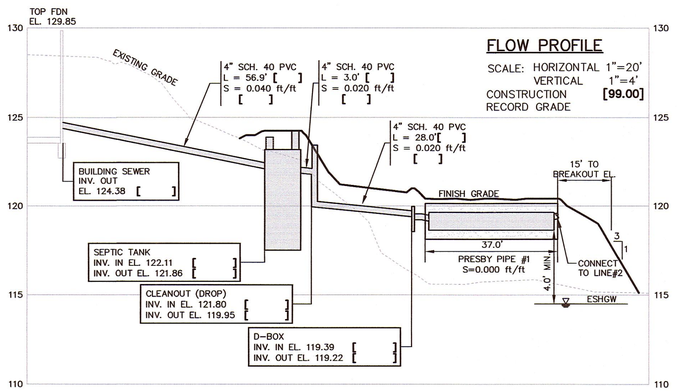
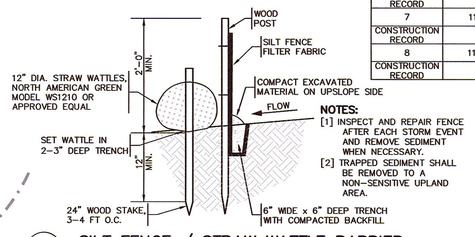


SOIL TEST ELEVATIONS

HOLE NO.	GRADE	ESHGW	BOTTOM
520–1	123.3	120.8	118.0
520–2	122.5	120.5	120.5
520–3	115.5	113.5	111.0
520–4	114.8	112.8	109.5
520–5	119.5	117.7	115.8
520–6	116.3	114.5	112.3
520–7	112.8	110.6	107.6
520–A	114.8	––	111.6

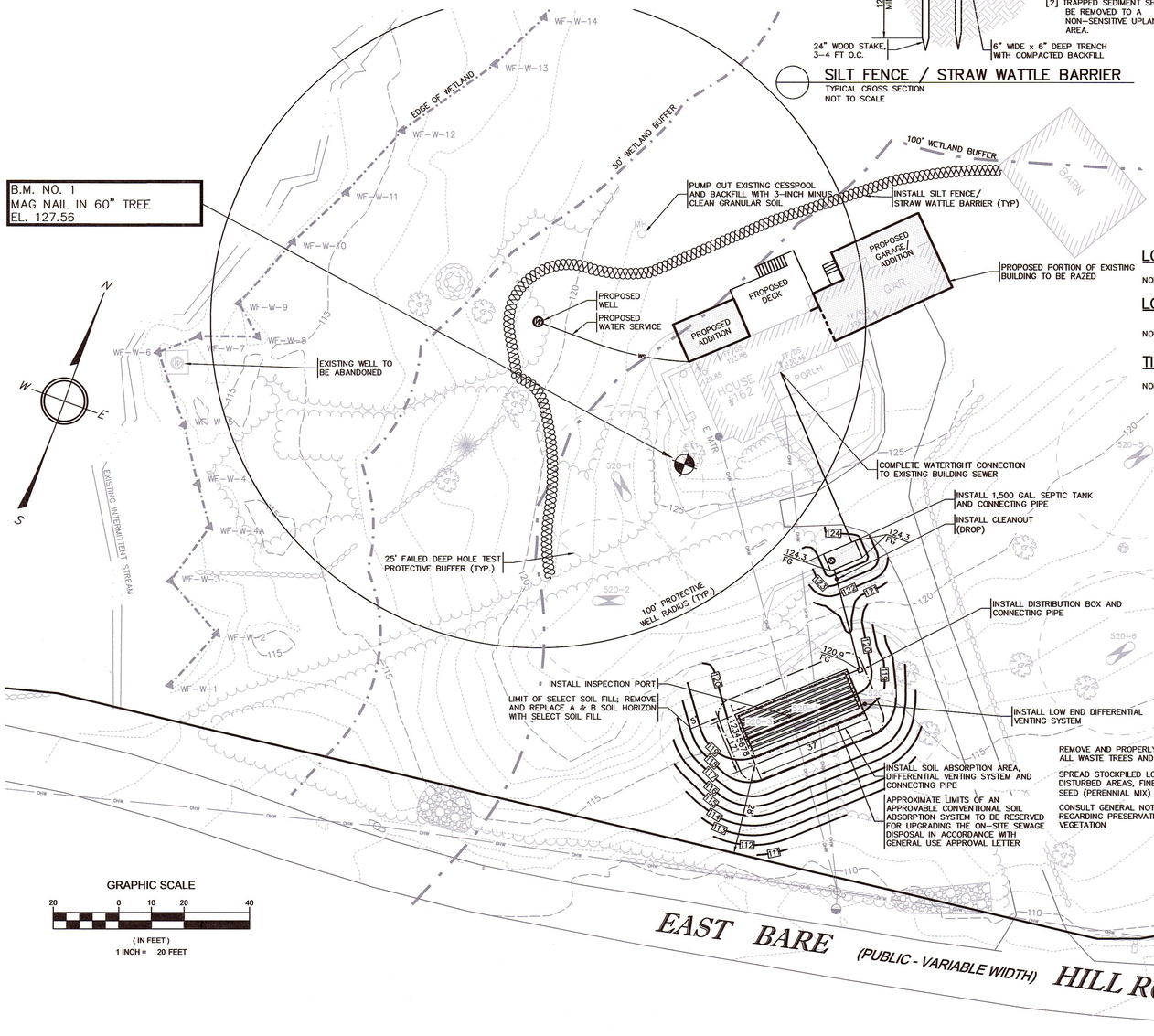
SOIL ABSORPTION AREA SCHEDULE OF ELEVATIONS

LINE #	FINISH GRADE	BREAKOUT	BOTTOM OF PIPE	BOTTOM OF SYSTEM SAND
1	120.4	118.1	118.6	118.1
CONSTRUCTION RECORD				
2	120.1	117.9	118.4	117.9
CONSTRUCTION RECORD				
3	119.9	117.7	118.2	117.7
CONSTRUCTION RECORD				
4	119.7	117.5	118.0	117.5
CONSTRUCTION RECORD				
5	119.5	117.3	117.8	117.3
CONSTRUCTION RECORD				
6	119.3	117.1	117.6	117.1
CONSTRUCTION RECORD				
7	119.1	116.8	117.3	116.8
CONSTRUCTION RECORD				
8	118.9	116.6	117.1	116.6.
CONSTRUCTION RECORD				



NOTES:
[1] INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
[2] TRAPPED SEDIMENT SHALL BE REMOVED TO A NON–SENSITIVE UPLAND AREA.

SILT FENCE / STRAW WATTLE BARRIER
TYPICAL CROSS SECTION
NOT TO SCALE



LOCAL UPGRADE APPROVAL (310 CMR 15.405)
NONE REQUIRED.

LOCAL BOARD OF HEALTH WAIVERS
NONE REQUIRED

TITLE 5 VARIANCES (310 CMR 15.410–417)
NONE REQUIRED

ASSESSORS REFERENCE:
ASSESSORS MAP 35, LOT 46
RECORD OWNER:
KELVIN & CHARLENE WIEBE
12 LINDEN STREET
CHELMSFORD, MA 01824

LEGEND

EXISTING		PROPOSED
100	ELEVATION CONTOUR	100
X100.0	SPOT GRADE	100.0 FG
WF–1	PROPERTY LINE	
	WETLAND DELINEATION	
	WETLAND BUFFER ZONE	
	SHORELINE	
	100–YEAR FLOODPLAIN LIMIT	
	TREE LINE / EDGE OF VEGETATION	
	EDGE OF PAVEMENT	
	CAPE COD BERM CURBING	
	GRANITE CURBING	
	GRAVEL/DIRT ROAD	
	STOCKADE FENCE	
	STONE WALL	
W	WATER MAIN	W
WS	WATER SERVICE	WS
FS	FIRE SERVICE	FS
WV	WATER VALVE	WV
	FIRE HYDRANT	
FM	FORCE MAIN	FM
SS	GRAVITY SEWER LINE	SS
	SEWER MANHOLE	SMH
G	GAS LINE	
GS	GAS SERVICE	GS
GV	GAS VALVE	
E	BURIED POWER LINE	E
OHW	OVERHEAD POWER LINE	OHW
	UTILITY POLE	
	GUY WIRE	
E	ELECTRIC BOX	E
SD	STORM DRAIN	SD
UD	UNDERDRAIN	UD
RD	ROOF DRAIN	RD
FD	FOUNDATION DRAIN	FD
CB	CATCH BASIN	
DMH	DRAIN MANHOLE	
	SILT FENCE BARRIER	
	STRAW WATTLES	
199–1	DEEP SOIL OBSERVATION HOLE	
	SITE LUMINAIRE	
	SIGN	
	SURFACE RUNOFF DIRECTION	
	STONE BOUND	
	DRILL HOLE	
	IRON ROD	

ABBREVIATIONS

EL	ELEVATION	HDPE	HIGH DENSITY POLYETHYLENE
INV	INVERT	PVC	POLYVINYL CHLORIDE
SF	SQUARE FEET	RCP	REINFORCED CONCRETE PIPE
AC	ACRES	N/F	NOW OR FORMERLY
FT	FEET	VP	VERNAL POOL
R	RADIUS	WF	WETLAND FLAG
DIA	DIAMETER	TW	TOP OF WALL
BIT	BITUMINOUS	BW	BOTTOM OF WALL
CONC	CONCRETE	FG	FINISH GRADE
L	LENGTH	BSMT	BASEMENT
S	SLOPE	FF	FINISH FLOOR

REMEDIAL USE APPROVAL (310 CMR 15.284)
APPROVAL FOR REMEDIAL USE PER MA DEP APPROVAL LETTER TO PRESBY ENVIRONMENTAL, INC. ISSUANCE DATE: REVISED SEPTEMBER 26, 2013. MODIFIED OCTOBER 30, 2019.

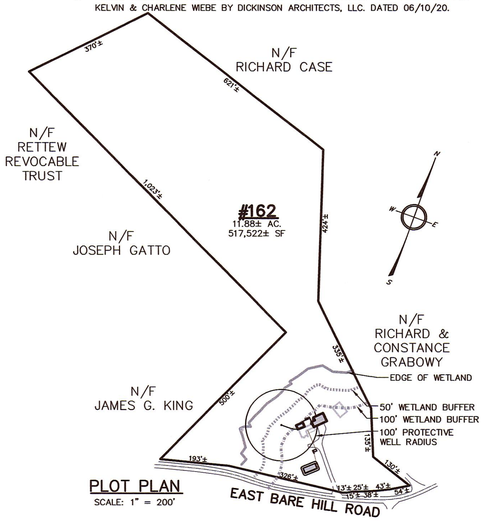
PRESBY ENVIRONMENTAL, INC.
143 AIRPORT ROAD
WHITEFIELD, NH 03598

CERTIFICATE NO: 5922MAES
ISSUED TO: NICHOLAS PAULING PE

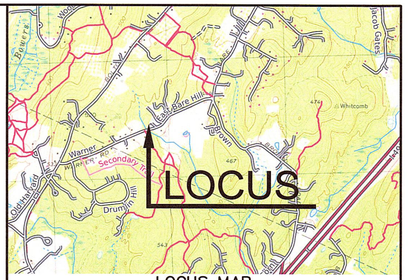
AND THE "STANDARD CONDITIONS FOR ALTERNATIVE SOIL ABSORPTION SYSTEMS WITH GENERAL USE CERTIFICATION AND/OR APPROVED FOR REMEDIAL USE" ISSUED BY THE MA DEP, REVISED MARCH 5, 2018.

REQUESTED:
SPECIAL CONDITIONS 3(B): A REDUCTION OF REQUIRED DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL LAYER REQUIRED BY 310 CMR 15.240(1) FROM 4 FT TO 2 FT,

PLAN REFERENCES:
1. "LAND IN HARVARD, MASS." SURVEYED FOR JOHN J. SHEEHAN BY PARKER, BATEMAN & CHASE. DATED DECEMBER 1947. PLAN NO. S–81. WORCESTER DISTRICT REGISTRY OF DEEDS PLAN BOOK 170, PLAN 39.
2. "WETLANDS DELINEATION REPORT–162 E. BARE HILL RD. HARVARD" PREPARED FOR GOLDSMITH, PREST & RINGWALL, INC. BY THREE OAKS ENVIRONMENTAL. DATED FEBRUARY 14, 2020.
3. "WIEBE RESIDENCE–162 EAST BARE HILL ROAD, HARVARD, MA" PREPARED FOR KELVIN & CHARLENE WIEBE BY DICKINSON ARCHITECTS, LLC. DATED 06/10/20.



PLOT PLAN
SCALE: 1" = 200'



LOCUS MAP
1" = 2000'

NITROGEN LOADING LIMITATIONS (310 CMR 15.214–217)
SENSITIVE AREA: NONE
UNIT DESIGN FLOW LIMIT: NONE
UNIT DESIGN FLOW: NO LIMITATION. SEE DESIGN CRITERIA.

DESIGN CRITERIA
FLOW AND SEPTIC TANK
1. BUILDING USE: SINGLE FAMILY DWELLING
2. NO. OF BEDROOMS: 4
3. DESIGN FLOW: 110 GPD PER BEDROOM
4. TOTAL DAILY FLOW: 440 GALLONS
5. GARBAGE GRINDER: NO
6. SEPTIC TANK SIZE: 440 GPD X 200% = 880 GALLONS REQUIRED
   USE 1,500 GALLON TANK MIN.

PRESBY ENVIRO–SEPTIC SOIL ABSORPTION AREA
1. DESIGN PERCOLATION RATE: 7 MIN. PER INCH
2. SOIL TEXTURAL CLASS: 1
3. LONG TERM ACCEPTANCE RATE: 0.68 GPD/SF
4. EFFECTIVE AREA REQUIRED (LOCAL CODE): 440 GPD/ 0.68 GPD/SF = 648 SF
   648 SF X 60% = 389 SF (THROUGH USE OF ENVIRO–SEPTIC)
5. EFFECTIVE AREA PROVIDED:
   BED WIDTH: 14 FT + 3 FT EXTENSION FOR BEDS >10% SLOPE = 17 FT
   BED AREA: 37 FT LONG X 17 FT WIDE = 629 SF
   ENVIRO–SEPTIC DISTRIBUTION LINES: REQUIRED 280 L.F.
   PROVIDED: 35 L.F. X 8 LINES = 280 L.F.
6. MIN. SEPARATION, BOTTOM STONE TO ESHGW: REQ'D: 4 FT; PROVIDED: 4 FT

CONVENTIONAL RESERVE AREA NOT REQUIRED/PROVIDED

ELEVATION DATUM
DATUM: ASSUMED B.M. NO.1

NOTE: IF THERE ARE NO BENCH MARKS WITHIN 75 FEET OF THE DISPOSAL SYSTEM TO BE INSTALLED, CONTRACTOR SHALL SET AT LEAST ONE BENCH MARK WITHIN SUCH PROXIMITY PRIOR TO ANY EXCAVATION.

EXISTING CONDITIONS NOTES:
1. EXISTING CONDITION INFORMATION BASED ON AN ON–THE–GROUND TOPOGRAPHIC AND BOUNDARY SURVEY PERFORMED BY GOLDSMITH, PREST & RINGWALL, INC. DATED APRIL 21, 2020 AND APRIL 29, 2020.
2. EDGE OF WETLAND DELINEATED BY THREE OAKS ENVIRONMENTAL. DATED FEBRUARY 14, 2020.

DRAWING ISSUED FOR:
☐ CONCEPT ☐ CONSTRUCTION
■ PERMIT ☐ CONSTRUCTION RECORD

THIS DRAWING MAY BE USED FOR CONSTRUCTION UPON ISSUANCE OF ALL PERMITS AND APPROVALS BY REGULATORY AUTHORITIES.

COMMONWEALTH OF MASSACHUSETTS
NICHOLAS M. PAULING
CIVIL
No. 47114
REGISTERED PROFESSIONAL ENGINEER
6/18/2020

PER 250 CMR 5.03(13), THE FOLLOWING ARE EXCLUDED FROM THE PROFESSIONAL ENGINEER'S RESPONSIBILITY: ALL BOUNDARY INFORMATION; LOCATION OF EXISTING STRUCTURES, TREES, UTILITIES, TOPOGRAPHY OR SIMILAR FEATURES; DESIGN OF RETAINING WALLS, PROPRIETARY EQUIPMENT. SEE EXISTING CONDITION NOTES.

NO.	DATE	BY	APP.	REVISION DESCRIPTION

GPR Engineering Solutions for Land & Structures
GOLDSMITH, PREST & RINGWALL, INC.
39 MAIN STREET, SUITE 301. AYER, MA 01432
CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING
VOICE: 978.772.1590 FAX: 978.772.1591
www.gpr-inc.com

SUBSURFACE SEWAGE DISPOSAL SYSTEM UPGRADE

SITE PLAN AND FLOW PROFILE

162 EAST BARE HILL ROAD
HARVARD, MA

PREPARED FOR:
KELVIN & CHARLENE WIEBE
12 LINDEN STREET
CHELMSFORD, MA 01824

DES. BY: MCL	DATE: JUNE 2020	JOB 201028	1 OF 2
CHK. BY: NMP			

P:\20----\201028\DWG\SDS\SITE PLAN.DWG 06-18-20 2:00:08 PM - LAYOUT SITE PLAN

GENERAL NOTES

1. LOCATION OF EXISTING UNDERGROUND UTILITIES/OBSTRUCTIONS/SYSTEMS SHOWN HEREON ARE APPROXIMATE ONLY. ALL UTILITIES/OBSTRUCTIONS/SYSTEMS MAY NOT BE SHOWN. LOCATE AND PROTECT ALL UNDERGROUND UTILITIES/OBSTRUCTIONS/SYSTEMS, WHETHER OR NOT SHOWN HEREON.
2. INSTALL ALL NEW UTILITIES UNDERGROUND, UNLESS SPECIFICALLY INDICATED OTHERWISE.
3. EMPLOY A LICENSED PROFESSIONAL LAND SURVEYOR TO LAY OUT BUILDING AND SITE IMPROVEMENTS FOR CONSTRUCTION. PROPERTY LINES SHOWN HEREON ARE APPROXIMATE. SEE PLAN REFERENCE HEREON.
4. CONTRACTOR IS RESPONSIBLE FOR SAFETY MEASURES, CONSTRUCTION METHODS, AND CONTROL OF WORK.
5. REPAIRS AND/OR REPLACEMENT OF ANY EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION THAT ARE NOT DESIGNATED FOR DEMOLITION AND/OR REMOVAL HEREON ARE THE RESPONSIBILITY OF CONTRACTOR. REPAIR SUCH DAMAGE TO THE SATISFACTION OF OWNER(S).
6. THIS PLAN IS NOT INTENDED TO SHOW AN ENGINEERED BUILDING FOUNDATION DESIGN, WHICH WOULD INCLUDE DETAILS AND ELEVATIONS OF FOOTINGS, WALLS AND SUBSURFACE DRAINS TO PREVENT INTERIOR FLOODING. SEE ARCHITECTURAL AND/OR STRUCTURAL DRAWINGS.
7. PRIOR TO IMPLEMENTATION, SEEK ENGINEER REVIEW AND APPROVAL OF ANY INTENDED REVISION OF HORIZONTAL AND/OR VERTICAL DESIGN LOCATION OF IMPROVEMENTS SHOWN HEREON.
8. PROMPTLY NOTIFY ENGINEER UPON COMMENCEMENT OF CONSTRUCTION IN ORDER TO ENSURE THAT REQUIRED INSPECTIONS ARE PERFORMED IN A TIMELY AND EFFICIENT MANNER. MAINTAIN DISPOSAL SYSTEM IN AN UNCOVERED CONDITION UNTIL AUTHORIZED TO BACKFILL BY ENGINEER AND LOCAL BOARD OF HEALTH.
9. NOTIFY ENGINEER UPON DISCOVERY OF ANY UNFORESEEN SURFACE OR SUBSURFACE CONDITIONS THAT MAY IMPACT SYSTEM INSTALLATION, REGULATORY APPROVAL, OR FUNCTION.
10. INSTALL FINISH RIM ELEVATIONS TO MATCH FINISH PAVEMENT, GRADING OR LANDSCAPING SURFACE, UNLESS SPECIFICALLY INDICATED OTHERWISE.
11. PLUG/CAP/FILL EXISTING UTILITY LINES/STRUCTURES THAT ARE TO BE CUT/BROKEN DOWN/ABANDONED, IN ACCORDANCE WITH UTILITY OWNER REQUIREMENTS.
12. WHERE THE WORD "INSTALL" IS USED HEREIN, IT IS INTENDED TO DIRECT CONTRACTOR TO "FURNISH, INSTALL, AND PLACE IN OPERATION" THE COMPONENT REFERRED TO.
13. THE ISSUANCE OF A CERTIFICATE OF COMPLIANCE IS NOT A GUARANTEE THAT THE DISPOSAL SYSTEM WILL FUNCTION SATISFACTORILY.
14. INSTALL EROSION CONTROL MEASURES, SUCH AS SILT FENCE AND/OR STRAW WATTLES AS MAY BE SHOWN HEREON, BEFORE EARTH DISTURBANCE OCCURS.
15. THE SUBJECT SYSTEM HAS BEEN DESIGNED TO PROCESS ONLY DOMESTIC SEWAGE AT THE INDICATED LOADING RATE. THE SYSTEM IS NOT DESIGNED TO ACCOMMODATE A GARBAGE DISPOSAL.
16. COORDINATE WITH OWNER/ENGINEER REGARDING REMOVAL OF TREES AND OTHER VEGETATION NOT REQUIRING REMOVAL BY REGULATIONS AND CODES.
17. THESE DRAWINGS DO NOT ADDRESS PLUMBING REQUIRED INSIDE BUILDINGS TO ROUTE APPROPRIATE DRAINS TO BUILDING SEWER. OWNER SHALL EMPLOY A LICENSED PLUMBER TO COMPLETE SUCH WORK AS IS NECESSARY TO DRAIN ALL BLACKWATER AND GREYWATER TO THE PROPOSED SEWAGE DISPOSAL SYSTEM.
18. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED.

REGULATORY NOTES

1. A LICENSED DISPOSAL SYSTEM INSTALLER SHALL PERFORM ALL WORK ON THE SEWAGE DISPOSAL SYSTEM.
2. CONTACT DIG-SAFE FOR UNDERGROUND UTILITY MARKING AT 888-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF ANY WORK.
3. OBTAIN ALL CONSTRUCTION PERMITS REQUIRED BY REGULATORY AUTHORITIES.
4. PRIOR TO COMMENCEMENT OF ANY WORK, REVIEW AND THOROUGHLY UNDERSTAND ALL CONSTRUCTION REQUIREMENTS, CONDITIONS, AND LIMITATIONS IMPOSED BY PERMITS AND APPROVALS ISSUED BY REGULATORY AUTHORITIES.
5. COMPLETE ALL WORK THAT IS OUTSIDE OF BUILDING AND LESS THAN 10 FEET FROM THE INSIDE FACE OF BUILDING FOUNDATION IN CONFORMANCE WITH THE UNIFORM STATE PLUMBING CODE OF MASSACHUSETTS, 248 CMR 2.00.
6. GENERAL COMPLIANCE WITH 28 CFR PART 36 – 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN AND 521 CMR PART C, EXTERIOR OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATIONS IS INTENDED. CONTRACTOR SHALL VERIFY COMPLIANCE DURING CONSTRUCTION AND SHALL NOTIFY THE OWNER OF ANY NON-COMPLIANCE ISSUES AS SOON AS DISCOVERED.

SITE NOTES

1. ALL SEWAGE DISPOSAL SYSTEM COMPONENTS ARE GREATER THAN 400 FEET FROM SURFACE WATER RESERVOIRS AND GREATER THAN 200 FEET FROM TRIBUTARIES TO SURFACE WATER RESERVOIRS.
2. THERE ARE NO KNOWN EXISTING WELLS WITHIN 150 FEET OF PROPOSED SOIL ABSORPTION AREA, OR WITHIN 50 FEET OF PROPOSED SEPTIC TANK.
3. ALL KNOWN WELLS WITHIN 200 FEET OF SEWAGE DISPOSAL SYSTEM ARE SHOWN HEREON.
4. WATER SERVICE VIA PRESSURE LINE FROM WELL.

SPECIFICATIONS

PIPE (310 CMR 15.251)

1. BUILDING SEWER: 4-INCH DIA. SCH 40 PVC, MIN. SLOPE 1/4 IN. PER FT.
2. DISTRIBUTION LINES: 12" OUTSIDE DIAMETER ENVIRO-SEPTIC PIPE INSTALLED LEVEL.
3. DISTRIBUTION LINES FROM DISTRIBUTION BOX: SOLID WALL 4-INCH DIA. SCH 40 PVC OR SDR35 PVC. MIN. 2-INCH DROP.
4. BED, HAUNCH, AND BACKFILL ALL PIPE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS. ALL JOINTS SHALL BE WATERTIGHT.
5. VENT BUILDING SEWER THROUGH MAIN STACK IN BUILDING SERVED BY IT.
6. DIFFERENTIAL VENTING SYSTEM: SOLID WALL 4-INCH DIA. SCH 40 PVC.

SEPTIC TANK (310 CMR 15.221, 15.223, 15.226)

1. TANK RATED FOR H-10 LOADING. MANUFACTURER: SHEA CONCRETE PRODUCTS, INC., WILMINGTON, MA (978-658-2645), OR EQUAL.
2. SEAL TANK WATERTIGHT, USING RUBBER JOINT SEALER AND NON-SHRINK GROUT ALONG ALL JOINTS. A WATER TEST MAY BE REQUIRED.

DISTRIBUTION BOX (310 CMR 15.232)

1. DISTRIBUTION BOX RATED FOR H-10 LOADING. MANUFACTURER: SHEA CONCRETE PRODUCTS, INC., WILMINGTON, MA (978-658-2645), OR EQUAL.
2. WHEN THE INLET PIPE SLOPE EXCEEDS 8% OR, WHERE A FORCE MAIN INLET IS SPECIFIED, INSTALL A PVC INLET TEE, WITH BOTTOM OF TEE ONE INCH ABOVE OUTLET INVERT.
3. DISTRIBUTION BOX SHALL HAVE A MINIMUM INSIDE DIMENSION OF 12 INCHES AND A MINIMUM SUMP DEPTH OF 6 INCHES BELOW OUTLET INVERT. SEAL BOX WATERTIGHT WITH NON-SHRINK GROUT.

SOIL ABSORPTION AREA

1. REMOVE FROM SOIL ABSORPTION AREA ALL TOPSOIL, BOULDERS LARGER THAN 24 INCHES (LONGEST DIMENSION), OR OTHER UNSUITABLE MATERIAL ENCOUNTERED DURING EXCAVATION.
2. SCARIFY ALL EXCAVATION INTERFACES PRIOR TO PLACEMENT OF FILL OR LEACHING AGGREGATE.
3. WHEN AREA IS TO BE INSTALLED WITHIN A SOIL HORIZON (TOP SOIL) OR ABOVE NATURAL GRADE, REMOVE TOP SOIL AND OTHER IMPERVIOUS MATERIALS FROM BENEATH SOIL ABSORPTION AREA, AND FROM THE SURROUNDING 5-FOOT BUFFER (SEE PLAN), AND REPLACE WITH SELECT SOIL FILL. PLACE AND COMPACT FILL TO MINIMIZE SETTLEMENT. SCARIFY FILL PRIOR TO PLACEMENT OF LEACHING AGGREGATE.
4. SYSTEM SAND MUST MEET ASTM STANDARD: C-33 (CONCRETE SAND). INSTALLER TO PROVIDE SIEVE ANALYSIS TO ENGINEER AND BOARD OF HEALTH FOR APPROVAL PRIOR TO INSTALLATION.
5. COMMON FILL: FREE OF DEBRIS AND STONES LARGER THAN 6 INCHES. FINISH GRADE COVER OVER SOIL ABSORPTION AREA TO ENSURE ADEQUATE RUNOFF (2% MIN. SLOPE).

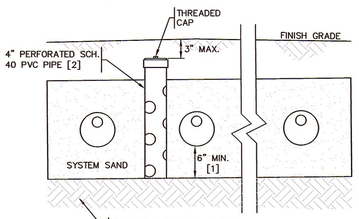
SELECT SOIL FILL (310 CMR 15.255(3))

1. SELECT SOIL FILL MATERIAL FOR SYSTEM CONSTRUCTION MAY CONSIST OF SELECT ON-SITE SOIL, OR IMPORTED SOIL.
2. SELECT SOIL FILL MATERIAL: COMPRISED OF CLEAN, GRANULAR SAND, FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES. MAXIMUM PARTICLE SIZE: 2 INCHES.
3. PERFORM A SIEVE ANALYSIS ON A REPRESENTATIVE SAMPLE OF THE FILL. UP TO 45% BY WEIGHT OF THE FILL SAMPLE MAY BE RETAINED ON A #4 SIEVE. ALSO PERFORM A SIEVE ANALYSIS ON THE FRACTION OF THE FILL SAMPLE PASSING THE #4 SIEVE. SUCH ANALYSIS SHALL DEMONSTRATE THAT THE MATERIAL PASSING THE #4 SIEVE MEETS THE FOLLOWING GRADATION:

SIEVE	EFFECTIVE PARTICLE SIZE	PERCENT PASSING
#4	4.75 mm	100
#50	0.30 mm	10 TO 100
#100	0.15 mm	0 TO 20
#200	0.075 mm	0 TO 5

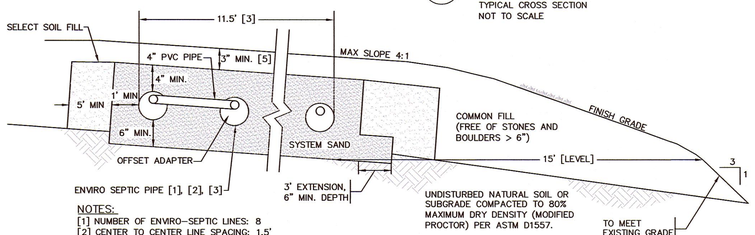
BUOYANCY CALCULATIONS: 1,500 GAL. SEPTIC TANK

FINISHED GRADE EL. = 124.3
ASSUMED WATER TABLE EL. = 121.4
OUTSIDE TOP OF STRUCTURE EL. = 123.2
OUTSIDE BOTTOM OF STRUCTURE EL. = 117.5
STRUCTURE OUTSIDE LENGTH = 10.5 FT
STRUCTURE OUTSIDE WIDTH = 5.7 FT
UNIT WEIGHT OF SOIL COVER (DRY) = 100 PCF
UNIT WEIGHT OF SOIL COVER (SATURATED) = 125 PCF
WEIGHT OF STRUCTURE = 11,670 LB (GRAVITY)
WEIGHT OF SOIL COVER = 6,333 LB (GRAVITY)
WEIGHT OF WATER DISPLACED (STRUCTURE) = 13,242 LB (BUOYANCY)
SUBTOTAL FORCE = 18,003 LB (GRAVITY), 13,242 LB (BUOYANCY)
NET FORCE = 4,761 LB (GRAVITY)
FACTOR OF SAFETY = 1.36



NOTES:
[1] BOTTOM OF INSPECTION PORT TO BE INSTALLED FLUSH WITH BOTTOM OF SYSTEM SAND.
[2] WRAP INSPECTION PORT WITH PERMEABLE GEOTEXTILE FABRIC TO ELIMINATE SAND INFILTRATION.

INSPECTION PORT
310 CMR 15.240(13)
TYPICAL CROSS SECTION
NOT TO SCALE



NOTES:
[1] NUMBER OF ENVIRO-SEPTIC LINES: 8
[2] CENTER TO CENTER LINE SPACING: 1.5'
[3] PIPE LENGTH = 35'
[4] BOTTOM OF BED CROSS SLOPE = 14%
[5] ADDITIONAL COVER IS REQUIRED FOR H-20 LOADING

SOIL ABSORPTION AREA
PRESBY ENVIRONMENTAL ENVIRO-SEPTIC
SYSTEM SLOPE > 10%
310 CMR 15.287
NOT TO SCALE

SOIL EVALUATION SUMMARY

SOIL EVALUATOR: BRUCE RINGWALL, GPR, INC.
SOIL EVALUATOR APPROVED ON: JUNE 9, 1995
WITNESSED BY: IRA GROSSMAN, R.S., NABH

Deep Observation Hole Log

Hole # 520-1 NB 29/85 Suface El 123.3

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-10	A	fsl	10YR3/3		
10-24	B	fsl	10Y5/6		
24-64	C	sl	2.5Y5/4	@30" 10YR6/6 2.5Y6/2	mf sbk

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA
Parent Material (geologic) Ground Moraine Depth to Bedrock: 64"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole 30"

Deep Observation Hole Log

Hole # 520-4 NB 29/85 Suface El 114.8

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-11	A	fsl	10YR3/3		
11-26	B	fsl	10YR5/6	@24" 10YR5/8 2.5Y6/3 10YR5/6 2.5Y6/2	mf sbk
26-64	C	sl	2.5Y5/4		

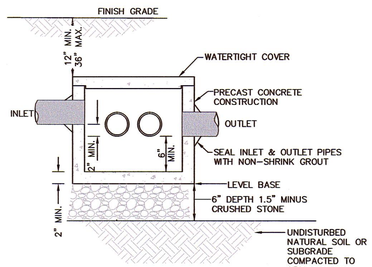
*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA
Parent Material (geologic) Ground Moraine Depth to Bedrock: 64"
Depth to Groundwater: Standing Water in the Hole n/a Weeping from Pit Face: n/a
Estimated Seasonal High Groundwater in the Hole 24"

Deep Observation Hole Log

Hole # 520-7 NB 29/87 Suface El 112.8

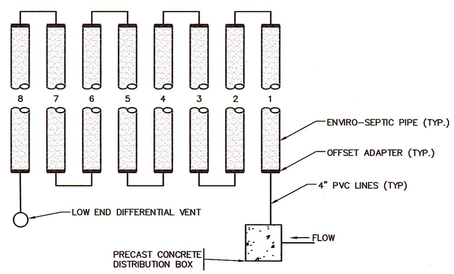
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-9	A	fsl	10YR3/3		
9-19	B	fsl	10YR5/6		
19-62	C	sl	2.5Y5/4	@26 2.5Y6/6 2.5Y6/2	mf sbk

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA
Parent Material (geologic) Ground Moraine Depth to Bedrock: 62"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: none
Estimated Seasonal High Groundwater in the Hole 26"



NOTES:
[1] DISTRIBUTION BOXES BURIED GREATER THAN 9-INCHES SHALL BE EQUIPPED WITH WATERTIGHT RISERS TO WITHIN 6-INCHES OF FINISH GRADE.

6-OUTLET DISTRIBUTION BOX
310 CMR 15.232
TYPICAL CROSS SECTION
NOT TO SCALE



D-BOX TO ENVIRO-SEPTIC PIPE
NOT TO SCALE

PERCOLATION TEST DATA

PERFORMED BY: BRUCE RINGWALL, GPR, INC.
WITNESSED BY: IRA GROSSMAN, R.S., NABH
TESTING PERFORMED: 5 / 28 / 20

520-A 7 MIN / INCH @ 38"

Deep Observation Hole Log

Hole # 520-2 NB 29/85 Suface El 122.5

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-24					CR @ 24"

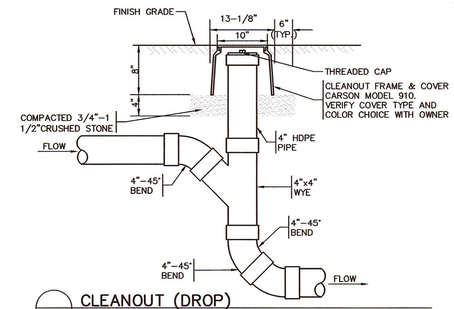
*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA
Parent Material (geologic) Ground Moraine Depth to Bedrock: 24"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole N/A

Deep Observation Hole Log

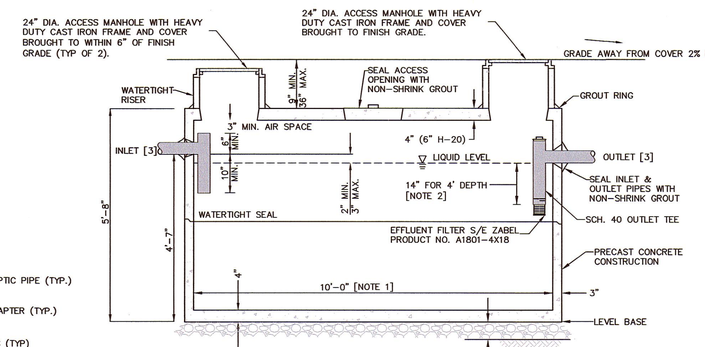
Hole # 520-5 NB 29/87 Suface El 119.5

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-9	A	fsl	10YR3/3		
9-20	B	fsl	10YR5/6		
20-44	C	sl	2.5Y5/4	@22 2.5Y6/6 2.5Y6/2	mf sbk

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA
Parent Material (geologic) Ground Moraine Depth to Bedrock: 44"
Depth to Groundwater: Standing Water in the Hole none Weeping from Pit Face: none
Estimated Seasonal High Groundwater in the Hole 22"



CLEANOUT (DROP)
TYPICAL CROSS SECTION
NOT TO SCALE



NOTES:
[1] INSIDE WIDTH: 5'-2"
[2] 19" FOR 5' DEPTH, 24" FOR 6' DEPTH. 29" FOR 7' DEPTH, 34" FOR 8' DEPTH
[3] IF SIDE INLET OF TANK IS USED, EXTEND PIPE TO CENTER OF TANK.

1,500-GALLON SEPTIC TANK
310 CMR 15.221, 15.223, 15.226
TYPICAL CROSS SECTION
NOT TO SCALE

Deep Observation Hole Log

Hole # 520-3 NB 29/85 Suface El 115.5

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-11	A	fsl	10YR3/3		
11-27	B	fsl	10YR5/6	@24" 10YR5/8 2.5Y6/3 10YR5/6 2.5Y6/2	2.5Y6/3 mf sbk
27-54	C	sl	2.5Y5/4		

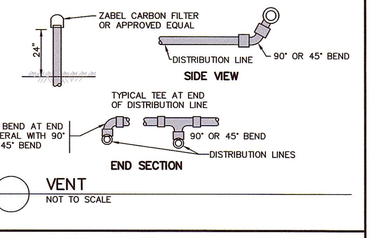
*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA
Parent Material (geologic) Ground Moraine Depth to Bedrock: 54"
Depth to Groundwater: Standing Water in the Hole none Weeping from Pit Face: none
Estimated Seasonal High Groundwater in the Hole 24"

Deep Observation Hole Log

Hole # 520-6 NB 29/87 Suface El 116.3

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-9	A	fsl	10YR3/3		
9-19	B	fsl	10YR5/6		
19-48	C	sl	2.5Y5/4	@22 2.5Y6/6 2.5Y6/2	mf sbk

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA
Parent Material (geologic) Ground Moraine Depth to Bedrock: 48"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole 22"



VENT
NOT TO SCALE

DRAWING ISSUED FOR:

☐ CONCEPT ☐ CONSTRUCTION
■ PERMIT ☐ CONSTRUCTION RECORD

THIS DRAWING MAY BE USED FOR CONSTRUCTION UPON ISSUANCE OF ALL PERMITS AND APPROVALS BY REGULATORY AUTHORITIES.

COMMONWEALTH OF MASSACHUSETTS — NICHOLAS M. PAULING CIVIL No. 47114 REGISTERED PROFESSIONAL ENGINEER — 6/18/2020

PER 250 CMR 5.03(13), THE FOLLOWING ARE EXCLUDED FROM THE PROFESSIONAL ENGINEER'S RESPONSIBILITY: ALL BOUNDARY INFORMATION; LOCATION OF EXISTING STRUCTURES, TREES, UTILITIES, TOPOGRAPHY OR SIMILAR FEATURES; DESIGN OF RETAINING WALLS, PROPRIETARY EQUIPMENT. SEE EXISTING CONDITION NOTES.

NO.	DATE	BY	APP.	REVISION DESCRIPTION

GPR Engineering Solutions for Land & Structures
GOLDSMITH, PREST & RINGWALL, INC.
39 MAIN STREET, SUITE 301, AYER, MA 01432
CIVIL ENGINEERING • LAND SURVEYING • LAND PLANNING
VOICE: 978.772.1590 FAX: 978.772.1591
www.gpr-inc.com

SUBSURFACE SEWAGE DISPOSAL SYSTEM UPGRADE

CONSTRUCTION DETAILS AND SPECIFICATIONS

162 EAST BARE HILL ROAD
HARVARD, MA

PREPARED FOR:
KELVIN & CHARLENE WIEBE
12 LINDEN STREET
CHELMSFORD, MA 01824

DES. BY: MCL	DATE: JUNE 2020	JOB 201028	2 OF 2
CHK. BY: NMP			

P:\20----\201028\DWG\SDS\SITE PLAN.DWG 06-18-20 12:17:19 PM - LAYOUT PRESBY