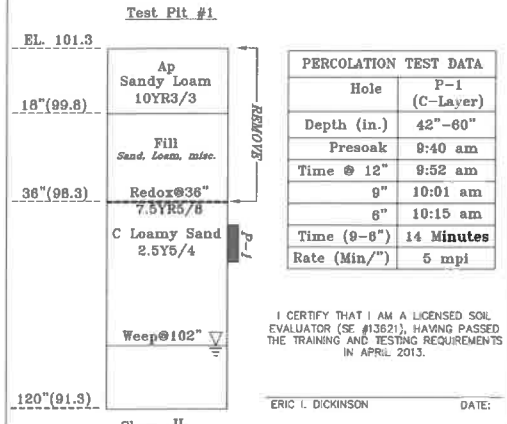


SOIL TEST PIT & PERCOLATION TESTING DATA

Perc. Test ∇ Observed Groundwater

Test Date: **January 30, 2024 @ 9:00 am**
 Weather: **30°-Clear/Cold**
 Testing: **Eric Dickinson, RS - CIVILized Solutions**
 Witness: **Scott Moles, RS - Holliston B.O.H. Director**



Hole	P-1 (C-Layer)
Depth (in.)	42"-60"
Time @ 12"	9:40 am
Time @ 12"	9:52 am
Time @ 6"	10:01 am
Time @ 6"	10:15 am
Rate (Min/In)	5 mpi

I CERTIFY THAT I AM A LICENSED SOIL EVALUATOR (SF #13621), HAVING PASSED THE TRAINING AND TESTING REQUIREMENTS IN APRIL 2013.

ERIC L. DICKINSON DATE: _____

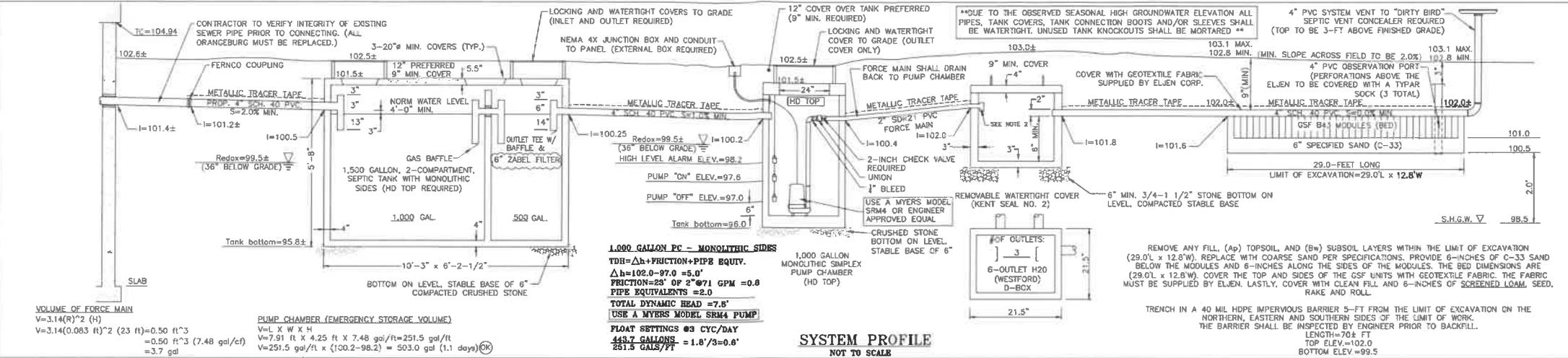
Class **II**
 SCS Class **Loamy Sand**

Fill material shall be comprised of clean granular sand, free from organic matter and deleterious substances. Mixtures and layers of different classes of soils 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 delivered to the site. Up to 45% by weight of the fill sample may be retained on the #4 sieve. Sieve analysis also shall be performed on the fraction of the fill sample passing the #4 sieve, such analysis 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	100%
100	0.15 mm	0% - 20%
200	0.075 mm	0% - 5%

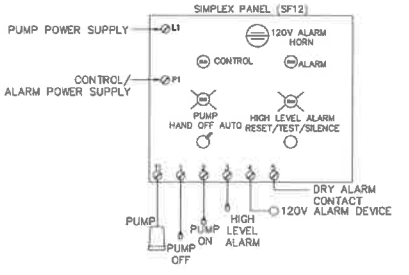
- General Notes:**
- This plan is for the construction of the sewage disposal facility ONLY.
 - All pipes shall be SCH 40 PVC or equivalent, unless otherwise noted.
 - Contractor shall call for inspections and approvals from the Board of Health and the Engineer after:
 - excavation
 - installation of system components
 - backfilling and final grading
 - Engineer shall certify installation and final grades on "As-built" plan. Contractor shall certify that installation conforms to approved As-built plan.
 - Prior to final backfill inspection, the contractor shall submit to B.O.H. a sketch with dimensions to system components from building corners and depth to access covers.
 - Contractor shall keep vehicles and materials off of the S.A.S. at all times.
 - No industrial wastes or categories are applicable.
 - Fill shall not be placed during rain or snow.
 - Excavation to be dry and scarified. Dewatering is required if fill is to be placed below groundwater.
 - No existing or proposed wells are within 200' of S.A.S., except as shown.
 - There are no known public wells or surface water supplies within 400 feet; private wells within 200 feet; inland banks or wetlands within 150-feet; no surface or subsurface drains of any kind except as shown, and no foundation drains. The work area is outside the regulatory floodway and the 100-year floodplain.
 - Area is NOT Nitrogen Sensitive.
 - All system components shall be marked with magnetic marking tape.

- Construction Notes:**
- Within limit of excavation, remove the fill, (Ap) topsoil, (Bw) subsoil and other impervious material.
 - All construction materials and methods shall conform to D.E.P. Title 5 and the local Board of Health Regulations.
 - Contractor shall be responsible for locating any and all underground utilities within the limits of construction. This includes securing and paying for the services of the local utility and private companies to mark all underground utilities on the property. The Engineer does not guarantee that ALL utilities and subsurface structures are shown.
 - The Existing Septic Tank shall be pumped dry, crushed in place, and the hole filled with sand.
 - Sand shall be stockpiled at edge and pushed/cast inward over excavated area.
 - Contractor shall install and maintain flagging around the system until the Certificate of Compliance is issued.



- Septic Tank & Pump Chamber Notes (HD tops Required):**
- Septic Tank/Pump Chamber shall be steel reinforced concrete.
 - Septic Tank/Pump Chamber to withstand H=20 loading.
 - All pipe connections and concrete construction to be watertight.
 - Inlet and Outlet tees to be SCH 40 PVC. Tees to be centered under manhole cover.
 - LaMarr does not use model numbers for stocking/ordering. Contractor shall contact LaMarr Concrete @ 603-878-1340 and request 1,500 gallon, monolithic septic tank and 1,000 gallon, monolithic pump chamber.
 - Recommended manufacturer-LaMarr, or approved equivalent.

- Distribution Box Notes (H20):**
- Distribution box to withstand H=20 loading.
 - Provide inlet tee or baffle where slope of inlet pipe exceeds 0.08'/ft, or in pumped system.
 - First two feet of pipe exiting d-box to be laid level.
 - Recommended manufacturer-LaMarr, or approved equivalent.
 - LaMarr does not use model numbers for stocking/ordering. Contractor shall contact LaMarr Concrete @ 603-878-1340 and request a 6-outlet, "Westford" Title 5 compliant distribution box.



NOTES:

PANEL SUPPLIED IN NEMA 1 OR NEMA4 ENCLOSURE.
 RATED FOR 1PH 115 / 230 (MAX 0.5 HP)
 CIRCUIT BREAKER PROVIDED FOR PUMP DISCONNECT.
 PROVIDED WITH MANUAL PUMP CONTROL & PUMP RUN INDICATORS.
 SEPARATE FUSES FOR ALARM AND CONTROL CIRCUITS.
 REMOTE ALARMS AVAILABLE.

ASTM C33 SAND SPECIFICATION

Sieve Size	Sieve Square opening size	Specification percent passing (wet sieve)
3/8 Inch	9.52 mm	100
No. 4	4.75 mm	85-100
No. 8	2.38 mm	80-100
No. 16	1.19 mm	50-85
No. 30	600 um	25-60
No. 50	297 um	10-30
No. 100	149 um	0-10
No. 200	75 um	0-5

Buoynancy Check:

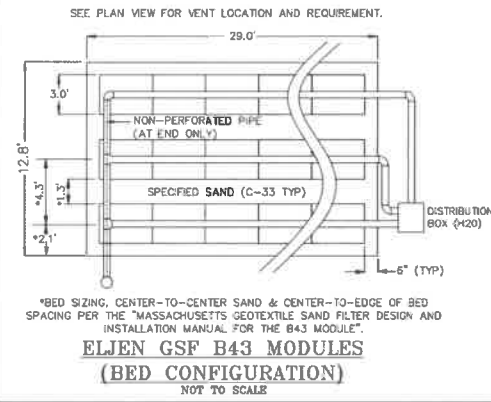
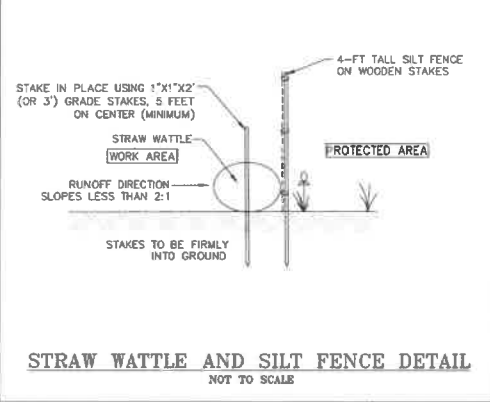
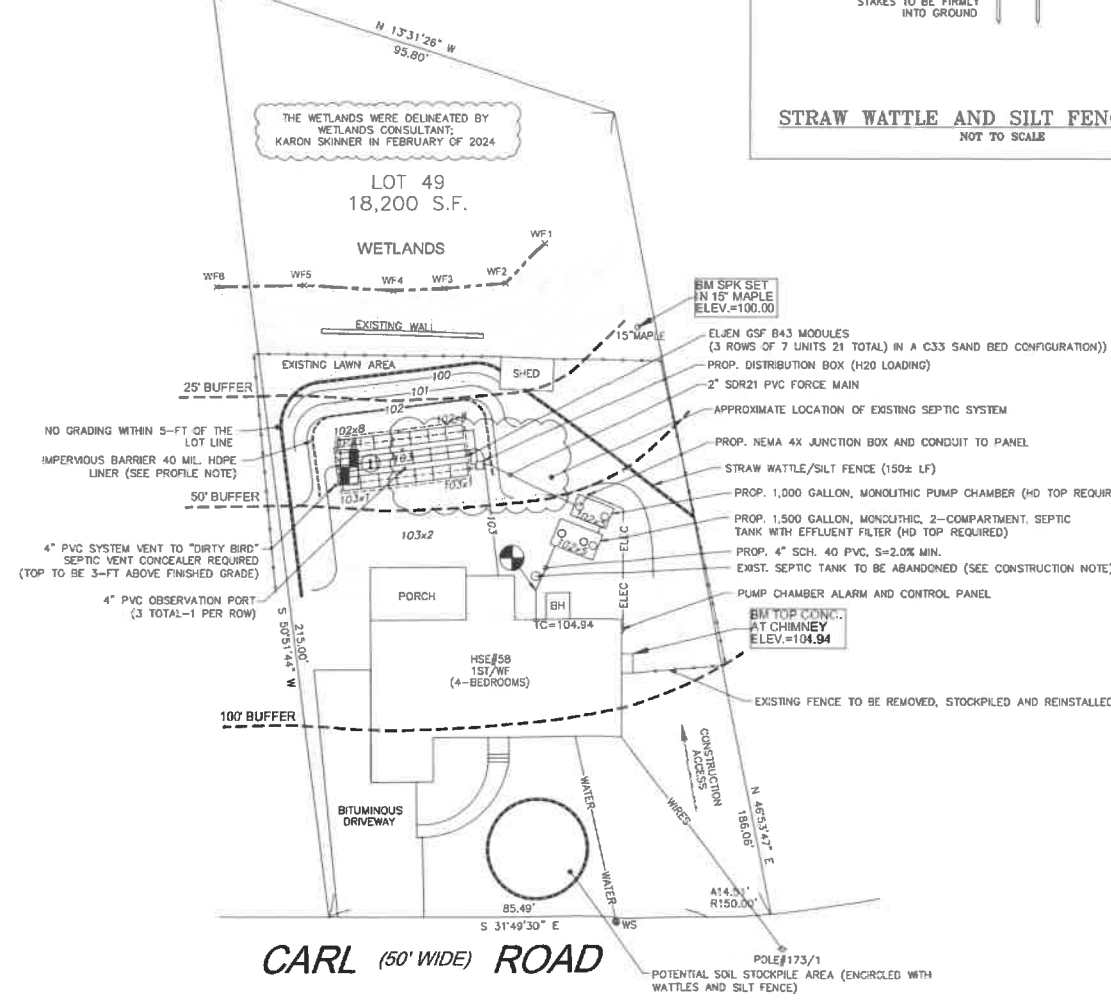
Septic Tank (HD Top Required):
 Wgt. of Tank+Soil= 14,200+(10.25x8.15)(1.0)(100)=20,504#
 Wgt. of Water Displaced= (10.25x8.15)(3.7)(62.4)=14,554# (ok)

Pump Chamber (HD Top Required):
 Wgt. of Tank+Soil= 10,200+(8.6x5.0)(1.0)(100)=14,500#
 Wgt. of Water Displaced= (8.6x5.0)(3.6)(62.4)=9,600# (ok)

AREAS OF TEMPORARY DISTURBANCE

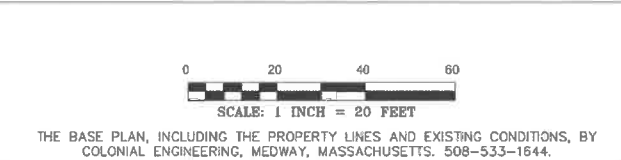
WITHIN THE 25-FOOT BUFFER - 225 SF
 WITHIN THE 25 TO 50-FOOT BUFFER - 1,341 SF
 WITHIN THE 50 TO 100-FOOT BUFFER - 1,555 SF
 THE TOTAL AREA OF TEMPORARY DISTURBANCE IS 3,121 SF

CONSERVATION NOTES:
 SOIL STOCKPILING ALLOWED OUTSIDE OF 100-FT BUFFERS.
 NO OVERNIGHT STORAGE OF EQUIPMENT WITHIN A 100-FOOT OF THE B.V.M..

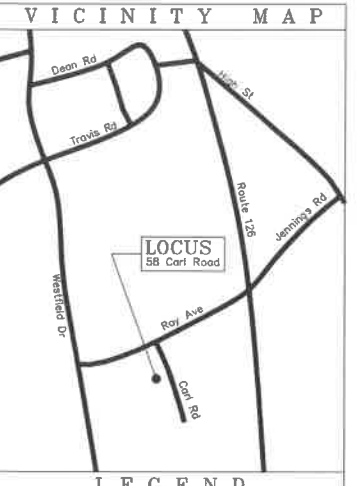


- NOTES:**
- THE WATER SERVICE LOCATION SHOWN IS APPROXIMATE. IF ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR RESOLUTION.
 - ANY SUBSTITUTIONS OF MANUFACTURERS BY THE CONTRACTOR OF THE SEPTIC TANK, DISTRIBUTION BOX, ETC. SHOWN ON THIS PLAN MUST BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. PRODUCT CUT SHEETS MUST BE PROVIDED FOR REVIEW.
 - THE CONTRACTOR SHALL CONSULT WITH THE HOMEOWNER PRIOR TO THE REMOVAL OF ANY VEGETATION (TREES, SHRUBS, ETC).
 - A GARBAGE GRINDER PROHIBITED BY DESIGN.
 - ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE.
 - IF DEWATERING IS NECESSARY, THE CONTRACTOR SHALL CONTACT THE ENGINEER AND CONSERVATION COMMISSION AT 508-651-7963 FOR RESOLVE.

- LOCAL VARIANCES AND DEED RESTRICTION:**
- SECTION 310 CMR 12.00(4) TO ALLOW THE SOL ABSORPTION SYSTEM TO BE INSTALLED 3- FEET ABOVE THE SEASONAL HIGH GROUNDWATER FOR SOILS WITH PERCOLATION RATES LESS THAN 2-MPH USING AN ELJEN GSF SYSTEM, PER DEP'S "REMEDIAL USE APPROVAL", LAST REVISED MARCH 30, 2022. DEP APPROVAL IS NOT REQUIRED.
 - SECTION 310 CMR 15.405 (1)(j) TO ALLOW A REDUCTION OF THE REQUIREMENT OF A TWELVE (12) INCH SEPARATION BETWEEN THE INLET AND OUTLET TEES TO HIGH GROUNDWATER, PROVIDED THAT ALL JOINTS ARE SEALED WITH HYDRAULIC CEMENT OR INSTALLED WITH WATER TIGHT SLEEVES AND THE TANK IS PROVEN WATER TIGHT.
 - MA DEP VARIANCES - NONE
 - DEED RESTRICTION - PER THE MADEP APPROVAL FOR REMEDIAL USE, THE SYSTEM OWNER SHALL BE REQUIRED TO RECORD AT THE REGISTRY A DEED RESTRICTION LIMITING THE SYSTEM TO 4-BEDROOMS. THE NOTICE OF AN ALTERNATIVE SYSTEM SUBJECT TO MA DEP'S "STANDARD CONDITIONS FOR ALTERNATIVE SOL ABSORPTION SYSTEMS WITH GENERAL USE CERTIFICATION AND/OR APPROVED FOR REMEDIAL USE-REVISED SEPTEMBER 26, 2014 AND MARCH 30, 2022. SEE ELJEN MASSACHUSETTS DESIGN MANUAL.



Revision History	DESIGNED: E. Dickinson, RS	PREPARED BY: ED
SCALE: 1"=20'	DATE: February 28, 2024	



- LEGEND**
- New Meets Existing (N.M.E.)
 - L.O.E. Limit of Excavation
 - N.I.C. Not In Contract
 - Test Pit
 - Perc Hole
 - Section A-A
 - 99x1 Spot Elevation
 - 99- Existing Contour Elevation
 - 100- Proposed Contour Elevation
 - Groundwater
 - S.H.G.W Seasonal High Groundwater
 - B.G. Below Grade
 - Tree to be removed

DESIGN CRITERIA

DESIGN FLOW: Single-Family Residence
 Existing 4-Bedrooms/9 total rooms
 4 Bedrooms @ 110 GPD/Br = 440 GPD
SEPTIC TANK:
 Required 440 x 3 = 1,320 Gal
 Provided: 1,500 Gal
 (Use a 2-Compartment, Monolithic Tank)
****GARBAGE DISPOSAL IS PROHIBITED****

LEACHING FACILITY:
 Design Perc Rate 5 Min./Inch
 Soil Class f
 Loading Rate 0.74 Gal/Day/SF
 Assume: Eljen GSF B43 Modules (Bed)

REQUIRED:
 440 GPD = 595 SF = 357 SF (PER ELJEN MANUAL)
 0.74 GPD/SF (MINIMUM 20 UNITS REQUIRED)

PROVIDED: BED CONFIGURATION-21 UNITS
 USE 3 ROWS OF 7 UNITS
 SAND AREA = 12.8'W x 29.0'L
 = 371.2 SF
 357 SF < 371.2 SF (o.k.)

SCHEDULE OF INVERT ELEVATIONS:

4" Septic Tank (IN)	101.2±
4" Septic Tank (OUT)	100.5
4" Pump Chamber (IN)	100.25
2" Pump Chamber (OUT)	100.4
2" Distribution Box (IN)	102.0
4" Distribution Box (OUT)	101.6
4" Leaching Pipe	101.8
Elev. at Bottom of Eljen	101.0
Elev. at Bottom of C-33 Sand	100.5
Elev. at Bottom of Excavation 36"+ B.G.	
Observed Groundwater Elev.	102" B.G.
High Groundwater Elev.	36" B.G.
Determination Method	Soil Morphology
B.O.H. Correction Factor	None

SEPTIC SYSTEM CONSTRUCTION
 58 Carl Road
 Holliston, Massachusetts

OWNER(S): Jason & Lisa Dufault
 58 Carl Road
 Holliston, MA 01746
 PH: 774-286-1844

ASSESSOR'S:
 MAP 11.0
 BLOCK 8.0
 LOT 49.0