

**SITE LOCATION**

APPROXIMATE SCALE: 1" = 1,000'

IMAGE TAKEN FROM GOOGLE EARTH



**GENERAL NOTES**

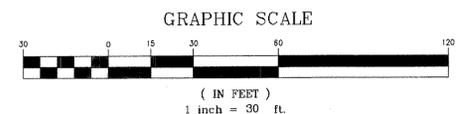
1. EXACT OBJECT LOCATIONS MAY DIFFER FROM THAT AS SHOWN, AND ADDITIONAL SUB-SURFACE AND SURFACE UTILITIES AND STRUCTURES MAY EXIST. THE CONTRACTOR IS TO PROCEED WITH GREAT CARE IN EXECUTING ANY WORK AND TO CALL DIG SAFE 48 HOURS PRIOR TO DIGGING, DRILLING OR BLASTING.
2. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY CONDITIONS THAT VARY FROM THOSE SHOWN ON THE PLANS. THE CONTRACTOR'S WORK SHALL NOT VARY FROM THE PLANS UNLESS THE EXPRESSED APPROVAL FROM THE ENGINEER.
3. THE CONTRACTOR IS INSTRUCTED TO COOPERATE WITH ANY AND ALL OTHER CONTRACTORS PERFORMING WORK ON THIS JOB SITE DURING THE PERFORMANCE OF THIS CONTRACT.
4. THE CONTRACTOR SHALL RESTORE LAWNS, DRIVEWAYS, CULVERTS, SIGNS AND OTHER PUBLIC OR PRIVATE PROPERTY DAMAGED OR REMOVED TO EXISTING CONDITIONS OR BETTER AS DETERMINED BY THE ENGINEER. ANY DAMAGED TREES, SHRUBS AND/OR HEDGES SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE, UNLESS NOTED OTHERWISE.
5. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIRED PERMITS.
6. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING, AND INCURRING THE COST OF ALL REQUIRED PERMITS, INSPECTIONS, AND CERTIFICATES.
7. THE CONTRACTOR WILL PROTECT EXISTING PROPERTY LINE MONUMENTATION. ANY MONUMENTATION DISTURBED OR DESTROYED, AS JUDGED BY THE ENGINEER OR OWNER SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE UNDER THE SUPERVISION OF A VERMONT STATE LICENSED LAND SURVEYOR.
8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLAN SHEETS AND SPECIFICATIONS, AND COORDINATE WORK WITH ALL CONTRACTS FOR THE SITE.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT EXPLORATORY TEST PITS AS MAY BE REQUIRED TO DETERMINE UNDERGROUND CONDITIONS.
10. ALL TRENCH EXCAVATION AND ANY REQUIRED SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH THE LATEST OSHA AND VOSHA REGULATIONS FOR CONSTRUCTION.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING AND THE MAINTENANCE OF SURFACE DRAINAGE DURING THE COURSE OF WORK.
12. MAINTAIN FLOW FOR ALL EXISTING UTILITIES, UNLESS NOTED OTHERWISE.
13. ALL SITE FILL SHALL MEET SELECTED FILL STANDARDS UNLESS NOTED OTHERWISE ON THE DRAWINGS.
14. CONTRACTOR TO GRADE ALL AREAS ON THE SITE TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND IMPERVIOUS SURFACES.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE CONTRACTOR SHALL PROVIDE MARKED-UP AS-BUILT PLANS FOR ALL UTILITIES SHOWING CONNECTIONS, BENDS, VALVES, LENGTHS OF LINES AND INVERTS. AS-BUILT PLANS SHALL BE REVIEWED BY THE OWNER AND HIS REPRESENTATIVES BEFORE UTILITIES WILL BE ACCEPTED.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER INSTALLATION, MONITORING, MAINTENANCE AND REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES. TAKING PRECAUTIONARY STEPS TO AVOID ANY SEDIMENT TRANSFER TO NEIGHBORING SITES OR WATERS OF THE STATE.

**LEGEND**

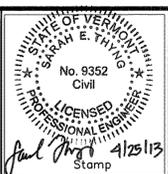
EXISTING FEATURES		PROPOSED FEATURES
C/O	CLEAN OUT	C/O
TP 1	TEST PIT	TP 1
TP -1	PERCOLATION TEST HOLE	TP -1
+100.5	SPOT ELEVATION	+100.5
---	PROPERTY LINE	---
- - - -	RIGHT-OF-WAY LINE	- - - -
---	CONTOUR	---
- - - -	SANITARY SEWER LINE	- - - -
- - - -	WATER LINE	- - - -
---	EDGE OF PAVEMENT	---

**SURVEY NOTES**

1. TOPOGRAPHIC DATA DERIVED FROM SURVEY PERFORMED BY ENGINEERING VENTURES, PC ON APRIL 23, 2013.
2. UTILITIES SHOWN DO NOT PURPORT TO CONSTITUTE OR REPRESENT ALL UTILITIES LOCATED UPON OR ADJACENT TO THE SURVEYED PREMISES. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITY CONFLICTS. ALL DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT, OWNER, AND ENGINEER. THE CONTRACTOR SHALL CONTACT DIG SAFE A MINIMUM OF 48 HOURS PRIOR TO ANY CONSTRUCTION.



FOR REVIEW ONLY  
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APRIL 26, 2012



Rev. No.	Description

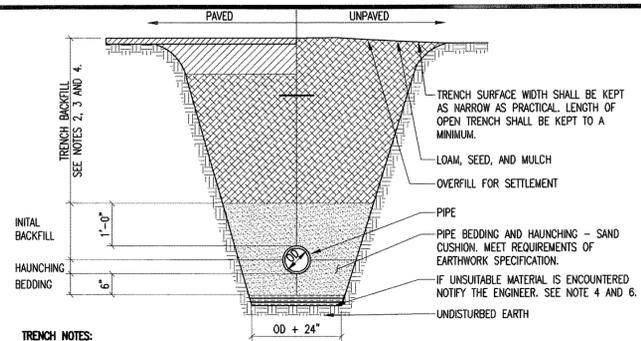
**ENGINEERING VENTURES PC**  
 208 Flynn Avenue, Suite 2A Burlington, VT 05401  
 Tel: 802.863.6205 • Fax: 802.863.6306  
 85 Mechanics Street, Suite 350A, Lebanon, NH 03766  
 Tel: 603.442.9333 • Fax: 603.442.9331  
 www.engineeringventures.com

Client: **Maureen Murray**  
 2778 Hinesburg Rd.  
 Charlotte, VT 05445

Sheet Title: **Replacement Septic Plan**  
 Project Title: **Murray Replacement Septic**  
 Charlotte, VT

Designed By: ST  
 Checked By: PG  
 Drawn By: ST  
 Scale: AS SHOWN  
 Date: APRIL 26, 2013

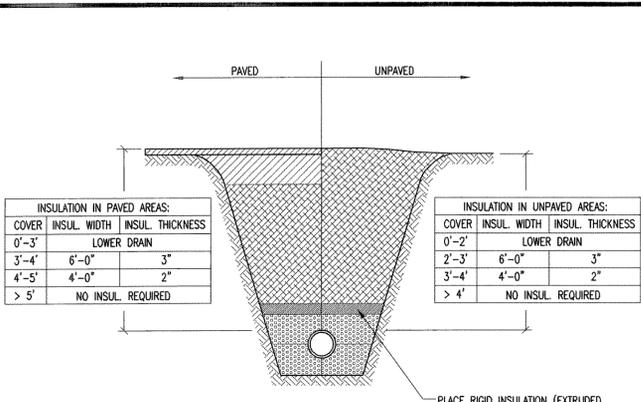
**C1.1**  
 EV#13178.00



- TRENCH NOTES:**
1. BEDDING TO PROVIDE A FIRM, STABLE, CONTINUOUS AND UNIFORM SUPPORT FOR FULL LENGTH OF PIPE.
  2. FOR BUILDING SEWERS THE MINIMUM DEPTH TO THE TOP OF THE PIPE SHALL BE 4'-0" WHERE BUILDING SEWERS ARE TO BE INSTALLED AT A DEPTH LESS THAN 3'-0" UNDER DRIVEWAYS, EXTRA HEAVY CAST IRON OR OTHER HIGH STRENGTH PIPE SHALL BE USED. REFER TO INSULATION OVER SHALLOW SEWER LINE DETAIL.
  3. FOR SEWER COLLECTION SYSTEMS THE MINIMUM DEPTH TO THE TOP OF THE PIPE SHALL BE 4'-0". THIS DEPTH SHALL BE INCREASED TO 5'-0" IN AREAS TO BE PLOWED DURING THE WINTER MONTHS. REFER TO INSULATION OVER SHALLOW SEWER LINE DETAIL.
  4. BACKFILL SHALL BE OF A SUITABLE MATERIAL REMOVED FROM EXCAVATION EXCEPT WHERE OTHER MATERIAL IS SPECIFIED. DEBRIS, FROZEN MATERIAL, LARGE CLODS OR STONES, ORGANIC MATTER, OR OTHER UNSTABLE MATERIALS SHALL NOT BE USED FOR BACKFILL WITHIN TWO FEET OF THE TOP OF THE PIPE.
  5. SEWERS ON 20 PERCENT SLOPES OR GREATER SHALL BE ANCHORED SECURELY WITH CONCRETE ANCHORS OR EQUIVALENT, SPACED AS FOLLOWS:
    - a. NOT OVER 36 FEET CENTER TO CENTER ON GRADES 20 PERCENT AND UP TO 35 PERCENT
    - b. NOT OVER 24 FEET CENTER TO CENTER ON GRADES 35 PERCENT AND UP TO 50 PERCENT
    - c. NOT OVER 16 FEET CENTER TO CENTER ON GRADES 50 PERCENT AND OVER
  6. LEDGE, ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF FOUR INCHES BELOW AND ON EACH SIDE OF ALL PIPES.

**SEWER TRENCH DETAIL**

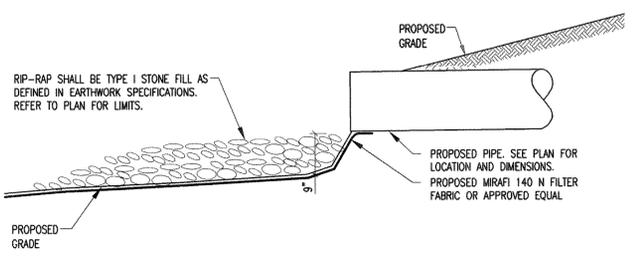
SCALE: NONE



- TRENCH NOTES:**
1. REFER TO APPLICABLE TRENCH DETAIL FOR SPECIFIC BACKFILL INFORMATION.

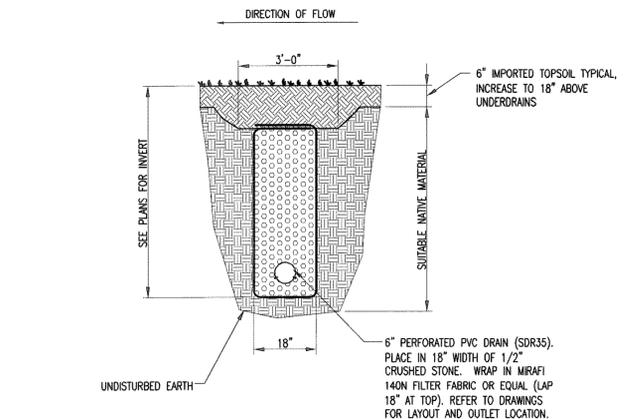
**INSULATION OVER SHALLOW SEWER LINE DETAIL**

SCALE: NONE



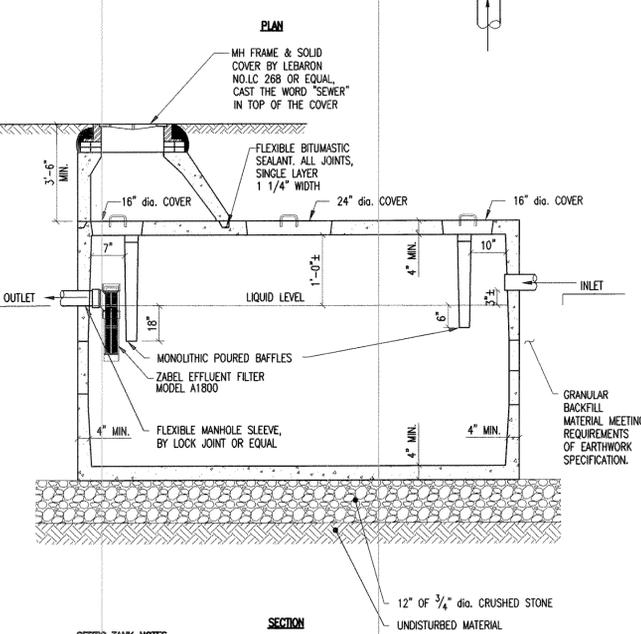
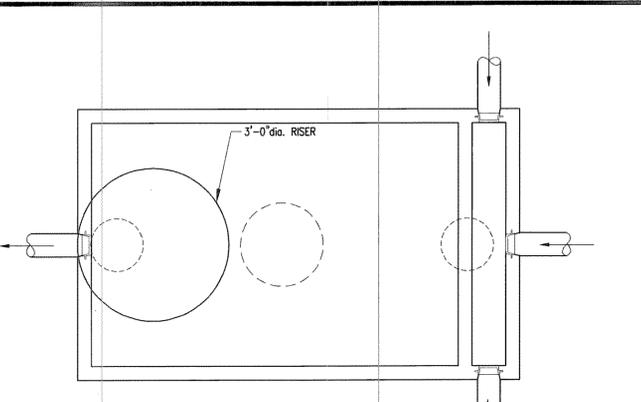
**STONE DISPERSAL PAD DETAIL**

SCALE: NONE



**UNDERDRAIN DETAIL**

SCALE: NONE

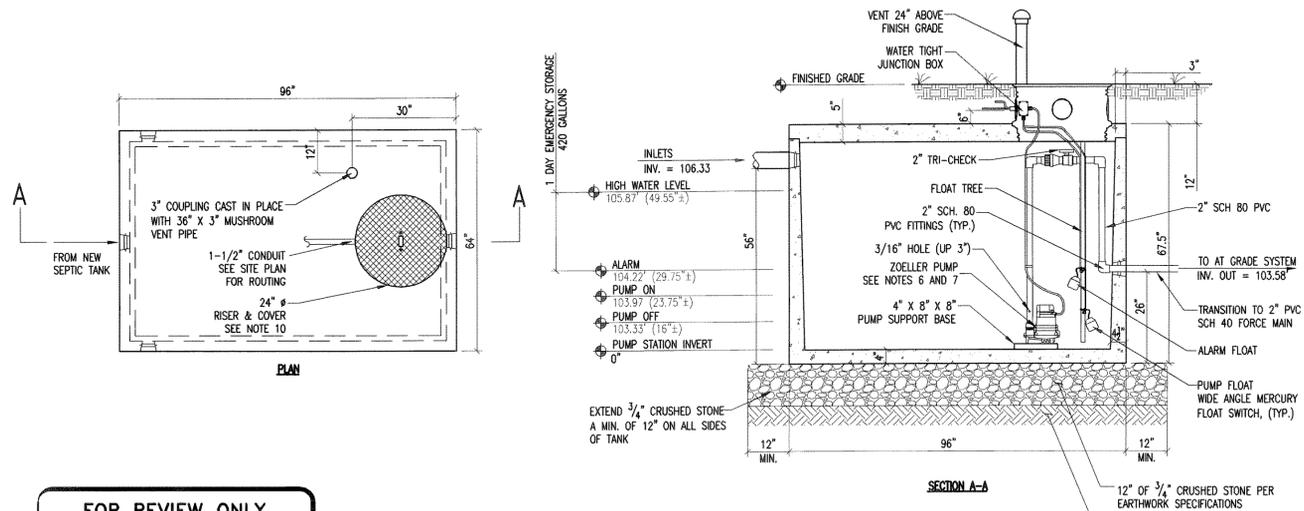


- SEPTIC TANK NOTES:**
1. MONOLITHIC SEPTIC TANK BY SD IRELAND OR APPROVED EQUIVALENT.
  2. SEPTIC TANK TO BE RATED FOR H10 LOADING.
  3. EXTERIOR OF SEPTIC TANK SHALL BE WATERPROOFED.
  4. DIMENSIONS ARE APPROXIMATE. COORDINATE WITH SEPTIC TANK SUPPLIER FOR ACTUAL DIMENSIONS.
  5. INSTALL A ZABEL EFFLUENT FILTER (OR APPROVED EQUIVALENT) THE FILTER SHALL PREVENT PASSAGE OF SOLIDS LARGER THAN 1/8" IN SIZE.

**1000 GALLON SEPTIC TANK DETAIL**

SCALE: NONE

- PUMP STATION NOTES:**
1. NEMA 4X CONTROL PANEL TO BE LOCATED IN THE EXISTING SINGLE FAMILY RESIDENCE AND SHALL CONTAIN:
    - a. RUN LIGHTS
    - b. HAND-ON-OFF SWITCH
    - c. ALARM SILENCE BUTTON
    - d. AUDIO AND VISUAL ALARM TO BE MOUNTED ON THE CONTROL PANEL BOX.
    - e. PUMP TIMER AND COUNTER
  2. SPARE PARTS TO BE SUPPLIED TO INCLUDE:
    - a. EXTRA FLOAT SWITCH
    - b. ONE ORIGINAL SET OF MANUALS FOR BOTH THE PUMP AND CONTROL PANEL.
  3. ALL PIPE AND FITTINGS IN PUMP STATION SHALL BE 2" SCHEDULE 80 PVC.
  4. PUMP STATION SHALL BE INSTALLED LEVEL ON A COMPACTED 12" GRAVEL BASE AS SHOWN.
  5. PUMP STATION SHALL BE A 1000 GALLON PRECAST, SEAMLESS PUMP STATION WITH A 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS AS MANUFACTURED BY CAMP PRECAST OR APPROVED EQUIVALENT. INSTALL (1) ZOELLER "AQUA-MATE" SUBMERSIBLE PUMP, MODEL 211 OR APPROVED EQUIVALENT. IF A SUBSTITUTE PUMP IS SELECTED, IT SHALL PROVIDE A PUMPING RATE OF 30 GPM AND 15.0 FEET OF TOTAL DYNAMIC HEAD.
  6. THE PUMP SHALL BE INSTALLED WITH A CHAIN AND RAIL SYSTEM SO THE PUMP MAY BE WITHDRAWN FROM THE PUMP STATION TO THE GROUND SURFACE.
  7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND PROVIDING ADEQUATE AND CODE COMPLIANT ELECTRICAL SERVICE TO THE PUMP STATION. THE CONTRACTOR IS RESPONSIBLE FOR ANY REQUIRED ELECTRICAL INSPECTIONS.
  8. ALL PIPE CONNECTIONS SHALL BE MADE WITH KOR-N-SEAL II FLEXIBLE CONNECTORS OR APPROVED EQUIVALENT TO PROVIDE A WATER TIGHT, FLEXIBLE CONNECTION.
  9. PUMP STATION, ACCESS RISER AND COVER SHALL BE RATED FOR H10 LOADING WHEN LOCATED IN LAWN AREAS AND H20 LOADING WHEN IN AREAS SUBJECT TO VEHICLE TRAFFIC.
  10. PUMP STATION DIMENSIONS ARE APPROXIMATE. COORDINATE WITH PUMP STATION MANUFACTURER FOR ACTUAL DIMENSIONS.
  11. REFER TO THE SITE PLAN FOR THE LOCATION OF THE PUMP STATION AND THE LENGTH, SIZE, MATERIAL AND SLOPE OF THE INLET AND OUTLET PIPES.



**PUMP STATION DETAIL**

SCALE: NONE

**SANITARY SEWER NOTES**

- CONTRACTOR SHALL CONFORM TO GUIDELINES DETAILED IN THE VERMONT STATE SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR READING AND FOLLOWING THE FULL COMPLETE EDITION PROVIDED BY THE STATE.
- A. MATERIALS: THE BUILDING SEWER SHALL BE CONSTRUCTED IN A MANNER WHICH WILL PREVENT LEAKING, BREAKING OR CLOGGING. ACCEPTABLE MATERIALS FOR THE SEWER ARE RUBBER-RING-JOINTED PVC GRAVITY SEWER PIPE SDR35 ASTM D3034.
  - B. SIZING AND SLOPE: MINIMUM BUILDING SEWER SIZE IS 4 INCHES (UNLESS SHOWN ON THE PLAN) AND A MINIMUM SLOPE IS 0.02 FOOT PER FOOT.
  - C. CLEANOUTS: CLEANOUTS SHALL BE PROVIDED AT EACH HORIZONTAL CHANGE IN DIRECTION OF THE BUILDING SEWER GREATER THAN 45 DEGREES AND WHERE INDICATED ON THE DESIGN DRAWINGS. BUILDING SEWER CHANGES IN DIRECTION WHICH EXCEED 45 DEGREES SHOULD BE MADE WITH TWO 45 DEGREE ELLS OR LONG SWEEP FITTINGS. MANHOLES ARE ACCEPTABLE IN LIEU OF CLEANOUTS, WHERE BUILDING SEWERS ARE TO BE INSTALLED AT A DEPTH OF LESS THAN 3 FEET UNDER DRIVEWAYS ARE ANTICIPATED, EXTRA HEAVY CAST IRON PIPE SHALL BE USED.
  - D. LEAKAGE: BUILDING SEWERS SHALL MEET THE LEAKAGE STANDARDS PRESCRIBED IN THE STATE OF VERMONT SPECIFICATIONS (EPR-CHAPTER 1). SEE BELOW FOR MORE DETAIL.
  - E. SLOPE, VELOCITY: ALL SEWERS SHALL BE INSTALLED WITH NOT LESS THAN THE SLOPES SHOWN BELOW:
 

PIPE SIZE (INCHES)	SLOPE (FEET/100 FEET)
4"	0.40
6"	0.20
  - F. CHANGES IN PIPE SIZE: WHEN A SMALLER SEWER JOINS A LARGE ONE, THE INVERT OF THE LARGER SEWER SHALL BE LOWERED SUFFICIENTLY TO MAINTAIN THE SAME ENERGY GRADIENT.
  - G. MATERIAL: PVC SDR 35, ASTM D3034, WITH PUSH-ON GASKETED JOINTS. GASKETS SHALL CONFORM TO ASTM D3212. SEWER JOINTS SHALL BE CONSTRUCTED TO MINIMIZE INFILTRATION AND TO PREVENT THE ENTRANCE OF ROOTS INTO THE SYSTEM.
  - H. TRENCHING: LEDGE, ROCK, BOULDERS AND LARGE STONES SHALL BE REMOVED TO PROVIDE A MINIMUM CLEARANCE OF FOUR INCHES BELOW AND ON EACH SIDE OF ALL PIPES.
  - I. BEDDING: SEE TRENCH DETAILS THIS DRAWING FOR MATERIALS. TRENCH BACKFILL SHALL BE OF A SUITABLE NATIVE MATERIAL FREE FROM DEBRIS, FROZEN MATERIAL, LARGE CLODS OR STONES, ORGANIC MATTER, OR OTHER UNSTABLE MATERIALS.
  - J. INSTALLATION: PIPE SHALL BE LAID WITH BELL ENDS FACING UPGRADE AND LAYING SHALL START AT THE DOWNGRADE END.
  - K. WATER LINE SEPARATION
    - a. HORIZONTAL SEPARATION: SEWERS SHALL BE LAID FLAT AT LEAST TEN FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. WHERE IMPOSSIBLE OR IMPRACTICABLE, DUE TO LEDGE, BOULDERS OR OTHER UNSUITABLE CONDITIONS, TO MAINTAIN THE TEN FOOT SEWER/WATER PIPE HORIZONTAL SEPARATION BETWEEN SEWER AND WATER LINES, THE WATER LINE MAY BE IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF IN THE SEWER TRENCH PROVIDED THAT THE BOTTOM OF THE WATER LINE IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER. WHEREVER IMPOSSIBLE OR IMPRACTICABLE TO MAINTAIN THE 18 INCH VERTICAL SEPARATION, THE SEWER LINE SHALL BE CONSTRUCTED TO NORMAL WATER LINE STANDARDS AND PRESSURE TESTED TO 50 PSI FOR 15 MINUTES PRIOR TO BACKFILLING. THERE SHALL BE NO LEAKAGE FOR THIS TEST.
    - b. CROSSINGS: SEWERS CROSSING WATER MAINS SHALL BE LAID BENEATH THE WATER MAIN WITH AT LEAST 18 INCHES VERTICAL CLEARANCE BETWEEN THE OUTSIDE OF THE SEWER AND THE OUTSIDE OF THE WATER MAIN. WHEN IT IS IMPOSSIBLE TO MAINTAIN THE 18 INCH VERTICAL SEPARATION:
      - 1.) THE CROSSING SHALL BE ARRANGED SO THAT ONE FULL LENGTH OF SEWER IS CENTERED ABOVE OR BELOW THE WATER LINE WITH SEWER JOINTS AS FAR AWAY AS POSSIBLE FROM WATER JOINTS;
      - 2.) THE SEWER PIPE MUST BE CONSTRUCTED TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 20 FEET ON EITHER SIDE OF THE CROSSING OR A TOTAL OF THREE PIPE LENGTHS, WHICHEVER IS GREATER;
      - 3.) THE SECTION CONSTRUCTED TO WATER MAIN STANDARDS MUST BE PRESSURE TESTED TO MAINTAIN 50 PSI FOR 15 MINUTES WITHOUT LEAKAGE PRIOR TO BACKFILLING BEYOND ONE FOOT ABOVE THE PIPE TO ASSURE WATER TIGHTNESS;
      - 4.) WHERE A WATER MAIN CROSSES UNDER A SEWER, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT DAMAGE TO THE WATER MAIN.

**SITE/EARTHWORK SPECIFICATIONS**

1. CLEARING AND GRUBBING - ALL TOPSOIL AND UNSUITABLE MATERIALS SHALL BE REMOVED FROM IMPACTED AREAS.
2. COMPACTION SHALL BE PERFORMED USING VIBRATORY ROLLERS AND WATER IN LIFTS OF NO GREATER THAN TWELVE INCHES. COMPACTION SHALL BE PERFORMED UNTIL THE REQUIRED DENSITY IS ACHIEVED.
3. DENSITY SHALL BE DETERMINED BY AASHTO T238 METHOD AND SHALL NOT BE LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY FOR PAVED AREAS AND 90 PERCENT OF THE MAXIMUM DENSITY FOR NON PAVED AREAS DETERMINED IN ACCORDANCE WITH AASHTO T99.
4. COMPACTION TESTING SHALL BE PERFORMED FOR EVERY LAYER OF MATERIAL PLACED AND FOR EVERY 1000 SQUARE FEET OF AREA.
5. ALL REMAINING DISTURBED AREAS WITHIN THE RIGHT OF WAY SHALL BE FERTILIZED AND SEEDED OR STONED IN ACCORDANCE WITH THE VERMONT STATE SPECIFICATIONS.
6. THE SEEDING OF SLOPES 3:1 OR GREATER AND DITCHES SHALL REQUIRE THE USE OF EROSION CONTROL MATTING.
7. COST OF INITIAL INSPECTION AND TESTING SHALL BE PAID BY THE OWNER. SUBSEQUENT TESTING OF MATERIALS NOT PASSING INITIAL INSPECTION, SHALL BE PAID BY THE CONTRACTOR.
8. ALL EARTHWORK MATERIALS SHALL BE OBTAINED FROM APPROVED SOURCES. THEY SHALL CONSIST OF SATISFACTORILY GRADED, FREE DRAINING MATERIAL, REASONABLY FREE FROM LOAM, SILT, CLAY AND ORGANIC MATERIAL. EARTHWORK MATERIALS SHALL MEET THE REQUIREMENTS OF THE FOLLOWING TABLES:
 

A. SAND BLANKET/BEDDING: SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
2 INCHES	100
1 1/2 INCHES	90 - 100
1/2 INCH	70 - 100
NO. 4	60 - 100
NO. 100	0 - 20
NO. 200	0 - 8

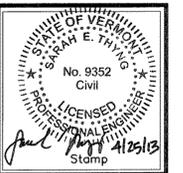
B. 3/4" CRUSHED STONE: SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
1 INCH	100
3/4 INCH	90 - 100
3/8 INCH	0 - 55
NO. 4	0 - 10
NO. 8	0 - 5

C. 1 1/2" CRUSHED STONE: SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
1 3/4 INCH	100
1 1/2 INCHES	90 - 100
1 INCH	20 - 55
3/4 INCHES	0 - 15
3/8 INCHES	0 - 5

D. GRANULAR BACKFILL: SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING SQUARE MESH SIEVES
3 INCHES	100
NO. 4	45 - 75
NO. 100	0 - 12
NO. 200	0 - 6
9. E. TOPSOIL (GENERAL QUALIFICATIONS): COMPOSITION: USE AS A PLANTING MEDIUM FOR THE PROJECT ONLY FERTILE, FRABLE, WELL-DRAINED SOIL, OF UNIFORM QUALITY, FREE OF STONES OVER 1 IN. DIAMETER, STICKS, OILS, CHEMICALS, PLASTER, CONCRETE, PESTS AND INFESTATIONS AND OTHER DELETERIOUS MATERIALS. SUBMIT SOIL ANALYSIS FOR IMPORT TOPSOIL.



Rev. No.	Description

**ENGINEERING VENTURES PC**  
 208 Flynn Avenue, Suite 2A Burlington, VT 05401  
 Tel: 802.263.6232 - Fax: 802.263.6306  
 85 Mechanic Street, Suite 500A, Lebanon, NH 03756  
 Tel: 603.442.2551  
 www.engingventures.com

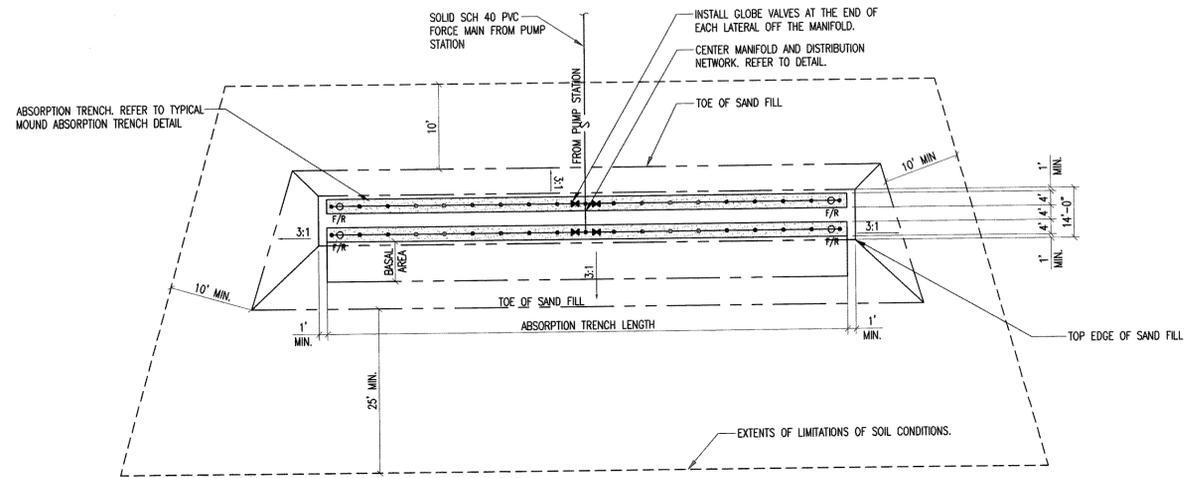
Client: **Maureen Murray**  
 2778 Hinesburg Rd.  
 Charlotte, VT 05445

Sheet Title: **Details**  
 Project Title: **Murray Replacement Septic**  
 Charlotte, VT

Designed By: **ST**  
 Checked By: **PG**  
 Drawn By: **JMF**  
 Scale: **AS NOTED**  
 Date: **APRIL 26, 2013**

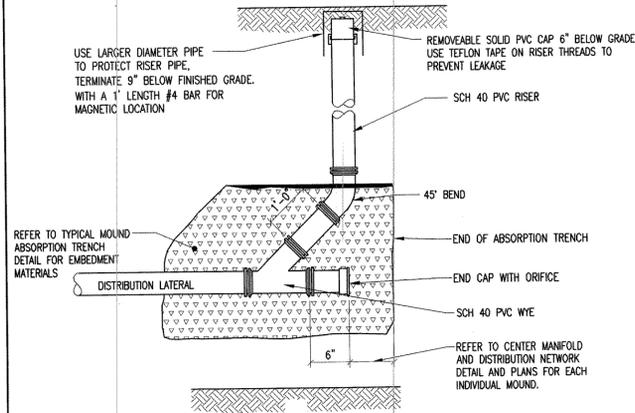
**C3.1**  
 EV#13178.00

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TYPICAL MOUND SYSTEM-PLAN VIEW

SCALE: NONE



FLUSHING RISER

SCALE: NONE

- NOTES:
1. FLUSHING OF DISTRIBUTION LATERALS SHOULD BE PERFORMED WHEN THE SEPTIC TANK AND PUMP STATION ARE PUMPED.
  2. EACH LATERAL SHOULD BE FLUSHED INDIVIDUALLY.
  3. FLUSHING OF EACH LATERAL CAN BE ACCOMPLISHED BY THE FOLLOWING PROCEDURE:
    - A. FILL THE PUMP CHAMBER WITH WATER TO THE HIGH WATER LEVEL, IMMEDIATELY PRIOR TO ACTIVATING PUMP FOR LATERAL FLUSHING.
    - B. CONNECT A HOSE TO THE FLUSHING RISER OF THE LATERAL TO BE FLUSHED AND DISCHARGE IT INTO THE INLET END ACCESS MANHOLE OF THE PUMPED OUT SEPTIC TANK.
    - C. FLUSH EACH LATERAL UNTIL THE RETURN WATER IS RELATIVELY FREE OF LARGE SOLIDS.

BASIS OF DESIGN

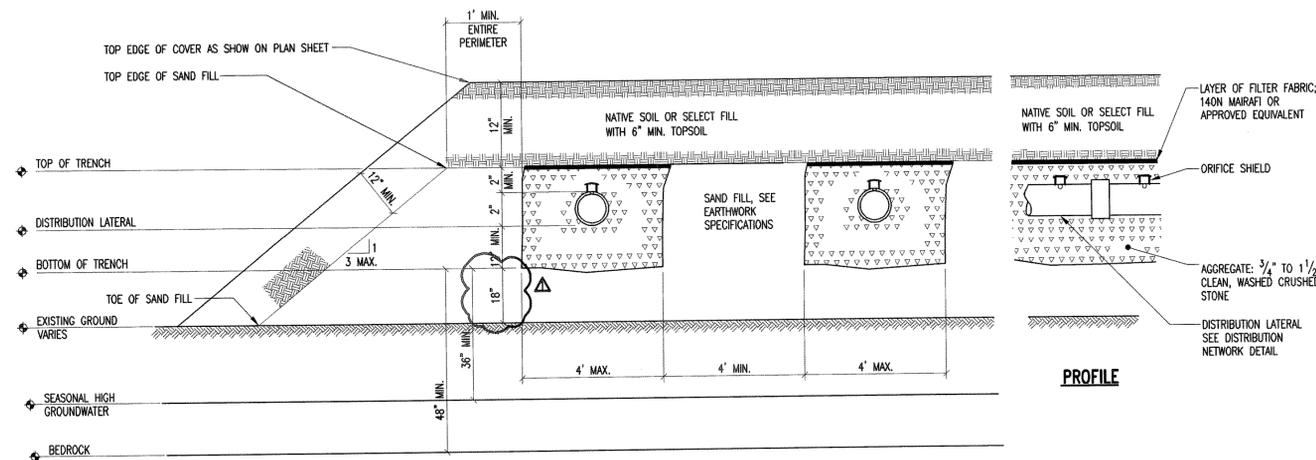
- KNOWN:
1. PERCOLATION RATE = 77 MIN/INCH (UTILIZE SECOND SLOWEST RATE)
  2. ONE SINGLE FAMILY RESIDENCE TO BE CONNECTED TO INDIVIDUAL MOUND WASTEWATER DISPOSAL SYSTEM
  3. SYSTEM WILL SERVE A SINGLE FAMILY RESIDENCE WITH 3 BEDROOMS

- DESIGN FLOW:
1. 70 GALLONS PER PERSON PER DAY
  2. THE FIRST THREE BEDROOMS OF THE HOME SHALL BE ASSUMED TO HAVE TWO PERSONS PER BEDROOM, EACH ADDITIONAL BEDROOM SHALL BE ASSUMED TO HAVE ONE PERSON PER BEDROOM.
  3. (3 BEDROOMS x 2 PEOPLE) x 70 GPD/PERSON = 420 GPD

- SEPTIC TANK:
1. DESIGN FLOW IS: 420 GPD < 667 GPD --> USE 1,000-GALLON CAPACITY TANK

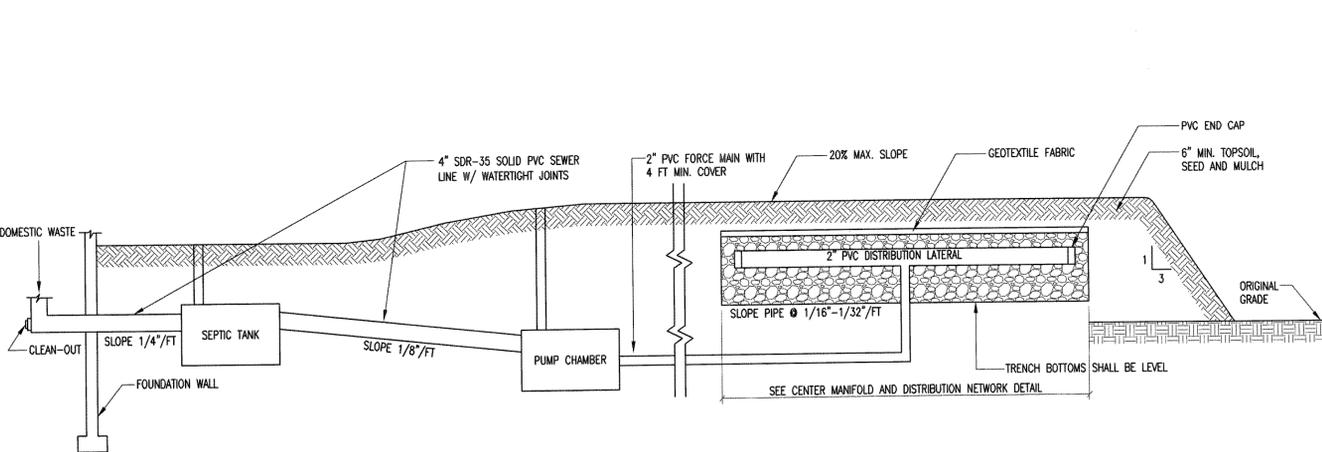
- MOUND DESIGN (FOR SEPTIC TANK EFFLUENT):
1. PROVIDE 48" OF SEPARATION BETWEEN BOTTOM OF DISPOSAL TRENCH AND BEDROCK.
  2. PROVIDE 36" OF SEPARATION BETWEEN BOTTOM OF DISPOSAL TRENCH AND SHWT.
  3. PROVIDE 36" OF SEPARATION BETWEEN BOTTOM OF DISPOSAL TRENCH AND INDUCED GROUNDWATER MOUNDING.
  4. MAXIMUM APPLICATION RATE = 1.0 GPD/SF
  5. REQUIRED ABSORPTION AREA = 420 GPD / 1.0 GPD/SF = 420 SF
  6. USE MAXIMUM TRENCH WIDTH OF 4'; 420 SF / 4' = 105 LF OF TRENCH
  7. TWO (2) TRENCHES PROVIDED AT 60'; 2 X 60' = 120' > 105' --> OK
  8. TWO (2) TRENCHES X 4' WIDE X 60' LONG = 480 SF > 420 SF --> OK
  9. SYSTEM LENGTH TO WIDTH RATIO IS: 60' / 12' = 5 > 2 --> OK

- BASAL AREA:
1. APPLICATION RATE: PERCOLATION RATE IS 60 < 77 MIN/INCH < 120 MIN/INCH --> USE 0.24 GPD/SF
  2. REQUIRED BASAL AREA = 420 GPD / 0.24 GPD/SF = 1,750 SF
  3. MINIMUM BASAL WIDTH = 1,750 SF / 60' = 29.17' --> USE 30'
  4. PROVIDED BASAL AREA = (30' x 60') = 1,800 SF > 1,750 SF --> OK



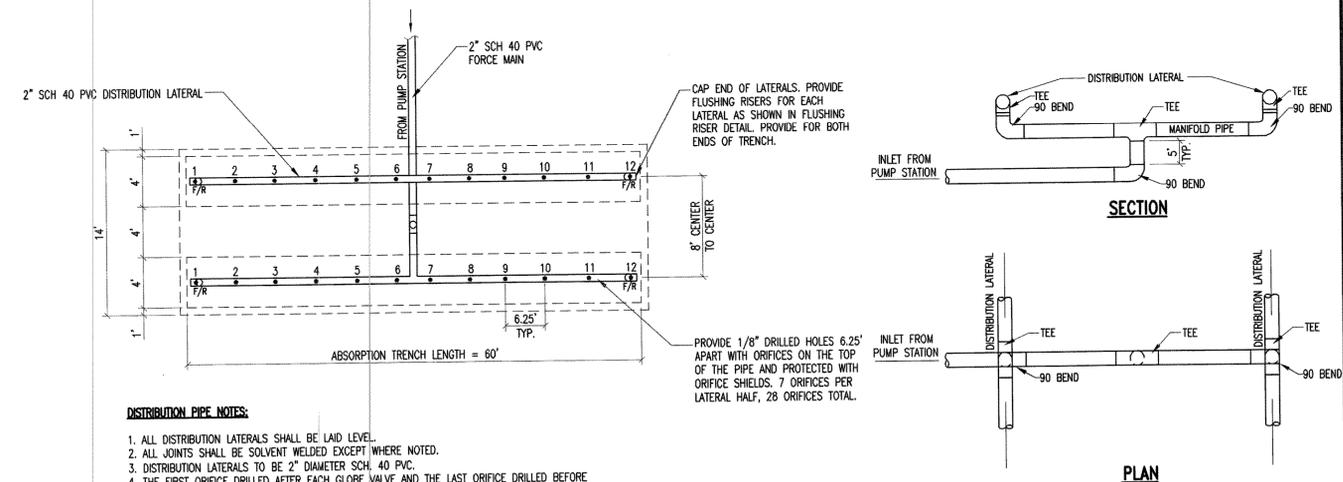
TYPICAL MOUND ABSORPTION TRENCH

NOT TO SCALE



TYPICAL ON-SITE SEPTIC HYDRAULIC PROFILE

NOT TO SCALE



DISTRIBUTION PIPE NOTES:

1. ALL DISTRIBUTION LATERALS SHALL BE LAID LEVEL.
2. ALL JOINTS SHALL BE SOLVENT WELDED EXCEPT WHERE NOTED.
3. DISTRIBUTION LATERALS TO BE 2" DIAMETER SCH. 40 PVC.
4. THE FIRST ORIFICE DRILLED AFTER EACH GLOBE VALVE AND THE LAST ORIFICE DRILLED BEFORE EACH END CAP SHALL BE ON THE UNDERSIDE OF THE DISTRIBUTION LATERAL TO PREVENT FREEZING. ALL OTHER ORIFICES TO BE FACING UP. PROVIDE AN ORIFICE SHIELD FOR EACH ORIFICE (TYPICAL).

CENTER MANIFOLD AND DISTRIBUTION NETWORK

NOT TO SCALE

MOUND CONSTRUCTION NOTES

1. ABOVE GROUND VEGETATION SHALL BE CLOSELY CUT AND REMOVED FROM THE GROUND SURFACE THROUGHOUT THE AREA TO BE USED FOR THE PLACEMENT OF THE FILL MATERIAL. THE AREA SHALL THEN BE PLOWED TO A DEPTH OF SEVEN (7) TO EIGHT (8) INCHES, PARALLEL TO THE LAND CONTOUR WITH THE PLOW THROWING THE SOIL UPSLOPE TO PROVIDE A PROPER INTERFACE BETWEEN THE FILL AND NATURAL SOILS. TREE STUMPS SHOULD BE CUT FLUSH WITH THE SURFACE OF THE GROUND AND ROOTS SHOULD NOT BE PULLED. ONCE PLOWING IS COMPLETE, THE AREA SHOULD BE FENCED TO PREVENT VEHICLES AND EQUIPMENT FROM ENTERING THE PLOWED AREA, UNLESS THE FILL MATERIAL IS GOING TO BE IN PLACE WITHIN 24 HOURS OF THE PLOWING. IF THE SITE CANNOT BE PLOWED, A BACKHOE BUCKET FITTED WITH CHISEL TEETH MAY BE USED TO "TILL" THE SITE BY CREATING FURROWS THAT ARE PARALLEL TO GROUND CONTOUR.
2. TO PREVENT COMPACTION, CONSTRUCTION EQUIPMENT SHALL NOT BE MOVED ACROSS THE PLOWED SURFACE OR THE EFFLUENT DISPERSAL AREA. HOWEVER, AFTER PLACEMENT OF A MINIMUM OF SIX (6) INCHES OF SAND FILL OVER THE PLOWED AREA, CONSTRUCTION EQUIPMENT MAY BE DRIVEN OVER THE PROTECTED SURFACE TO EXPEDITE CONSTRUCTION. CONSTRUCTION AND/OR PLOWING SHALL NOT BE INITIATED WHEN THE SOIL MOISTURE CONTENT IS HIGH. IF A SAMPLE OF SOIL OBTAINED FROM APPROXIMATELY NINE (9) INCHES BELOW THE SURFACE CAN BE EASILY ROLLED INTO A WIRE, THE SOIL MOISTURE CONTENT IS TOO HIGH FOR CONSTRUCTION PURPOSES.
3. A DESIGNER SHALL REVIEW THE MOUND WASTEWATER DISPOSAL SYSTEM THROUGH THE CRITICAL STAGES OF CONSTRUCTION. UPON COMPLETION OF PLOWING OF THE MOUND AREA AND PRIOR TO THE PLACING OF THE FILL MATERIAL, THE DESIGNER SHALL INSPECT THE SITE PREPARATIONS. UPON COMPLETION OF THE INSTALLATION OF THE DISTRIBUTION PIPING, THE NETWORK SHALL BE TESTED WITH CLEAN WATER TO ASSURE THAT DISTRIBUTION IS COMPLETE AND MEETS THE REQUIREMENTS IN THE STATE OF VERMONT, AGENCY OF NATURAL RESOURCES, WASTEWATER SYSTEM AND POTABLE WATER SUPPLY RULES.
4. AFTER SUCCESSFUL TESTING OF THE DISTRIBUTION SYSTEM, FILTER FABRIC SHALL BE INSTALLED AND THE SYSTEM COMPLETED. THE INSTALLER SHALL CROWN THE ENTIRE MOUND WASTEWATER DISPOSAL SYSTEM WITH A COVER OF SOIL LESS PERMEABLE THAN THE MOUND FILL, COVERING WITH 12" ON THE SIDES OF THE MOUND. NATIVE SOIL FROM THE SITE IS NORMALLY SUITABLE FOR COVER MATERIAL, THOUGH THE TOP 2-4" OF THIS COVER MUST BE TOPSOIL. THE ENTIRE MOUND SHALL BE SEED OR SOODED TO ASSURE STABILITY OF THE INSTALLATION. THIS GRASS COVER SHALL BE MAINTAINED AND SHOULD BE MOWED A MINIMUM OF ANNUALLY.
5. THE AREA SURROUNDING THE MOUND WASTEWATER DISPOSAL SYSTEM SHALL BE GRADED TO PROVIDE DIVERSION OF SURFACE RUN-OFF WATERS.
6. FILL MATERIAL: THE FILL MATERIAL FROM THE NATURAL SOIL PLOWED SURFACE TO THE TOP OF THE TRENCH OR BED SHALL BE CLEAN WASHED SILICA SAND MEETING ONE OF THE FOLLOWING SIEVE REQUIREMENTS:
 

(1) 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

(2) 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

(3) SIEVE NUMBER	OPENING (mm)	PERCENT PASSING, BY WEIGHT
3/8	9.500	85-100
40	0.420	30-50
200	0.074	0-5

7. THE FILL MATERIAL MUST MEET THE SPECIFICATIONS OF (1), (2), OR (3) ABOVE. INTERPOLATION OF ANALYSES IS NOT PERMITTED. FILL MATERIAL (2) IS ASTM SPECIFICATION C33 AND IS INTENDED FOR MANUFACTURED MATERIAL.

TEST PIT AND PERCOLATION TEST DATA

TEST PITS PERFORMED ON APRIL 18, 2013 BY ENGINEERING VENTURES, PC

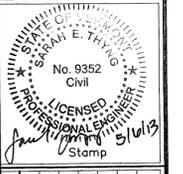
TEST PITS

TEST PIT #1

SHWT AT 14"

DEPTH	HORIZON	DESCRIPTION	COLOR	COMMENTS
0" - 4"	A	TOPSOIL	2.5YR3/2	
4" - 14"	B	SILT LOAM	2.5YR4/3	BRIGHT MOTTLING WITH LOW CHROMA SOILS AT 14"
14" - 36"	C	SILT LOAM	5YR3/2	

- PERC TESTS
- PERC TEST #1: PERC RATE = 77 MIN/INCH <-- USE SECOND SLOWEST RATE
- PERC TEST #2: PERC RATE = 28 MIN/INCH



Rev. No.	Description
1	W/WW COMMENTS

**ENGINEERING VENTURES PC**

208 Flynn Avenue, Suite 218, Burlington, VT 05401  
 Tel: 802.863.6225 • Fax: 802.863.6306  
 85 Mechanic Street, Suite 350A, Lebanon, NH 03766  
 Tel: 603.442.9333 • Fax: 603.442.9331  
 www.engineeringventures.com

Client: **Maureen Murray**  
 2778 Hinshelwood Rd  
 Charlestown, VT 05445

Sheet Title: **Details**  
 Project Title: **Murray Replacement Septic**  
 Charlestown, VT

Designed By: ST  
 Checked By: PG  
 Drawn By: ST  
 Scale: AS NOTED  
 Date: APRIL 26, 2013

**C3.0**  
 EY#13178.00

FOR REVIEW ONLY  
 NOT FOR CONSTRUCTION  
 APRIL 26, 2012