



**CONSTRUCTION SPECIFICATIONS - MOUND**

1. MOUND CONSTRUCTION PROCEDURES ARE JUST AS IMPORTANT AS THE MOUND DESIGN. GOOD DESIGN WITH POOR CONSTRUCTION WILL RESULT IN THE MOUND OPERATING POORLY. EXCAVATORS WORK BEST. WHEEL TYRE TRACKS ARE TOO DIFFICULT TO MANEUVRE IN THE FILL. THE FOLLOWING IS A STEP-BY-STEP PROCEDURE FOR MOUND CONSTRUCTION, WHICH HAS BEEN FIELD AND PROVEN. OTHER TECHNIQUES COULD BE USED AS LONG AS THE DESIGNER IS AWARE OF MOUND DESIGN CRITERIA AND CONSTRUCTION METHODS VIOLATED.
2. START A REPRESENTATIVE SAMPLE (ENOUGH TO FILL A GALLON BUCKET OF MOUND SAND FROM THE INTERIOR SOURCE FOR TESTING ACCORDING TO ASTM D422) ON EACH CONSULTING ENGINEER, PEEL'S ENGINEERING, OTHER CHEER ENGINEERING, AND VERRONT TESTING ON ALL PERFORMING TESTS. SUBMIT A COPY OF THE RESULTS TO THE DESIGNER PRIOR TO BEGINNING CONSTRUCTION.
3. STAKE OUT THE MOUND ON THIS SITE SO THAT THE TRENCHES OR BED RUN RECOMMENDED IN CASE CORNER STAKES ARE DISTURBED. LINCOLN APPLIED GEOLOGY, INC., MUST STAKEOUT OR VERIFY THIS TASK.
4. STAKE OUT CORNERS OF THE BED AND DETERMINE THE BOTTOM ELEVATION OF THE BED. DETERMINE WHERE THE FORCE MAIN FROM THE PUMP CHAMBER CONNECTS TO THE DISTRIBUTION SYSTEM IN THE MOUND.
5. DETERMINE WHERE THE FORCE MAIN FROM THE PUMP CHAMBER TO THE MOUND. LAY THE PIPE 3' BELOW THE GROUND SURFACE FOR FROST PROTECTION. WHERE THERE IS LESS THAN 3' OF COVER, PLACE THE FORCE MAIN IN TWO 1" LAYERS WITH STAGGERED JOINTS. CUT AND CAP THE PIPE 1' BEYOND THE GROUND SURFACE. BACKFILL AND COMPACT SOIL AROUND PIPE TO PREVENT IT FROM COMING UP AND DISTURBING THE SURFACE.
7. INSTALL THE CURTAIN DRAIN (IF SHOWN ON PLANS).
8. CHECK THE MOISTURE CONTENT OF THE SOIL AT 7'-8" DEEP. FIT IS TOO WET, SWEARING AND COMPACTION WILL RESULT. THIS REDUCES THE INFILTRATION CAPACITY OF THE SOIL. SOIL MOISTURE CAN BE ESTIMATED BY HOLDING A SOIL SAMPLE BETWEEN THE HANDS. IF IT PREPARED CAN PROCEED.
9. CUT TREES TO GROUND LEVEL. REMOVE EXCESS VEGETATION BY MOWING. DO NOT REMOVE STUMPS. PREPARE THE SITE BY USING A MANDOLADO PLOW TO CREATE A 10" DEEP FURROW PERPENDICULAR TO THE SLOPE. FURROWS MUST BE THROWN UP HILLS. OTHER WORKING TOOLS CAN BE USED IF A MANDOLADO PLOW IS NOT AVAILABLE. MOTOWING SANDS, ALTERNATIVELY, PLOWING CAN BE DONE BY USING AN EXCAVATOR BUCKET TO PULL THE SOIL INTO FURROWS PARALLEL WITH THE GROUND SURFACE. THE RESULTING IS CUTTING ABOVE. IMMEDIATE CONSTRUCTION AFTER PLOWING IS NECESSARY. AVOID RUTTING OF PLOWED AREA WITH VEHICULAR TRAFFIC. DESIGNER INSPECTION REQUIRED AT THIS POINT.
10. EXTEND THE EFFLUENT PIPE TO SEVERAL FEET ABOVE THE GROUND SURFACE.
11. PLACE THE APPROVED FILL MATERIAL AROUND THE EDGE OF THE PLOWED AREA. KEEP WHEELS OF TRUCK OR PLOWED AREAS. MINIMIZE TRAFFIC ON THE DOWN-SLOPE SIDE OF THE MOUND. WORK FROM THE END AND UPSLOPE SIDE.
12. MOVE THE FILL MATERIAL INTO PLACE USING SMALL TRACK TYPE TRACTORS WITH A BLADE. ALWAYS KEEP A MINIMUM OF 6 INCHES OF SAND BENEATH TRACKS TO PREVENT COMPACTION OF THE NATURAL SOIL.
13. PLACE THE FILL MATERIAL TO THE DESIRED DEPTH, WHICH IS THE TOP OF THE TRENCHES OR BED. SHAPE SIDES TO THE DESIRED SLOPE. INSPECTION REQUIRED AT THIS POINT.
14. WITH THE BLADE OF THE TRACTOR FORM THE BED OR TRENCHES, HAND LEVEL THE BOTTOM OF THE BED. MAKE SURE BOTTOM IS AT THE SAME ELEVATION AND LEVEL.
15. PLACE THE COARSE AGGREGATE IN THE TRENCHES OR BED. IT SHOULD BE 1% TO 1 1/2% WASHED DURABLE AGGREGATE (IE. NOT LIMESTONE OR MARBLE). LEVEL AGGREGATE TO THE DESIGN DEPTH.
16. PLACE THE DISTRIBUTION SYSTEM ON THE AGGREGATE. CONNECT THE MANHOLE TO THE FORCE MAIN FROM THE PUMP CHAMBER OR SPRING CHAMBER. SLOPE MANHOLE DOWN. PLACE COARSE LUMINA. INSPECTION REQUIRED AT THIS POINT. COARSE AND DISCHARGE RATE AND PRESSURE TESTING.
17. PLACE SHIRTS ON COINERS AND PROPERLY CENTER V. CENTER ALL COMPONENTS. PLACE 2" OF AGGREGATE OVER THE DISTRIBUTION PIPE.
18. PLACE A SYNTHETIC RUBBER LINER (IE. 2" PLASTIC LINER OR EQUIVALENT) OVER THE ENTIRE STONE BED. OVERLAP JOINTS BY 12" MINIMUM. PLACE AN 8" X 8" MAT OF FIBED POLYSTYRENE INSULATION, 2" THICK, CENTERED OVER FORCE MAIN RISER. PLACE INSULATION IN TWO LAYERS (1" EACH) AND STAGGER THE JOINT PATTERN.
19. PLACE SOIL ON TOP OF THE BED OR TRENCH TO A DEPTH OF 1" IN CENTER AND 6" AT OUTER EDGE OF BED OR TRENCHES. THIS MAY BE A SUBSOIL OR TOPSOIL.
20. PLACE 6" OF GOOD QUALITY 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'. INSPECTION REQUIRED AT THIS POINT.
21. LANDSCAPE THE MOUND BY PLANTING GRASS. USING THE BEST VEGETATION AVAILABLE TO THE AREA. A MIXTURE OF 50% BIRDSFOOT TREFOIL AND 10% TIMOTHY MAY BE DESIRABLE. THE MOUND IS NOT BROADCAST. IF MOUNDING IS DESIRED, A COMBINATION OF BIRDSFOOT TREFOIL AND TIMOTHY MAY BE USED. SEEDS SHOULD BE PLANTED AT THE DESIRED VEGETATIVE COVER. SHRUBS CAN BE PLANTED AROUND THE BASE AND UP THE SIDESLOPES. THEY SHOULD BE SOMEWHAT MOISTURE TOLERANT SINCE THE TOE OF THE MOUND AND SHRUBS AWAY FROM THE TOP OF THE MOUND AS ROOT SYSTEMS CAN DESTROY THE DISTRIBUTION NETWORK.
22. MOUND MAINTENANCE INVOLVES PLUMBING THE SEPTIC TANK AND PUMP CHAMBER EVERY 1 TO 3 YEARS TO AVOID CARRYOVER OF SOLIDS INTO THE MOUND. A GOOD WATER CONSERVATION PLAN WITHIN THE HOUSE ASSURES THAT THE MOUND WILL NOT BE OVERLOADED. MOUNDING SHOULD BE DONE IN THE FALL. INSPECT PUMP CHAMBER AND SEPTIC TANK EACH YEAR TO DETERMINE THE LEVEL OF SLUDGE ACCUMULATION. MOW TWICE A YEAR.
23. UTILITIES INFORMATION SHOWN ON THIS PLAN WAS OBTAINED FROM AVAILABLE SOURCES AND MAY OR MAY NOT BE EITHER ACCURATE OR COMPLETE. THE CONTRACTORS SHOULD VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY EXCAVATION. ANY DAMAGE TO ANY UTILITY, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN ON THIS PLAN, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
24. ALL FILL AROUND THE STRUCTURES SHALL BE PLACED IN 12" LIFTS AND THOROUGHLY COMPACTED TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT.
25. THIS DESIGN MUST BE INSPECTED BY LINCOLN APPLIED GEOLOGY, INC., LINCOLN, VT., PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PROBLEMS THAT MAY OCCUR, FAILURE TO FOLLOW SPECIFICATIONS, AND THE DESIGN INTENT THAT THE PLANS CONVEY, AND FROM FAILURE TO HAVE BEEN NOTICED BY THE CONTRACTOR FOR INSPECTIONS.

**SEPTIC TANK**

**OPERATION & MAINTENANCE RECOMMENDATIONS**

1. THE SEPTIC TANKS IN PROUSE IS TO SETTLE OUT SOLIDS. CONTAIN THE SOLID AND PASS TREATED EFFLUENT. BACTERIA WITHIN THE SEPTIC TANK HELPS DECOMPOSE THE SOLIDS. SHOULD ANY SOLIDS PASS THROUGH THE SEPTIC TANK INTO THE SYSTEM, PREVENTIVE MEASURES SHOULD BE TAKEN IMMEDIATELY. 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. THE STATE FLOW RATES OF 40 GPD/DWY BEDROOM ARE BASED ON SHORT TERM PEAK USE PERIODS (I.E. DAILY EVENTS). ACTUAL FLOWS SHOULD AVERAGE 75-90 GALLONS PER DAY PER BEDROOM.
3. ONCE PER YEAR, THE DEPTH OF SOLID 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 SOLID LAYERS 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 5 YEAR INTERVAL.
4. ONCE A YEAR, THE DISTRIBUTION BOX AND/OR PUMP STATION SHOULD BE INSPECTED AND ANY SETTLED SOLIDS REMOVED.
5. THE EFFLUENT FILTER SHOULD BE INSPECTED AND CLEANED ANNUALLY.
6. ABOVE ITEMS 1-5 ARE INTENDED TO PROLONG THE LIFE OF THE SYSTEM. NOT GUARANTEE IT.

**SEWAGE DESIGN INFORMATION**

1. THE SEWAGE DISPOSAL SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE TOWN REGULATIONS AND THE VERMONT ENVIRONMENTAL PROTECTION ACT.
2. THE FOLLOWING MINIMUM ISOLATION DISTANCES SHALL BE MAINTAINED FROM THE PROPERTY LINE:

PROPERTY LINE	25 FEET
BUILDING WITH FOOTING DRAIN (UPSIDE OR SIDESLOPE)	35 FEET
EXISTING SEWER OR SANITARY CONNECTIONS OR DRIVEWAYS & PARKING LOTS	10 FEET
TREES	10 FEET

3. BASIS OF DESIGN:
  - NO. OF BEDROOMS: 5
  - DESIGN FLOW RATE: 480 GPD
  - LOADING RATE (TRENCHES): 1.0 GALS/SQYD (8" STONE)
4. SEPTIC TANK:
  - A. A 1,000 GALLON PRECAST CONCRETE SEPTIC TANK, CAMP PRECAST OR APPROVED EQUAL SHALL BE USED WITH THREE ACCESS COVERS. 3,000 PSI CONCRETE. THE TANK SHALL BE 48" HIGH WITH A 12" DIA. OUTLET. THE OUTLET SHALL BE 12" DIA. WITH STEEL COVER.
  - B. THE USE OF GARBAGE DISPOSALS IS NOT RECOMMENDED.
5. MISC.:
  - A. IF A WATER TREATMENT SYSTEM IS GOING TO BE USED, THE BACKWASH WATER MAY NOT BE DISCHARGED INTO THE DISPOSAL SYSTEM.

**STATE OF VERMONT MOUND SAND SPECIFICATIONS**

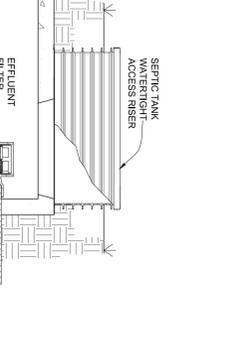
Fill Material: The fill material from the natural soil exposed surface to the top of the trench or bed shall be tested in accordance with the following sieve analysis:

Sieve Number	Opening (mm)	Percent Passing, by Weight
3/8	9.500	85 - 100
4	4.750	25 - 75
6	2.500	10 - 30
10	2.000	0 - 10
200	0.075	0 - 5

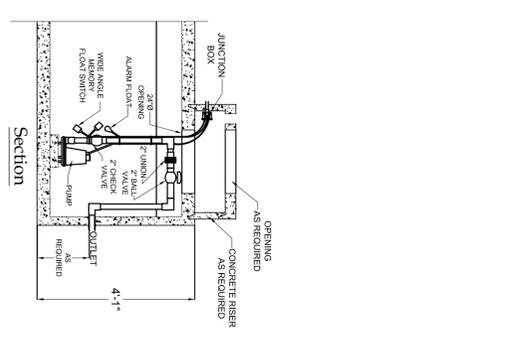
Sieve Number	Opening (mm)	Percent Passing, by Weight
4	4.750	95 - 100
6	2.500	80 - 100
10	2.000	50 - 85
20	0.850	10 - 30
40	0.425	10 - 30
100	0.149	2 - 10

3. The material must meet specifications 1, 2, or 3. Introduction of analyses is not permitted. Fill material 2 is ASTM Specification C-33 and is intended for manufactured material.

**RETROFITTED PUMP STATION & EFFLUENT PUMP**



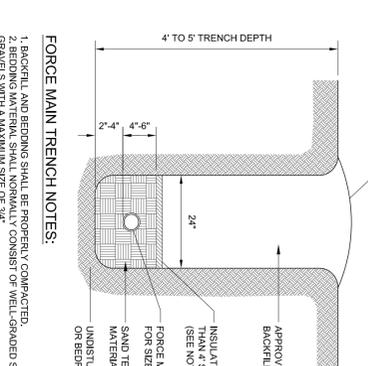
**RETROFIT ACCESS RISERS FILTER & WATER TIGHT ACCESS RISERS DETAIL**



**DESIGN NOTES:**

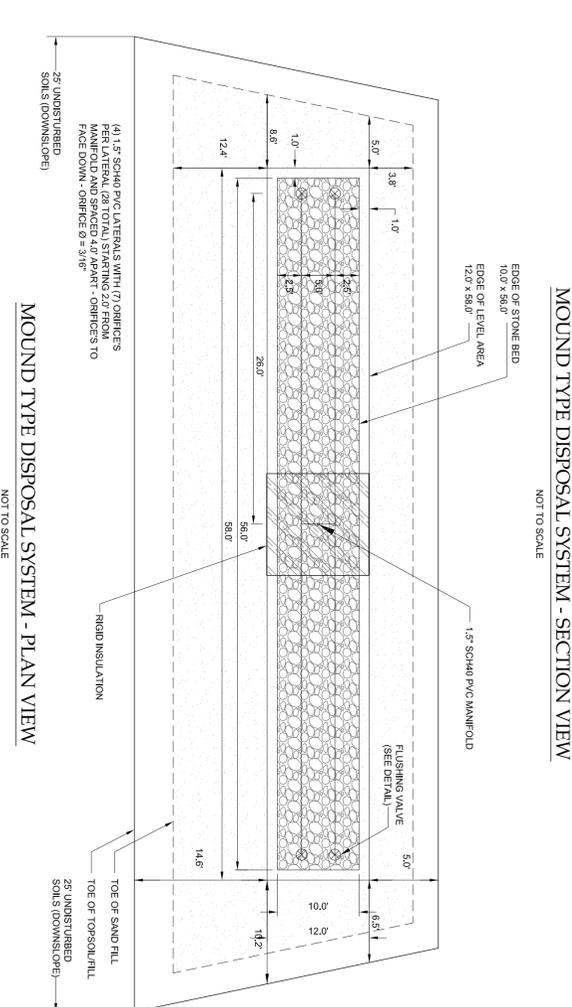
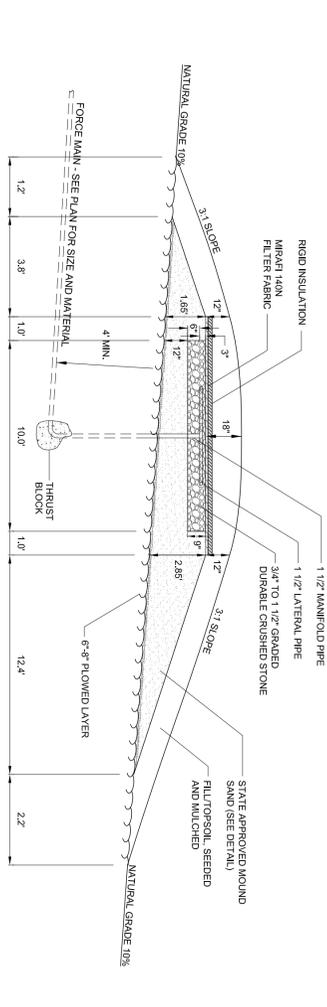
1. 5000 PSI CONCRETE. AS PER STRUCTURE.
2. LOW PRESSURE SEALS DESIGNED TO ACCEPT 4" CL OR PVC PIPE.
3. REQUIRES A RETROFITTED EFFLUENT PUMP CAPABLE OF PUMPING A MINIMUM OF 20.00 GPM PRESSURE 12.82' TDH, AND A SUPER SINGLE PUMP SWITCH WITH A 6\"/>

THE CONTRACTOR SHALL NOTIFY "DISSAFE" AT 1-888-016-SAFE PRIOR TO ANY EXCAVATION.



- FORCE MAIN TRENCH NOTES:**
1. BACKFILL AND BEDDING SHALL BE PROPERLY COMPACTED.
  2. TRENCHES SHALL BE 4' TO 6' DEEP.
  3. BACKFILL SHALL NOT CONTAIN:
    - (a) 1/2\"/>
  4. CONTAIN ANY FROZEN WET OR ORGANIC MATERIAL.
  5. FORCE MAIN MUST BE TESTED FOR LEAKAGE.
  6. AT ANY CROSSING UNDER A ROAD OR DRIVE, FORCE MAINS TO BE ENCASED IN A 4\"/>

**FORCE MAIN TRENCH DETAIL**



THE CONTRACTOR SHALL NOTIFY "DISSAFE" AT 1-888-016-SAFE PRIOR TO ANY EXCAVATION.

1. I hereby certify that in the exercise of my reasonable professional judgment, the design and construction details submitted with this application is true and correct, and that the design complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.

Stephent Revell, CPG  
Licensed Class B Designer #178

DATE: June 18, 2013  
DRAWN BY: TMM/ML  
SCALE: 1/4\"/>

**Holmberg Property**

774 Stockbridge Road  
Charlotte, Vermont  
Wastewater Details Sheet

