per day = 420
Application Rate = 1.0 gallon/sf
Required Disposal Area = 420 gpd/1.0 gpd/sf = 420 sf
Disposal Area Provided = 7.3' x 57.5' bed = 427.5 sf

Lot 2
Number of bedrooms = 3
Number of occupants = 6
Number of gallons per day = 420
Application Rate = 1.0 gallon/sf
Required Disposal Area = 420 gpd/1.0 gpd/sf = 420 sf
Disposal Area Provided = 4.85' x 87' bed = 421 sf

Lot 3
Number of bedrooms = 3
Number of occupants = 6
Number of gallons per day = 420
Application Rate = 1.0 gallon/sf
Required Disposal Area = 420 gpd/1.0 gpd/sf = 420 sf
Disposal Area Provided = 7.64' x 55' bed = 420 sf

3. The use of garbage disposals is not recommended.

4. If a water treatment system (water softener) is going to be used, the backwash water may not be discharged into the disposal system.

State of Vermont Mound Sand Specifications

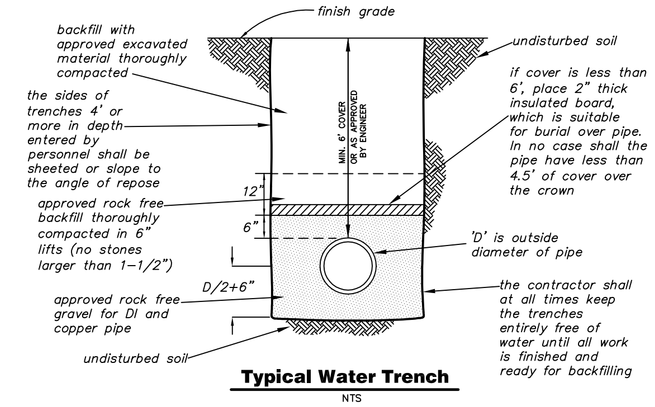
Fill Material: The fill material from the natural soil plowed surface to the top of the trench or bed shall be sand texture with one of the following sieve analyses:

a. Sieve Number	Opening (mm)	Percent Passing, by Weight
3/8	9.500	85 – 100
40	0.420	25 – 75
60	0.240	0 – 30
100	0.149	0 – 10
200	0.074	0 – 5

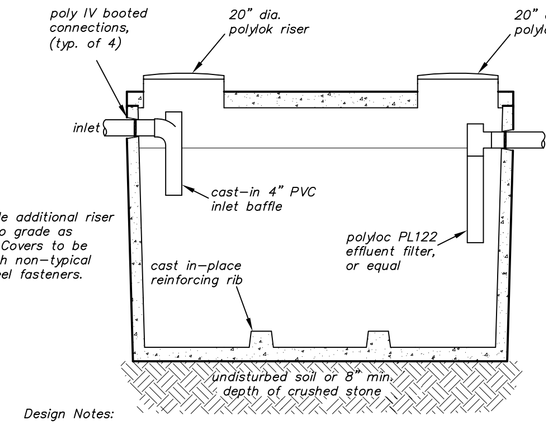
b. Sieve Number	Opening (mm)	Percent Passing, by Weight
4	4.750	95 – 100
8	2.380	80 – 100
16	1.190	50 – 85
30	0.590	25 – 60
50	0.297	10 – 30
100	0.149	2 – 10

c. Sieve Number	Opening (mm)	Percent Passing, by Weight
3/8	9.500	85 – 100
40	0.420	30 – 50
200	0.074	0 – 5

The material must meet specifications a, b, or c. Interpolation of analyses is not permitted. Fill material b is ASTM Specification C-33 and is intended for manufactured material.



Typical Water Trench
NTS



Note: Provide additional riser extensions to grade as necessary. Covers to be attached with non-typical stainless steel fasteners.

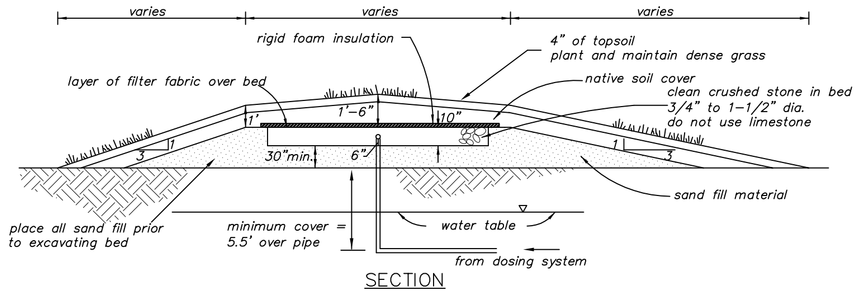
Design Notes:

1. Concrete: 4,000 psi after 28 days. Reinforcing 6x6/10x10 and fibers.
2. Heavy-duty septic tank tops reinforced with 5/8" rebar @ 12" o.c. each way.
3. Keyed joint sealed with butyl rubber.
4. Excavation must be at least 12" wider and longer than tank size.
5. Provide watertight pipe connections using pre-fab 4" plastic boots or non-shrink grout.
6. The tank shall be leak-tested for 24 hours prior to backfilling.
7. The cover shall be child-proof.

1000 Gallon Seamless Precast Concrete Septic Tank
NTS

Note: Cut and remove all above ground vegetation with a hand mower. The existing ground shall not be graded or excavated. The contractor shall plow the surface to a depth of 7"–8", parallel to the land contour with the plow throwing the soil uphill.

Construction equipment shall not be driven across the original ground or the plowed surface. A minimum of 6" of sand shall be placed over the plowed surface for a lightweight construction equipment base.

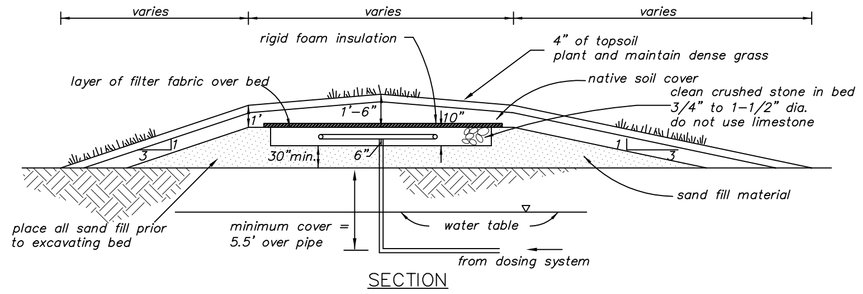


SECTION

Lot 2 - Mound System Cross Section
NTS

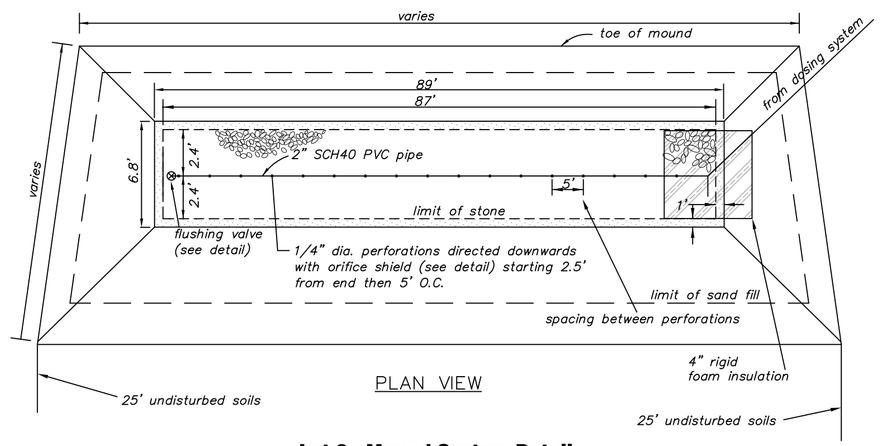
Note: Cut and remove all above ground vegetation with a hand mower. The existing ground shall not be graded or excavated. The contractor shall plow the surface to a depth of 7"–8", parallel to the land contour with the plow throwing the soil uphill.

Construction equipment shall not be driven across the original ground or the plowed surface. A minimum of 6" of sand shall be placed over the plowed surface for a lightweight construction equipment base.



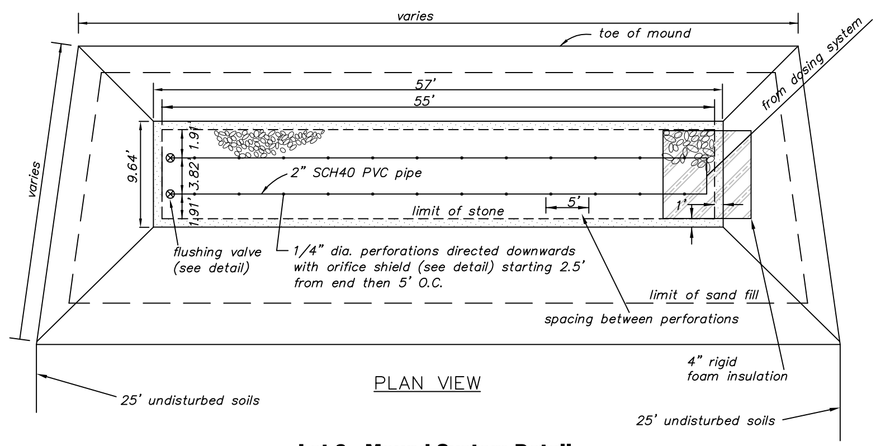
SECTION

Lot 3 - Mound System Cross Section
NTS



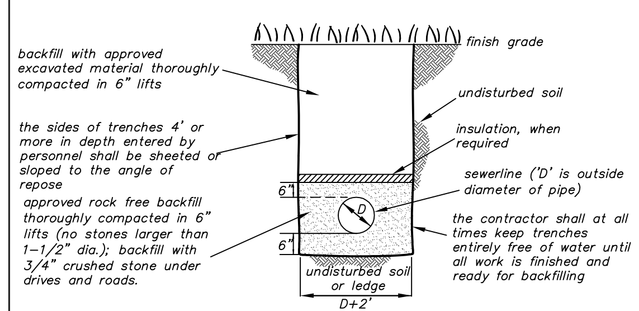
PLAN VIEW

Lot 2 - Mound System Detail
NTS



PLAN VIEW

Lot 3 - Mound System Detail
NTS



Note: If cover is less than 5', place 2" wide by 4" thick insulation board, suitable for burial, on a 6" bed of sand over pipe. In no case shall depth of cover be less than 3'. At driveway and road crossings, depth of cover shall not be less than 4'.

Sewerline Trench
NTS

Operation & Maintenance Recommendations

1. The septic tank's purpose is to settle out solids, contain the scum and pass treated effluent. Bacteria within the septic tank helps decompose the solids. Should any solids pass through the septic tank into the system, premature clogging of the piping, stone or native soil beneath the system is likely to occur. Only human wastes should enter the sewage system, water use should be conservative and cleaning agents cannot enter the system, as they kill bacteria.

2. Once per year, the depth of scum and sludge in the septic tank should be measured and the tank shall be pumped if:

   a. The sludge level is within 12 inches of the bottom of the outlet.

   b. The scum layer is within 3 inches of the top of the outlet.

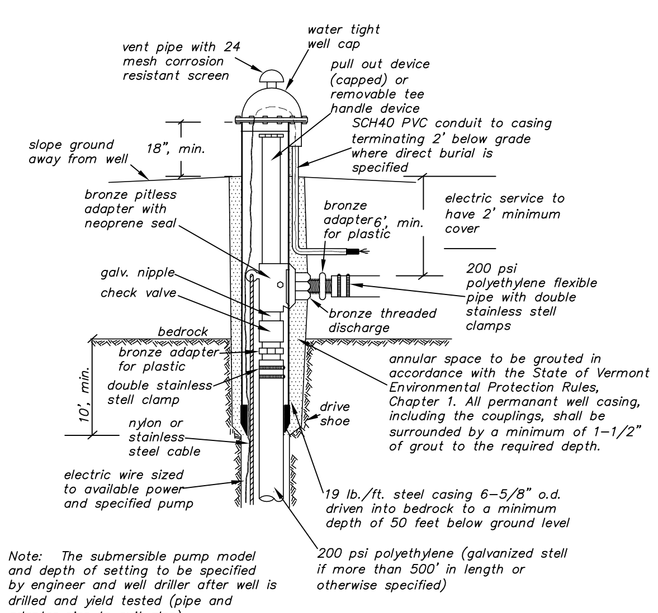
   c. If A or B is anticipated to occur prior to the next inspection.

   d. In any case, the tank shall be pumped at a maximum 4-year interval.

3. Once a year, the septic tanks, pump chambers, distribution box and effluent filter should be inspected by a qualified professional. The person that performs the inspection is cautioned to consult with a health professional prior to performing the above items. Any settled solids should be removed from the distribution box and the effluent filter should be cleaned.

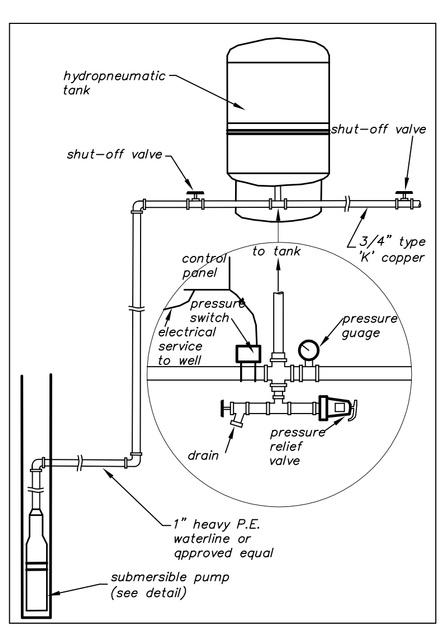
4. Above items 1–3 are intended to prolong the life of the system, not guarantee it.

5. The Designer is not responsible for use of the system in ways that are not consistent with the design of the system such as but not limited to chemicals, septic system additives, garbage disposals, backwash from softeners or other water treatment devices, poor maintenance, or abnormal weather.

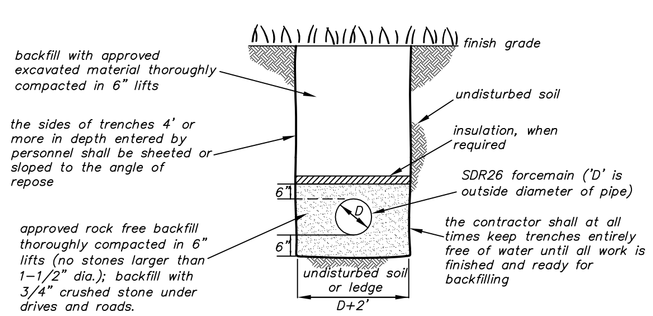


Note: The submersible pump model and depth of setting to be specified by engineer and well driller after well is drilled and yield tested (pipe and adapter size to suit also)

Typical Individual Drilled Well
NTS



Typical Individual Water System
NTS

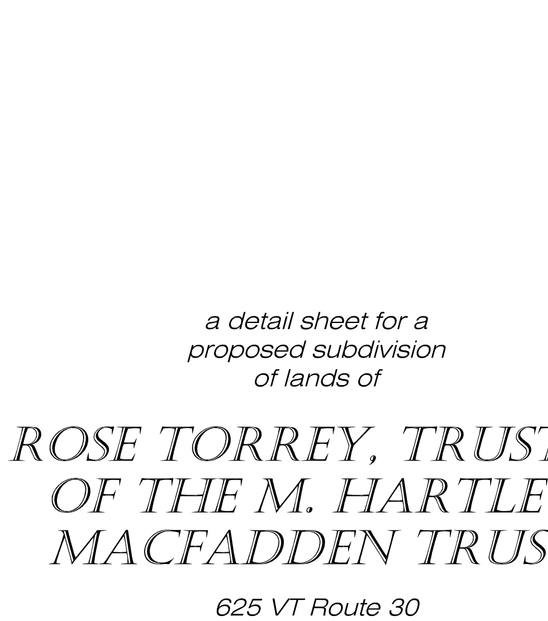


Note: If cover is less than 5', place 2" wide by 4" thick insulation board, suitable for burial, on a 6" bed of sand over pipe. In no case shall depth of cover be less than 3'. At driveway and road crossings, depth of cover shall not be less than 4'.

Forcemain Trench Notes:

1. Backfill and bedding shall be properly compacted.
2. Bedding material shall normally consist of well-graded sands and gravels with a maximum size of 3/4".
3. Backfill shall not contain:
   a. Any stones more than 12" (1-1/2" max. diameter within 2' of the outside of the pipe) in the largest dimension.
   b. Be greater than 50 pounds.
   c. Contain any frozen, wet or organic material.
4. Use rigid foam insulation at the rate of 1" for every foot less than 4' of cover over forcemain.
5. Forcemain shall be tested for leakage.
6. At any crossing under a road or drive, forcemain shall be encased in a 4" PVC sleeve. Said sleeve is to extend 8' in either direction from edge of traveled way.
7. The sides of the trenches 4' or more in depth entered by personnel shall be sheeted or sloped to the angle of repose as defined by O.S.H.A. standards.

Forcemain/Water Trench
NTS



Design Notes:

1. 4000 psi concrete, 28 day strength.
2. Low pressure seals designed to accept 4" C.I. or PVC pipe.
3. Requires effluent pump and a super single pump switch with a swing setting for a 105 gallon dose set 6" above the base of the pump with a high level alarm set 6" above the "pump on" setting. There shall be a minimum of one day storage above "alarm on" level.
4. Pump station shall be leak tested for 24 hours prior to backfilling.
5. It should be noted that any deviation in the location or elevation of the septic tank, pump station, or the disposal system from the designed location may require a different size pump.
6. The cover shall be child-proof.

1000 Gallon Seamless Precast Concrete Pump Station
NTS

compiled & prepared by

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STATE OF VERMONT
KEVIN A. LAROSE
NO. 443B
LICENSED DESIGNER

a detail sheet for a proposed subdivision of lands of

ROSE TORREY, TRUSTEE OF THE M. HARTLEY MACFADDEN TRUST

625 VT Route 30
Cornwall, Addison County, Vermont

January 5, 2023

PROJECT #21096