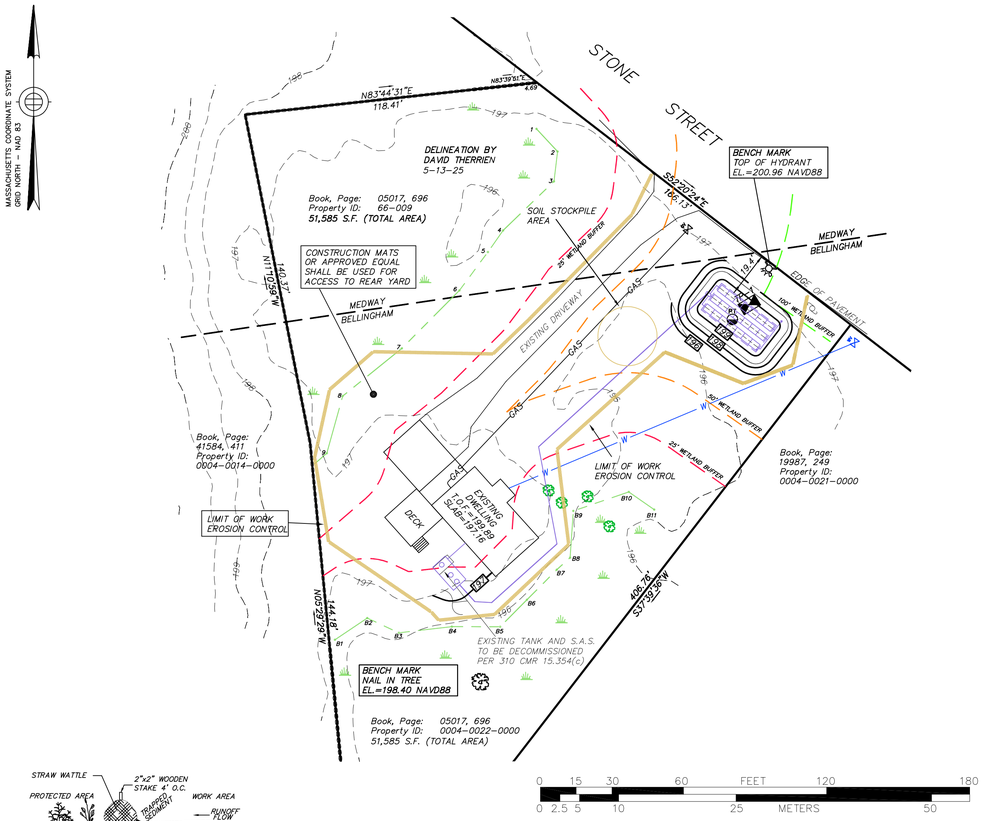


SOIL EVALUATOR:
GREGORY A. BUNAVICZ, SE 2712

BOARD OF HEALTH WITNESS:
DYLAN LABONTE

TP–1	
0" 5–21–25	196.5
FILL	
24"	194.5
Cd SANDY LOAM 7.5YR5/4	
36"	193.5
C2 COARSE LOAMY SAND 2.5Y5/4	
90"	189.0

MOTTLES: 24" (194.5)
WEEPING: 40" (193.2)
STANDING: 54" (192.0)

SIEVE SAMPLE: C2 UNCOMPACTED
83.9% SAND
CLASS I: ELR 0.74 GPD/SF

REMOVE AND REPLACE:

REMOVE TO ELEVATION 193.5 OR UNTIL ALL UNSUITABLE MATERIAL IS REMOVED AND REPLACE TO ELEVATION 197.5 WITH TITLE V SAND DIRECLTY BELOW ACTIVE AREA ONLY.

LOCAL UPGRADE APPROVAL REQUESTS:

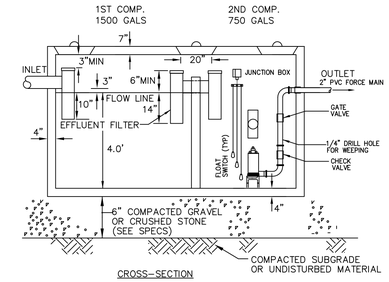
1. SECTION 310 CMR 15.227 (5) OF TITLE V WHICH REQUIRES THAT THE SEPTIC TANK INLET AND OUTLET INVERT ELEVATIONS BE AT LEAST 12" ABOVE THE HIGH GROUND WATER ELEVATION. A REDUCTION FROM 12" ABOVE TO 9" BELOW THE HIGH WATER TABLE IS REQUESTED IN ACCORDANCE 310 CMR 15.411.
2. A LOCAL UPGRADE APPROVAL FROM SECTION 310 CMR 15.104 AND 15.105 OF TITLE V WHICH REQUIRES A PERCOLATION TEST. A SIEVE ANALYSIS IN ACCORDANCE WITH DEPARTMENT GUIDANCE IS REQUESTED IN ACCORDANCE 310 CMR 15.405 (1)(i).

PUMP NOTES:

1. THE SYSTEM INSTALLER SHALL CAUSE THE PUMP ELECTRICAL SYSTEM TO BE INSPECTED AND APPROVED BY THE ELECTRICAL INSPECTOR.
2. PUMP SHALL BE MYERS SUBMERSIBLE NON CLOG MODEL ME3F 1/2 HP OR EQUAL WITH A 2" DISCHARGE LINE AND SHALL BE EQUIPPED WITH LEVEL CONTROL FLOAT SWITCHES, ALARM CONTROL, AND NEMA–1 CONTROL BOX, OR EQUAL. PUMP SHALL BE CAPABLE OF PUMPING 55 GPM @ 20 FT TDH.
3. PUMP TO INCLUDE A CONTROL PANEL WITH MANUAL–ON, MANUAL–OFF, AUTOMATIC ON–OFF SWITCH, VISUAL ALARM, AUDIBLE ALARM AND AUDIBLE ALARM SILENCER SWITCH. PUMP ALARM AND PUMP FLOATS MUST BE ON SEPARATE CIRCUITS
4. ELECTRICAL JUNCTION BOX TO BE LOCATED OUT SIDE OF PUMP CHAMBER.

PROVIDE ZABEL FILTER
MODEL A1800
ON OUTLET TEE
OR APPROVED EQUAL

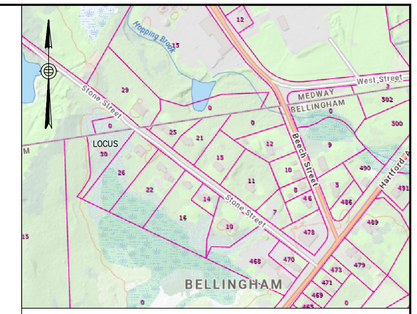
TANK NOTES:
1. Concrete : 4,000 P.S.I Minimum Strength@ 28 Days
2. Steel Reinforcing– ASTM A–615, Grade 60.
3. Cover to Steel–1" Minimum
4. Tongue and groove joint sealed with butyl resin.
5. Covers shall be set to finish grade, install risers.
6. Tank shall meet H–20 loading.



CROSS–SECTION

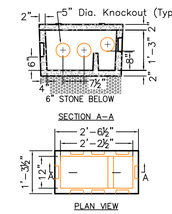
SHEA PRE-CAST M20002CH
H-20 TWO COMPARTMENT MONOLITHIC
2000 GALLON SEPTIC TANK / PUMP CHAMBER

N.T.S.



VICINITY MAP

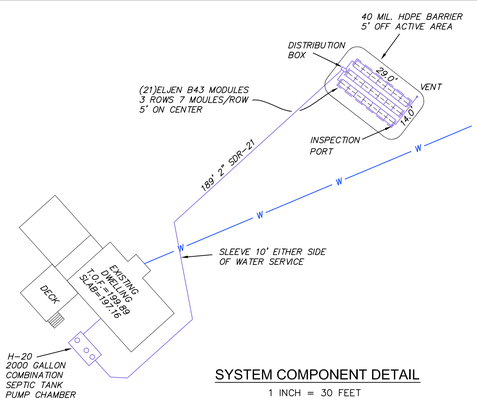
N.T.S.



NOTE:
RISER IS REQUIRED IF THE TOP OF D.BOX IS GREATER THAN 9 INCHES BELOW FINISH GRADE. MINIMUM INSIDE DIMENSION IS 12", MINIMUM SUMP IS 6", D.BOX SHALL BE EQUIPPED WITH WATER TIGHT COVER.

5-OUTLET DISTRIBUTION BOX

N.T.S



SYSTEM COMPONENT DETAIL

1 INCH = 30 FEET

LEACHING FACILITY DESIGN CRITERIA

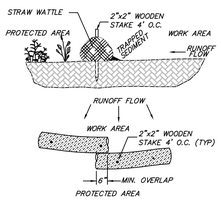
DEP Transmittal Number: X280580
ELJEN GSF B43 MODULE
Modified Remedial Use Approval – March 30, 2022

TYPE OF BUILDING: SINGLE FAMILY DWELLING
OF BEDROOMS: 3
MIN. DAILY FLOW: 3 x 110= 330 GPD
SOIL CLASS: I
EFFLUENT LOADING RATE (GPD/SF) = 0.74

CALCULATION:
REQUIRED BED AREA = 330 GPD/0.74 GPD/SF=446 SFx.60 =268 SF
400 SF MIN.

FROM DESIGN MANUAL TABLE 5: B43 BED SIZING CHART
MIN. NUMBER OF MODULES = 15

USE 3 ROWS WITH 7 MODULES PER ROW = 21 MODULES
ASTM C33 BED SIZE = 14' x 29' = 406 SF > 400 SF REQ.



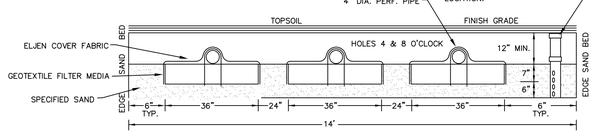
EROSION CONTROL DETAIL
STRAW WATTLE

N.T.S

ELJEN COVER FABRIC MUST BE SUPPLIED BY ELJEN CORP. ALTERNATIVE FABRICS SHALL NOT BE PERMITTED. CONTRACTOR SHALL PROVIDE PROPER VERIFICATION UPON REQUEST.

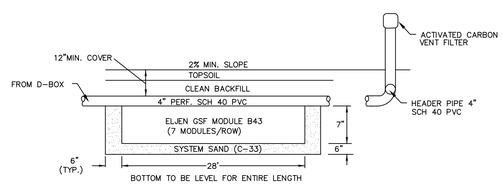
THE FABRIC COVERS THE TOP AND SIDES OF THE GFM ALONG THE ENTIRE LENGTH OF EACH ROW.

INSPECTION PORT:
4" PERFORATED OBSERVATION PIPE SHALL BE INSTALLED TO THE BOTTOM LEACHING INTERFACE OF THE LEACHING AREA PIPE TO BE ANCHORED AND SHALL EXTEND TO WITHIN 3" OF FINISH GRADE WITH A CAP. PERFORATED SECTION SHALL HAVE FILTER FABRIC SOCK TO PREVENT CLOGGING. SEE SITE PLAN FOR LOCATION.



BED CROSS SECTION (B43 MODULE)

N.T.S.



TANK BUOYANCY CALCS:
DIMENSIONS 13.0' x 7'
EST. GW =196.0
BOTTOM TANK=191.0 > 5.0 FT.

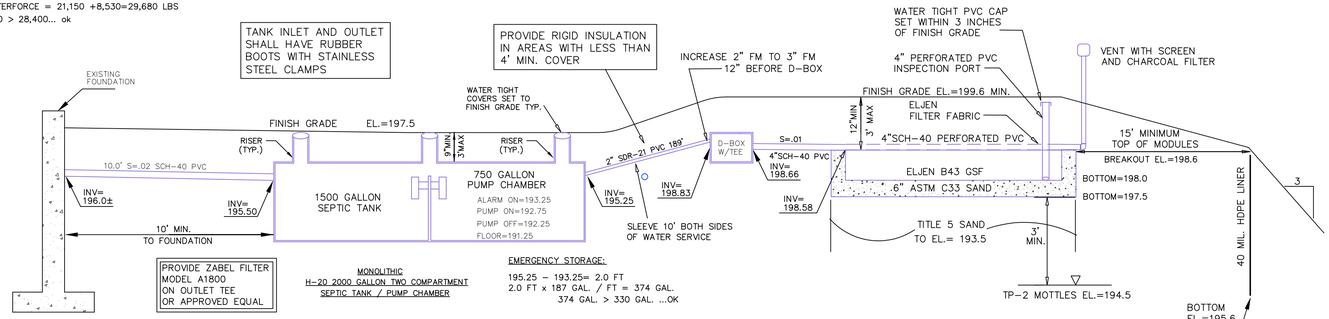
BUOYANCY FORCE
(13.0)(7.0)(5.0 FT.)(62.4) = 28,400 LBS

H–20 PRECAST 2000 GAL. TWO COMP. = 21,150 LBS. (SHEA PRE–CAST M20002CH)

BACKFILL (13.0)(7.0)(.75)(125)=8,530 LBS

COUNTERFORCE = 21,150 +8,530=29,680 LBS

29,680 > 28,400... ok



MONOLITHIC
H–20 2000 GALLON TWO COMPARTMENT
SEPTIC TANK / PUMP CHAMBER

EMERGENCY STORAGE:
195.25 – 193.25= 2.0 FT
2.0 FT x 187 GAL. / FT = 374 GAL.
374 GAL. > 330 GAL. ...OK

SYSTEM COMPONENT PROFILE

N.T.S

NOTES:

1. THIS LAND IS SUBJECT TO ANY EASEMENTS, RIGHTS–OF–WAY, RESTRICTIONS, RESERVATIONS, OR OTHER LIMITATIONS WHICH MAY BE REVEALED BY AN EXAMINATION OF THE TITLE.
2. THE OFFSETS AS SHOWN ON THIS PLAN ARE NOT TO BE USED FOR THE ESTABLISHMENT OF PROPERTY LINES OR FOR THE ESTABLISHMENT OF ANY PROPOSED CONSTRUCTION.
3. THIS PLAN WAS PREPARED FOR THE EXCLUSIVE USE AND PURPOSE FOR THE PARTY STATED HEREON AND SHALL NOT BE USED BY ANY THIRD PARTY WITHOUT THE EXPRESSED WRITTEN PERMISSION OF BORDERLAND ENGINEERING, INC.
4. THIS SITE DOES NOT FALL WITHIN A SPECIAL HAZARD FLOOD ZONE A, AS DESIGNATED BY F.I.R.M. NUMBER 25021C0139E EFFECTIVE DATE JULY 17, 2012.
5. UTILITIES ARE PLOTTED FROM FIELD LOCATION AND ANY RECORD INFORMATION AVAILABLE, AND SHOULD BE CONSIDERED APPROXIMATE. OTHER UTILITIES MAY EXIST WHICH ARE NOT EVIDENT OR FOR WHICH RECORD INFORMATION WAS NOT AVAILABLE. CONTRACTORS (IN ACCORDANCE WITH MASSACHUSETTS LAW) MUST CONTACT ALL UTILITY COMPANIES BEFORE EXCAVATING AND DRILLING. ALSO, CALL "DIG–SAFE" AT 1(888)344–7233 {1(888)DIG–SAFE}.
6. THE SYSTEM FOR THE SUBSURFACE DISPOSAL OF SANITARY SEWAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF 310 CMR 15.00 THE STATE ENVIRONMENTAL CODE, TITLE 5: MINIMUM REQUIREMENTS FOR THE SUBSURFACE DISPOSAL OF SANITARY SEWAGE. THE SYSTEM SHALL ALSO MEET THE LATEST LOCAL MUNICIPAL BOARD OF HEALTH REQUIREMENTS.
7. BUILDING SEWER PIPE AND FITTINGS SHALL BE SCHEDULE 40 PVC (POLYVINYL CHLORIDE) MANUFACTURED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF ASTM D3034. JOINTS SHALL BE SOLVENT WELDED TYPE(TIGHT JOINTS). PIPE TO BE LAID ON FIRM COMPACTED BASE.
8. WASHED STONE AND OTHER SOIL MATERIALS SHALL BE IN CONFORMANCE WITH TITLE 5.
9. WHENEVER SYSTEM IS TO BE CONSTRUCTED IN ZONE OF TOPSOIL & SUBSOIL OR OTHER DELETERIOUS MATERIAL, THE MATERIAL SHALL BE REMOVED AND REPLACED FOR 5' AROUND SYSTEM WHEN BELOW GRADE, AND 5' AROUND SYSTEM WHEN ABOVE GRADE. FILL MATERIAL SHALL BE CLEAN GRANULAR MATERIAL WITH A PERCOLATION RATE OF 2 MIN./INCH OR LESS, BE FREE OF DELETERIOUS MATERIAL, AND PROPERLY COMPACTED TO MINIMIZE SETTLEMENT.
10. NO CHANGES SHALL BE MADE IN THIS PLAN WITHOUT THE AUTHORIZATION OF THE ENGINEER AND THE BOARD OF HEALTH.
11. A GARBAGE GRINDER SHALL NOT BE ALLOWED TO BE INSTALLED IN THE DWELLING ON THIS SITE NOW OR IN THE FUTURE.
12. ZABEL FILTER IN TANK SHALL BE CLEANED ONCE A YEAR.
13. IT IS RECOMMENDED THAT SEPTIC TANKS BE INSPECTED FOR CLEANING ONCE A YEAR.
14. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC TAPE.
15. THE CONTRACTOR SHALL NOTIFY THE BOARD OF HEALTH AND ENGINEER IN WRITING 3 DAYS PRIOR TO START OF CONSTRUCTION.
16. THIS SYSTEM IS NOT WITHIN A NITROGEN SENSITIVE AREA AS DEFINED BY 310 CMR 15.00.
17. THERE ARE NO PUBLIC WELLS WITHIN 100'; BORDERING VEGETATED WETLANDS WITHIN 150 FEET; INLAND BANKS WITHIN 150 FEET; SURFACE WATERS WITHIN 150 FEET; SURFACE DRAINS WITHIN 50 FEET; OPEN, SURFACE, SUBSURFACE, SUBSURFACE OR FOUNDATION DRAINS WHICH INTERCEPT HIGH GROUND WATER WITHIN 50 FEET; VERNAL POOLS WITHIN 100 FEET; STORM DRAINAGE LEACHING CATCH BASINS OR DRY WELLS WITHIN 50 FEET; PERENNIAL STREAM WITHIN 200 FEET; AND ANY BOUNDARY OF A REGULATORY FLOODWAY OR 100 YEAR FLOOD WITHIN 150 FEET; NO PUBLIC WATER SUPPLIES WITHIN 400 FEET OF THE PROPOSED SYSTEM; UNLESS AS SHOWN ON THE PLAN.
18. ELJEN SYSTEM REQUIRES RECORDED DEED NOTICE PRIOR TO ISSUING CERTIFICATE OF COMPLIANCE.

COMMONWEALTH OF MASSACHUSETTS
GREGORY A. BUNAVICZ
CIVIL
No. 45851
REGISTERED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DESCRIPTION
1.	6–17–25	REAR YARD ACCESS
2.	6–19–25	SYSTEM LOCATION

BORDERLAND ENGINEERING, INC.
500 Turnpike Street
Canton, MA 02021
781-963-9500
www.borderlandeng.com

SEPTIC DESIGN PLAN
IN
BELLINGHAM, MASSACHUSETTS

30 STONE STREET

PREPARED FOR: PATRICTIA LLEWELLYN
30 STONE STREET
BELLINGHAM, MA 02019

DATE: MAY 28, 2025 PROJECT NUMBER: P3138

DRAWING SCALE: 1 INCH = 30 FEET