

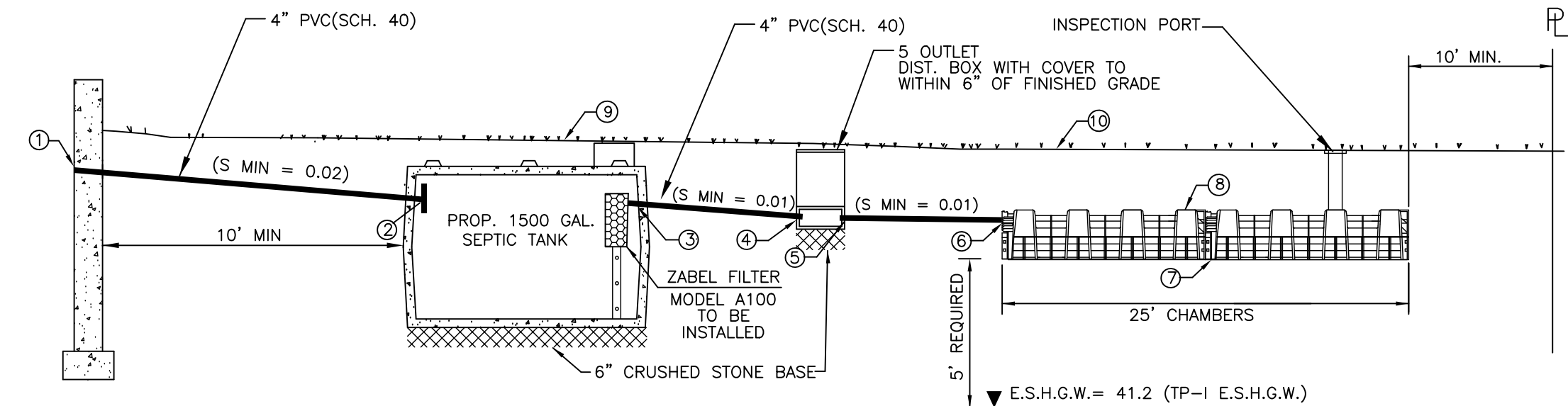
VICINITY MAP  
NO SCALE



**SOIL TEST DATA**

SOIL TESTING AND EVALUATION BY: JAMES D. GARFIELD, P.E., S.E.#14162  
SOIL TESTING WITNESSED BY: JOHN CHESIA, P.E.  
DATE: SEPTEMBER 1, 2022 & SEPTEMBER 23, 2022

TP-A	APPROX. GRADE EL. 50.8	TP-B	APPROX. GRADE EL. 54.0	TP-C	TESTPIT ABANDONED	TP-D	APPROX. GRADE EL. 52.4	TP-E	APPROX. GRADE EL. 51.5
EL. 50.1	A HORIZON SANDY LOAM 10YR 3/2	EL. 53.3	A HORIZON SANDY LOAM 10YR 3/2			EL. 51.6	A HORIZON SANDY LOAM 10YR 3/2	EL. 50.8	A HORIZON SANDY LOAM 10YR 3/2
EL. 48.8	B HORIZON SANDY LOAM 10YR 5/6	EL. 52.7	B HORIZON LOAMY SAND 10YR 5/6			EL. 50.2	B HORIZON LOAMY SAND 10YR 5/6	EL. 49.7	B HORIZON LOAMY SAND 10YR 5/6
EL. 46.3	C HORIZON SANDY LOAM 2.5Y 6/2	EL. 47.3	C HORIZON LOAMY SAND 2.5Y 6/2			EL. 45.1	C HORIZON LOAMY SAND 2.5Y 6/2	EL. 47.0	C HORIZON LOAMY SAND 2.5Y 6/2
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: 18 MPI @ 33"-51" ESHGW: 54" (EL. 46.3)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: 9 MPI @ 40"-58" ESHGW: 77" (EL. 47.6)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: 5 MPI @ 26"-44" ESHGW: 88" (EL. 45.1)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: 8 MPI @ 53"-71" ESHGW: 52" (EL. 47.9)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: 5 MPI @ 65"-83" ESHGW: 103" (EL. 41.2)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: 14 MPI @ 76"-94" ESHGW: >125" (EL. 40.1)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: NONE ESHGW: 108" (EL. 40.0)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: NONE ESHGW: 108" (EL. 40.0)									
WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: NONE ESHGW: 108" (EL. 40.0)									
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WEEPING OBSERVED: NONE MOTTLING OBSERVED: NONE PERC. RATE: NONE ESHGW: 108" (EL. 40.0)									



**SCHEDULE OF ELEVATIONS**

1. INV. OF PIPE AT FOUNDATION = 53.5± (MIN.)	6. INV. OF 4" PIPE AT CHAMBER INLET = 46.79
2. INV. OF PIPE AT SEPTIC TANK INLET = 53.25	7. BOTTOM OF CHAMBER = 46.20
3. INV. OF PIPE AT SEPTIC TANK OUTLET = 53.00	8. TOP OF CHAMBER (BREAKOUT) = 47.28
4. INV. OF PIPE AT DIST. BOX INLET = 47.02	9. FINISHED GRADE OVER SEPTIC TANK = 55.0(MIN) - 57.3(MAX)
5. INV. OF PIPE AT DIST. BOX OUTLET = 46.85	10. FINISHED GRADE OVER LEACHING CHAMBERS = 48.3(MIN) - 50.3(MAX)

**GENERAL NOTES**

- SEPTIC SYSTEM INSTALLATION CONTRACTORS SHALL BE LICENSED BY THE BOARD OF HEALTH AND MUST COMPLY WITH ALL REQUIREMENTS OF THE BOARD OF HEALTH DISPOSAL WORKS CONSTRUCTION PERMIT AND ANY CONDITIONS, IF ISSUED BY THE CONSERVATION COMMISSION.
- ALL CONSTRUCTION MUST COMPLY WITH TITLE 5 OF THE STATE ENVIRONMENTAL CODE 310 CMR 15 & THE ANY LOCAL BOARD OF HEALTH SUPPLEMENTAL REGULATIONS.
- THERE SHALL BE NO CHANGES MADE IN THIS PLAN WITHOUT THE WRITTEN PERMISSION OF THE BOARD OF HEALTH AND DESIGN ENGINEER.
- ANY CHANGE IN SITE CONDITIONS, DISCREPANCIES, ERRORS OR OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF MORSE ENGINEERING PRIOR TO THE COMMENCEMENT OF WORK.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH TITLE 5 (310 CMR 15) AND THE LOCAL BOARD OF HEALTH REQUIREMENTS TO THE FULLEST EXTENT PRACTICABLE. NO GUARANTEE TO THE SYSTEMS PERFORMANCE IS EXPRESSED OR IMPLIED.
- SOIL TEST DATA SHOWN IS LIMITED TO THE CONDITIONS EXISTING AT THE SUBJECT TEST PIT LOCATION ONLY. IF DIFFERENT SOIL CONDITIONS ARE FOUND IN THE AREA OF THE PROPOSED SOIL ABSORPTION SYSTEM THEY SHALL BE BROUGHT TO THE ATTENTION OF MORSE ENGINEERING IMMEDIATELY.
- THE CONTRACTOR SHALL NOTIFY DISEASE PRIOR TO ANY EXCAVATION AT THE SUBJECT PROPERTY. IT IS SPECIFICALLY PROVIDED THAT THE SUBSURFACE UTILITIES SHOWN ARE APPROXIMATE ONLY AND HAVE BEEN COMPILED FROM AVAILABLE RECORDS AND OBSERVABLE SITE FEATURES. UTILITIES OTHER THAN THOSE SHOWN MAY BE PRESENT AT THIS LOCATION.
- THIS PLAN HAS BEEN PREPARED SPECIFICALLY AS A SEPTIC SYSTEM DESIGN AND IS NOT TO BE USED TO ESTABLISH PROPERTY LINES OR BUILDING SETBACKS. PROPERTY LINES AND BUILDING LOCATIONS ARE GRAPHIC ONLY, PROPERTY LINES NOT HAVING BEEN VERIFIED. NO REPRESENTATION OR CERTIFICATION AS TO THE ACCURACY OF THOSE SHOWN IS IMPLIED.
- CONTRACTOR TO VERIFY AND ENSURE THAT ALL INTERIOR PLUMBING IS DIRECTED INTO PROPOSED SEPTIC SYSTEM, ANY VARIATIONS FROM THE DESIGN AS SHOWN SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER.

**CONSTRUCTION NOTES**

- CONTRACTOR SHALL COORDINATE INSPECTION TIMES WITH THE LOCAL BOARD OF HEALTH AND DESIGN ENGINEER 24 HOURS IN ADVANCE OF THE FOLLOWING INSPECTIONS:
  - AFTER EXCAVATION OF ALL UNSUITABLE MATERIAL FROM SOIL ABSORPTION AREA.
  - PRIOR TO COVERING THE CONSTRUCTED SYSTEM.
  - AFTER SYSTEM BACKFILL AND FINAL GRADING.
- ALL CONSTRUCTION MUST COMPLY WITH TITLE 5 OF THE STATE ENVIRONMENTAL CODE 310 CMR 15 & THE ANY LOCAL BOARD OF HEALTH SUPPLEMENTAL REGULATIONS.
- ALL TIGHT-JOINT PLUMBING SHALL BE CONSTRUCTED OF SCH. 40 PVC PIPE WITH CLEANED AND CEMENTED FITTINGS, UNLESS OTHERWISE NOTED.
- ALL PRECAST/PIPE CONSTRUCTION JOINTS AND FITTINGS SHALL BE MADE WATERTIGHT BY PARGING WITH HYDRAULIC CEMENT.
- THE CONTRACTOR SHALL PROVIDE THAT A SIEVE ANALYSIS OF THE TITLE 5 PERC SAND UTILIZED FOR FILL TO VERIFY THAT IT MEETS THE REQUIREMENTS OF 310 CMR 15.255(3). TITLE 5 SAND FILL SHALL COMPLY WITH THE FOLLOWING:
 

SIEVE SIZE	PARTICLE SIZE
#4	4.75 mm
#50	0.30 mm
#100	0.15 mm
#200	0.075 mm
- THE CONTRACTOR SHALL PREVENT ANY HEAVY CONSTRUCTION MACHINERY AND/OR TRUCKS FROM DRIVING OVER THE PROPOSED SOIL ABSORPTION SYSTEM LOCATION UNTIL FINISHED GRADE IS ESTABLISHED.
- THE CONTRACTOR SHALL INSTALL MAGNETIC TAPE OVER SYSTEM PIPING & COMPONENTS
- THE DESIGN ENGINEER SHALL CERTIFY AND PREPARE AN "AS-BUILT" PLAN FOR SUBMITTAL TO THE BOARD OF HEALTH UPON SEPTIC SYSTEM COMPLETION.
- ALL DISTURBED AREAS SHALL BE RESTORED WITH 4" LOAM & SEED POST CONSTRUCTION.
- ALL SEPTIC SYSTEM COMPONENTS TO BE STAKED OUT BY PROFESSIONAL LAND SURVEYOR PRIOR TO SYSTEM INSTALLATION.

**SITE NOTES**

- LOCUS DOES NOT LIE WITHIN A DEP DESIGNATED ZONE II AREA.
- ALL KNOWN WETLANDS WITHIN 100 FEET OF THE PROPOSED PROJECT ARE SHOWN.
- PROPERTY LINE DATA WAS OBTAINED FROM PLAN ENTITLED, "APPROVAL NOT REQUIRED DIVISION OF LAND, (ASSESSOR'S PARCELS: 65-0-25 & 65-0-49), 174 & 170 CHIEF JUSTICE CUSHING HIGHWAY, HINGHAM, MASSACHUSETTS," PREPARED BY MORSE ENGINEERING COMPANY, INC., DATED MAY 27, 2022.
- ALL RECORDED WELLS OBSERVED WITHIN 500'-FT. OF THE PROPOSED SYSTEM ARE SHOWN.
- LOCUS LIES IN FEMA FLOOD ZONE "X" AS SHOWN ON FEMA COMMUNITY MAP PANEL 25023C 0101K DATED JULY 6, 2021.
- ALL KNOWN EASEMENTS ON THE SUBJECT PROPERTY ARE SHOWN.
- ALL KNOWN ADJACENT SEPTIC SYSTEMS TO THE PROPOSED SYSTEM ARE SHOWN.

**\*CONTRACTOR TO BE INFILTRATOR CERTIFIED\***

PROJECT: 170 CHIEF JUSTICE CUSHING HIGHWAY (ASSESSOR'S PARCEL: 65-0-25) HINGHAM, MASSACHUSETTS		DESIGN: JDG CHECK: JMH JOB NO: 18-249 DATE: 12/13/2022 REV:	
APPLICANT: JOSEPH MAHONEY		PLAN TITLE: SITE & SEPTIC DESIGN PLAN	
SHEET: 1 OF 2		1/6/2023	

**CONSTRUCTION SCHEDULE**

- INSTALL EROSION CONTROLS.
- TEMPORARILY CUT AND CAP UTILITY SERVICES.
- DEMOLISH AND REMOVE GARAGE.
- CUT AND REMOVE TREES INDICATED TO BE REMOVED.
- REMOVE STUMPS.
- INSTALL BUILDING FOUNDATION.
- ROUGH GRADING.
- INSTALL STORMWATER CONTROLS.
- INSTALL SEPTIC SYSTEM
- CONNECT UTILITIES.
- BINDER COURSE PAVING.
- FINAL GRADING AND LOAMING.
- LANDSCAPING AND HARDSCAPING.
- FINAL PAVING.
- INSPECT DOWNGRADING AREAS AND REMOVE EROSION CONTROLS WHEN THE PROPERTY IS FULLY STABILIZED.

**LAND DISTURBANCE**

DISTURBANCE TOTAL = 25,760± S.F.  
DISTURBANCE >10% SLOPES = 12,638± S.F.

**CRITICAL ROOT ZONE & TREE PROTECTION**

THE "CRITICAL ROOT ZONE" (CRZ) OF TREES WITHIN THE "10' TREE YARD" MUST BE LEFT UNDISTURBED IN ORDER TO PRESERVE A SUFFICIENT ROOT MASS TO GIVE A TREE A REASONABLE CHANCE OF SURVIVAL. THE CRZ IS REPRESENTED BY A CONCENTRIC CIRCLE CENTERING ON THE TREE'S TRUNK AND EXTENDING OUTWARD TOWARDS THE TREE'S DRIPLINE. THE CRZ CIRCLE IS MEASURED AS THE TREE CALIPER MULTIPLIED BY 12.

THIS SINGLE FAMILY HOME RAZE AND REBUILD PROJECT DOES NOT PROPOSE ANY WORK WITHIN THE "CRITICAL ROOT ZONE" TO ANY TREES WITHIN THE "10' TREE YARD".

**ZONING TABLE**

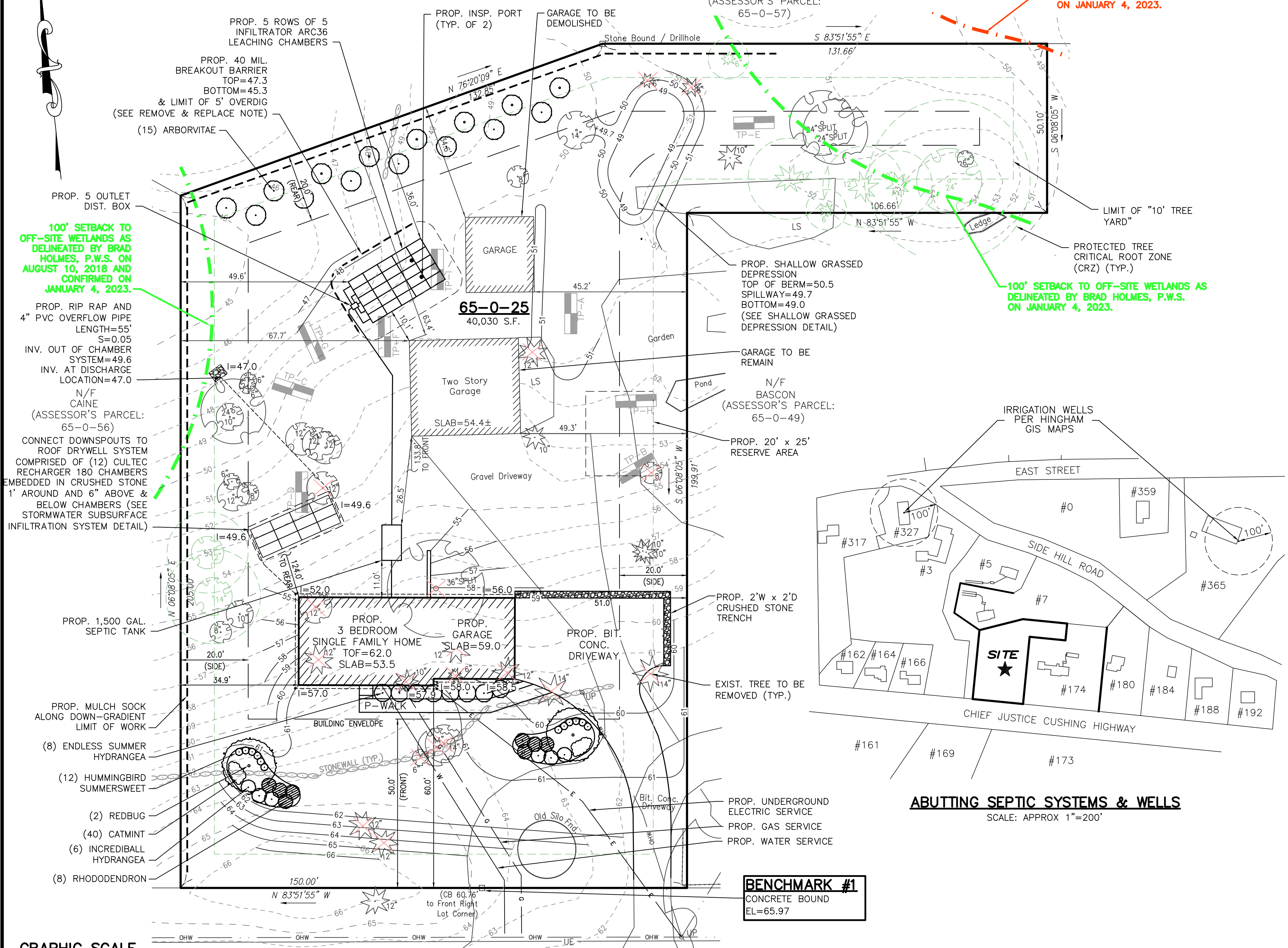
RESIDENCE C ZONE	REQUIRED	EXISTING	PROPOSED
MIN. LOT AREA	40,000 S.F.	40,030 S.F.	NO CHANGE
FRONTAGE (FT.)	150'	150.00'	NO CHANGE
FRONT YARD SETBACK (FT.)	50'	133.8'	60.0'
SIDE YARD SETBACK (FT.)	20'	45.2'	34.9'
REAR YARD SETBACK (FT.)	20'	34.6'	63.4'
HEIGHT (FT.)	35'	<35'	SEE ARCHITECTURAL PLANS

**DESIGN DATA**

- BUILDING TYPE: RESIDENTIAL
- NO. OF BEDROOMS: 3
- DESIGN FLOW: 3 BEDROOMS x 110 G.P.D./BED = 330 G.P.D.
- DESIGN PERCOLATION RATE: 14 MPI (TP-F)
- GARBAGE DISPOSAL: NO
- SEPTIC TANK DESIGN REQUIREMENT: 200% DESIGN FLOW  
330 X 2 = 660 GAL. (USE 1500 GAL. SEPTIC TANK)
- LEACH AREA REQUIREMENTS GALLONS/SQ. FT. (CLASS II SOILS)  
BOTTOM: 0.56 GAL./S.F. SIDE: 0.56 GAL./S.F.
- TOTAL LEACH AREA REQUIRED:  
TITLE 5: 330 GPD / (0.56 GPD/S.F.) = 589.3 S.F.  
PROVIDED: 5 ROWS OF 5 INFILTRATOR ARC-36 LEACHING CHAMBERS  
25 CHAMBERS x 5'L (EA.) x 4.8 S.F./L.F.\* = 600 S.F.  
CAPACITY: 600 S.F. x 0.56 GPD/S.F. = 336 GPD  
\*EFFECTIVE AREA PER GENERAL USE CERTIFICATION ISSUED BY DEP.
- TOTAL RESERVE AREA REQUIRED:  
TITLE 5: 330 GPD / (0.66 GPD/S.F.) = 500 S.F.  
PROVIDED: 20' X 25' RESERVE AREA = 500 S.F.

**\*\*REMOVE & REPLACE\*\***

CONTRACTOR TO EXCAVATE ALL UNSUITABLE MATERIAL TO A DEPTH OF 48"± (TO C HORIZON) & REPLACE WITH CLEAN TITLE 5 PERC SAND TO EL. = 47.28 DIRECTLY UNDER AND WITHIN 5'-FT. HORIZONALLY OF THE PROPOSED SOIL ABSORPTION SYSTEM.  
(APPROX. SAND VOL. = 1.2% x 35'L x 24.15'W x (47.28-46.5) / 27 = 29 C.Y. ±



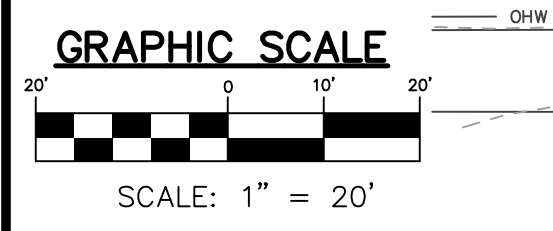
**ABUTTING SEPTIC SYSTEMS & WELLS**

SCALE: APPROX 1"=200'

**BENCHMARK #1**  
CONCRETE BOUND  
EL.=65.97

**HINGHAM BOARD OF HEALTH SUPPLEMENTARY RULES & REGULATIONS FOR THE DISPOSAL OF SANITARY SEWAGE**

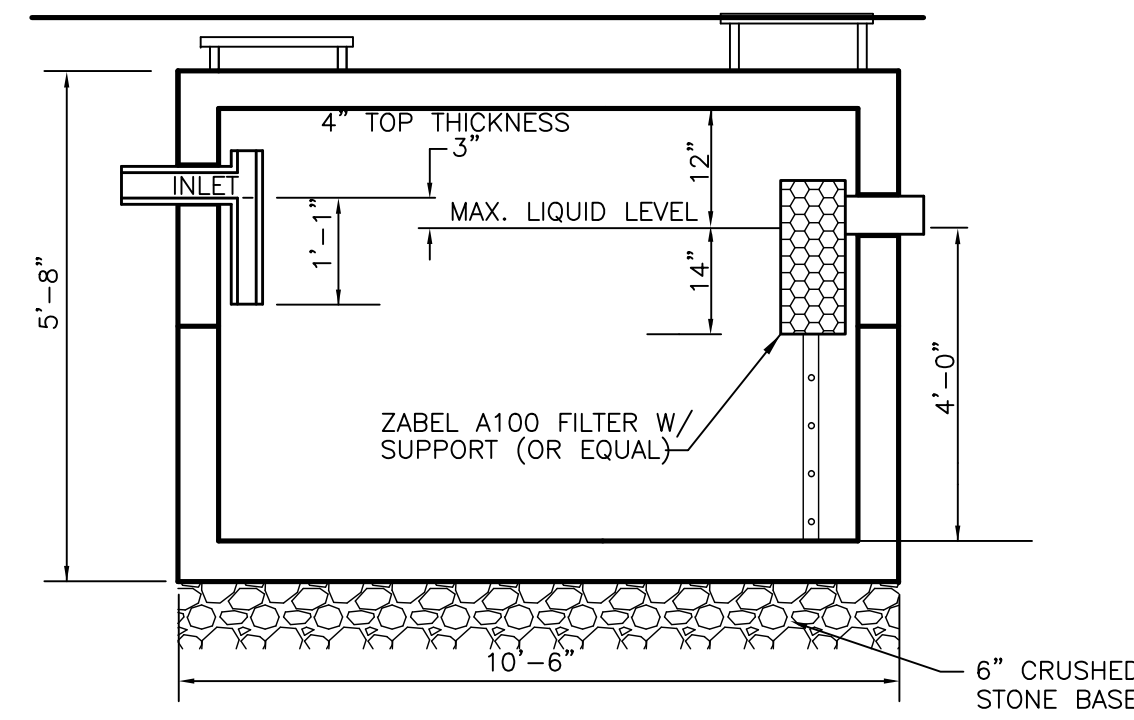
SECTION VIII(1): TO ALLOW A REDUCTION FROM 5' (REQ'D) TO 2.5' (PROP.) OF NATURALLY OCCURRING PERVIOUS STRATA ABOVE THE MAXIMUM GROUNDWATER ELEVATION WITHIN THE PROPOSED RESERVE AREA.



CHIEF JUSTICE CUSHING HIGHWAY  
(PUBLIC - 80' WIDE) (STATE HIGHWAY LAYOUT)

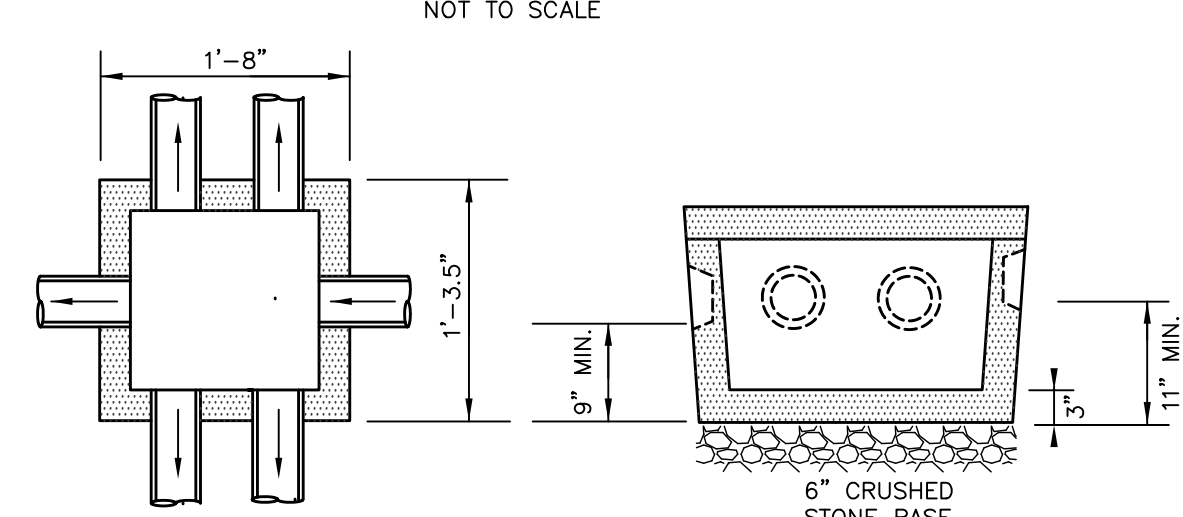


**1,500 GAL. SEPTIC TANK**



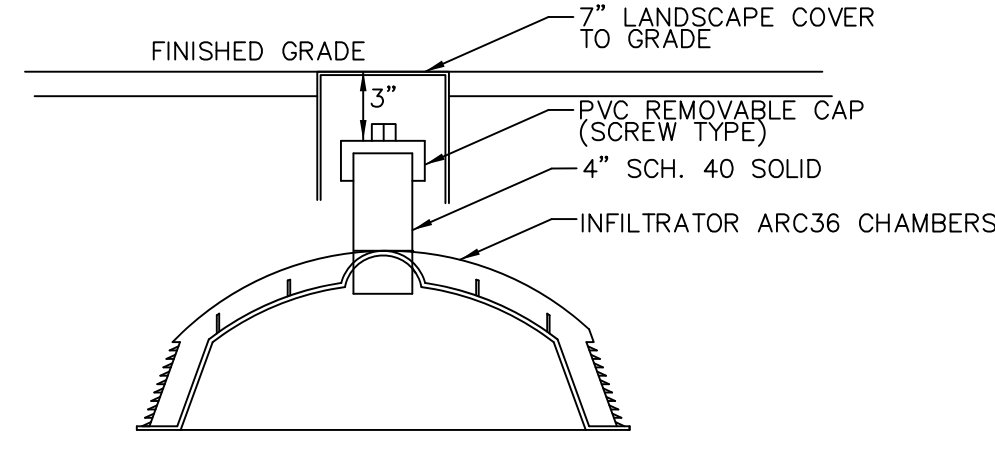
1. THE SEPTIC TANK INLET COVER SHALL BE EXTENDED WITHIN 6" OF FINISHED GRADE & OUTLET COVER SHALL BE EXTENDED TO FINISHED GRADE & EQUIPPED WITH 20" DIA. CAST IRON FRAME & COVER.
2. ALL PIPE CONNECTION AND CONSTRUCTION JOINTS SHALL BE SEALED WITH HYDRAULIC CEMENT.
3. SEPTIC TANK SHALL BE INSTALLED ON A LEVEL 6" CRUSHED STONE BASE.
4. OUTLET SHALL BE EQUIPPED WITH A ZABEL A100 EFFLUENT FILTER (OR APPROVED EQUAL).

**5-OUTLET DISTRIBUTION BOX**



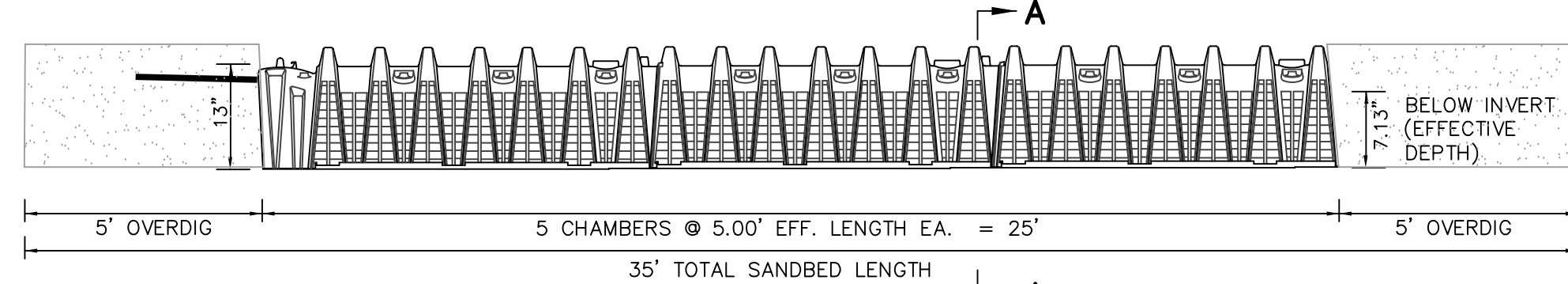
- NOTES:
1. DISTRIBUTION BOX COVER SHALL BE EQUIPPED WITH RISERS AS NECESSARY TO BRING THE COVER TO WITHIN 6" OF FINISHED GRADE.
  2. ALL PIPE CONNECTION AND CONSTRUCTION JOINTS SHALL BE SEALED WITH HYDRAULIC CEMENT.
  3. DISTRIBUTION BOX TO BE INSTALLED ON A LEVEL 6" CRUSHED STONE BASE.
  4. THE FIRST 2 FT. OF PIPE EXITING THE DISTRIBUTION BOX SHALL BE INSTALLED LEVEL.

**INSPECTION PORT**

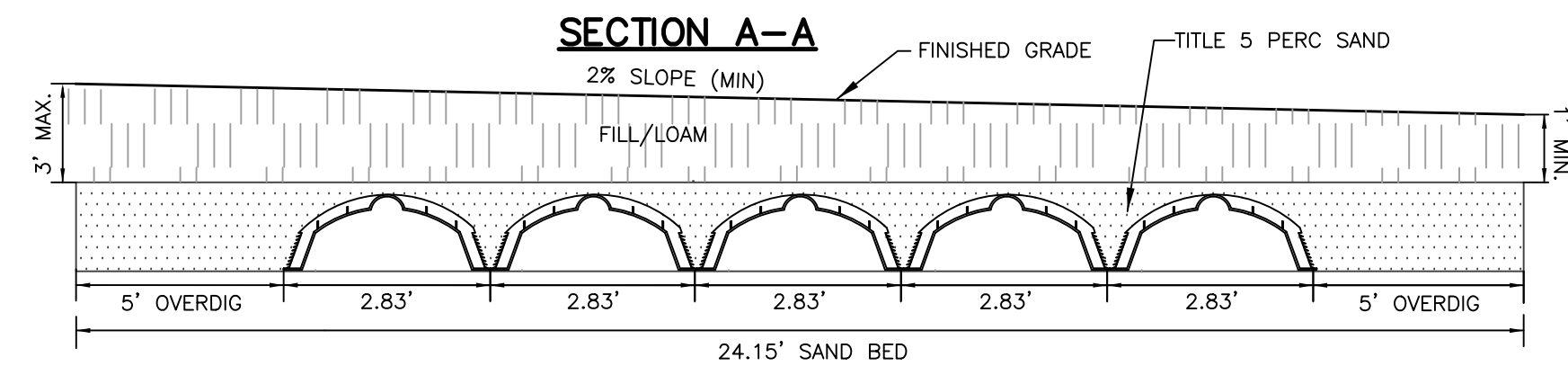


\*CONTRACTOR TO PROVIDE 2 INSPECTION PORTS\*

**INFILTRATOR ARC36 LEACHING CHAMBERS**

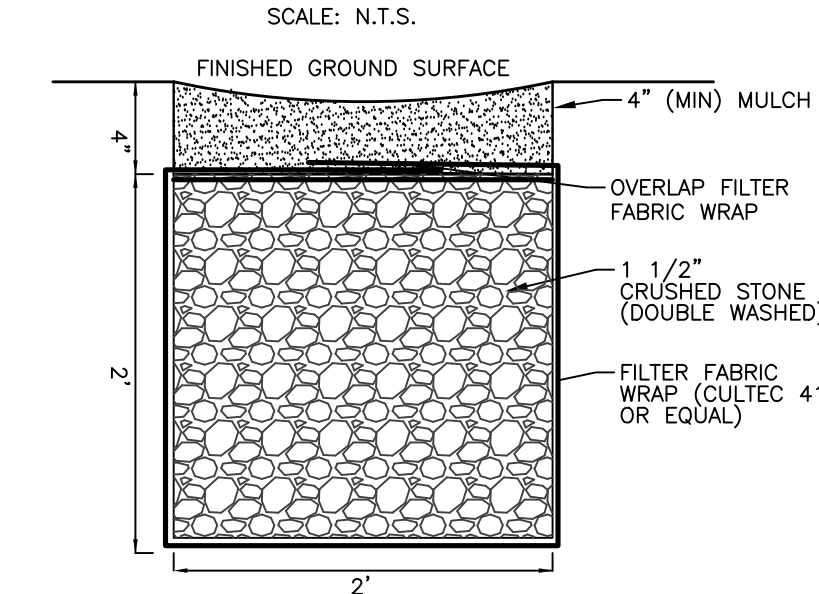


**SECTION A-A**

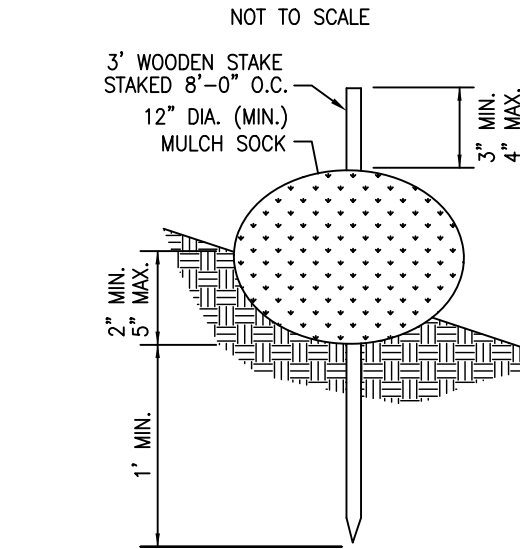


- NOTES:
- 1.) NO STONE BELOW OR AROUND CHAMBERS IS REQUIRED.
  - 2.) BACKFILL CHAMBERS WITH CLEAN COARSE SAND IN ACCORDANCE WITH 310 CMR 15.255 (3) TO THE TOP OF THE CHAMBER.
  - 3.) DO NOT BACKFILL WITH ANY STONES 3" OR LARGER AGAINST CHAMBERS.
  - 4.) CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

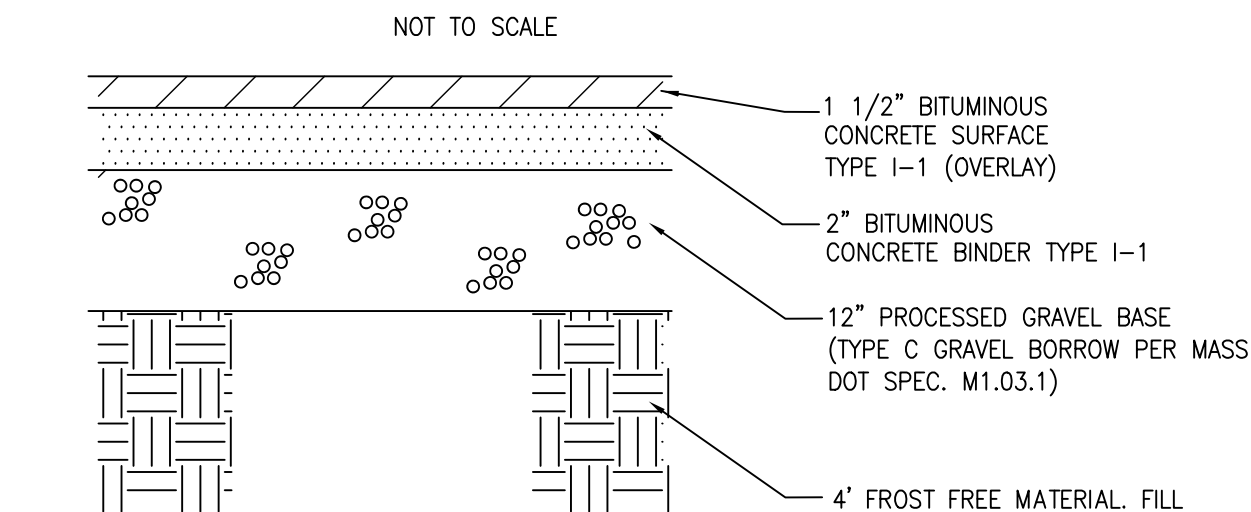
**CRUSHED STONE TRENCH DETAIL**



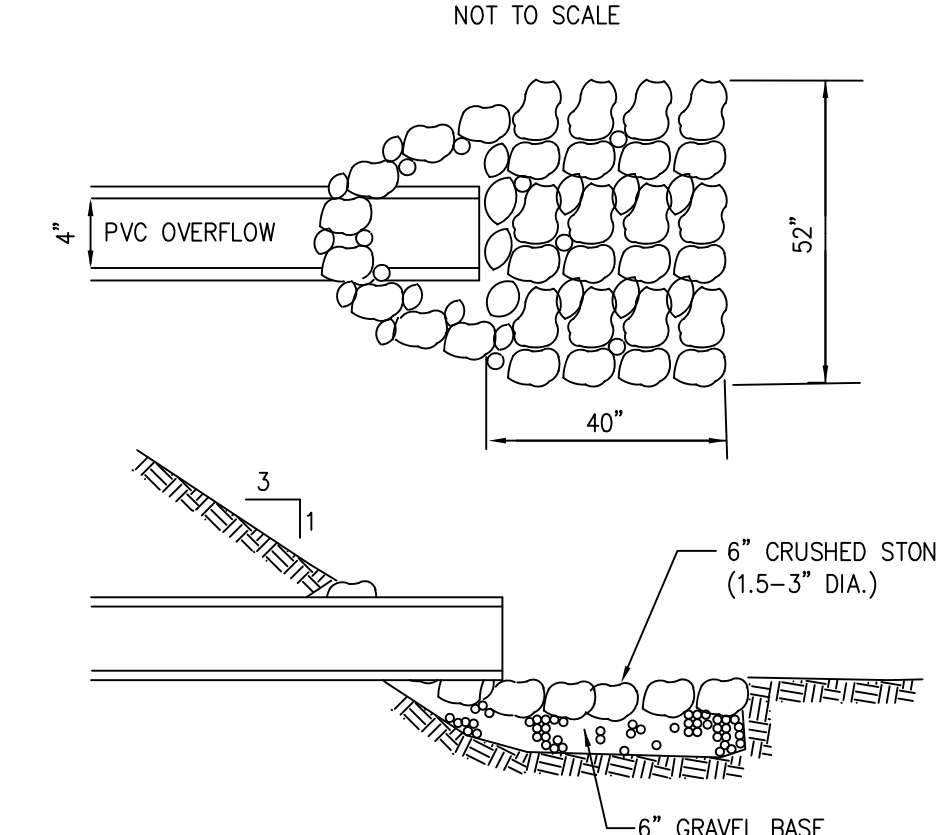
**STAKED MULCH SOCK DETAIL**



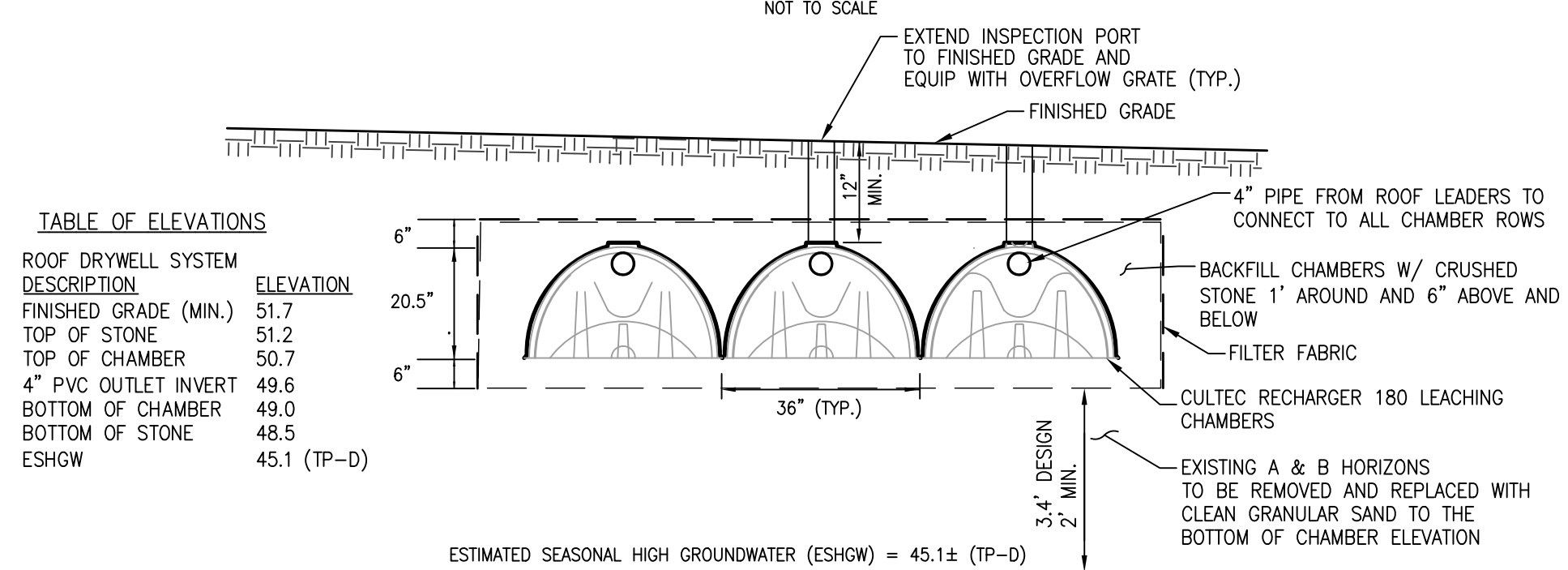
**STANDARD BITUMINOUS CONCRETE PAVEMENT DETAIL**



**RIP RAP DETAIL**



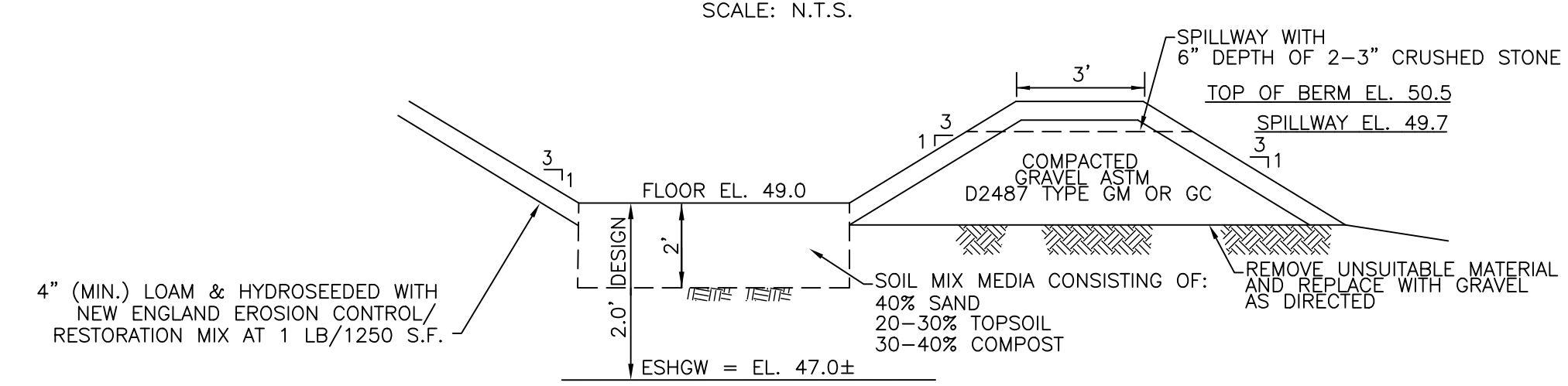
**STORMWATER SUBSURFACE INFILTRATION SYSTEM**



DESCRIPTION	ELEVATION
ROOF DRYWELL SYSTEM	
FINISHED GRADE (MIN.)	51.7
TOP OF STONE	51.2
TOP OF CHAMBER	50.7
4" PVC OUTLET INVERT	49.6
BOTTOM OF CHAMBER	49.0
BOTTOM OF STONE	48.5
ESHW	45.1 (TP-D)

- NOTE:
1. ALL ROOF LEADERS SHALL BE EQUIPPED WITH DOWNSPOUT STRAINERS.
  2. NO CONSTRUCTION ACTIVITY (TRAFFIC) SHALL BE ALLOWED OVER THE LEACHING DRY WELL AREAS.
  3. NO CONSTRUCTION SURFACE WATER OR DEWATERING DISCHARGES SHALL BE DISCHARGED INTO THE DRYWELL STRUCTURES OR DRYWELL SITE LOCATIONS.
  4. DRYWELLS SHALL BE LOCATED A MINIMUM OF 10' FROM FOUNDATIONS & 10' FROM PROPERTY LINES.
  5. SOILS WITHIN AREA OF PROPOSED SUBSURFACE INFILTRATION SYSTEM SHALL NOT BE COMPACTED PRIOR TO CONSTRUCTION.

**SHALLOW GRASSED DERESSION DETAIL**



	PREPARED BY:	
	PROJECT:	
APPLICANT:	JOSEPH MAHONEY	DESIGN: JDG
PLAN TITLE:	SITE & SEPTIC DESIGN PLAN	CHECK: JMH
		JOB NO: 21-342
		DATE: 12/13/2022
		REV:
		1/6/2023
		SHEET: 2 OF 2