

**H-20 1,500 GAL. SEPTIC TANK DETAIL (NO SCALE)**

2-COMPARTMENT SEPTIC TANK H-20 DESIGN  
 PRECAST REINFORCED CONCRETE  
 CAPACITY OF TANK = 1,500 GALLONS

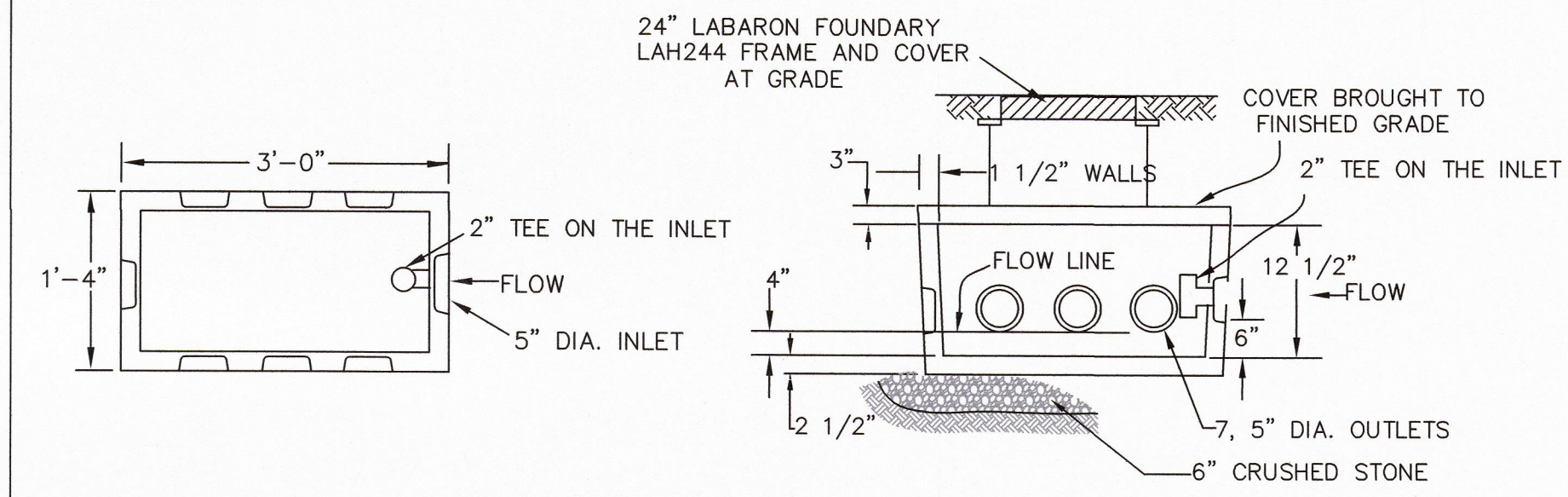
ADJUSTED GROUNDWATER ELEVATION =  
 BOUYANCY FACTOR SAFETY=(WEIGHT OF TANK + WEIGHT OF SOIL)/WEIGHT OF WATER DISPLACED  
 =(12,500+7,260)/6,178=3.19 WITH TANK EMPTY.

- MUST BE WATER TIGHT AND SET ON A LEVEL BASE THAT HAS BEEN COMPACTED TO PREVENT SETTLING.
- 6" CRUSHED STONE MUST BE PLACED UNDER TANK.
- TANK MUST HAVE A SEAL STATING THAT ASTM STANDARDS HAVE BEEN MET.
- 24" MANHOLES MUST BE INSTALLED OVER INLET, OUTLET AND COMPARTMENT DIVIDING WALL. IF DOUBLE COMPARTMENT TANK IS USED, OR OVER INLET AND OUTLET IF SINGLE COMPARTMENT TANK IS USED. MANHOLES MUST BE BROUGHT TO WITHIN 6" OF FINISH GRADE.
- THE INLET TEE SHALL EXTEND A MINIMUM OF 10" BELOW THE FLOW LINE. THE OUTLET SHALL BE PROVIDED WITH A TEE EXTENDING BELOW THE FLOW LINE IN ACCORDANCE WITH THE FOLLOWING TABLE:

LIQUID DEPTH IN SEPTIC TANK	DEPTH OF OUTLET TEE BELOW FLOW LINE
4 FEET	14 INCHES
5 FEET	19 INCHES
6 FEET	24 INCHES
7 FEET	29 INCHES
8 FEET	34 INCHES

**BUILDING SEWER**

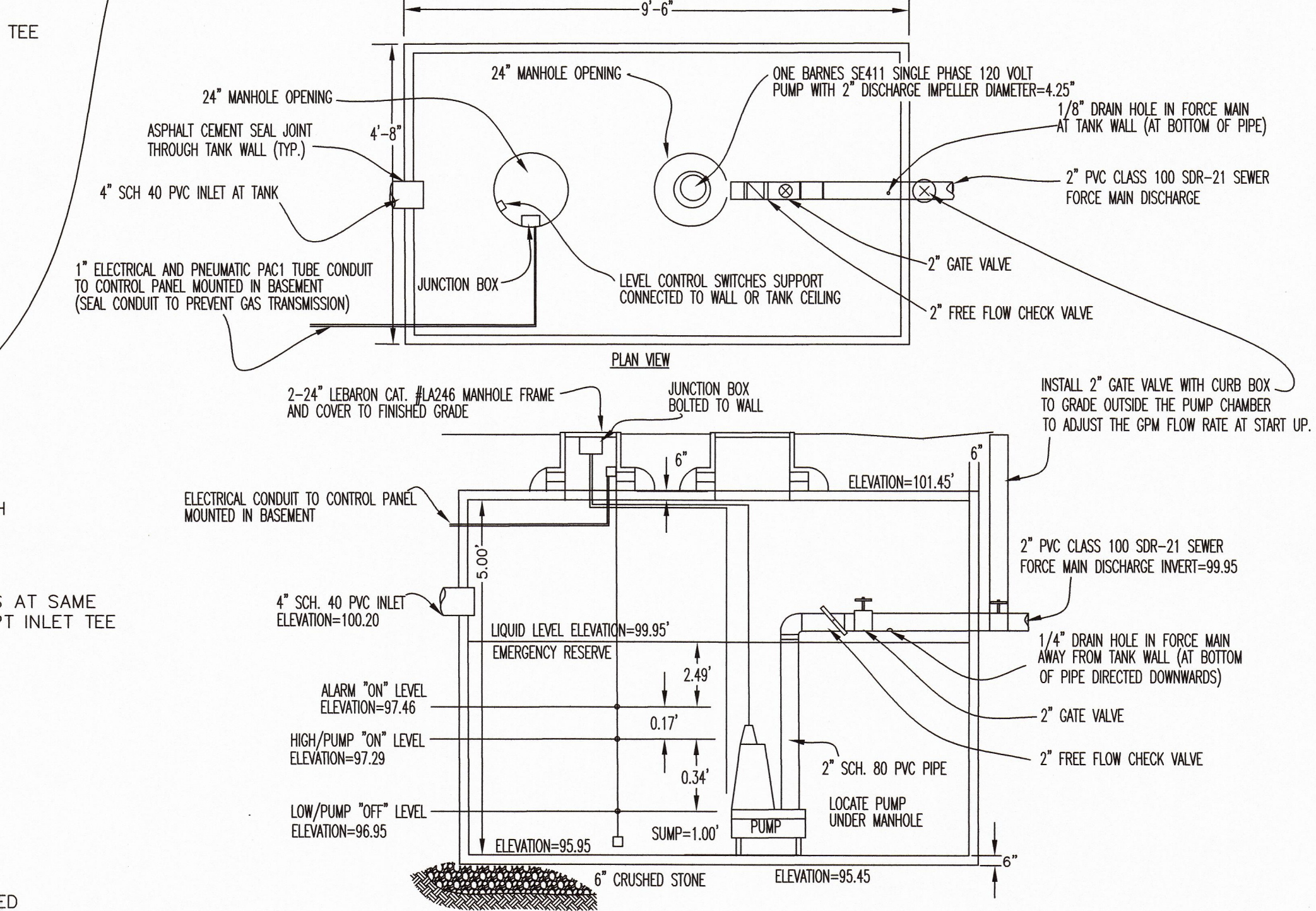
- BUILDING SEWER MUST BE 4" IN DIAMETER AND CAST IRON PIPE WITH LEAD AND OAKUM JOINTS (TIGHT JOINTS OR SCH 40 PVC)
- SEWER LINE MUST BE LAID ON A FIRM COMPACTED BASE.
- PIPE MUST BE SLOPED AT A MIN. OF 1% (2% PREFERRED)
- PIPE MUST BE LAID ON A CONTINUOUS UNIFORM GRADIENT.
- MANHOLES WITH CAST IRON FRAMES AND COVERS TO GRADE ARE NEEDED AT CHANGES OF DIRECTIONS OR GRADIENT WHEN 2 SEWER LINES ARE CONNECTED.
- GRAVITY SEWER MANHOLES SHALL HAVE AN OPEN CHANNEL DEPTH EQUAL TO OR GREATER THAN THE DIAMETER OF THE INLET PIPE. THE CHANGE OF DIRECTION CAN NOT EXCEED 90°.



**H-20 DISTRIBUTION BOX (NO SCALE)**

- COVER MUST BE WATER TIGHT.
- 6" OF CRUSHED STONE MUST BE PLACED UNDER DISTRIBUTION BOX.
- SOIL MUST BE COMPACTED UNDER DISTRIBUTION BOX TO PREVENT SETTLING.
- FRAME AND COVER TO FINISH GRADE

**ZABEL EFFLUENT FILTER DETAIL**  
 FILTER MODEL # A1800-4X18  
 OR APPROVED EQUAL  
 FILTER SHALL BE CLEANED AT 6 MONTH INTERVALS PER MANUFACTURERS INSTRUCTIONS.  
 (SEE INTERNET WEB SITE www.zabelzone.com)



**1,000 GAL. PUMP CHAMBER DETAIL (NOT TO SCALE)**

SHEA M1000/ 1000 GALLON PUMP  
 CHAMBER MONOLITHIC 4"W WALL  
 (NOT TO SCALE)

**PUMP- TOTAL DYNAMIC HEAD CALCULATIONS**

BASIS FOR 2" PVC PIPE  
 TOTAL DYNAMIC HEAD (TDH)= (FRICTION LOSS + VELOCITY LOSS + ELEVATION CHANGE)=6.8'

**PUMP CHAMBER**

- PUMP CHAMBER- CONSTRUCTION** - PUMP CHAMBER TO BE A PRECAST (H-20 DESIGN) PUMP CHAMBER (1,000 GALLON SEPTIC TANK WITHOUT BAFFLE), OR APPROVED EQUAL WITH A CAPACITY OF 250 GALLONS PER FOOT OF DEPTH. ALL PIPING AND CONDUIT TO AND FROM THE CHAMBER SHALL BE SEALED WITH ASPHALT CEMENT OR AN APPROVED EQUAL. THE PUMP CHAMBER COVER OVER THE PUMPS SHALL BE A 24" DIAMETER CAST IRON RING AND COVER AND SHALL BE BROUGHT TO FINISHED GRADE.  
 DESIGN CAPACITY - THE CONTROL LEVELS SHALL MAINTAIN A 12 INCH SUMP WITH A DRAWING DEPTH OF 0.34' FEET AND "AN ALARM" LEVEL 2 INCHES ABOVE THE PUMP "ON" LEVEL. THERE SHALL BE 2.49' FEET ADDITIONAL ABOVE THE ALARM LEVEL TO PROVIDE 45.8 HOURS OF EMERGENCY STORAGE. THERE WILL BE 4.0 DOSE PER DAY. THE DOSING VOLUME REQUIRED = 83 GALLONS. THE DOSING VOLUME PROVIDED=110 GALLONS. 24-HOUR EMERGENCY STORAGE REQUIRED=83 GALLONS. 24-HOUR EMERGENCY STORAGE PROVIDED=2.49' FEET X 250 GALLONS PER FOOT OF DEPTH=622 GALLONS.

**PUMPING** - THE PUMP IS TO BE A SIMPLEX PUMP INSTALLATION USING ONE BARNES 2" DISCHARGE MODEL SE411 0.40 HP, SINGLE PHASE, 115 VOLT, 4.25" DIAMETER IMPELLER, SUBMERSIBLE PUMP CAPABLE OF PASSING 2.0" SOLIDS AND PUMPING AT A RATE OF 40 GALLONS PER MINUTE AT A TOTAL DYNAMIC HEAD OF 6.8'.

**NOTE:**  
 CONTRACTOR CAN USE A 240 VOLT SIMPLEX PUMP IF IT IS AVAILABLE AT THE ELECTRICAL SYSTEM.

- PIPING** - PIPING FROM THE BUILDING TO THE SEPTIC TANK SHALL BE 4 INCH SCH 40 PVC SEWER PIPE. THE FORCE MAIN FROM THE PUMP CHAMBER TO THE DISTRIBUTION BOX SHALL BE 2 INCH PVC CLASS 100, SDR 21. THERE SHALL BE A CHECK VALVE AND GATE VALVE FOR THE PUMP IN THE PUMP CHAMBER. UNIONS AND PIPE SHALL BE THREADED AS APPROPRIATE TO FACILITATE PUMP REMOVAL AND REPLACEMENT. THE DISCHARGE LINE SHALL HAVE A 1/4 INCH HOLE DRILLED IN IT AFTER THE CHECK VALVES TO ALLOW SLOW DRAINING OF THE FORCE MAIN BACK INTO THE PUMP CHAMBER. THE 2" FORCE MAIN IS TO BE INSULATED WITH "DOW-TRYMER 2000" INSULATION AND P.V.C. PROTECTIVE JACKETING OR APPROVED EQUAL. THE DISTRIBUTION BOX SHALL HAVE AN INLET TEE (CUT OFF ONE INCH ABOVE THE FLOW LINE) AND BAFFLE TO RETARD THE TURBULENCE IN THE DISTRIBUTION BOX.

**NOTE:**  
 IF FORCE MAIN IS MAINTAINED 4' BELOW GROUND, NO INSULATION IS REQUIRED.

- CONTROLS** - THE CONTROLS SHALL BE MOUNTED ON THE PUMP CHAMBER TO THE MANUFACTURER'S SPECIFICATION. ALL MOUNTINGS AND JUNCTION BOXES SHALL BE NEMA-6 OR BETTER. THE PUMP CONTROL PANEL SHALL BE MOUNTED IN THE BASEMENT OF THE HOUSE. THE CONTROL PANEL SHALL BE EQUIPPED WITH AN "OFF-AUTO-ON" SWITCH FOR THE PUMP AND AN "ALARM WITH A LIGHT AND AUDIBLE BELL OR BUZZER". THE PANEL SHALL BE EQUIPPED WITH AN "ALARM TEST SWITCH" AND A "BELL OR BUZZER SILENCER" SWITCH. THE ALARM SHALL BE ON A SEPARATE "POWER CIRCUIT". A PROVISION SHALL BE MADE FOR AN ELECTRICAL TRANSFER SWITCH TO ALLOW CONNECTION TO A PORTABLE GENERATOR. RUN TIME METER SHOULD BE LOCATED ON THE CONTROL PANEL.

- INSTALLATION/INSPECTION** - THE DESIGN ENGINEER WILL CONDUCT A FLOW TEST FOR THE PUMP INSTALLATION AND WILL PROVIDE A CERTIFIED REPORT OF THE RESULTS TO THE BOARD OF HEALTH. THE INSTALLER SHALL CAUSE THE ELECTRICAL SYSTEM TO BE INSPECTED AND APPROVED BY THE TOWN'S ELECTRICAL INSPECTOR.

- PUMP CHAMBER MUST BE WATER TIGHT AND SET ON A LEVEL BASE THAT HAS BEEN COMPACTED TO PREVENT SETTLING.
- 6" CRUSHED STONE MUST BE PLACED UNDER TANK.
- TANK MUST HAVE A SEAL STATING THAT ASTM STANDARDS HAVE BEEN MET.
- THE SYSTEM OWNER SHALL BE PROVIDED WITH INFORMATIONAL BROCHURES AND ADVICE FOR MAINTENANCE AND REPAIR OF THE PUMP SYSTEM BY THE INSTALLER.

**SYSTEM IN FILL**

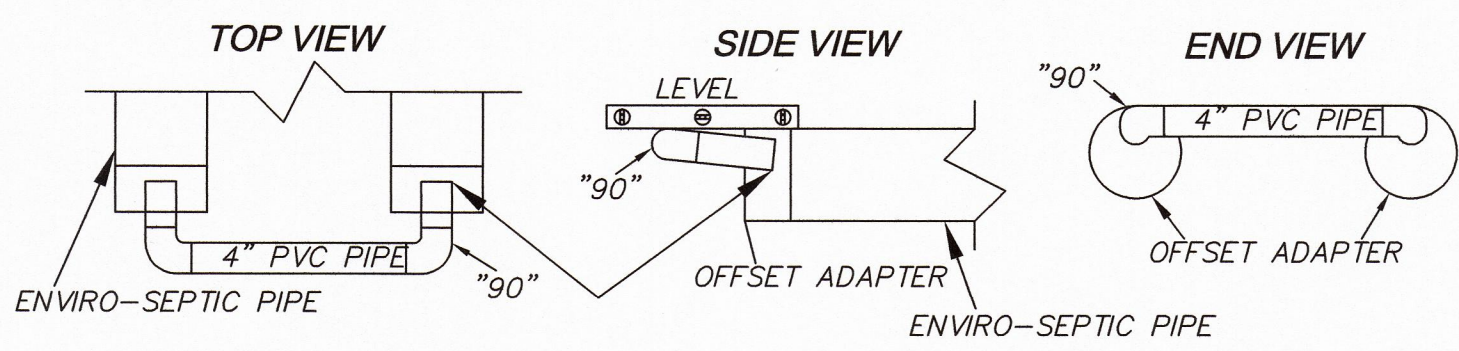
- MINIMUM OF 6" OF MEDIUM TO COARSE SAND (WASHED CONCRETE SAND) WITH LESS THAN 2% PASSING A # 200 SIEVE REQUIRED AROUND CIRCUMFERENCE OF ENVIRO-SEPTIC PIPES. (SEE DESIGN AND INSTALLATION MANUAL "SECTION F" FOR COMPLETE SAND AND FILL SPECIFICATIONS.) MATERIAL SHALL CONFORM TO ASTM C-33, ALSO KNOWN AS "CONCRETE SAND".
- SURROUNDING SAND SHALL BE TITLE 5 SEWER SAND. ONLY SURROUNDING SAND MAY BE PLACED UNDER RAISED SYSTEMS OF WHERE TOP SOIL AND SOIL HORIZONS WITH ORGANIC MATTER HAVE BEEN REMOVED. IT SHALL BE GRADED SUCH THAT NO MORE THAN 45% OF THE SAMPLE SHALL BE RETAINED ON THE #4 SIEVE. 20% OR LESS SHALL PASS THE #100 SIEVE AND 5% OR LESS SHALL PASS THE #200 SIEVE. BETWEEN 10% AN 100% SHALL BE RETAINED ON THE #50 SIEVE. THE UNIFORMITY COEFFICIENT OF THE SOIL SHALL MEET TITLE 5 REQUIREMENTS.
- EXCAVATION PRIOR TO GRANULAR FILL MUST BE DRY AND SCARIFIED.
- FILL TO BE STOCKPILED AT THE EDGE OF EXCAVATION AND PUSHED OR CAST INWARD OVER EXCAVATED AREA.
- FILL SHOULD NOT BE PLACED DURING RAIN OR SNOW STORMS.
- IF FILL IS TO BE INSTALLED BELOW GROUND WATER, EXCAVATION MUST BE DEWATERED.
- A SIEVE ANALYSIS SHALL BE PROVIDED TO THE BOARD OF HEALTH FROM THE FILL MATERIAL IN PLACE.

**FINAL GRADING**

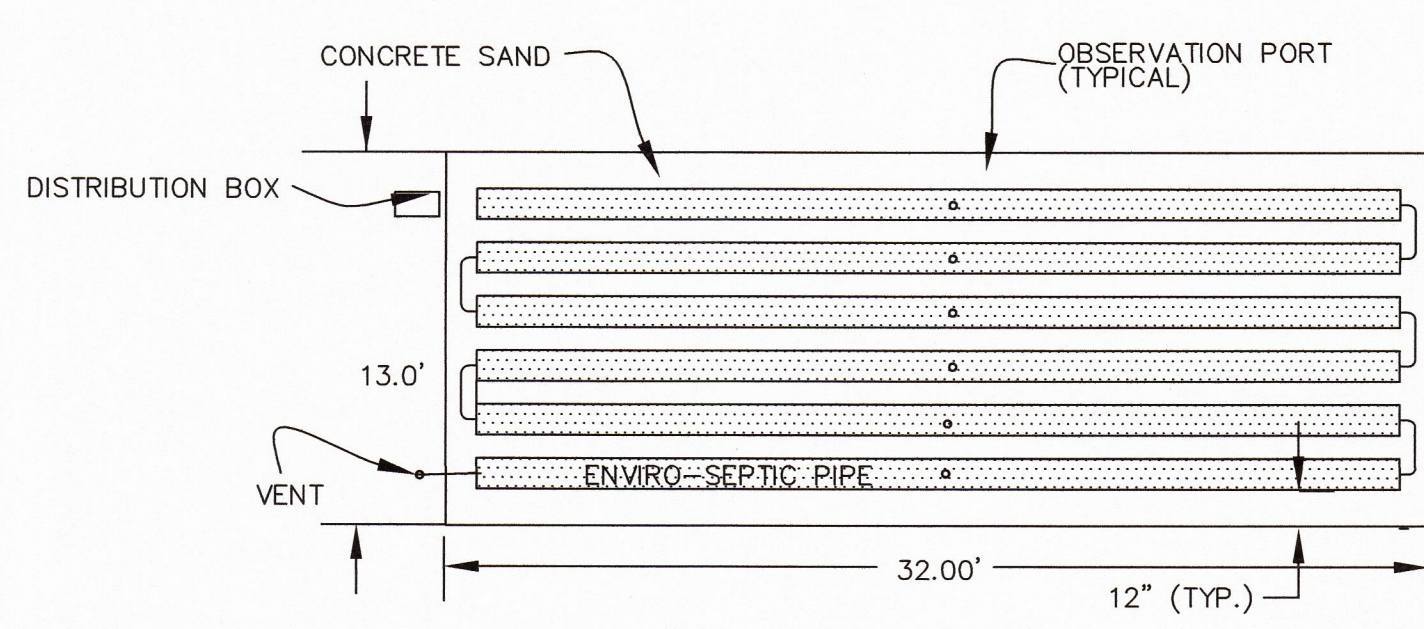
- 2% SLOPE MUST BE PROVIDED OVER AND AROUND SYSTEM.
- SURFACE DRAINAGE MUST BE AWAY FROM SYSTEM.
- GRADING MUST BE DONE TO PREVENT PONDING.
- BOTTOM OF THE ENVIRO-SEPTIC PIPE = BREAKOUT ELEVATION = SEE TABLE ON SHEET #1. BREAKOUT ELEVATION MUST BE MAINTAINED FOR A DISTANCE OF 15' FROM ENVIRO-SEPTIC PIPE ON A DOWNHILL SLOPE NOT TO EXCEED 1 FOOT VERTICAL DROP IN 3 FEET HORIZONTAL DISTANCE. SEE SITE PLAN (SHEET 1) FOR BREAKOUT CONTOUR ELEVATION AND PROPOSED GRADING.

**LEACHING FIELD**

- SIDES AND BOTTOM OF LEACHING FACILITY TO BE SCARIFIED.
- BOTTOM OF LEACHING FIELD MUST BE LEVEL.
- PIPING MUST BE SCH 40 P.V.C. WITH TIGHT JOINTS.
- NO MORE THAN 18" OF COVER IS ALLOWED OVER THE SYSTEM.
- EXCAVATION PRIOR TO PLACING FILL IS TO LIMITS OF THE LEACHING FIELD, AND AT LEAST 3" BELOW THE TOP OF THE "C" HORIZON.
- EXCAVATION AREA ON SITE PLAN (SHEET 1). EXCAVATION IS TO BE INSPECTED PRIOR TO BACKFILLING. EXCAVATION TO REMOVE ALL UNSUITABLE SOIL AND DELETERIOUS MATERIAL IN THE SPECIFIED AREA OF WORK.



**RAISED CONNECTION (NO SCALE)**



- NOTES:**
- NO INSTALLER SHALL INSTALL THE SYSTEM UNLESS THE INSTALLER HAS BEEN TRAINED BY PRESBY ENVIRONMENTAL ON INSTALLATION OF THE SYSTEM.
  - FOR PRODUCT INFORMATION OR THE NEAREST DEALER CONTACT PRESBY ENVIRONMENTAL, INC. 143 AIRPORT ROAD, WHITEFIELD, NH 03598 PHONE 1-800-473-5298 - WWW.PRESBYENVIRONMENTAL.COM

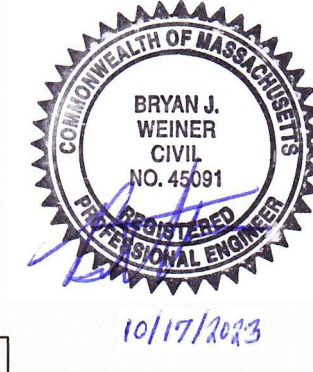
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**GENERAL NOTES**

- ALL CONSTRUCTION TO CONFORM TO THE REQUIREMENTS OF THE MASSACHUSETTS ENVIRONMENTAL CODE, TITLE FIVE, AND THE TOWN OF FOXBOROUGH BOARD OF HEALTH REGULATIONS.
- SOIL TESTING DUNN MCKENZIE, INC PERFORMED IN ACCORDANCE WITH THE INSTRUCTIONS OF MASSACHUSETTS ENVIRONMENTAL CODE, TITLE 5.
- DESIGN SEWAGE FLOW = (3 BEDROOMS AT 110 G.P.D. = 330 GALLONS.)
- DESIGN PERCOLATION RATE = <5 M.P.I. LTAR = 0.74 GAL/S.F. (CLASS I)
- SEPTIC TANK CAPACITY REQUIRED: 330 GALLONS (200% OF 660) PROVIDED: 1,500 GALLONS (MINIMUM ALLOWABLE)
- REQUIRED SAND BED AREA = 330/.74= 446 S.F. (TITLE 5) 446 S.F. X 0.60 (PRESBY REDUCTION FACTOR) = 267.6 S.F. SAND BED AREA MIN. PROVIDED=400 S.F.(AREA PROVIDED=32' LONG X 13' WIDE SAND BED=416 S.F.) ON-CENTER SPACING REQUIRED (TABLE B)=1.5', USED 2.0' (PROVIDED: 18 ENVIRO-SEPTIC PIPES - 3 EACH LINE - 6 LINES)
- THERE ARE NO SURFACE WATER SUPPLIES OR WETLANDS BORDERING SURFACE WATER SUPPLIES WITHIN 400' OF SITE. THERE ARE NOT PUBLIC WELLS WITHIN 400' OF SITE.
- THERE ARE NO PRIVATE WELLS WITHIN 100' OF SITE.
- THERE ARE BORDERING VEGETATED WETLANDS; BUT NO INLAND BANKS, OR SURFACE WATERS WITHIN 100' OF LEACHING AREA.
- THERE ARE NO SURFACE OR SUBSURFACE DRAINS WHICH ARE USED TOLOWER THE GROUND WATER ON THE SITE.
- THERE ARE NO VERNAL POOLS WITHIN 100' OF SITE.
- SITE IS NOT WITHIN THE 100 YEAR FLOOD PLAIN.
- EFFLUENT BEING DISCHARGED TO THE SYSTEM CAN BE ASSOCIATED WITH NORMAL STRENGTH DOMESTIC USE ONLY.
- ELEVATIONS REFER TO ASSUMED
- FOR PROPER PERFORMANCE, THE SEPTIC TANK SHOULD BE PUMPED ANNUALLY.
- ANY ALTERATIONS MUST BE APPROVED IN WRITING BY THE DESIGN ENGINEER. ANY CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFERING FROM THOSE SHOWN HEREON OR REPORTED HEREIN SHALL BE REPORTED TO THE DESIGN ENGINEER BEFORE CONSTRUCTION CONTINUES.
- TEST HOLE INFORMATION SHOWN HEREON IS LIMITED TO SOIL CONDITIONS FOUND AT THAT PARTICULAR TEST HOLE LOCATION AND IS NOT TO BE CONSIDERED AN IMPLIED OR EXPRESSED WARRANTY OF SOIL CONDITIONS BEYOND THE LIMITS OF SUCH TEST HOLES.

**CONSTRUCTION NOTES**

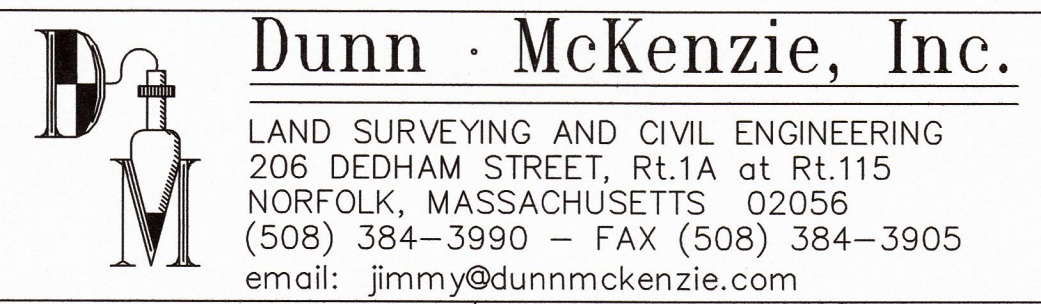
- SYSTEM CAN NOT BE BACK-FILLED OR CONCEALED UNTIL DESIGN FIRM AND BOARD OF HEALTH HAVE INSPECTED THE SYSTEM AND PERMISSION TO BACKFILL HAS BEEN GIVEN.
- DESIGN FIRM MUST PREPARE AND SUBMIT "AS BUILT" PLAN TO BOARD OF HEALTH. THIS PLAN MUST CERTIFY THAT THE SYSTEM WAS INSTALLED IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS AND THAT IT COMPLIES WITH PROPOSED PLAN. THEREFORE, THE CONTRACTOR MUST NOTIFY DUNN-MCKENZIE, INC., IN ADVANCE FOR PERIODIC INSPECTIONS OF THE CONSTRUCTION AT THE FOLLOWING MINIMUM POINTS:  
 A) SEPTIC TANK & PUMP CHAMBER EXCAVATION WITH STONE PRIOR TO SEPTIC TANK PLACEMENT.  
 B) LEACHING FIELD EXCAVATION PRIOR TO BACKFILLING WITH "SEWER GRAVEL".  
 C) "SEWER SAND" AND "CONCRETE SAND" BACKFILL - MUST PASS SIEVE TEST.  
 D) ALL PIPING ELEVATIONS PRIOR TO BACKFILL.  
 E) FINAL GRADING OVER ENTIRE SYSTEM.
- SYSTEM AREA SHALL BE STAKED AND FLAGGED FROM DATE OF INSTALLATION UNTIL CERTIFICATE OF COMPLIANCE IS ISSUED. VEHICULAR TRAFFIC, PARKING OF VEHICLES, STOCKPILING OF MATERIALS AND STORAGE OF EQUIPMENT OVER LEACHING AREA IS PROHIBITED.
- THERE ARE IS NO RECORD OF A FOUNDATION DRAIN.
- ALL PIPING MUST BE TIGHT JOINTS, UNLESS NOTED.
- PIPING MUST BE LAID AS STRAIGHT AS PRACTICAL.
- ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.
- THE INSTALLER SHALL PROVIDE A SKETCH AND CERTIFICATION OF THE CONSTRUCTION OF THE SYSTEM AS REQUIRED BY THE BOARD OF HEALTH.
- OBSERVATION PIPES SHALL BE INSTALLED IN ACCORDANCE WITH THE TYPICAL INSPECTION PORT DETAIL AND SHALL BE AVAILABLE FOR SYSTEM INSPECTION WHEN REQUIRED. THE LOCATIONS OF THE OBSERVATION PIPES SHALL BE SHOWN ON THE AS-BUILT PLAN.
- EXISTING SEPTIC TANK SHALL BE PUMPED OUT, EXISTING SEPTIC TANK AND LEACHING FIELD SHALL BE EXCAVATED AND REMOVED FROM THE SITE, IN ACCORDANCE WITH THE STATE AND LOCAL REGULATION.



**TITLE 5 SEWAGE DISPOSAL SYSTEM UPGRADE FOR AN EXISTING 3 BEDROOM DWELLING**

**LOCATION**  
 52 WEST STREET  
 FOXBOROUGH, MASSACHUSETTS 02035

**APPLICANT & OWNER OF RECORD**  
 JARDAN ENTERPRISES, LLP  
 72 WEST STREET  
 FOXBOROUGH, MASSACHUSETTS 02035  
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DATE: SEPTEMBER 22, 2023 SHEET 2 OF 2 FILE No. 801 JOB No. 5133