

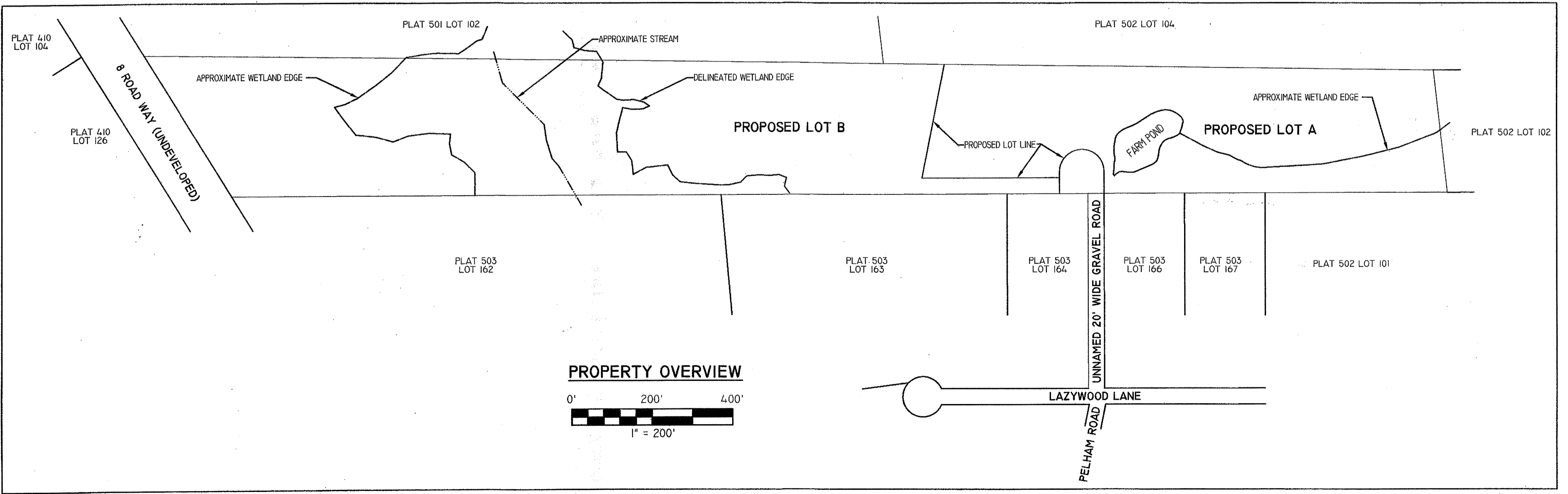
* SEE RIDEM OCI FILE #OCI-FW-19-25 FOR RESTORATION INFORMATION. LOCATIONS ON THIS PLAN AREA APPROXIMATE.

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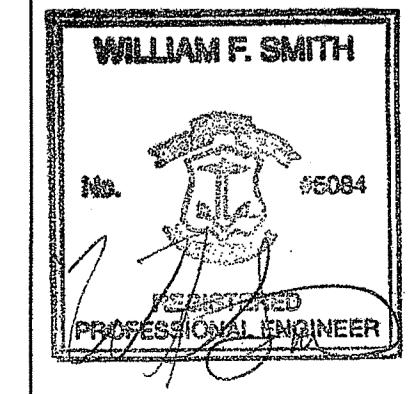
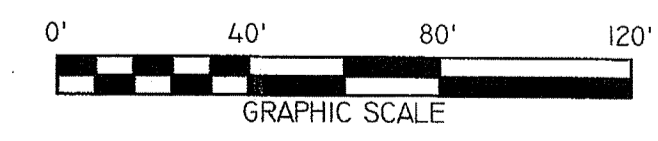
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED **NOV 19 2021** FILE # **19-0315**
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Justin D. Wencen

Environmental Management
OCT 01 2021
Office of Water Resources

- LEGEND**
- EXISTING CONTOUR
 - STONE WALL
 - ROW OF STONES
 - EXISTING CULVERT
 - EXISTING FENCE
 - DELINEATED WETLAND EDGE
 - 50' PERIMETER WETLAND
 - APPROXIMATE EDGE OF VEGETATION
 - 125' TOWN OWTS WETLAND SETBACK
 - WELL (AS NOTED)
 - PROPOSED CONTOUR
 - PROPOSED COMPOST FILTER SOCK OR SILT FENCE = LIMITS OF DISTURBANCE
 - UE PROPOSED UNDERGROUND ELECTRIC, TEL.COM
 - APPROXIMATE BUFFER ZONE FENCE
 - APPROXIMATE AREA OF WETLAND RESTORATION
 - APPROXIMATE AREA OF PERIMETER WETLAND RESTORATION



PROPERTY OVERVIEW
0' 200' 400'
1" = 200'



REVISIONS:
#3; 09/16/21; ADD & RENUMBER SHEETS, AND ADD RESTORATION AREAS
#2; 02/05/21; ADD CULVERT INVERTS PER RIDEM
#1; 07/11/19; PER RIDEM REVIEW COMMENTS

PROPOSED OWTS NEW CONSTRUCTION PLAN
PREPARED FOR
ALFRED ARRUDA
ASSESSOR'S PLAT 501 LOT 103
PROPOSED SUBDIVISION LOT B
139 LAZYWOOD LANE
TIVERTON, RHODE ISLAND

SCALE: 1" = 40' DATE: MAY 30, 2019

Civil Engineering Concepts, Inc.
34A MAIN STREET
LITTLE COMPTON, RI 02857
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SHEET 1 OF 3 JOB#: 03-109

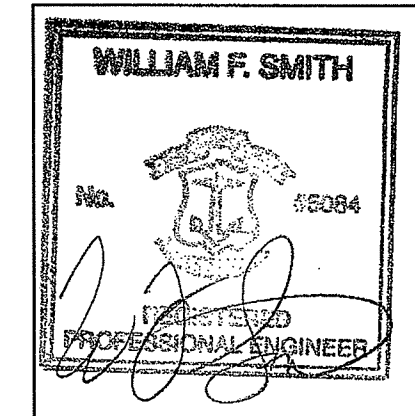


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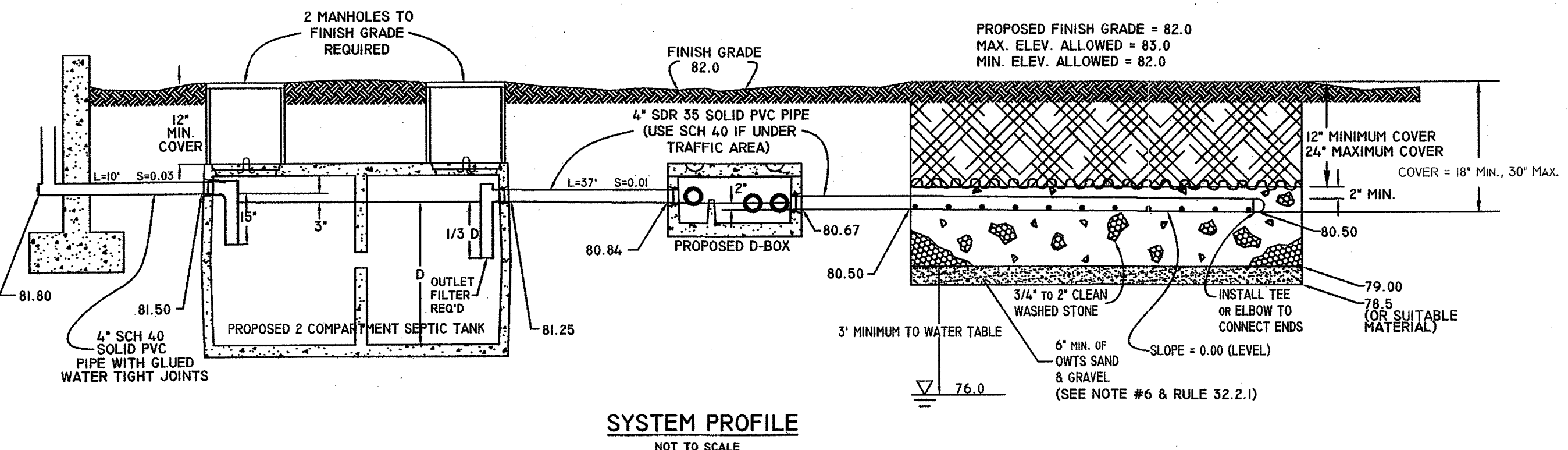
* SEE RIDEM OCI FILE #0CI-FW-19-26 FOR RESTORATION INFORMATION. LOCATIONS ON THIS PLAN AREA APPROXIMATE.

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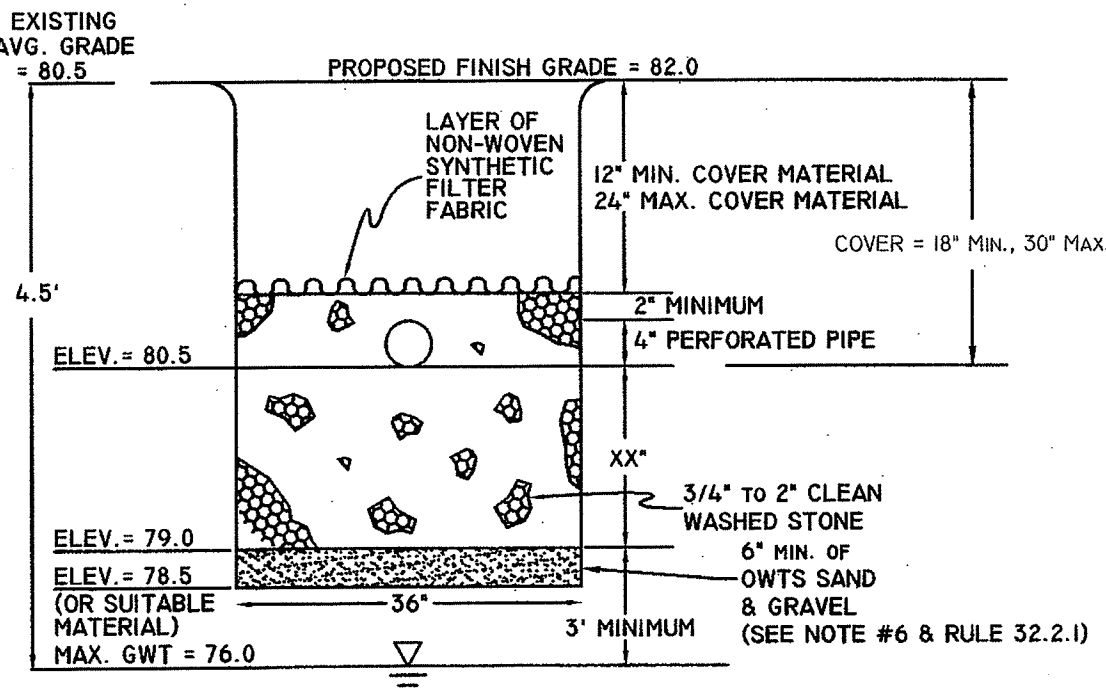


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SYSTEM PROFILE
NOT TO SCALE

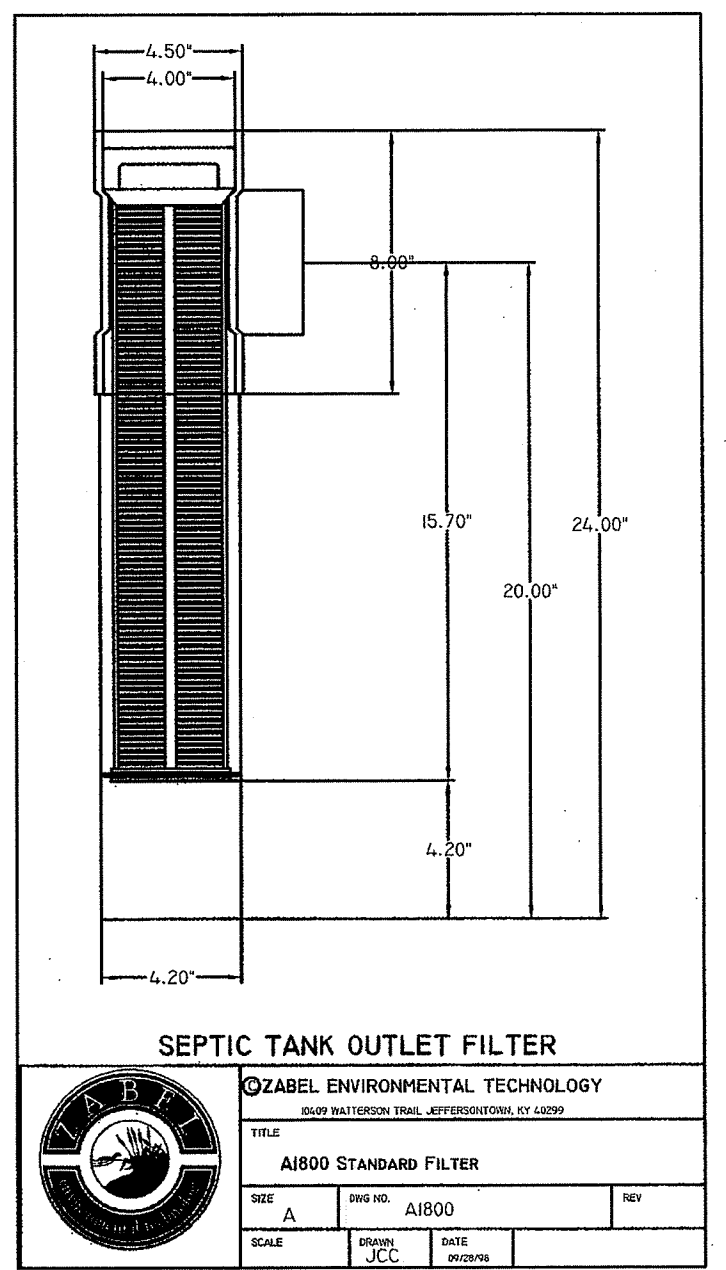


TYPICAL TRENCH SECTION
NOT TO SCALE

1000 GALLON SEPTIC TANK BUOYANCY CALCULATIONS

Tank type: 1000 Gallon H-10 Tank Wt.: 8,800 lbs.
Weight of Earth Cover (min. of 1' of soil on tank): 3,695 lbs.

Upward lift (neglecting soil friction): **TANK BOTTOM IS ABOVE WATERTABLE**
8.5' (length) x 4.83' (width) x 0' (max. submerged depth) x 62.4 lbs./c.f. = 0 lbs.



SEPTIC TANK OUTLET FILTER
ZABEL ENVIRONMENTAL TECHNOLOGY
AIR800 STANDARD FILTER

BASIS OF SANITARY DESIGN

NUMBER OF BEDROOMS: 3
GARBAGE GRINDER: NOT ALLOWED
WATER SOFTENER: NOT ALLOWED
JACUZZI/HOT TUB: NOT ALLOWED
ESTIMATED SEWAGE FLOW: 34.5 GALLONS PER DAY
SIZE OF SEPTIC TANK: 1000 GALLONS
DESIGN PERCOLATION RATE: SOIL CAT. 9 (0.40 GAL/SF/DAY)
LEACHING AREA PROVIDED: 4' OWTS DISPERSAL TRENCHES AT 50' LONG
3" WIDE WITH 18" CLEAN WASHED CRUSHED STONE BELOW INVERT
= 903 SF (863 SF REQUIRED)
SYSTEM CAPACITY: 903 SF x 0.40 GALLONS/SF/DAY
= 361 GALLONS PER DAY

FINISHED GARAGE FLOOR..... 83.25
FINISHED FIRST FLOOR..... 87.00
TOP OF FOUNDATION..... 86.00
FINISHED BASEMENT FLOOR..... 78.50 (WALKOUT)
INVERT AT DWELLING..... 81.80
INVERT INTO SEPTIC TANK..... 81.50
INVERT OUT OF SEPTIC TANK..... 81.25
INVERT INTO D-BOX..... 80.84
INVERT OUT OF D-BOX..... 80.67
INVERT AT BEGINNING OF TRENCH..... 80.50
INVERT AT END OF TRENCH..... 80.50
BOTTOM OF WASHED STONE..... 79.0
BOTTOM OF OWTS SAND & GRAVEL..... 78.5
ELEVATION OF WATER TABLE..... 76.0
EXISTING AVERAGE GRADE AT OWTS..... 80.5

***NOTE: ELEVATIONS ARE BASED ON CONVENTIONAL DWELLING. NOTIFY DESIGNER OF ANY DISCREPANCIES PRIOR TO ANY WORK. DESIGN DOES NOT PERMIT TOILETS IN BASEMENT AREA.

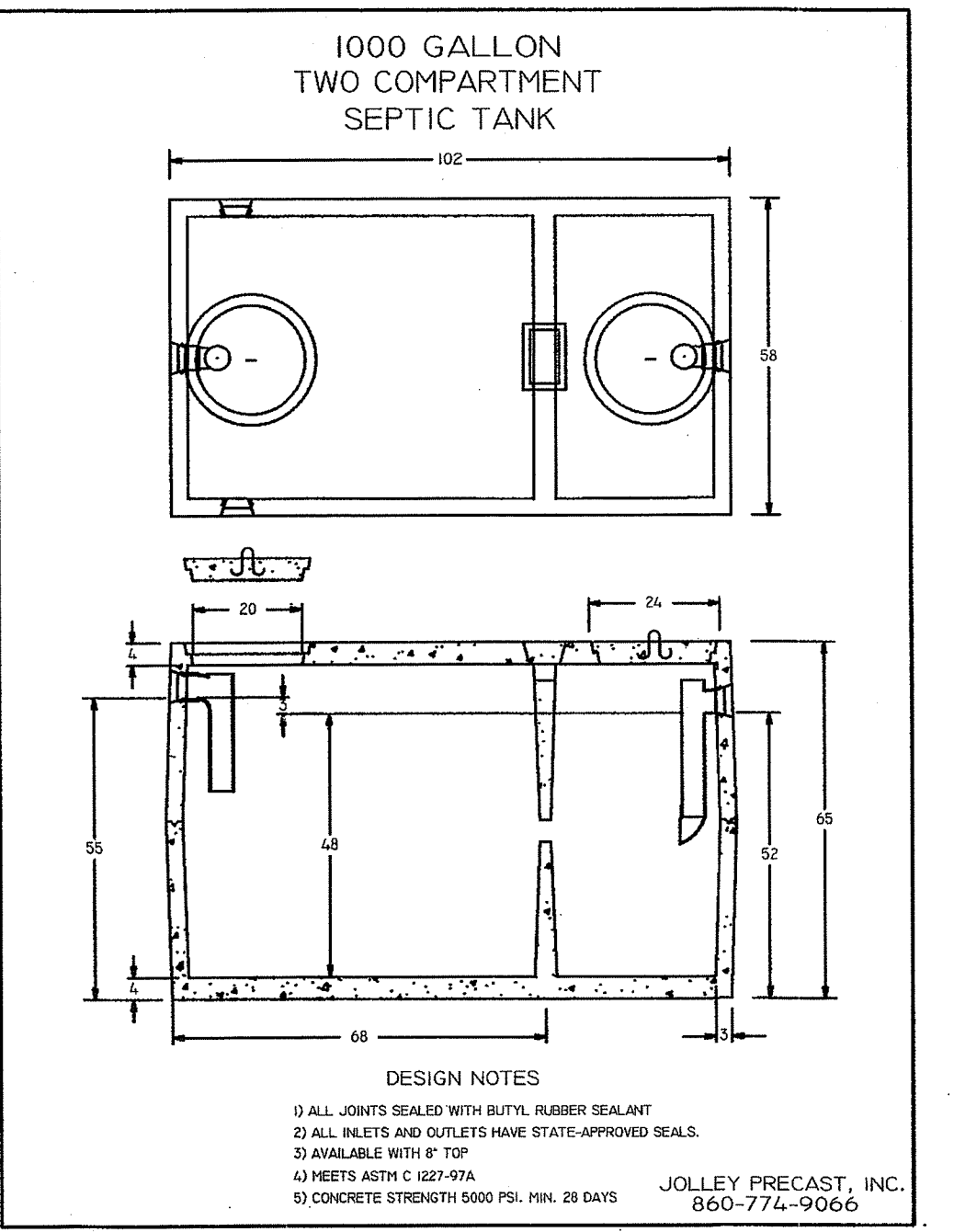
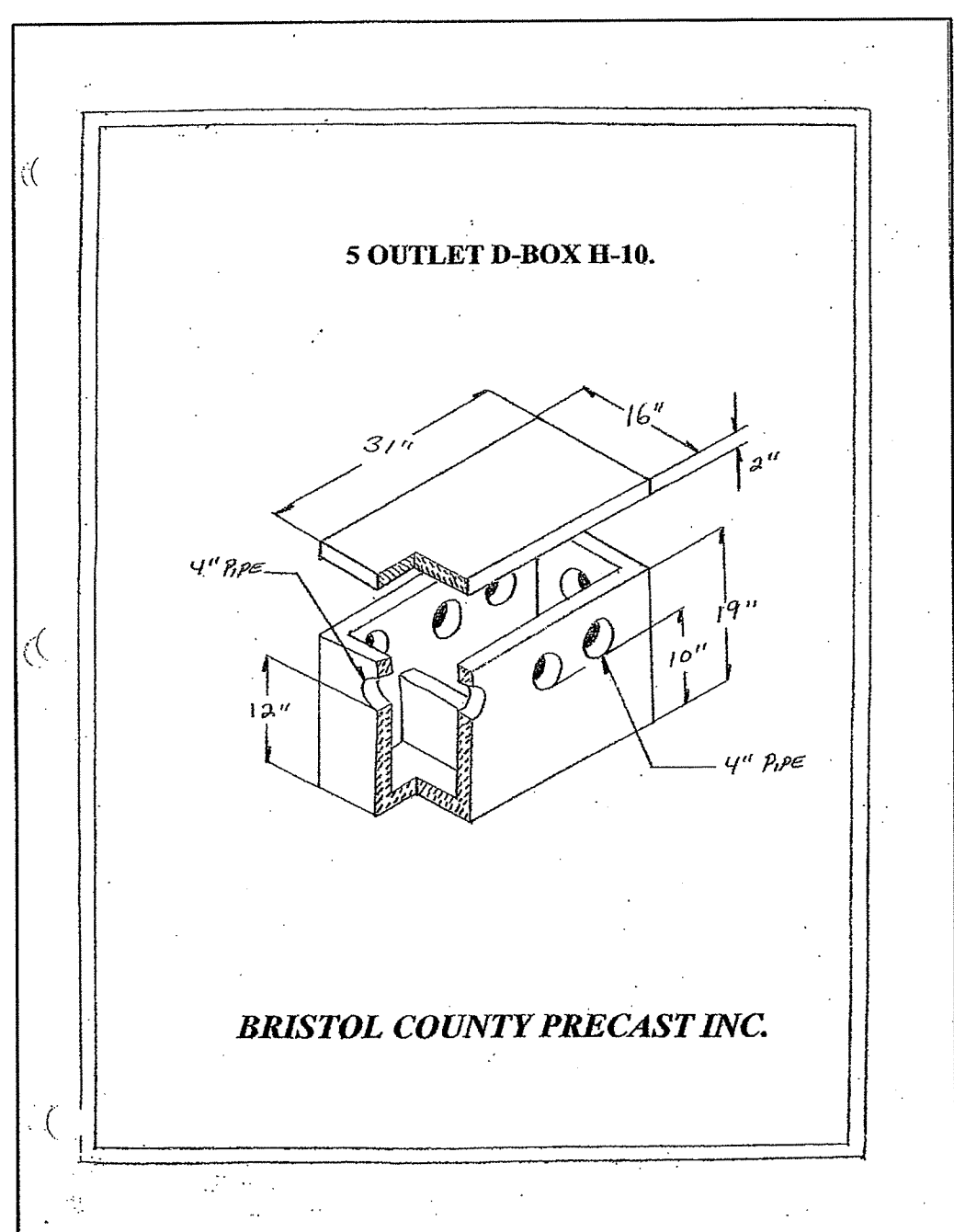
ALL EXISTING AND PROPOSED WELLS WITHIN 200' OF PROPOSED OWTS ARE SHOWN. NO EXISTING OR PROPOSED PUBLIC WELLS WERE OBSERVED WITHIN 500' OF PROPOSED OWTS. NO EXISTING OR PROPOSED SEPTIC SYSTEMS WITHIN 100' OF PROPOSED WELL. MAINTAIN ELEVATION 80.5 WITHIN 10' OF PROPOSED OWTS.

NO UPGRADIENT DRAINS ALLOWED WITHIN 25' OF PROPOSED OWTS. NO DOWNGRADIENT DRAINS ALLOWED WITHIN 50' OF PROPOSED OWTS. BRING SEPTIC TANK COVERS TO GRADE. COVER TO BE 20" MIN. (INSIDE DIA.) AND CAPABLE OF WITHSTANDING H-20 LOADINGS. COVERS TO WEIGH 59 LBS. MINIMUM OR BOLT DOWN. ALL OWTS PIPE TO BE 4" DIAMETER, PVC SDR 35 (MIN) PERFORATED OR SOLID AS REQUIRED. OUTLET FILTER TO BE INSPECTED SEMI-ANNUALLY TO ENSURE PROPER FUNCTIONING. BUILDING SEWER TO BE 4" SCH 40 PVC WITH GLUED, WATERTIGHT JOINTS.

- NOTES:**
- 1.) ALL CONSTRUCTION SHALL CONFORM TO THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS DEPARTMENT OF ENVIRONMENTAL MANAGEMENT- RULES AND REGULATIONS ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS MOST RECENTLY AMENDED.
 - 2.) ALL WORK SHALL BE DONE IN A WORKMANLIKE MANNER WITH LINES LAID AS STRAIGHT AS POSSIBLE AND JOINTS MADE WATERTIGHT. ALL WORK TO BE DONE BY AN INSTALLER LICENSED IN THE STATE OF RHODE ISLAND.
 - 3.) SEPTIC TANK TO BE JOLLEY PRECAST 1000 GALLON TWO COMPARTMENT SEPTIC TANK. TWO SEPTIC TANK COVERS TO BE BROUGHT TO FINISH GRADE. OUTLET FILTER REQUIRED.
 - 4.) DISTRIBUTION BOX TO BE JOLLEY PRECAST DBS-3 D-BOX OR APPROVED EQUALS. ALL DISTRIBUTION LINES FROM BOX ONE FOOT INTO START OF TRENCH TO BE MINIMUM SOLID SDR-35. A DROP OF 2" IS REQUIRED FROM THE D-BOX TO THE START OF THE TRENCHES. BAFFLES OR INLET TEE REQUIRED IN D-BOX.
 - 5.) LEACHING AREA EXCAVATION SHALL BE LEVEL AND SCARIFIED. CARE SHALL BE TAKEN TO AVOID COMPACTION OF THE LEACHING AREA. EXCAVATION SHALL BE STRIPPED OF ALL BRUSH, TREES, TOPSOIL, SUBSOIL AND OTHER UNDESIRABLE MATERIAL.
 - 6.) OWTS SAND AND GRAVEL TO BE FREE OF ORGANIC MATTER AND FOREIGN SUBSTANCES AND SHALL NOT CONTAIN MATERIAL LARGER THAN 3" AND UP TO 10% MAY BE SIZED BETWEEN 3/4" AND 3" REFERENCE IS MADE TO STATE OF RHODE ISLAND RULES ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION, AND MAINTENANCE OF ONSITE WASTEWATER TREATMENT SYSTEMS RULE 32.12.1
 - 7.) ALL BACKFILL MATERIAL PLACED OVER THE SEPTIC SYSTEM SHALL BE FREE OF LARGE STONES, RUBBISH, OR OTHER DELETERIOUS MATERIALS, HEAVY EQUIPMENT SHALL NOT BE ALLOWED TO RUN OVER THE LEACHING AREA.
 - 8.) THE SYSTEM IS NOT DESIGNED TO ACCOMMODATE A GARBAGE GRINDER, WATER SOFTENER OR JACUZZI.
 - 9.) FOR PROPER OPERATION, THE SEPTIC TANK SHALL BE INSPECTED ANNUALLY AND PUMPED AT NO GREATER THAN 2 YEAR INTERVALS. OUTLET FILTER TO BE INSPECTED AND CLEANED SEMI-ANNUALLY.
 - 10.) NO PARKING IS PERMITTED IN THE VICINITY OF THE OWTS.
 - 11.) DIG SAFE NOTIFICATION IS REQUIRED PRIOR TO ANY EXCAVATION.
 - 12.) CONTRACTOR TO INSTALL 12" MINIMUM COVER OVER OWTS. CONTRACTOR IS TO INSURE 6" LOAM AND SEED OVER ALL DISTURBED AREAS UNLESS OTHER ARRANGEMENTS HAVE BEEN MADE FOR FINISH LANDSCAPING.
 - 13.) PROPERTY LINES AS DEPICTED ON THIS PLAN ARE BASED ON A PERIMETER SURVEY. THE PROPOSED SUBDIVISION IS PENDING.
 - 14.) CONTRACTOR IS RESPONSIBLE TO ENSURE THAT ALL SAFETY AND BUILDING CODES ARE FOLLOWED.
 - 15.) DESIGNER TO BE NOTIFIED 72 HOURS (3 WORKING DAYS) PRIOR TO THE START OF OWTS CONSTRUCTION. CONTRACTOR IS TO INSURE THAT DESIGNER IS NOTIFIED 2 WORKING DAYS IN ADVANCE OF REQUIRED INSPECTIONS SO PROPER NOTIFICATION TO BIDEN CAN BE MADE. FAILURE TO PROVIDE ADVANCE NOTICE WILL RESULT IN DELAYS TO THE CONTRACTOR. WORK SHALL NOT CONTINUE UNTIL VARIOUS STAGE IS APPROVED.

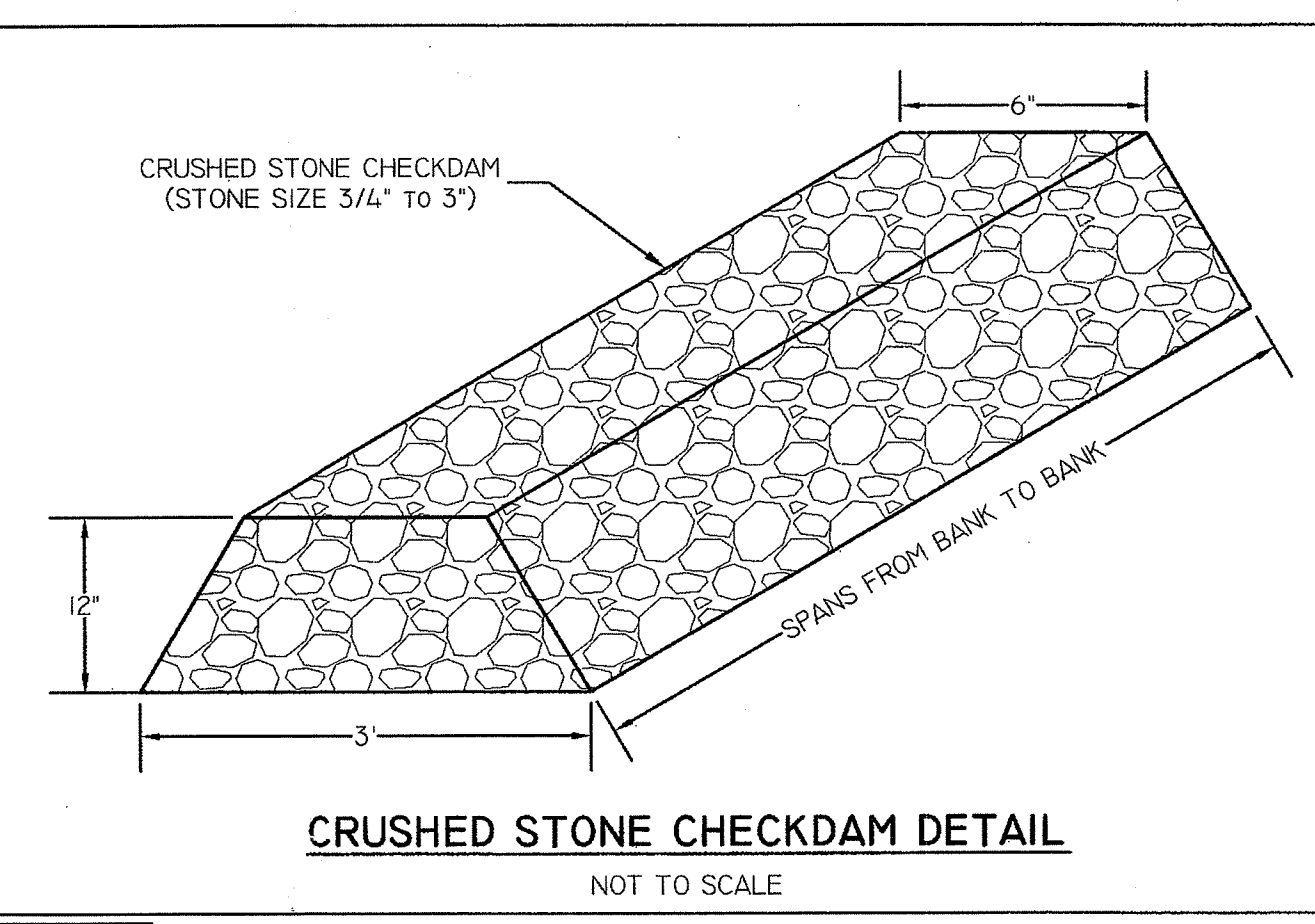
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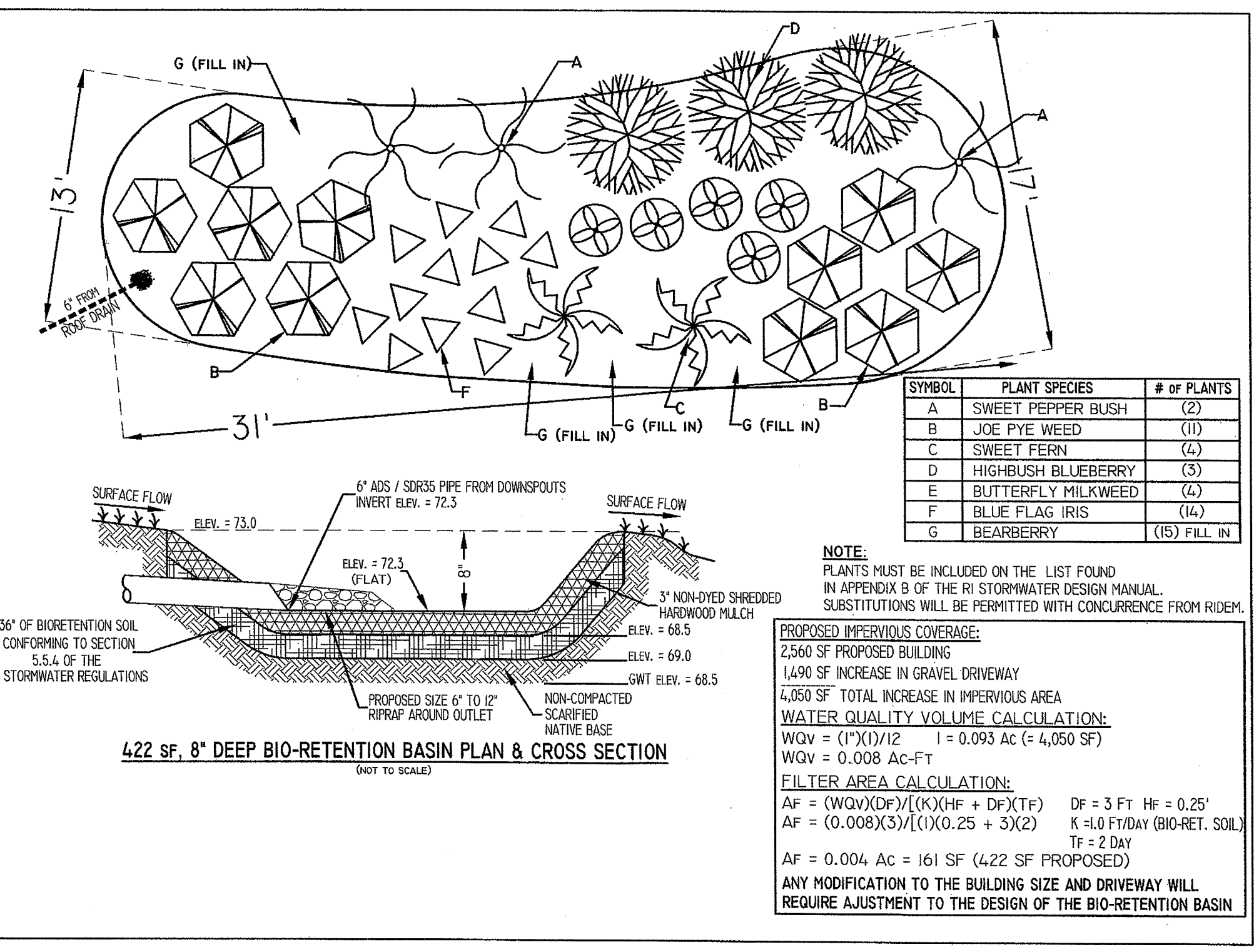


BIO-RETENTION SOIL SPECIFICATION

SAND	85 - 88%	
SOIL FINES	8 - 12%	(< 2% CLAY)
ORGANICS	3 - 5%	(6-12 MONTH AGED LEAF COMPOST)



CRUSHED STONE CHECKDAM DETAIL
NOT TO SCALE



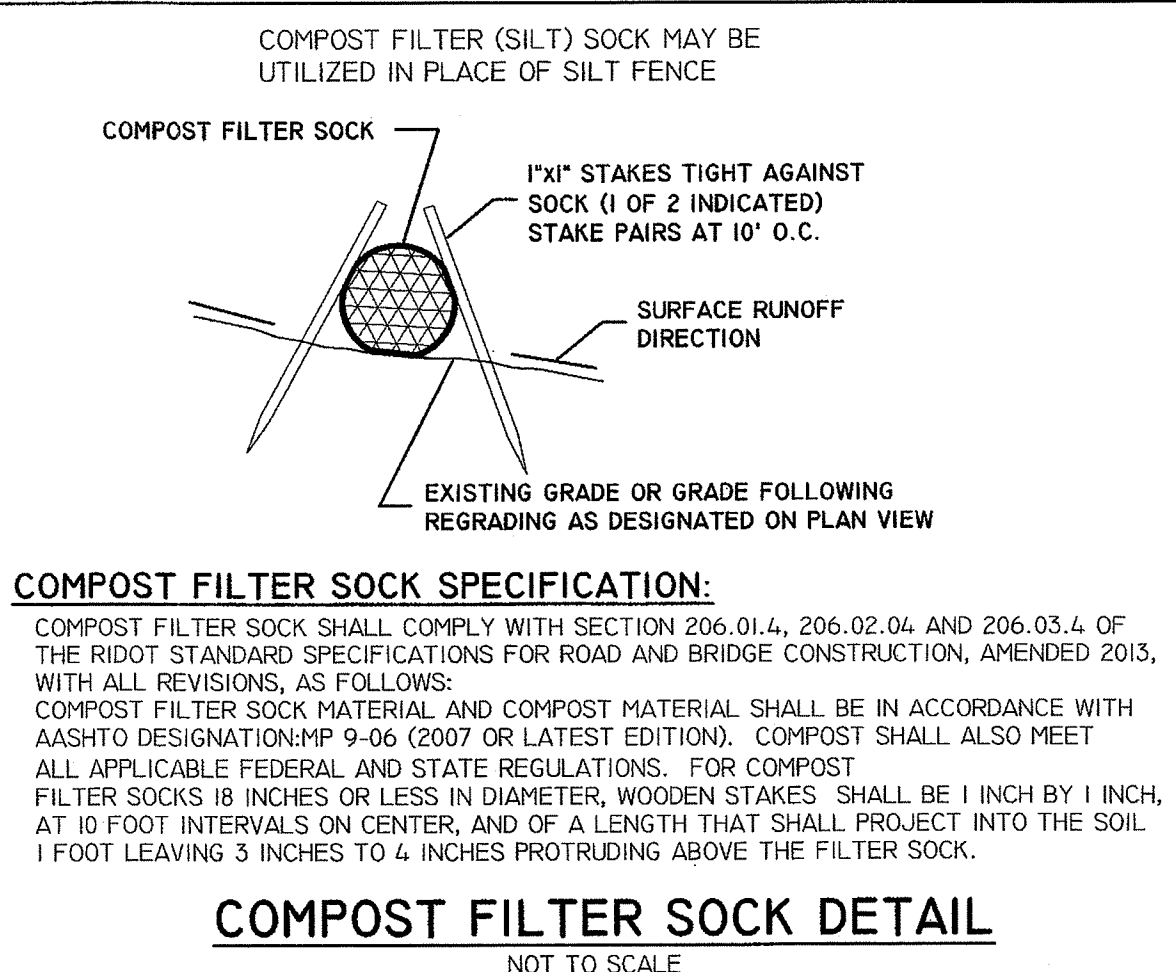
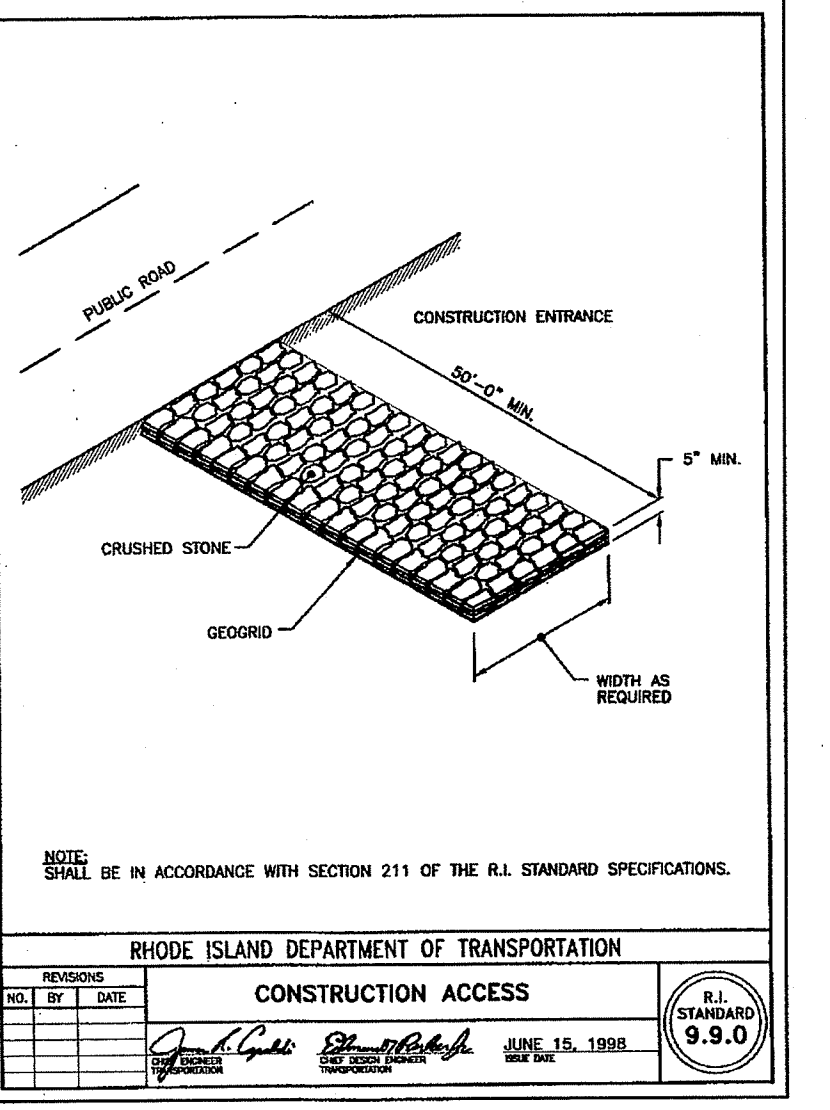
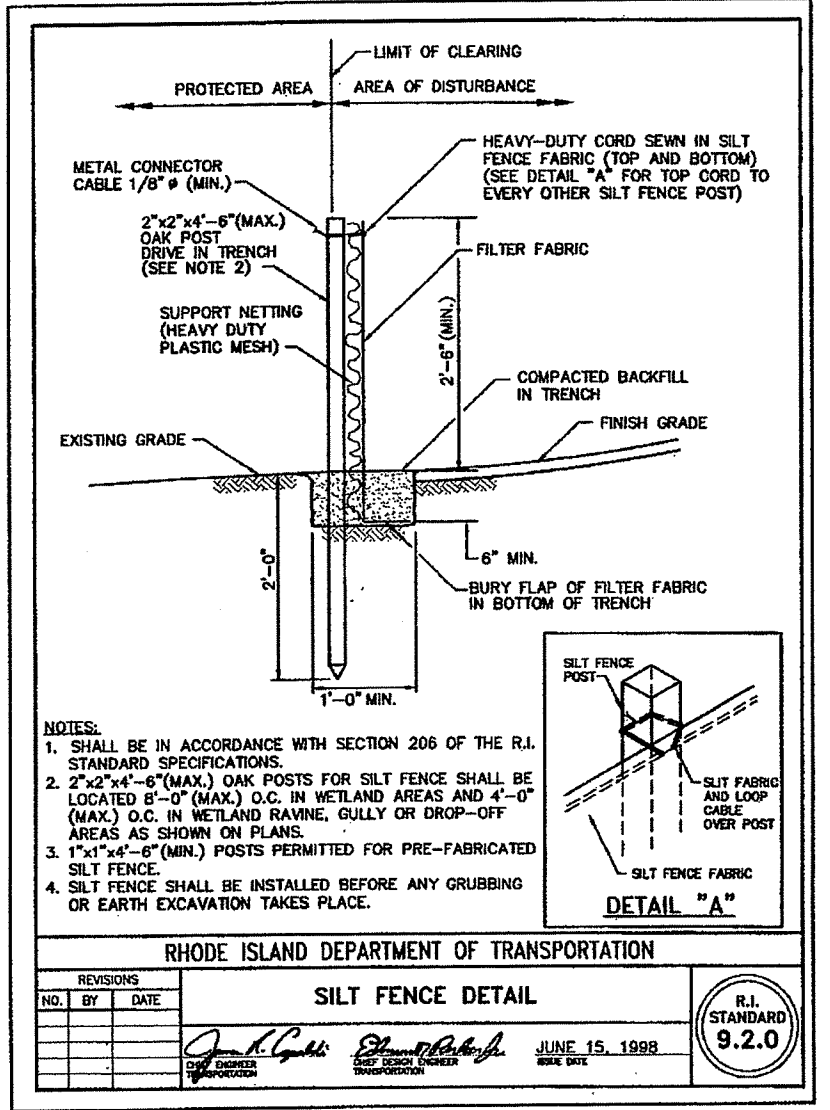
SYMBOL	PLANT SPECIES	# of PLANTS
A	SWEET PEPPER BUSH	(2)
B	JOE PYE WEED	(1)
C	SWEET FERN	(2)
D	HIGHBUSH BLUEBERRY	(3)
E	BUTTERFLY MILKWEED	(4)
F	BLUE FLAG IRIS	(14)
G	BEARBERRY	(15) FILL IN

NOTE:
PLANTS MUST BE INCLUDED ON THE LIST FOUND IN APPENDIX B OF THE RI STORMWATER DESIGN MANUAL. SUBSTITUTIONS WILL BE PERMITTED WITH CONCURRENCE FROM RIDEM.

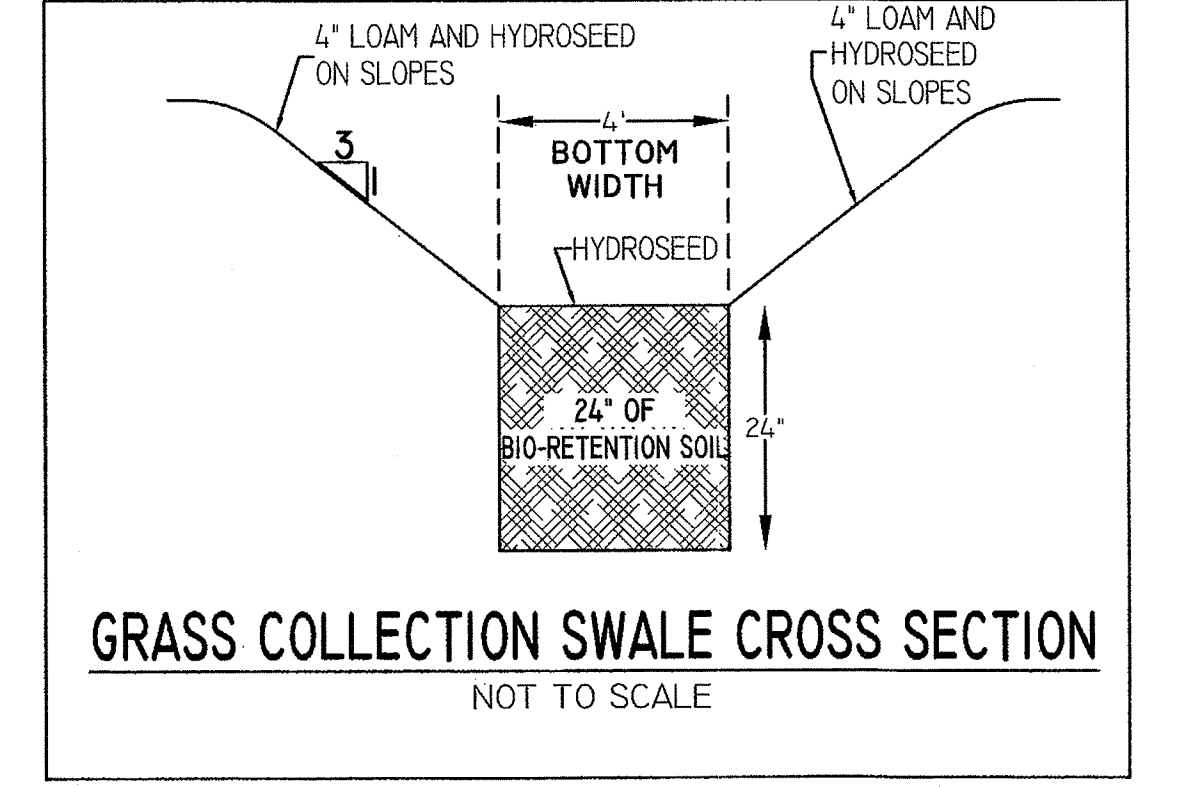
PROPOSED IMPERVIOUS COVERAGE:
2,500 SF PROPOSED BUILDING
1,490 SF INCREASE IN GRAVEL DRIVEWAY
4,050 SF TOTAL INCREASE IN IMPERVIOUS AREA
WATER QUALITY VOLUME CALCULATION:
WQV = (I)(X)/12 = 1 = 0.093 AC (= 4,050 SF)
WQV = 0.008 AC-FT

FILTER AREA CALCULATION:
AF = (WQV)(Df)/(K)(HF + Df)(Tf) Df = 3 FT HF = 0.25'
AF = (0.008)(3)/[(1)(0.25 + 3)(2)] K = 1.0 FT/DAY (BIO-RET. SOIL)
Tf = 2 Day
AF = 0.004 AC = 161 SF (422 SF PROPOSED)

ANY MODIFICATION TO THE BUILDING SIZE AND DRIVEWAY WILL REQUIRE ADJUSTMENT TO THE DESIGN OF THE BIO-RETENTION BASIN



COMPOST FILTER SOCK SPECIFICATION:
COMPOST FILTER SOCK SHALL COMPLY WITH SECTION 206.01.4, 206.02.04 AND 206.03.4 OF THE RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED 2013, WITH ALL REVISIONS, AS FOLLOWS:
COMPOST FILTER SOCK MATERIAL AND COMPOST MATERIAL SHALL BE IN ACCORDANCE WITH AASHTO DESIGNATION: MP 9-06 (2007 OR LATEST EDITION). COMPOST SHALL ALSO MEET ALL APPLICABLE FEDERAL AND STATE REGULATIONS. FOR COMPOST FILTER SOCKS 18 INCHES OR LESS IN DIAMETER, WOODEN STAKES SHALL BE 1 INCH BY 1 INCH, AT 10 FOOT INTERVALS ON CENTER, AND OF A LENGTH THAT SHALL PROJECT INTO THE SOIL 1 FOOT LEAVING 3 INCHES TO 4 INCHES PROTRUDING ABOVE THE FILTER SOCK.



WILLIAM F. SMITH
No. 06084
PROFESSIONAL ENGINEER

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