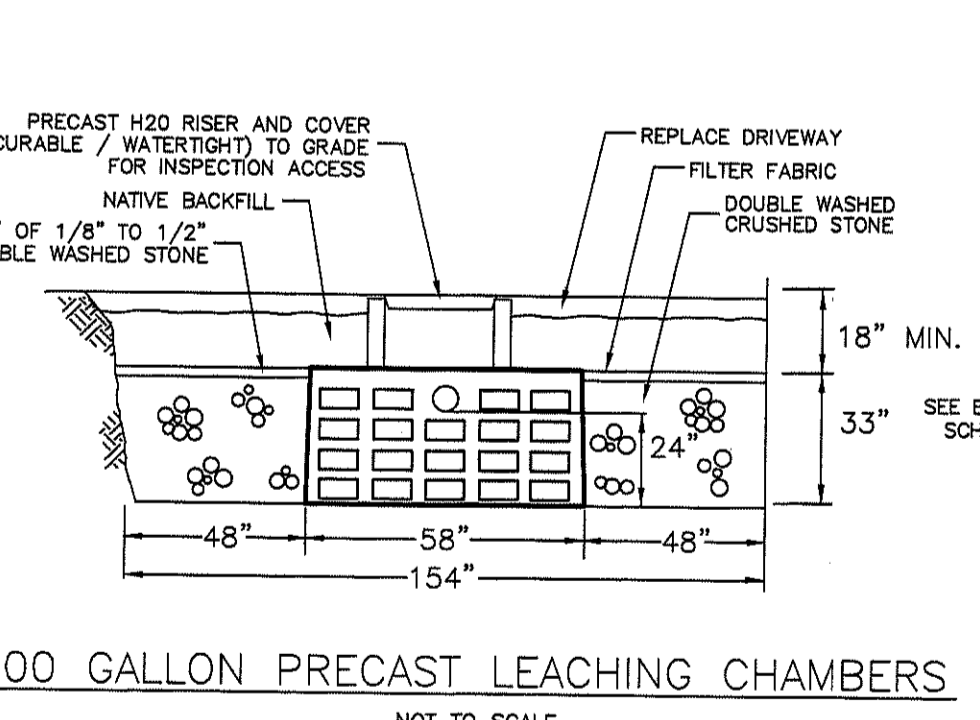
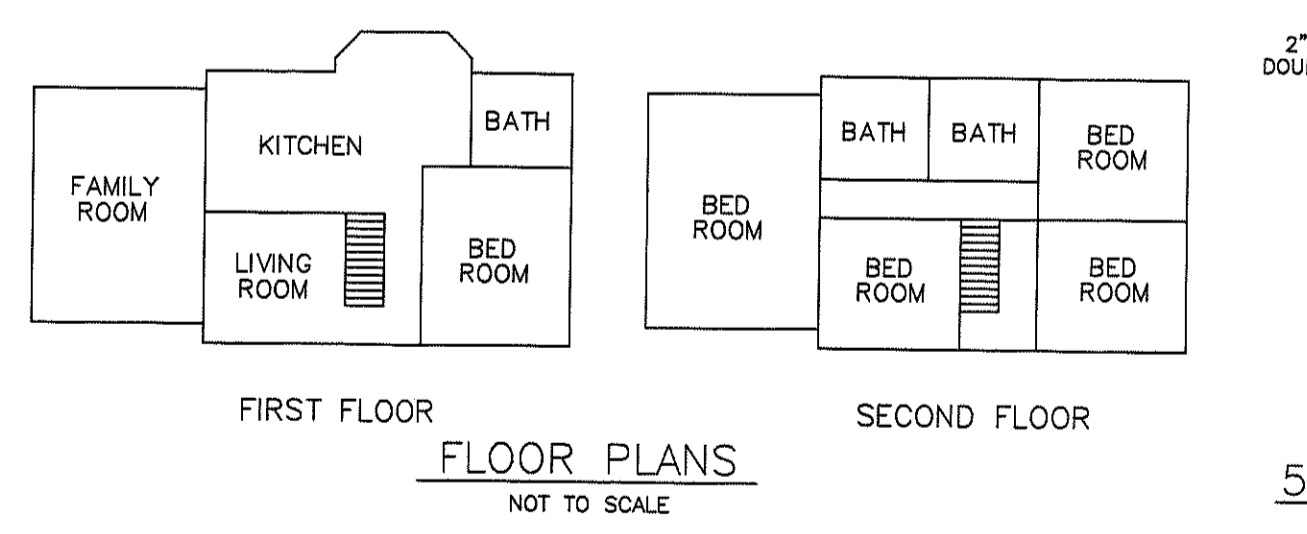
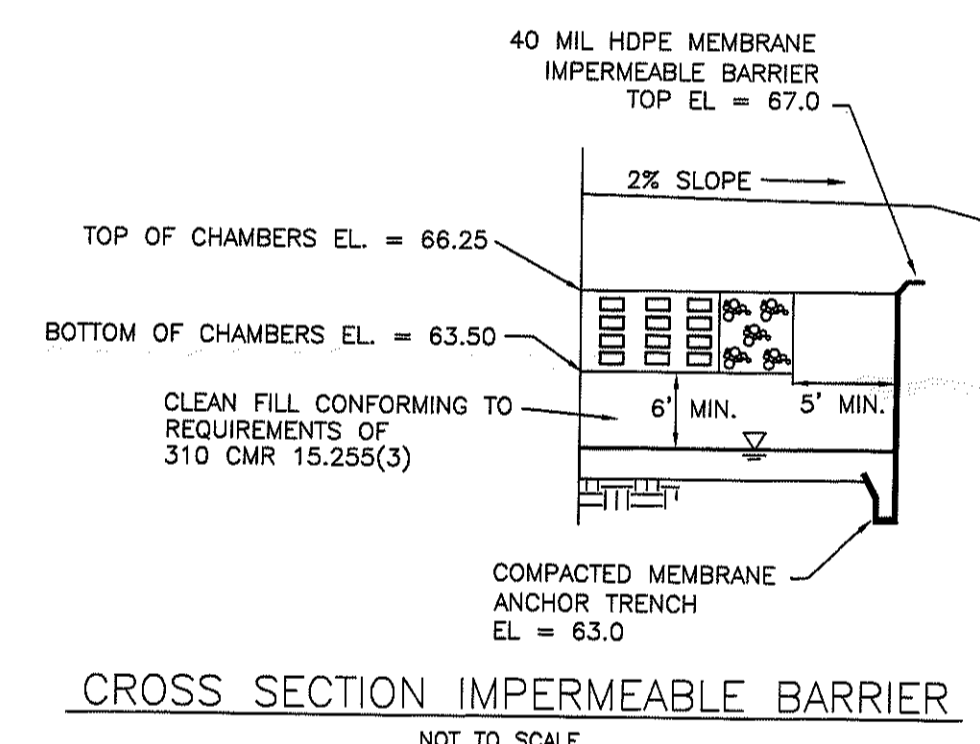
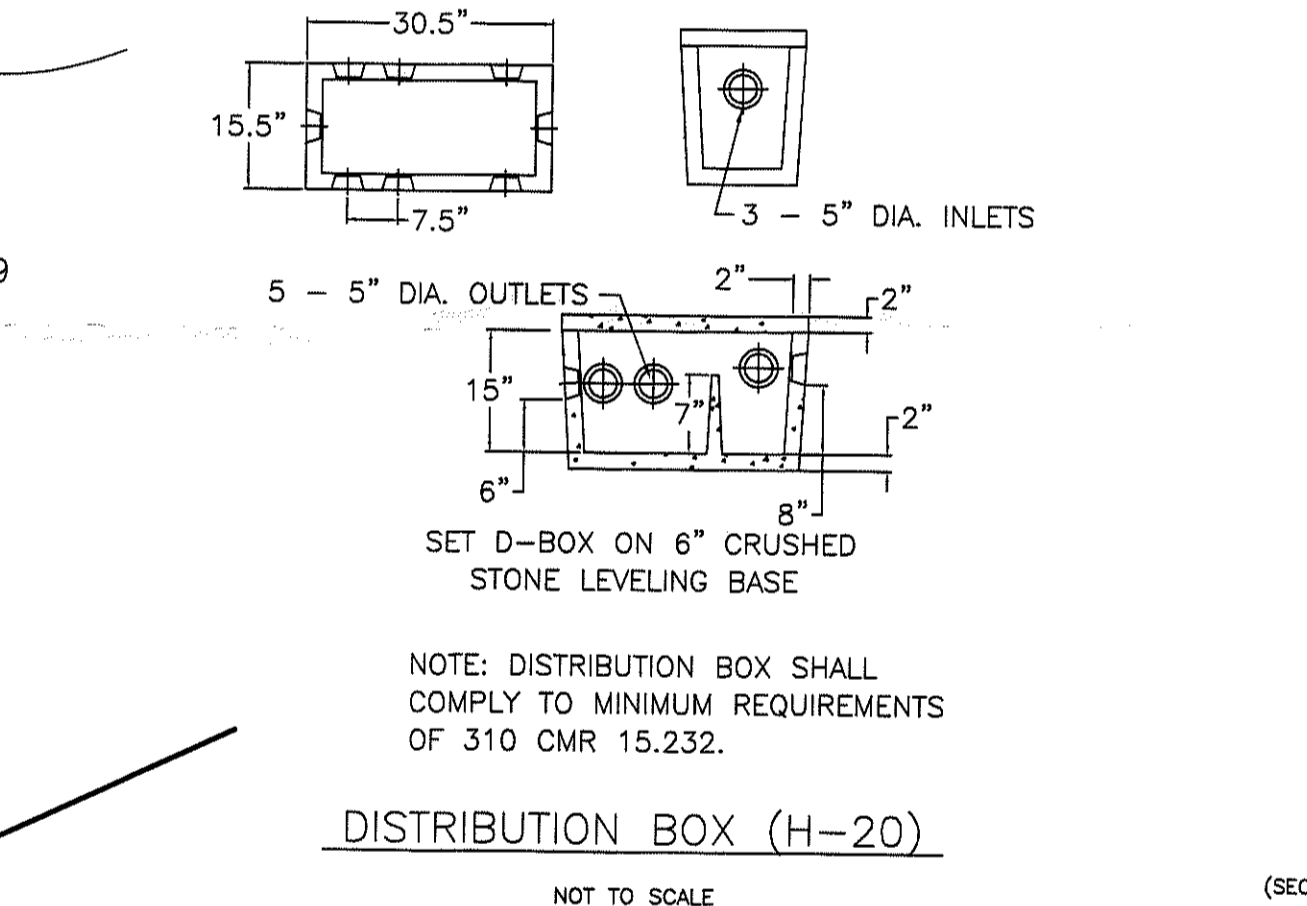
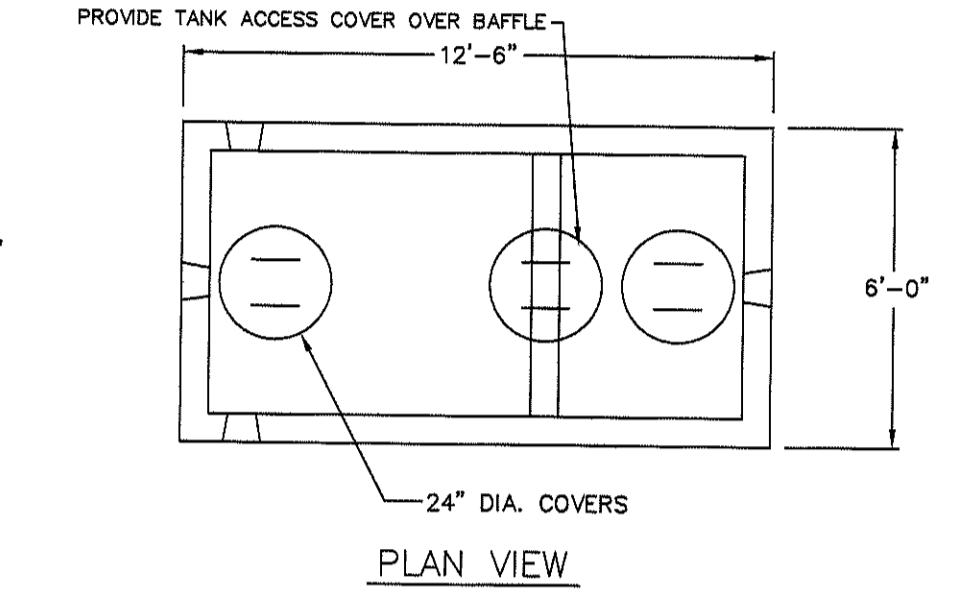
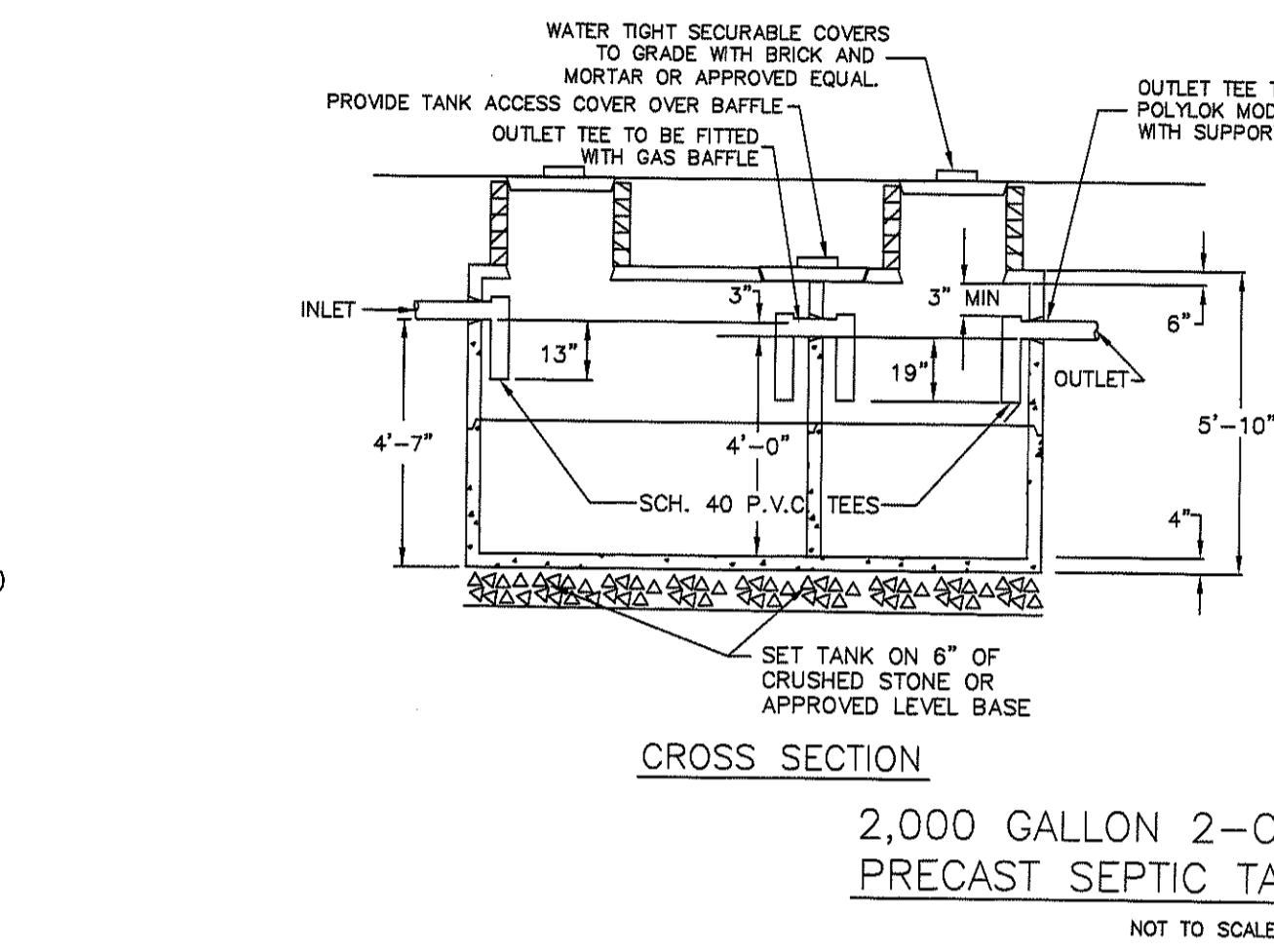
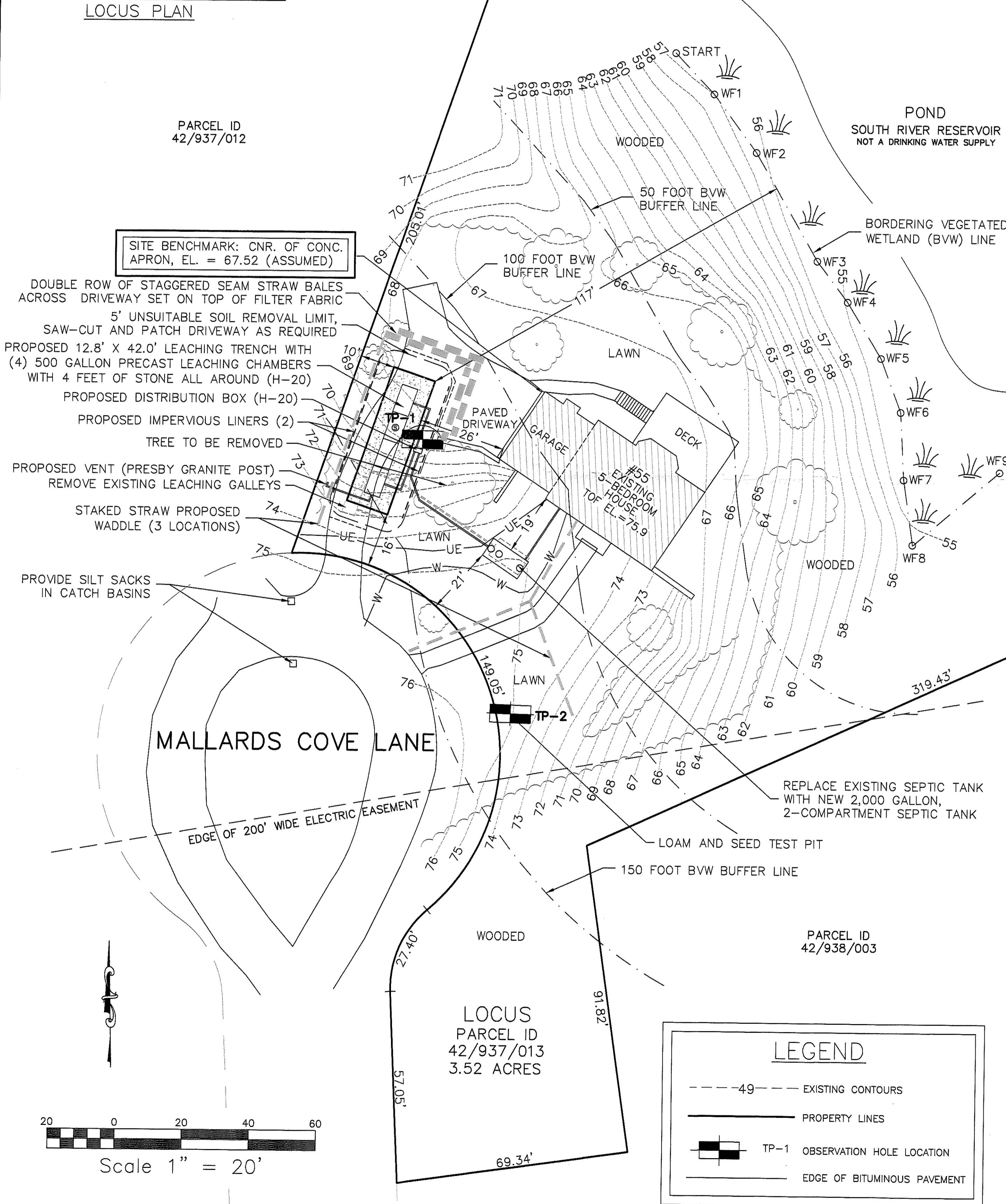


**ELEVATION SCHEDULE:**

DESCRIPTION	ELEVATION
4" INV. AT HOUSE (EXISTING)	71.6
4" INV. AT SEPTIC TANK (IN)	71.00
4" INV. AT SEPTIC TANK (OUT)	70.75
4" INV. AT DIST. BOX (IN)	66.00
4" INV. AT DIST. BOX (OUT)	65.83
4" INV. INTO SAS	65.50
ELEVATION AT BOTTOM OF SAS	63.50
GROUNDWATER ELEVATION	<57.50

- NOTES:**
- THE CONTRACTOR SHALL NOTIFY THE LOCAL BOARD OF HEALTH AND COLLINS ENGINEERING GROUP AT LEAST 48 HOURS PRIOR TO REQUIRED INSPECTIONS.
  - SITE BENCHMARK IS THE CORNER OF THE CONCRETE GARAGE APRON AS INDICATED ON THIS PLAN: EL = 67.52 ASSUMED DATUM.
  - HEAVY EQUIPMENT SHALL NOT BE ALLOWED TO OPERATE OVER THE LIMITS OF THE SEWAGE DISPOSAL FIELD DURING THE COURSE OF CONSTRUCTION OF THE SYSTEM.
  - NO FIELD MODIFICATIONS TO THE SEWAGE SYSTEM SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER AND THE LOCAL BOARD OF HEALTH.
  - UNLESS OTHERWISE NOTED ALL SYSTEM COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH TITLE V OF THE STATE ENVIRONMENTAL CODE DATED JANUARY 2000 AND ANY APPLICABLE LOCAL RULES.
  - DISTRIBUTION BOX SHALL BE MANUFACTURED BY J&R PRECAST, INC. OR APPROVED EQUAL.
  - GROUT TO BE USED AT ALL POINTS WHERE PIPES ENTER OR LEAVE ALL CONCRETE STRUCTURES IN ORDER TO PROVIDE A WATERTIGHT SEAL.
  - THE FIRST TWO FEET OF EACH LINE EXITING THE DISTRIBUTION BOX SHALL BE LEAK TESTED.
  - THIS SYSTEM IS NOT DESIGNED TO ACCOMMODATE A GARBAGE GRINDER OR WATER FILTRATION SYSTEM BACKWASH.
  - SYSTEM COMPONENTS TO WITHSTAND H-20 LOADING CRITERIA.
  - PROPERTY LINE SHOWN IS APPROXIMATE ONLY AND IS NOT A RESULT OF A PROFESSIONAL SURVEY.
  - THE CONTRACTOR SHALL DECOMMISSION (PUMP & FILL OR REMOVE) THE EXISTING SEPTIC SYSTEM AND ALL ASSOCIATED PIPING IN ACCORDANCE WITH 310 CMR 15.354.
  - AS SHOWN, THERE ARE NO KNOWN WELLS WITHIN 150 FEET OF THE PROPOSED LEACH FIELD.
  - ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE RESTORED (LOAM AND TO INCLUDE HISTORIC TEST PITS OUTSIDE CONSTRUCTION LIMITS).
  - CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ANY APPLICABLE PERMITS.
  - CONTRACTOR WILL BE RESPONSIBLE FOR CONTACTING DIG SAFE (888-DIGSAFE) FOR ANY OTHER APPLICABLE UTILITY COMPANIES PRIOR TO STARTING WORK.
  - UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY.
  - CONTRACTOR WILL BE RESPONSIBLE FOR COMBINING LAUNDRY FLOW WITH SYSTEM FLOW.
  - CONTRACTOR RESPONSIBLE FOR IMPLEMENTING ALL O.S.H.A. PROCEDURES TO INSURE BUT NOT LIMITED TO CONFINED SPACE ENTRY PROCEDURES.
  - CONTRACTOR RESPONSIBLE FOR CONFIRMING LOCATION OF EXISTING FAVORABLE FAULTS.
  - CONTRACTOR TO CONFIRM EXISTING PLUMBING, BENCHMARK, AND SILL ELEVATION PRIOR TO CONSTRUCTION.
  - MAGNETIC LOCATOR TAPE TO BE PLACED ON ALL SEPTIC SYSTEM COMPONENTS.
  - THE PROPOSED SYSTEM IS NOT LOCATED WITHIN A ZONE II.
  - THERE ARE WETLANDS WITHIN 150' OF THE PROPOSED SYSTEM (VARIANCE REQUESTED).
  - THERE ARE NO IRRIGATION WELLS WITHIN 100' OF THE PROPOSED SYSTEM.
  - THE PROPOSED SYSTEM IS NOT LOCATED WITHIN A FLOOD ZONE.
  - NO VARIANCES ARE REQUESTED FROM TITLE V OR THE TOWN OF DUXBURY RULES AND REGULATIONS, EXCEPT AS NOTED.
  - CONTRACTOR RESPONSIBLE FOR REPAIRING ANY DAMAGE TO LAWN IRRIGATION SYSTEM.
  - WATER SERVICE LOCATION IS UNKNOWN AND IT MUST BE LOCATED BY A PRIVATE UTILITY LOCATOR SERVICE OR BY OTHER MEANS. REPLACE AND REROUTE AS FIELD CONDITIONS DICTATE.



- DESIGN DATA:**
- DESIGN FLOW:**  
5 BEDROOMS x 110 GPD/BEDROOM = 550 GPD
- SEPTIC TANK:**  
550 GPD x 2.0 = 1,100 GALLONS  
USE NEW 2,000 GALLON SEPTIC TANK
- SOIL ABSORPTION SYSTEM:**  
PERCOLATION RATE < 2 MIN./INCH (CLASS 1 SOIL)  
DESIGN LOADING RATE = 0.74 GPD/SF  
LEACHING AREA REQ'D = (550 GPD) / 0.74 GPD/SF = 744 SF
- USE: 12.8'W x 42.0'L x 2'H LEACHING TRENCH WITH (4) 500 GALLON PRECAST LEACHING CHAMBERS WITH 4 FEET OF STONE ALL AROUND
- LEACHING AREA PROVIDED:**  
BOTTOM: 12.8' x 42.0' = 537 SF  
SIDE: 109.6' x 2' = 219 SF  
TOTAL: 537 SF + 219 SF = 756 SF > 744 REQUIRED
- DAILY FLOW CAPACITY:**  
756 SF x 0.74 GPD/SF = 559 GPD > 550 GPD REQ'D

**SOIL DATA:**

DATE: AUGUST 20, 2020  
PERFORMED BY: GEORGE R. COLLINS, P.E. (SE-413)  
WITNESSED BY: TRACY MAYO, DUXBURY BOH

SOIL HORIZ.	SOIL COLOR	TP-1 DEPTH 0	ELEV.	SOIL HORIZ.	SOIL COLOR	TP-2 DEPTH 0
FILL/A		18"	66.50			
Bw 10YR 5/6	SANDY LOAM	48"				
66" BOTTOM OF PERC HOLE						
C 2.5Y 6/3	MED. SAND					

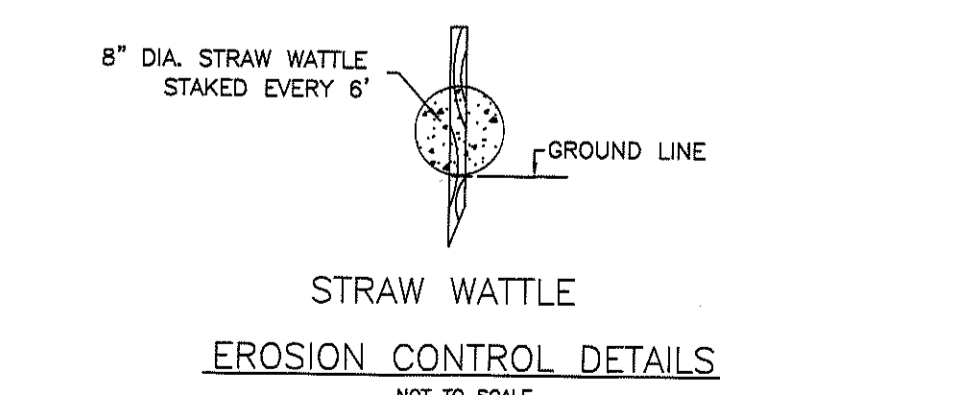
ESTIMATED SEASONAL HIGH GROUNDWATER ELEV. <57.50  
DESIGN PERC RATE = 1" IN <2 MIN.

NOTE: LAYERS FILL/A, B, AND C TO BE REMOVED TO A DEPTH OF 54" BELOW GRADE AND REPLACED WITH CLEAN FILL IN ACCORDANCE WITH 310 CMR 15.255(3). UNSUITABLE SOIL TO BE REMOVED TO A DEPTH OF 5'-0" BEYOND THE LIMITS OF THE SOIL ABSORPTION SYSTEM.

- WETLAND AND EROSION CONTROL NOTES**
- WETLAND DELINEATED BY BROOKE MONROE, BOTANIST, AUGUST 2020.
  - EROSION CONTROL TO BE INSTALLED PRIOR TO ANY ACTIVITY AND REMAIN IN PLACE UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED.
  - CONTRACTOR RESPONSIBLE FOR IMPLEMENTING ALL CONSERVATION COMMISSION AND BOARD OF HEALTH DIRECTIVES.
  - CONTRACTOR TO SWEEP STREET AT THE END OF EACH WORK DAY.
  - CONTRACTOR TO MONITOR, REPAIR AND MODIFY EROSION CONTROL TO ASSURE THAT THERE IS NO WETLAND RESOURCE AREA OR ABUTTER ENCROACHMENT.
  - SILT SACKS (2) TO BE INSTALLED AT THE 2 CATCH BASINS IN THE STREET AS SHOWN. CONTRACTOR TO MAINTAIN AND MONITOR DURING WORK AND REMOVED AFTER WORK IS DONE.
  - DESIGN FIRM TO STAKE OUT LEACHING AND WORK LIMITS DUE TO TIGHT SITE TOLERANCES.
  - FULL DRIVEWAY REPLACEMENT MAY TRIGGER A CONSERVATION APPLICATION FOR WORK WITHIN THE 100 FOOT WETLAND BUFFER ZONE.

- LOCAL UPGRADE APPROVAL REQUEST:**
- VARIANCE FROM SECTION 310 CMR 15.221 OF THE STATE SANITARY CODE WHICH REQUIRES A MAXIMUM OF 36" OF COVER OVER ALL SEPTIC SYSTEM COMPONENTS. A VARIANCE THAT WOULD ALLOW UP TO 80" OF COVER IS REQUESTED (H-20 LOADING PROVIDED).

- REQUESTED B.O.H. REGULATION VARIANCE:**
- VARIANCE FROM DUXBURY BOARD OF HEALTH REGULATIONS WHICH REQUIRES A 150' SETBACK FROM A WETLAND TO A SAS. A VARIANCE ALLOWING A REDUCTION TO 117' IS REQUESTED.



REV.	DATE	DESCRIPTION	BY	APP.

**DRAWING TITLE:** PLAN AND DETAILS  
**SUBSURFACE SEWAGE DISPOSAL SYSTEM UPGRADE**

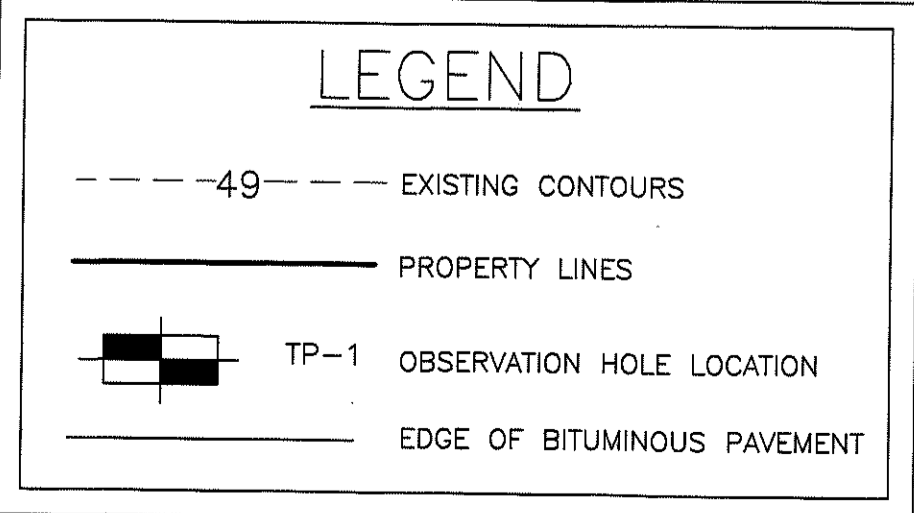
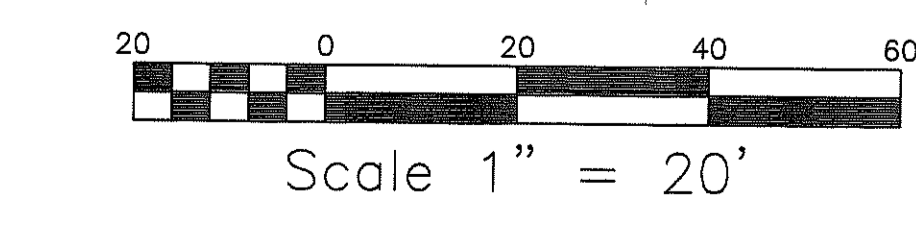
**PROJECT:** 55 MALLARDS COVE LANE, DUXBURY, MA

**CLIENT:** PAUL DAUWER, 55 MALLARDS COVE LANE, DUXBURY, MA 02332

**COLLINS CIVIL ENGINEERING GROUP, INC.**  
BRAintree - FALMOUTH - WEST BRIDGEWATER  
CIVIL ENGINEERING - LAND SURVEY - L.S.P. SERVICES  
225 SOUTH MAIN STREET, WEST BRIDGEWATER, MA 02379  
TEL:508-680-2932 MOBILE: 617-947-1363 E-MAIL:GRCPE@AOL.COM

**SCALE:** AS SHOWN  
**DATE:** 8-28-20  
**DRAWN BY:** SWR  
**DESIGNED BY:** SWR  
**CHECKED BY:** GRC  
**APPROVED BY:** GRC

**DRAWING NO.:** PROJECT NO. 20-160-314



**PROPOSED 1500 GALLON TANK**

NOT TO SCALE

**DISTRIBUTION BOX**

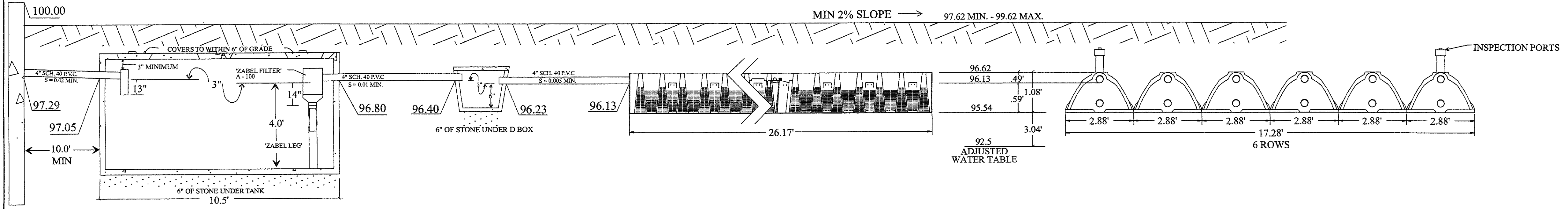
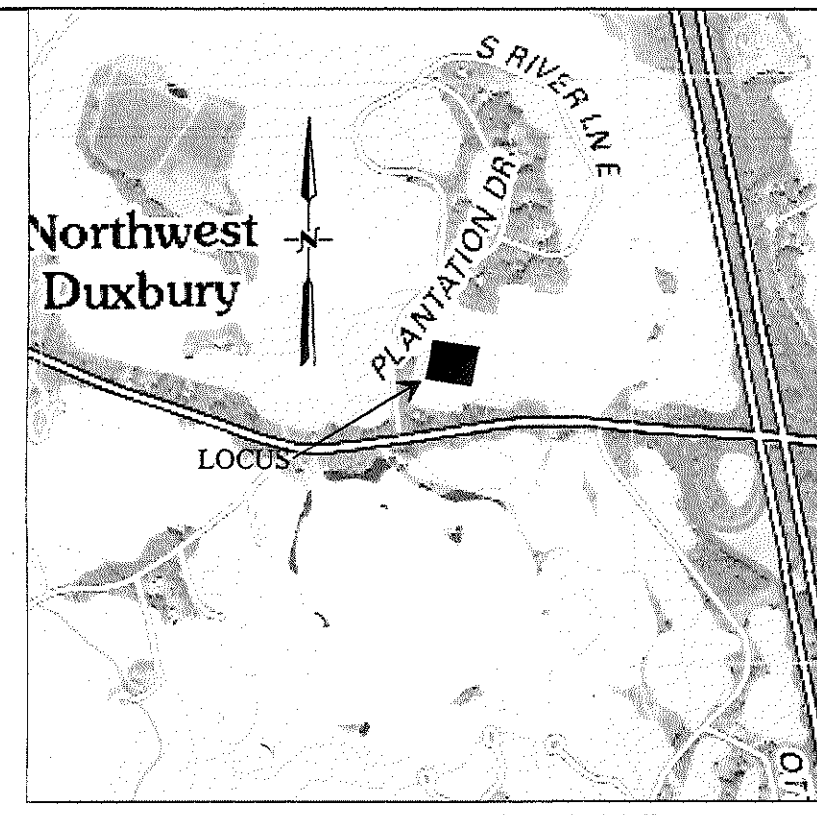
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**ARC 36 CAPACITY CHAMBER DETAIL**

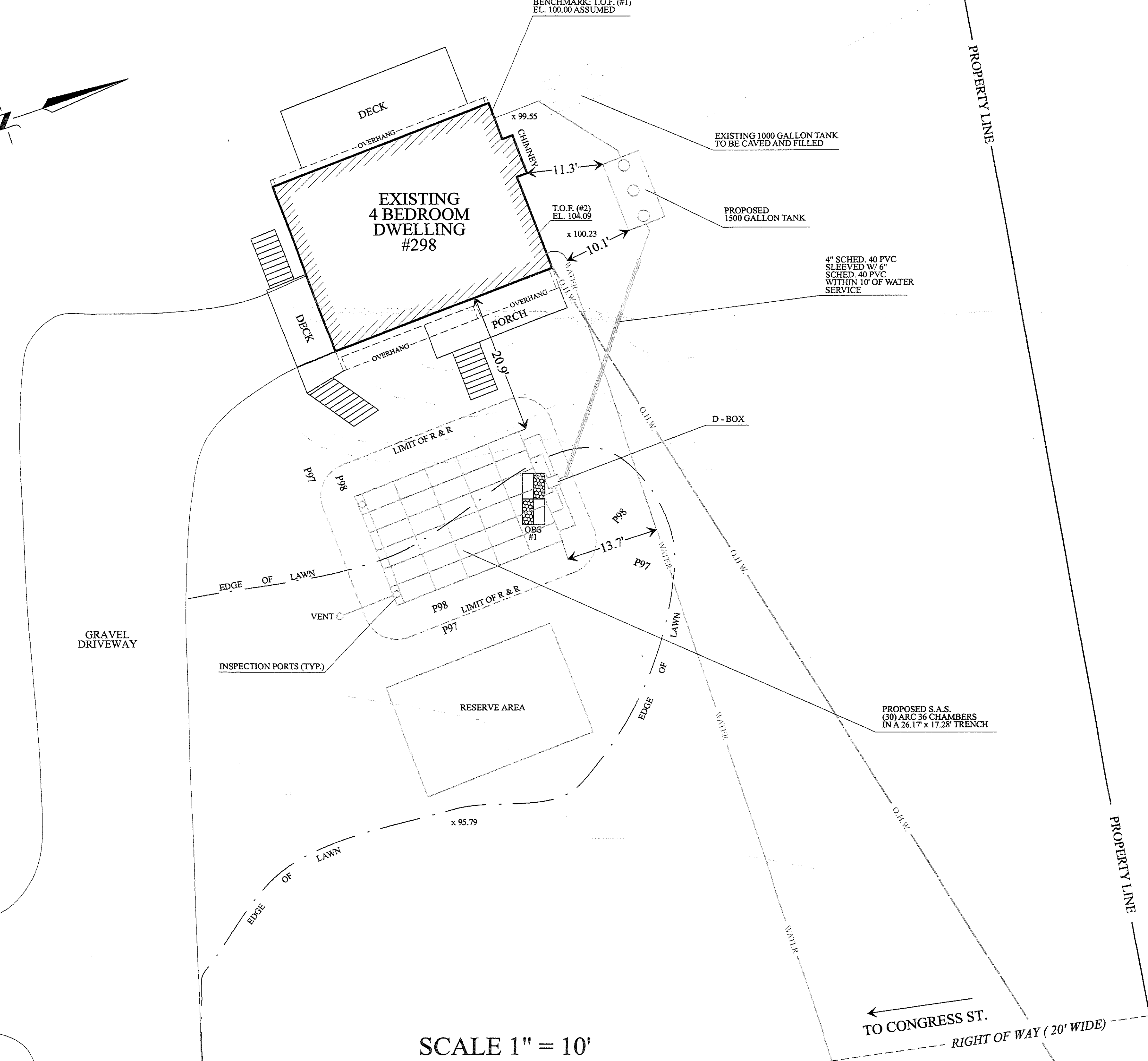
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**CROSS SECTION**

NOT TO SCALE

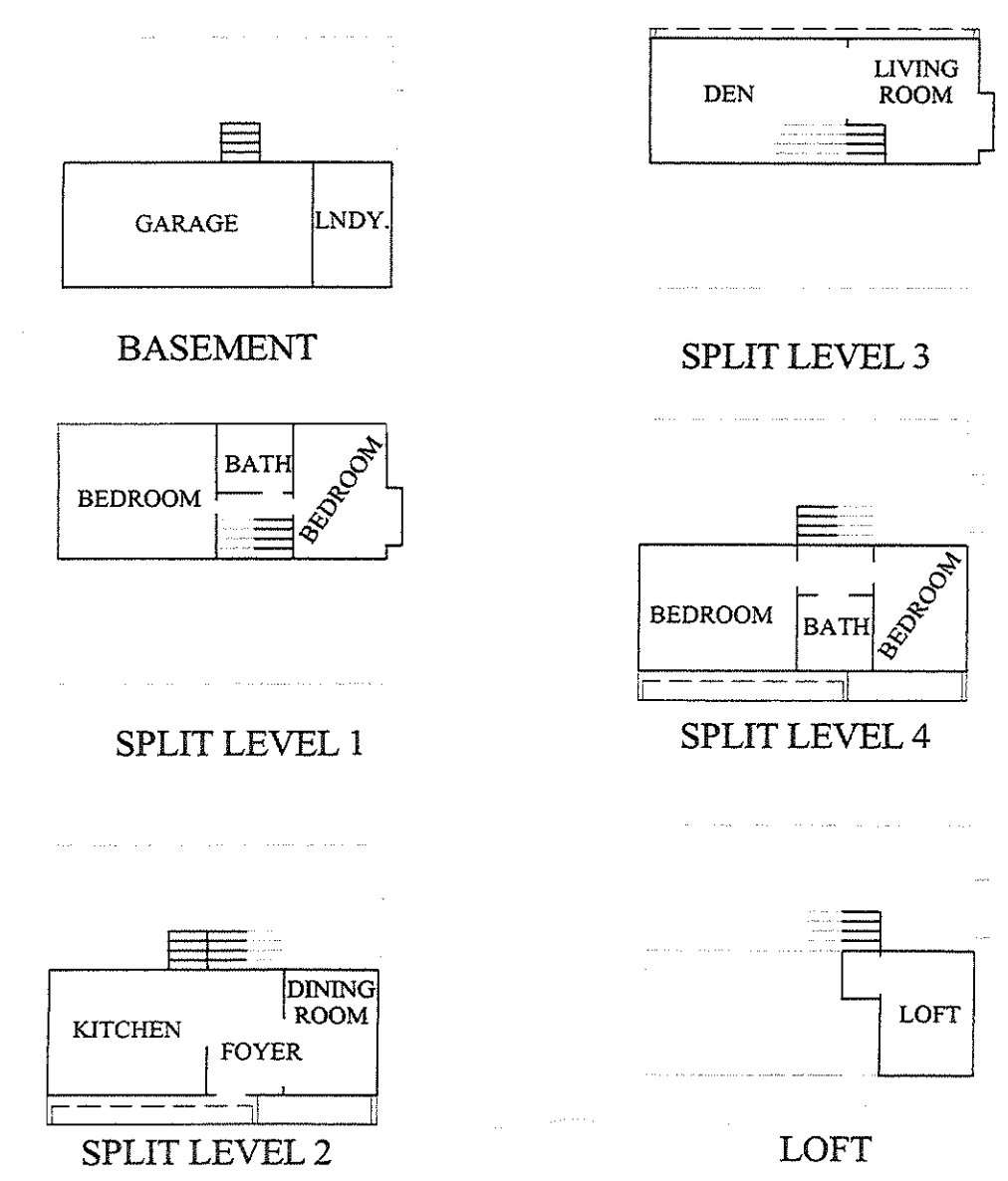


PARCEL #041 - 835 - 002  
+/- 1.12 AC.



**FLOOR PLAN**

NOT TO SCALE



**DESIGN CALCULATIONS**

EXISTING BEDROOMS	4	
PROPOSED BEDROOMS	4 @ 110 G.P.D.	440 G.P.D.
NUMBER OF ROWS	6	
NUMBER OF UNITS PER ROW	5	
NUMBER OF CHAMBERS	30	
NUMBER OF COUPLINGS	6	
DEPTH BELOW INVERT	0.59	
LENGTH OF BED	26.17	
WIDTH OF BED	17.28	
TOTAL CHAMBER LENGTH	157.02	
LT AR	0.60	
SQ. FT. MIN.	734	
SQ. FT. PER X235253 @ 4.8	753.70	
CAPACITY TOTAL	452.22	

**GENERAL NOTES**

ALL PIPING TO BE SCHEDULE 40 P.V.C.  
ALL LOCATIONS OF UTILITIES SHOWN ARE MARKED BY DIG SAFE AND ARE TO BE VERIFIED BY INSTALLER PRIOR TO CONSTRUCTION.  
THERE ARE NO KNOWN WETLANDS WITHIN 150' OF THE PROPOSED LEACHING FACILITY UNLESS SHOWN.  
THERE ARE NO KNOWN POTABLE WELLS WITHIN 150' OF THE PROPOSED LEACHING FACILITY.  
THERE ARE NO KNOWN IRRIGATION WELLS WITHIN 100' OF THE PROPOSED LEACHING FACILITY.  
THIS PROPERTY DOES NOT FALL WITHIN A ZONE II OF A WELLHEAD PROTECTION AREA.  
THIS PROPERTY DOES NOT FALL WITHIN A FLOOD ZONE AS SHOWN ON FIRM MAP 25023C0236J DATED 7/17/2012.  
THIS DESIGN DOES REQUIRE VARIANCES TO TITLE 5 (310 C.M.R. 15.00) OR DUXBURY SUPPLEMENTAL REGULATIONS.  
ALL CONSTRUCTION SHALL BE IN ACCORD WITH TITLE 5 AND DUXBURY SUPPLEMENTAL REGULATIONS.  
ALL SYSTEM COMPONENTS SHALL BE MARKED WITH 1" WASHERS.

**IN-LINE ELEVATIONS PROPOSED AS-BUILT**

INV @ HSE	97.29
INV INTO TANK	97.05
INV OUT OF TANK	96.80
INV INTO D-BOX	96.40
INV OUT OF D-BOX	96.23
INV INTO ARC 36	96.13
BOTTOM OF ARC 36	95.54
SEPARATION PROVIDED	3.04'
WATER TABLE	92.5 (ADJUSTED WATER TABLE)
BOTTOM OF OBS HOLE	90.4

**SURVEY INFORMATION**

PROPERTY LINE DATA TAKEN FROM PLANS DRAWN BY ROBERT B. DELANO ON JULY 9, 1971 ON FILE AT REG. OF DEEDS PLAN BOOK 16 PAGE 160  
PLAN TO BE USED FOR INSTALLATION OF SEPTIC SYSTEM ONLY  
BENCH MARK - TOP OF FOUNDATION (#1) EL. 100.00 ASSUMED

**SOIL LOGS**

DATE :	6/25/2020	OBSERVED BY :	FREEMAN BOYNTON III SOIL EVALUATOR	WITNESSED BY :	TRACY MAYOR BOARD OF HEALTH
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ELEV.	OBS. HOLE #1	DEPTH
96.7	A SANDY LOAM 10YR 3/2	0"
96.2	B SANDY LOAM 10YR 5/8	6"
95.1	C1 SANDY LOAM 10YR 6/3	19"
92.5	ADJUSTED	50"
91.1	MOTTLING	67"
90.4	STANDING	76"

PERC RATE = 6 MINS. / INCH

**FRIMPTER ADJUSTMENT**

Duxbury (D4W) 79 INPUT	
96.7 measured elevation (ft.)	
76 measured depth to water (in.)	
6/23/2020 monthly/year of monthly well data	
8.29	
6.33 measured depth to water table	
6.1 yearly well info	
4.0 4.0 = 10% exceedance in sand	
4.04 yearly well info	
2.17 adjustment value	
4.17 adjustment to measured depth	
OUTPUT	
92.53 adjusted water table elevation (ft.)	
50 adjusted depth to water (in.)	

**WATER SUPPLY LOCATIONS LIST**

PARCEL NUMBER	STREET ADDRESS	SUPPLY TYPE
041 - 835 - 002	298 CONGRESS ST	TOWN WATER
041 - 835 - 003	300 CONGRESS ST	TOWN WATER
041 - 502 - 008	0 CONGRESS ST	TOWN WATER
041 - 901 - 047	45 PLANTATION DR	TOWN WATER
041 - 901 - 048	33 PLANTATION DR	TOWN WATER
041 - 901 - 049	19 PLANTATION DR	TOWN WATER
042 - 835 - 001	296 CONGRESS ST	TOWN WATER
042 - 901 - 050	314 CONGRESS ST	TOWN WATER

**VARIANCES**

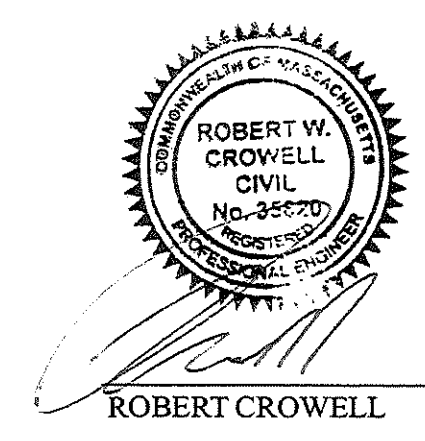
**DUXBURY SUPPLEMENTAL REGS**  
SECTION 1.11 (1A) GROUNDWATER SEPARATION  
1. THE PROPOSED LEACHING FIELD IS TO BE CONSTRUCTED 4.00' ABOVE MAXIMUM GROUND WATER. (DUXBURY REGULATIONS REQUIRE 5.0' WHERE THE PERC RATE IS GREATER THAN 2 MINS./INCH.)  
LOCAL UPGRADE APPROVAL  
(b) THE LOCAL APPLYING AUTHORITY MAY REDUCE THE REQUIRED FOUR FOOT SEPARATION (IN SOILS WITH A RECORDED PERCOLATION RATE OF MORE THAN TWO MINUTES PER INCH) ... BETWEEN THE BOTTOM OF THE SOIL ABSORPTION SYSTEM AND THE HIGH GROUNDWATER ELEVATION ONLY IF ALL OF THE FOLLOWING CONDITIONS ARE MET:  
2. A MINIMUM THREE FOOT SEPARATION (IN SOILS WITH A RECORDED PERCOLATION RATE OF MORE THAN TWO MINUTES PER INCH) ... BETWEEN THE BOTTOM OF THE SOIL ABSORPTION SYSTEM AND THE HIGH GROUNDWATER ELEVATION IS MAINTAINED.  
1. THE PROPOSED LEACHING FIELD IS TO BE CONSTRUCTED 3.04' ABOVE MAXIMUM GROUND WATER.

**REMOVE AND REPLACE**

ALL UNSUITABLE MATERIALS ARE TO BE REMOVED FOR A DISTANCE OF 5' IN ALL DIRECTIONS AROUND PROPOSED LEACHING FACILITY TO THE LAYER C1 OF SANDY LOAM (OBS#1) APPROX. ELEVATION 95.10 AND REPLACED WITH CLEAN SAND AS REQUIRED BY 310 CMR 15.255(3)

**PLAN SHOWING:**

<b>PROPOSED SEPTIC SYSTEM REPAIR IN DUXBURY</b>	
FOR: GLADYS COVINO	DRAWN BY: NICK MOSCARITOLO
LOC: 298 CONGRESS STREET	DESIGN & CHECKED BY: FREEMAN BOYNTON, JR. & ROBERT CROWELL
LOT #: 041 - 835 - 002	REVISIONS: DESCRIPTION: DATE:
DATE: JUNE 29, 2020	



I CERTIFY THAT THIS PLAN CONFORMS TO TITLE 5 AND DUXBURY B.O.H. REGULATIONS (EXCLUDING WAIVERS SPECIFIED)

**DUXBURY CONSTRUCTION, LLC**  
P.O. BOX 2514 DUXBURY MASSACHUSETTS 781 934 0000

SCALE 1" = 10'