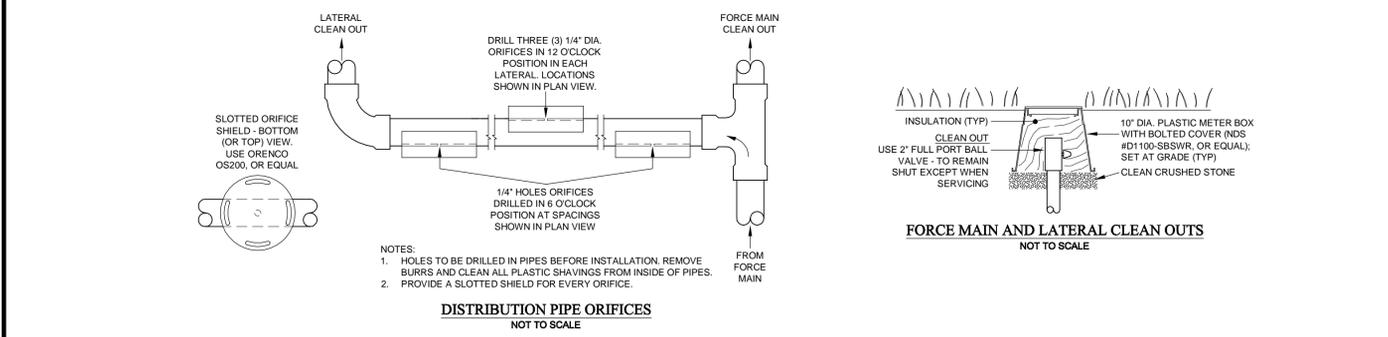
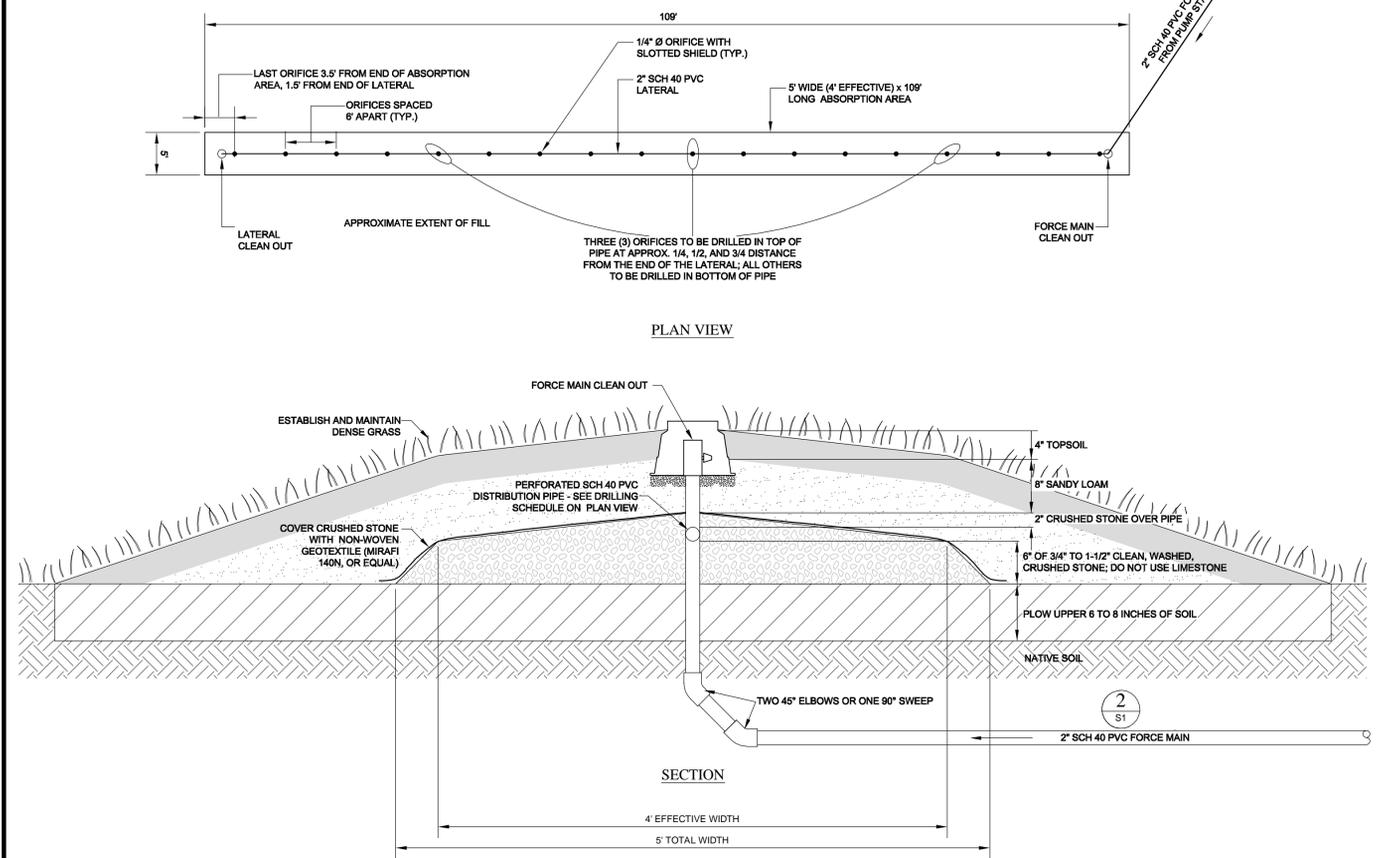
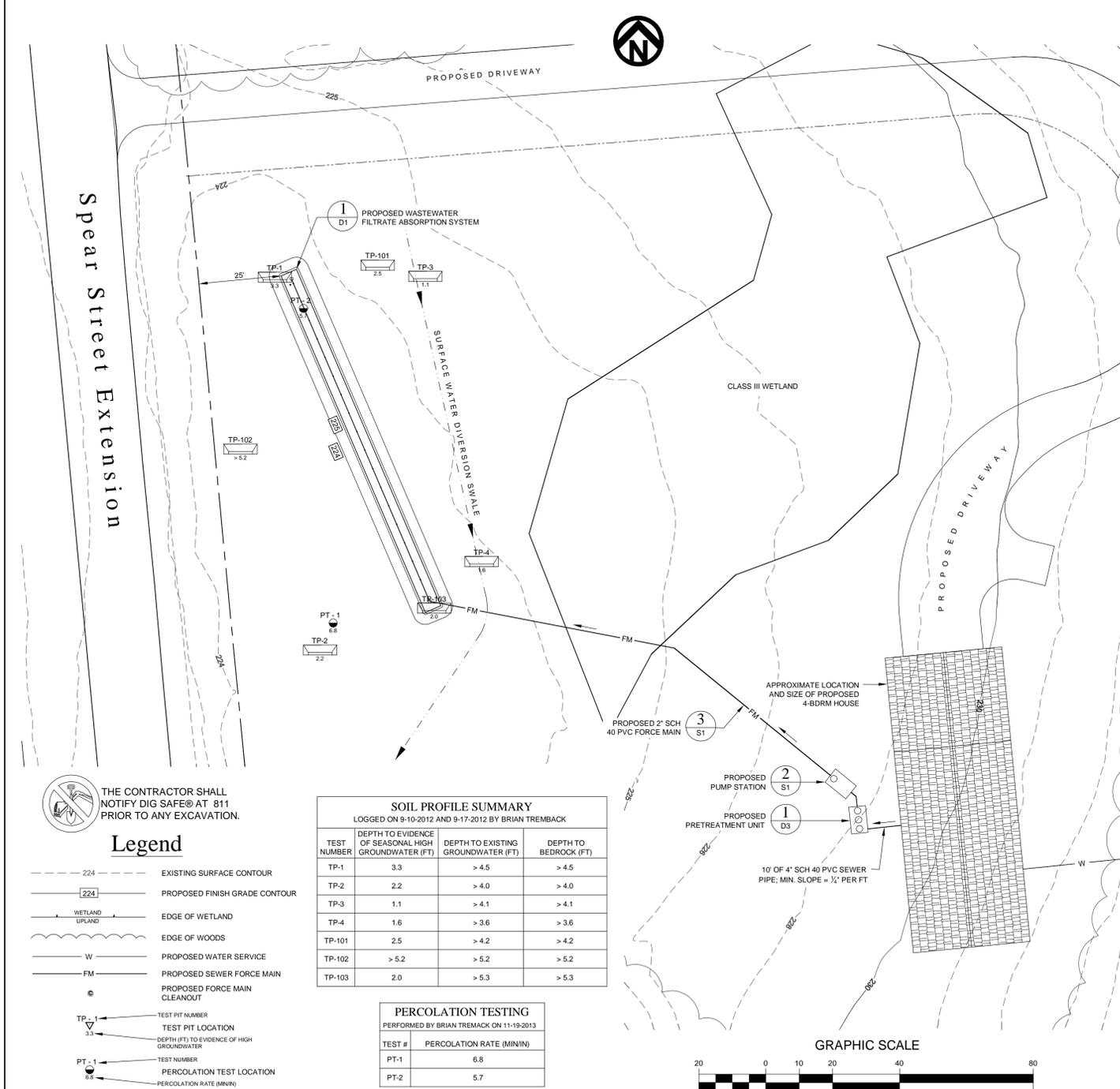


**1 AT-GRADE FILTRATE ABSORPTION SYSTEM**  
S1 / SCALE AS SHOWN



**ABSORPTION SYSTEM SPECIFICATIONS**

- PRIOR TO CONSTRUCTION, THE LOCATION OF THE AT-GRADE SYSTEM SHALL BE STAKED OUT IN THE FIELD.
- TILLING OR CONSTRUCTION OF THE SYSTEM SHALL NOT TAKE PLACE WHEN THE SOIL MOISTURE IS HIGH.
- TO PREVENT COMPACTION, CONSTRUCTION EQUIPMENT SHALL NOT BE MOVED ACROSS OR DOWNSLOPE OF THE SYSTEM AREA. THE SOIL FOR A DISTANCE OF 25 FEET DOWNSLOPE OF THE AT-GRADE SYSTEM IS THE EFFLUENT DISPERSAL AREA AND SHALL NOT BE DISTURBED.
- WOODY VEGETATION OR TALL HERBACEOUS VEGETATION SHALL BE CUT FLUSH WITH THE GROUND AND THE ROOTS LEFT IN PLACE. ON WOODED SITES, THE FOREST LITTER SHALL BE RAKED OFF IF IT IS MORE THAN ONE INCH THICK.
- THE SYSTEM AREA SHALL BE TILLED, PREFERABLY WITH A PLOW, TO A DEPTH OF 6 TO 8 INCHES, PARALLEL TO GROUND CONTOUR. DURING PLOWING, THE SOIL SHOULD BE THROWN UPSLOPE TO PROVIDE A PROPER INTERFACE BETWEEN THE SOIL AND STONE AGGREGATE. 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 THE GROUND CONTOUR.
- UPON COMPLETION OF TILLING AND BEFORE PLACING CRUSHED STONE, THE DESIGNER SHALL BE CONTACTED TO INSPECT THE SITE PREPARATION.
- CONSTRUCTION OF THE EFFLUENT ABSORPTION AREAS SHALL BEGIN IMMEDIATELY AFTER TILLING BY PLACING SIX (6) INCHES OF 3/4" TO 1-1/2" OF CLEAN WASHED STONE.
- WHILE THE PIPE IS EXPOSED, THE CONTRACTOR SHALL CONTACT THE DESIGNER TO PERFORM A PRESSURE DISTRIBUTION TEST. THIS WILL REQUIRE THAT THE PUMP STATION BE INSTALLED AND OPERATIONAL, AND THAT THERE BE A SOURCE OF CLEAN WATER.
- ONCE THE PRESSURE DISTRIBUTION TEST IS SUCCESSFULLY COMPLETED, INSTALL THE ORIFICE SHIELDS AND COVER THE LATERALS WITH 2 INCHES OF 3/4" TO 1-1/2" OF CLEAN WASHED STONE.
- THE TOP OF THE STONE SHALL BE COMPLETELY COVERED WITH NON-WOVEN GEOTEXTILE, MIRAFI 140N OR EQUAL.
- THE GEOTEXTILE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL BUT NOT MORE THAN 18 INCHES, WITH THE UPPER 4 TO 6 INCHES BEING TOPSOIL, AND THE REMAINDER OF THE FILL BEING OF A FINE SANDY LOAM TEXTURE. THE SOIL COVER SHALL BE PLACED AT A MAXIMUM SLOPE OF 1:3. A DENSE COVER OF MOWED GRASS, FREE OF SHRUBS AND TREES, SHALL BE MAINTAINED OVER THE SYSTEM.

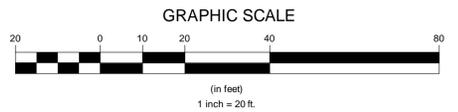


**SOIL PROFILE SUMMARY**  
LOGGED ON 9-10-2012 AND 9-17-2012 BY BRIAN TREMBACK

TEST NUMBER	DEPTH TO EVIDENCE OF SEASONAL HIGH GROUNDWATER (FT)	DEPTH TO EXISTING GROUNDWATER (FT)	DEPTH TO BEDROCK (FT)
TP-1	3.3	> 4.5	> 4.5
TP-2	2.2	> 4.0	> 4.0
TP-3	1.1	> 4.1	> 4.1
TP-4	1.6	> 3.6	> 3.6
TP-101	2.5	> 4.2	> 4.2
TP-102	> 5.2	> 5.2	> 5.2
TP-103	2.0	> 5.3	> 5.3

**PERCOLATION TESTING**  
PERFORMED BY BRIAN TREMBACK ON 11-19-2013

TEST #	PERCOLATION RATE (MININ)
PT-1	6.8
PT-2	5.7



THE CONTRACTOR SHALL NOTIFY DIG SAFE® AT 811 PRIOR TO ANY EXCAVATION.

- Legend**
- 224 - EXISTING SURFACE CONTOUR
  - 224 - PROPOSED FINISH GRADE CONTOUR
  - WETLAND UPLAND - EDGE OF WETLAND
  - W - EDGE OF WOODS
  - W - PROPOSED WATER SERVICE
  - FM - PROPOSED SEWER FORCE MAIN
  - - PROPOSED FORCE MAIN CLEANOUT
  - TP-1 - TEST PIT NUMBER
  - 3.3 - TEST PIT LOCATION (DEPTH TO EVIDENCE OF HIGH GROUNDWATER)
  - PT-1 - TEST NUMBER
  - 6.8 - PERCOLATION TEST LOCATION
  - 6.8 - PERCOLATION RATE (MININ)

**WASTEWATER DESIGN DATA**

- IT IS THE OPINION OF THE DESIGNER THAT THE SOIL CONDITIONS WITHIN THE PROPOSED WASTEWATER SYSTEM AREA MEET THE REQUIREMENTS OF THE VERMONT ENVIRONMENTAL PROTECTION RULES-CHAPTER 1 FOR A PRESCRIPTIVE AT-GRADE WASTEWATER SYSTEM.
- BASIS OF DESIGN** (USING AN AT-GRADE SYSTEM WITH PRETREATMENT)
  - NO. OF BEDROOMS = 4
  - DESIGN FLOW = 490 GPD
  - FILTRATE APPLICATION RATE = 1.84 GPD/SQ FT
  - REQUIRED ABSORPTION AREA = 266.3 SQ FT
  - REQUIRED ABSORPTION AREA FOR 150% SYSTEM = 399.5 SQ FT
  - MIN. SYSTEM LENGTH FOR 490 GPD (LINEAR LOADING = 4.5 GPD/LINEAR FT) = 109 FT

**INSPECTION**

- CONSTRUCTION OBSERVATION AND CERTIFICATION ARE REQUIRED BY STATE AND/OR LOCAL PERMITS. IT IS RECOMMENDED THAT CONSTRUCTION OF THE IMPROVEMENTS DETAILED ON THESE PLANS BE OBSERVED BY LAMOUREUX & DICKINSON CONSULTING ENGINEERS, INC. (L&D) TO DETERMINE IF THE WORK IS BEING PERFORMED IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. L&D WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS THAT MAY ARISE FROM: FAILURE TO FOLLOW THESE PLANS AND SPECIFICATIONS AND THE DESIGN INTENT THAT THEY CONVEY; ANY CHANGES MADE IN THE PLANS AND SPECIFICATIONS OR IN THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS WITHOUT L&D'S PRIOR KNOWLEDGE AND CONSENT; AND/OR FAILURE TO SCHEDULE OBSERVATION OF THE WORK AND TESTING IN PROGRESS.
- THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR NOTIFYING THE ENGINEER AND THE TOWN FOR INSPECTION OF THE WASTEWATER SYSTEM AT

APPROPRIATE STAGES OF CONSTRUCTION, THE REQUIREMENTS FOR CONTACTING THE ENGINEER ARE LISTED BELOW. THE CONTRACTOR SHALL ALSO DETERMINE THE TOWN'S REQUIREMENTS FOR INSPECTION.

- THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF 24 HOURS IN ADVANCE FOR INSPECTION OF EACH OF THE FOLLOWING ITEMS:
  - SURFACE PREPARATION BEFORE PLACEMENT ABSORPTION SYSTEM STONE AND FILL
  - COMPLETED INSTALLATION OF STRUCTURES AND PIPES BEFORE BACKFILLING
  - FINAL GRADING OVER THE WASTEWATER SYSTEM COMPONENTS

**MAINTENANCE**

- AT LEAST ONCE PER YEAR, THE DEPTH OF THE SLUDGE AND SCUM IN THE SEPTIC TANK SHALL BE MEASURED. THE TANK SHOULD BE PUMPED IF IT IS EXPECTED IN THE UPCOMING YEAR THAT:
  - THERE WILL BE GREATER THAN 6 INCHES OF SCUM, OR
  - THERE WILL BE GREATER THAN 12 INCHES OF SLUDGE
- AT LEAST ONCE EVERY 6 MONTHS, THE EFFLUENT FILTER IN THE SEPTIC TANK SHALL BE INSPECTED. IF NECESSARY, CLEAN THE FILTER BY HOISING IT OFF INTO THE TANK.
- ONCE PER YEAR, THE LATERAL IN THE ABSORPTION FIELD SHALL BE FLUSHED BY OPENING THE LATERAL CLEAN OUT AT THE END AND ALLOWING THE PUMP TO DISCHARGE UNTIL THE LIQUID RUNS CLEAR. ANY SOLIDS SHALL BE COLLECTED AND DISPOSED OF IN THE SEPTIC TANK.
- DO NOT FLUSH OR DISCHARGE TO THE WASTEWATER SYSTEM ANY MATERIALS THAT ARE NON-BIODEGRADABLE OR SLOW TO DECOMPOSE, SUBSTANCES THAT CAN SLOW OR HALT BIOLOGICAL ACTIVITY, OR MATERIALS THAT CAN OVERLOAD THE TREATMENT CAPACITY OF THE SYSTEM. THIS INCLUDES, FOR EXAMPLE, FOOD WASTE, HIGH-STRENGTH PAPER TOWELS, CAT LITTER, FEMININE NAPKINS AND

TAMPONS, CONDOMS, FATS AND OILS, PESTICIDES, DISINFECTANTS, STRONG ACIDS AND BASES, PAINTS, SOLVENTS, SOIL, WATER SOFTENER BACKWASH, AND SALTS.

- DO NOT CONNECT FLOOR DRAINS, HOT TUBS, SAUNAS, GARBAGE DISPOSALS, OR OTHER POTENTIAL SOURCES OF EXCESS WATER OR ORGANIC MATTER INTO THIS SYSTEM.
- EXCESS WATER USAGE WILL SIGNIFICANTLY REDUCE THE LIFE OF ANY WASTEWATER SYSTEM. WATER FIXTURES SHALL BE REGULARLY INSPECTED FOR LEAKS AND PROMPTLY REPAIRED IF NECESSARY. INSTALL AND MAINTAIN WATER-CONSERVING FIXTURES (TOILETS WITH MAX. 1.6 GALLON FLUSH AND SHOWERHEAD AND FAUCET AERATORS WITH MAX. 2 GALLON PER MINUTE FLOW). ADDITIONALLY, WE RECOMMEND THE USE OF A FRONT-LOADING WASHING MACHINE.
- THIS WASTEWATER SYSTEM DESIGN INCLUDES ONE OR MORE STRUCTURES THAT MEET THE DEFINITION OF A "CONFINED SPACE" UNDER NO CIRCUMSTANCES SHALL A CONFINED SPACE BE ENTERED EXCEPT IN STRICT CONFORMANCE WITH OSHA REQUIREMENTS.

Date	Revision	By
These plans shall only be used for the purpose shown below:		
<input type="checkbox"/> Sketch/Concept	<input type="checkbox"/> Act 250 Review	
<input type="checkbox"/> Preliminary	<input type="checkbox"/> Construction	
<input checked="" type="checkbox"/> Final Local/State Review	<input type="checkbox"/> Record Drawing	

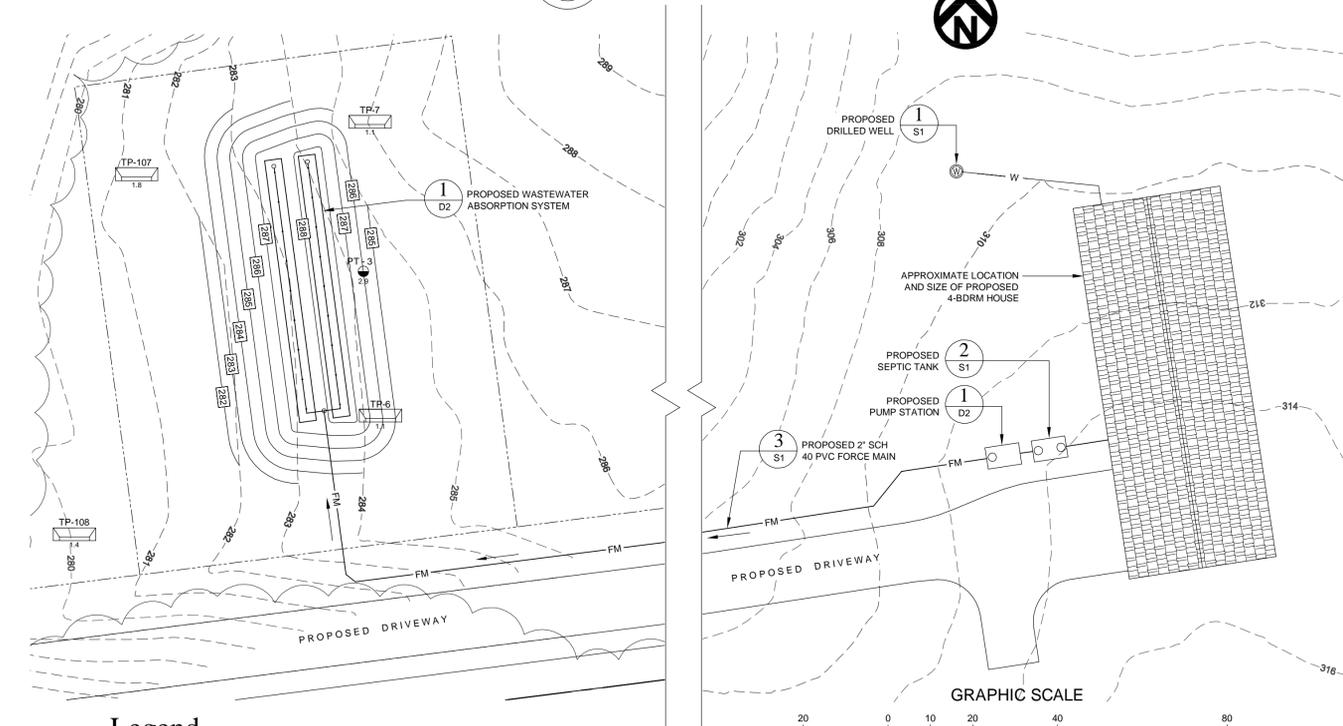
**Gregg & Elizabeth Beldock Property**  
Spear Street Extension, Charlotte, Vermont

**Lot 1**  
Wastewater System Plan, Details, and Specifications

**Lamoureux & Dickinson Consulting Engineers, Inc.**  
14 Morse Drive, Essex, VT 05452  
802-878-4450 www.LDengineering.com

Project No. 12018  
Survey L&D  
Design BJT  
Drawn BJT  
Checked DJG  
Date 12-2-2013  
Scale AS SHOWN  
Sheet number **D1**

THE CONTRACTOR SHALL NOTIFY DIG SAFE® AT 811 PRIOR TO ANY EXCAVATION.



**Legend**

- 706 --- EXISTING SURFACE CONTOUR
- 706 --- PROPOSED FINISH GRADE CONTOUR
- WETLAND UPLAND --- EDGE OF WETLAND
- W --- EDGE OF WOODS
- W --- PROPOSED WATER SERVICE
- FM --- PROPOSED SEWER FORCE MAIN
- 6 --- PROPOSED FORCE MAIN CLEANOUT
- TP-1 --- TEST PIT NUMBER
- 3.3 --- TEST PIT LOCATION
- PT-1 --- TEST NUMBER
- 0.8 --- PERCOLATION TEST LOCATION
- --- PERCOLATION RATE (MIN)

**SOIL PROFILE SUMMARY**

LOGGED ON 9-10-2012 AND 9-17-2012 BY BRIAN TREMBACK

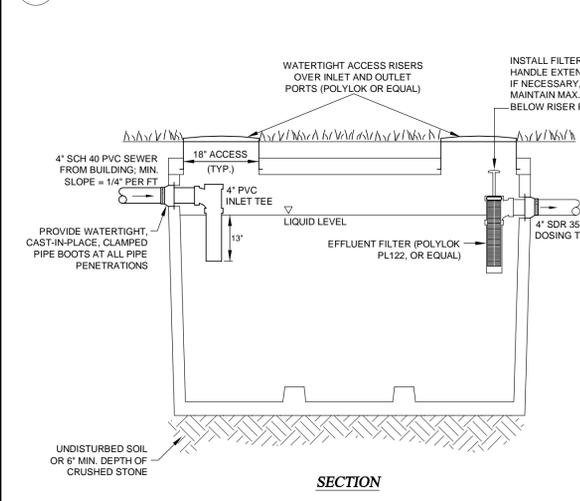
TEST NUMBER	DEPTH TO EVIDENCE OF SEASONAL HIGH GROUNDWATER (FT)	DEPTH TO EXISTING GROUNDWATER (FT)	DEPTH TO BEDROCK (FT)
TP-6	1.1	> 4.0	> 4.0
TP-7	1.1	> 4.3	> 4.3
TP-107	1.8	> 5.5	> 5.5
TP-108	1.4	> 3.4	> 3.4

**PERCOLATION TESTING**

PERFORMED BY BRIAN TREMBACK ON 11-19-2013

TEST #	PERCOLATION RATE (MIN)
PT-3	2.9

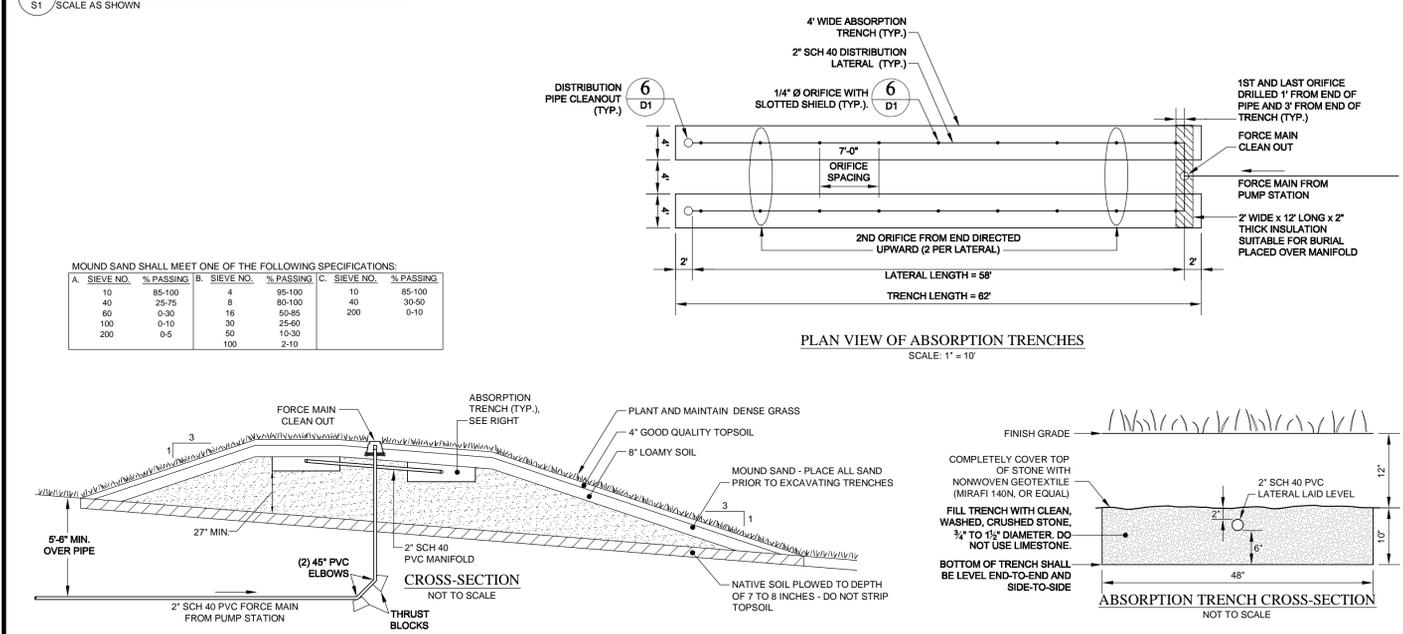
**1 1,000 GAL. PRECAST CONCRETE SEPTIC TANK**



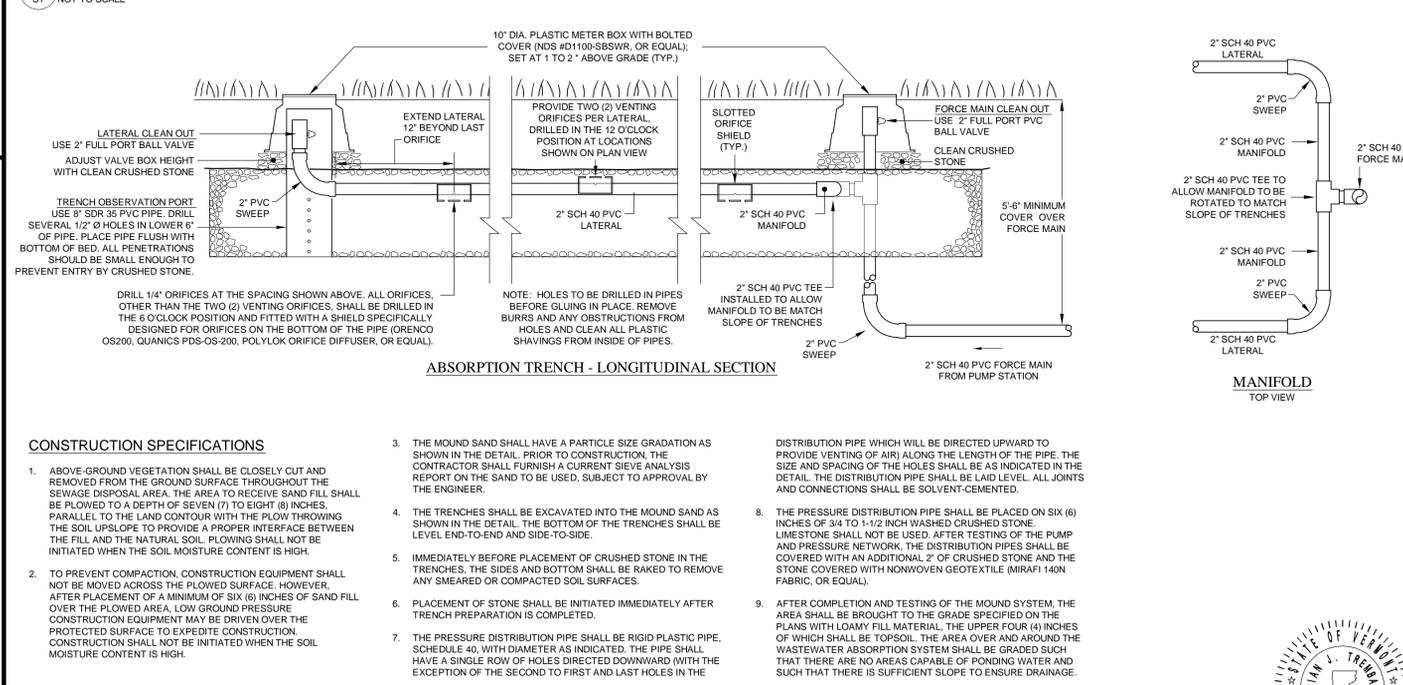
**SEPTIC TANK SPECIFICATIONS**

- DESIGN DATA: DESIGN FLOW = 490 GPD. USE A 1,000-GALLON SEPTIC TANK.
- THE SEPTIC TANK SHALL BE WATERTIGHT AND CONSTRUCTED OF STEEL-REINFORCED, 5,000 PSI, PRE-CAST CONCRETE. DO NOT EXCEED THE MANUFACTURER'S RECOMMENDED DEPTH OF COVER. IF VEHICLE LOADS ARE ANTICIPATED OVER THE SEPTIC TANK, IT SHALL BE RATED FOR H-20 LOADING.
- THE TANK SHALL BE FITTED WITH AN EFFLUENT FILTER CAPABLE OF RETAINING 1/16" SOLIDS.
- WATERTIGHT SURFACE ACCESS RISERS SHALL BE PROVIDED OVER THE INLET AND OUTLET PORTS OF THE TANK. THE RISERS AND LID SHALL PREVENT INFILTRATION BY SURFACE OR GROUND WATER.
- THE EXCAVATION MUST BE AT LEAST 12" WIDER AND LONGER THAN THE TANK DIMENSIONS.
- EACH PIPE PENETRATION SHALL BE EQUIPPED WITH A WATERTIGHT, CAST-IN-PLACE, CLAMPED BOOT.
- IF LEDGE IS ENCOUNTERED AT A DEPTH INSUFFICIENT TO ACCOMMODATE THE SPECIFIED TANK, THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR ALTERNATE STRUCTURE RECOMMENDATIONS.
- BACKFILL SIDES AND TOP OF TANK WITH SAND OR GRAVEL. ALL BACKFILL AROUND THE TANK SHALL BE THOROUGHLY COMPACTED TO NOT LESS THAN 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE AASHTO-T-99 STANDARD PROCTOR.

**2 WASTEWATER ABSORPTION SYSTEM**



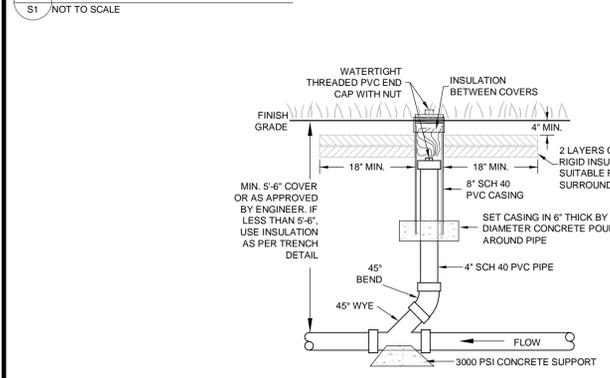
**3 WASTEWATER ABSORPTION SYSTEM - PIPE DETAILS**



**CONSTRUCTION SPECIFICATIONS**

- ABOVE-GROUND VEGETATION SHALL BE CLOSELY CUT AND REMOVED FROM THE GROUND SURFACE THROUGHOUT THE SEWAGE DISPOSAL AREA. THE AREA TO RECEIVE SAND FILL SHALL 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 THE NATURAL SOIL. PLOWING SHALL NOT BE INITIATED WHEN THE SOIL MOISTURE CONTENT IS HIGH.
- TO PREVENT COMPACTION, CONSTRUCTION EQUIPMENT SHALL NOT BE MOVED ACROSS THE PLOWED SURFACE. HOWEVER, AFTER PLACEMENT OF A MINIMUM OF SIX (6) INCHES OF SAND FILL OVER THE PLOWED AREA, LOW GROUND PRESSURE CONSTRUCTION EQUIPMENT MAY BE DRIVEN OVER THE PROTECTED SURFACE TO EXPEDITE CONSTRUCTION.
- THE MOUND SAND SHALL HAVE A PARTICLE SIZE GRADATION AS SHOWN IN THE DETAIL. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FURNISH A CURRENT SIEVE ANALYSIS REPORT ON THE SAND TO BE USED, SUBJECT TO APPROVAL BY THE ENGINEER.
- THE TRENCHES SHALL BE EXCAVATED INTO THE MOUND SAND AS SHOWN IN THE DETAIL. THE BOTTOM OF THE TRENCHES SHALL BE LEVEL END-TO-END AND SIDE-TO-SIDE.
- IMMEDIATELY BEFORE PLACEMENT OF CRUSHED STONE IN THE TRENCHES, THE SIDES AND BOTTOM SHALL BE RAKED TO REMOVE ANY SMEAR OR COMPACTED SOIL SURFACES.
- PLACEMENT OF STONE SHALL BE INITIATED IMMEDIATELY AFTER TRENCH PREPARATION IS COMPLETED.
- THE PRESSURE DISTRIBUTION PIPE SHALL BE RIGID PLASTIC PIPE, SCHEDULE 40, WITH DIAMETER AS INDICATED. THE PIPE SHALL HAVE A SINGLE ROW OF HOLES DIRECTED DOWNWARD (WITH THE EXCEPTION OF THE SECOND TO FIRST AND LAST HOLES IN THE DISTRIBUTION PIPE WHICH WILL BE DIRECTED UPWARD TO PROVIDE VENTING OF AIR) ALONG THE LENGTH OF THE PIPE. THE SIZE AND SPACING OF THE HOLES SHALL BE AS INDICATED IN THE DETAIL. THE DISTRIBUTION PIPE SHALL BE LAID LEVEL. ALL JOINTS AND CONNECTIONS SHALL BE SOLVENT-CEMENTED.
- THE PRESSURE DISTRIBUTION PIPE SHALL BE PLACED ON SIX (6) INCHES OF 3/4 TO 1-1/2 INCH WASHED CRUSHED STONE. LIMESTONE SHALL NOT BE USED. AFTER TESTING OF THE PUMP AND PRESSURE NETWORK, THE DISTRIBUTION PIPES SHALL BE COVERED WITH AN ADDITIONAL 2" OF CRUSHED STONE AND THE STONE COVERED WITH NONWOVEN GEOTEXTILE (MIRAFI 140N FABRIC, OR EQUAL).
- AFTER COMPLETION AND TESTING OF THE MOUND SYSTEM, THE AREA SHALL BE BROUGHT TO THE GRADE SPECIFIED ON THE PLANS WITH LOAMY FILL MATERIAL. THE UPPER FOUR (4) INCHES OF WHICH SHALL BE TOPSOIL. THE AREA OVER AND AROUND THE WASTEWATER ABSORPTION SYSTEM SHALL BE GRADED SUCH THAT THERE ARE NO AREAS CAPABLE OF PONDING WATER AND SUCH THAT THERE IS SUFFICIENT SLOPE TO ENSURE DRAINAGE.

**4 FORCE MAIN CLEAN OUT**



- AT LEAST ONCE EVERY 6 MONTHS, THE EFFLUENT FILTER IN THE SEPTIC TANK SHALL BE INSPECTED. IF NECESSARY, CLEAN THE FILTER BY HOUSING IT OFF INTO THE TANK.
- AT LEAST ONCE PER YEAR, THE PRETREATMENT SYSTEM SHALL BE INSPECTED BY AN AUTHORIZED CONTRACTOR. THE PROPER FUNCTIONING OF THE SYSTEM SHALL BE VERIFIED AND ANY NECESSARY REPAIRS OR MAINTENANCE SHALL BE DONE.
- ONCE PER YEAR, THE LATERAL IN THE ABSORPTION FIELD SHALL BE FLUSHED BY OPENING THE LATERAL CLEAN OUT AT THE END AND ALLOWING THE PUMP TO DISCHARGE UNTIL THE LIQUID RUNS CLEAR. ANY SOLIDS SHALL BE COLLECTED AND DISPOSED OF IN THE SEPTIC TANK.
- DO NOT FLUSH OR DISCHARGE TO THE WASTEWATER SYSTEM ANY MATERIALS THAT ARE NON-BIODEGRADABLE OR SLOW TO DECOMPOSE, SUBSTANCES THAT CAN SLOW OR HALT BIOLOGICAL ACTIVITY, OR MATERIALS THAT CAN OVERLOAD THE TREATMENT CAPACITY OF THE SYSTEM. THIS INCLUDES, FOR EXAMPLE: FOOD WASTE, HIGH-STRENGTH PAPER TOWELS, CAT LITTER, FEMINE NAPKINS AND TAMPONS, CONDONS, FATS AND OILS, PESTICIDES, DISINFECTANTS, STRONG ACIDS AND BASES, PAINTS, SOLVENTS, SOIL, WATER SOFTENER BACKWASH, AND SALTS.
- EXCESS WATER USAGE WILL SIGNIFICANTLY REDUCE THE LIFE OF ANY WASTEWATER SYSTEM. WATER FIXTURES SHALL BE REGULARLY INSPECTED FOR LEAKS AND PROMPTLY REPAIRED IF NECESSARY. INSTALL AND MAINTAIN WATER-CONSERVING FIXTURES (TOWELS WITH MAX. 1.6 GALLON FLUSH AND SHOWERHEAD AND FAUCET AERATORS WITH MAX. 2 GALLON PER MINUTE FLOW). ADDITIONALLY, WE RECOMMEND THE USE OF A FRONT-LOADING WASHING MACHINE.
- THIS WASTEWATER SYSTEM DESIGN INCLUDES ONE OR MORE STRUCTURES THAT MEET THE DEFINITION OF A "CONFINED SPACE". UNDER NO CIRCUMSTANCES SHALL A CONFINED SPACE BE ENTERED EXCEPT IN STRICT CONFORMANCE WITH OSHA REQUIREMENTS.

**WASTEWATER SYSTEM DESIGN DATA**

- IT IS THE OPINION OF THE DESIGNER THAT THE SOIL CONDITIONS WITHIN THE PROPOSED WASTEWATER SYSTEM AREA MEET THE REQUIREMENTS OF THE VERMONT ENVIRONMENTAL PROTECTION RULES-CHAPTER 1 FOR A PERFORMANCE BASED WASTEWATER SYSTEM.
- THE IDENTIFIED WASTEWATER SYSTEM AREA HAS AT LEAST 1.1 FT TO EVIDENCE OF SEASONAL HIGH GROUNDWATER. USE A PERFORMANCE-BASED MOUND SYSTEM.
- BASIS OF DESIGN
  - NO. OF BEDROOMS = 4
  - DESIGN FLOW = 490 GPD
  - PERCOLATION RATE = 2.9 MIN/IN
  - APPLICATION RATE = 1 GPD/SQ FT
  - ABSORPTION AREA REQUIRED = 490 SQ FT
- DESKTOP MOUNDING ANALYSIS
  - SOIL TEXTURE = LOAMY FINE SAND
  - NATURAL GROUND SLOPE = 6.7%
  - DEPTH TO EVID. HIGH GRD WATER = 1.1 FT
  - LINEAR LOADING RATE FACTOR (f) = 26.2
  - AVAILABLE SOIL DEPTH (h) = 0.35 FT
  - (MAINTAINING GROUNDWATER MOUND AT 0.75' BELOW GRADE WITH 2.25' SAND)
  - PROPOSED DESIGN FLOW = 490 GPD
  - MINI SYSTEM LENGTH = 53.4 FT
  - REQUIRED DEPTH OF SAND = 2.25 FT
  - SYSTEM DESIGN: USE TWO (2) 62 FT LONG x 4 FT WIDE ABSORPTION TRENCHES WITH A MINIMUM OF 2.25 FT OF MOUND SAND BENEATH THE TRENCHES. ABSORPTION AREA PROVIDED IS 496 SQ FT.

**INSPECTION**

- CONSTRUCTION OBSERVATION AND CERTIFICATION ARE REQUIRED BY STATE AND/OR LOCAL PERMITS. IT IS RECOMMENDED THAT CONSTRUCTION OF THE IMPROVEMENTS DETAILED ON THESE PLANS BE OBSERVED BY LAPOUREUX & DICKINSON CONSULTING ENGINEERS, INC. (L&D) TO DETERMINE IF THE WORK IS BEING PERFORMED IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. L&D WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS THAT MAY ARISE FROM FAILURE TO FOLLOW THESE PLANS AND SPECIFICATIONS AND THE DESIGN INTENT THAT THEY CONVEY. ANY CHANGES MADE IN THE PLANS AND SPECIFICATIONS OR IN THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS WITHOUT L&D'S PRIOR KNOWLEDGE AND CONSENT, AND/OR FAILURE TO SCHEDULE OBSERVATION OF THE WORK AND TESTING IN PROGRESS.
- THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR NOTIFYING THE ENGINEER AND THE TOWN FOR INSPECTION OF THE WASTEWATER SYSTEM AT APPROPRIATE STAGES OF CONSTRUCTION. THE REQUIREMENTS FOR CONTACTING THE ENGINEER ARE LISTED BELOW. THE CONTRACTOR SHALL ALSO DETERMINE THE TOWN'S REQUIREMENTS FOR INSPECTION.
  - SURFACE PREPARATION BEFORE PLACEMENT ABSORPTION SYSTEM STONE AND FILL
  - COMPLETED INSTALLATION OF STRUCTURES AND PIPES BEFORE BACKFILLING
  - FINAL GRADING OVER THE WASTEWATER SYSTEM COMPONENTS
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF 24 HOURS IN ADVANCE FOR INSPECTION OF EACH OF THE FOLLOWING ITEMS:
  - COMPLETED INSTALLATION OF STRUCTURES AND PIPES BEFORE BACKFILLING
  - FINAL GRADING OVER THE WASTEWATER SYSTEM COMPONENTS

**MAINTENANCE**

- AT LEAST ONCE PER YEAR, THE DEPTH OF THE SLUDGE AND SCUM IN THE SEPTIC TANK SHALL BE MEASURED. THE TANK SHOULD BE PUMPED IF IT IS EXPECTED IN THE UPCOMING YEAR THAT:
  - THERE WILL BE GREATER THAN 6 INCHES OF SCUM, OR
  - THERE WILL BE GREATER THAN 12 INCHES OF SLUDGE

Date	Revision	By
These plans shall only be used for the purpose shown below:		
<input type="checkbox"/> Sketch/Concept	<input type="checkbox"/> Act 250 Review	
<input type="checkbox"/> Preliminary	<input type="checkbox"/> Construction	
<input checked="" type="checkbox"/> Final Local/State Review	<input type="checkbox"/> Record Drawing	

**Gregg & Elizabeth Beldock Property**  
Spear Street Extension, Charlotte, Vermont

**Lot 2 Wastewater System Plan, Details, and Specifications**

**Lamoureux & Dickinson Consulting Engineers, Inc.**  
14 Morse Drive, Essex, VT 05452  
802-878-4450 www.LDengineering.com

Project No. 12018  
Survey L&D  
Design BJT  
Drawn BJT  
Checked DJG  
Date 12-2-2013  
Scale AS SHOWN  
Sheet number **D2**



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THE CONTRACTOR SHALL NOTIFY DIG SAFE@ 811 PRIOR TO ANY EXCAVATION.

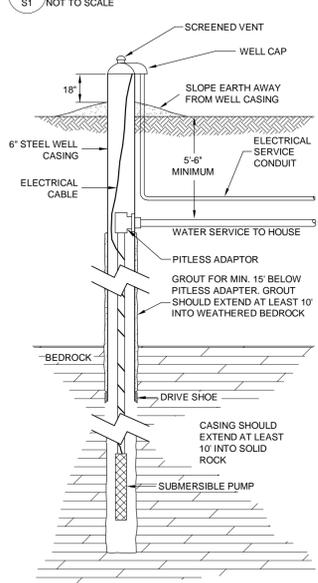
**Legend**

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- SIDELINE OF EASEMENT
- BUILDING ENVELOPE
- 7.06' --- EXISTING SURFACE CONTOUR
- WETLAND UPLAND --- EDGE OF WETLAND
- WETLAND UPLAND --- EDGE OF WOODS
- BUILDING ENVELOPE
- W --- PROPOSED WATER SERVICE
- FM --- PROPOSED SEWER FORCE MAIN
- @ --- PROPOSED FORCE MAIN CLEANOUT
- TP - 1 --- TEST PIT NUMBER
- TP - 1 --- TEST PIT LOCATION
- DEPTH (FT) TO EVIDENCE OF HIGH GROUNDWATER
- PT - 1 --- TEST NUMBER
- PT - 1 --- PERCOLATION TEST LOCATION
- PERCOLATION RATE (MIN)

**GENERAL SPECIFICATIONS**

1. UTILITIES INFORMATION SHOWN HEREON WERE OBTAINED FROM THE BEST AVAILABLE SOURCES AND MAY OR MAY NOT BE EITHER ACCURATE OR COMPLETE. THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY, PUBLIC OR PRIVATE, SHOWN OR NOT SHOWN HEREON.
2. THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-DIG-SAFE PRIOR TO ANY EXCAVATION.
3. LAMOUREUX & DICKINSON DOES NOT UNDERTAKE OR ASSUME ANY RESPONSIBILITY FOR SAFETY ON THE CONSTRUCTION SITE BUT DOES REMIND THE CONTRACTOR THAT THE SIDES OF EXCAVATIONS ENTERED BY PERSONNEL SHOULD BE SHEETED OR SLOPED TO THE ANGLE OF REPOSE; AND IN ANY CASE, THE CONTRACTOR SHOULD WORK IN STRICT COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) STANDARDS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION AND REMOVAL OF ALL EXISTING VEGETATION, PAVEMENT AND STRUCTURES NECESSARY TO DEVELOP THIS PROPERTY UNLESS OTHERWISE NOTED ON THESE PLANS. CONTRACTOR SHALL REMOVE ALL TRASH FROM SITE UPON COMPLETION OF CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN EXPENSE FOR ENSURING THAT THE DUST CREATED AS A RESULT OF CONSTRUCTION DOES NOT CREATE A NUISANCE OR A SAFETY HAZARD. WHERE AND WHEN DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR WILL BE REQUIRED TO WET SECTIONS OF THE CONSTRUCTION AREA WITH WATER, APPLY CALCIUM CHLORIDE, OR SWEEP THE ROADWAY WITH A POWER BROOM AS DUST CONTROL.
6. ALL DISTURBED AREAS SHALL RECEIVE A MINIMUM OF 4 TO 6 INCHES OF TOPSOIL AND SHALL BE IMMEDIATELY SEEDED AND MULCHED/MATTED AFTER COMPLETION OF GRADING. ANY WORK PERFORMED AFTER OCTOBER 1 OF EACH YEAR SHALL BE STABILIZED WITH MULCH OR MATTING SUFFICIENT TO PREVENT EROSION AND SHALL BE IMMEDIATELY SEEDED AND REMULCHED OR REMATTED AS SOON AS WEATHER PERMITS IN THE SPRING.
7. ALL SLOPES, DITCHES, AND DISTURBED AREAS SHALL BE GRADED SMOOTH AND BE FREE OF POCKETS WITH SUFFICIENT SLOPE TO ENSURE DRAINAGE.
8. ALL FILL OR BACKFILL SHALL BE PLACED AND THOROUGHLY COMPACTED TO 95% OF MAXIMUM DENSITY OF OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698 STANDARD PROCTOR.

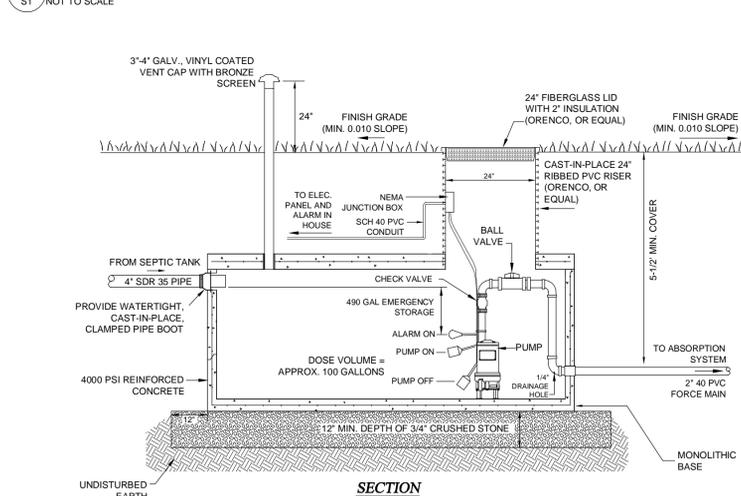
**1 TYPICAL DRILLED WELL**



**WATER SUPPLY BASIS OF DESIGN**

1. DRILLED WELL FOR A 4-BDRM HOUSE
2. REQUIREMENTS
  - 2.1. AVERAGE DAY DEMAND (DESIGN FLOW) = 480 GPD
  - 2.2. MAXIMUM DAY DEMAND = 480 GPM / 720 MIN = 0.68 GAL
3. INSTANTANEOUS PEAK DEMAND = 5 GPM
4. PUMP CAPACITY = 5 GPM
5. OPERATING PRESSURE = 30 TO 60 PSI
6. STORAGE - TO BE DETERMINED BASED ON WELL YIELD

**2 PUMP STATION**



**PUMP STATION SPECIFICATIONS**

1. THE PUMP STATION TANK SHALL HAVE SUFFICIENT CAPACITY TO ACCOMMODATE THE REQUIRED PUMP, THE SPECIFIED DOSE VOLUME, AND THE NECESSARY EMERGENCY STORAGE VOLUME.
2. USE A WATERTIGHT, STEEL-REINFORCED, 5,000 PSI, PRE-CAST CONCRETE TANK. DO NOT EXCEED THE MANUFACTURER'S RECOMMENDED DEPTH OF COVER. IF VEHICLE LOADS ARE ANTICIPATED OVER THE PUMP STATION, IT SHALL BE RATED FOR H-20 LOADING.
3. THE PUMP STATION SHALL BE CONSTRUCTED TO MINIMIZE THE RISK OF FREEZING OF EFFLUENT IN THE PIPES OR STRUCTURE.
4. BACKFILL SIDES AND TOP OF TANK WITH SAND OR GRAVEL. ALL BACKFILL MATERIAL AROUND THE TANK SHALL BE THOROUGHLY COMPACTED TO NOT LESS THAN 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY THE AASHTO-T-99 STANDARD PROCTOR.
5. ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE AND MATERIALS SHALL MEET U.L. APPROVAL.
6. PUMP SPECIFICATIONS
 

	LOT 1	LOT 2
2" SCH 40 PVC @	21 GPM	21 GPM
LENGTH OF FORCE MAIN =	150 FT	1550 FT
ABSORPTION SYSTEM ELEV =	224.5 FT	287.0 FT
PUMP ELEVATION =	222.0 FT	307.0 FT

**HEAD LOSSES**

STATIC LIFT =	2.5 FT	-20.0 FT
FORCE MAIN FRICTION =	1.4 FT	14.6 FT
VALVES AND FITTINGS =	3.0 FT	7.0 FT
NETWORK LOSSES =	0.7 FT	0.7 FT
INLINE PRESSURE =	2.3 FT	2.3 FT
TOTAL DYNAMIC HEAD =	9.9 FT	4.6 FT

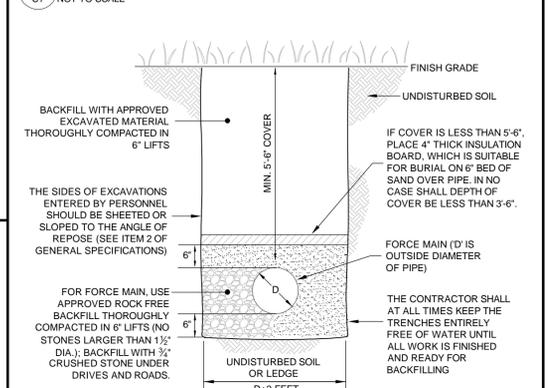
- LOT 1 - USE ONE (1) PUMP, SINGLE PHASE, MINIMUM CAPACITY 21 GPM @ 9.9 FT TOTAL DYNAMIC HEAD. USE HYDROMATIC SHEF30, OR APPROVED EQUAL. IF THE "PUMP OFF" ELEVATION IS LESS THAN 222.0' (REF. ELEV.), THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO VERIFY ADEQUACY OF THE SPECIFIED PUMP.
- LOT 2 - USE ONE (1) PUMP, SINGLE PHASE, MINIMUM CAPACITY 21 GPM @ 4.6 FT TOTAL DYNAMIC HEAD. USE HYDROMATIC SHEF30, OR APPROVED EQUAL. IF THE "PUMP OFF" ELEVATION IS LESS THAN 307.0' (REF. ELEV.), THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO VERIFY ADEQUACY OF THE SPECIFIED PUMP.
7. TESTING: THE CONTRACTOR AND THE DESIGNER SHALL BE PRESENT DURING START-UP. THE CONTRACTOR SHALL PROVIDE A WATER SOURCE TO PERFORM A FULL OPERATIONAL CHECK OF THE PUMP STATION, INCLUDING PROGRAMMABLE TIMER, FLOAT FUNCTIONS, ALARMS, AND INDICATOR LIGHTS. THE PUMP SHALL BE FIELD-TESTED TO INSURE THE PUMPING CAPACITY MEETS THE PROJECT REQUIREMENTS.

NOTE: THIS PLAN NOT TO BE USED FOR PROPERTY CONVEYANCE. REFER INSTEAD TO A PLAN ENTITLED "GREGG H. & ELIZABETH BELDOCK, SPEAR STREET EXTENSION, CHARLOTTE, VERMONT / TWO-LOT SUBDIVISION PLAT", BY LAMOUREUX & DICKINSON CONSULTING ENGINEERS, INC.



Graphic Scale

**3 FORCE MAIN TRENCH**



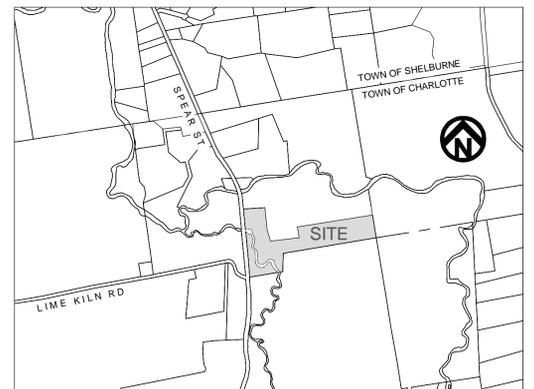
**FORCE MAIN SPECIFICATIONS**

1. USE 2" SCH 40 PVC FORCE MAIN PIPE WITH THRUST BLOCKS AT ALL FORCE MAIN BENDS.
2. FORCE MAIN TESTING: THE CONTRACTOR SHALL FURNISH ALL FACILITIES AND PERSONNEL FOR CONDUCTING THE FOLLOWING TEST. THE PVC FORCE MAIN SHALL BE FILLED WITH WATER AND TESTED BY THE CONTRACTOR TO A MINIMUM PRESSURE OF 50 PSI AT THE HIGHEST POINT ALONG THE FORCE MAIN FOR TWO HOURS AND THE PRESSURE SHALL NOT VARY MORE THAN 5 PSI. THE NEW LINES SHALL NOT BE ACCEPTED IF THE LEAKAGE DURING THE TWO-HOUR TEST IS GREATER THAN THAT DETERMINED BY THE FOLLOWING FORMULA:
 
$$L = \frac{ND \sqrt{P}}{7400}$$

WHERE

  - L = THE ALLOWABLE LEAKAGE IN GALLONS PER HOUR
  - N = THE NUMBER OF JOINTS IN THE LENGTH OF PIPELINE TESTED
  - D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES
  - P = THE AVERAGE TEST PRESSURE MEASURED IN LBS/SQ IN

LEAKAGE IS DEFINED AS THE QUANTITY OF WATER THAT MUST BE SUPPLIED INTO THE NEWLY LAID PIPE TO MAINTAIN THE PRESSURE OF 50 PSI. THE CONTRACTOR SHALL AT ONCE LOCATE ANY LEAKS AND ACHIEVE THE ACCEPTABLE LIMIT AT NO EXTRA CHARGE TO THE OWNER.



Location Map

Date	Revision	By
These plans shall only be used for the purpose shown below:		
<input type="checkbox"/> Sketch/Concept	<input type="checkbox"/> Act 250 Review	
<input type="checkbox"/> Preliminary	<input type="checkbox"/> Construction	
<input checked="" type="checkbox"/> Final Local/State Review	<input type="checkbox"/> Record Drawing	
<b>Gregg &amp; Elizabeth Beldock Property</b>		Project No. 12018
Spear Street Extension, Charlotte, Vermont		Survey L&D
<b>Two-Lot Subdivision Water Supply and Wastewater System Design</b>		Design BJT
Date 12-2-2013		Checked DJG
Scale 1" = 80'		Date 12-2-2013
Sheet number S1		Scale 1" = 80'
Lamoureux & Dickinson Consulting Engineers, Inc. 14 Morse Drive, Essex, VT 05452 802-878-4450 www.LDEngineering.com		Sheet number S1

