

**COMPONENT TIES**

SYSTEM COMPONENT	BARN COR. @ (A)	CONTROL PT. 3 @ (B)	HOUSE COR. @ (C)	HOUSE COR. @ (D)
SEPTIC TANK OUTLET COVER	-	-	17.2'	31.1'
PUMP / OUTLET COVER	-	-	21.5'	40.5'
DISTRIBUTION BOX D1	27.6'	11.8'	-	-
DISTRIBUTION BOX D2	45.6'	46.0'	-	-
LEACH LINE D1 IN	46.6'	44.2'	-	-
LEACH LINE D1 END	90.7'	73.0'	-	-
LEACH LINE D4 IN	56.0'	58.6'	-	-
LEACH LINE D4 END	96.0'	82.8'	-	-
INSPECTION PORT	75.5'	62.3'	-	-

**SYSTEM COMPONENT LEGEND**

- ① 18 L.F. OF 4" SCH 40 PVC PIPE @ 2.3%
- ② 2,000 GALLON MONOLITHIC, 2-COMPARTMENT PRO-STEP SEPTIC TANK / PUMP CHAMBER WITH TEES, RISERS AND COVERS
- ③ 67 L.F. OF 2" SCH 40 PVC PIPE FORCEMAIN @ -1.0% MIN.
- ④ 6 OUTLET DISTRIBUTION BOX D1 WITH INLET TEE, RISER AND COVER
- ⑤ 53 L.F. OF 4" SCH 40 PVC PIPE @ 2.6%
- ⑥ 6 OUTLET DISTRIBUTION BOX D2 WITH SPEED LEVELERS, RISER AND COVER
- ⑦ 4" SCH 40 PVC PIPE @ 1.0% MIN.
- ⑧ 50 L.F. OF 4" PERFORATED SCH 40 PVC PIPE @ 0.5% WITHIN A 20' WIDE X 6" EFFECTIVE DEPTH X 50' LONG STONE LEACH BED
- ⑨ 4" SCH 40 PVC CONNECTOR PIPE LAID FLAT
- ⑩ IMPERMEABLE BARRIER
- ⑪ INSPECTION PORT
- ⑫ 4" SCH 40 PVC VENT PIPE

**NOTES - SPECIFIC**

1. OWNER: HENRY CHUB TRUST APPLICANT: THOMAS CHUB  
31 GLEN FOREST DRIVE 31 GLEN FOREST DRIVE  
BOXFORD, MA 01921 BOXFORD, MA 01921
2. LOT BOUNDARIES DEPICTED HEREON ARE NOT THE RESULT OF A BOUNDARY DETERMINATION AND SURVEY. PLAN REFERENCE: PLAN BOOK 93, PLAN 54.
3. ASSESSORS DESIGNATION: MAP 18, BLOCK 2, LOT 13. LOT AREA = 2.27± ACRES
4. TOPOGRAPHY SHOWN AS OF MARCH, 2018. DATUM IS ASSUMED.
5. SOIL TESTS CONDUCTED ON MARCH 19, 2018 BY GERARD McDONALD, P.E. OF H. L. GRAHAM ASSOCIATES, INC. AND WITNESSED BY HEALTH AGENT KENDALL LONGO.

**DEEP OBSERVATION HOLE (EL. 503.9)**

TEST HOLE NO.	DOH 1		
TOTAL DEPTH:	84"		
DEPTH TO LEDGE:	84"		
DEPTH TO GROUNDWATER:	NONE		
ESTIMATED GROUNDWATER:	70" (MOTTLES)		
SOIL STRATA:			
DEPTH	HORIZON	TEXTURE	MUNSELL COLOR
0'-8"	A	SANDY LOAM	10YR 3/2
8'-18"	B	LOAMY SAND	10YR 5/6
18'-70"	C1	LOAMY SAND	10YR 4/4
70'-84"	C2	SANDY LOAM	2.5Y 5/4

**PERCOLATION TEST**

TEST HOLE NO.	P1
TOTAL DEPTH:	50"
PRESOAK TIME:	15 MINUTES
OBSERVED PERC RATE:	7 MINUTES PER INCH
DESIGN PERC RATE:	7 MINUTES PER INCH

**DEEP OBSERVATION HOLE (EL. 501.9)**

TEST HOLE NO.	DOH 2		
TOTAL DEPTH:	84"		
DEPTH TO LEDGE:	84"		
DEPTH TO GROUNDWATER:	NONE		
ESTIMATED GROUNDWATER:	84"		
SOIL STRATA:			
DEPTH	HORIZON	TEXTURE	MUNSELL COLOR
0'-12"	A	SANDY LOAM	10YR 3/2
12'-26"	B	LOAMY SAND	10YR 5/6
26'-84"	C	LOAMY SAND	2.5Y 5/4

**6. DESIGN DATA:**

- PERCOLATION RATE: 1" IN 7 MINUTES (MEASURED)
- BEDROOMS: 4 EXISTING
- DAILY SEWAGE FLOW: 4 BEDRMS. @ 165 GPD  
4 x 165 = 660 GPD
- SIZE SEPTIC TANK: 200% OF 660 GPD = 1,320 GPD  
USE 2,000 GALLON 2-COMPARTMENT TANK

**CALCULATE LEACHING AREA REQUIREMENT**

L.T.A.R. - CLASS 1 SOIL	= 0.68 GPD PER SQUARE FT.
660 GPD	= 970.6 SQUARE FT.
0.74 GPD PER SQUARE FT.	

**LEACHING AREA PROVIDED:**

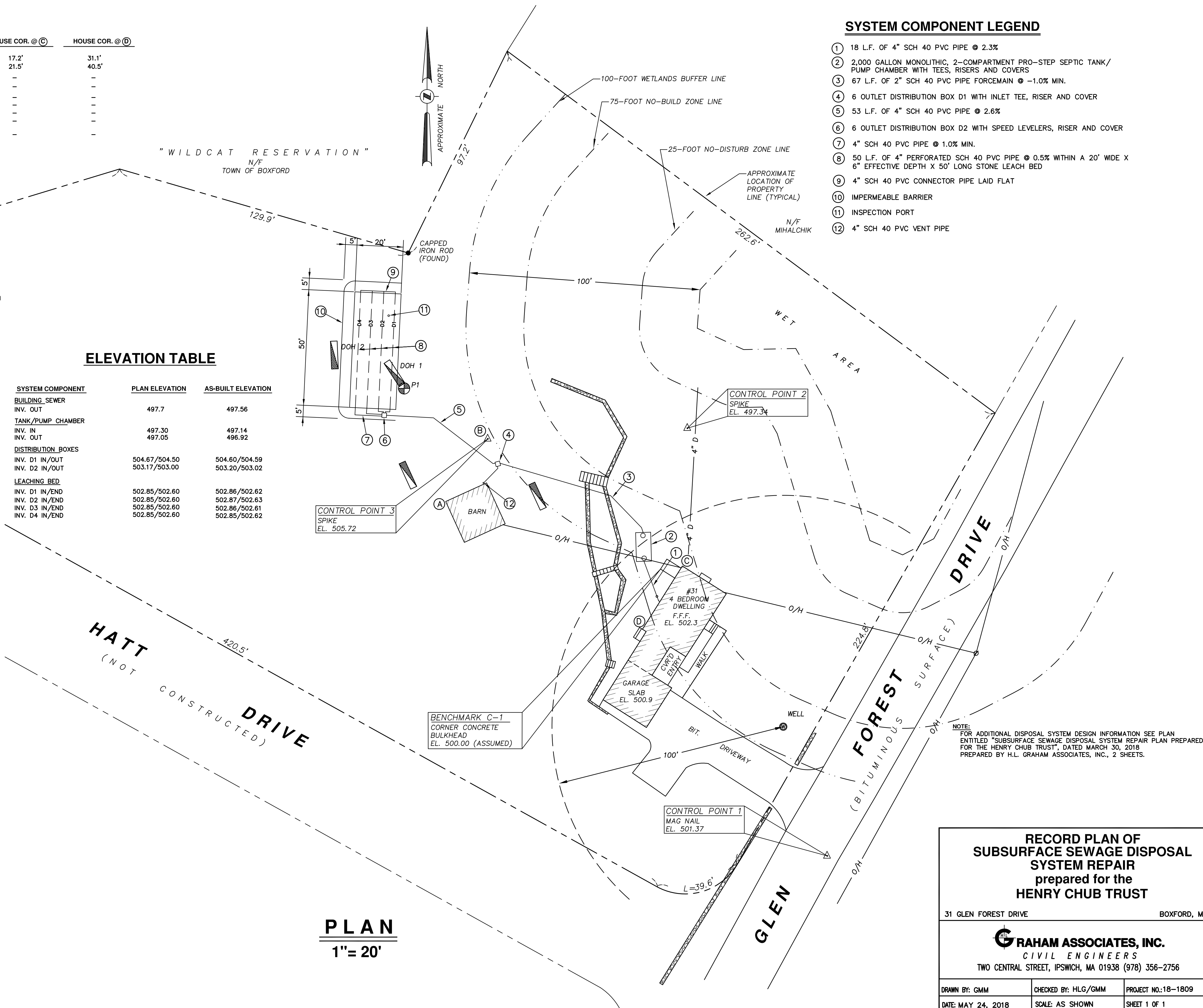
PROPOSED LEACH BED 20' WIDE X 50' LONG  
AREA = 1,000 S.F. > 970.6 S.F.

**BUOYANCY CALCULATIONS:**

SEPTIC TANK	
GROUNDWATER ESTIMATED AT 4.0' BELOW EXISTING GRADE	
BOTTOM OF SEPTIC TANK AT 6.6' BELOW EXISTING GRADE	
DEPTH OF WATER DISPLACED = 2.6'	
FORCE OF UPLIFT (62.4 lb./C.F. X 75.1 S.F. X 2.6')	= 12,184 lbs.
WT. OF TANK (FROM MANUFACTURER)	= 21,150 lbs.
WT. OF BACKFILL (100 lb./C.F. X 1.0' X 81.25 S.F.)	= 8,125 lbs.
TOTAL	= 29,275 lbs.
SAFETY FACTOR (29,275/12,184)	= 2.4

**ELEVATION TABLE**

SYSTEM COMPONENT	PLAN ELEVATION	AS-BUILT ELEVATION
<b>BUILDING SEWER</b>		
INV. OUT	497.7	497.56
<b>TANK/PUMP CHAMBER</b>		
INV. IN	497.30	497.14
INV. OUT	497.05	496.92
<b>DISTRIBUTION BOXES</b>		
INV. D1 IN/OUT	504.67/504.50	504.60/504.59
INV. D2 IN/OUT	503.17/503.00	503.20/503.02
<b>LEACHING BED</b>		
INV. D1 IN/END	502.85/502.60	502.86/502.62
INV. D2 IN/END	502.85/502.60	502.87/502.63
INV. D3 IN/END	502.85/502.60	502.86/502.61
INV. D4 IN/END	502.85/502.60	502.85/502.62



**PLAN**  
1" = 20'

NOTE:  
FOR ADDITIONAL DISPOSAL SYSTEM DESIGN INFORMATION SEE PLAN ENTITLED "SUBSURFACE SEWAGE DISPOSAL SYSTEM REPAIR PLAN PREPARED FOR THE HENRY CHUB TRUST", DATED MARCH 30, 2018 PREPARED BY H.L. GRAHAM ASSOCIATES, INC., 2 SHEETS.

**RECORD PLAN OF  
SUBSURFACE SEWAGE DISPOSAL  
SYSTEM REPAIR  
prepared for the  
HENRY CHUB TRUST**

31 GLEN FOREST DRIVE BOXFORD, MA

**GRAHAM ASSOCIATES, INC.**  
CIVIL ENGINEERS

TWO CENTRAL STREET, IPSWICH, MA 01938 (978) 356-2756

DRAWN BY: GMM	CHECKED BY: HLG/GMM	PROJECT NO.: 18-1809
DATE: MAY 24, 2018	SCALE: AS SHOWN	SHEET 1 OF 1