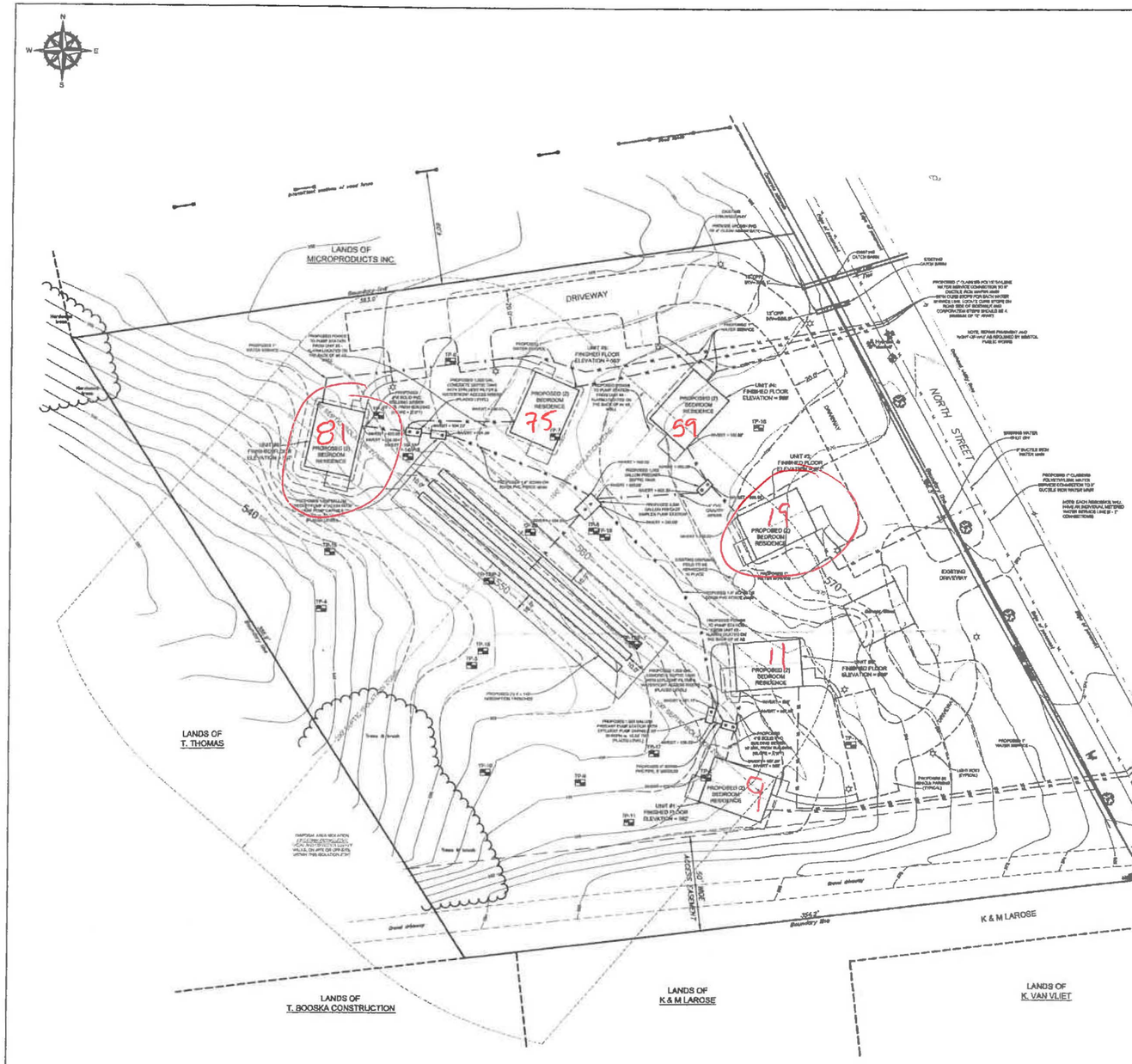
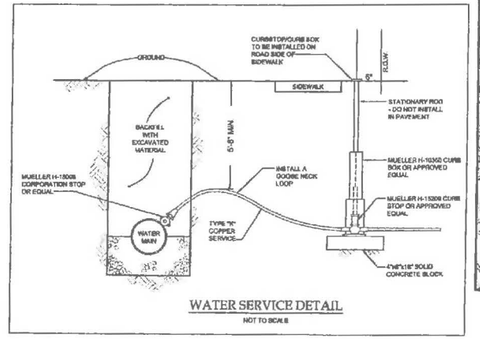
Agenda Item V.3





WATER SERVICE DETAIL

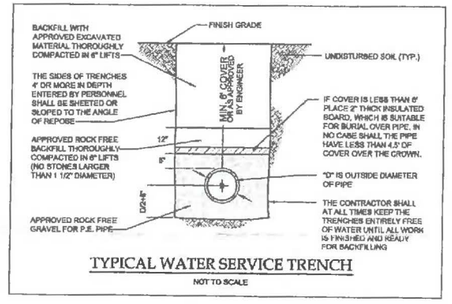
NOT TO SCALE

GENERAL LOCATION MAP

SCALE: 1"=1,000'±

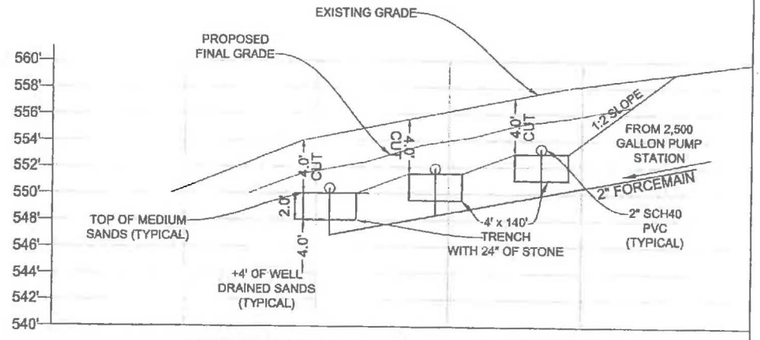
LEGEND

560	UNCHANGED GROUND CONTOUR
550	PROPOSED GROUND CONTOUR
550	EXISTING GROUND CONTOUR
WL	EXISTING WATER LINE
WL	PROPOSED WATER LINE
SL	PROPOSED SANITARY SEWER
	EDGE OF PAVEMENT
	EXISTING EDGE OF DRIVE
	PROPOSED EDGE DRIVE
	SEPTIC ISOLATION ZONE
	EXISTING PROPERTY LINE
	EXISTING EASEMENT
	EXISTING TREELINE
	DECIDUOUS TREE
TP-1/P-1	LIGHT POLE
	TEST PIT/PERCOLATION TEST
	UTILITY POLE



TYPICAL WATER SERVICE TRENCH

NOT TO SCALE



DISPOSAL FIELD CROSS SECTION
WITH SITE MODIFICATIONS

SCALE: 1" = 5'

GRAPHIC SCALE
(IN FEET)
30 0 15 30 60 120
(1"=30')

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-DIG-SAFE PRIOR TO ANY EXCAVATION.

"I hereby certify that in the exercise of my reasonable professional judgment the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules."

Alan Hutzenga, P.E.
VT Professional Engineer #6905
GME Project No. 19-010.22

Stephen Revell, CPG
Licensed Designer #152.0126700-BW

LINCOLN APPLIED GEOLOGY, INC.
ENVIRONMENTAL CONSULTANTS

Alison Parker Living Trust Property
93 North Street
Bristol, Vermont

Proposed 6-Unite Pocket Neighborhood
Site Development Plan with
Water and Wastewater Systems
(For Water & Wastewater System Permitting)

LAD PROJECT #	15118
DATE:	June 27, 2017
SURVEY WORK:	TAM
DRAWN BY:	TAM
FIGURE	1

CONSTRUCTION SPECIFICATIONS
PRESSURIZED TRENCH

NOTE: PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY DIGSAFE (1-888-DIGSAFE) AND ALL MATERIALS, INCLUDING STONE SHALL BE APPROVED BY THE ENGINEER OR LICENSED DESIGNER.

1. THE COLLECTION SYSTEM CONTRIBUTING TO THE 2,500 GALLON PUMP STATION SHOULD BE CONSTRUCTED AS SHOWN ON THE FIGURE 1 - SITE PLAN.

2. THE SITE SHOULD BE STRIPPED OF 4.0' OF SOIL IN THE DISPOSAL AREA TO EXPOSE THE MEDIUM SAND, AS SHOWN ON THE FIGURE 1 CROSS SECTION.

3. THE TRENCHES SHOULD BE CUT 24" INTO THE SAND AND BACKFILLED WITH STONE WITH THE PLACEMENT OF THE PRESSURE DISTRIBUTION SYSTEM.

4. 24 INCHES OF CLEAN CRUSHED STONE (3/4 TO 1-1/2 INCHES) SHALL BE PLACED IN THE BOTTOM OF THE TRENCHES IN ACCORDANCE WITH THE PLANS. THE DISTRIBUTION LINE SHALL BE CAREFULLY PLACED LEVEL ON THE BEDDING IN THE CENTER OF THE TRENCH AND COVERED WITH AT LEAST 2 INCHES OF STONE. THE ENDS OF THE DISTRIBUTION LINES SHALL INCLUDE FLUSHING VALVES (FOR CLEANING PURPOSES).

5. THE GRADING SHALL BE DONE IN ACCORDANCE WITH THE FIGURE 1 CROSS SECTION. RUN-OFF SHALL BE DIRECTED AWAY FROM THE SEPTIC SYSTEM AREAS AND BE SMOOTH AND FREE OF POCKETS WITH SUFFICIENT SLOPE TO ENSURE DRAINAGE.

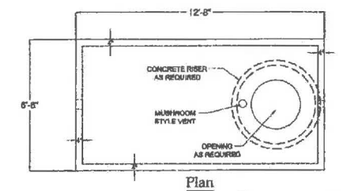
INSPECTION REQUIREMENTS

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OR LICENSED DESIGNER A MINIMUM OF 48 HOURS IN ADVANCE FOR LAY-OUT AND/OR INSPECTION AND FOR INSPECTION OF THE BOTTOM OF THE TRENCHES PRIOR TO PLACEMENT OF STONE AND PIPING.

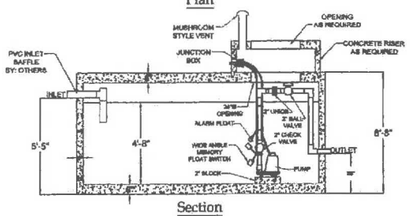
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OR LICENSED DESIGNER A MINIMUM OF 24 HOURS IN ADVANCE FOR INSPECTION AND TESTING OF THE PRESSURIZED TRENCH SYSTEM PRIOR TO BACKFILLING, INCLUDING THE 2,500 GALLON PUMP STATION.

3. PUMP STATIONS: CONDUCTING TANK TIGHTNESS TESTS AND WITNESSING PUMP ON, OFF AND ALARM OPERATION, AND CONDUCTING PRESSURE AND FLOW TESTING OF THE PRESSURE DISTRIBUTION SYSTEM.

4. THIS DESIGN MUST BE INSPECTED BY LINCOLN APPLIED GEOLOGY, INC., LINCOLN, VERMONT TO ENSURE COMPLIANCE WITH THESE PLANS. LINCOLN APPLIED GEOLOGY, INC. 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.



Plan



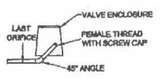
Section

2,500 GALLON PUMP STATION

NOT TO SCALE

DESIGN NOTES:

1. 5000 PSI CONCRETE, 28 DAY STRENGTH.
2. LOW PRESSURE SEALS DESIGNED TO ACCEPT 4" C.I. OR PVC PIPE.
3. REQUIRES EFFLUENT PUMP CAPABLE OF PUMPING A MINIMUM OF 80.2GPM VERSUS 7.22' TDH, AND A SUPER SINGLE PUMP SWITCH WITH A 8.33" SWING SETTING (+/-420 GALLONS) SET 4" ABOVE THE BASE OF THE PUMP WITH HIGH LEVEL ALARM SET 6" ABOVE THE PUMP ON SETTING.
4. 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.
5. ALL ELECTRICAL WIRING MUST BE DONE BY A LICENSED ELECTRICIAN.
6. PROPER FLOAT TREE ASSEMBLY IS REQUIRED AS SPECIFIED IN DETAIL.



FLUSHING VALVE DETAIL

NOT TO SCALE

SEPTIC TANK
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. THE STATE FLOW FIGURES OF 149 GAL/DAY/BEDROOM ARE BASED ON SHORT TERM PEAK USE PERIODS (I.E., DAILY EVENTS). ACTUAL FLOWS SHOULD AVERAGE 75-100 GALLONS PER DAY, PER BEDROOM.

3. 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 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 RULES.

2. THE FOLLOWING MINIMUM ISOLATION DISTANCES SHALL BE MAINTAINED FROM THE DISPOSAL AREA TO:

PROPERTY LINE	25 FEET
BUILDING (WITH FOOTING DRAIN) UPSLOPE OR SIDESLOPE	35 FEET
BUILDING (WITH FOOTING DRAIN) DOWNSLOPE	75 FEET
DRIVEWAYS & PARKING LOTS	10 FEET
TREES	10 FEET

3. BASIS OF DESIGN:

NO. OF BEDROOMS	4
DESIGN FLOW	1,000
PERCOLATION RATE	<60 MIN/INCH
LOADING RATE, Q (TRENCHES)	1.0 GAL/SF/DAY 150% SYSTEM WITH REDUCTION FOR 24" OF STONE

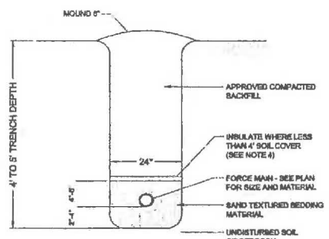
4. SEPTIC TANK

A. A 1,000 GALLON PRECAST CONCRETE SEPTIC TANK, CAMP PRECAST OR APPROVED EQUAL SHALL BE USED, WITH THREE ACCESS COVERS; 4,000 PSI CONCRETE; WATERPROOF JOINTS AND SET ON THOROUGHLY COMPACTED SUBBASE. THE OUTLET BAFFLE SHALL HAVE AN EFFLUENT FILTER & A TWO (2) FOOT DIAMETER RISER TO GRADE 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.

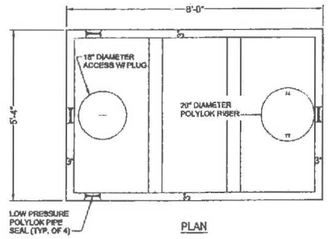


FORCE MAIN TRENCH NOTES:

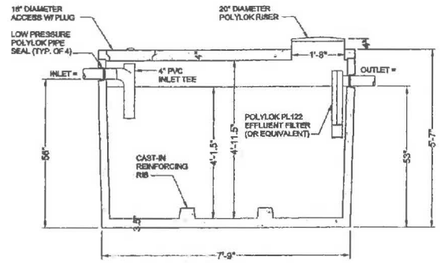
1. BACKFILL AND BEDDING SHALL BE PROPERLY COMPACTED.
2. BEDDING MATERIAL SHALL NORMALLY CONSIST OF WELL-GRADED SANDS AND GRAVELS WITH A MAXIMUM SIZE OF 3/4".
3. BACKFILL SHALL NOT CONTAIN:
   - ANY STONES MORE THAN 12" (1 1/2" MAXIMUM DIAMETER WITHIN 2' OF THE OUTSIDE OF THE PIPE) IN THE LARGEST DIMENSION.
   - BE GREATER THAN 50 POUNDS.
   - CONTAIN ANY FROZEN, WET OR ORGANIC MATERIAL.
4. USE RIGID INSULATION AT THE RATE OF 1" FOR EVERY FOOT LESS THAN 4'.
5. FORCE MAIN MUST BE TESTED FOR LEAKAGE.
6. AT ANY CROSSING UNDER A ROAD OR DRIVE, FORCE MAIN IS TO BE ENCASED IN A 4" PVC SLEEVE, SAID SLEEVE IS TO EXTEND 9' 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.

UNITS 1 & 2 AND UNITS 5 & 6
FORCE MAIN TRENCH DETAIL

NOT TO SCALE



PLAN



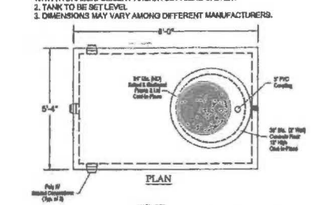
SECTION

UNITS 1 & 2, UNITS 3 & 4 AND UNITS 5 & 6
1,000 GALLON PRECAST CONCRETE SEPTIC TANK

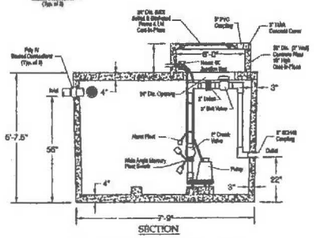
NOT TO SCALE

1,000 GALLON SEPTIC TANK NOTES:

1. INLET, OUTLET, SEAM, AND CASTING HOLES TO BE SEALED WITH HYDRAULIC CEMENT AND/OR BUTYLENE GASKET.
2. TANK TO BE SET LEVEL.
3. DIMENSIONS MAY VARY AMONG DIFFERENT MANUFACTURERS.



PLAN



SECTION

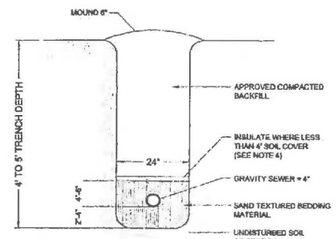
UNITS 1 & 2 AND UNITS 5 & 6
1000 GALLON PRECAST CONCRETE PUMP STATION

NOT TO SCALE

DESIGN NOTES:

1. 5000 PSI CONCRETE, 28 DAY STRENGTH.
2. LOW PRESSURE SEALS DESIGNED TO ACCEPT 4" C.I. OR PVC PIPE.
3. REQUIRES EFFLUENT PUMP CAPABLE OF PUMPING A MINIMUM OF (X) GPM VERSUS (Y) TDH, AND A SUPER SINGLE PUMP SWITCH WITH A (Z") SWING SETTING (+/-140 GALLONS) SET 6" ABOVE THE BASE OF THE PUMP WITH HIGH LEVEL ALARM SET 9" ABOVE THE PUMP ON SETTING.
4. 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.
5. ALL ELECTRICAL WIRING MUST BE DONE BY A LICENSED ELECTRICIAN.
6. PROPER FLOAT TREE ASSEMBLY IS REQUIRED AS SPECIFIED IN DETAIL.

UNIT #	(X) gpm	(Y) ft	(Z) inches
UNIT 1 & 2	20.0	15.33	4.67
UNIT 5 & 6	20.0	10.77	4.67



GRAVITY SEWER 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:
   - ANY STONES MORE THAN 12" (1 1/2" MAXIMUM DIAMETER WITHIN 2' OF THE OUTSIDE OF THE PIPE) IN THE LARGEST DIMENSION.
   - BE GREATER THAN 50 POUNDS.
   - CONTAIN ANY FROZEN, WET OR ORGANIC MATERIAL.
4. USE RIGID INSULATION AT THE RATE OF 1" FOR EVERY FOOT LESS THAN 4'.
5. GRAVITY SEWER MUST BE TESTED FOR LEAKAGE.
6. AT ANY CROSSING UNDER A ROAD OR DRIVE, GRAVITY SEWER IS TO BE ENCASED IN A 4" PVC SLEEVE, SAID SLEEVE IS TO EXTEND 9' 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.

UNITS 3 & 4 GRAVITY SEWER TRENCH DETAIL

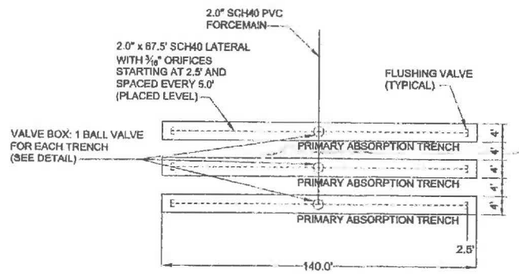
NOT TO SCALE

ITEM	LEACHFIELD	SEPTIC TANK	SEWER
DRILLED WELL	(b)	50	50
GRAVEL PACK WELL, SHALLOW WELL OR SPRING	(b)	75	75
LAKES, PONDS AND IMPOUNDMENTS	50	25	25
RIVER, STREAM	50	25	10
DRAINAGE SWALES, ROADWAY DITCHES	25	--	--
MAIN OR MUNICIPAL WATER LINES	50	50	(d)
SEWER SERVICE LINES	25	25	(d)
ROADWAYS, DRIVEWAYS, PARKING LOTS	10	5	(c)
TOP OF EMBANKMENT, OR SLOPE > 30%	25	10	--
PROPERTY LINE	25[1]	10	10
TREES	10	10	10
OTHER DISPOSAL FIELD OR REPLACEMENT AREA	10[2]	--	--
FOUNDATION, FOOTING DRAINS, CURTAIN DRAINS	36[1]	10	--
PUBLIC COMMUNITY WATER SUPPLY (e)	(f)	(f)	(f)
SUCTION WATER LINE	100	50	50

THESE DISTANCES MAY BE REDUCED WHEN EVIDENT THAT THE DISTANCE IN UNNECESSARY TO PROTECT AN ITEM OR INCREASED IF NECESSARY TO PROVIDE ADEQUATE PROTECTION.

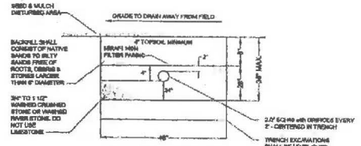
(a) ISOLATION DISTANCES APPLY REGARDLESS OF PROPERTY LINE AND OWNERSHIP.
(b) SEPARATION BETWEEN POTABLE WATER SUPPLIES AND LEACHFIELDS SHALL BE DETERMINED BY METHODS IN THE VERMONT WATER AND SUPPLY RULE, APPENDIX 21-A, PART 11, 11.4.
(c) SEWERS UNDER ROADS, DRIVEWAYS OR PARKING LOTS MAY REQUIRE PROTECTIVE CONDUITS OR SLEEVES.
(d) SEPARATION OF PRESSURE WATER LINES CONSIDERED AS "SERVICE CONNECTIONS" AND SEWER LINES SHALL ADHERE TO THE VERMONT PLUMBING RULES. SEPARATION OF PRESSURE WATER LINES (CONSIDERED TO BE PART OF A PUBLIC WATER SYSTEM AS DEFINED BY THE VERMONT WATER SUPPLY RULE) AND SEWER LINES SHALL ADHERE TO THE REQUIREMENTS OF THE VERMONT WATER SUPPLY RULE.
(e) THIS REFERS TO PUBLIC COMMUNITY WATER SYSTEMS, AS DEFINED IN THE VERMONT WATER SUPPLY RULE.
(f) CONTACT DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S WATER SUPPLY DIVISION, 103 SOUTH MAIN STREET, WATERBURY, VERMONT FOR ISOLATION DISTANCES RELATIVE TO PUBLIC COMMUNITY WATER SUPPLY.

WASTEWATER SYSTEM ISOLATION DISTANCES



TYPICAL SYSTEM LAYOUT

NOT TO SCALE

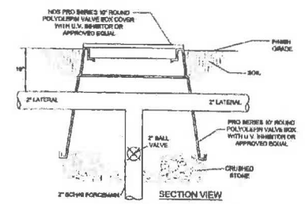


ABSORPTION TRENCH

NOT TO SCALE

ABSORPTION TRENCH NOTES:

1. DO NOT ALLOW CONSTRUCTION TRAFFIC, DRIVING OR PARKING ON TOP OF THE SYSTEM.
2. THE TRENCH SIDEWALLS AND BOTTOM SHALL BE UNDISTURBED PRIOR TO BACKFILLING CALL FOR INSPECTION, RAKE ANY SMEARED SOILS



SECTION VIEW

10" ROUND VALVE BOX

NOT TO SCALE

NOT TO SCALE

THE CONTRACTOR SHALL NOTIFY "DIGSAFE" AT 1-888-DIG-SAFE PRIOR TO ANY EXCAVATION.

"I hereby certify that in the exercise of my reasonable professional judgment the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules."

Alan Huizenga, P.E.
VT Professional Engineer #5905
GME Project No.

Stephen Revell, CPG
Licensed Designer #152.0126700-BW

LINCOLN APPLIED GEOLOGY, INC.
ENVIRONMENTAL CONSULTANTS

Alison Parker Living Trust Property
93 North Street
Bristol, Vermont

Proposed Wastewater System Details

LAG PROJECT #	15118
DATE	June 27, 2017
SURVEYORS	TAM
DRAWN BY	TAM
FIGURE #	2