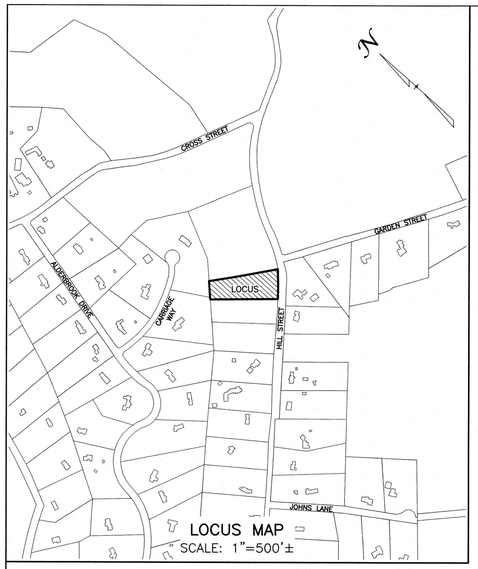
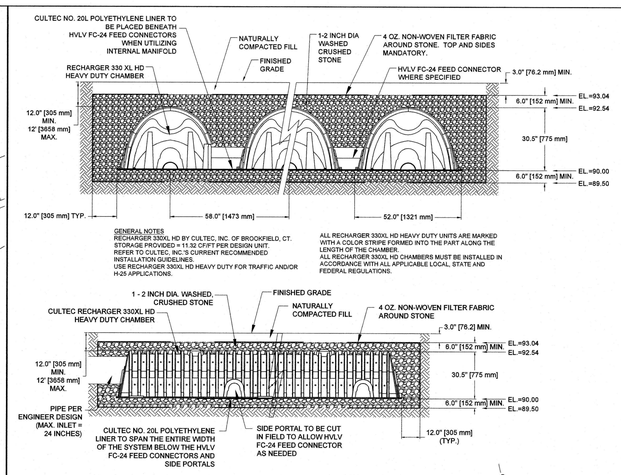


LOCUS MAP
SCALE: 1"=500'±



RIP RAP APRON DETAIL
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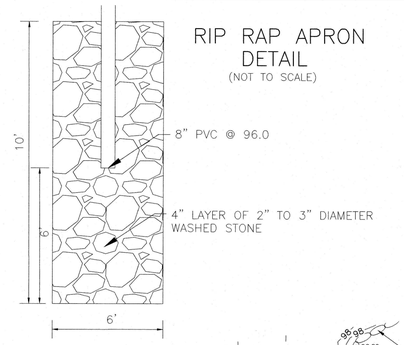
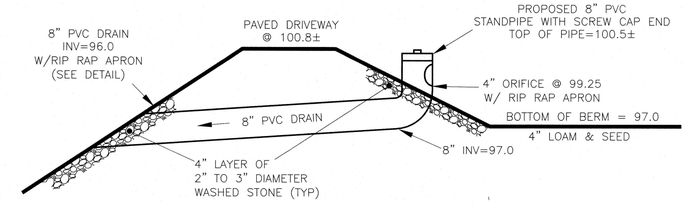
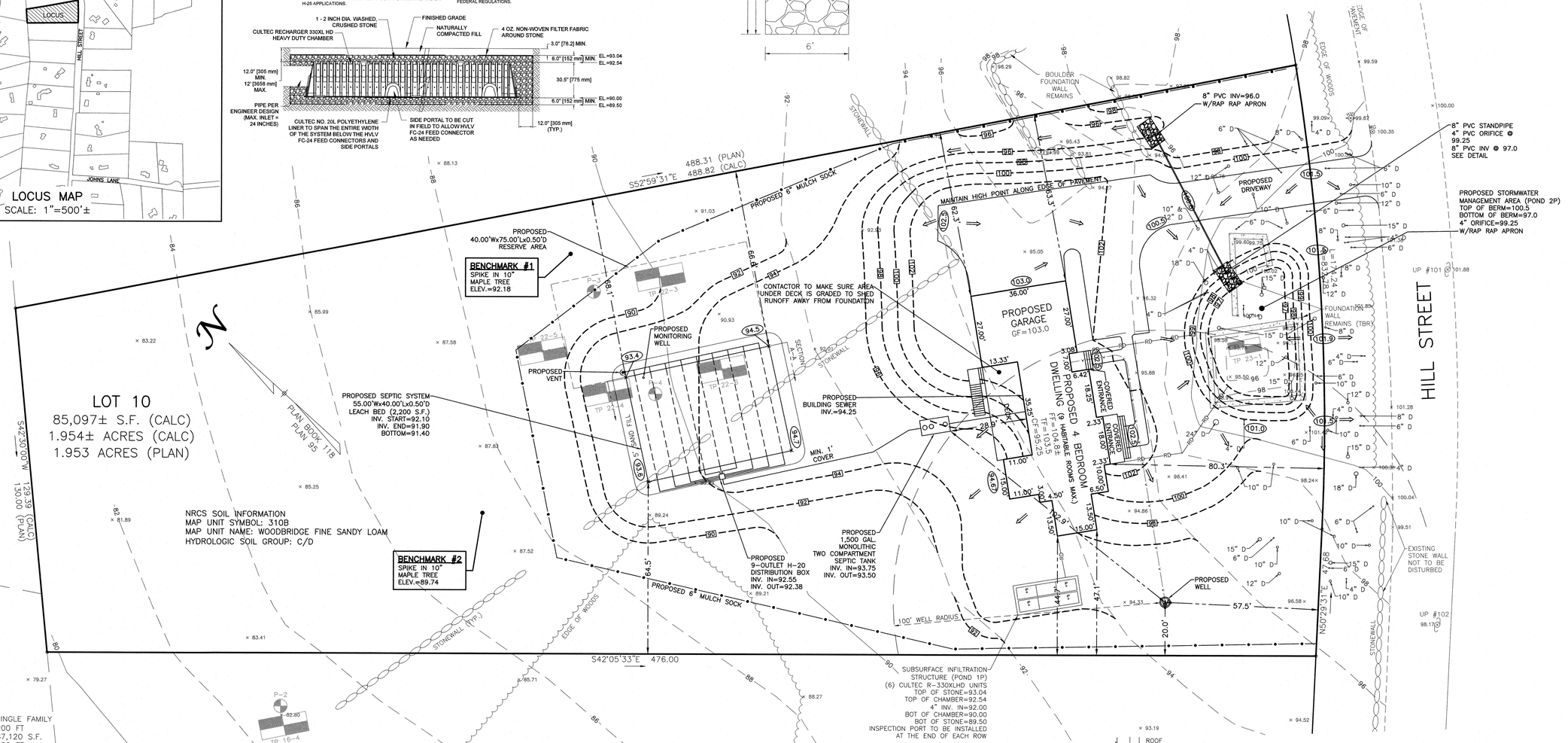


PROPOSED OUTLET CONTROL STRUCTURE POND 2P
DETAIL N.T.S.





ZONE: O-R-A	SINGLE FAMILY
MIN. LOT FRONTAGE	200 FT
MIN. LOT AREA	87,120 S.F.
MIN. LOT DEPTH	200 FT
FRONT YARD MIN.	20 FT
SIDE YARD MIN.	20 FT
REAR YARD MIN.	40 FT
MAX. HEIGHT	35 FT
MAX. BUILDING AREA	15 %
MIN. OPEN SPACE	50 %

LEGEND

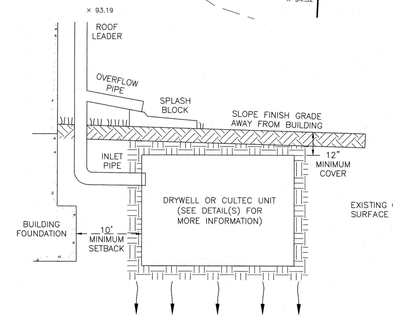
_" D = DECIDUOUS TREE

Soil Test Pit Data
Soil Evaluator: Will Schkuta
Witnessed By: Wendy Hansbury & Mark Carleo, Topsfield BOH Witness
Date of Testing: September 1, 2022

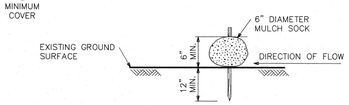
TP 22-3 Elev. = 90.0±				TP 22-4 Elev. = 89.5±				TP 22-5 Elev. = 88.5±				TP 22-6 Elev. = 90.5±				TP 23-1 Elev. = 96.0±			
0-6"	A	FSL	10YR 3/4	0-6"	A	FSL	10YR 3/4	0-6"	A	FSL	10YR 3/4	0-6"	A	FSL	10YR 3/4	0-8"	A	FSL	10YR 3/4
6-22"	B	FSL	10YR 5/6	6-26"	B	FSL	10YR 5/6	6-24"	B	FSL	10YR 5/6	6-24"	B	FSL	10YR 5/6	8-18"	B	FSL	10YR 5/6
22-88"	C	Gr.SL	2.5Y 6/4	26-86"	C	FSL	2.5Y 6/4	24-85"	C	FSL	2.5Y 6/4	24-78"	C	FSL	2.5Y 6/4	18-24+"	C	FSL	2.5Y 6/4
ESHWT observed down 22"				ESHWT observed down 26"				ESHWT observed down 24"				ESHWT observed down 24"				ESHWT observed down 22"			
Percolation Test @ P-3 @ 32"+18", 53 MPI								Percolation Test @ P-4 @ 26"+18", 46 MPI											

SCHEDULE OF INVERTS:

BUILDING INV. = 94.17'
SEPTIC TANK INV. IN = 93.75'
SEPTIC TANK INV. OUT = 93.50'
DISTRIBUTION BOX INV. IN = 92.55'
DISTRIBUTION BOX INV. OUT = 92.38'
LEACH FIELD INV. START = 92.21'
LEACH FIELD INV. END = 91.90'
BOTTOM FIELD = 91.40'



PROPOSED ROOF LEADER OVERFLOW DETAIL
DETAIL N.T.S.



MULCH SOCK DETAIL
(NOT TO SCALE)

WILLIAMS & SPARAGES
ENGINEERS SCIENTISTS SURVEYORS
1019 MAIN STREET
SUITE 101
MIDDLETON, MA 01949
PHONE: (978) 539-8208
FAX: (978) 539-8209
WSENGINEERS.COM

Owner:
Thomas Schutz
287 Hanover Street
Boston, MA 02113

Applicant:
Barbara Crowley
15 Timber Lane
Topsfield, MA 01983

Designed By: RLW
Drawn By: TAA
Reviewed By: RLW
Project Manager: RLW
Job File Number: TOPS-0077
Drawing File Folder: TOPS77

☐ Drawing Issued for Review Only
☒ Drawing Issued for Permit
☐ Drawing Issued for Construction

SEAL

COMMONWEALTH OF MASSACHUSETTS
PETER M. BLASSILL JR.
No. 41813
PROFESSIONAL ENGINEER
8-19-2023

6		
5		
4	REVISE HOUSE FOOTPRINT, DRIVEWAY, SEPTIC TANK	8/4/2023
3	REVISE PER BOH COMMENTS	3/16/2023
2	OUTLET CONTROL STRUCTURE DETAIL	2/28/2023
1	TREE LOCATIONS IN RIGHT OF WAY	2/23/2023

SEPTIC SYSTEM DESIGN PLAN
#79 HILL STREET (LOT 10), TOPSFIELD, MA
MAP 64, LOT 14

0' 10' 20' 40'
SCALE: 1"=20'

FEBRUARY 21, 2023

DRAWING: S-1

SHEET 1 OF 2

P:\TOPS-0077\79 Hill Street, Lot 10\Drawings\Sheet\79_Rd.dwg, 8/16/2023 9:12:54 AM, PMB

PLAN NOTES:

1. SOIL TESTING INFORMATION USED FOR DESIGN WAS PERFORMED ON SEPTEMBER 1, 2022.
2. ALL ELEVATIONS SHOWN ARE REFERENCED TO AN ASSUMED DATUM.
3. VEHICULAR TRAFFIC, PARKING OF VEHICLES, STOCKPILING OF MATERIALS, AND STORAGE OF EQUIPMENT OVER LEACHING AREA ARE PROHIBITED AT ALL TIMES.
4. EXISTING TOPOGRAPHIC INFORMATION SHOWN IS THE RESULT FROM AN ACTUAL INSTRUMENT SURVEY CONDUCTED BY WILLIAMS & SPARAGES ON JANUARY 31, 2023.
5. SEPTIC TANK TO BE VACUUM TESTED AND BE EQUIPPED WITH RUBBER BOOTS IN ACCORDANCE WITH THE LOCAL BOARD OF HEALTH REGULATIONS.
6. THIS PROJECT DOES NOT LIE WITHIN A NITROGEN SENSITIVE AREA.
7. ACCORDING TO AVAILABLE MAPPING AND INFORMATION, THERE ARE NO PUBLIC OR PRIVATE DRINKING WATER SUPPLY WELLS WITHIN 100-FEET OF THE PROPOSED SEPTIC SYSTEM. IN ADDITION, THE PROPOSED SYSTEM DOES LIE WITHIN 400-FEET OF A ZONE A TO A PUBLIC WATER SUPPLY.

WILLIAMS & SPARAGES LLC HAS BEEN RETAINED TO PREPARE A SEPTIC SYSTEM DESIGN PLAN FOR THE CLIENT, BUT HAS NOT BEEN RETAINED TO CONSTRUCT OR SUPERVISE CONSTRUCTION OF THE SEPTIC SYSTEM. THEREFORE, NO GUARANTEE OR WARRANTY, EXPRESS OR IMPLIED, IS MADE TO THE CLIENT OR TO THE ULTIMATE USER RELATIVE TO ANY SYSTEM INSTALLED PURSUANT TO THIS PLAN SET.

1. THE PLAN SHOWS ONLY THOSE FEATURES THAT WERE VISUALLY APPARENT ON THE DATE OF TOPOGRAPHY. THE ABSENCE OF SUBSURFACE STRUCTURES UTILITIES, ETC. DOES NOT MEAN THAT THEY DO NOT EXIST.
2. THE FINISHED SURFACE OF THE LEACHING AREA SHALL BE GRADED TO ASSURE SURFACE WATER RUNOFF (2% MINIMUM SLOPE IN ACCORDANCE WITH TITLE 5).
3. THE CONTRACTOR SHALL NOTIFY THE DESIGNER OF ANY SITE CONDITION THAT DIFFERS FROM THOSE INDICATED ON THE DESIGN PLAN.
4. IF ANY PART OF THIS DESIGN IS TO BE ALTERED IN ANY WAY, THE DESIGNER AS WELL AS THE APPROVING AUTHORITIES SHALL BE NOTIFIED IN WRITING PRIOR CONSTRUCTION.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR HORIZONTAL AND VERTICAL CONTROL OF ALL SYSTEM COMPONENTS.
6. THE GENERAL CONTRACTOR IS RESPONSIBLE TO CHECK BETWEEN A MINIMUM OF TWO (2) VERTICAL CONTROL BENCHMARKS.
7. THESE PLANS AND SPECIFICATIONS ARE INTENDED TO BE EXPLANATORY OF THE WORK TO BE DONE, BUT SHOULD ANY OMISSION, ERRORS, OR DISCREPANCIES APPEAR, THEY SHALL BE SUBJECT TO CORRECTION AND INTERPRETATION BY THE DESIGN ENGINEER, THEREBY DEFINING AND FULFILLING THE INTENT OF THE PLANS.
8. ALTERNATE MANUFACTURERS FOR CONCRETE STRUCTURES AND EQUIPMENT SHOWN ON THESE PLANS MAY BE USED UPON WRITTEN APPROVAL OF THE DESIGNER. ALTERNATE MANUFACTURERS WILL NOT BE USED IF THE USE OF THEIR EQUIPMENT REQUIRES DESIGN CHANGES.
9. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING DIG SAFE SYSTEM, INC. (1-888-344-7233 OR 811) TO LOCATE UTILITIES.
10. THE SYSTEM IS DESIGNED ONLY TO ACCOMMODATE SANITARY SEWAGE ASSOCIATED WITH NORMAL DOMESTIC USAGE AND CONSISTING OF WATER-CARRIED PUTRESCIBLE WASTE.
11. DISPOSAL SYSTEM AREAS ARE TO BE RAKED (SCARIFIED) BEFORE INSTALLATION OF STONE. ALL STONES EXCEEDING 2 INCHES IN DIAMETER AND ALL FOREIGN MATERIAL ENCOUNTERED DURING EXCAVATION ARE TO BE REMOVED FROM THE LEACHING AREA BED SURFACE.
12. THIS PLAN SHOWS THE DESIGN OF THE SUBSURFACE SEWAGE DISPOSAL SYSTEM ONLY. THE SYSTEM IS DESIGNED FOR FLOWS ESTIMATED UNDER DESIGN CRITERIA.
13. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC MARKING TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM AFTER THEY ARE BURIED.
14. THE SOIL ABSORPTION SYSTEM SHALL HAVE A MINIMUM OF 1 INSPECTION PORT CONSISTING OF A PERFORATED 4 INCH PIPE PLACED VERTICALLY DOWN INTO THE STONE TO THE NATURALLY OCCURRING SOIL OR SAND FILL BELOW THE STONE. THE PIPE SHALL BE CAPPED WITH A SCREW TYPE CAP AND ACCESSIBLE TO WITHIN 3 INCHES OF FINISH GRADE.
15. ALL WORK AND MATERIALS SHALL COMPLY WITH THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION STATE ENVIRONMENTAL CODE, TITLE 5 AND LOCAL BOARD OF HEALTH SUPPLEMENTARY REGULATIONS AS REQUIRED.
16. NO GARBAGE GRINDER SHALL BE INSTALLED AS PART OF THIS DESIGN.
17. THE SYSTEM SHALL BE VENTED THROUGH BUILDING PLUMBING AS REQUIRED BY THE BUILDING AND/OR PLUMBING CODE.
18. THE INSTALLER OF THIS SYSTEM MUST BE LICENSED BY THE LOCAL BOARD OF HEALTH.
19. APPLICABLE ZONING BYLAWS AND/OR OTHER LOCAL REGULATIONS SHALL BE CONFIRMED BY THE OWNER PRIOR TO CONSTRUCTION.
20. THE SEPTIC TANK SHALL BE PERIODICALLY INSPECTED AND MAINTAINED AND SHOULD BE PUMPED WHENEVER THE TOP OF THE SLUDGE LAYER IS WITHIN 12-INCHES OF THE BOTTOM OF THE OUTLET TEE OR WHEN THE TOP OF THE SCUM LAYER IS WITHIN 2-INCHES OF THE TOP OF THE OUTLET TEE OR THE BOTTOM OF THE SCUM LAYER IS WITHIN 2-INCHES OF THE BOTTOM OF THE OUTLET TEE.
21. COMPONENTS NOT TO BE BACKFILLED WITHOUT INSPECTION BY BOARD OF HEALTH AND PERMISSION OBTAINED BY BOARD OF HEALTH.
22. DESIGNER TO SUBMIT AN AS-BUILT PLAN OF SYSTEM WITHIN 30 DAYS OF FINAL INSPECTION OF THE SYSTEM.
23. EXCAVATE ALL TOPSOIL, SUBSOIL, AND ANY OTHER UNSUITABLE MATERIAL. FILL MATERIAL FOR SYSTEMS CONSTRUCTED IN FILL SHALL CONSIST OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES.
24. FILL MATERIAL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN 2 INCHES. THE FILL MATERIAL SHALL COMPLY WITH THE STATE ENVIRONMENTAL CODE, TITLE 5, 310 CMR 15.255 (3) AS REVISED.
25. CONTRACTOR TO SUPPLY TO THE CITY OR TOWN WITH A CURRENT SIEVE TEST ANALYSES REPORT AT THEIR EXPENSE IF REQUIRED BY THE LOCAL APPROVING AUTHORITY.

MATERIAL NOTES:

AGGREGATE FOR SOIL ABSORPTION SYSTEM:

1. CLEAN DOUBLE WASHED STONE SHALL BE FREE OF IRON PARTICLES, FINES AND DUST IN PLACE.
2. BASE AGGREGATE IN LEACH AREA SHALL CONSIST OF 3/4" TO 1-1/2" DOUBLE WASHED STONE AS DESCRIBED ABOVE.
3. A MINIMUM 2-INCH LAYER OF DOUBLE WASHED STONE RANGING FROM 1/8 TO 1/2 INCH DIAMETER AS DESCRIBED IN NOTE 1 ABOVE SHALL COVER THE BASE AGGREGATE. GEOTEXTILE FABRIC MAY BE SUBSTITUTED FOR THE MINIMUM 2-INCH LAYER OF DOUBLE WASHED STONE.

SOIL ABSORPTION SYSTEM (SAS) SIZING CALCULATIONS:

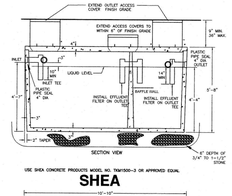
SEWAGE FLOWS SINGLE FAMILY DWELLING:
NUMBER OF BEDROOMS = 4 BR
DESIGN FLOW = 110 GPD/BR
DAILY FLOW = (110 GPD/BR * 4 BR) = 440 GPD

SEPTIC TANK REQUIRED:
(2*440 GPD) = 880 GPD, USE 1,500 GAL. SEPTIC TANK

PRIMARY LEACHING AREA REQUIRED:
FOR CLASS II SOIL WITH A PERCOLATION RATE OF 46 MINUTES PER INCH = 440 GPD/0.20 GPD/S.F. = 2,200.0 S.F.
LEACHING AREA PROVIDED = LEACH BED 30.00'W x 74.00'L x 0.50'D = 2,220.0 S.F.

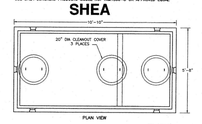
RESERVE LEACHING AREA REQUIRED:
FOR CLASS II SOIL WITH A PERCOLATION RATE OF 53 MINUTES PER INCH = 440 GPD/0.15 GPD/S.F. = 2,933.33 S.F.
LEACHING AREA PROVIDED = LEACH BED 40.00'W x 75.00'L x 0.50'D = 3,000.0 S.F.

P:\TOPS-0077 79 Hill Street, Lot 10\Drawings\Utility Plan.dwg, 8/16/2023 9:12:59 AM, PMB



USE SHEA CONCRETE PRODUCTS MODEL NO. TNM1500-3 OR APPROVED EQUAL

SHEA

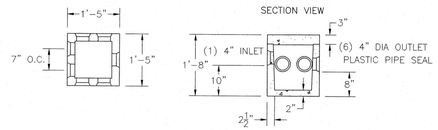


ITEM NO.		WEIGHT
M1500		11,035#
M15002C		11,841#

1500 GALLON SEPTIC TANK MONOLITHIC 3" WALL

N.T.S.

1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN CONFORMS WITH 310 CMR, SECTION 15.00 DEP TITLE 5 REGS FOR SEPTIC TANKS
3. ALL REINFORCEMENT PER ASTM C1227.
4. TEES AND GAS BAFFLE SOLD SEPARATELY.
5. TONGUE AND GROOVE JOINT SEALED WITH BUTYL RESIN.
6. IF COVER EXCEDS 4 FEET, HEAVY DUTY TANK REQUIRED. ALSO AVAILABLE IN AASHTO HS-20 LOADING.



ITEM NO.		WEIGHT
B-6DBH	W/COVER	432#
B-6DBCH	COVER ONLY	151#

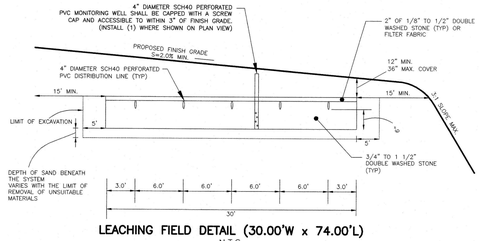
SHEA

OR APPROVED EQUAL

6 OUTLET H-20 DISTRIBUTION BOX

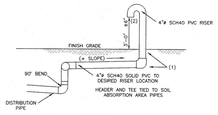
N.T.S.

1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN CONFORMS WITH 310 CMR 15.000, DEP TITLE 5 REGS, FOR DISTRIBUTION BOXES.
3. CONTRACTOR SHALL INSURE THAT ALL INLETS AND OUTLETS ARE MADE WATERTIGHT.
4. CONTRACTOR SHALL INSURE THAT DISTRIBUTION BOXES ARE SET ON A MINIMUM OF 6" OF MECHANICALLY COMPACT CRUSHED STONE..
5. THE INVERT ELEVATION OF ALL OUTLETS SHALL BE EQUAL TO EACH OTHER AND LOCATED AT LEAST 2" BELOW THE INVERT OF THE INLET.
6. INLET TEES IN DISTRIBUTION BOXES SHALL BE INSTALLED IN ACCORDANCE TO 310 CMR 15.232 (3)(A) TO PROVIDE 1" BETWEEN THE BOTTOM OF THE TEE AND THE OUTLET INVERT.



LEACHING FIELD DETAIL (30.00'W x 74.00'L)

N.T.S.



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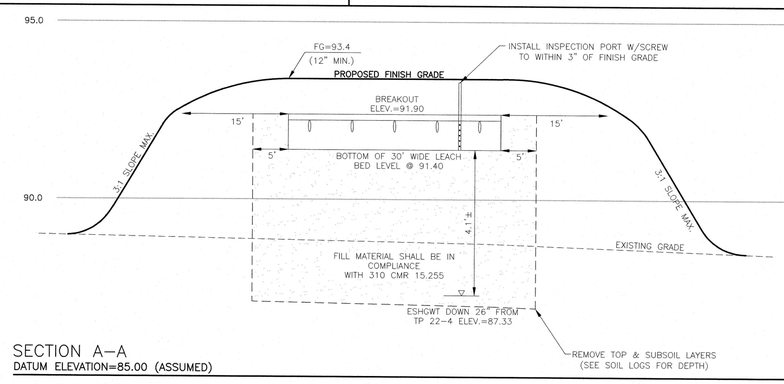
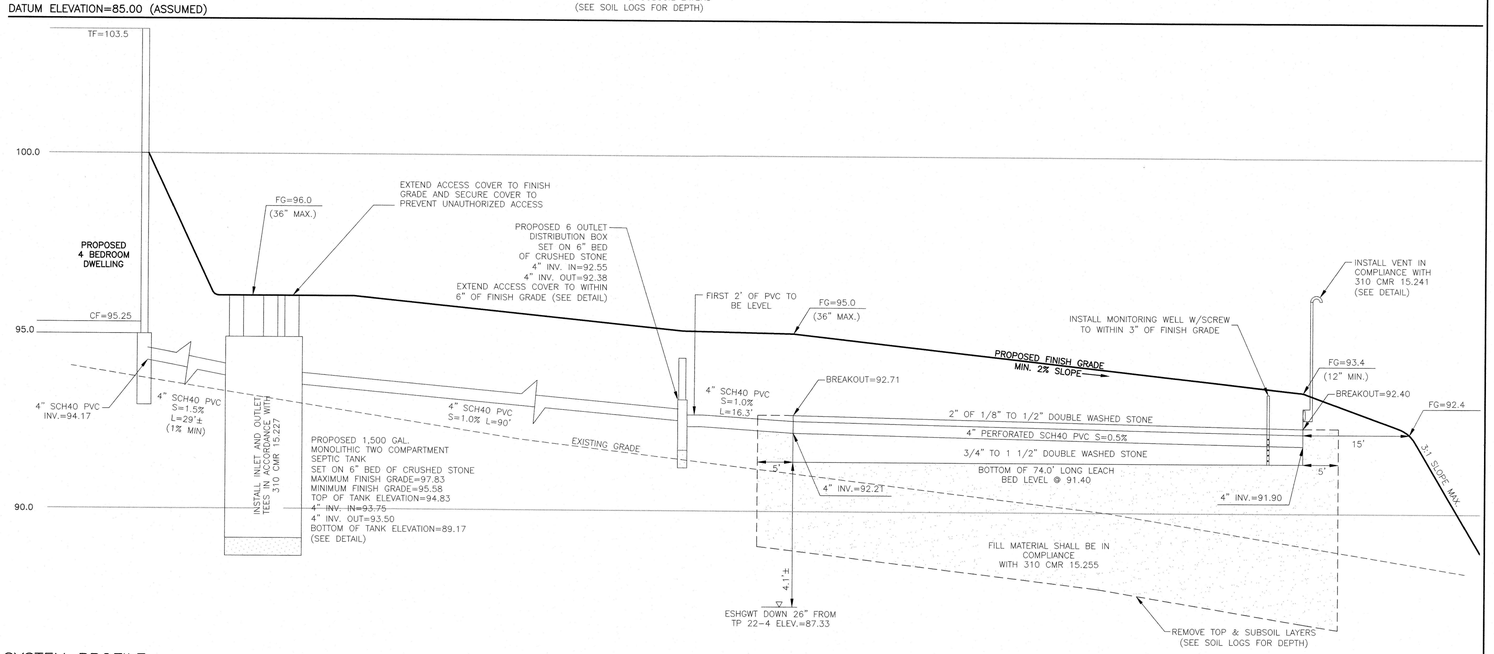
N.T.S.



SECTION A-A

DATUM ELEVATION=85.00 (ASSUMED)



SYSTEM PROFILE

DATUM ELEVATION=85.00 (ASSUMED)

WILLIAMS & SPARAGES
ENGINEERS SCIENTISTS SURVEYORS
1 SOUTH MAIN STREET SUITE 101
MIDDLETON, MA 01949
PHONE: (978) 539-8388
FAX: (978) 539-8200
WSENGINEERS.COM

Owner:
Thomas Schutz
287 Hanover Street
Boston, MA 02113

Applicant:
Barbara Crowley
15 Timber Lane
Topsfield, MA 01983

Designed By: RLW
Drawn By: TAA
Reviewed By: RLW
Project Manager: RLW
Job File Number: TOPS-0077
Drawing File Folder: TOPS77

☐ Drawing Issued for Review Only
☒ Drawing Issued for Permit
☐ Drawing Issued for Construction

SEAL

SEPTIC SYSTEM DESIGN PLAN

#79 HILL STREET (LOT 10), TOPSFIELD, MA

6		
5		
4		
3		
2		
1	ELEVATIONS OF PROPOSED HOUSE/INVERTS, SEPTIC TANK	8/4/2023

0' 5' 10' 20'
SCALE: 1"=10'
1"=2' (VERT)
FEBRUARY 21, 2023

DRAWING: S-2

SHEET 2 OF 2