

NOTE: UNDERGROUND UTILITY LOCATIONS ARE NOT GUARANTEED.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.

DIGSAFE IS TO BE NOTIFIED 72 BUSINESS HOURS IN ADVANCE OF CONSTRUCTION. CALL DIGSAFE AT 811

SOIL TESTS PERFORMED BY: PETER BEMIS, SOIL EVALUATOR 130 ON SEPTEMBER 30, 2022. PETER BEMIS PASSED THE SOIL EVALUATION EXAMINATION APPROVED BY DEP AND HAS CERTIFIED THAT HIS ANALYSIS WAS PERFORMED CONSISTENT WITH 310 CMR 15.017. SOIL TESTS WITNESSED BY: SCOTT MOLES, HOLLISTON BOH.

DEEP HOLE: TP#200	ELEV. 335.0	DEEP HOLE: TP#201	ELEV. 335.3	DEEP HOLE: TP#202	ELEV. 337.3	DEEP HOLE: TP#203	ELEV. 337.5
6" A	LOAM	6" A	LOAM	6" A	LOAM	6" A	LOAM
36" Bw	SANDY LOAM 2.5Y3/3	36" Bw	SANDY LOAM 2.5Y3/3	36" Bw	SANDY LOAM 2.5Y3/3	36" Bw	SANDY LOAM 2.5Y3/3
108" C	LOAMY SAND 2.5Y5/4	108" C	LOAMY SAND 2.5Y5/4	108" C	LOAMY SAND 2.5Y5/4	108" C	LOAMY SAND 2.5Y5/4
MOTTLING: 36" 5YR5/6 332.0		MOTTLING: 36" 5YR5/6 332.3		MOTTLING: 36" 5YR5/6 334.3		MOTTLING: 36" 5YR5/6 334.5	
PERCOLATION TEST: 18.3 MPI @ 56"		PERCOLATION TEST: 20 MPI @ 51"		PERCOLATION TEST: 15 MPI @ 58"		PERCOLATION TEST: N.A.	
SOIL CLASS: CLASS II		SOIL CLASS: CLASS II		SOIL CLASS: CLASS II		SOIL CLASS: CLASS II	
OBSERVED GW: NONE		OBSERVED GW: NONE		OBSERVED GW: NONE		OBSERVED GW: NONE	

ENGINEERING DESIGN CONSULTANTS, INC. SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, OR PROCEDURES UTILIZED BY THE CONTRACTOR, NOR FOR THE SAFETY OF PUBLIC OR CONTRACTORS EMPLOYEES, OR FOR THE FAILURE OF THE CONTRACTOR TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

ENGINEERING DESIGN CONSULTANTS, INC.'S LIABILITY FOR THIS PLAN IS LIMITED TO THE EXTENT OF ITS FEE LESS THIRD PARTY COSTS.

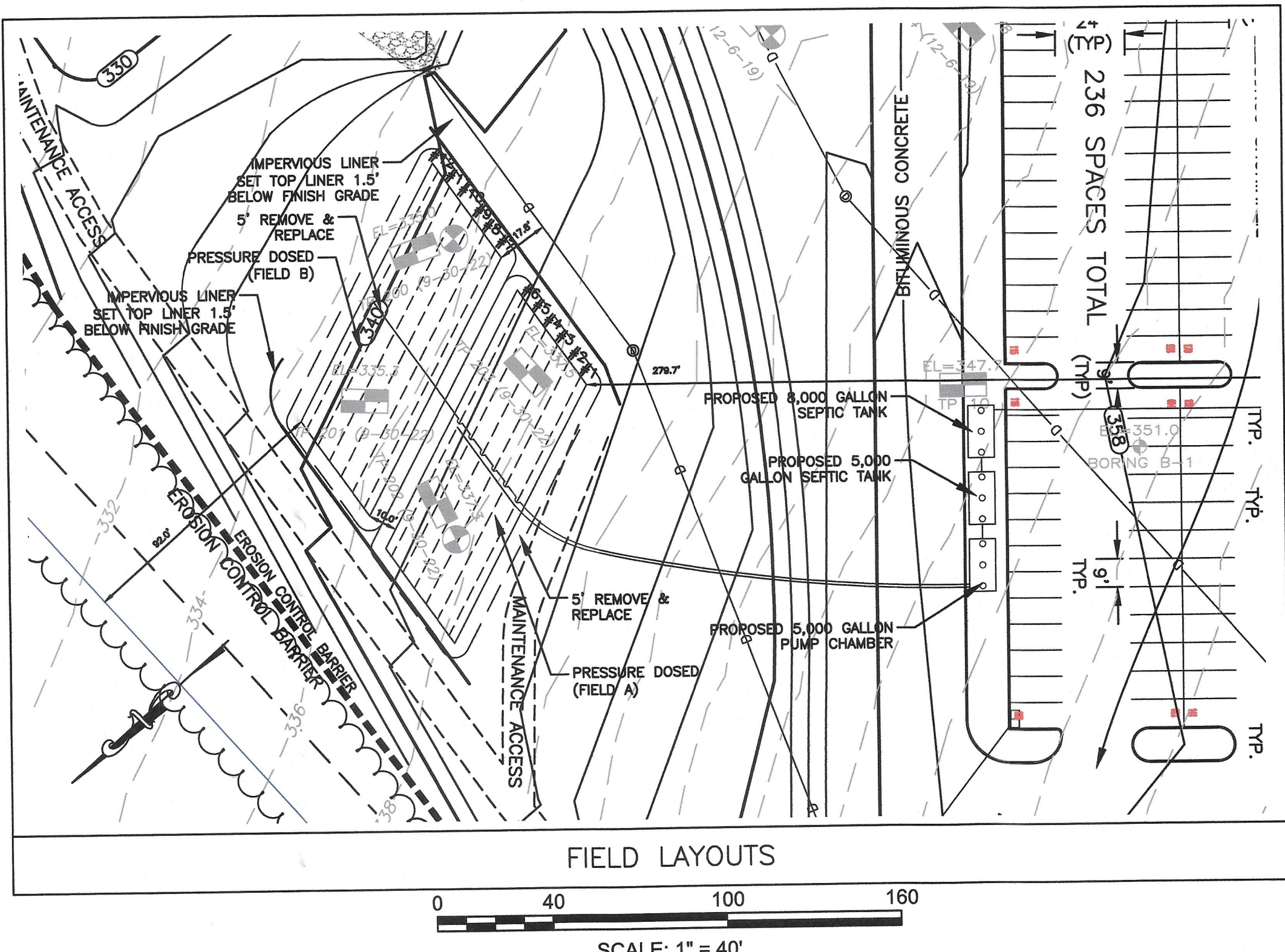
ENGINEERING DESIGN CONSULTANTS, INC. 555 HOPPING BROOK ROAD HOLLISTON, MASSACHUSETTS (MIDDLESEX COUNTY) ph:(508) 480-0225 fax:(800)832-5781

WALTER M. LEWINSKI CIVIL No. 33337 REGISTERED PROFESSIONAL ENGINEER

PREPARED BY: EDC

PROJECT: 555 HOPPING BROOK ROAD HOLLISTON, MASSACHUSETTS (MIDDLESEX COUNTY)

FILE NO: 3780 CRG-SEPTIC PREDS 1 DATE: JANUARY 24, 2023 DEFINITIVE PLAN NO: 1 OF 2



ZONING

ZONING DISTRICT: IND

REQUIRED	PROPOSED
MIN. FRONTAGE: 100 FT.	150.0 FT.
MIN. AREA: 20,000 S.F.	3,200,443±S.F.
MAX. LOT COVERAGE: 40%	550,000 S.F. - 17.2%
MAX. HEIGHT: 40 FT. 3 ST.	<40 FT.
LOT DEPTH: 150 FT.	>150 FT.
F.A.R.: 0.5	0.17

SETBACKS:	REQUIRED	PROPOSED
FRONT:	30 FT.	582.4 FT.
SIDE:	20 FT.	LT-288.4 FT. RT-281.0 FT.
REAR:	30 FT.	1687.7 FT.

PARKING: 1 SP/13 EMP. 236 SPACES (7 HC)

- SPECIAL NOTES:
- SYSTEM DESIGN BASED ON PRESSURE DOSED TRENCHES.
 - DESIGNER TO STAKE & FLAG SAS LOCATION. CONTRACTOR SHALL MAINTAIN LIMITS, UNTIL CERTIFICATE OF COMPLIANCE ISSUED AT INSTALLATION COMPLETION.
 - INSTALLER SHALL SUBMIT CERTIFICATION OF INSTALLATION AT SAS COMPLETION.

SCHEDULE OF ELEVATIONS

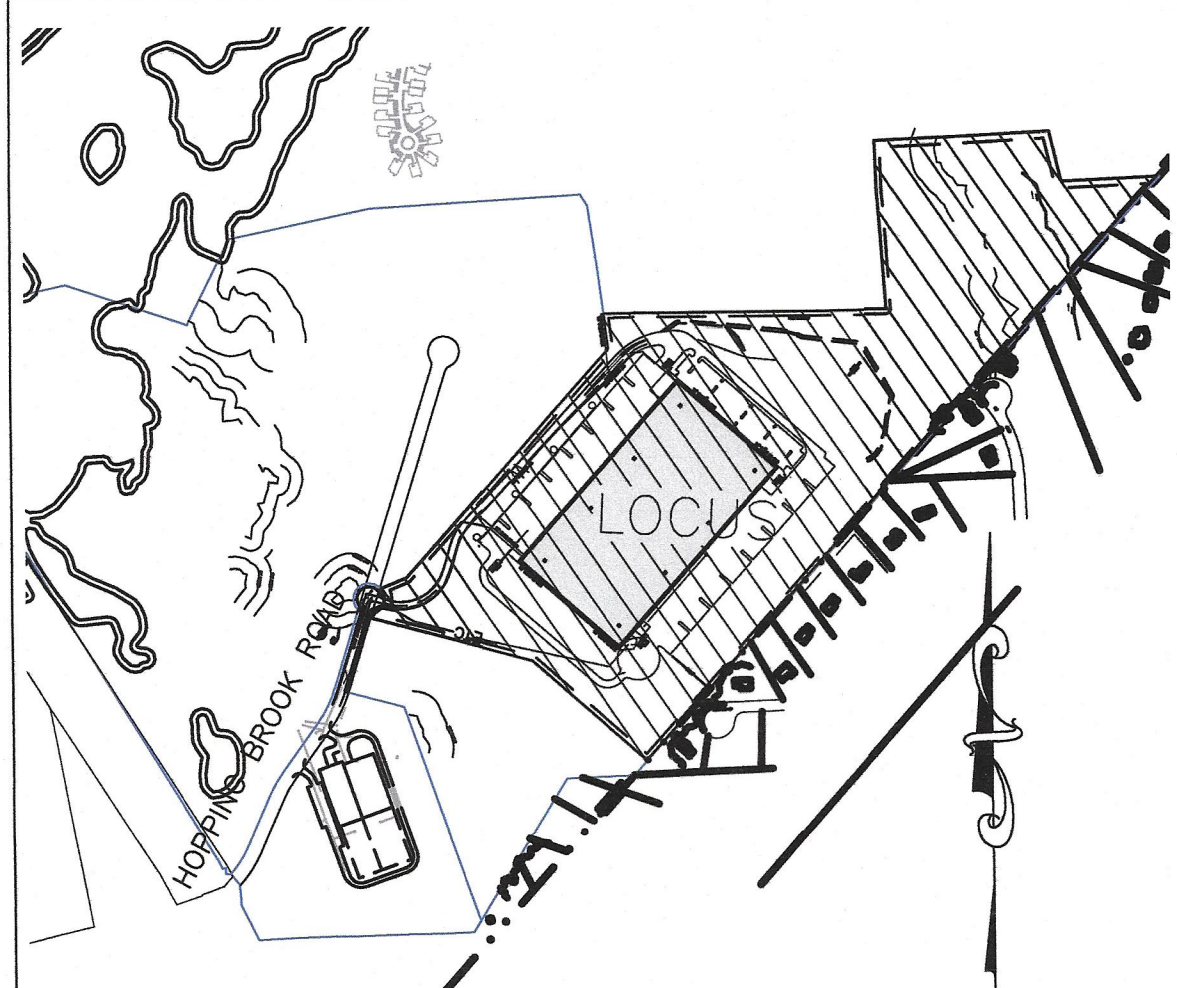
INVERT AT BUILDING	355.00
INVERT IN SEPTIC TANK 1	352.20
INVERT OUT SEPTIC TANK 1	352.00
INVERT IN SEPTIC TANK 2	351.90
INVERT OUT SEPTIC TANK 2	351.70
INVERT IN PUMP CHAMBER	351.60
INVERT OUT PUMP CHAMBER	351.40
INVERT OF LATERAL LINES	#1-6340.00 #7-12338.00
BOTTOM OF FIELDS	#1-6339.50 #7-12337.50

DESIGN CRITERIA

COMMERCIAL BUILDING	250 EMPLOYEES
ESTIMATED SEWAGE FLOW	250 X 15 = 3,750 GPD
PERCOLATION RATE	20 MPI DESIGN
SYSTEM DIMENSIONS	2 X (36"X100')
RESERVE LEACHING AREA	2 X (36"X100')
TOTAL LEACHING AREA	7,200 S.F.

LEACHING AREA COMPUTATIONS

DESIGN RATE 20 MPI: 250 EMPLOYEES X 15 GPD = 3,750 GPD REQ. LTAR=0.53 GPD/SF REQ. (15,242) 2 X FIELD DESIGN 100' LONG X 36' WIDE: 2x LENGTH 100' X 36' = 7,200 SF, 7,200 X 0.53 = 3,816 GPD>3,750 GPD



- CONSTRUCTION NOTES**
- LEACHING AREA FILL SHALL CONSIST OF SELECT ON-SITE OR IMPORTED SOIL MATERIAL. THE FILL SHALL BE COMPRISED OF CLEAN GRANULAR SAND, BE FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES, AND SHALL NOT CONTAIN REMEDIATION WASTE AS THAT TERM IS DEFINED IN 310 CMR 40.0000. MIXTURES AND LAYERS OF DIFFERENT CLASSES OF SOIL SHALL NOT BE USED. THE FILL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN TWO INCHES. A SIEVE ANALYSIS, USING A #4 SIEVE, SHALL BE PERFORMED ON A REPRESENTATIVE SAMPLE OF THE FILL. UP TO 45% BY WEIGHT OF THE FILL SAMPLE MAY BE RETAINED ON THE #4 SIEVE. SIEVE ANALYSES ALSO SHALL BE PERFORMED ON THE FRACTION OF THE FILL SAMPLE PASSING THE #4 SIEVE, SUCH ANALYSES MUST DEMONSTRATE THAT THE MATERIAL MEETS EACH OF THE FOLLOWING SPECIFICATIONS:

SIEVE SIZE	EFFECTIVE PARTICLE SIZE	% THAT MUST PASS SIEVE
# 4	4.75 MM	100%
# 50	0.30 MM	10%-100%
# 100	0.15 MM	0%-20%
# 200	0.075MM	0%-5%

A PLOT OF SIEVE ANALYSES OF A PORTION OF THE SAMPLE PASSING THE #4 SIEVE SHALL FALL ON OR BETWEEN THE LINES ON THE GRAPH AS DEPICTED IN 310 CMR 15.255(3).

 - NO PERSON SHALL DISCHARGE SEWERAGE TO A NEW, UPGRADED OR EXPANDED SYSTEM WITHOUT FIRST OBTAINING A CERTIFICATE OF COMPLIANCE FROM THE APPROVING AUTHORITY IN ACCORDANCE WITH 310 CMR 15.021(2) THROUGH (5). A REQUEST FOR CERTIFICATE OF COMPLIANCE SHALL BE ACCOMPANIED BY A CERTIFIED AS-BUILT OF THE SOIL ABSORPTION AS-BUILT APPURTENANCES PREPARED BY THE DESIGN FIRM.
 - ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.
 - THE SOIL ABSORPTION SYSTEM SHALL HAVE A MINIMUM OF ONE (1) INSPECTION PORT CONSISTING OF A PERFORATED FOUR (4) INCH PIPE PLACED VERTICALLY DOWN INTO THE STONE TO THE NATURALLY OCCURRING SOIL OR SAND FILL BELOW THE STONE. THE PIPE SHALL BE CAPPED WITH A THREADED CLEANOUT ASSEMBLY WITHIN A SMALL IRRIGATION OR VALVE BOX ACCESSIBLE TO WITHIN THREE (3) INCHES OF FINISH GRADE (SEE DETAIL).
 - THE SEPTIC TANK SHALL BE PUMPED WHEN THE TOP OF THE SLUDGE OR SOLIDS LAYER IS WITHIN 12" OR LESS OF THE BOTTOM OF THE OUTLET TEE OR THE TOP OF THE SCUM LAYER IS WITHIN TWO INCHES OF THE TOP OF THE OUTLET TEE. PUMPING FREQUENCY IS A FUNCTION OF USE, PUMPING IS REQUIRED AT LEAST ONCE EVERY THREE YEARS AND RECOMMENDED ON AN ANNUAL BASIS BY THIS DESIGN FIRM.
 - SEWER PIPE CROSSING WATER LINE OR DRAIN LINE SHALL BE ENCASED IN CONCRETE WITH A MINIMUM OF 6-INCHES OF CONCRETE ALL AROUND AND 5-FEET TO EITHER SIDE OF THE UTILITY CROSSING.

- GENERAL NOTES**
- ELEVATION REFER TO BENCHMARK: IRON ROD & CAP SET = 295.45 LOCATED AT HOPPING BROOK CUL-DE-SAC STA 56+81.97 RIGHT 38.02' TO BE TRANSFERRED TO WITHIN 50' OF SAS FIELD LIMITS PRIOR TO COMMENCEMENT OF CONSTRUCTION
 - ENGINEERING DESIGN CONSULTANTS, INC. WILL NOT BE HELD RESPONSIBLE FOR BEDROCK FOUND WITHIN EXCAVATIONS OR VARIATIONS IN THE SOIL OR EXISTING CONDITIONS REPORTED HEREIN.
 - GARBAGE DISPOSAL UNITS SHALL NOT BE CONNECTED TO THIS SOIL ABSORPTION SYSTEM.
 - THIS PLAN IS TO BE UTILIZED ONLY FOR THE CONSTRUCTION OF THE SOIL ABSORPTION SYSTEM ILLUSTRATED HEREON.
 - ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE REGULATION OF THE LOCAL BOARD OF HEALTH AND THE STATE ENVIRONMENTAL CODE TITLE 5.
 - ANY ALTERATION TO THE APPROVED SOIL ABSORPTION DESIGN MUST BE APPROVED BY THE DESIGN ENGINEER AND SUBMITTED TO THE LOCAL BOARD OF HEALTH FOR APPROVAL PRIOR TO CONSTRUCTION.
 - PRIOR TO BACKFILLING THE SOIL ABSORPTION SYSTEM, THE DESIGN ENGINEER SHALL BE NOTIFIED 72 HOURS IN ADVANCE FOR INSPECTION OF ALL MATERIALS AND METHODS TO INSURE COMPLIANCE WITH THIS DESIGN.
 - THIS SOIL ABSORPTION SYSTEM MUST BE INSPECTED AND CERTIFIED BY AN ENGINEER AND THE LOCAL BOARD OF HEALTH. A CERTIFICATE OF COMPLIANCE FROM THE ENGINEER WILL BE REQUIRED INDICATING THAT THE SYSTEM HAS BEEN LOCATED AND CONSTRUCTED IN COMPLIANCE WITH THE TERMS OF THE PERMIT PRIOR TO FINAL APPROVAL BY THE LOCAL BOARD OF HEALTH.
 - NO SOIL ABSORPTION SYSTEM SHALL BE LOCATED WITHIN 150' OF A DOMESTIC WELL.
 - AS-BUILT PLANS SHALL BE REQUIRED SHOWING THE EXACT LOCATION OF THE ONSITE SUBSURFACE SEWAGE DISPOSAL SYSTEM AND WELL AFTER SYSTEM HAS BEEN INSTALLED. THERE SHALL BE INCLUDED A CERTIFICATION BY THE DESIGN ENGINEER THAT THE SYSTEM, INCLUDING FINAL GRADING, HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLAN AND TERMS OF THE PERMIT. THIS PLAN SHALL BE SUBMITTED BEFORE THE FINAL INSPECTION IS MADE BY THE BOARD OF HEALTH AND BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED. THIS ASBUILT PLAN SHALL REMAIN ON FILE AT THE BOARD OF HEALTH OFFICE. A COMPUTERIZED COPY OF THE ASBUILT PLAN SHALL BE SUBMITTED.
 - PRIOR TO CONSTRUCTION OF THE SEPTIC SYSTEM THE BUILDER SHALL SUBMIT TO THE BOARD OF HEALTH TWO COPIES OF THE CERTIFIED FOUNDATION PLAN, SHOWING ELEVATIONS OF THE TOP OF THE CELLAR FLOOR AND TOP OF FOUNDATION AND THE LOCATION OF THE WELL.
 - THERE SHALL BE A MINIMUM OF THREE IN-PROGRESS INSPECTIONS OF THE DISPOSAL WORKS. ONE INSPECTION SHALL BE CONDUCTED WHEN THE DISPOSAL AREA IS EXCAVATED AND THE SEPTIC TANK IS IN PLACE, ONE WHEN THE CONSTRUCTION OF THE SEPTIC SYSTEM IS COMPLETED EXCEPT FOR BACKFILLING AND ONE WHEN THE FINISHED GRADING OF THE LOT IS COMPLETED.
 - THE ENTIRE SYSTEM INCLUDING THE BUILDING SEWER SHALL REMAIN EXPOSED FOR THE SECOND INSPECTION AND THE DISTRIBUTION BOX SHALL BE LEVEL AND FILLED WITH WATER. A RESPONSIBLE PERIOD OF NOTIFICATION SHALL BE GIVEN TO THE BOARD OF HEALTH FOR AN EXAMINATION REQUEST.

MAR 30 2023

SOIL ABSORPTION SYSTEM

Septic Approved North Middlesex 5-25-23

See CONDITIONS letter 5-25-2023

CRG INTEGRATED REAL ESTATE SOLUTIONS

200 Barr Harbor Drive
Conshohocken, PA 19248

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CONSTRUCTION NOTES:

1. PROVIDE TWO (2) ALTERNATING PENTAIR MEYERS 3MHW-V3MHW 1.0HP 1750 RPM PUMPS OR EQUAL. (PROVIDE 20'± OF HEAD @ 108±GPM)
2. PROVIDE 5,000 GALLON PRECAST PUMP CHAMBER.
3. PUMP CHAMBER SHALL BE WATERTIGHT CONSTRUCTION AND HAVE MANUFACTURERS QUALITY CONTROL SEAL.
4. PROVIDE A 8,000 GALLON SEPTIC TANK AND A 5,000 GALLON SEPTIC TANK
5. SEPTIC TANKS SHALL BE WATERTIGHT CONSTRUCTION AND HAVE MANUFACTURERS QUALITY CONTROL SEAL.
6. WHEN TANKS ARE PLACED DURING CONSTRUCTION, ADEQUATE PROTECTION FROM FLOATING SHALL BE TAKEN BY THE CONTRACTOR, BY THE USE OF PUMPING GROUNDWATER AND/OR CONSTRUCTION WHEN GROUNDWATER IS LOW. SOIL COVER SHALL BE PLACED ON THE TANKS AS SOON AS POSSIBLE, THE DESIGN ELEVATIONS OF THE TANKS MUST BE MAINTAINED.
7. POWER SUPPLY FOR PUMPS AND ALL ELECTRICAL CONNECTIONS TO BE VERIFIED PRIOR TO INSTALLATION AND PERFORMED BY A LICENSED ELECTRICIAN.
8. THE CONTROL PANEL SHALL INCLUDE A MANUAL ON-OFF, AUTOMATIC ON-OFF SWITCH, VISUAL ALARM, AUDIBLE ALARM, AND AUDIBLE ALARM SILENCER SWITCH, THERE SHALL BE A MINIMUM OF THREE SWITCHES IN THE PUMP CHAMBER.
9. THE ALARM SHALL BE CONNECTED TO A SEPARATE ELECTRICAL CIRCUIT FROM THE PUMP. ALSO THE PUMP ELECTRICAL EQUIPMENT SHALL BE EQUIPPED WITH A TRANSFER SWITCH TO ALLOW CONNECTION TO A PORTABLE GENERATOR.
10. THE PUMPS SHALL BE LOCATED AS CLOSE TO THE ACCESS MANHOLE OF THE PUMP CHAMBER AS POSSIBLE.
11. THE ACCESS MANHOLE SHALL BE CONSTRUCTED TO FINISH GRADE WITH A SECURE COVER OF HEAVY WEIGHT OR LOCKABLE TO PREVENT UNAUTHORIZED ACCESS.
12. PRIOR TO INSPECTION OF THE PUMP SYSTEM, THE DESIGNER SHALL CONDUCT A FLOW RATE TEST TO CONFIRM EQUAL DISTRIBUTION OF EFFLUENT THROUGH LATERALS.

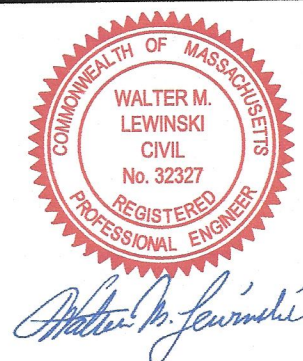
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DRAWN BY: VML
CHECKED BY: PSB
APPROVED BY: PSB

REVISIONS:

REV	DATE	DESCRIPTION
0	1/24/23	ISSUED FOR PERMIT



PREPARED BY:



Engineering Design Consultants, Inc.
32 Turnpike Road
Southborough, Massachusetts
ph: (508) 480-0225 fax: (800) 832-5781

PROJECT:

555 HOPPING BROOK ROAD
HOLLISTON, MASSACHUSETTS
(MIDDLESEX COUNTY)

TITLE:

SOIL ABSORPTION DETAILS

OWNER/APPLICANT:

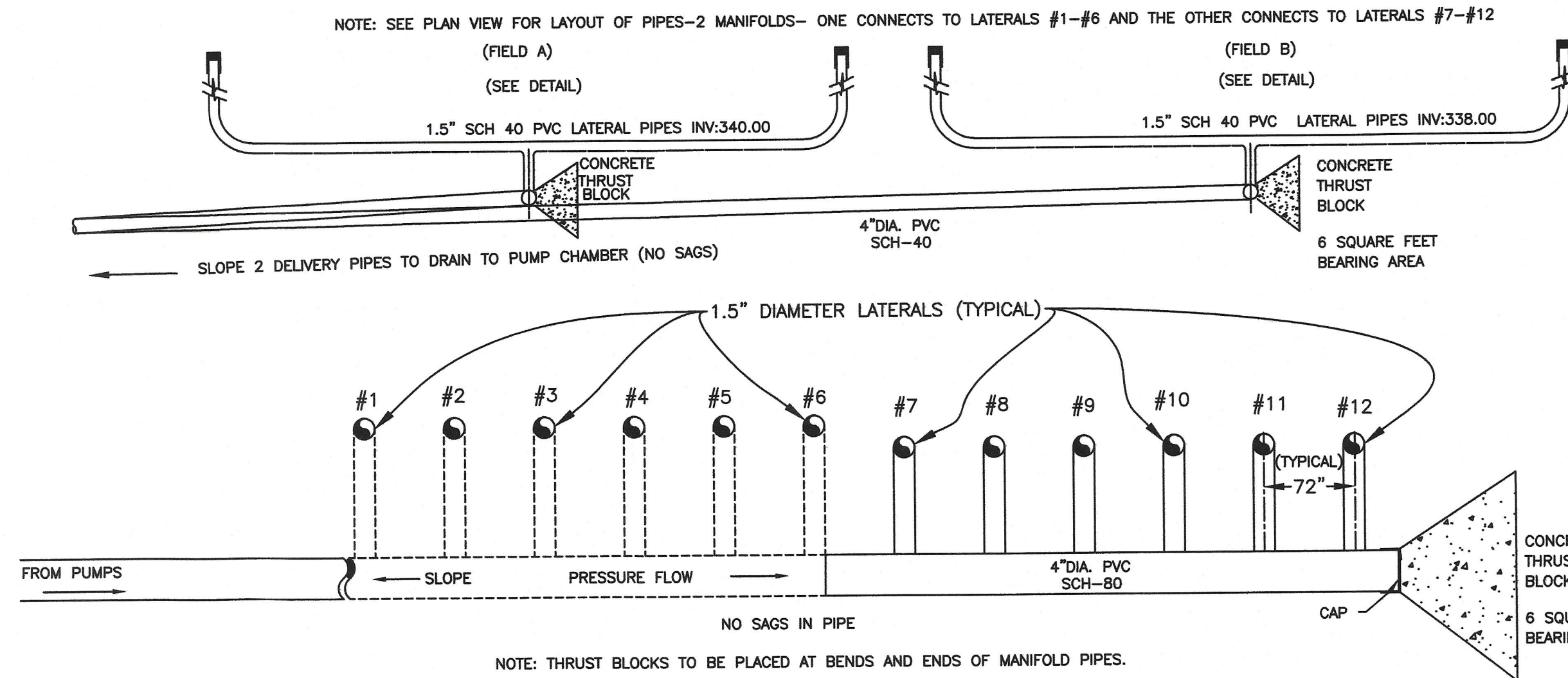
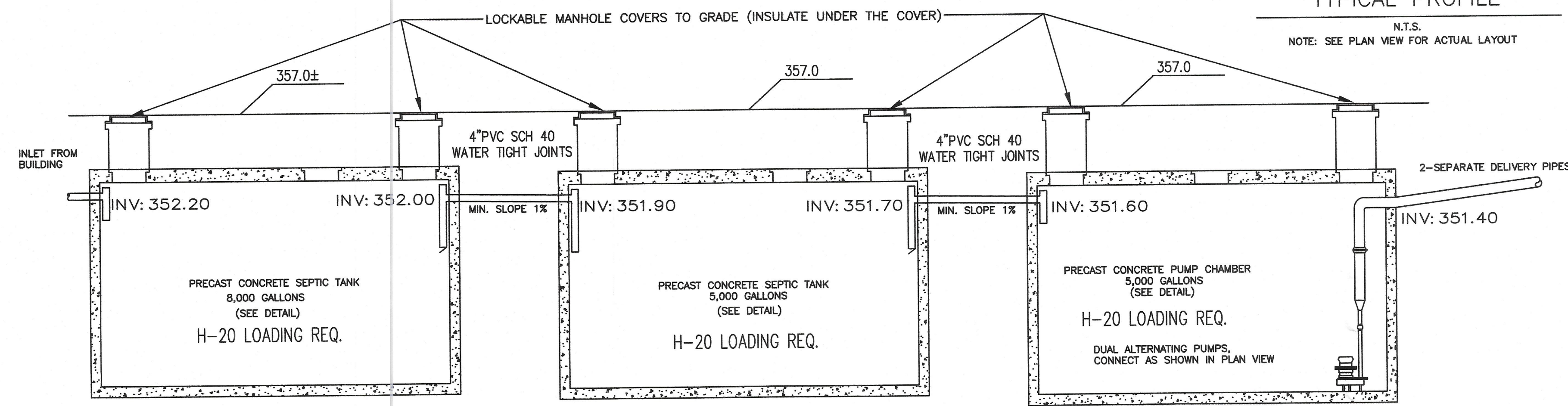
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200 Barr Harbor Drive
Conshohocken, PA 19248

FILE NO: 3780 CRG-SEPTIC
PREDS 2

DATE: JANUARY 24, 2023

PLAN NO: 2 OF 2

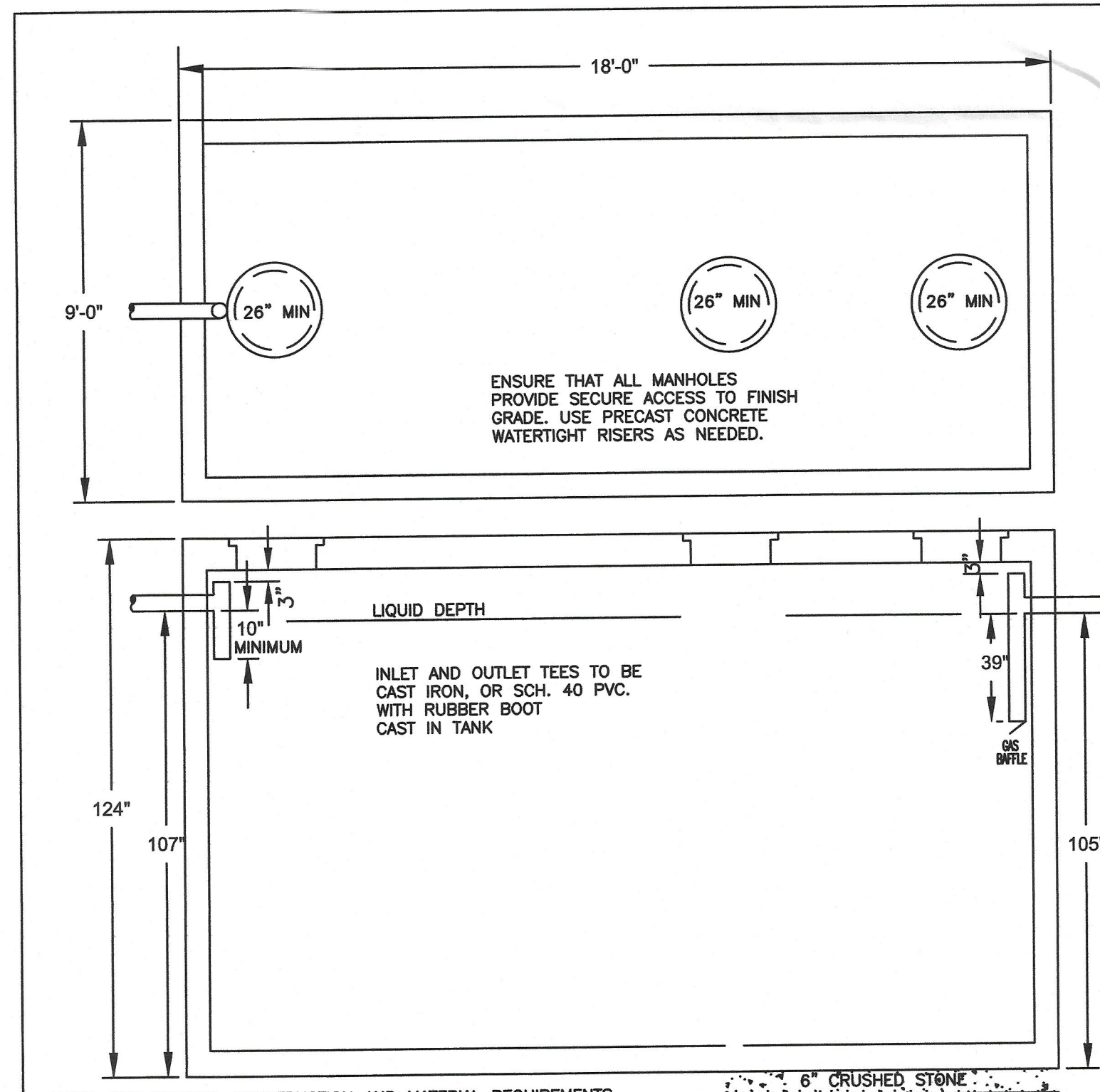
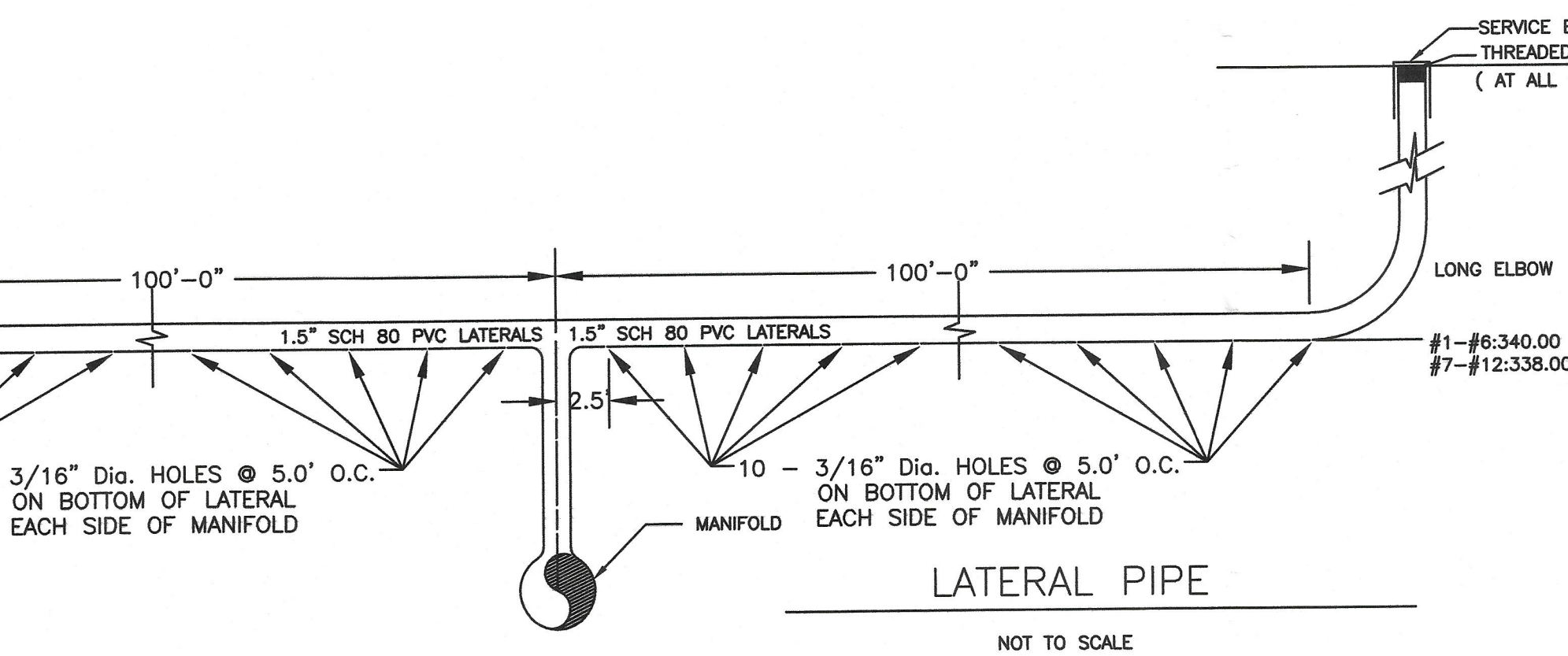
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TYPICAL TRENCH SECTION

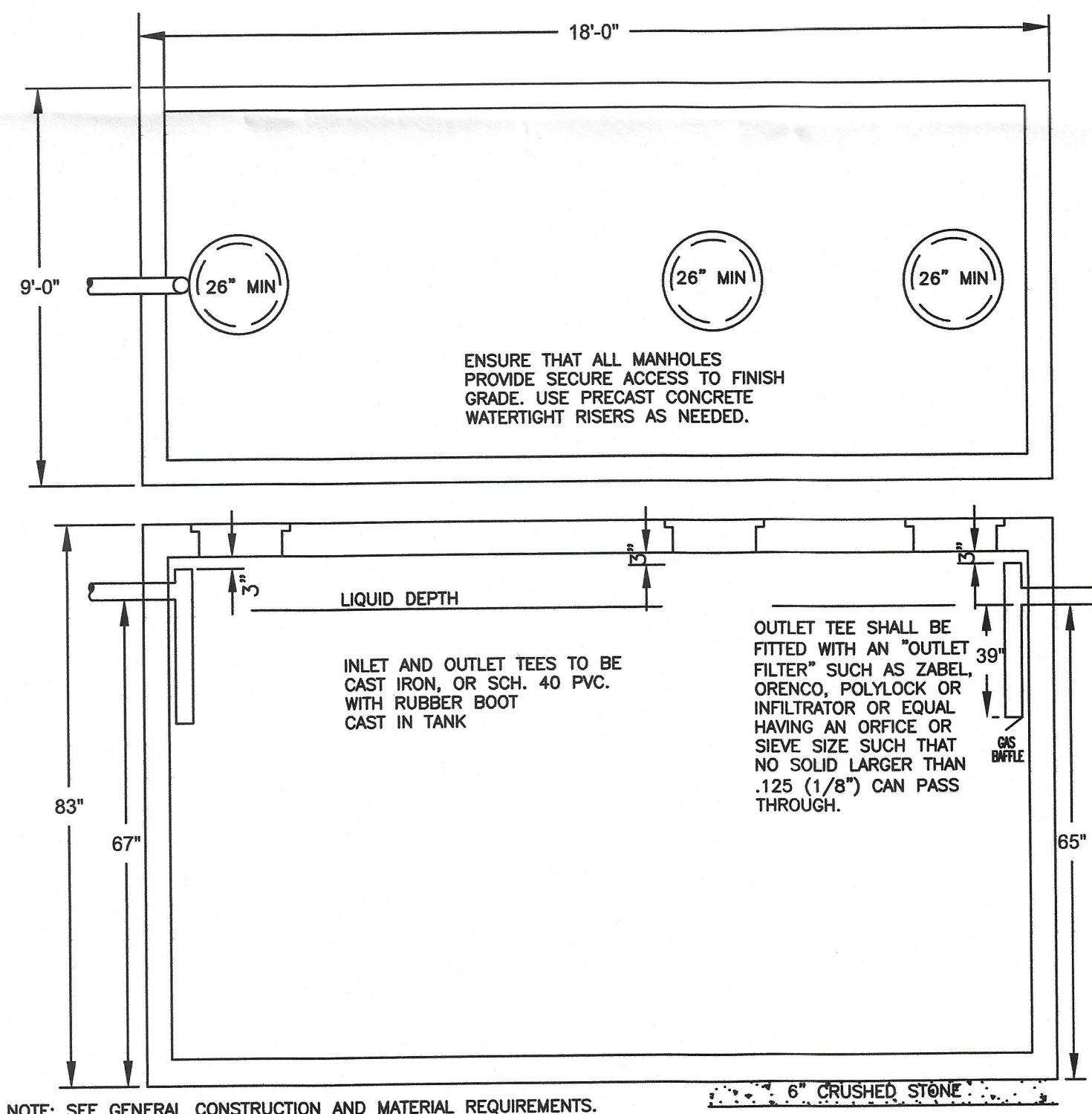
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NOTE: SEE GENERAL CONSTRUCTION AND MATERIAL REQUIREMENTS.



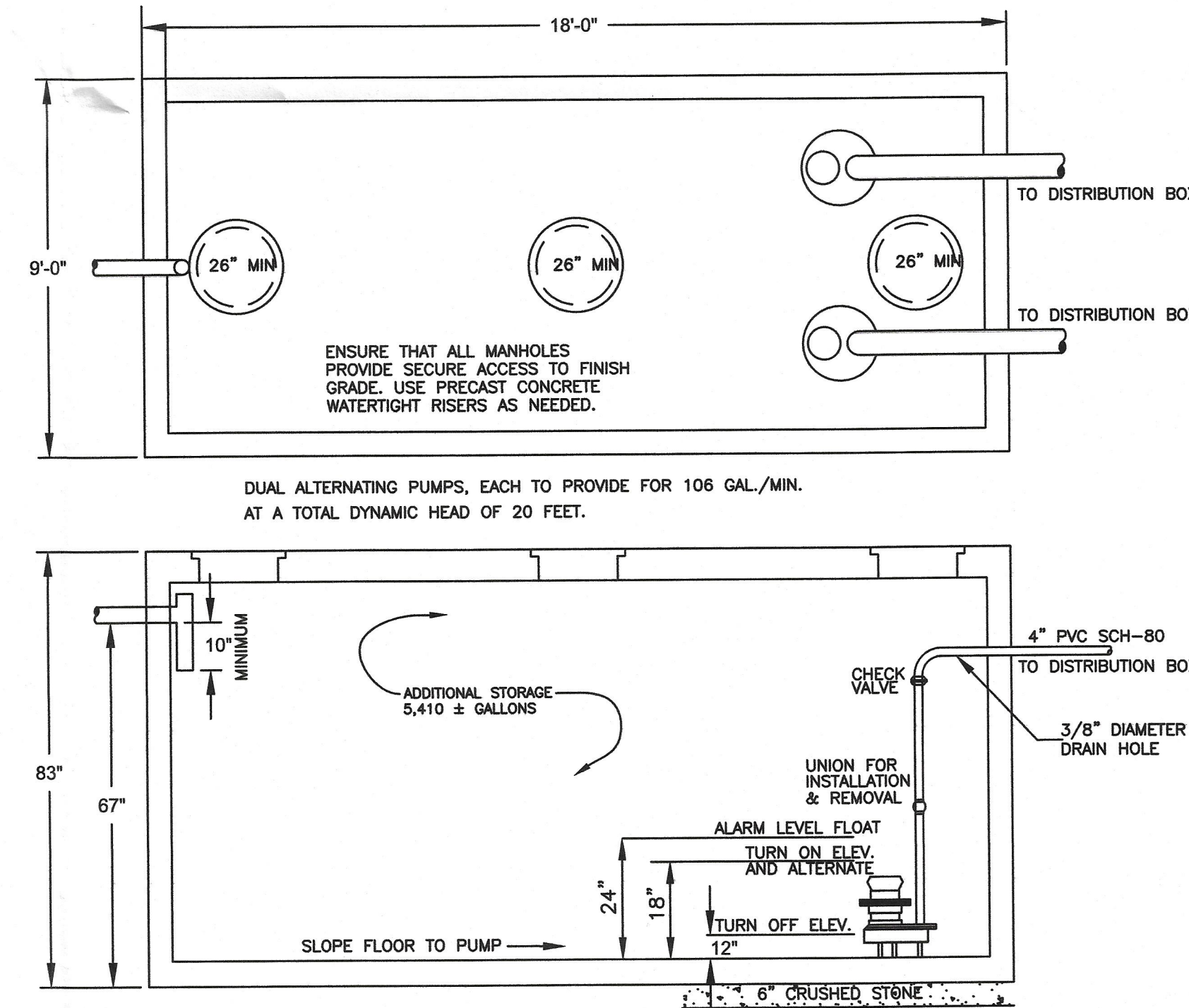
PRECAST CONCRETE SEPTIC TANK

8,000 GALLONS
WILLIAM N. LAMARRE CONCRETE PRODUCTS - COMMERCIAL H2O 8,000 GAL. PRECAST SEPTIC TANK
LIQUID CAPACITY = 9,435 GALLONS



PRECAST CONCRETE SEPTIC TANK

5,000 GALLONS
WILLIAM N. LAMARRE CONCRETE PRODUCTS - H2O COMMERCIAL GRADE
LIQUID CAPACITY = 6,035 GALLONS



PRECAST CONCRETE PUMP CHAMBER

5,000 GALLONS
WILLIAM N. LAMARRE CONCRETE PRODUCTS - H2O COMMERCIAL
LIQUID CAPACITY = 6,035 GALLONS
1,248 GALLONS PER VERTICAL FOOT
3 DOSES PER DAY AT 625 GAL PER DOSE = 0.5\"/>

MEASUREMENTS TO BE TAKEN FROM BOTTOM OF PUMP CHAMBER
PUMP OFF = 12\"/>