

RIDEM WETLAND PERMIT MODIFICATION APPLICATION PLAN PHASE 1A

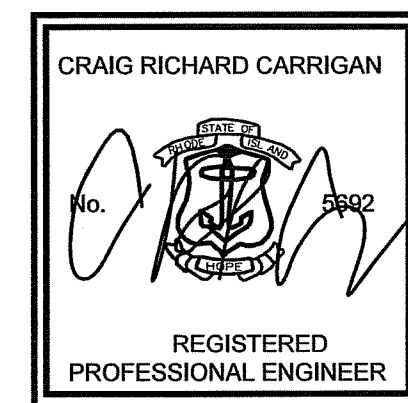
THE PRESERVE AT BOULDER HILLS, LLC
&
MTM DEVELOPMENT CORPORATION

87 KINGSTOWN ROAD
A.P. 5B, LOT 38/ A.P. 6B, LOT 2/ A.P. 6B, LOT 4
RICHMOND, RHODE ISLAND

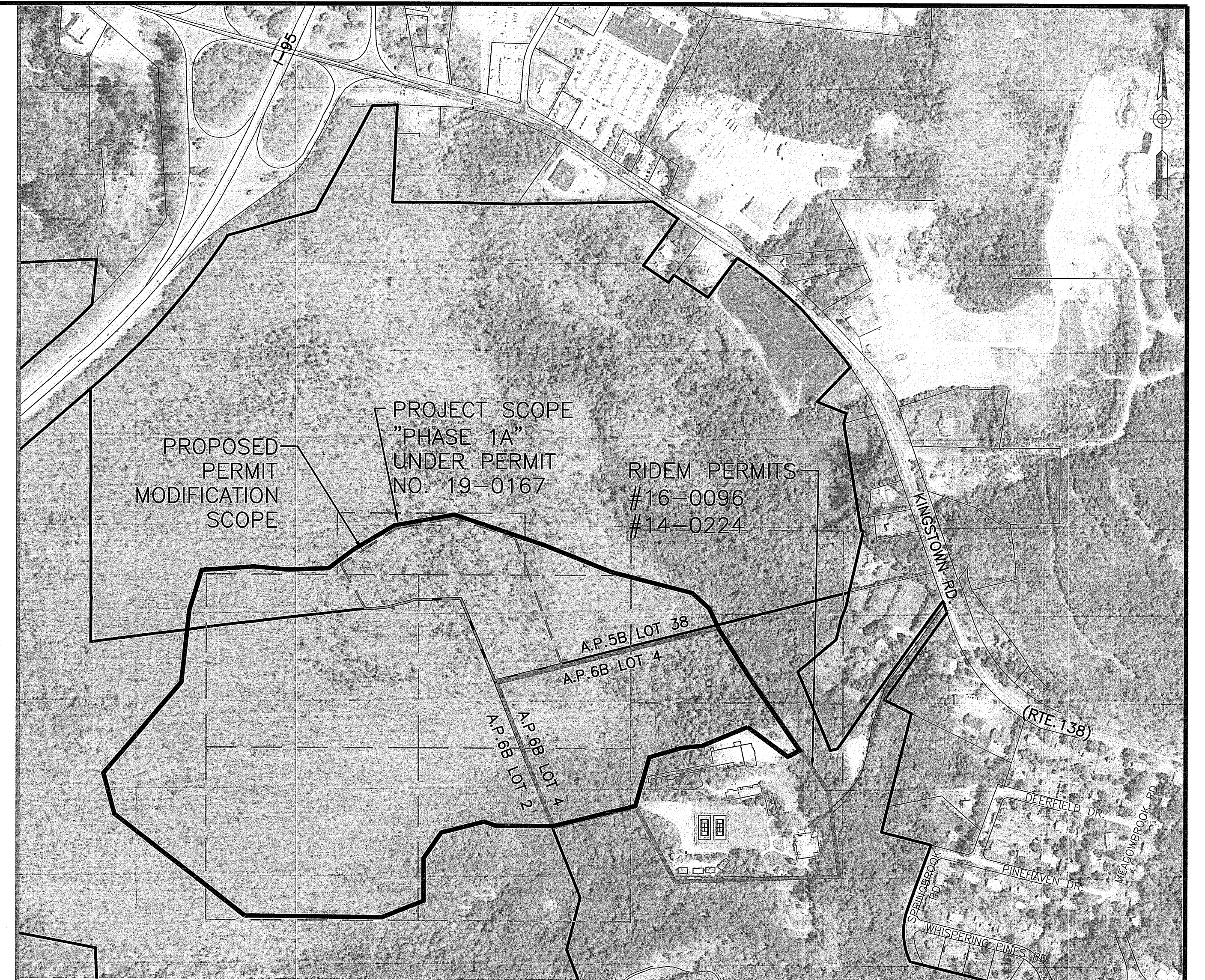
ISSUED FOR PERMITTING

PREPARED FOR
THE PRESERVE AT BOULDER HILLS, LLC

DATE: JULY 3, 2024
REVISED: SEPTEMBER 13, 2024
REVISED: SEPTEMBER 25, 2024
REVISED SEPTEMBER 26, 2024



CARRIGAN ENGINEERING, INC.
CIVIL AND ENVIRONMENTAL ENGINEERING
86 BROOK FARM ROAD SOUTH
WAKEFIELD, RI 02879
PHONE: (401) 789-6865



LOCATION MAP
SCALE: 1"=400'

LIST OF DRAWINGS

- | | |
|-----------------------------------|------------------------------------|
| 1. TITLE SHEET | 10. ZONE 7: GRADING & UTILITY PLAN |
| 2. EXISTING CONDITIONS SHEET | 11. DRY SWALE PROFILES PLAN |
| 3. PROJECT SCOPE PLAN | 12. SESC PLAN - 1 |
| 4. ZONE 1: GRADING & UTILITY PLAN | 13. SESC PLAN - 2 |
| 5. ZONE 2: GRADING & UTILITY PLAN | 14. SESC PLAN - 3 |
| 6. ZONE 3: GRADING & UTILITY PLAN | 15. DETAIL SHEET - 1 |
| 7. ZONE 4: GRADING & UTILITY PLAN | 16. DETAIL SHEET - 2 |
| 8. ZONE 5: GRADING & UTILITY PLAN | 17. DETAIL SHEET - 3 |
| 9. ZONE 6: GRADING & UTILITY PLAN | |

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS
SPECIFIED IN THE LETTER OF APPROVAL
DATED: NOV 11 2024 FILE # 19-0167
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Craig R. Carrigan

PROJECT DATA

ASSESSORS REFERENCE:

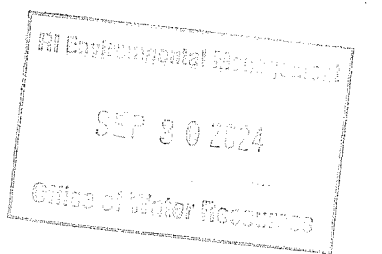
A.P. 5B LOT 38
A.P. 6B LOT 2
A.P. 6B LOT 4

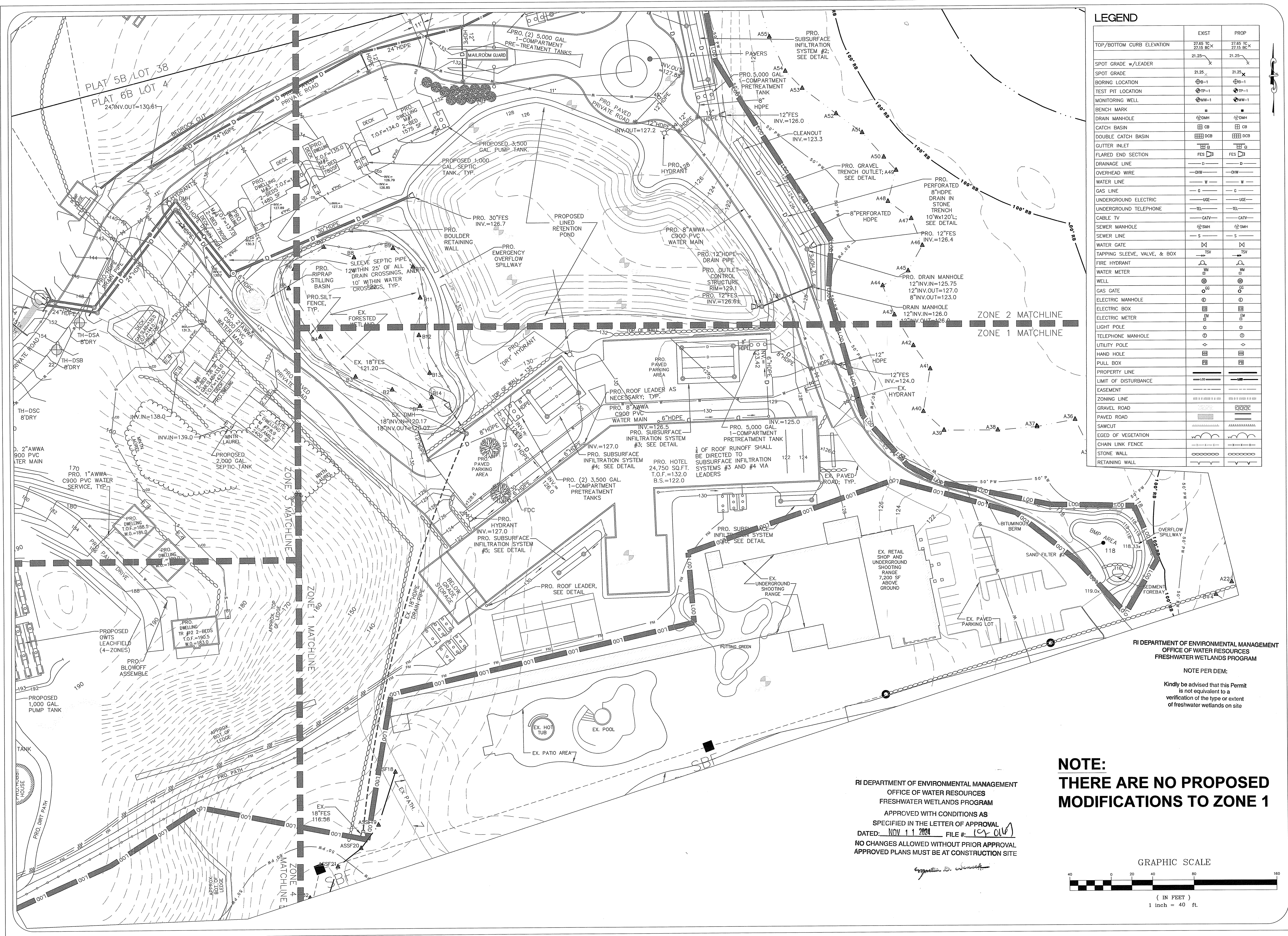
REFERENCES:

- PROPERTY LINE INFORMATION OBTAINED FROM SURVEY PLANS TITLED "SV-1 EXISTING CONDITIONS SURVEY LIMITED CONTENT PERIMETER SURVEY PREPARED FOR THE PRESERVE AT BOULDER HILLS III, LLC KINGSTOWN ROAD PLAT 5B LOT 38 RICHMOND, RHODE ISLAND", "SV-4 EXISTING CONDITIONS LIMITED CONTENT PERIMETER SURVEY PROPERTY OF CASTLE RESIDENCES, LLC ROUTE 95 PLAT 6B LOT 2 RICHMOND, RHODE ISLAND", AND "SV-5 EXISTING CONDITIONS LIMITED CONTENT PERIMETER SURVEY PREPARED FOR THE PRESERVE AT BOULDER HILLS, LLC & MTM DEVELOPMENT PLAT 6B LOT 4 87 KINGSTOWN ROAD RICHMOND, RHODE ISLAND" ALL PLANS DATED APRIL 18, 2018 AND PREPARED BY CHERENZIA & ASSOCIATES, LTD.
- EXISTING 2-FOOT CONTOURS OBTAINED FROM RIGIS LIDAR DATA.

GENERAL NOTES:

- ALL PLANS AND IMPROVEMENTS CONFORM TO ALL EXISTING AND AMENDED STANDARDS OF THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS, BOARD OF REGISTRATION OF PROFESSIONAL ENGINEERS AND BOARD OF REGISTRATION OF LAND SURVEYORS.
- ONLY PLANS STAMPED ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION.
- THE LOCATION AND ELEVATION FOR ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ANY CROSSINGS OF PROPOSED UTILITIES AND EXISTING UTILITIES. ANY DISCREPANCIES IN THE LOCATION OF ANY UTILITY SHOWN OR ENCOUNTERED DURING CONSTRUCTION SHALL BE REPORTED TO MTM DEVELOPMENT CORPORATION, 87 KINGSTOWN RD, RICHMOND, RHODE ISLAND 02898; (401) 539-4653.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 72 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
- IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN THE INTEGRITY OF ALL EXISTING UTILITIES, STRUCTURES, AND ADJUTING PROPERTIES. THE COST OF ANY REPAIR OR REPLACEMENT OF DAMAGED ITEMS SHALL BE BORNE BY THE CONTRACTOR.





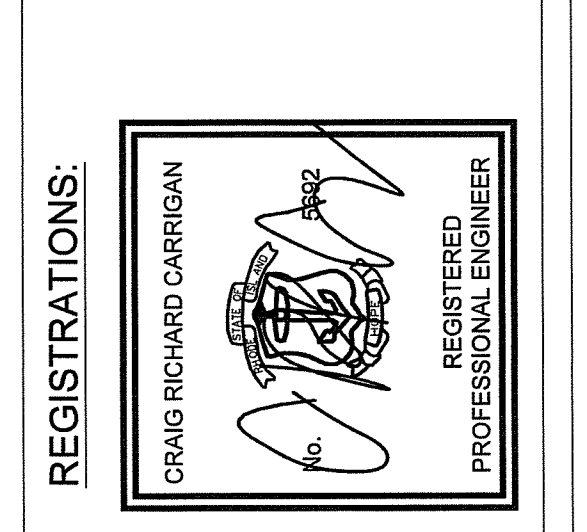
LEGEND

	EXIST	PROP
TOP/BOTTOM CURB ELEVATION	27.65 TC 27.15 BC X	27.65 TC 27.15 BC X
SPOT GRADE w/LEADER	X	X
SPOT GRADE	21.25	21.25
BORING LOCATION	⊕B-1	⊕B-1
TEST PIT LOCATION	⊕TP-1	⊕TP-1
MONITORING WELL	⊕MW-1	⊕MW-1
BENCH MARK	⊕	⊕
DRAIN MANHOLE	⊕DMH	⊕DMH
CATCH BASIN	⊕CB	⊕CB
DOUBLE CATCH BASIN	⊕DCB	⊕DCB
GUTTER INLET	⊕GI	⊕GI
FLARED END SECTION	FES	FES
DRAINAGE LINE	D	D
OVERHEAD WIRE	OHW	OHW
WATER LINE	W	W
GAS LINE	G	G
UNDERGROUND ELECTRIC	USE	USE
UNDERGROUND TELEPHONE	TEL	TEL
CABLE TV	CATV	CATV
SEWER MANHOLE	⊕SMH	⊕SMH
SEWER LINE	S	S
WATER GATE	⊕WG	⊕WG
TAPPING SLEEVE, VALVE, & BOX	⊕TSV	⊕TSV
FIRE HYDRANT	⊕FH	⊕FH
WATER METER	⊕WM	⊕WM
WELL	⊕W	⊕W
GAS GATE	⊕GG	⊕GG
ELECTRIC MANHOLE	⊕EMH	⊕EMH
ELECTRIC BOX	⊕EB	⊕EB
ELECTRIC METER	⊕EM	⊕EM
LIGHT POLE	⊕LP	⊕LP
TELEPHONE MANHOLE	⊕TMH	⊕TMH
UTILITY POLE	⊕UP	⊕UP
HAND HOLE	⊕HH	⊕HH
PULL BOX	⊕PB	⊕PB
PROPERTY LINE	---	---
LIMIT OF DISTURBANCE	---	---
EASEMENT	---	---
ZONING LINE	---	---
GRAVEL ROAD	---	---
PAVED ROAD	---	---
SAWCUT	---	---
EGED OF VEGETATION	---	---
CHAIN LINK FENCE	---	---
STONE WALL	---	---
RETAINING WALL	---	---

TITLE:
ZONE 1 - GRADING & UTILITY PLAN
 A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND
 PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 07/03/24 SHEET 4 OF 17

REVISIONS:

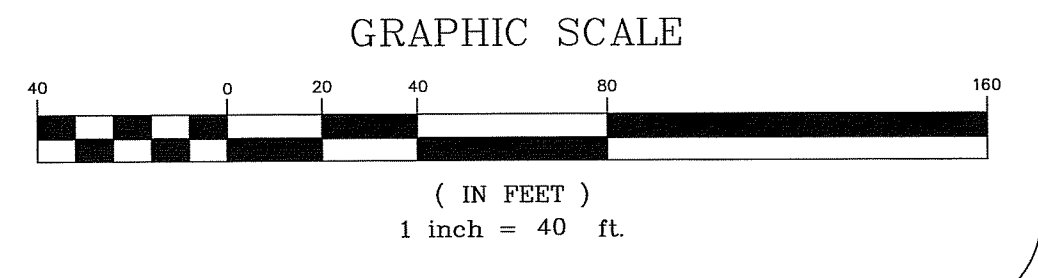
NO.	DATE	DESCRIPTION	BY



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 NOTE PER DEM:
 Kindly be advised that this Permit is not equivalent to a verification of the type or extent of freshwater wetlands on site

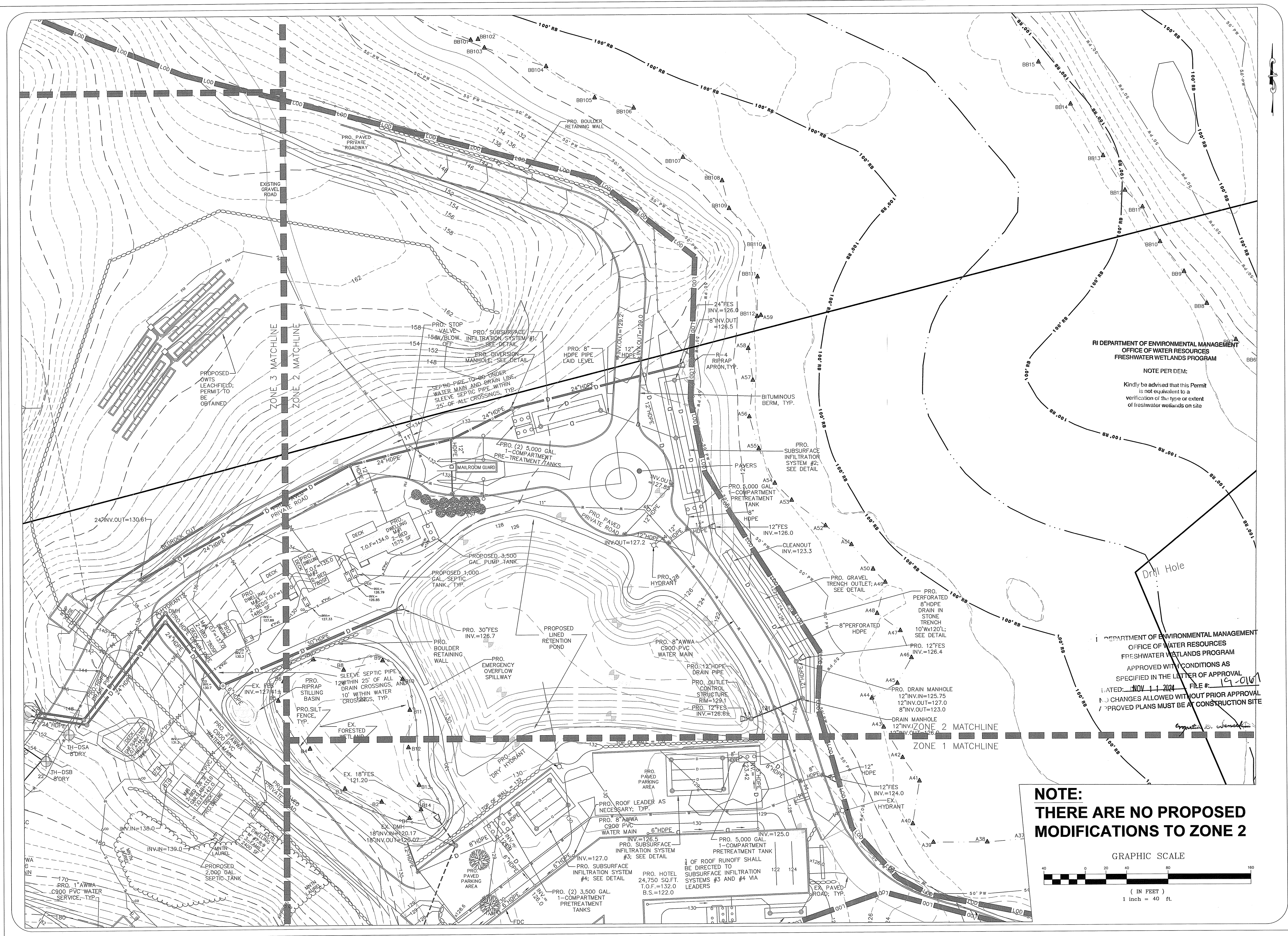
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED: NOV 11 2024 FILE #: 19-010
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NOTE:
THERE ARE NO PROPOSED MODIFICATIONS TO ZONE 1



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SEP 30 2024



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM

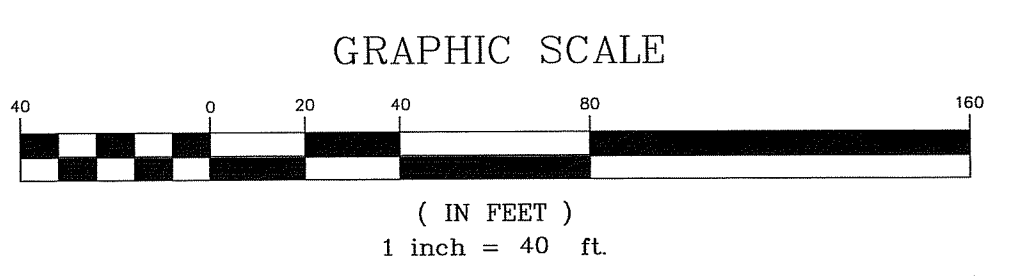
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APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL DATED: NOV 11 2024 FILE # 19-0161

NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
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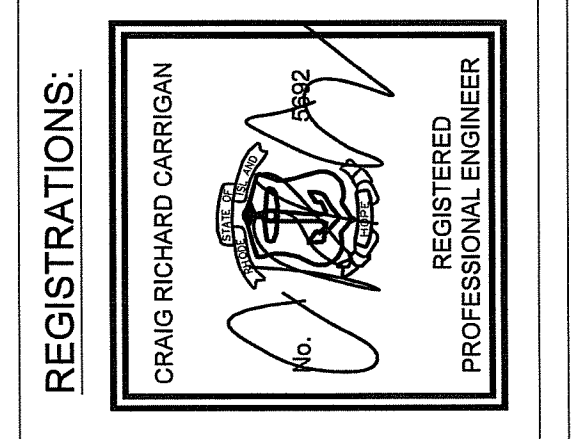
NOTE:
 THERE ARE NO PROPOSED MODIFICATIONS TO ZONE 2



TITLE:
ZONE 2 - GRADING & UTILITY PLAN
 A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND
 PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 07/03/24 SHEET 5 OF 17

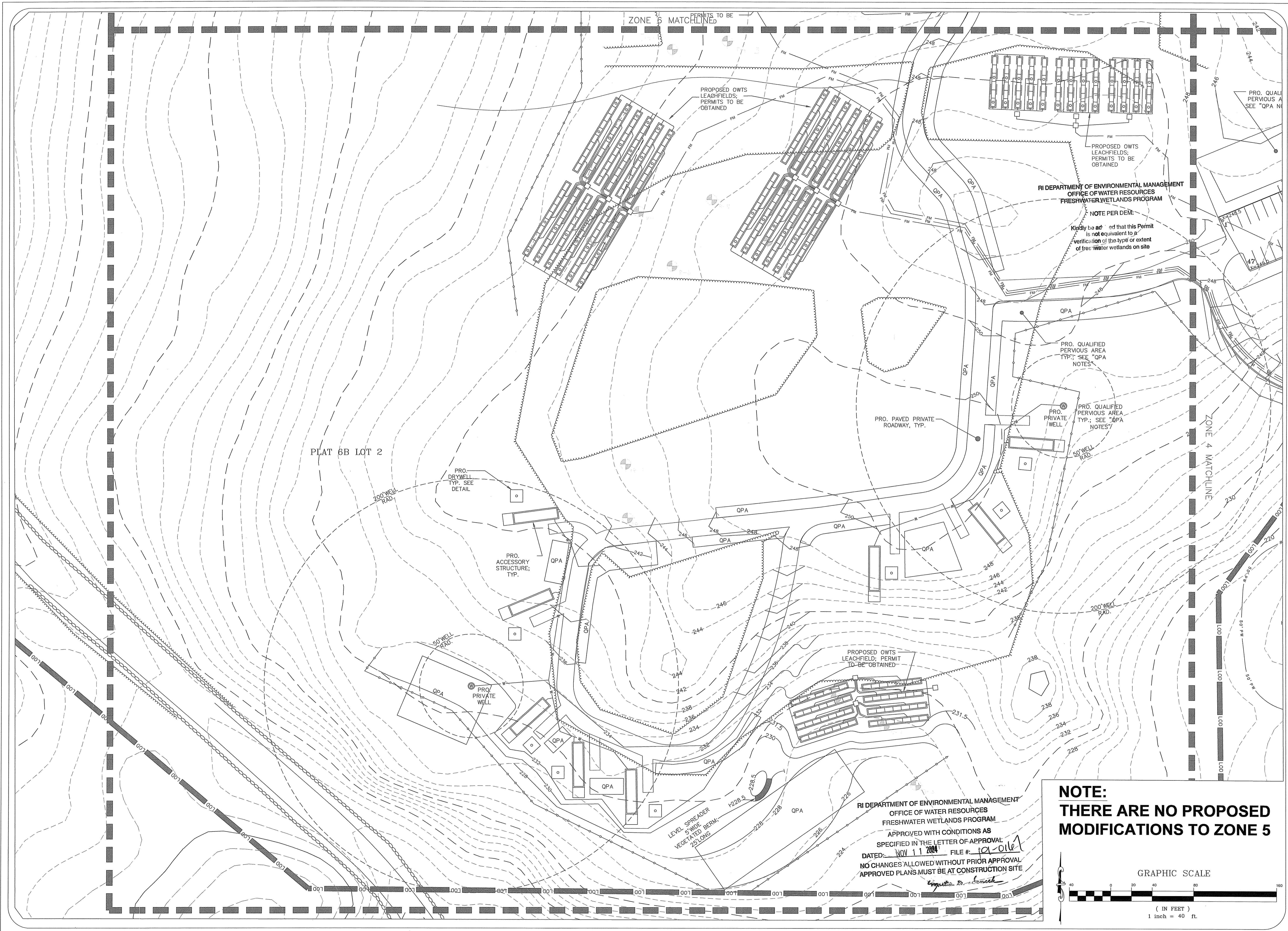
REVISIONS:

NO.	DATE	DESCRIPTION	BY

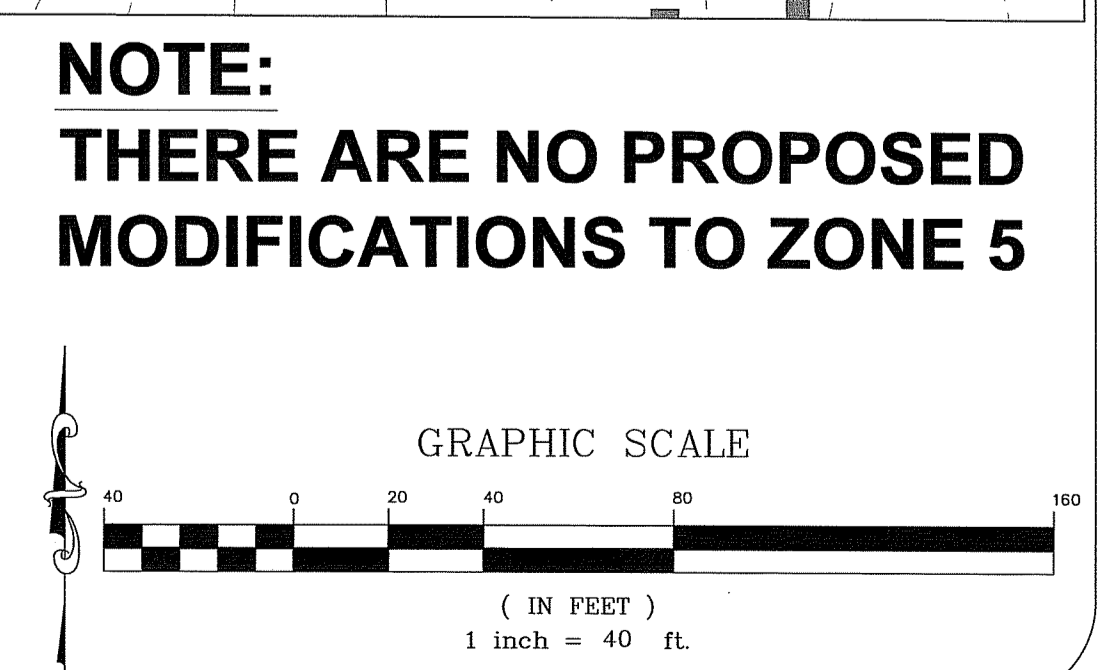


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SEP 3 0 2024



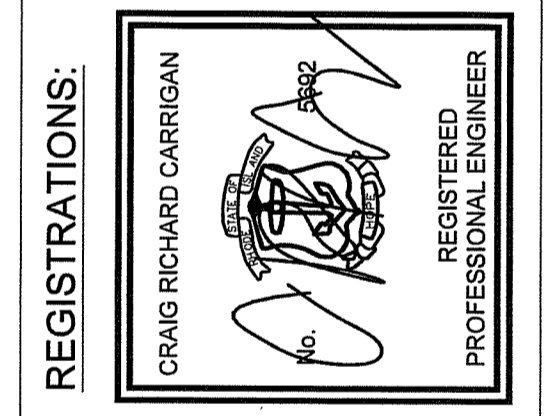
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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 APPROVED WITH CONDITIONS AS
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 DATED: NOV 11 2024 FILE #: 12A-0114
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
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TITLE:
ZONE 5 - GRADING & UTILITY PLAN
 A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND
 PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 07/03/24 SHEET 8 OF 17

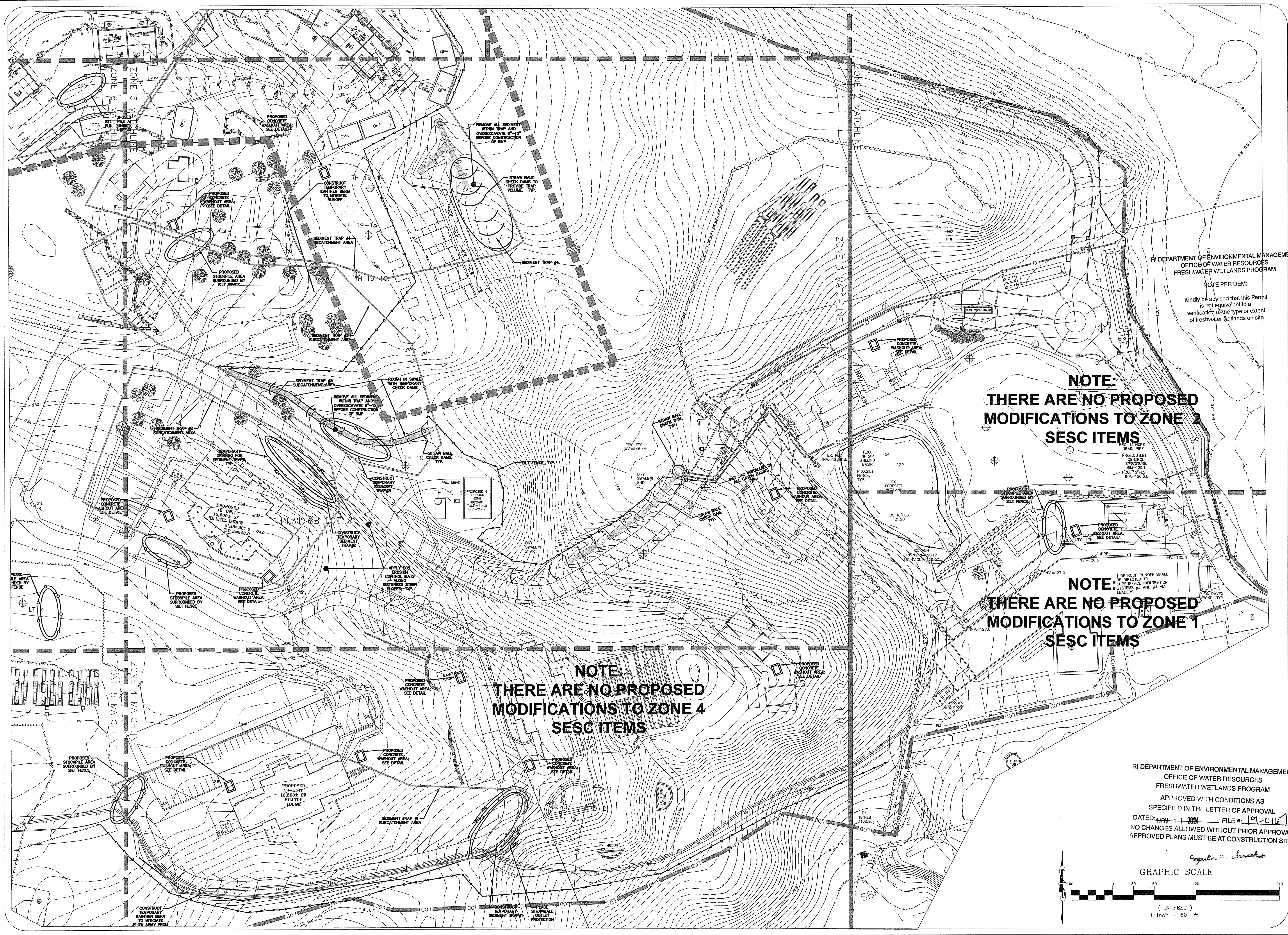
REVISIONS:

NO.	DATE	DESCRIPTION	BY



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 CIVIL AND ENVIRONMENTAL ENGINEERING
 86 BROOK FARM ROAD SOUTH
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SEP 3 0 2024



SESC PLAN - 1
 A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND
 PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 07/03/24 SHEET 12 of 17

TITLE:

REVISIONS:	NO.	DATE	DESCRIPTION	BY
CC/BM	1.	9.13.24	RIDEM COMMENTS	
CC/BM	2.	9.24.24	RIDEM COMMENTS	
CC/BM	3.	9.26.24	RIDEM COMMENTS	

REGISTRATIONS:

CARRIGAN RICHARD CARRIGAN
 REGISTERED PROFESSIONAL ENGINEER

CARRIGAN ENGINEERING, INC.
 CIVIL AND ENVIRONMENTAL ENGINEERING
 86 BROOK FARM ROAD SOUTH
 WAKEFIELD, RI 02879
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RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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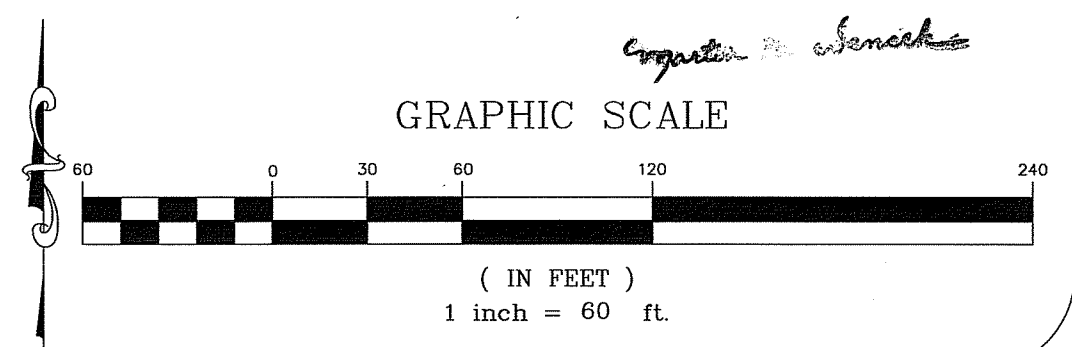
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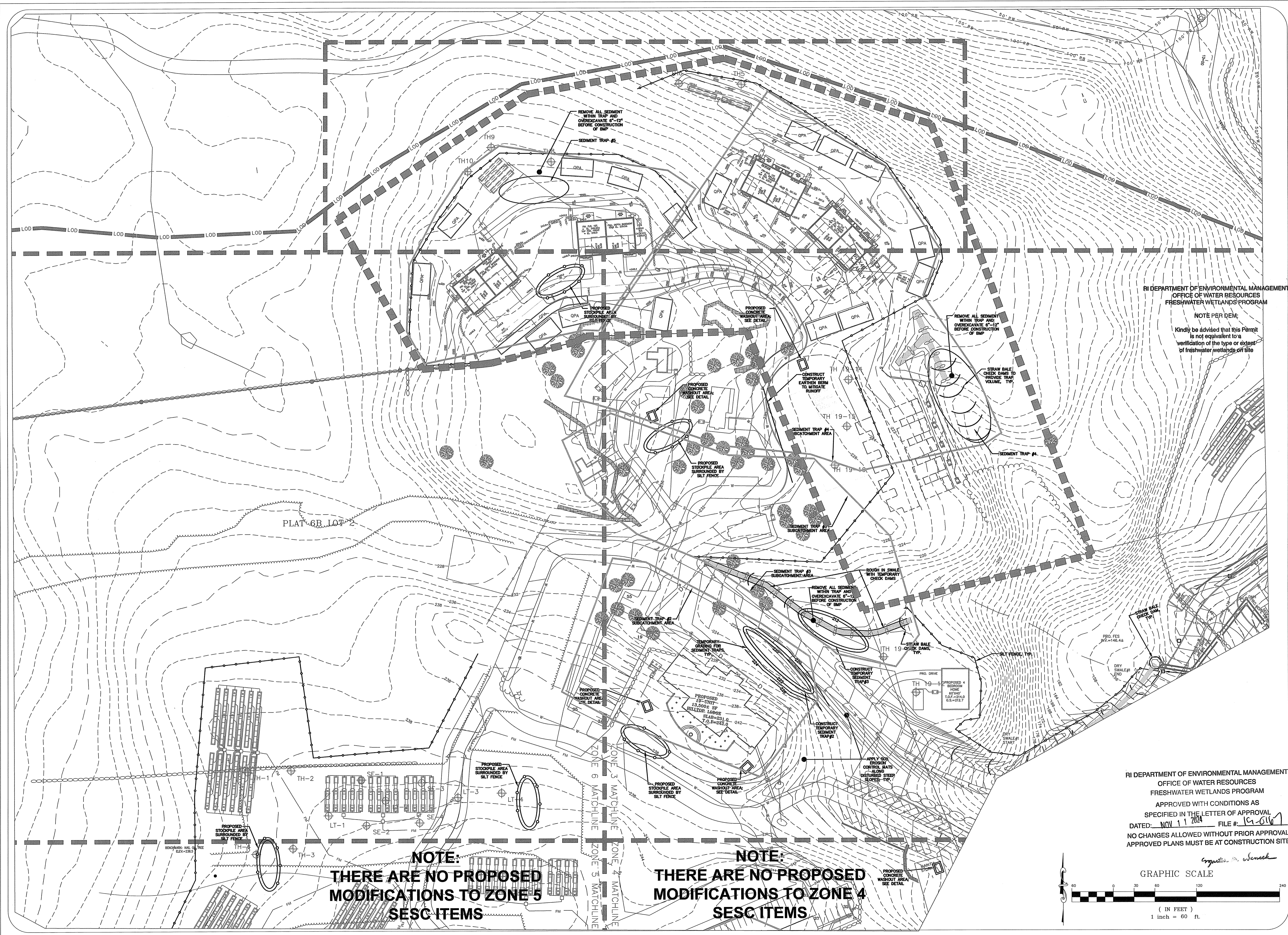
NOTE:
 THERE ARE NO PROPOSED MODIFICATIONS TO ZONE 2 SESC ITEMS

NOTE:
 THERE ARE NO PROPOSED MODIFICATIONS TO ZONE 1 SESC ITEMS

NOTE:
 THERE ARE NO PROPOSED MODIFICATIONS TO ZONE 4 SESC ITEMS

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
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 DATED: 09/11/2024 FILE # 01-0116
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
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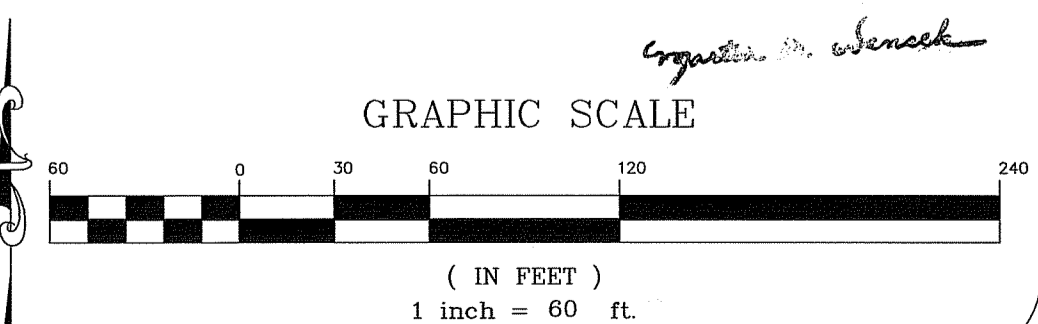




NOTE:
THERE ARE NO PROPOSED
MODIFICATIONS TO ZONE 5
SESC ITEMS

NOTE:
THERE ARE NO PROPOSED
MODIFICATIONS TO ZONE 4
SESC ITEMS

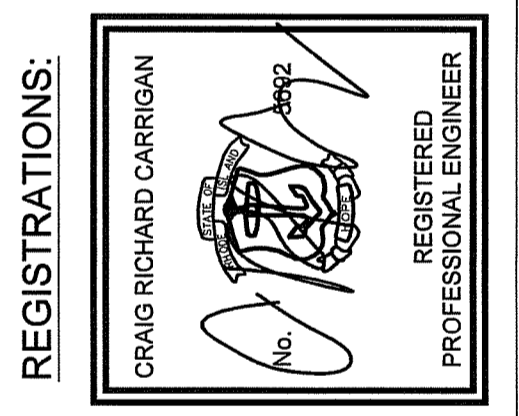
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SESC PLAN - 1
A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
87 KINGSTOWN ROAD
RICHMOND, RHODE ISLAND
PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
SCALE: AS SHOWN DATE: 07/03/24 SHEET 14 of 17

TITLE:

REVISIONS:	NO.	DATE	DESCRIPTION	BY
1.	9.13.24			
2.	9.24.24			
3.	9.26.24			



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SEP 30 2024
Office of Water Resources

GENERAL EROSION CONTROL NOTES:

- THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED AUG. 2013, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. THE 2013 STANDARD SPECIFICATIONS MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION WEB PAGE. THESE SPECIFICATIONS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO.
- LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO EXISTING UTILITIES AS SHOWN OR NOT SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR. NO EXCAVATION SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 48-HOURS IN ADVANCE. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 48 WORKING HOURS EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION AND/OR BLASTING WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION AND/OR BLASTING WORK MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
- IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN ANY AND ALL PERMITS REQUIRED BY, BUT NOT LIMITED TO, THE STATE OF RHODE ISLAND, THE FEDERAL GOVERNMENT, LOCAL (TOWN/CITY) GOVERNMENT AND ALL INDIVIDUAL UTILITY COMPANIES PRIOR TO COMMENCING ANY WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS. ALL MATERIAL FOR FILL SHALL BE CLEAN AND FREE OF MATTER WHICH COULD POLLUTE ANY DOWN STREAM WATERCOURSE.
- FILL MATERIAL SHALL BE COMPACTED IN ONE FOOT (MAXIMUM) LIFTS TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D-1557 (MODIFIED PROCTOR TEST).
- ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ALL AREAS NOT TO BE DEVELOPED THAT ARE COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED BY TILLING THE TOP 12" OF SOIL.

EROSION CONTROL AND SOIL STABILIZATION PROGRAM:

- ALL STRAW BALES OR TEMPORARY PROTECTION SHALL REMAIN IN-PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
- THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH RHODE ISLAND STANDARD SPECIFICATION M.20.01, AS AMENDED.
- THE SEED MIX SHALL BE INOCULATED WITHIN 24-HOURS BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
- THE DESIGN MIX UTILIZED IN ALL DISTURBED AREAS TO BE SEEDDED SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT	SEEDING DATE
CREeping RED FESCUE	70	APRIL 1 - JUNE 15
ASTORIA BENTGRASS	5	AUGUST 15 - OCT.
BIRDFOOT TREFOOL	15	
PERENNIAL RYEGRASS	10	

APPLICATION RATE 100 LBS/ACRE
LIMING AND FERTILIZING AS REQUIRED TO COMPLIMENT OR UPGRADE EXISTING CONDITIONS.

- ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR SHALL BE REPAIRED AND/OR RESEEDED.
- THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.
- STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
- STOCKPILES OF TOPSOIL AND EARTH MATERIAL SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 2:1 AND STOCKPILE SHALL ALSO BE SEEDDED AND/OR STABILIZED. THE STOCKPILES SHALL BE SURROUNDED BY STACKED STRAW BALES AND/OR SILT FENCE.
- ON SLOPES STEEPER THAN 30% MULCH APPLICATIONS SHALL BE TACKED DOWN BY "CRIMPING" OR "TRACKING".
- TREES TO BE RETAINED SHALL BE FENCED OR ROPED OFF TO PROTECT THEM FROM CONSTRUCTION EQUIPMENT.
- ALL PROPOSED PLANTINGS MUST BE ACCOMPLISHED AS EARLY AS POSSIBLE UPON COMPLETION OF GRADING AND CONSTRUCTION, AND AT LEAST PRIOR TO ANY ON-SITE OCCUPANCY.
- PLANTINGS SHALL BE MAINTAINED BY THE PROPERTY OWNER TO ENSURE SURVIVAL.
- SHOULD ANY OR ALL OF THE PROPOSED PLANTS FAIL TO SURVIVE AT LEAST ONE (1) FULL GROWING SEASON FROM THE TIME THEY HAVE BEEN PLANTED, THE OWNER SHALL BE FULLY RESPONSIBLE FOR REPLACING AND MAINTAINING THE SAME PLANT SPECIES FOR ONE (1) ADDITIONAL GROWING SEASON.
- ALL DISTURBED AREAS MUST BE SEEDDED OR PLANTED WITHIN THE CONSTRUCTION SEASON.
- TEMPORARY SEEDING MUST BE DONE WITHIN ONE (1) MONTH AFTER DISTURBANCE.
- ALL DISTURBED AREAS MUST BE PERMANENTLY SEEDDED OR PLANTED BEFORE OCTOBER 1ST, IF NOT THEY MUST BE TEMPORARILY SEEDDED.
- SLOPES CONSTRUCTED AT, OR STEEPER THAN, 15% SHALL HAVE TEMPORARY EROSION CONTROL MATTING UTILIZED AS A SUPPORTIVE METHOD IN ADDITION TO THE METHODS DESCRIBED ABOVE UNLESS IN THE CASE WHERE PERMANENT TURF REINFORCEMENT MATS ARE INSTALLED IMMEDIATELY UPON CONSTRUCTION OF THE SLOPE. IN NO CASE SHALL STEEP SLOPES BE LEFT UNPROTECTED.
- ALL PROPOSED INLETS AND OUTLETS SHALL BE PROTECTED WITH TURF REINFORCEMENT AS PROPOSED ON THE PLANS AND/OR STRAW BALE INLET AND OUTLET PROTECTION DEVICES. SEE DETAILS.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND PROCEDURES SET FORTH IN THE TOWN ZONING ORDINANCES, RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL, AMENDED MARCH 2015 AS PREPARED BY THE RIDEM AND CRMC; AND RHODE ISLAND EROSION AND SEDIMENT CONTROL HANDBOOK AS PREPARED BY RHODE ISLAND STATE CONSERVATION COMMITTEE, REVISED 2014, (AS REVISED).

- EXTREME CARE SHALL BE EXERCISED AS TO PREVENT ANY MATERIALS FROM ENTERING THE ROADWAYS, ROADWAY DRAINAGE SYSTEMS, ADJACENT PROPERTY, WETLANDS, PERIMETER WETLANDS, AND RIVERBANK WETLANDS.
- STAKED STRAW BALES AND/OR SILT FENCE SHALL BE INSTALLED WHERE SHOWN ON THE PLAN AND AS REQUIRED TO PREVENT SEDIMENTATION INTO PERIMETER AND RIVERBANK WETLANDS.
- DENUDED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR MORE THAN 2 WEEKS OF TIME OR FOR THE INACTIVE WINTER SEASON.
- ALL DISTURBED SOILS EXPOSED PRIOR TO OCTOBER 15 OF ANY CALENDAR YEAR SHALL BE SEEDDED OR PROTECTED BY THAT DATE. ANY SUCH AREAS THAT DO NOT HAVE ADEQUATE VEGETATIVE STABILIZATION, AS DETERMINED BY THE RESIDENT ENGINEER OR ENVIRONMENTAL INSPECTOR, BY NOVEMBER 15 OF ANY CALENDAR YEAR, MUST BE STABILIZED THROUGH THE USE OF EROSION CONTROL MATTING OR STRAW MULCH, IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK OR AS DIRECTED BY THE RESIDENT ENGINEER OR INSPECTOR. IF WORK CONTINUES WITHIN ANY OF THESE AREAS DURING THE PERIOD FROM OCTOBER 15 THROUGH APRIL 15, CARE MUST BE TAKEN TO ENSURE THAT ONLY THE AREA REQUIRED FOR THAT DAY'S WORK IS EXPOSED, AND ALL ERODIBLE SOIL MUST BE RE-STABILIZED WITHIN 5 WORKING DAYS. ANY WORK TO CORRECT PROBLEMS RESULTING FROM FAILURE TO COMPLY WITH THIS PROVISION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THERE WILL BE NO SEPARATE PAYMENT FOR THIS PROVISION. IT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 2 WEEKS OF FINAL GRADING.
- PREPARE TEMPORARY SEEDING AREA, PROVIDE AND PLANT SEED IN ACCORDANCE WITH "RHODE ISLAND EROSION AND SEDIMENT CONTROL HANDBOOK" AS PREPARED BY THE RHODE ISLAND STATE CONSERVATION COMMITTEE, REVISED 2014, (AS REVISED).

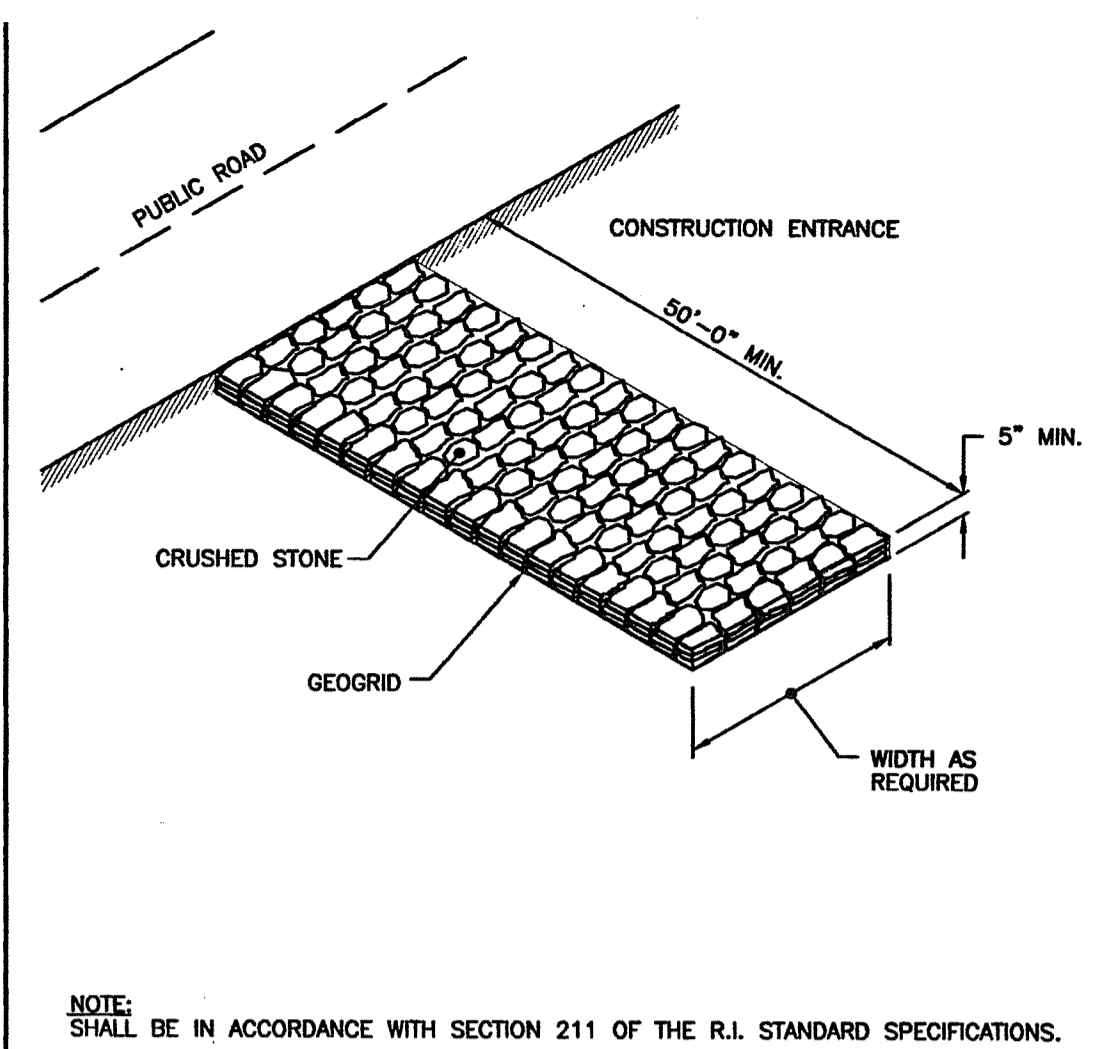
SEED MIX:
ANNUAL RYE GRASS 1.5 LBS/1,000 SQ. FT.

- TEMPORARY TREATMENTS TO STABILIZE EXPOSED SOILS SHALL CONSIST OF STRAW OR FIBER MULCH OR PROTECTIVE COVERS, SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK WHEN SOILS ARE EXPOSED FOR TWO WEEKS OR MORE OR AS ORDERED BY THE RESIDENT ENGINEER OR OWNER AT NO ADDITIONAL COST.
- STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 4,000 LBS/ACRE.
- ALL NEW STRAW BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED AND POTENTIAL SEDIMENTATION SOURCES ARE REMOVED.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT/REPLACE AS NEEDED.
- ADDITIONAL STRAW BALES/SILT FENCE OR OTHER TREATMENTS SHALL BE PROVIDED AS DIRECTED BY ENGINEER, RIDEM OR LOCAL REPRESENTATIVES AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL INSPECT THE SOIL EROSION CONTROL DEVICES AFTER EVERY RAIN STORM EVENT AND EVERY 7 DAYS (WHICH EVER COMES FIRST) ANY SOIL MIGRATION PAST THE DEVICES SHALL BE REMOVED AND THE SOIL EROSION CONTROL DEVICES SHALL BE RE-ESTABLISHED TO PREVENT SOIL EROSION. ALL ACCUMULATED SEDIMENT IN FRONT OF THE DEVICES SHALL BE REMOVED AFTER EVERY RAIN STORM EVENT.
- ALL DISTURBED SOIL AREAS SHALL BE PROTECTED AGAINST SOIL EROSION BY PLACEMENT OF STRAW BALES AND/OR SILT FENCE ON THE DOWN GRADIENT SIDE OF THE DISTURBED AREA(S). SHOULD THE VOLUME AND/OR RATE OF STORMWATER RUNOFF BE TOO GREAT FOR A SINGLE DEVICE, THEN MULTIPLE DEVICES ARE REQUIRED SUCH AS SILT FENCE BACKED-UP WITH STRAW BALES. THESE ADDITIONAL DEVICES ARE NOT SHOWN ON THE PLAN BUT SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- AT THE END OF THE PROJECT CONSTRUCTION ALL SEDIMENT IN MANHOLE SUMPS AND WITHIN ANY DRAINAGE STRUCTURE OR BMP SHALL BE REMOVED.

SEQUENCE AND STAGING OF LAND DISTURBING ACTIVITIES:

- CONTRACTOR TO REFER TO RIDEM RIDGES SOIL EROSION AND SEDIMENT CONTROL (SESC) REPORT AS WELL AS THESE DRAWINGS.
- INSTALL SEDIMENTATION PROTECTION DEVICES IN EXISTING CATCHBASINS AND INLET STRUCTURES.
- SURVEY AND STAKE LIMIT OF DISTURBANCE FOR PLACEMENT OF SEDIMENTATION CONTROL DEVICES.
- PLACE PERIMETER SEDIMENTATION CONTROL DEVICES, SEE DETAILS. IN NO CASE SHALL THE LIMIT OF WORK EXTEND BEYOND THE SEDIMENTATION CONTROL DEVICES.
- CONSTRUCT CONSTRUCTION ENTRANCE DEVICES LOCATED ALONG ROUTE 138. SEE DETAIL.
- CLEAR AND GRUB AREA WITHIN THE LIMIT OF DISTURBANCE.
- CONSTRUCT TEMPORARY SEDIMENT TRAPS.
- CLEAR AND ROUGH GRADE ROADS AND BUILDING SITES.
 - INSTALL AND COMPACT GRAVEL BASE COURSE FOR ROADS.
 - EXCAVATE AND POUR BUILDING FOUNDATION
- CONSTRUCT UTILITIES (SEWER, WATER, DRAINAGE, ETC...)
 - ENSURE THAT DRAIN MANHOLE GRATES ARE ABOVE GRADE TO ENSURE NO RUNOFF ENTERS INTO DRAINAGE SYSTEM.
 - POUR BITUMINOUS CONCRETE BASE COURSE.
 - FINISH REMAINDER OF CONSTRUCTION AND PAVE BITUMINOUS CONCRETE SURFACE COURSE.
- REMOVE TEMPORARY SOIL EROSION DEVICES.
- CLEAN UP ALL DRAINAGE BASINS AND STRUCTURES AS NEEDED. REMOVE AND DISPOSE ALL ACCUMULATED SEDIMENT IN A SUITABLE AREA.

- REFERENCE IS MADE TO APPENDIX G "POLLUTION PREVENTION AND SOURCE CONTROLS" OF THE RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL, AMENDED 2015. THIS DOCUMENT SHALL BE REFERENCED WHEN IMPLEMENTING THE POLLUTION PREVENTION TECHNIQUES. A BRIEF SUMMARY OF THE TECHNIQUES IS PROVIDED BELOW. REFER TO THE ABOVE REFERENCE FOR ALL TECHNIQUES TO BE IMPLEMENTED.
- SOLID WASTE CONTAINMENT:
 - OWNER TO PROVIDE TRASH CONTAINER. CONTAINER TO HAVE A COVER TO PREVENT TRASH FROM BLOWING OUT.
 - SWEEP STREET/PARKING AREA ANNUALLY.
- HAZARDOUS MATERIALS CONTAINMENT:
 - CONTRACTOR TO STORE ALL HAZARDOUS MATERIALS INSIDE STORAGE LOCKERS OR OTHER APPROVED METHODS WHICH HAVE SECONDARY CONTAINMENT SYSTEMS.
 - SECONDARY CONTAINMENT MUST BE INCLUDED WHEREVER SPILLS MIGHT OCCUR (E.G. FUELING AND HAZARDOUS MATERIAL TRANSFER AND LOADING AREAS).
- ROADS AND PARKING AREA MANAGEMENT:
 - SWEEP STREET/PARKING AREA ANNUALLY.
 - USE DRAINING CHEMICALS AND SAND JUDICIOUSLY SINCE THEY CAUSE WATER QUALITY PROBLEMS. PROVIDE AND SPREAD IN ACCORDANCE WITH APPENDIX G RECOMMENDATIONS.
 - PLOW SNOW AND STORE ACCUMULATED SNOW PILES AWAY FROM SAND FILTER SYSTEM AND SEDIMENT FOREBAY.
 - DEBRIS SHOULD BE CLEANED FROM THE SITE PRIOR USING THE SITE FOR SNOW DISPOSAL.
 - DEBRIS SHOULD BE CLEANED FROM THE SITE AND PROPERLY DISPOSED OF AT THE END OF THE SNOW SEASON.
- D. ONLY USE ASPHALT BASED SEALANTS WHEN SEALING THE PAVEMENTS. DO NOT USE COAL-TAR BASED SEALANTS SINCE THESE ARE MORE TOXIC.
- SEPTIC SYSTEM:
 - NO SEPTIC SYSTEMS PROPOSED.
- LAWN, GARDEN, AND LANDSCAPE MANAGEMENT:
 - LAWN CONVERSION - REDUCE THE AMOUNT OF LAWN BY REPLANTING LAWN WITH GARDEN BEDS CONTAINING FLOWERS/SHRUBS. LAWNS REQUIRE MORE MAINTENANCE THAN FLOWER BEDS.
 - SOIL BUILDING - MAINTAIN A HEALTHY LAWN BY TESTING SOIL FOR PH, FERTILITY, COMPACTION, TEXTURE, AND EARTH WORM CONTENT.
 - GRASS SELECTION - SELECT DROUGHT TOLERANT GRASS SPECIES. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - MOWING AND THATCH MANAGEMENT - KEEP GRASS HEIGHT HIGH SUCH AS 2 TO 3 INCHES IN HEIGHT. THIS WILL REDUCE WEED GROWTH.
 - FERTILIZATION - MINIMIZE FERTILIZATION. FERTILIZE NO MORE THAN TWICE A YEAR. APPLY CAREFULLY. FERTILIZER DOES NOT SPREAD UNTO IMPERVIOUS SURFACES. REFRAIN FROM THE USE OF PHOSPHATE BASED FERTILIZERS. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - WEED MANAGEMENT - NEVER USE CHEMICAL HERBICIDES TO ELIMINATE OR CONTROL WEEDS. OWNER SHALL REMOVE WEEDS BY PULLING OR DIGGING OUT. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - PEST MANAGEMENT - LIMIT PESTICIDE USE. CHOOSE PESTICIDES THAT POSE THE LEAST RISK TO HUMAN HEALTH AND THE ENVIRONMENT. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - SENSIBLE IRRIGATION - WATER NO MORE THAN 1" PER WEEK. USE DROUGHT-RESISTANT GRASSES. CUT GRASS AT 2-3 INCHES.



RHODE ISLAND DEPARTMENT OF TRANSPORTATION

CONSTRUCTION ACCESS

NO. BY DATE

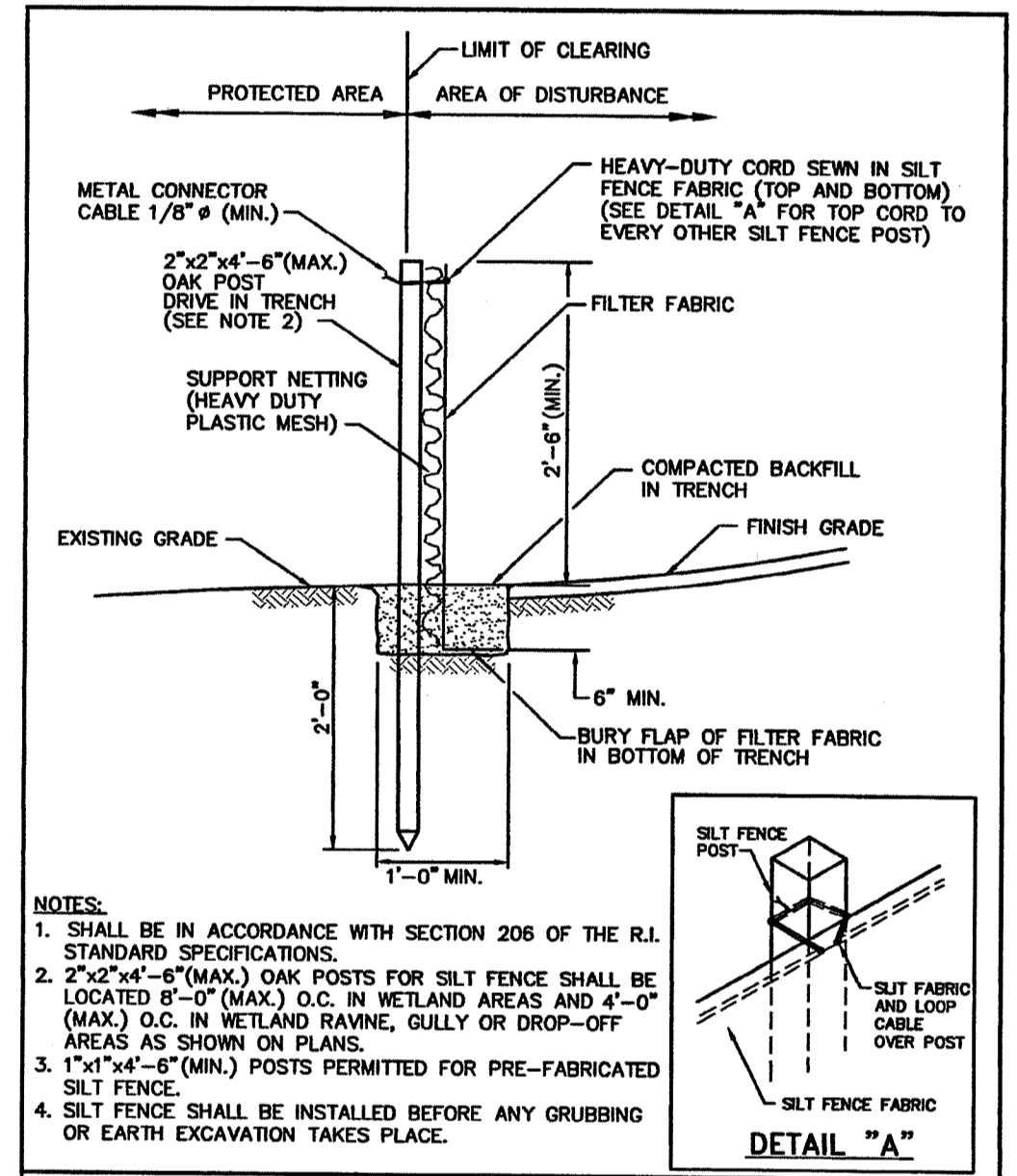
NO. BY DATE

JUNE 15, 1998

R.I. STANDARD 9.9.0

SEDIMENTATION CONTROL PROGRAM:

- EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
- DURING CONSTRUCTION, THE CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUN-OFF FLOW DURING STORMS.
- SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED CLOSELY AND MAINTAINED PROMPTLY AFTER EACH RAINFALL.
- CARE SHALL BE TAKEN SO AS NOT TO PLACE "REMOVED SEDIMENTS" WITHIN THE PATH OF EXISTING, NEWLY CREATED (BOTH TEMPORARY AND PERMANENT) OR PROPOSED WATERCOURSES OR THOSE AREAS SUBJECT TO STORMWATER FLOWAGE.
- ADDITIONAL STRAW BALES OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
- SEDIMENTATION TRAPS SHALL BE PROVIDED AT ALL DRAINAGE STRUCTURES DURING CONSTRUCTION (SILT SACS, STRAW BALES, TEMPORARY DITCHES, ETC).
- EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AT THE SITE PRIOR TO THE START OF CONSTRUCTION AND BE PROPERLY MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED INCLUDING:
 - THE INSTALLATION OF AN EROSION CONTROL FENCE IN ALL LOCATIONS SHOWN ON THE APPROVED SITE PLANS AND WHERE OTHERWISE NECESSARY TO PREVENT SEDIMENT FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
 - ALL DISTURBED AREAS ARE TO BE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER PRIOR TO THE COMPLETION OF THE PROJECT. AREAS EXPOSED DURING EXTENDED PERIODS ARE TO BE COMPLETELY COVERED WITH SPREAD STRAW MULCH. CATCH BASINS WILL BE PROTECTED WITH SILT SACS & STRAW BALE FILTERS THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED. SUMPS ARE TO BE CLEANED IMMEDIATELY FOLLOWING INSTALLATION OF PERMANENT PAVEMENT.
 - OUTFALLS ARE TO BE PROTECTED BY STRAW BALE FILTERS UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER BY THE ENGINEER.
 - ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
- THE LIMITS OF ALL CLEARING, GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE SHALL REMAIN TOTALLY UNDISTURBED.
- UPON COMPLETION OF CONSTRUCTION OF SITE IMPROVEMENTS AND THE STORMWATER DRAINAGE SYSTEM, ALL CATCH BASINS AND STORM DRAIN PIPING SHALL BE CLEANED OF SEDIMENT. SEDIMENT FOREBAY AND SAND FILTER SHALL BE CLEANED OF SEDIMENT TO THE DESIGN GRADES INDICATED.
- AT NO TIME DURING CONSTRUCTION SHALL THE SUBGRADE OF THE SITE BE SUCH THAT SURFACE RUNOFF WILL BE PERMITTED TO DIRECTLY ENTER ANY DRAINAGE STRUCTURE. A TEMPORARY DEPRESSED AREA AROUND THE STRUCTURE SHALL BE INCORPORATED AS A SEDIMENTATION TRAP. THE MOUTH OF THE TRAP SHALL BE LINED WITH STRAW BALES AROUND THE COMPLETE PERIMETER. DURING ALL PRELIMINARY STAGES, THE TOP OF THE STRUCTURE SHALL ALWAYS BE HIGHER THAN THE SUBGRADE.
- STRAW BALE EROSION CHECKS SHALL BE MAINTAINED AROUND ALL CATCH BASINS UNTIL ALL UPGRADED DISTURBED AREAS ARE STABILIZED BY PAVEMENT OR VEGETATION.
- ALL COMPONENTS OF THE DRAINAGE SYSTEM MUST BE CLEANED OF SEDIMENT BY THE APPLICANT OR HIS REPRESENTATIVE IMMEDIATELY AFTER CONSTRUCTION IS COMPLETED.
- INSPECT TEMPORARY DIVERSIONS AND THEIR COMPONENTS ONCE A WEEK AND AFTER EVERY RAINFALL. DAMAGE CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHOULD BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
- CHECK DAMS SHALL BE INSTALLED EVERY 300 FEET FOR SLOPES OF 1% OR LESS, EVERY 200 FEET FOR SLOPES OF 2%, EVERY 150 FEET FOR SLOPES OF 3% TO 5%, AND EVERY 100 FEET FOR SLOPES OF 5% OR GREATER.
- CHECK DAMS SHALL BE INSTALLED EVERY 20 FEET ALONG THE PROPOSED SWALE.
- SEDIMENTS SHOULD BE REMOVED FROM THE CHECK DAM WHEN IT REACHES ONE-HALF THE DAM HEIGHT.



RHODE ISLAND DEPARTMENT OF TRANSPORTATION

SILT FENCE DETAIL

NO. BY DATE

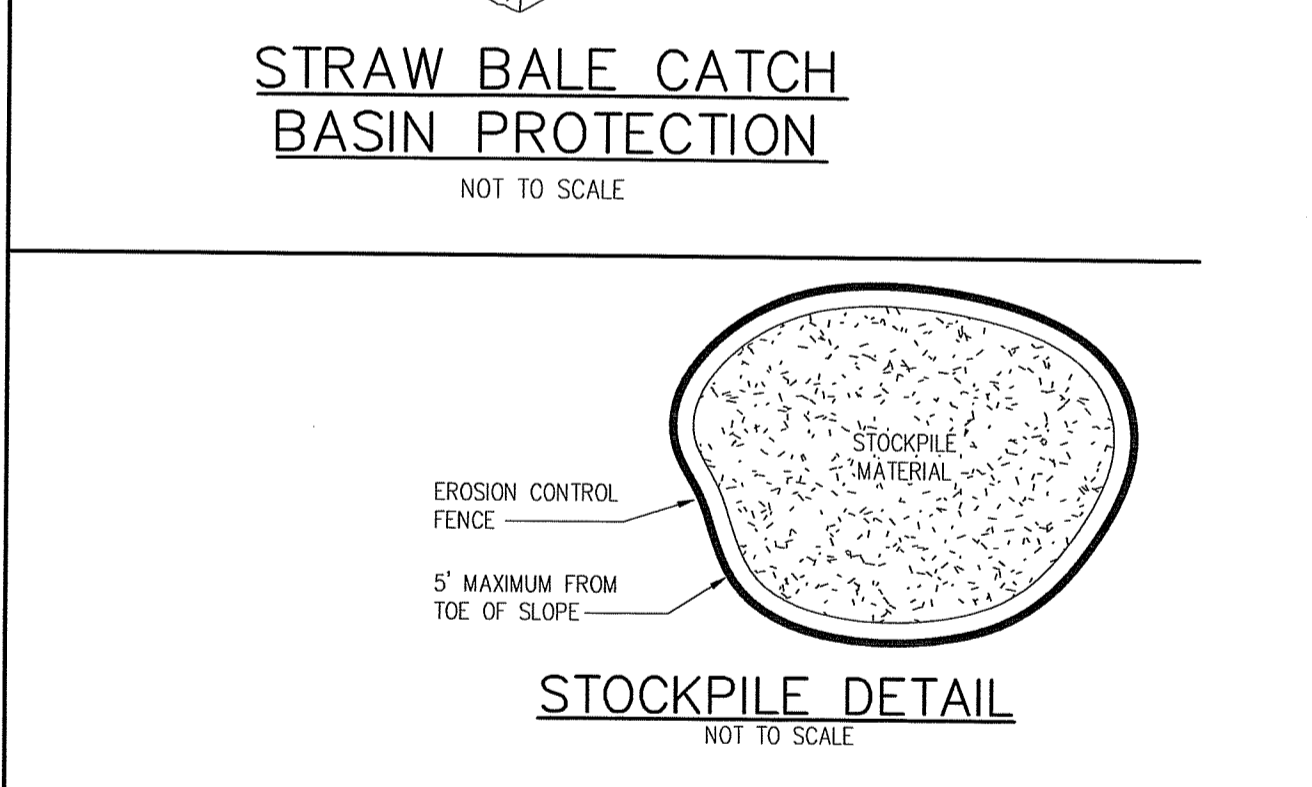
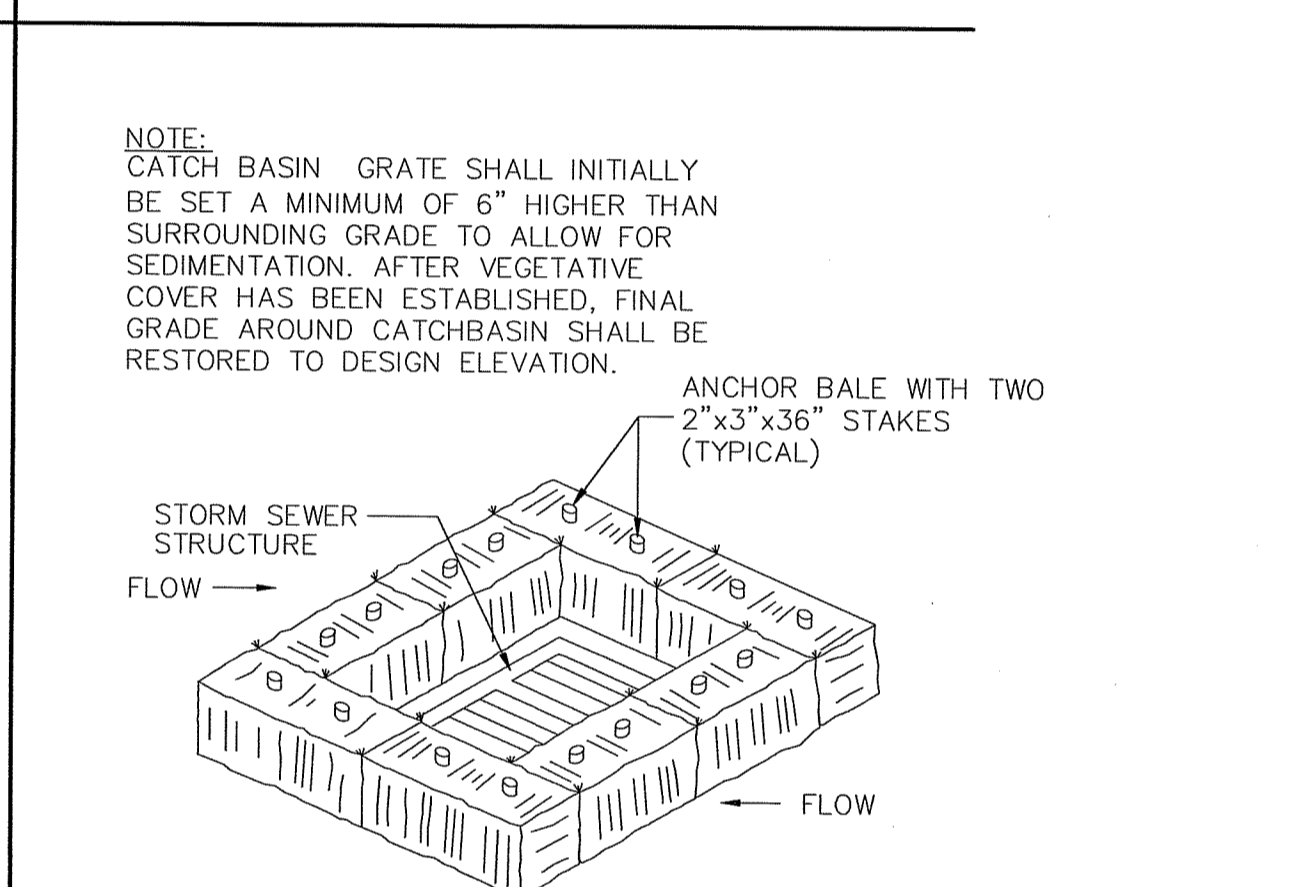
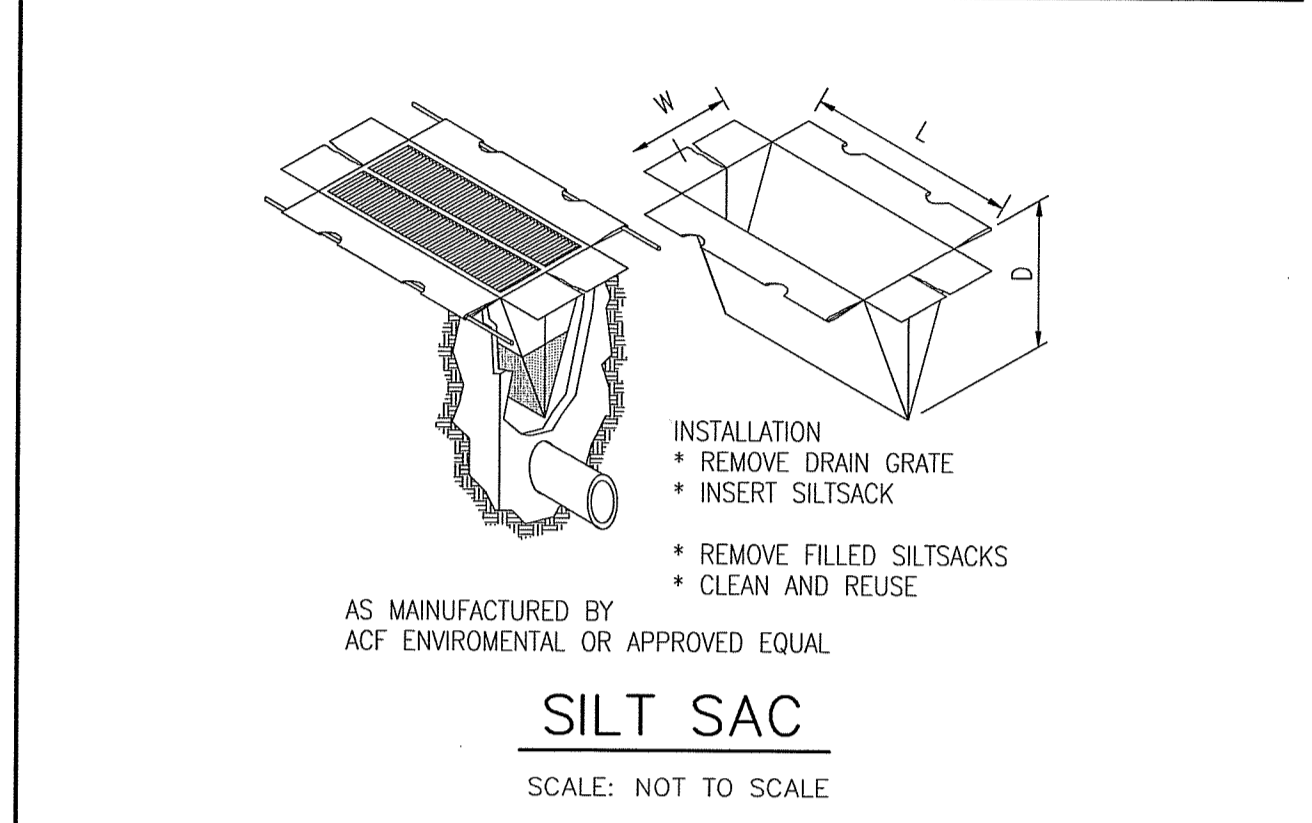
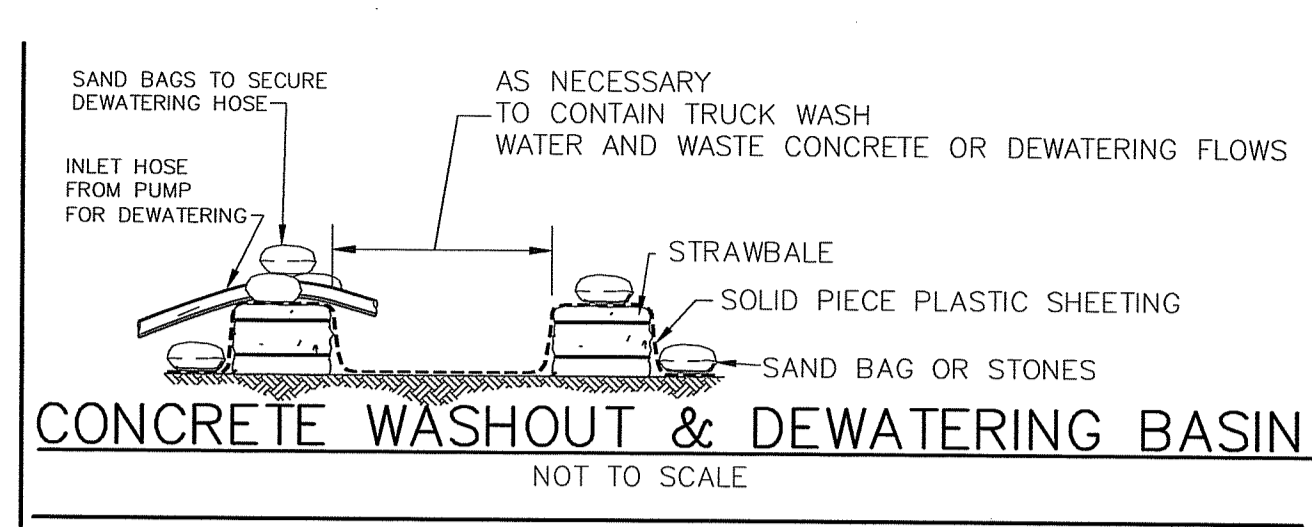
NO. BY DATE

JUNE 15, 1998

R.I. STANDARD 9.2.0

TEST HOLE DATA

TH#	DATE	SOIL DATA	SHWT DEPTH	TOTAL DEPTH				
D-1	2/15/2016	A 0-6" SL	10'	12'				
		B 6"-20" SL						
		C 20"-144" S/GCOS						
D-2	2/15/2016	A 0-8" SL	10'	12'				
		B 8"-24" SL						
		C 24"-144" S/GCOS						
D-3	2/15/2016	A 0-7" FSL	10'	10'				
		B 7"-26" FSL						
		C 26"-120" VGS/CBGS						
D-4	2/15/2016	A 0-7" FSL	10'	10'				
		B 7"-30" FSL						
		C 30"-120" CB,VGCOSS						
D-6	2/15/2016	A 0-10" SIL	10'	12'				
		B 10"-24" SIL						
		C 24"-32" SIL						
D-7	2/15/2016	A 0-5" FSL	10'	12'				
		B 5"-13" SL						
		C 13"-144" VGS						
D-8	2/15/2016	A 0-8" FSL	10'	12'				
		B 8"-15" GSL						
		C 15"-144" GS8						
D-13	2/16/2016	C 0"-144" VGCOSS/COS	10'	12'				
		D-14			2/16/2016	A 0-6" FSL	10'	12'
		B 6"-20" GFSL						
C 20"-144" VGCOSS/COS								
D-16	2/16/2016	A 0-2" FSL	2'	8'				
		B 2"-24" FSL						
		C 24"-96" VFSL						



TEST HOLE DATA CONT.

TH#	DATE	SOIL DATA	SHWT DEPTH	TOTAL DEPTH
TH5	3/25/2024	A 0-3" SL	6'	9'
		Bw 3"-18" SL		
		C 18"-108" GR/LS		
		R 108"+		
TH16	3/25/2024	A 0-3" SL	7'	10.5'
		Bw1 3"-18" SL		
		Bw2 18"-26" LS		
		C 26"-126"+ GR/LS		
TH18	3/25/2024	A 0-4" SL	10.66'	7.5'
		Bw 4"-28" SL		
		C 28"-128"+ GR/LS		
TH9	3/25/2024	A 0-3" SL	6.66'	10'
		Bw 3"-19" SL		
		C 19"-120"+ GLS		
TH10	3/25/2024	A 0-4" SL	6'	9'
		Bw 4"-26" SL		
		C1 26"-48" GR/S		
		C2 48"-108"+ GR/LS		

CARIGAN ENGINEERING, INC.
CIVIL AND ENVIRONMENTAL ENGINEERING
86 BROOK FARM ROAD SOUTH
WAKEFIELD, RI 02879
PHONE: (401) 789-6865

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL DATED: NOV 11 2024 FILE # 19-0167

NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL APPROVED PLANS MUST BE AT CONSTRUCTION SITE

SEP 8 0 2024

REVISIONS:

NO.	DATE	DESCRIPTION	BY

REGISTRATIONS:

CRAIG RICHARD CARRIGAN REGISTERED PROFESSIONAL ENGINEER

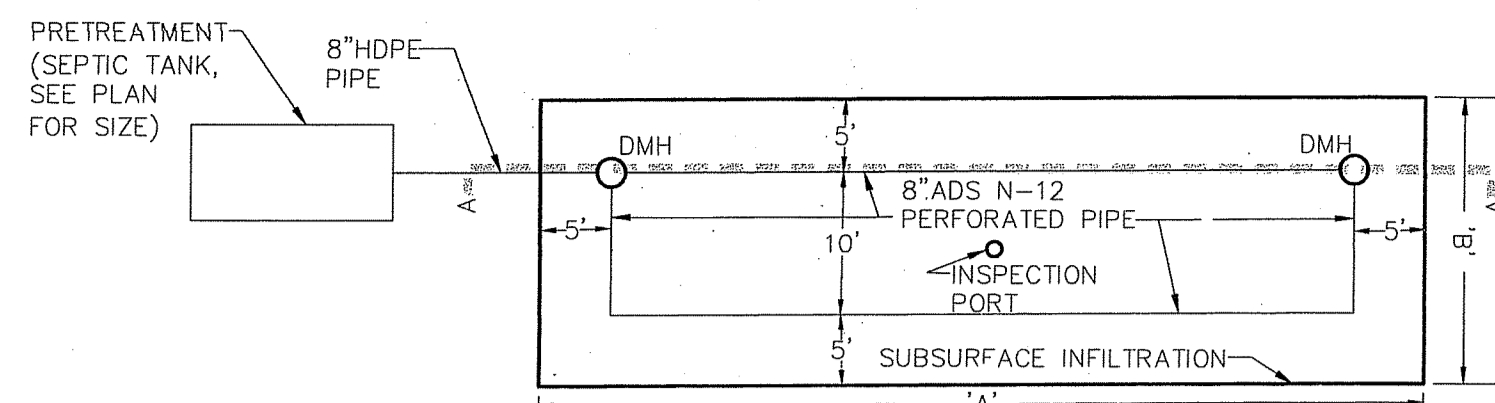
DETAIL SHEET - 1

A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
87 KINGSTOWN ROAD
RICHMOND, RHODE ISLAND

PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.

SCALE: AS SHOWN DATE: 07/03/24 SHEET 15 OF 17

JOB NO.

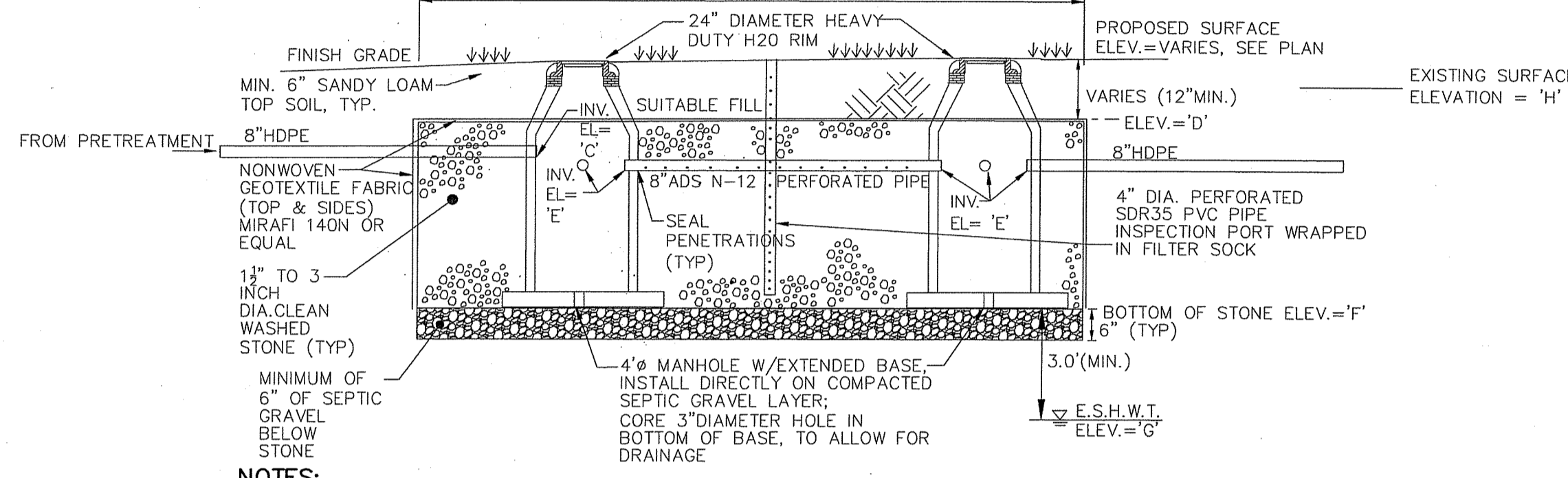


DIMENSION/ELEVATION SCHEDULE:

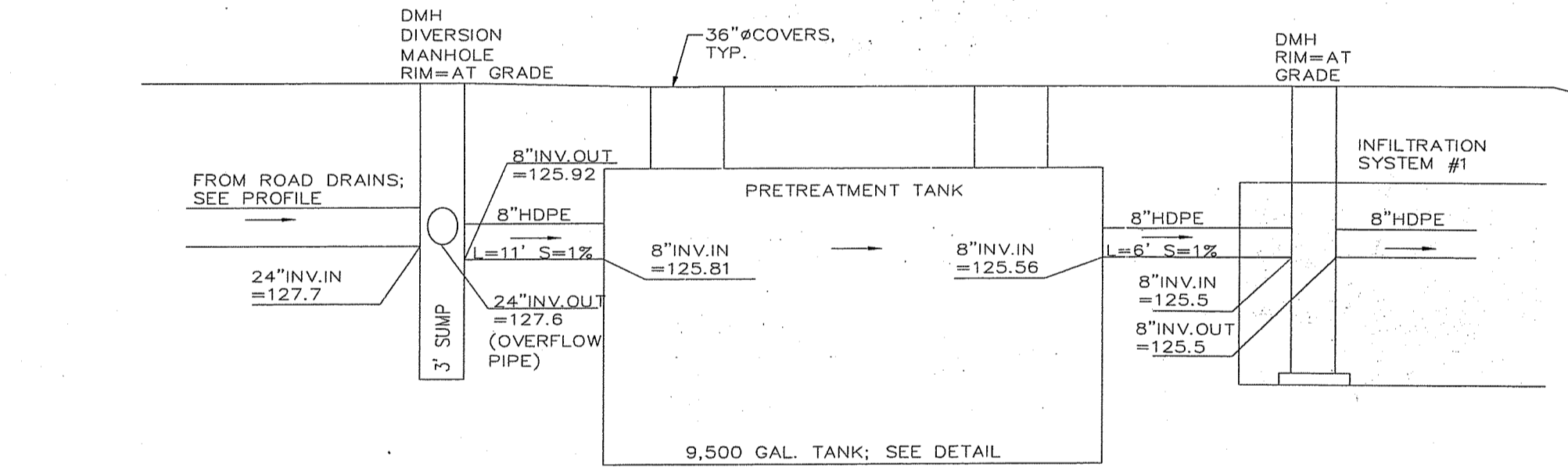
SYSTEM #1		SYSTEM #2		SYSTEM #3	
A' = 70'	A' = 120'	A' = 60'	A' = 48'	A' = 42'	A' = 42'
B' = 20'	B' = 20'	B' = 20'	B' = 40'	B' = 10'	B' = 10'
C' = 125.50'	C' = 125.50'	C' = 123.05'	C' = 124.00'	C' = 126.10'	C' = 126.00'
D' = 127.50'	D' = 127.50'	D' = 124.00'	D' = 125.00'	D' = 126.00'	D' = 126.00'
E' = 125.50'	E' = 125.50'	E' = 123.00'	E' = 123.00'	E' = 122.00'	E' = 122.00'
F' = 123.00'	F' = 123.00'	F' = 122.00'	F' = 122.00'	F' = 122.00'	F' = 122.00'
G' = 119.00'	G' = 119.00'	G' = 119.00'	G' = 119.00'	G' = 119.00'	G' = 119.00'
H' = 129.00'	H' = 129.00'	H' = 129.00'	H' = 129.00'	H' = 129.00'	H' = 129.00'

SUBSURFACE INFILTRATION SYSTEM PLAN VIEW
NOT TO SCALE

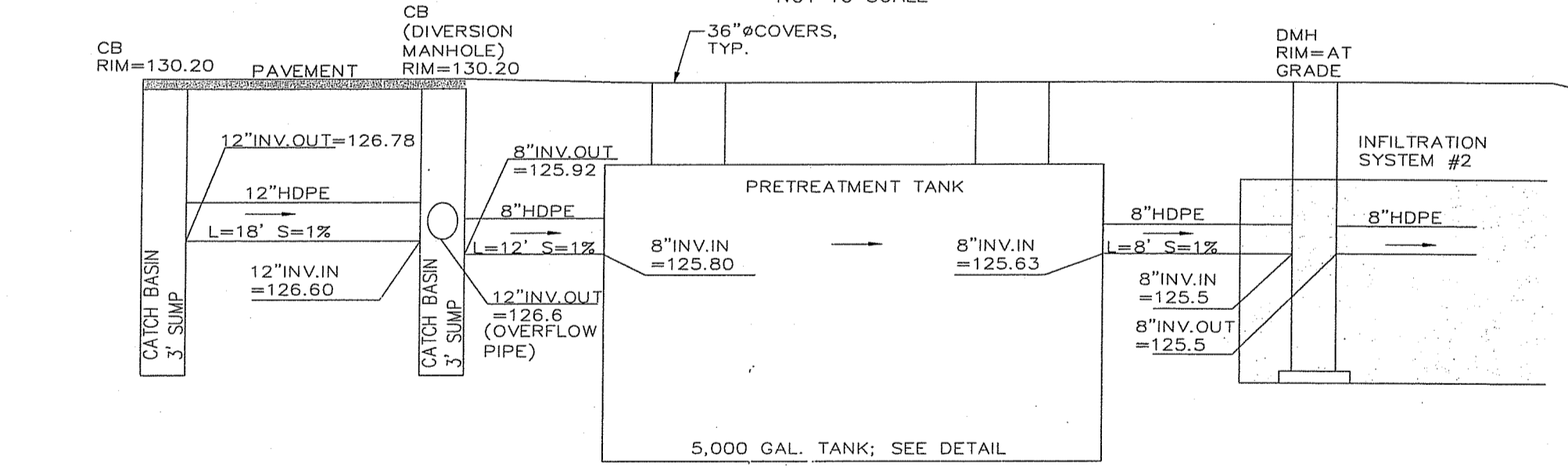
SYSTEM #1: 70'L X 20'W = 1,400 SQ.FT. SURFACE AREA
SYSTEM #2: 120'L X 20'W = 2,400 SQ.FT. SURFACE AREA



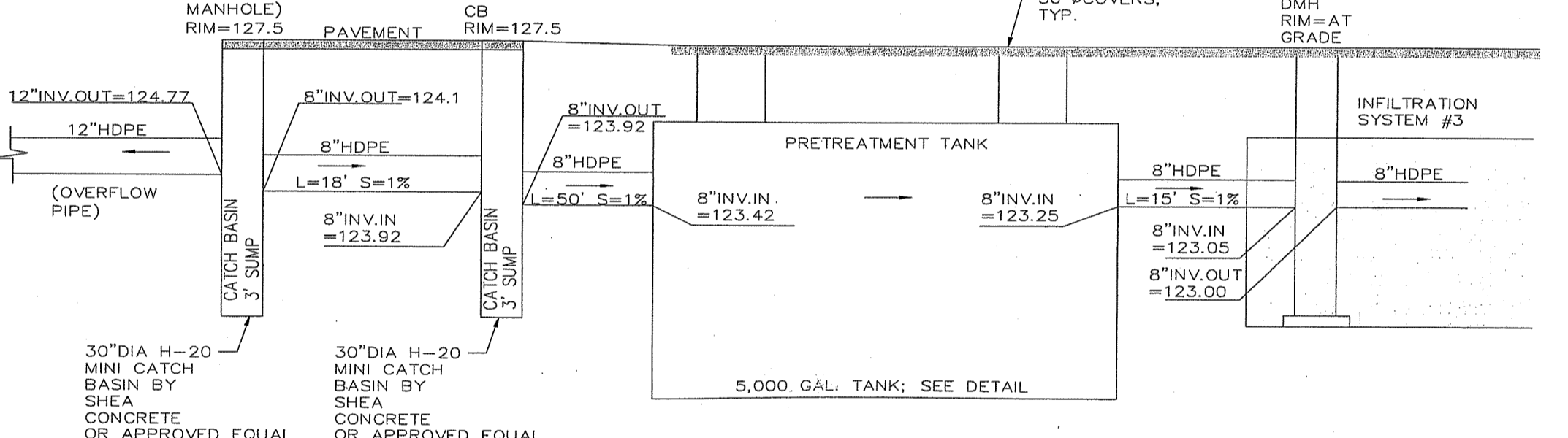
SUBSURFACE INFILTRATION SYSTEM SECTION A-A
NOT TO SCALE



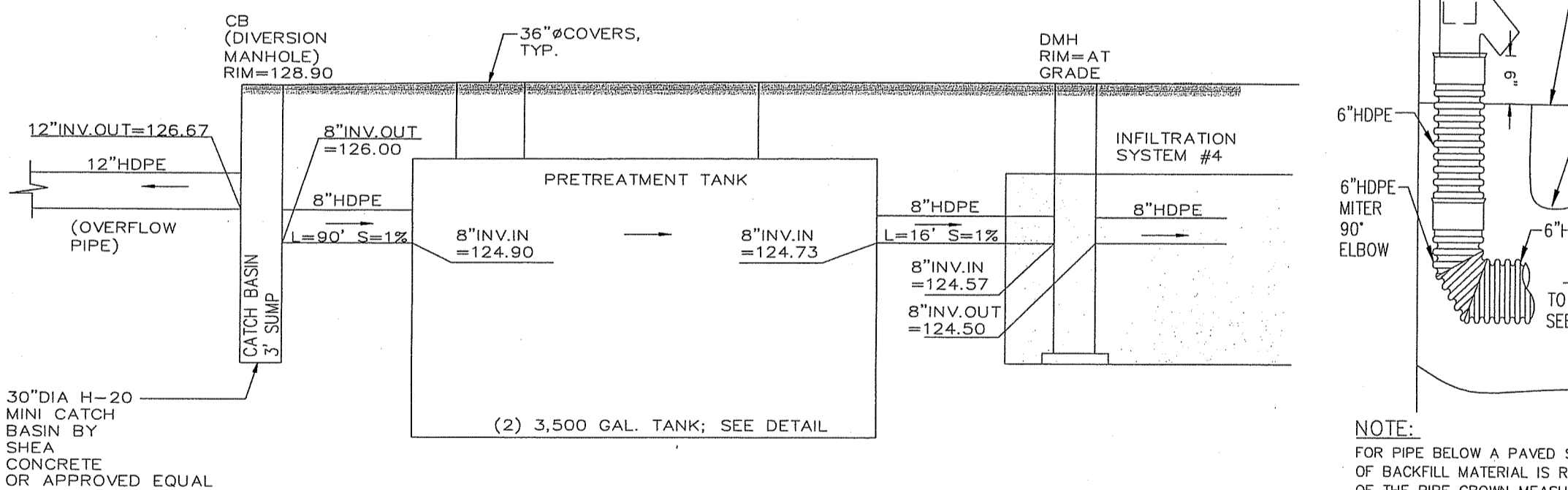
SUBSURFACE INFILTRATION SYSTEM #1 PRETREATMENT PROFILE
NOT TO SCALE



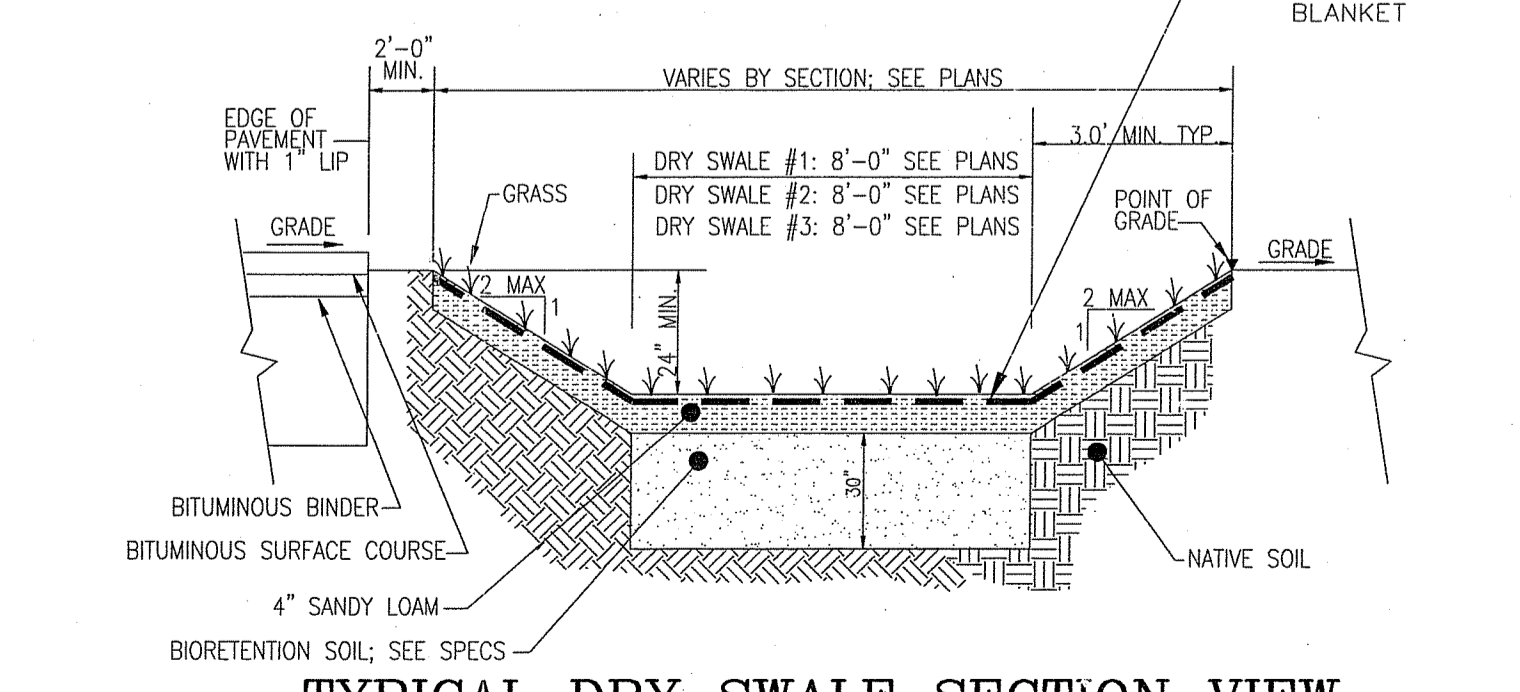
SUBSURFACE INFILTRATION SYSTEM #2 PRETREATMENT PROFILE
NOT TO SCALE



SUBSURFACE INFILTRATION SYSTEM #3 PRETREATMENT PROFILE
NOT TO SCALE



SUBSURFACE INFILTRATION SYSTEM #4 PRETREATMENT PROFILE
NOT TO SCALE



TYPICAL DRY SWALE SECTION VIEW
NOT TO SCALE

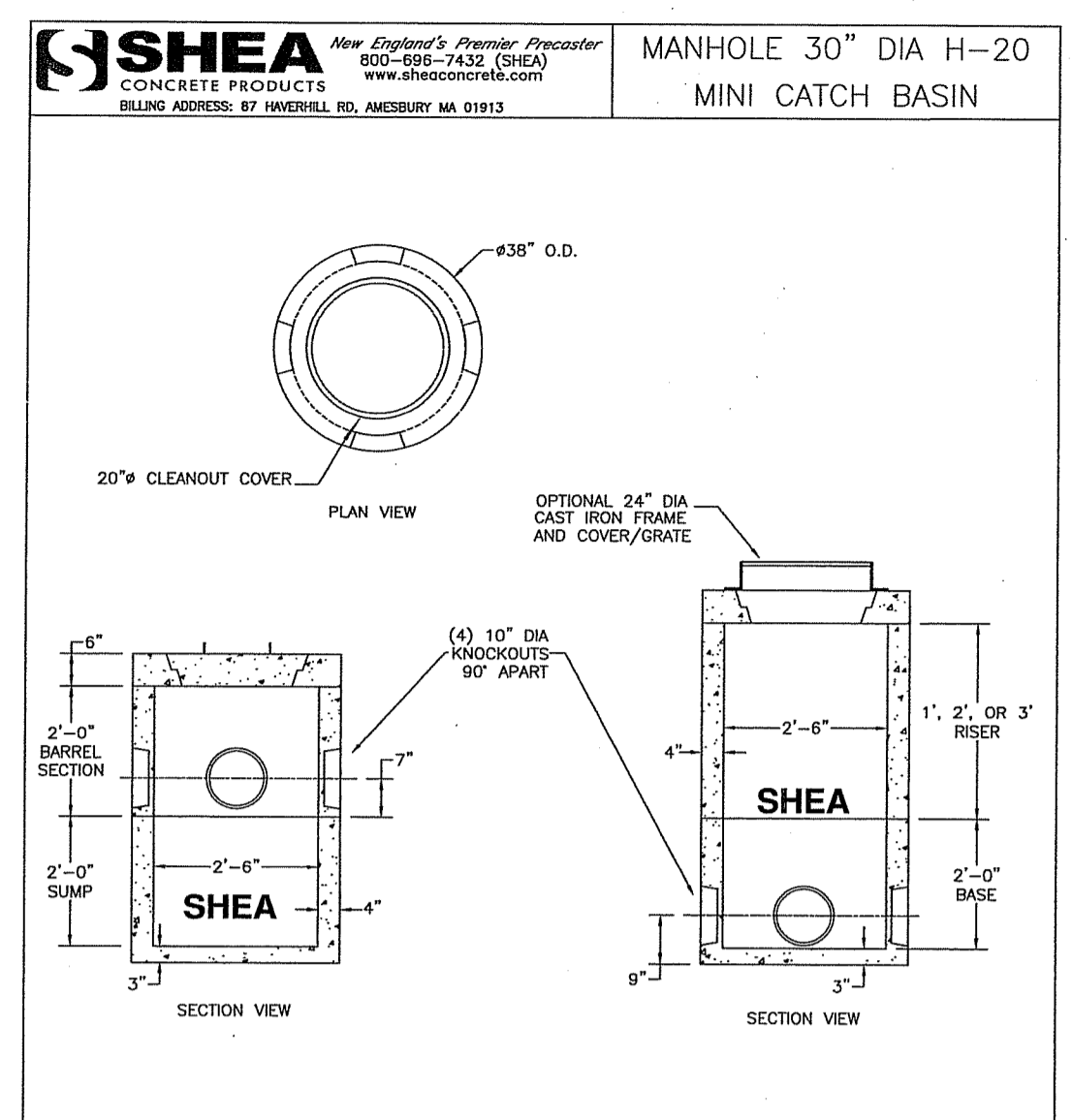
BIORETENTION SOIL SPEC.

- BIORETENTION SOIL MIX (BY VOLUME):

SAND	85 TO 88%
ORGANIC MATTER	3 TO 5%
SILT	0 TO 12%
CLAY	0 TO 2%
- THE BIORETENTION SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OTHER WOODY MATERIAL OVER 1" IN DIAMETER, OR BRUSH/SEEDS FROM NOXIOUS WEEDS. PLACEMENT OF THE SOIL SHOULD BE IN LIFTS OF 6 INCHES, LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET).

DRY SWALE & VEGETATED SWALE MAINTENANCE NOTES:

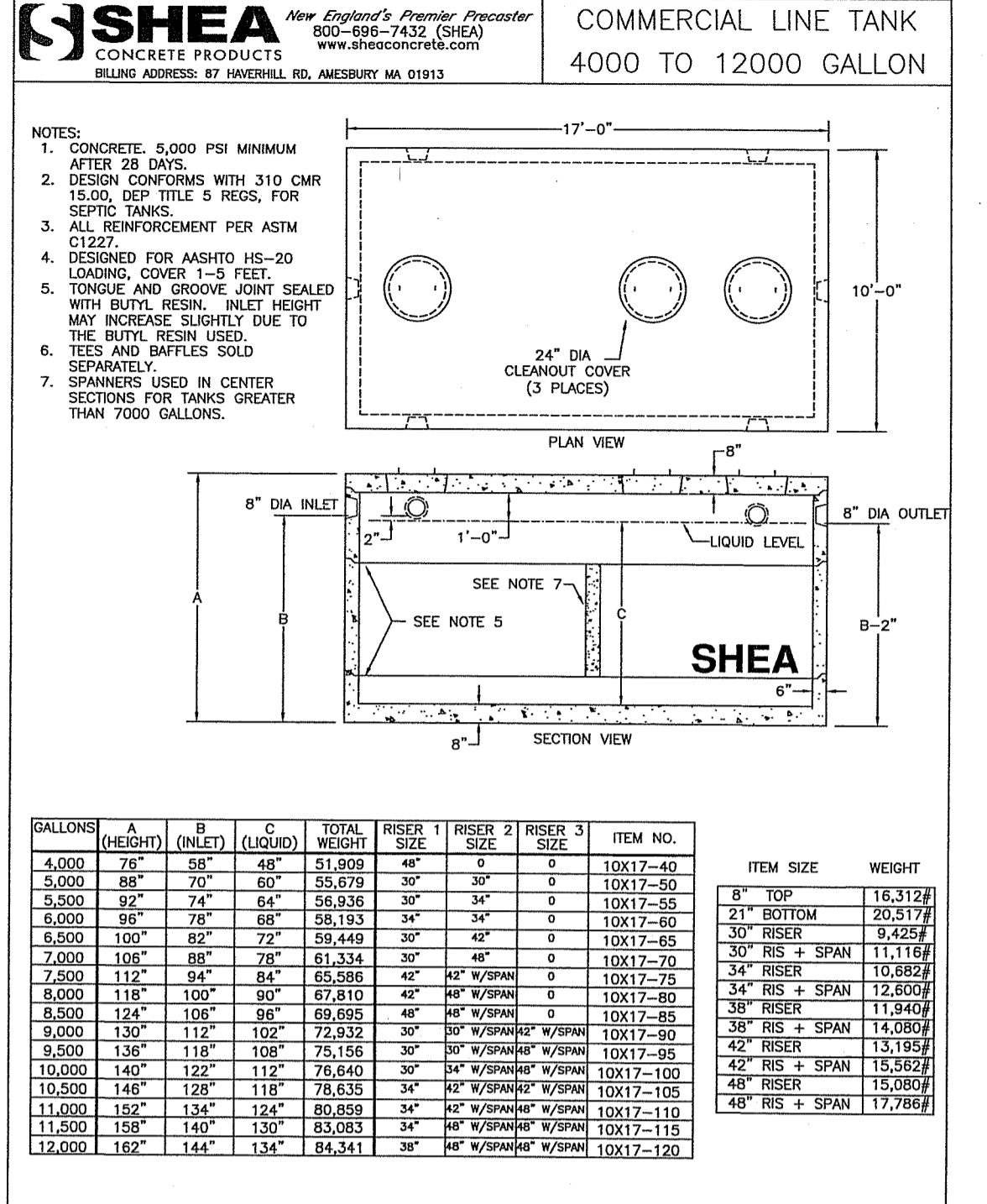
- OPEN CHANNEL PRACTICES SHALL BE INSPECTED ANNUALLY AND AFTER STORMS OF GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR TYPE III PRECIPITATION EVENT.
- SEDIMENT BUILD-UP WITHIN THE BOTTOM OF THE CHANNEL SHALL BE REMOVED WHEN GREATER THAN OR EQUAL TO 3" DEPTH OF SEDIMENT HAS BEEN ACCUMULATED IN THE CHANNEL.
- ERODED SIDE SLOPES AND CHANNEL BOTTOMS SHALL BE STABILIZED AS NECESSARY.
- IN THE ABSENCE OF EVIDENCE OF CONTAMINATION, REMOVED DEBRIS MAY BE TAKEN TO A LANDFILL OR OTHER PERMITTED FACILITY.
- SEDIMENT TESTING MAY BE REQUIRED PRIOR TO SEDIMENT DISPOSAL WHEN CONTAMINATION IS PRESENT.
- VEGETATION SHALL BE MOWED AS REQUIRED TO MAINTAIN GRASS HEIGHTS IN THE 4-6 INCH RANGE, WITH MANDATORY MOWING ONCE GRASS HEIGHTS EXCEED 10 INCHES.
- IF THE SURFACE OF THE DRY SWALE BECOMES CLOGGED TO THE POINT THAT STANDING WATER IS OBSERVED ON THE SURFACE 48 HOURS AFTER PRECIPITATION EVENTS, THE BOTTOM SHALL BE ROTOTILLED OR CULTIVATED TO BREAK UP ANY HARD-PAKED SEDIMENT, AND THEN RESEDED.
- EVERY FIVE YEARS, THE CHANNEL BOTTOM SHOULD BE SCRAPED TO REMOVE SEDIMENT AND TO RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE, AND SHOULD BE SEED TO RESTORE GROUND COVER.
- DURING INSPECTION, ANY STRUCTURAL COMPONENTS OF THE SYSTEM, INCLUDING TRASH RACKS, VALVES, PIPES, AND SPILLWAY STRUCTURES, SHOULD BE CHECKED FOR PROPER FUNCTION. ANY CLOGGED OPENINGS SHOULD BE CLEANED OUT AND REPAIRS SHOULD BE MADE WHERE NECESSARY.



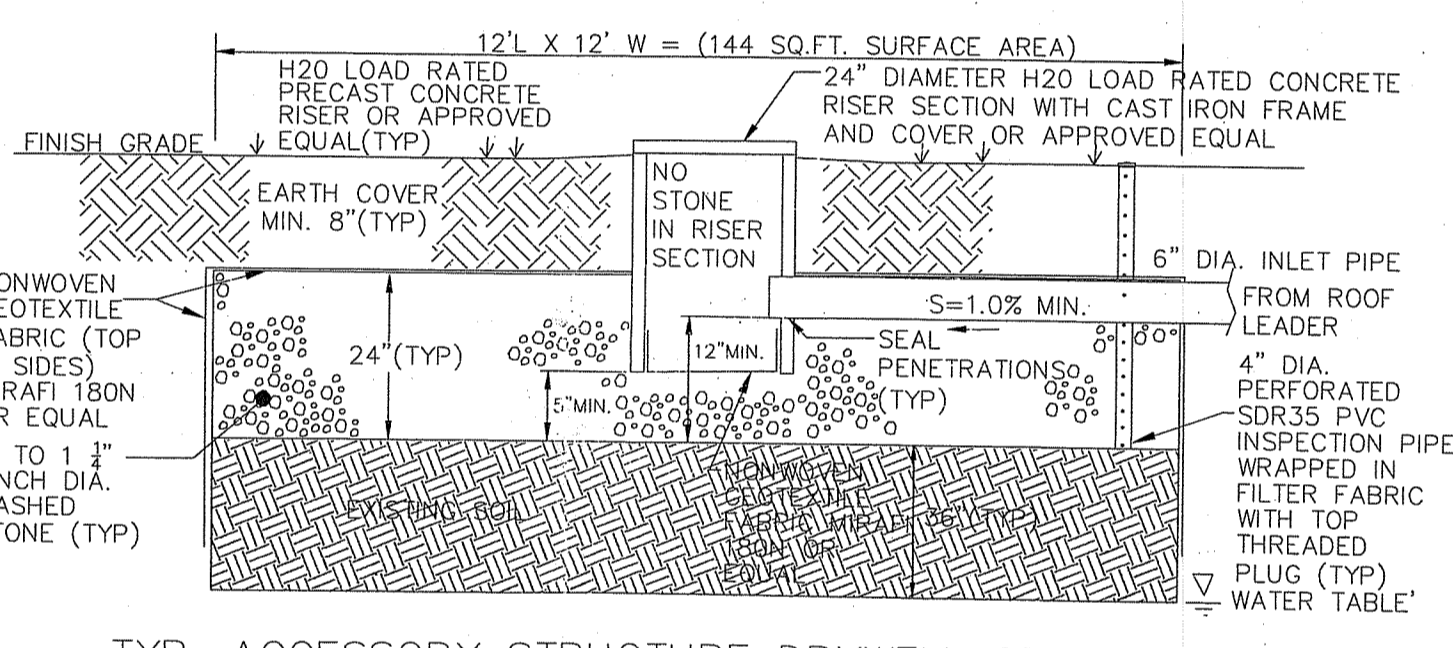
ITEM NO. WEIGHT

SECTIONS	ITEM NO.	WEIGHT
1'-0" RISER	MC-MCB120H	440#
2'-0" RISER	MC-MCB24H	880#
3'-0" RISER	MC-MCB36H	1320#
2'-0" BASE	MC-MCB24SH	1175#
2'-0" BARREL	MC-MCB48H	950#
3\"/>		

1. CONCRETE, 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR ASHTO HS-20 LOADING, 1-5 FEET COVER.

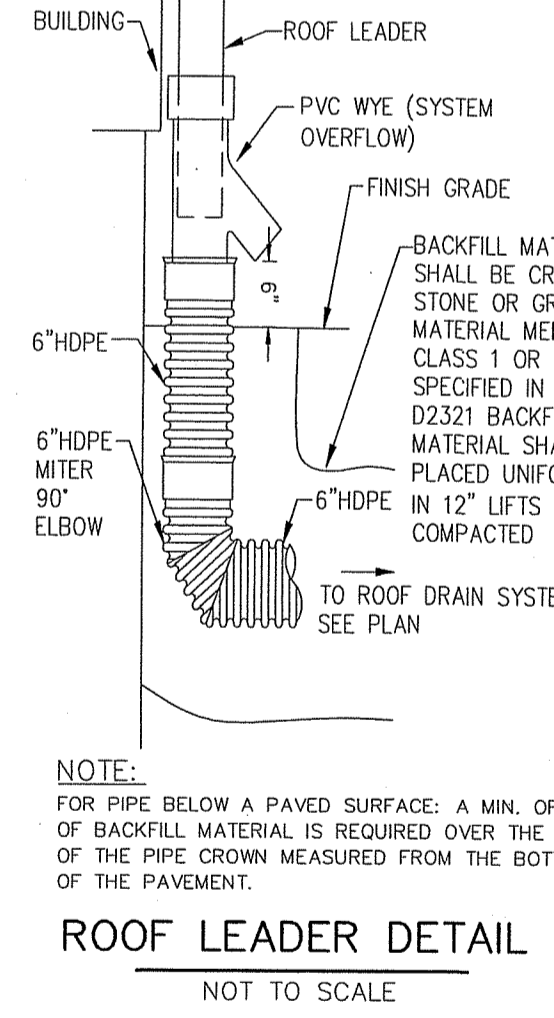


1. CONCRETE, 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR ASHTO HS-20 LOADING, 1-5 FEET COVER.

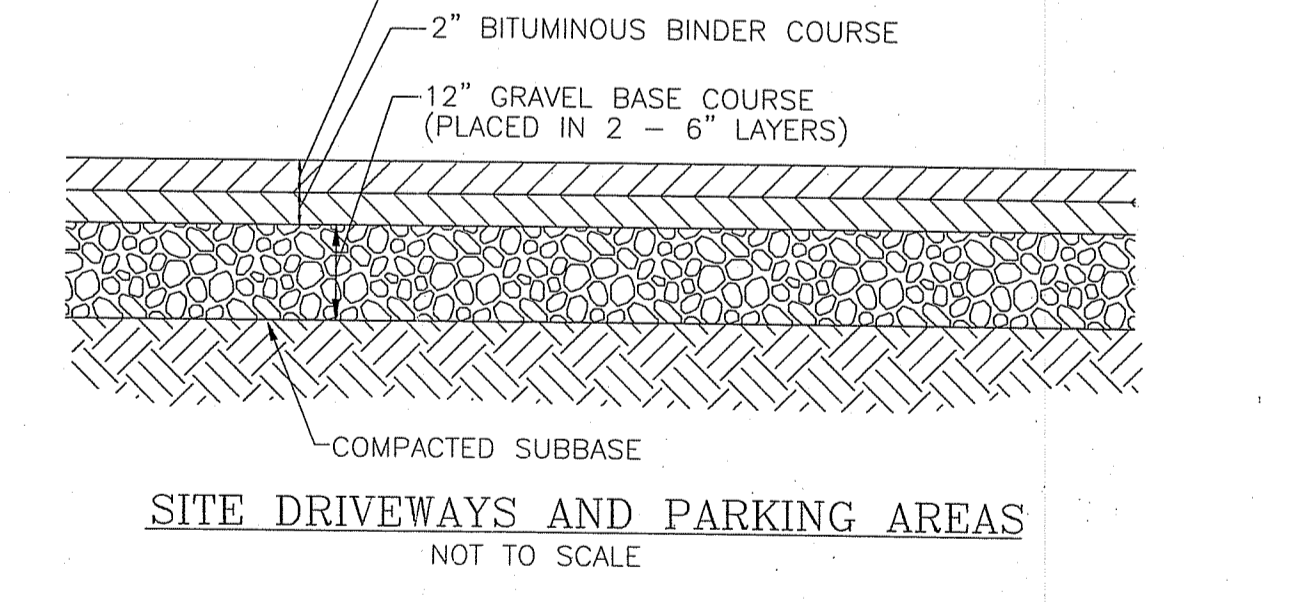


TYPICAL NOTES:

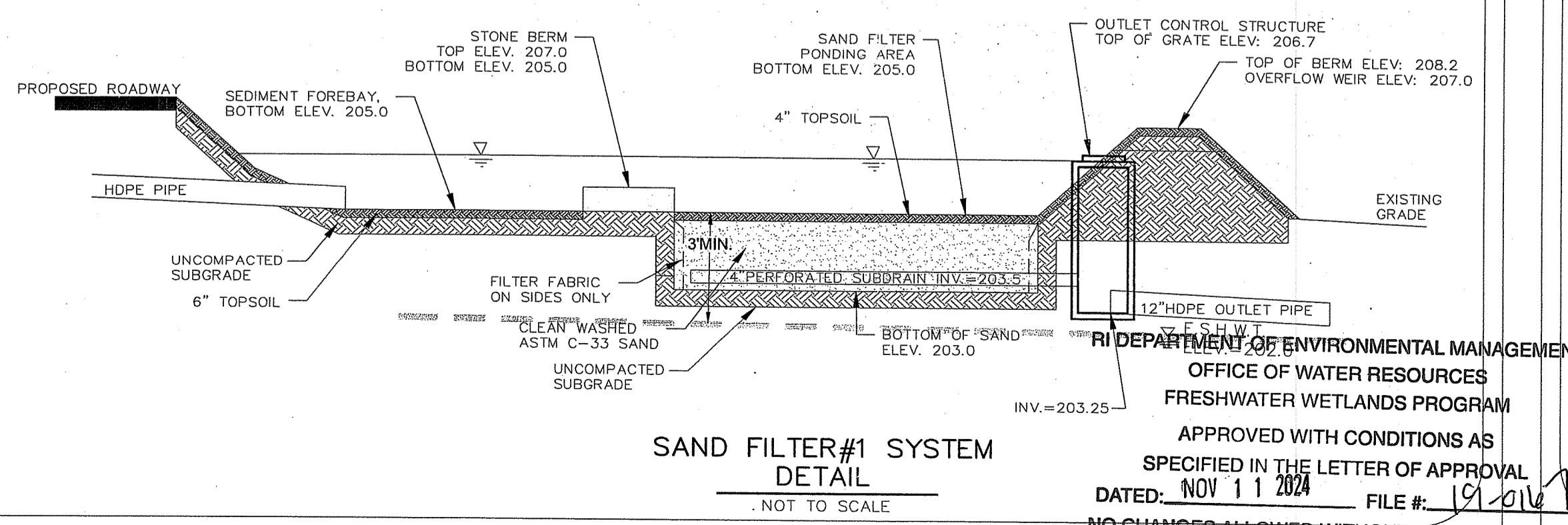
- CRUSHED STONE SHALL BE CLEAN WITH NO FINES.
- CRUSHED STONE SHALL BE WRAPPED WITH FABRIC ON TOP & SIDES.
- SCARIFY BOTTOM PRIOR TO PLACEMENT OF SAND AND STONE.
- PIPE ROOF RUNOFF FROM DOWNSPOUTS (WHERE INDICATED) TO DRYWELL TO MAXIMUM EXTENT POSSIBLE.
- DO NOT ALLOW SEDIMENT LAIDEN RUNOFF TO ENTER DRYWELL.
- 6" PIPE SHALL BE HDPE OR APPROVED EQUAL, MINIMUM SLOPE = 1.0% (1/8" PER FOOT).
- DRY WELLS PROVIDE 96 CUBIC FEET OF VOLUME, PROVIDING WGV FOR UP TO 1,150 SF OF ROOFTOP.



ROOF LEADER DETAIL
NOT TO SCALE



SITE DRIVEWAYS AND PARKING AREAS
NOT TO SCALE



SAND FILTER #1 SYSTEM DETAIL
NOT TO SCALE

CARRIGAN ENGINEERING, INC.
CIVIL AND ENVIRONMENTAL ENGINEERING
86 BROOK FARM ROAD SOUTH
WAKEFIELD, RI 02879
PHONE: (401) 789-6865

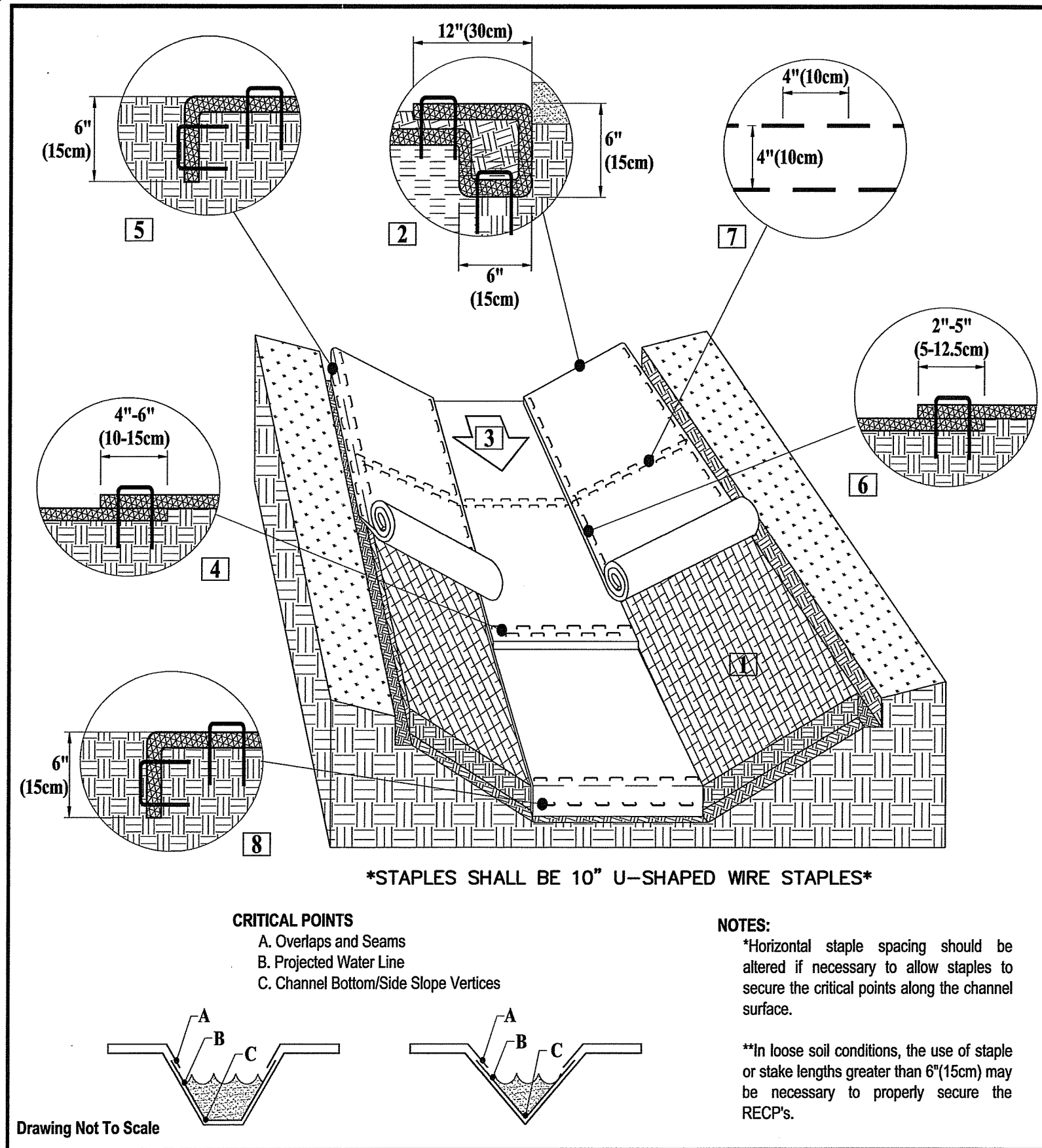
REGISTRATIONS:
CARRIGAN RICHARD CARRIGAN REGISTERED PROFESSIONAL ENGINEER

DETAIL SHEET - 2
A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
87 KINGSTOWN ROAD
RICHMOND, RHODE ISLAND
PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
SCALE: AS SHOWN DATE: 07/03/24 SHEET 16 OF 17

NO.	DATE	DESCRIPTION	BY

NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

SEP 3 0 2024



CHANNEL INSTALLATION DETAIL

1. Prepare soil before installing rolled erosion control products (RECPs) including any necessary application of lime, fertilizer, and seed.

2. Begin at the top of the channel by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12"(30cm) of RECPs extended beyond the up-slope portion of the trench. Use ShoreMax mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECPs with a row of staples/stakes approximately 12"(30cm) apart in the bottom of the trench. Backfill and compact the trench after staping. Apply seed to the compacted soil and fold the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12" apart across the width of the RECPs.

3. Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.

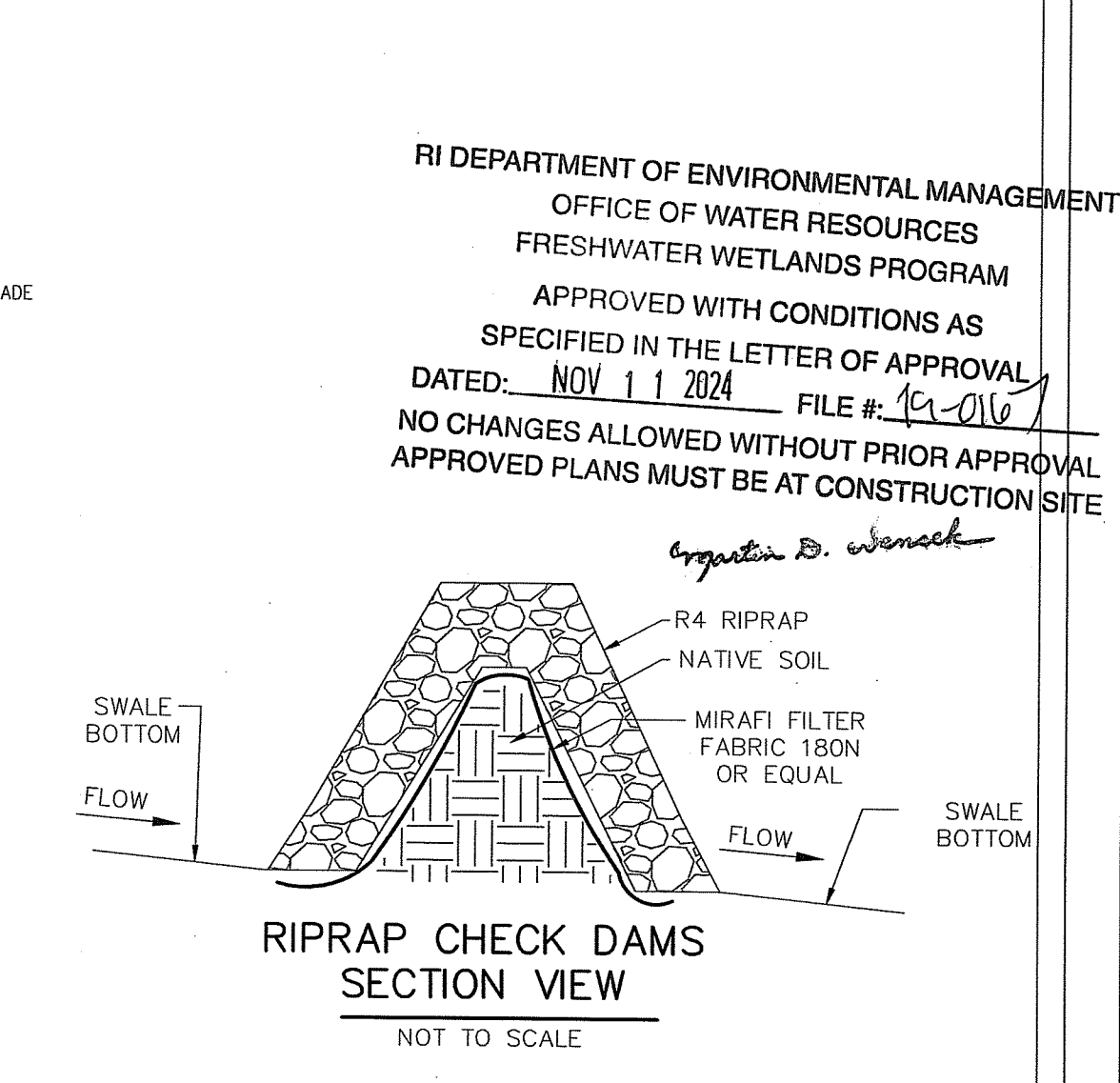
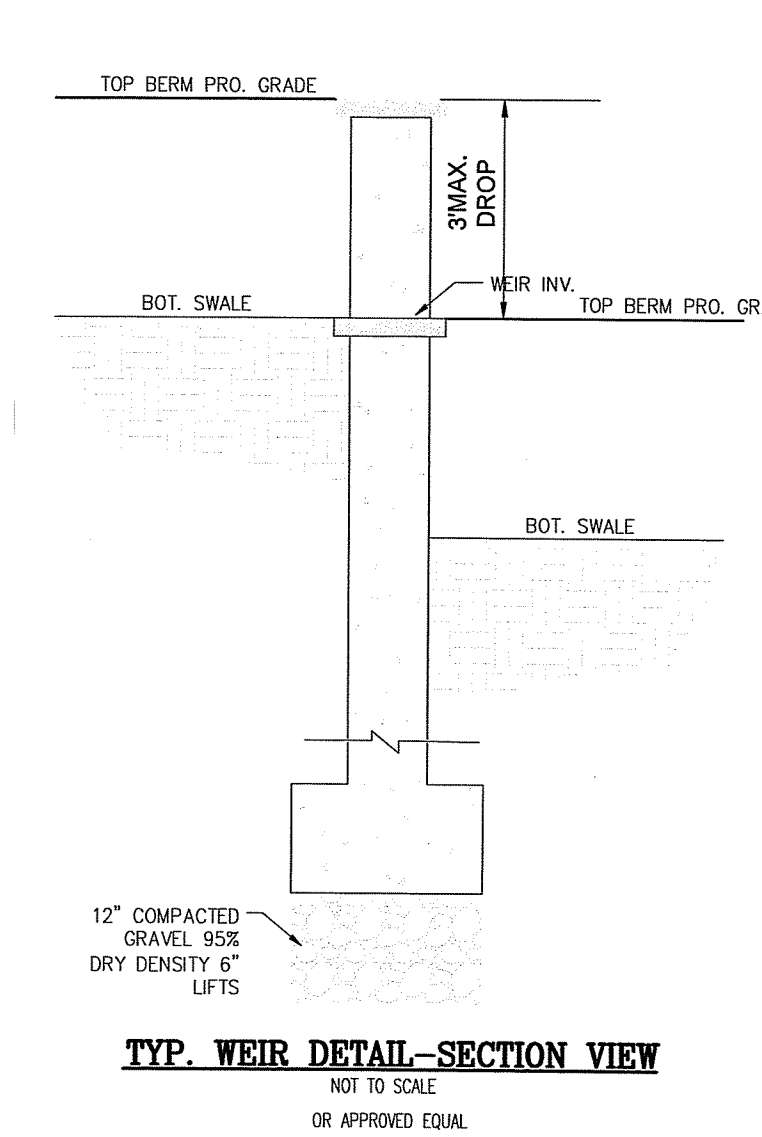
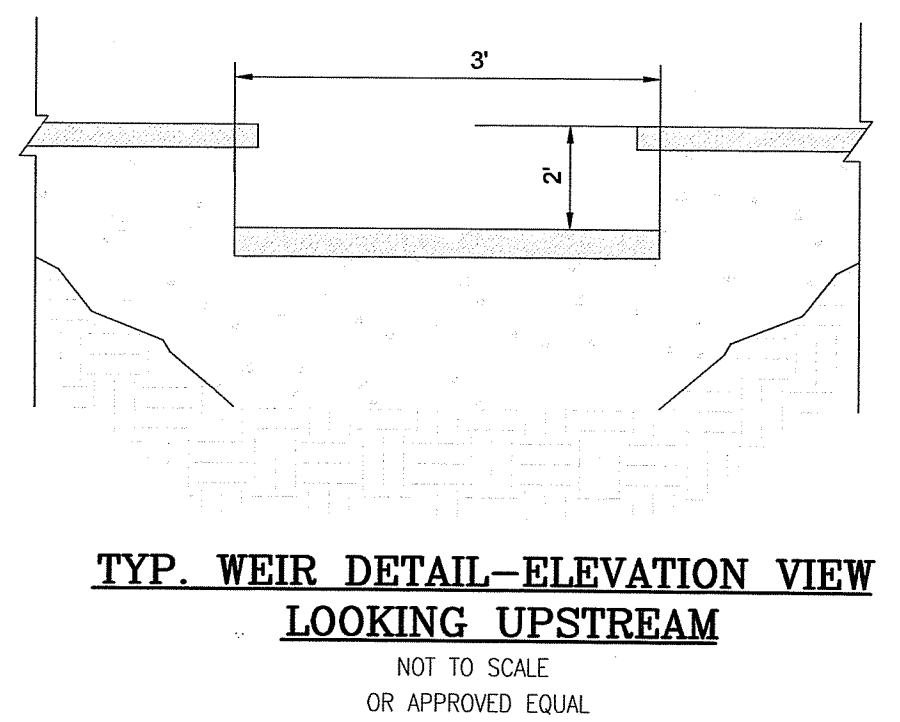
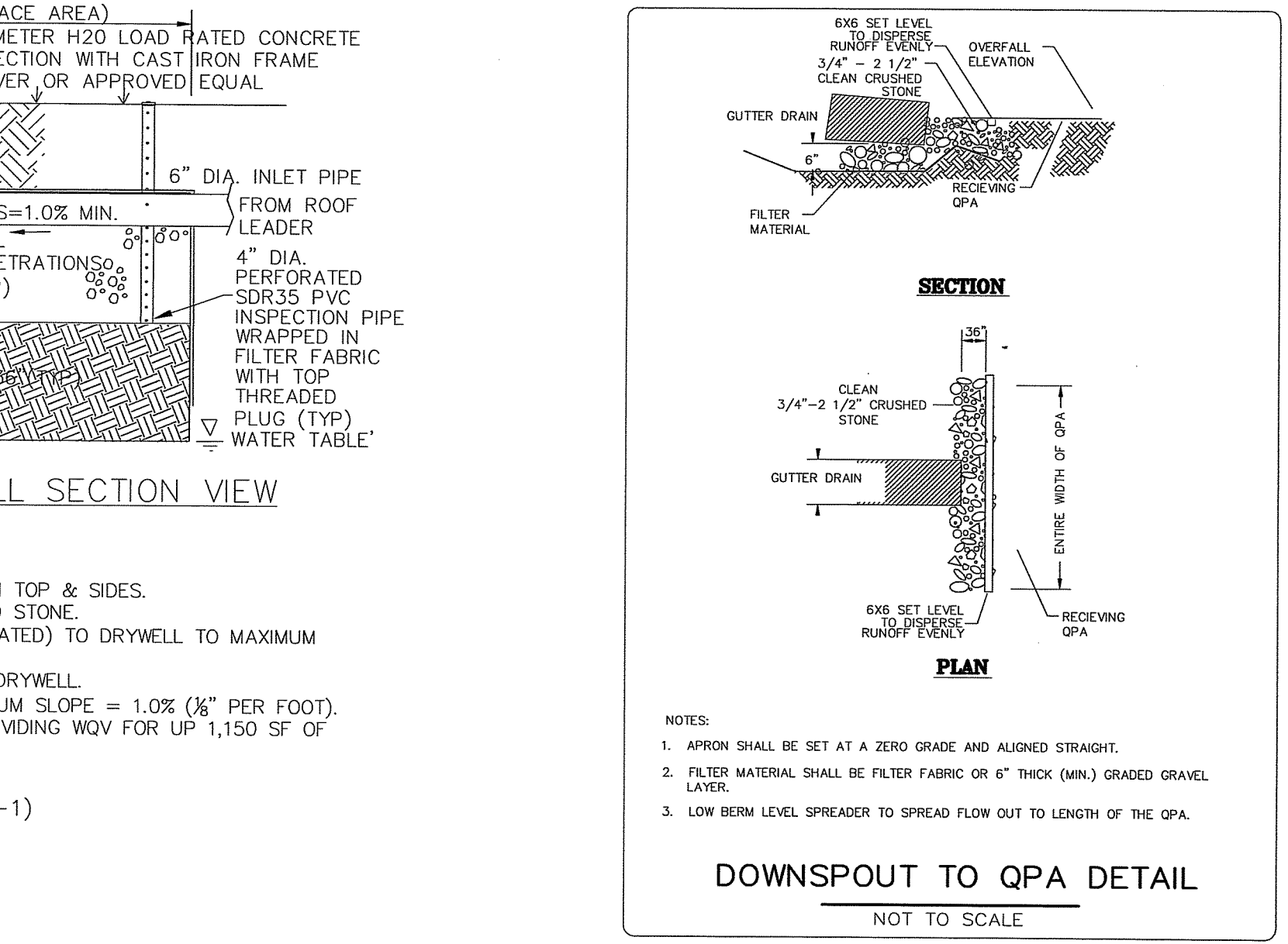
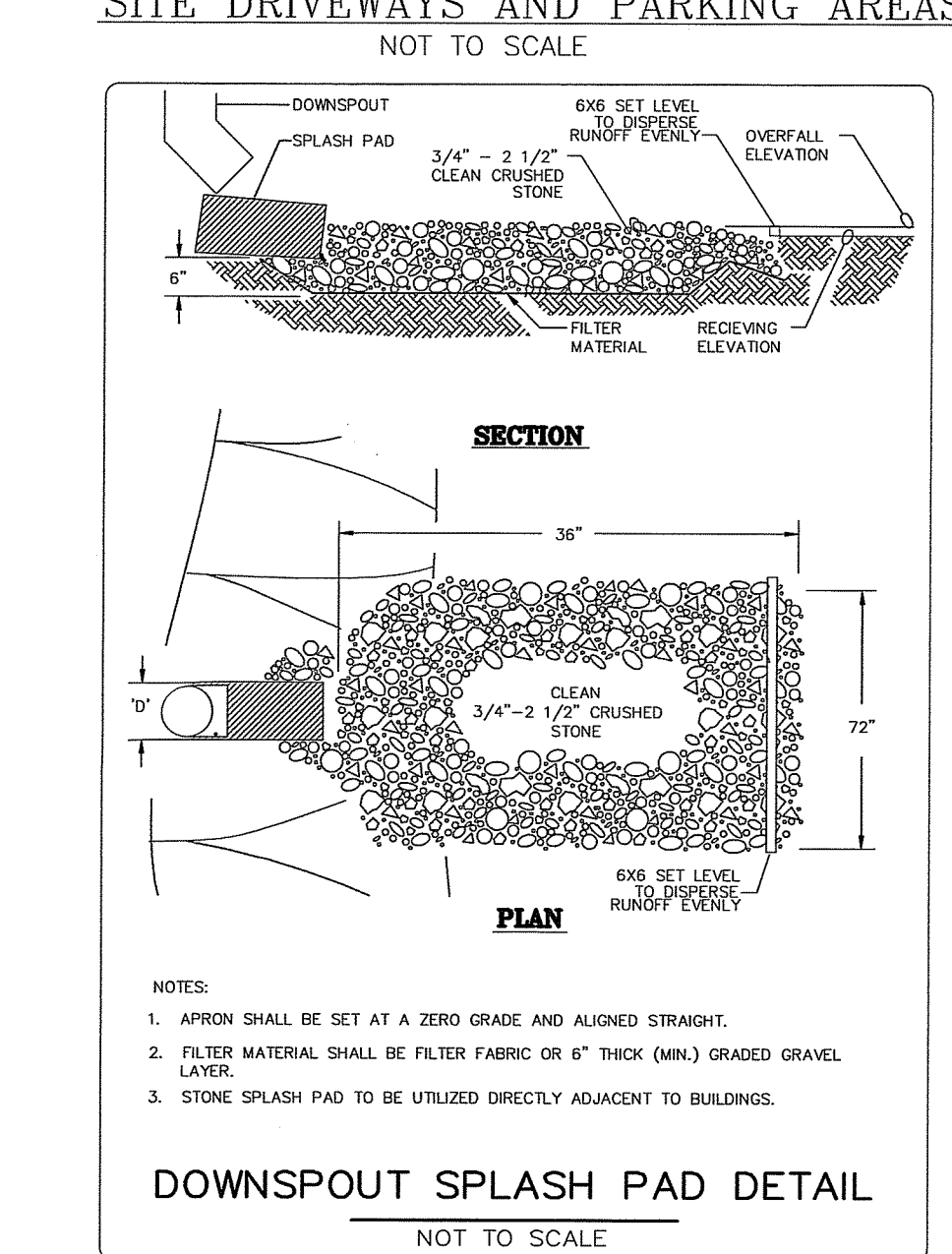
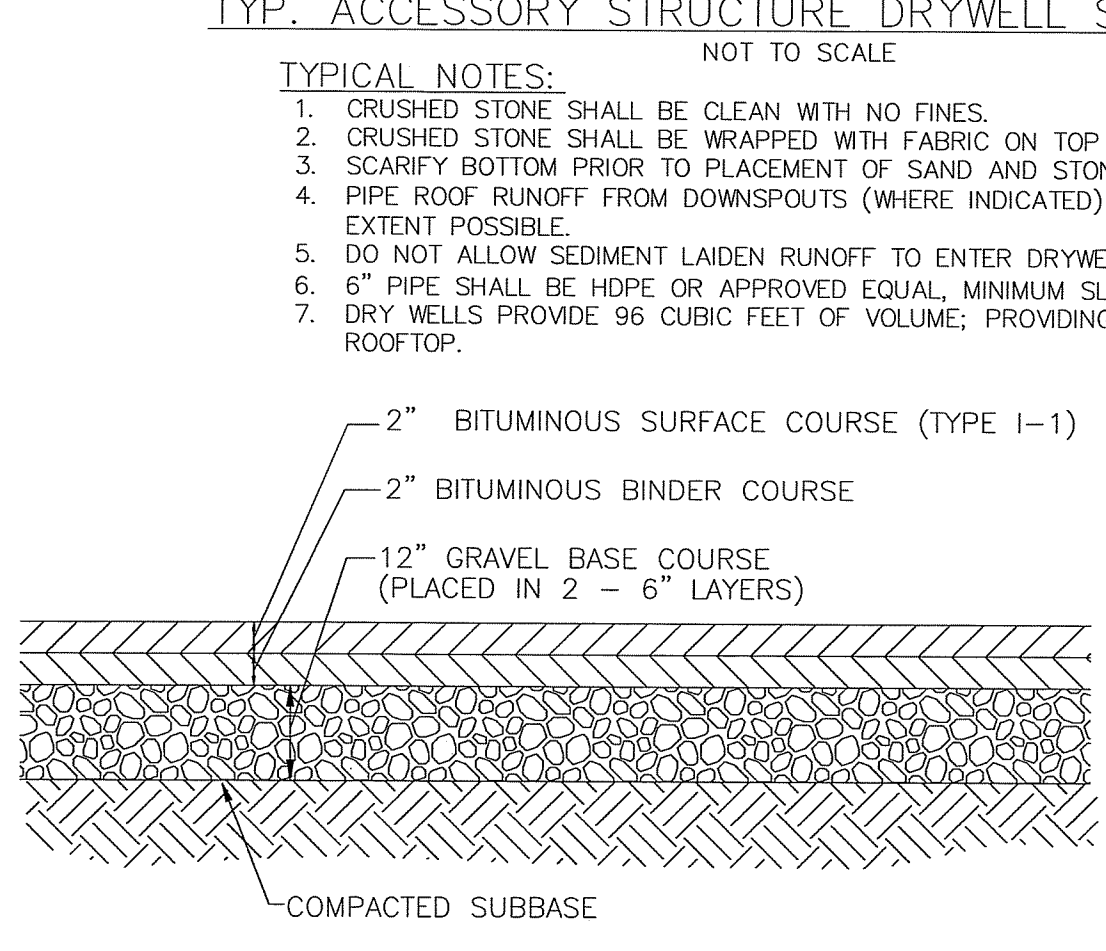
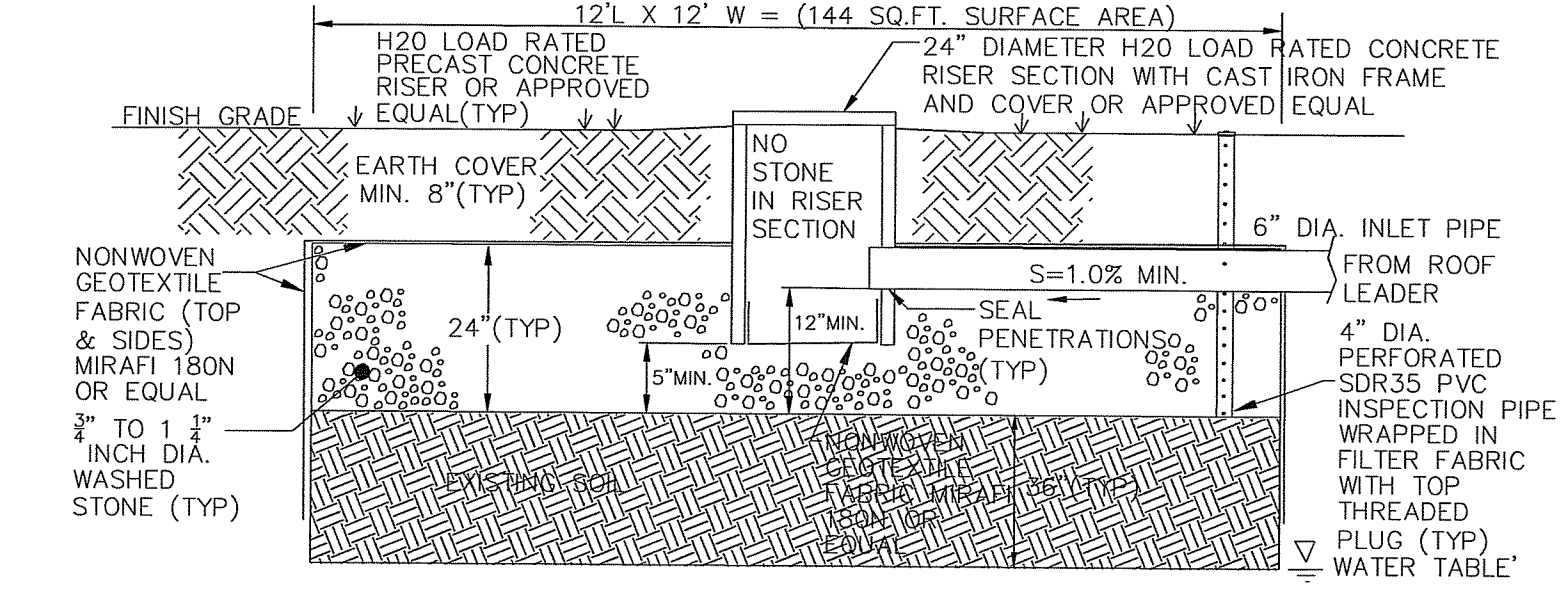
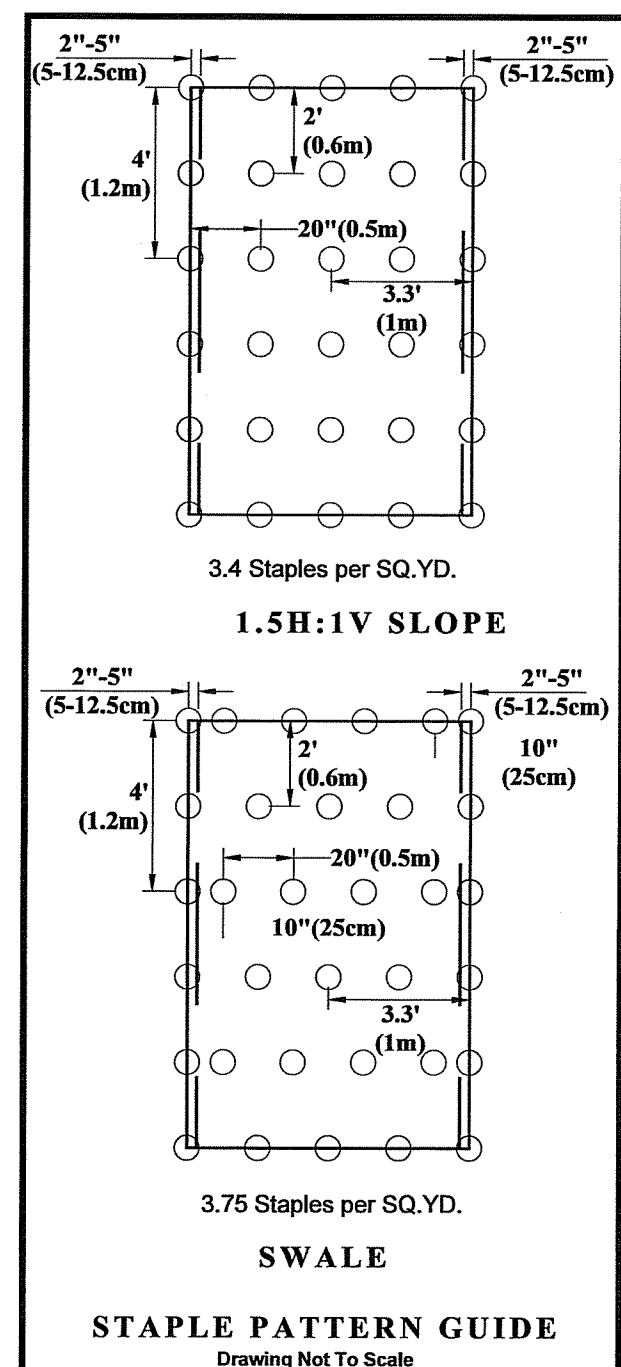
4. Place consecutive RECPs end-over-end (Shingle style) with a 4"-6" overlap. Use a double row of staples staggered 4" apart and 4" on center to secure RECPs.

5. Full length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes approximately 12"(30cm) apart in a 6"(15cm) deep X 6"(15cm) wide trench. Backfill and compact the trench after staping.

6. Adjacent RECPs must be overlapped approximately 2'-5" (5-12.5cm) (Depending on RECPs type) and stapled.

7. In high flow channel applications a staple check slot is recommended at 30 to 40 foot (9-12m) intervals. Use a double row of staples staggered 4"(10cm) apart and 4"(10cm) on center over entire width of the channel.

8. The terminal end of the RECPs must be anchored with a row of staples/stakes approximately 12" (30cm) apart in a 6"(15cm) deep X 6"(15cm) wide trench. Backfill and compact the trench after staping.



NORTH AMERICAN GREEN
 5401 St. Wendel - Cynthiana Rd.
 Poseyville, IN 47633
 PH: 800-722-2040
 www.nagreen.com

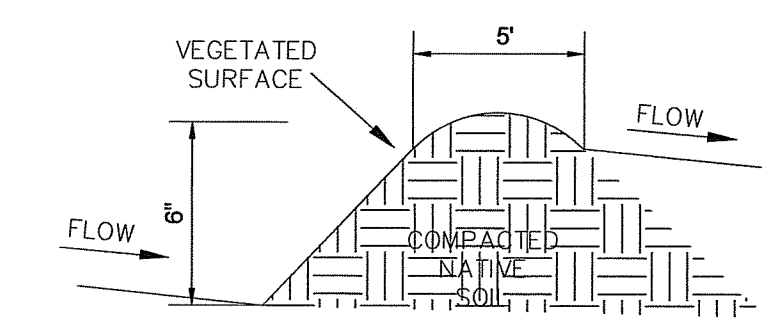
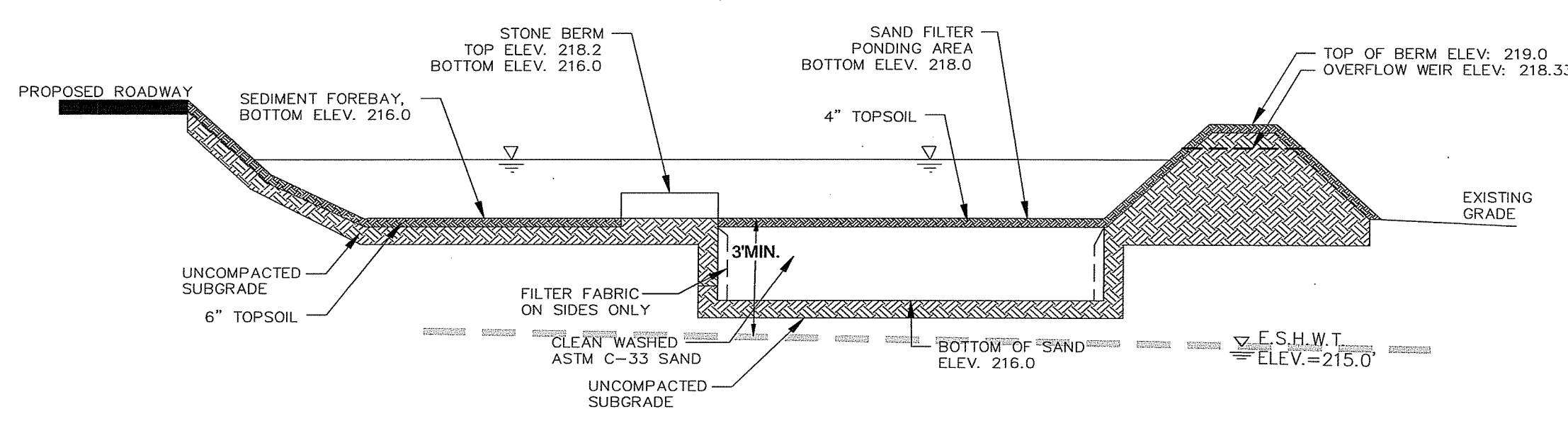
Disclaimer:
 The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

NORTH AMERICAN GREEN SC-250 TURF REINFORCEMENT MAT

NORTH AMERICAN GREEN
 5401 St. Wendel - Cynthiana Rd.
 Poseyville, IN 47633
 PH: 800-722-2040
 www.nagreen.com

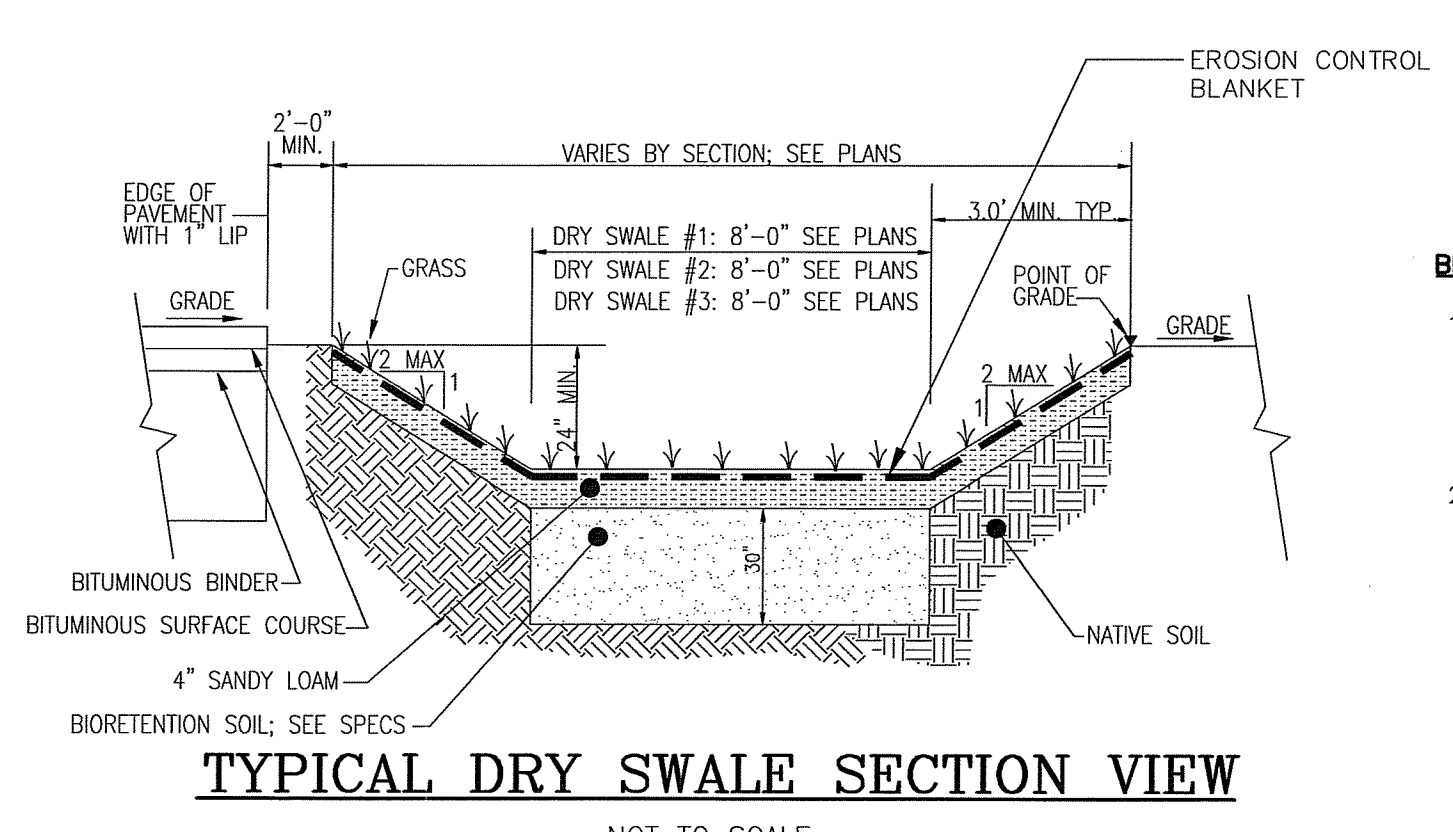
DRY SWALE #1 TURF REINFORCEMENT MAT DETAILS
 OR APPROVED EQUAL
 NOT TO SCALE



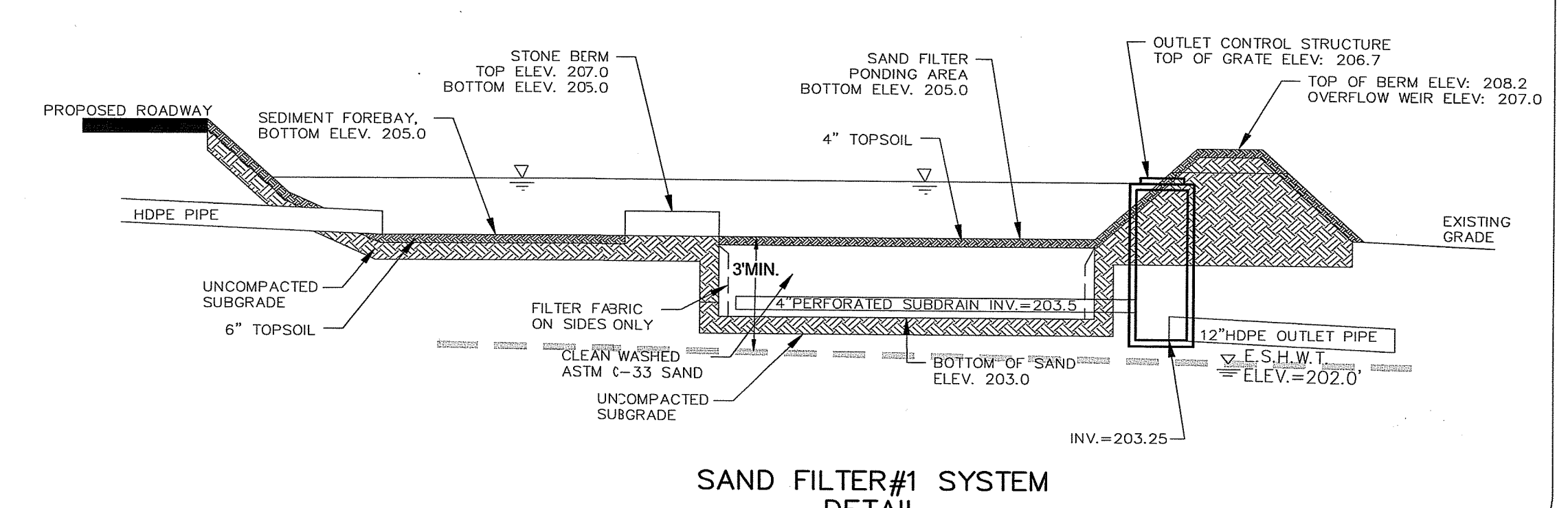
SPREADER DESIGN CALCS
 $L = Q/(V \cdot D)$
 10YR STORM:
 $Q = 2.0$ CFS
 $V = 1.0$ FPS
 $D = 2"$ DEPTH
 $L = 12"$ (MIN.)
 PROPOSED $L = 25' > 12'$ MIN.

DRY SWALE & VEGETATED SWALE MAINTENANCE NOTES:

1. OPEN CHANNEL PRACTICES SHALL BE INSPECTED ANNUALLY AND AFTER STORMS OF GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR TYPE III PRECIPITATION EVENT.
2. SEDIMENT BUILD-UP WITHIN THE BOTTOM OF THE CHANNEL SHALL BE REMOVED WHEN GREATER THAN OR EQUAL TO 3" DEPTH OF SEDIMENT HAS BEEN ACCUMULATED IN THE CHANNEL.
3. ERODED SIDE SLOPES AND CHANNEL BOTTOMS SHALL BE STABILIZED AS NECESSARY.
4. IN THE ABSENCE OF EVIDENCE OF CONTAMINATION, REMOVED DEBRIS MAY BE TAKEN TO A LANDFILL OR OTHER PERMITTED FACILITY.
5. SEDIMENT TESTING MAY BE REQUIRED PRIOR TO SEDIMENT DISPOSAL WHEN CONTAMINATION IS PRESENT.
6. VEGETATION SHALL BE MOWED AS REQUIRED TO MAINTAIN GRASS HEIGHTS IN THE 4-6 INCH RANGE, WITH MANDATORY MOWING ONCE GRASS HEIGHTS EXCEED 10 INCHES.
7. IF THE SURFACE OF THE DRY SWALE BECOMES CLOGGED TO THE POINT THAT STANDING WATER IS OBSERVED ON THE SURFACE 48 HOURS AFTER PRECIPITATION EVENTS, THE BOTTOM SHALL BE ROTOTILLED OR CULTIVATED TO BREAK UP ANY HARD-PACKED SEDIMENT, AND THEN RESEED.
8. EVERY FIVE YEARS, THE CHANNEL BOTTOM SHOULD BE SCRAPED TO REMOVE SEDIMENT AND TO RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE, AND SHOULD BE SEEDED TO RESTORE GROUND COVER.
9. DURING INSPECTION, ANY STRUCTURAL COMPONENTS OF THE SYSTEM, INCLUDING TRASH RACKS, VALVES, PIPES, AND SPILLWAY STRUCTURES, SHOULD BE CHECKED FOR PROPER FUNCTION. ANY CLOGGED OPENINGS SHOULD BE CLEANED OUT AND REPAIRS SHOULD BE MADE WHERE NECESSARY.



- BIORETENTION SOIL SPEC.:**
1. BIORETENTION SOIL MIX (BY VOLUME):
 SAND 85 TO 88%
 ORGANIC MATTER 3 TO 5%
 SILT 0 TO 12%
 CLAY 0 TO 2%
 2. THE BIORETENTION SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OTHER WOODY MATERIAL OVER 1" IN DIAMETER, OR BRUSH/SEEDS FROM NOXIOUS WEEDS. PLACEMENT OF THE SOIL SHOULD BE IN LIFTS OF 6 INCHES, LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET).



DETAILS - 2

PHASE 1A - WETLANDS MODIFICATION
THE PRESERVE AT BOULDER HILLS

A.P. 5B, LOT 38 KINGSTOWN ROAD RICHMOND, RI 02898

OWNER:
 THE PRESERVE AT BOULDER HILLS III, LLC
 2091 NOOSENECK HILL RD.
 COVENTRY, RI 02816

APPLICANT:
 M.T.M. DEVELOPMENT CORPORATION
 87A KINGSTOWN RD.
 RICHMOND, RI 02898

SCALE: AS SHOWN DATE: 7/03/24 SHEET 17 OF 17

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1.	9.13.24	RIDEM COMMENTS	CC/BM
2.	9.24.24	RIDEM COMMENTS	CC/BM
3.	9.26.24	RIDEM COMMENTS	CC/BM
4.	9.27.24	RIDEM COMMENTS	CC/BM

REGISTRATIONS:

CRAIG RICHARD CARRIGAN
 REGISTERED PROFESSIONAL ENGINEER

CARRIGAN ENGINEERING, INC.
 CIVIL AND ENVIRONMENTAL ENGINEERING
 86 BROOK FARM ROAD SOUTH
 WAKEFIELD, RI 02879
 PHONE: (401) 789-6865

SEP 8 2024

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED: NOV 11 2024 FILE #: 19-016

NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Ernest D. Janssch

RIDEM WETLAND PERMIT APPLICATION PLAN PHASE 1A

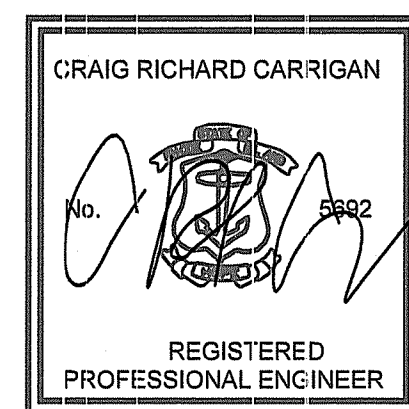
THE PRESERVE AT BOULDER HILLS, LLC & MTM DEVELOPMENT CORPORATION

87 KINGSTOWN ROAD
A.P. 5B, LOT 38/ A.P. 6B, LOT 2/ A.P. 6B, LOT 4
RICHMOND, RHODE ISLAND

ISSUED FOR PERMITTING

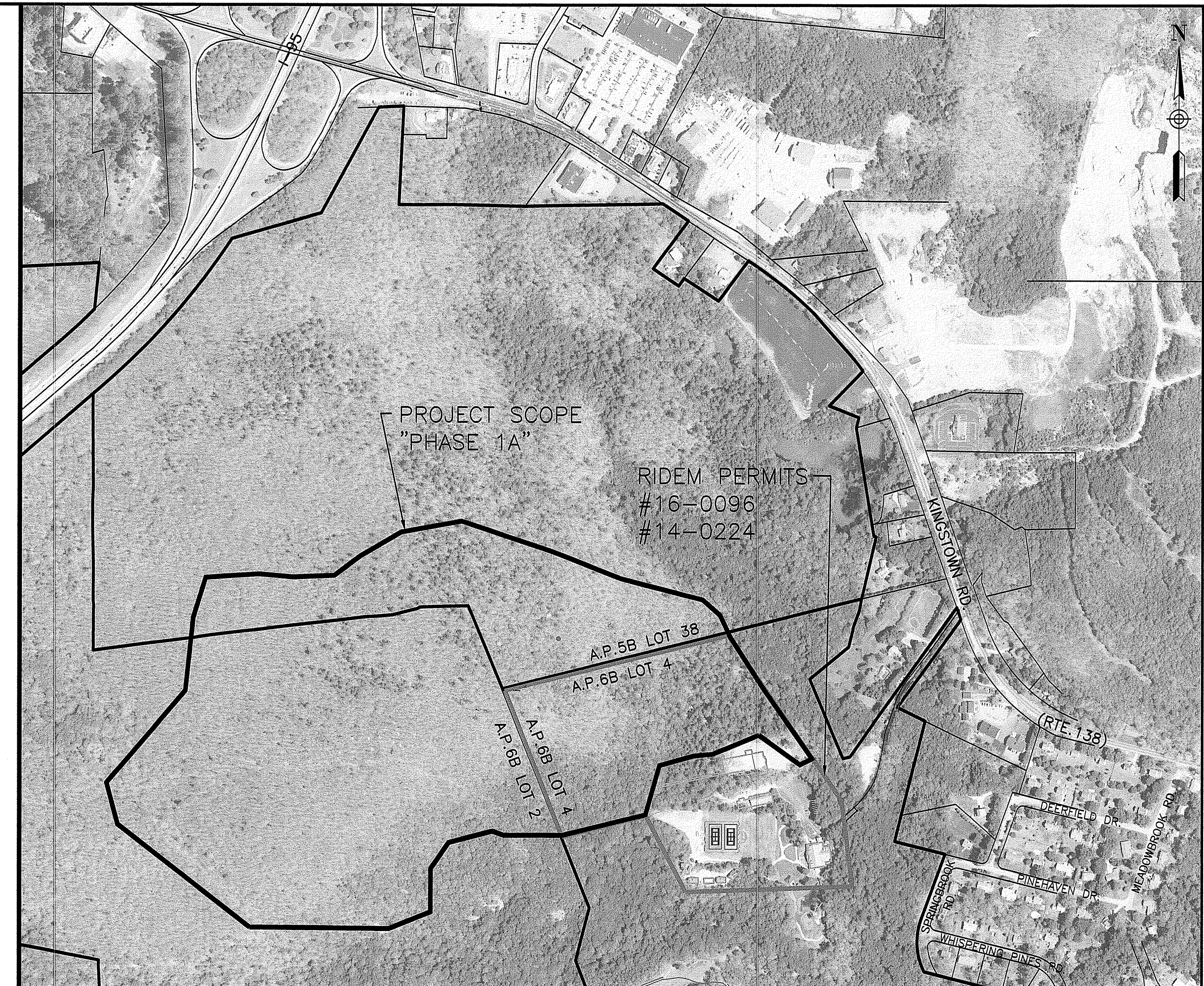
PREPARED FOR
THE PRESERVE AT BOULDER HILLS, LLC

DATE: MAY 25, 2019
REVISED: AUGUST 14, 2019
REVISED: SEPTEMBER 8, 2019



CARRIGAN ENGINEERING, INC.
CIVIL AND ENVIRONMENTAL ENGINEERING
86 BROOK FARM ROAD SOUTH
WAKEFIELD, RI 02879
PHONE: (401) 789-6865

DEM COPY



LOCATION MAP
SCALE: 1"=400'

LIST OF DRAWINGS

1. TITLE SHEET
2. EXISTING CONDITIONS SHEET
3. PROJECT SCOPE PLAN
4. ZONE 1: GRADING & UTILITY PLAN
5. ZONE 2: GRADING & UTILITY PLAN
6. ZONE 3: GRADING & UTILITY PLAN
7. ZONE 4: GRADING & UTILITY PLAN
8. ZONE 5: GRADING & UTILITY PLAN
9. ZONE 6: GRADING & UTILITY PLAN
10. DRY SWALE PROFILES PLAN
11. SESC PLAN - 1
12. SESC PLAN - 2
13. DETAIL SHEET - 1
14. DETAIL SHEET - 2
15. DETAIL SHEET - 3

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED SEP 11 2019 FILE # 19-0164
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Signature

PROJECT DATA

ASSESSORS REFERENCE:

- A.P. 5B LOT 38
- A.P. 6B LOT 2
- A.P. 6B LOT 4

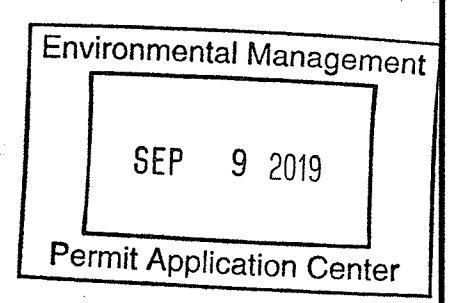
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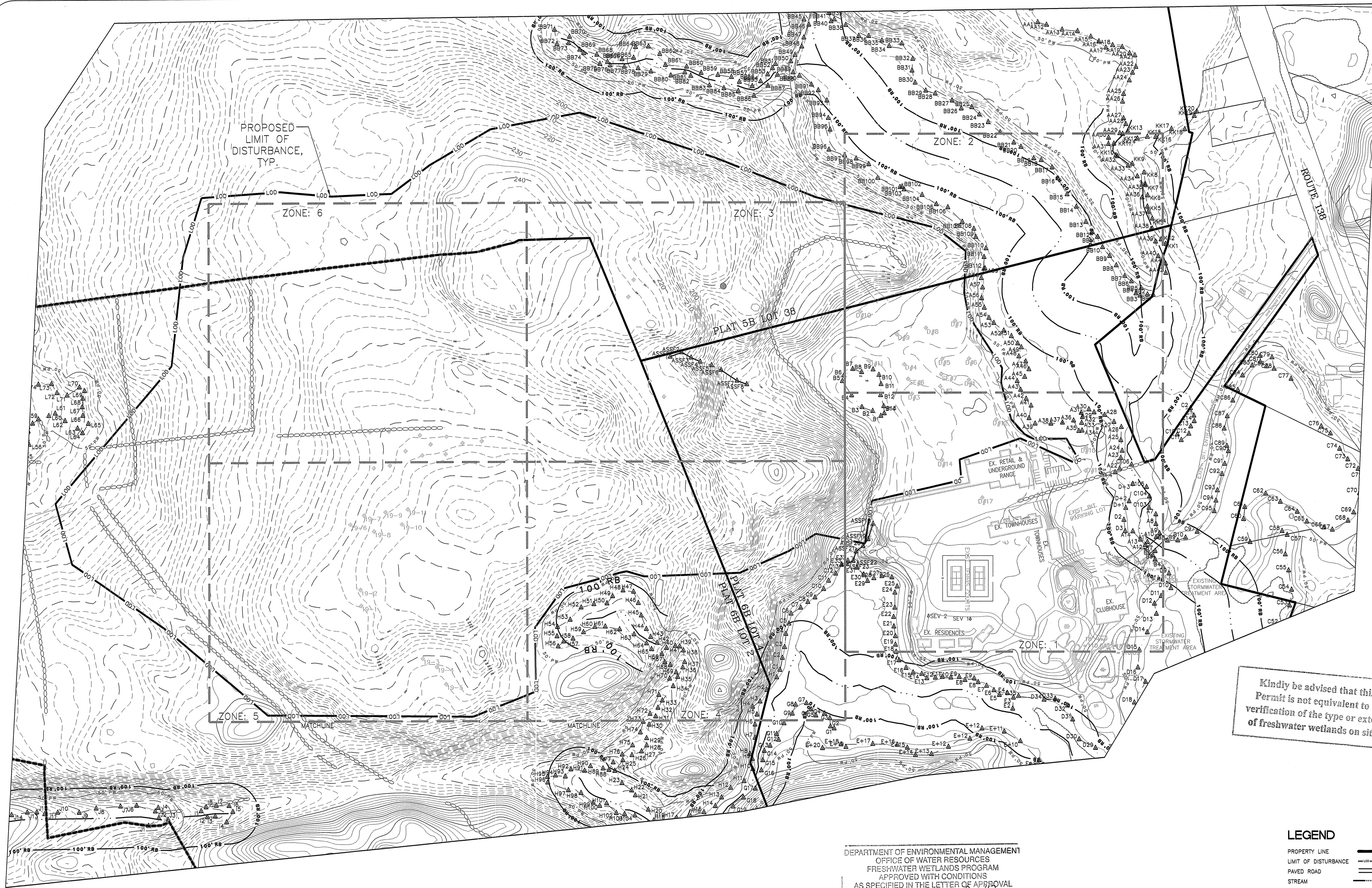
1. PROPERTY LINE INFORMATION OBTAINED FROM SURVEY PLANS TITLED "SV-1 EXISTING CONDITIONS SURVEY LIMITED CONTENT PERIMETER SURVEY PREPARED FOR THE PRESERVE AT BOULDER HILLS III, LLC KINGSTOWN ROAD PLAT 5B LOT 38 RICHMOND, RHODE ISLAND", "SV-4 EXISTING CONDITIONS LIMITED CONTENT PERIMETER SURVEY PROPERTY OF CASTLE RESIDENCES, LLC ROUTE 95 PLAT 6B LOT 2 RICHMOND, RHODE ISLAND", AND "SV-5 EXISTING CONDITIONS LIMITED CONTENT PERIMETER SURVEY PREPARED FOR THE PRESERVE AT BOULDER HILLS, LLC & MTM DEVELOPMENT PLAT 6B LOT 4 87 KINGSTOWN ROAD RICHMOND, RHODE ISLAND" ALL PLANS DATED APRIL 18, 2018 AND PREPARED BY CHERENZIA & ASSOCIATES, LTD.
2. EXISTING 2-FOOT CONTOURS OBTAINED FROM RIGIS LIDAR DATA.

GENERAL NOTES:

1. ALL PLANS AND IMPROVEMENTS CONFORM TO ALL EXISTING AND AMENDED STANDARDS OF THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS, BOARD OF REGISTRATION OF PROFESSIONAL ENGINEERS AND BOARD OF REGISTRATION OF LAND SURVEYORS.
2. ONLY PLANS STAMPED ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION.
3. THE LOCATION AND ELEVATION FOR ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ANY CROSSINGS OF PROPOSED UTILITIES AND EXISTING UTILITIES. ANY DISCREPANCIES IN THE LOCATION OF ANY UTILITY SHOWN OR ENCOUNTERED DURING CONSTRUCTION SHALL BE REPORTED TO MTM DEVELOPMENT CORPORATION, 87 KINGSTOWN RD, RICHMOND, RHODE ISLAND 02898; (401) 539-4653.
4. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 72 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
5. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN THE INTEGRITY OF ALL EXISTING UTILITIES, STRUCTURES, AND ABUTTING PROPERTIES. THE COST OF ANY REPAIR OR REPLACEMENT OF DAMAGED ITEMS SHALL BE BORNE BY THE CONTRACTOR.

Kindly be advised that this
Permit is not equivalent to a
verification of the type or extent
of freshwater wetlands on site.



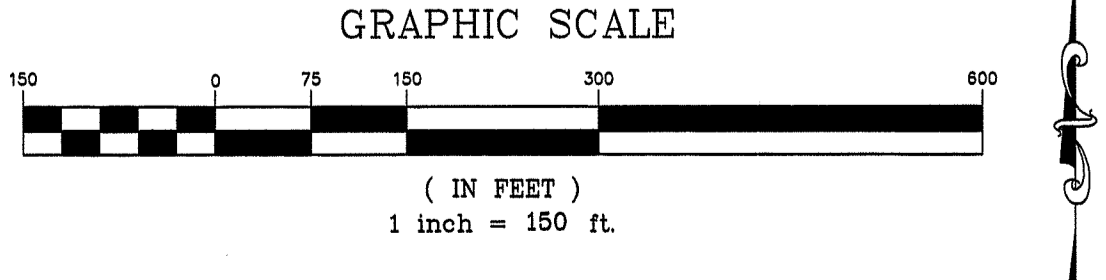


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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED SEP 10 2018 FILE # 18-0167
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Christopher D. Carrigan

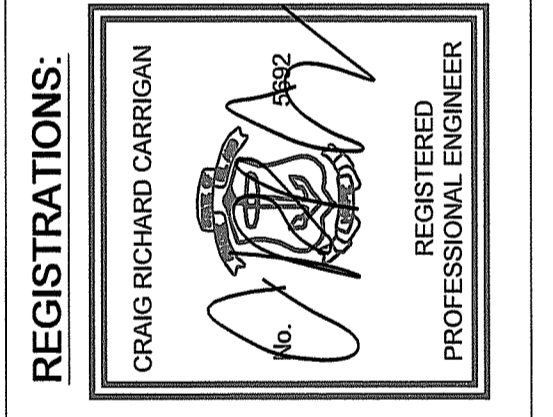
- LEGEND**
- PROPERTY LINE
 - LIMIT OF DISTURBANCE
 - PAVED ROAD
 - STREAM
 - 100' RIVERBANK
 - WETLAND EDGE
 - 50' PERIMETER WETLANDS



TITLE:
EXISTING CONDITIONS PROJECT SCOPE PLAN
 A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND
 PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 05/25/19 SHEET 2 OF 15

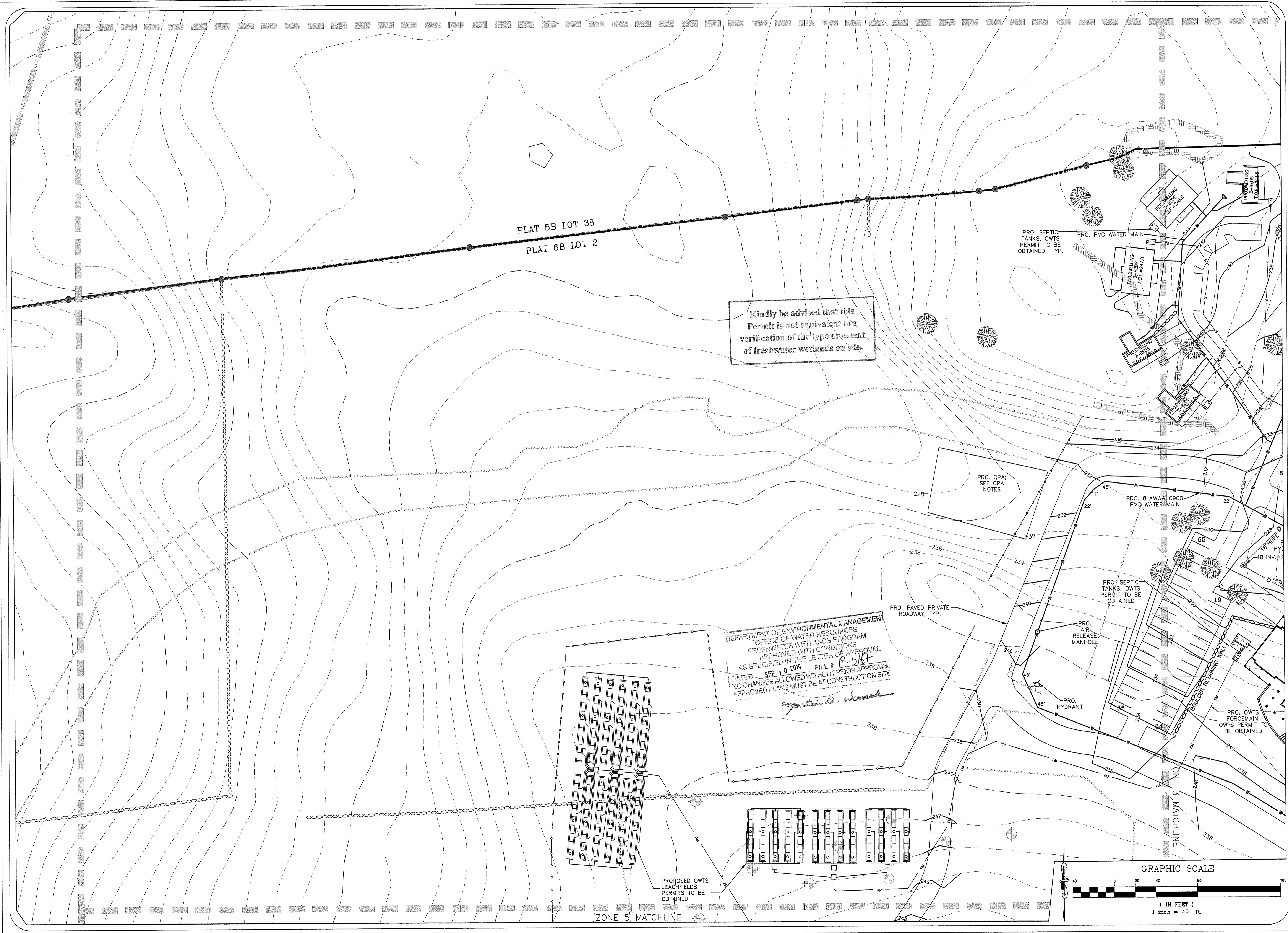
REVISIONS:

NO.	DATE	DESCRIPTION	DKM	BY
1.	08/14/19	DEM COMMENTS		



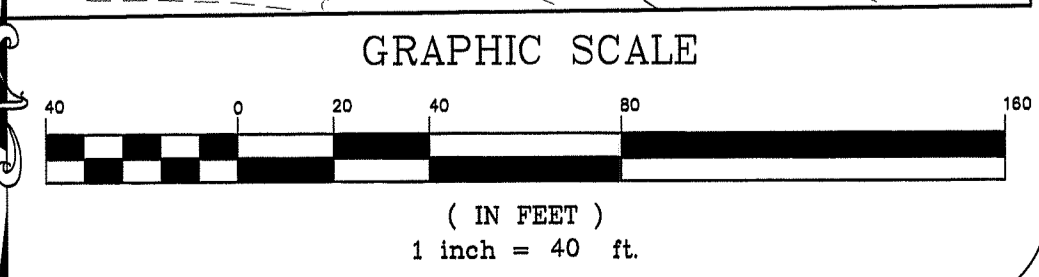
CARRIGAN ENGINEERING, INC.
 CIVIL AND ENVIRONMENTAL ENGINEERING
 86 BROOK FARM ROAD SOUTH
 WAKEFIELD, RI 02879
 PHONE: (401) 789-6865

Environmental Management
 AUG 14 2019
 Permit Application Center



Kindly be advised that this Permit is not equivalent to a verification of the type or extent of freshwater wetlands on site.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 AS SPECIFIED IN THE LETTER OF APPROVAL
 DATED SEP 10 2019 FILE # 19-018
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

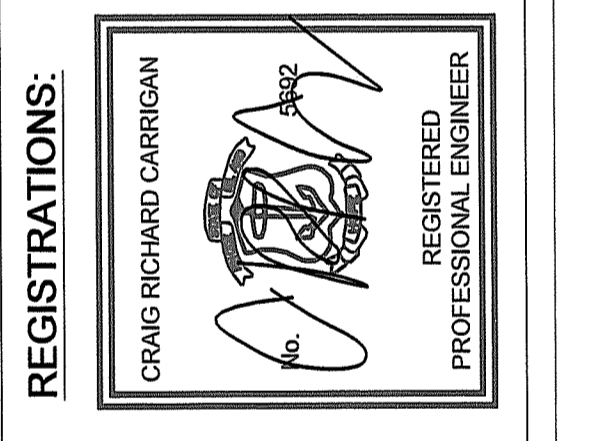


TITLE: **ZONE 6 - GRADING & UTILITY PLAN**
 A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND
 PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 05/25/19 SHEET 9 OF 15

REVISIONS:

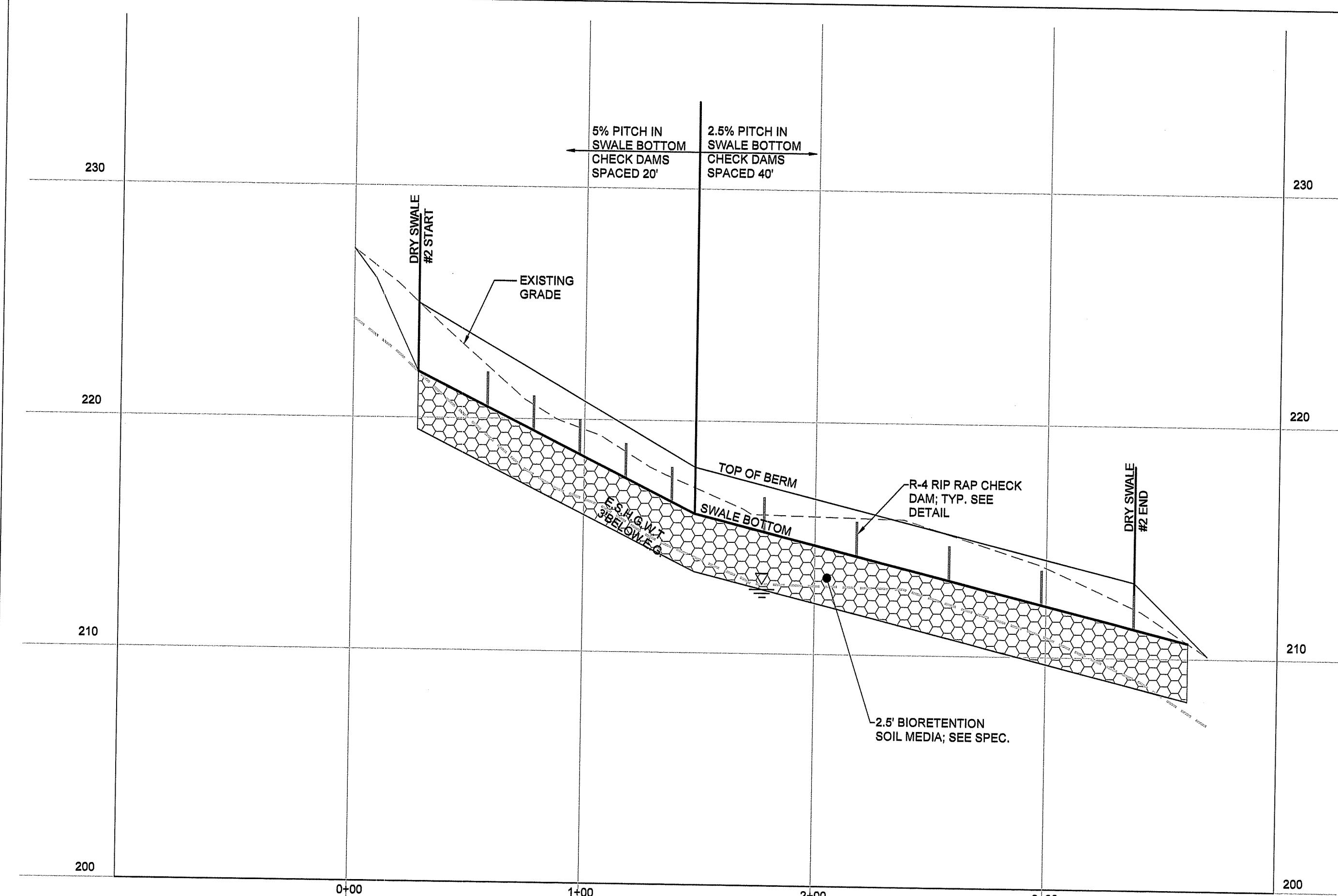
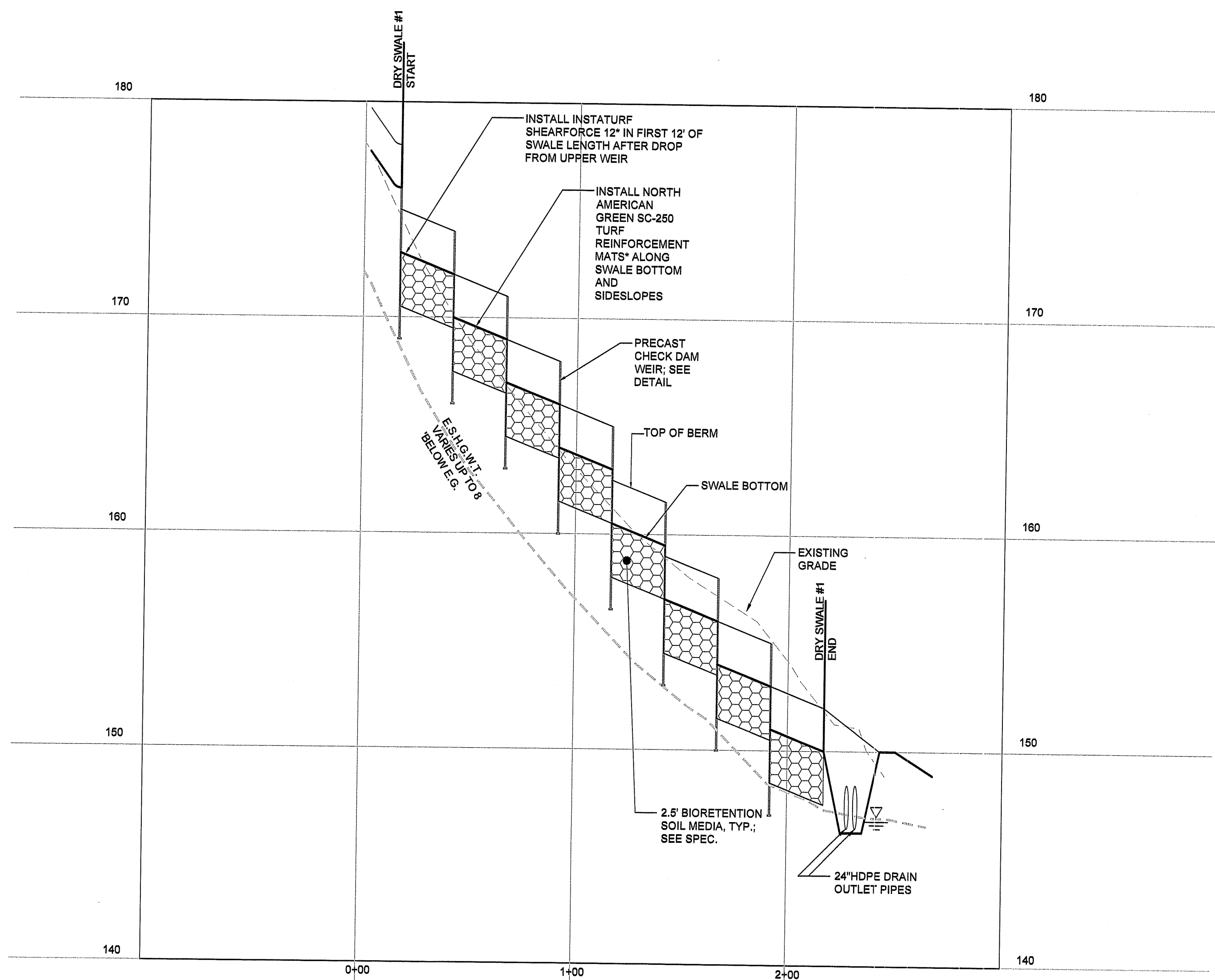
NO.	DATE	DESCRIPTION	BY
1.	05/14/19	DEM COMMENTS	DKM

JOB NO.



CARRIGAN ENGINEERING, INC.
 CIVIL AND ENVIRONMENTAL ENGINEERING
 86 BROOK FARM ROAD SOUTH
 WAKEFIELD, RI 02879
 PHONE: (401) 789-6865

Environmental Management
 AUG 14 2019
 Permit Application Center



DRY SWALE #2 PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

DURING WATER QUALITY FLOW:
MAX. VELOCITY = 2.0 FPS
MAX. FLOW DEPTH = 0.59'

DURING 1-YR STORM:
MAX. VELOCITY = 2.81 FPS
MAX. FLOW DEPTH = 0.66'

DURING 10-YR STORM:
MAX. VELOCITY = 4.05 FPS
MAX. FLOW DEPTH = 0.79'

DURING 100-YR STORM:
MAX. VELOCITY = 5.70 FPS
MAX. FLOW DEPTH = 1.01'

*OR APPROVED EQUAL
DRY SWALE #1 PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

DURING WATER QUALITY FLOW:
MAX. VELOCITY = 1.6 FPS
MAX. FLOW DEPTH = 0.07'

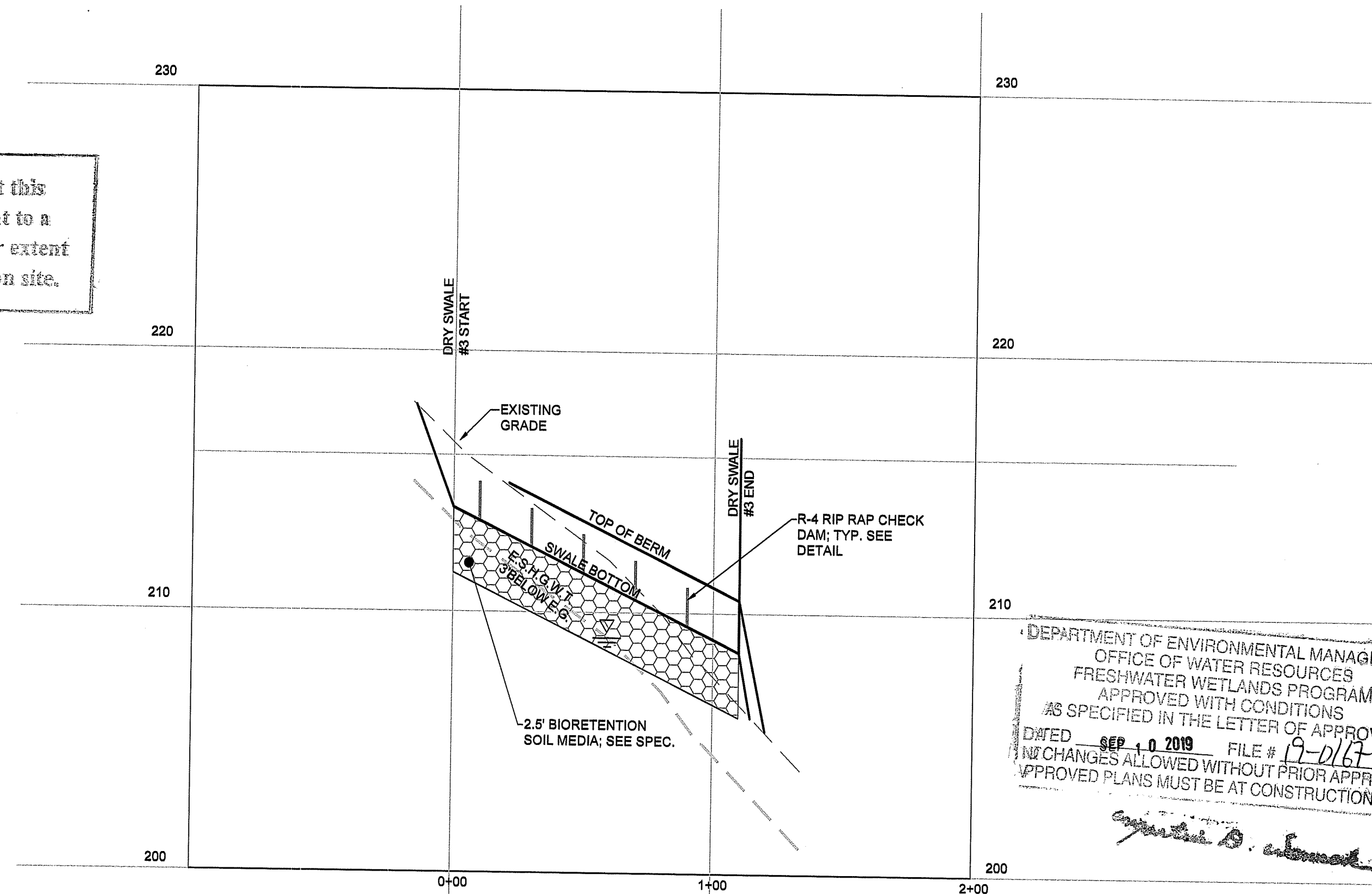
DURING 1-YR STORM:
MAX. VELOCITY = 2.26 FPS
MAX. FLOW DEPTH = 0.12'

DURING 10-YR STORM:
MAX. VELOCITY = 3.2 FPS
MAX. FLOW DEPTH = 0.20'

DURING 100-YR STORM:
MAX. VELOCITY = 4.41 FPS
MAX. FLOW DEPTH = 0.35'

VELOCITY FROM 3' DROP = 14 FPS

Kindly be advised that this Permit is not equivalent to a verification of the type or extent of freshwater wetlands on site.



DRY SWALE #3 PROFILE VIEW
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

DURING WATER QUALITY FLOW:
MAX. VELOCITY = 1.2 FPS
MAX. AVG. FLOW DEPTH = 0.54'

DURING 1-YR STORM:
MAX. VELOCITY = 1.73 FPS
MAX. FLOW DEPTH = 0.57'

DURING 10-YR STORM:
MAX. VELOCITY = 3.06 FPS
MAX. FLOW DEPTH = 0.68'

DURING 100-YR STORM:
MAX. VELOCITY = 4.69 FPS
MAX. FLOW DEPTH = 0.87'

SHEARFORCE 12
Soft Armor Rock Solid Protection™
www.Instaturf.com

Recommended Design Values

Design Shear Stress	Channels/Duffalls/Spillways/Streambanks*				Slopes		Shorelines	
	Manning's n	Cohesive Soils	Non-Cohesive Soils	Design Velocity	Max Gradient (ft/v)	Max Wave Height	Max	Min
ShearForce12 Divulge/veg	.025 - .040	14 lbs/ft²	12 lbs/ft²	30 ft/sec	25 ft/sec	>1:1	<=1.5 ft	>1.5 ft
ShearForce12 Vegetated	.025 - .04	18 lbs/ft²	16 lbs/ft²	30 ft/sec	25 ft/sec	>1:1	<=2.0 ft	>2.0 ft

* Design values are derived from ASTM D6402 large-scale channel testing on bank soils under 4 consecutive 20 min flow events in 5% gradient test flumes. A safety factor (FS) of 1.25 - 2.0 may be applied to channel lining designs to account for larger flow velocities, most erodible soils, and varying side-slope profiles.

Soil Loss vs Shear Stress
in ASTM D6402 Large-Scale Channel Testing of Scour Control Mats
(24 inch Concrete Soil Loss Column)

Legend:
 - ShearForce12 Scour Control Mat (vegetated)
 - Top Concrete Block Mat (divulge/veg)
 - 100 lb/ft² concrete aggregate with 1/2" top layer (divulge/veg)
 - 100 lb/ft² concrete aggregate (divulge/veg)

Sources: 1) 2015 All referenced large-scale channel tests conducted at US Environmental Protection Agency Research Facility using ASTM D6402 testing protocol or modified version thereof.
 2) GrassWorx, LLC 2016, ASTM D6402 Channel Testing of Instaturf ShearForce12 Divulge/veg and ShearForce12 Scour Control Mat in 20% Test Flumes, August and September 2016.
 3) H&E Enterprises, 2016, Large-Scale Channel Erosion Testing of Precast Concrete Lining, February 2016.
 4) AGS10-1179F Large-Scale Channel Erosion Testing of North American Green's Shoreline Mats over P500-TM, December 2011 (www.agc.com)

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TITLE:
DRY SWALE PROFILES PLAN
A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
87 KINGSTOWN ROAD
RICHMOND, RHODE ISLAND
PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
SCALE: AS SHOWN DATE: 05/25/19 SHEET 10 OF 15

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1.	08/14/19	DEM COMMENTS	DKM

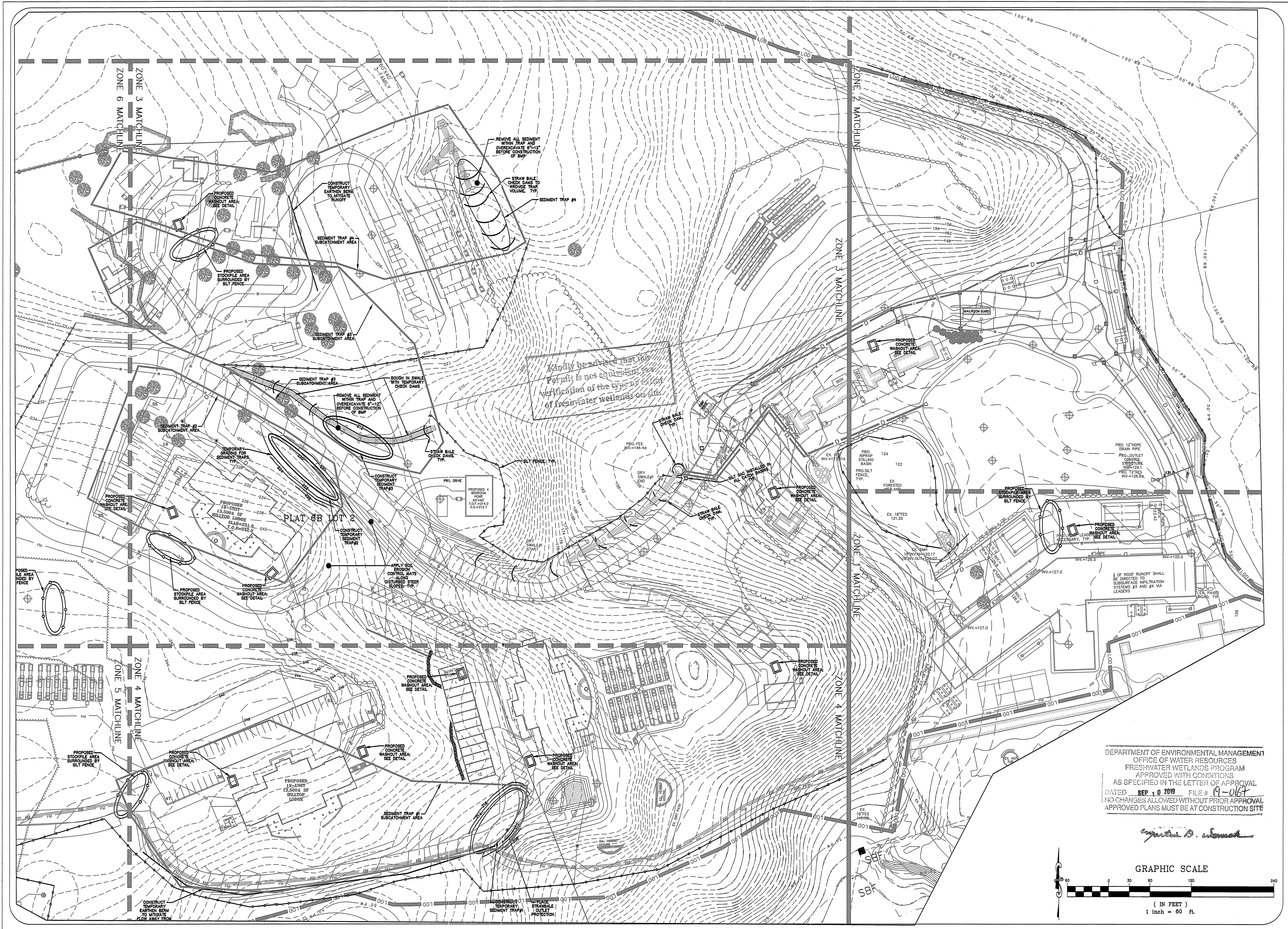
JOB NO.

REGISTRATIONS:
CRAIG RICHARD CARRIGAN
REGISTERED PROFESSIONAL ENGINEER

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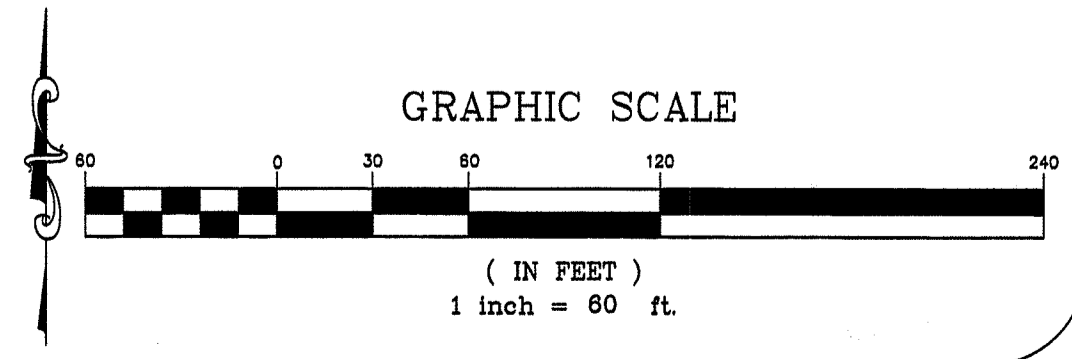
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED SEP 10 2019 FILE # 19-0167
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Environmental Management
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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Signature



SESC PLAN - 1
 A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND
 PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 05/25/19 SHEET 11 of 15

REVISIONS:

NO.	DATE	DESCRIPTION	BY
2.	09/09/19	DEM COMMENTS	DKM
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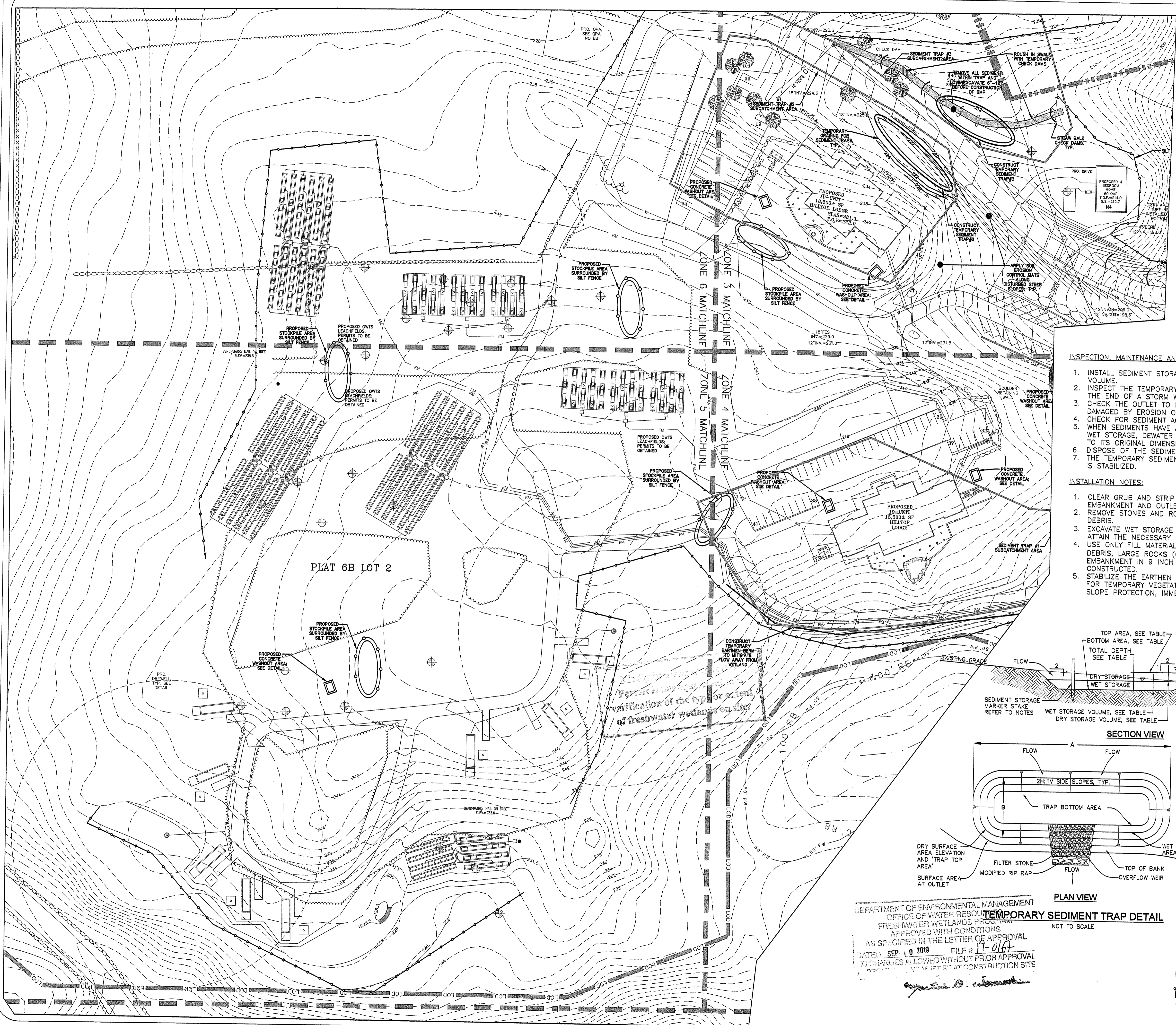
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Environmental Management
 SEP 9 2019
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GENERAL NOTES:

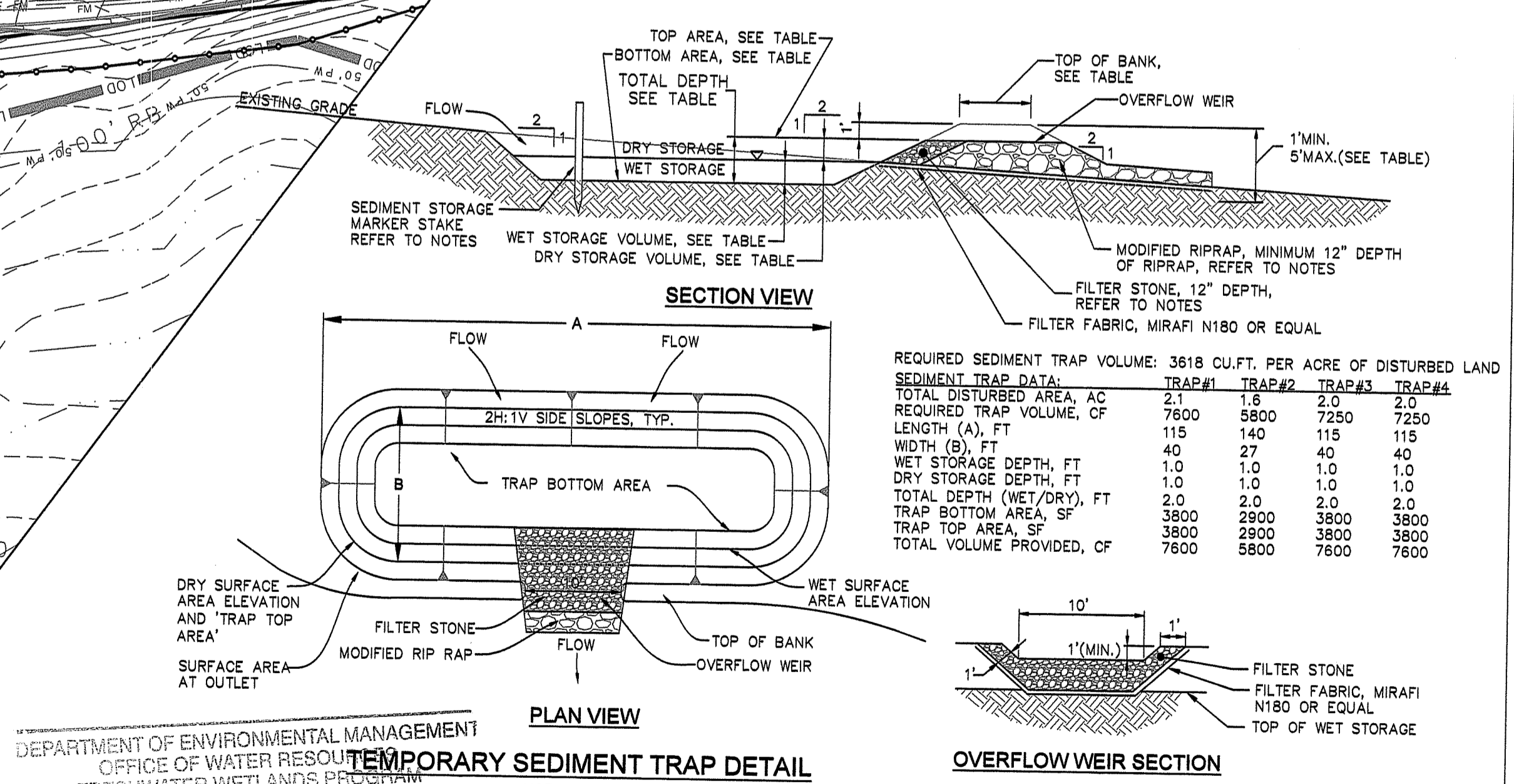
1. THE TEMPORARY SEDIMENT TRAP SHALL MEET ALL REQUIREMENTS FOR TEMPORARY SEDIMENT TRAPS OUTLINED IN THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK (LATEST REVISION) SECTION SIX: SEDIMENT CONTROL MEASURES.
2. THE TEMPORARY SEDIMENT TRAP SHALL HAVE AN INITIAL STORAGE VOLUME OF 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER. THE OUTLET SHALL BE LOCATED AT THE MOST DISTANT HYDRAULIC POINT FROM THE INLET.
4. THE OUTLET CONSISTS OF A PERVIOUS STOKE DIKE WITH A CORE OF MODIFIED RIP RAP AND FACED ON THE UPSTREAM SIDE WITH STONE.
5. TEMPORARY SEDIMENT TRAPS MUST OUTLET ONTO STABILIZED GROUND.
6. MAXIMUM HEIGHT OF A TEMPORARY SEDIMENT TRAP EMBANKMENT IS LIMITED TO FIVE FEET.
7. SIDE SLOPES OF THE EMBANKMENT SHALL BE 2:1 OR FLATTER.
8. MODIFIED RIP RAP SHALL MEET THE REQUIREMENTS OF RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SUBSECTION M.10.03.2 AND BE R-4 GRADE RIPRAP.
9. FILTER STONE SHALL MEET THE REQUIREMENTS OF RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SUBSECTION M.01.03 TABLE 1 COLUMN V FILTER STONE.

INSPECTION, MAINTENANCE AND REMOVAL REQUIREMENTS:

1. INSTALL SEDIMENT STORAGE STAKE WITH A MARKER AT ONE HALF OF THE WET STORAGE VOLUME.
2. INSPECT THE TEMPORARY SEDIMENT TRAP AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.25 INCHES OR GREATER.
3. CHECK THE OUTLET TO ENSURE THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OF CONSTRUCTION EQUIPMENT.
4. CHECK FOR SEDIMENT ACCUMULATION AND FILTRATION PERFORMANCE.
5. WHEN SEDIMENTS HAVE ACCUMULATED TO ONE HALF THE MINIMUM REQUIRED VOLUME OF THE WET STORAGE, DEWATER THE TRAP AS NEEDED, REMOVE SEDIMENTS AND RESTORE THE TRAP TO ITS ORIGINAL DIMENSIONS.
6. DISPOSE OF THE SEDIMENT REMOVED FROM THE BASIN IN A SUITABLE AREA.
7. THE TEMPORARY SEDIMENT TRAP MAY BE REMOVED AFTER THE CONTRIBUTING DRAINAGE AREA IS STABILIZED.

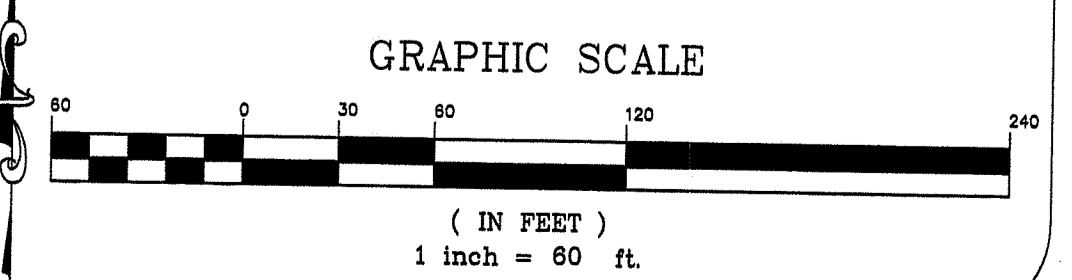
INSTALLATION NOTES:

1. CLEAR GRUB AND STRIP ANY VEGETATION AND ROOT MAT FROM ANY PROPOSED EMBANKMENT AND OUTLET AREA.
2. REMOVE STONES AND ROCKS WHOSE DIAMETER IS GREATER THAN 3 INCHES AND OTHER DEBRIS.
3. EXCAVATE WET STORAGE AND CONSTRUCT THE EMBANKMENT AND/OR OUTLET AS NEEDED TO ATTAIN THE NECESSARY STORAGE REQUIREMENTS.
4. USE ONLY FILL MATERIAL FOR THE EMBANKMENT THAT IS FREE FROM EXCESSIVE ORGANICS, DEBRIS, LARGE ROCKS (OVER SIX INCHES) OR OTHER UNSUITABLE MATERIALS. COMPACT THE EMBANKMENT IN 9 INCH LAYERS BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
5. STABILIZE THE EARTHEN EMBANKMENT USING ANY OF THE FOLLOWING MEASURES, SEEDING FOR TEMPORARY VEGETATION COVER, SEEDING FOR PERMANENT VEGETATIVE COVER, OR SLOPE PROTECTION, IMMEDIATELY AFTER INSTALLATION.



TEMPORARY SEDIMENT TRAP DETAIL
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED SEP 10 2019 FILE # 19-016
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
FOR ANY CHANGES TO BE MADE AT CONSTRUCTION SITE



SESC PLAN - 2

A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
87 KINGSTOWN ROAD
RICHMOND, RHODE ISLAND

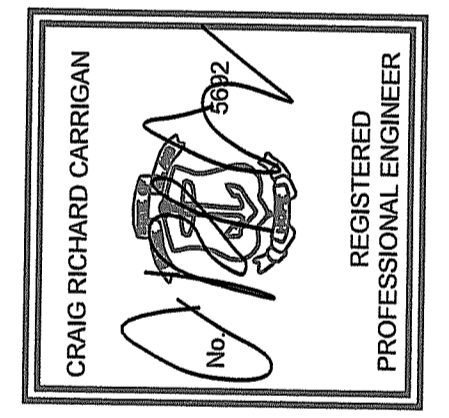
PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
SCALE: AS SHOWN DATE: 05/25/19 SHEET 12 of 15

TITLE:

REVISIONS:

NO.	DATE	DESCRIPTION	DKM	BY
2.	09/08/19	DEM COMMENTS	DKM	
1.	08/14/19	DEM COMMENTS	DKM	

REGISTRATIONS:



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GENERAL EROSION CONTROL NOTES:

- THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AMENDED AUG. 2013, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. THE 2013 STANDARD SPECIFICATIONS MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION WEB PAGE. THESE SPECIFICATIONS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO.
- LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO EXISTING UTILITIES AS SHOWN OR NOT SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR. NO EXCAVATION SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 48-HOURS IN ADVANCE. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 48 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION AND/OR BLASTING WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION AND/OR BLASTING WORK MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
- IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN ANY AND ALL PERMITS REQUIRED BY, BUT NOT LIMITED TO, THE STATE OF RHODE ISLAND, THE FEDERAL GOVERNMENT, LOCAL (TOWN/CITY) GOVERNMENT AND ALL INDIVIDUAL UTILITY COMPANIES PRIOR TO COMMENCING ANY WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS. ALL MATERIAL FOR FILL SHALL BE CLEAN AND FREE OF MATTER WHICH COULD POLLUTE ANY DOWN STREAM WATERCOURSE.
- FILL MATERIAL SHALL BE COMPACTED IN ONE FOOT (MAXIMUM) LIFTS TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D-1557 (MODIFIED PROCTOR TEST).
- ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ALL AREAS NOT TO BE DEVELOPED THAT ARE COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED BY TILLING THE TOP 12" OF SOIL.

EROSION CONTROL AND SOIL STABILIZATION PROGRAM:

- ALL STRAW BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
 - THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH RHODE ISLAND STANDARD SPECIFICATIONS 200.01, AS AMENDED.
 - THE SEED MIX SHALL BE INOCULATED WITHIN 24-HOURS BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
 - THE DESIGN MIX UTILIZED IN ALL DISTURBED AREAS TO BE SEEDDED SHALL BE COMPRISED OF THE FOLLOWING:
- | TYPE | % BY WEIGHT | SEEDING DATE |
|---------------------|-------------|-------------------|
| CREeping RED FESCUE | 70 | APRIL 1 - JUNE 15 |
| ASTORIA BENTGRASS | 5 | AUGUST 15 - OCT. |
| BIRDFOOT TREFLOE | 10 | |
| PERENNIAL RYEGRASS | 15 | |
- APPLICATION RATE 100 LBS/ACRE
LIMING AND FERTILIZING AS REQUIRED TO COMPLEMENT OR UPGRADE EXISTING CONDITIONS.
- ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR SHALL BE REPAIRED AND/OR RESEEDED.
 - THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.
 - STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
 - STOCKPILES OF TOPSOIL AND EARTH MATERIALS SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 2:1 AND STOCKPILE SHALL ALSO BE SEEDDED AND/OR STABILIZED. THE STOCKPILES SHALL BE SURROUNDED BY STACKED STRAW BALES AND/OR SILT FENCE.
 - ON SLOPES STEEPER THAN 30% MULCH APPLICATIONS SHALL BE TACKLED DOWN BY "CRIMPING" OR "TRACKING".
 - TREES TO BE RETAINED SHALL BE FENCED OR ROPED OFF TO PROTECT THEM FROM CONSTRUCTION EQUIPMENT.
 - ALL PROPOSED PLANTINGS MUST BE ACCOMPLISHED AS EARLY AS POSSIBLE UPON COMPLETION OF GRADING AND CONSTRUCTION, AND AT LEAST PRIOR TO ANY ON-SITE OCCUPANCY.
 - PLANTINGS SHALL BE MAINTAINED BY THE PROPERTY OWNER TO ENSURE SURVIVAL.
 - SHOULD ANY OR ALL OF THE PROPOSED PLANTS FAIL TO SURVIVE AT LEAST ONE (1) FULL GROWING SEASON FROM THE TIME THEY HAVE BEEN PLANTED, THE OWNER SHALL BE FULLY RESPONSIBLE FOR REPLACING AND MAINTAINING THE SAME PLANT SPECIES FOR ONE (1) ADDITIONAL GROWING SEASON.
 - ALL DISTURBED AREAS MUST BE SEEDDED OR PLANTED WITHIN THE CONSTRUCTION SEASON.
 - TEMPORARY SEEDING MUST BE DONE WITHIN ONE (1) MONTH AFTER DISTURBANCE.
 - ALL DISTURBED AREAS MUST BE PERMANENTLY SEEDDED OR PLANTED BEFORE OCTOBER 1ST, IF NOT THEY MUST BE TEMPORARILY SEEDDED. SLOPES CONSTRUCTED AT, OR STEEPER THAN, 15% SHALL HAVE TEMPORARY EROSION CONTROL MATTING UTILIZED AS A SUPPORTIVE METHOD IN ADDITION TO THE METHODS DESCRIBED ABOVE UNLESS IN THE CASE WHERE PERMANENT TURF REINFORCEMENT MATS ARE INSTALLED IMMEDIATELY UPON CONSTRUCTION OF THE SLOPE. IN NO CASE SHALL STEEP SLOPES BE LEFT UNPROTECTED.
 - ALL PROPOSED INLETS AND OUTLETS SHALL BE PROTECTED WITH TURF REINFORCEMENT AS PROPOSED ON THE PLANS AND/OR STRAW BALE INLET AND OUTLET PROTECTION DEVICES. SEE DETAILS.
 - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND PROCEDURES SET FORTH IN THE TOWN ZONING ORDINANCES; RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL, AMENDED MARCH 2015 AS PREPARED BY THE RIDEM AND CRMC; AND RHODE ISLAND EROSION AND SEDIMENT CONTROL HANDBOOK AS PREPARED BY RHODE ISLAND STATE CONSERVATION COMMITTEE, REVISED 2014, (AS REVISED).

- EXTREME CARE SHALL BE EXERCISED AS TO PREVENT ANY MATERIALS FROM ENTERING THE ROADWAYS, ROADWAY DRAINAGE SYSTEMS, ADJACENT PROPERTY WETLANDS, PERIMETER WETLANDS, AND RIVERBANK WETLANDS.
- STACKED STRAW BALES AND/OR SILT FENCE SHALL BE INSTALLED WHERE SHOWN ON THE PLAN AND AS REQUIRED TO PREVENT SEDIMENTATION INTO PERIMETER AND RIVERBANK WETLANDS.
- DENUDED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR MORE THAN 2 WEEKS OF TIME OR FOR THE INACTIVE WINTER SEASON.
- ALL DISTURBED SOILS EXPOSED PRIOR TO OCTOBER 15 OF ANY CALENDAR YEAR SHALL BE SEEDDED OR PROTECTED BY THAT DATE. ANY SUCH AREAS THAT DO NOT HAVE ADEQUATE VEGETATIVE STABILIZATION, AS DETERMINED BY THE RESIDENT ENGINEER OR ENVIRONMENTAL INSPECTOR, BY NOVEMBER 15 OF ANY CALENDAR YEAR, MUST BE STABILIZED THROUGH THE USE OF EROSION CONTROL MATTING OR STRAW MULCH, IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK OR AS DIRECTED BY THE RESIDENT ENGINEER OR INSPECTOR. IF WORK CONTINUES WITHIN ANY OF THESE AREAS DURING THE PERIOD FROM OCTOBER 15 THROUGH APRIL 15, CARE MUST BE TAKEN TO ENSURE THAT ONLY THE AREA REQUIRED FOR THAT DAY'S WORK IS EXPOSED, AND ALL ERODIBLE SOIL MUST BE RESTABILIZED WITHIN 5 WORKING DAYS. ANY WORK TO CORRECT PROBLEMS RESULTING FROM FAILURE TO COMPLY WITH THIS PROVISION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THERE WILL BE NO SEPARATE PAYMENT FOR THIS PROVISION, IT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 2 WEEKS OF FINAL GRADING.
- PREPARE TEMPORARY SEEDING AREA, PROVIDE AND PLANT SEED IN ACCORDANCE WITH 'RHODE ISLAND EROSION AND SEDIMENT CONTROL HANDBOOK' AS PREPARED BY THE RHODE ISLAND STATE CONSERVATION COMMITTEE, REVISED 2014, (AS REVISED).

SEED MIX:
ANNUAL RYE GRASS 1.5 LBS/1,000 SQ. FT.

- TEMPORARY TREATMENTS TO STABILIZE EXPOSED SOILS SHALL CONSIST OF STRAW OR FIBER MULCH OR PROTECTIVE COVERS, SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCLESOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK WHEN SOILS ARE EXPOSED FOR TWO WEEKS OR MORE OR AS ORDERED BY THE RESIDENT ENGINEER OR OWNER AT NO ADDITIONAL COST.
- STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 4,000 LBS/ACRE.
- ALL NEW STRAW BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED AND POTENTIAL SEDIMENTATION SOURCES ARE REMOVED.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT/REPLACE AS NEEDED.
- ADDITIONAL STRAW BALES/SILT FENCE OR OTHER TREATMENTS SHALL BE PROVIDED AS DIRECTED BY ENGINEER, RIDEM OR LOCAL REPRESENTATIVES AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL INSPECT THE SOIL EROSION CONTROL DEVICES AFTER EVERY RAIN STORM EVENT AND EVERY 7 DAYS (WHICH EVER COMES FIRST). ANY SOIL MIGRATION PAST THE DEVICES SHALL BE RE-ESTABLISHED TO PREVENT SOIL EROSION. ALL ACCUMULATED SEDIMENT IN FRONT OF THE DEVICES SHALL BE REMOVED AFTER EVERY RAIN STORM EVENT.
- ALL DISTURBED SOIL AREAS SHALL BE PROTECTED AGAINST SOIL EROSION BY PLACEMENT OF STRAW BALES AND/OR SILT FENCE ON THE DOWN GRADIENT SIDE OF THE DISTURBED AREA(S). SHOULD THE VOLUME AND/OR RATE OF STORMWATER RUNOFF BE TOO GREAT FOR A SINGLE DEVICE, THEN MULTIPLE DEVICES ARE REQUIRED SUCH AS SILT FENCE BACKED-UP WITH STRAW BALES. THESE ADDITIONAL DEVICES ARE NOT SHOWN ON THE PLAN BUT SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- AT THE END OF THE PROJECT CONSTRUCTION ALL SEDIMENT IN MANHOLE SUMPS AND WITHIN ANY DRAINAGE STRUCTURE OR BMP SHALL BE REMOVED.

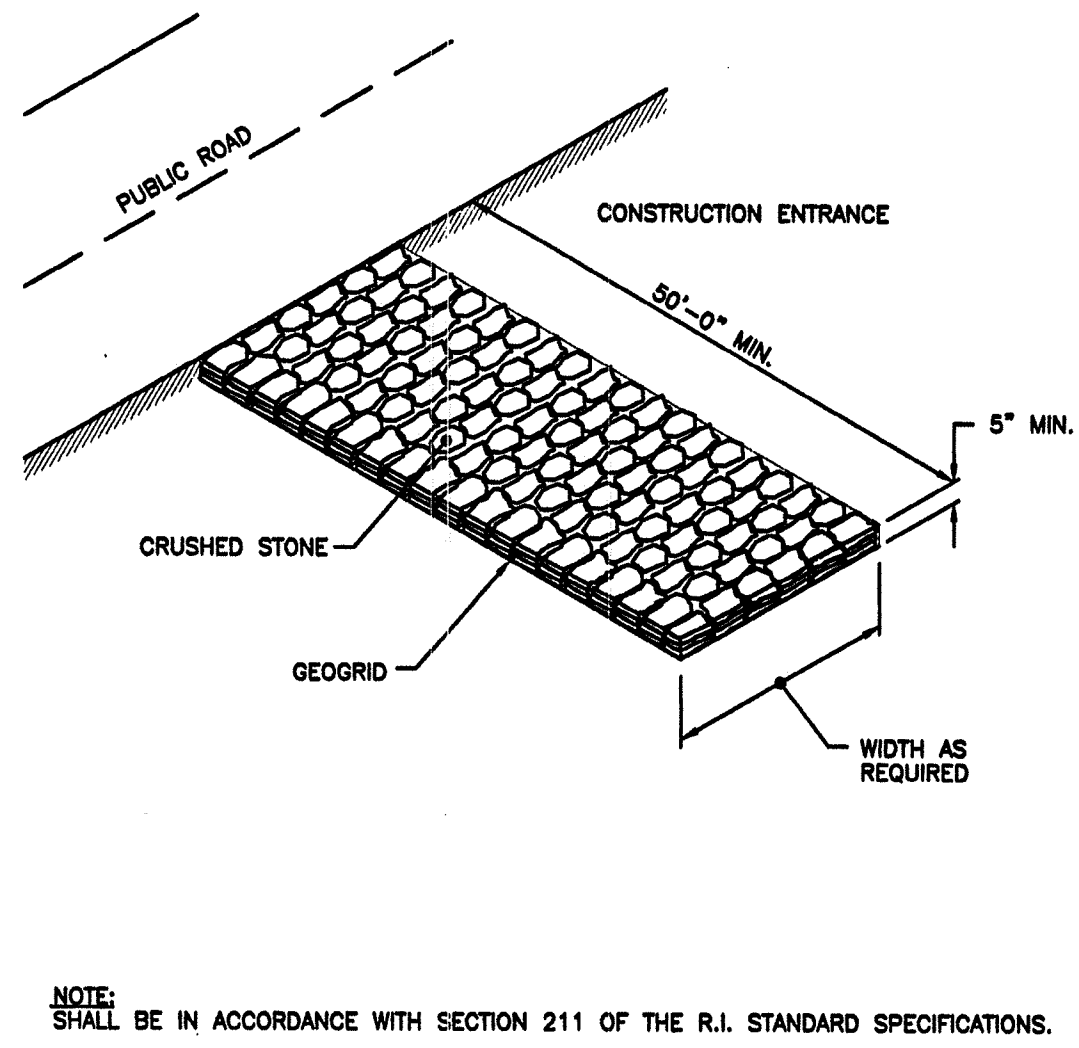
SEQUENCE AND STAGING OF LAND DISTURBING ACTIVITIES:

- CONTRACTOR TO REFER TO RIDEM RIDES SOIL EROSION AND SEDIMENT CONTROL (SESC) REPORT AS WELL AS THESE DRAWINGS.
- INSTALL SEDIMENTATION PROTECTION DEVICES IN EXISTING CATCHBASINS AND INLET STRUCTURES.
- SURVEY AND STAKE LIMIT OF DISTURBANCE FOR PLACEMENT OF SEDIMENTATION CONTROL DEVICES.
- PLACE PERIMETER SEDIMENTATION CONTROL DEVICES. SEE DETAILS. IN NO CASE SHALL THE LIMIT OF WORK EXTEND BEYOND THE SEDIMENTATION CONTROL DEVICES.
- CONSTRUCT CONSTRUCTION ENTRANCE DEVICES LOCATED ALONG ROUTE 138. SEE DETAIL.
- CLEAR AND GRUB AREA WITHIN THE LIMIT OF DISTURBANCE.
- CONSTRUCT TEMPORARY SEDIMENT TRAPS.
- CLEAR AND ROUGH GRADE ROADS AND BUILDING SITES.
 - INSTALL AND COMPACT GRAVEL BASE COURSE FOR ROADS.
 - EXCAVATE AND POUR BUILDING FOUNDATION
- CONSTRUCT UTILITIES (SEWER, WATER, DRAINAGE, ETC...)
 - ENSURE THAT DRAIN MANHOLE GRATES ARE ABOVE GRADE TO ENSURE NO RUNOFF ENTERS INTO DRAINAGE SYSTEM.
 - POUR BITUMINOUS CONCRETE BASE COURSE.
 - FINISH REMAINDER OF CONSTRUCTION AND PAVE BITUMINOUS CONCRETE SURFACE COURSE.
 - REMOVE TEMPORARY SOIL EROSION DEVICES.
 - CLEAN OUT ALL DRAINAGE BASINS AND STRUCTURES AS NEEDED. REMOVE AND DISPOSE ALL ACCUMULATED SEDIMENT IN A SUITABLE AREA.

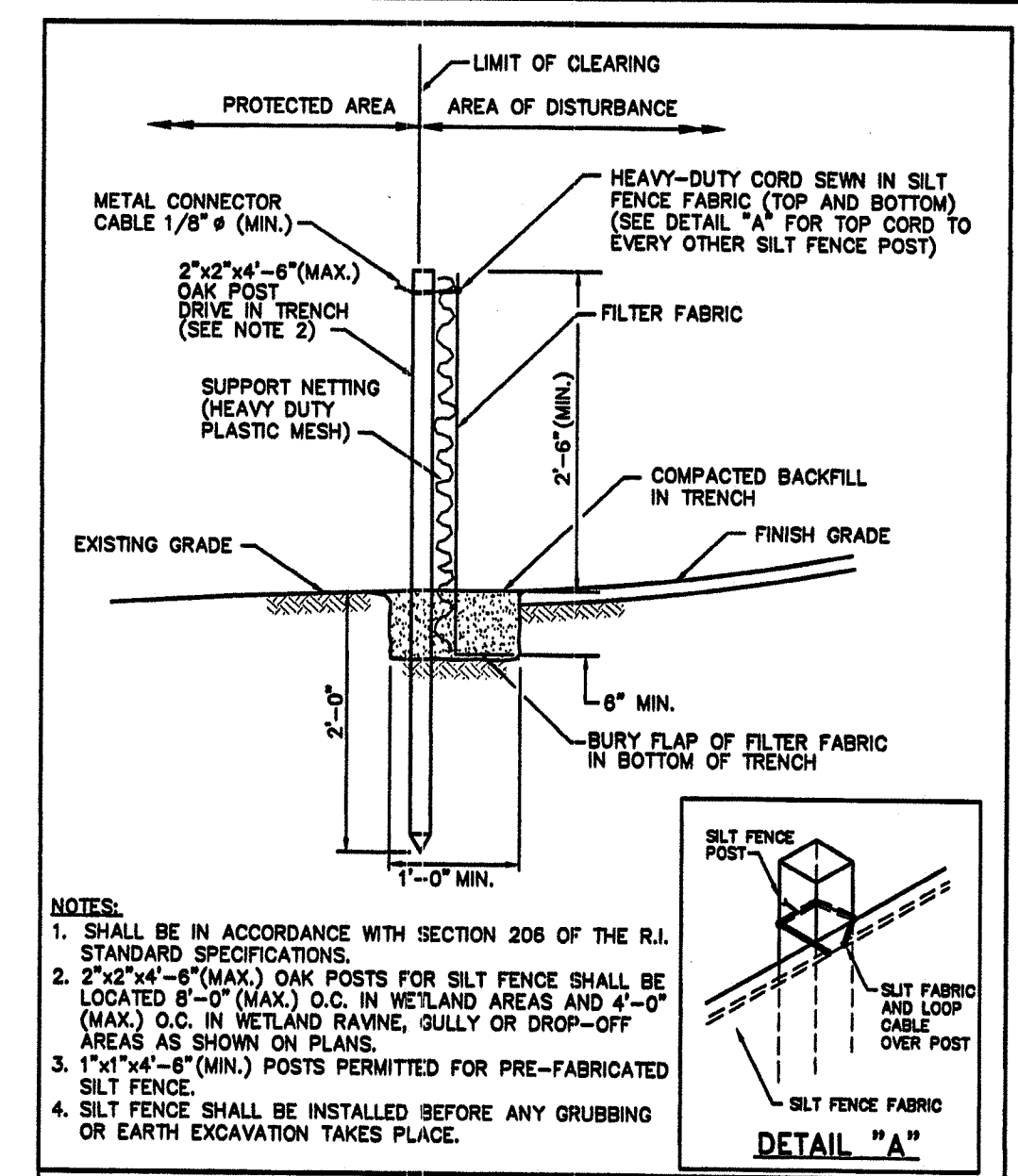
- REFERENCE IS MADE TO APPENDIX G 'POLLUTION PREVENTION AND SOURCE CONTROLS' OF THE RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL, AMENDED 2015. THIS DOCUMENT SHALL BE REFERENCED WHEN IMPLEMENTING THE POLLUTION PREVENTION TECHNIQUES. A BRIEF SUMMARY OF THE TECHNIQUES IS PROVIDED BELOW. REFER TO THE ABOVE REFERENCE FOR ALL TECHNIQUES TO BE IMPLEMENTED.
- SOLID WASTE CONTAINMENT:**
 - OWNER TO PROVIDE TRASH CONTAINER. CONTAINER TO HAVE A COVER TO PREVENT TRASH FROM BLOWING OUT.
 - SWEEP STREET/PARKING AREA ANNUALLY.
- HAZARDOUS MATERIALS CONTAINMENT:**
 - CONTRACTOR TO STORE ALL HAZARDOUS MATERIALS INSIDE STORAGE LOCKERS OR OTHER APPROVED METHODS WHICH HAVE SECONDARY CONTAINMENT SYSTEMS.
 - SECONDARY CONTAINMENT MUST BE INCLUDED WHEREVER SPILLS MIGHT OCCUR (E.G. FUELING AND HAZARDOUS MATERIAL TRANSFER AND LOADING AREAS).
- ROADS AND PARKING AREA MANAGEMENT:**
 - SWEEP STREET/PARKING AREA ANNUALLY.
 - USE DEICING CHEMICALS AND SAND JUDICIOUSLY SINCE THEY CAUSE WATER QUALITY PROBLEMS. PROVIDE AND SPREAD IN ACCORDANCE WITH APPENDIX G RECOMMENDATIONS.
 - FLOW SNOW AND STORE ACCUMULATED SNOW PILES AWAY FROM SAND FILTER SYSTEM AND SEDIMENT FOREBAY.
 - DEBRIS SHOULD BE CLEANED FROM THE SITE PRIOR USING THE SITE FOR SNOW DISPOSAL.
 - DEBRIS SHOULD BE CLEANED FROM THE SITE AND PROPERLY DISPOSED OF AT THE END OF THE SNOW SEASON.
 - ONLY USE ASPHALT BASED SEALANTS WHEN SEALING THE PAVEMENTS. DO NOT USE SEAL-TAR BASED SEALANTS SINCE THESE ARE MORE TOXIC.
- SEPTIC SYSTEM:**
 - NO SEPTIC SYSTEMS PROPOSED.
- LAWN, GARDEN, AND LANDSCAPE MANAGEMENT:**
 - LAWN CONVERSION - REDUCE THE AMOUNT OF LAWN BY REPLANTING LAWN WITH GARDEN BEDS CONTAINING FLOWERS/SHRUBS. LAWNS REQUIRE MORE MAINTENANCE THAN FLOWER BEDS.
 - SOIL BUILDING - MAINTAIN A HEALTHY LAWN BY TESTING SOIL FOR PH, FERTILITY, COMPACTION, TEXTURE, AND EARTH WORM CONTENT.
 - GRASS SELECTION - SELECT DROUGHT TOLERANT GRASS SPECIES. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - MOWING AND THATCH MANAGEMENT - KEEP GRASS HEIGHT HIGH SUCH AS 2 TO 3 INCHES IN HEIGHT. THIS WILL REDUCE WEED GROWTH.
 - FERTILIZATION - MINIMIZE FERTILIZATION. FERTILIZE NO MORE THAN TWICE A YEAR. APPLY CAREFULLY SO FERTILIZER DOES NOT SPREAD ONTO ADJACENT AREAS. REFRAIN FROM THE USE OF PHOSPHATE BASED FERTILIZERS. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - WEED MANAGEMENT - NEVER USE CHEMICAL HERBICIDES TO ELIMINATE OR CONTROL WEEDS. THE OWNER SHALL REMOVE WEEDS BY PULLING OR DIGGING OUT. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - PEST MANAGEMENT - LIMIT PESTICIDE USE. CHOOSE PESTICIDES THAT POSE THE LEAST RISK TO HUMAN HEALTH AND THE ENVIRONMENT. REFER TO APPENDIX G FOR ADDITIONAL INFORMATION.
 - SENSIBLE IRRIGATION - WATER NO MORE THAN 1" PER WEEK. USE DROUGHT-RESISTANT GRASSES. CUT GRASS AT 2-3 INCHES.

SEDIMENTATION CONTROL PROGRAM:

- EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
- DURING CONSTRUCTION, THE CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUN-OFF FLOW DURING STORMS.
- SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED CLOSELY AND MAINTAINED PROMPTLY AFTER EACH RAINFALL.
- CARE SHALL BE TAKEN SO AS NOT TO PLACE "REMOVED SEDIMENTS" WITHIN THE PATH OF EXISTING, NEWLY CREATED (BOTH TEMPORARY AND PERMANENT) OR PROPOSED WATERCOURSES OR THOSE AREAS SUBJECT TO STORMWATER FLOWAGE.
- ADDITIONAL STRAW BALES OR SANDSACS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
- SEDIMENTATION TRAPS SHALL BE PROVIDED AT ALL DRAINAGE STRUCTURES DURING CONSTRUCTION (SILT SACS, STRAW BALES, TEMPORARY DITCHES, ETC).
- EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AT THE SITE PRIOR TO THE START OF CONSTRUCTION AND BE PROPERLY MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED INCLUDING:
 - THE INSTALLATION OF AN EROSION CONTROL FENCE IN ALL LOCATIONS DOWN ON THE APPROVED SITE PLANS AND WHERE OTHERWISE NECESSARY TO PREVENT SEDIMENTS FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
 - ALL DISTURBED AREAS ARE TO BE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER UNTIL THE COMPLETION OF THE PROJECT. AREAS EXPOSED FOR EXTENDED PERIODS ARE TO BE COMPLETELY COVERED WITH SPREAD STRAW MULCH. CATCH BASINS WILL BE PROTECTED WITH SILT SACS & STRAW BALE FILTERS THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED. SUMPS ARE TO BE CLEANED IMMEDIATELY FOLLOWING INSTALLATION OF PERMANENT PAVEMENT.
 - OUTFALLS ARE TO BE PROTECTED BY STRAW BALE FILTERS UNTIL ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER.
 - ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
 - THE LIMITS OF ALL CLEARING, GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE SHALL REMAIN TOTALLY UNDISTURBED.
 - UPON COMPLETION OF CONSTRUCTION OF SITE IMPROVEMENTS AND THE STORMWATER DRAINAGE SYSTEM, ALL CATCH BASINS AND STORM DRAIN PIPING SHALL BE CLEANED OF SEDIMENT. SEDIMENT FOREBAY AND SAND FILTER SHALL BE CLEANED OF SEDIMENT TO THE DESIGN GRADES INDICATED.
 - AT NO TIME DURING CONSTRUCTION SHALL THE SUBGRADE OF THE SITE BE SUCH THAT SURFACE RUNOFF WILL BE PERMITTED TO DIRECTLY ENTER ANY DRAINAGE STRUCTURE. A TEMPORARY DEPRESSED AREA AROUND THE STRUCTURE SHALL BE INCORPORATED AS A SEDIMENTATION TRAP. THE MOUTH OF THE TRAP SHALL BE LINED WITH STRAW BALES AROUND THE COMPLETE PERIMETER. DURING ALL PRELIMINARY STAGES, THE TOP OF THE STRUCTURE SHALL ALWAYS BE HIGHER THAN THE SUBGRADE. STRAW BALE EROSION CHECKS SHALL BE MAINTAINED AROUND ALL CATCH BASINS UNTIL ALL UPGRADIENT DISTURBED AREAS ARE STABILIZED BY PAVEMENT OR VEGETATION.
 - ALL COMPONENTS OF THE DRAINAGE SYSTEM MUST BE CLEANED OF SEDIMENT BY THE APPLICANT OR HIS REPRESENTATIVE IMMEDIATELY AFTER CONSTRUCTION IS COMPLETED.
 - INSPECT TEMPORARY DIVERSIONS AND THEIR COMPONENTS ONCE A WEEK AND AFTER EVERY RAINFALL. DAMAGE CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHOULD BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
 - CHECK DAMS SHALL BE INSTALLED EVERY 300 FEET FOR SLOPES OF 1% OR LESS, EVERY 200 FEET FOR SLOPES OF 2% EVERY 150 FEET FOR SLOPES OF 3% TO 5%, AND EVERY 100 FEET FOR SLOPES OF 5% OR GREATER.
 - CHECK DAMS SHALL BE INSTALLED EVERY 20 FEET ALONG THE PROPOSED SWALE.
 - SEDIMENTS SHOULD BE REMOVED FROM THE CHECK DAM WHEN IT REACHES ONE-HALF THE DAM HEIGHT.



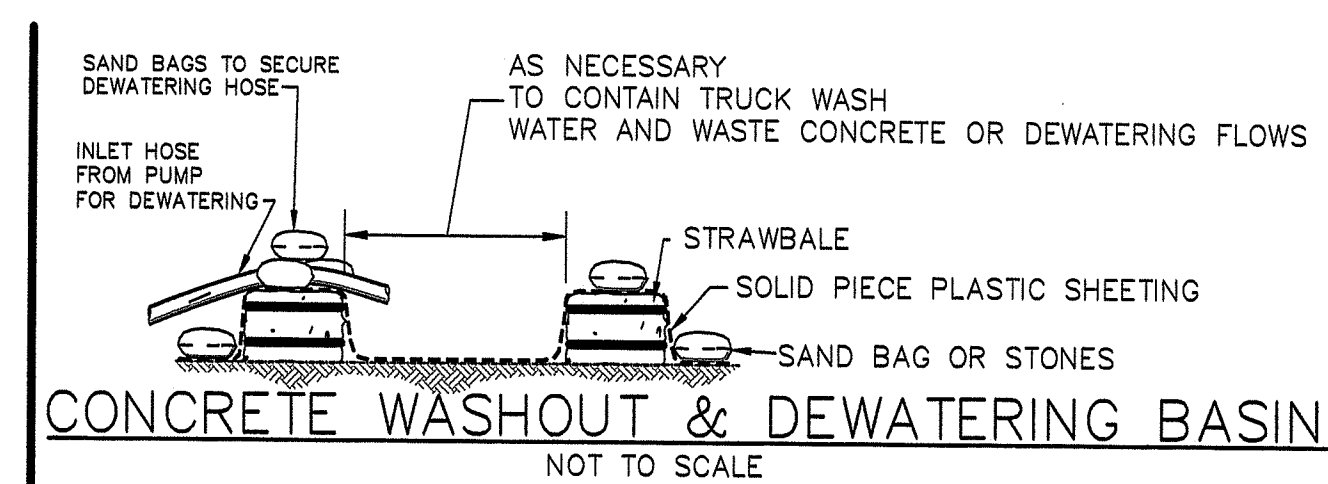
RHODE ISLAND DEPARTMENT OF TRANSPORTATION
CONSTRUCTION ACCESS
DATE: JUNE 15, 1998
R.I. STANDARD 9.9.0



RHODE ISLAND DEPARTMENT OF TRANSPORTATION
SILT FENCE DETAIL
DATE: JUNE 15, 1998
R.I. STANDARD 9.2.0

TEST HOLE DATA

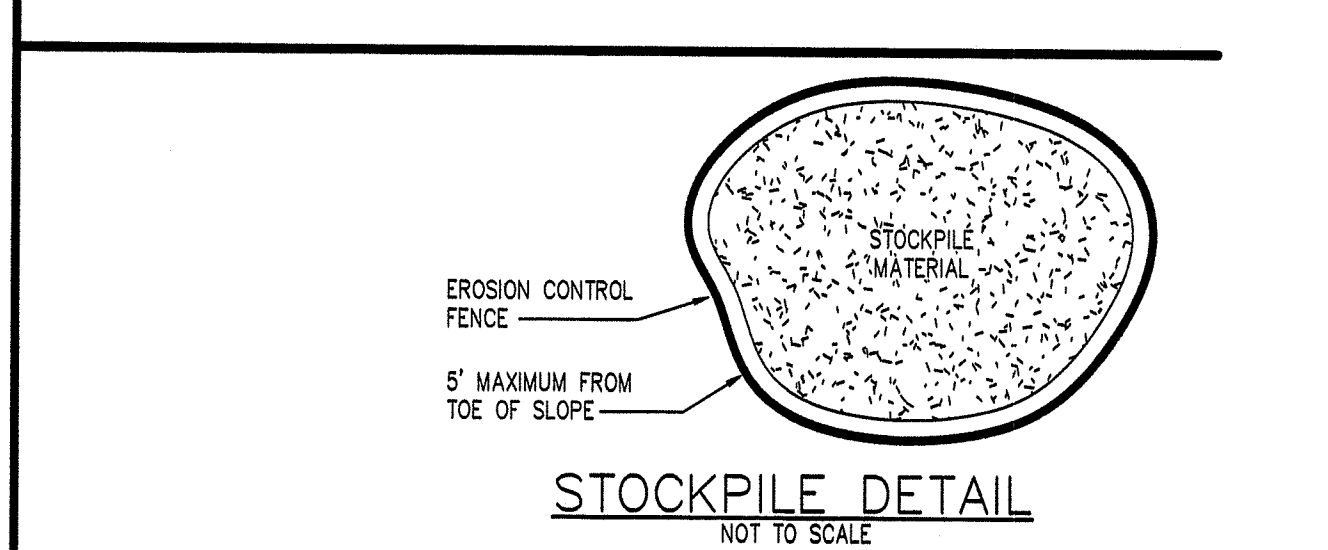
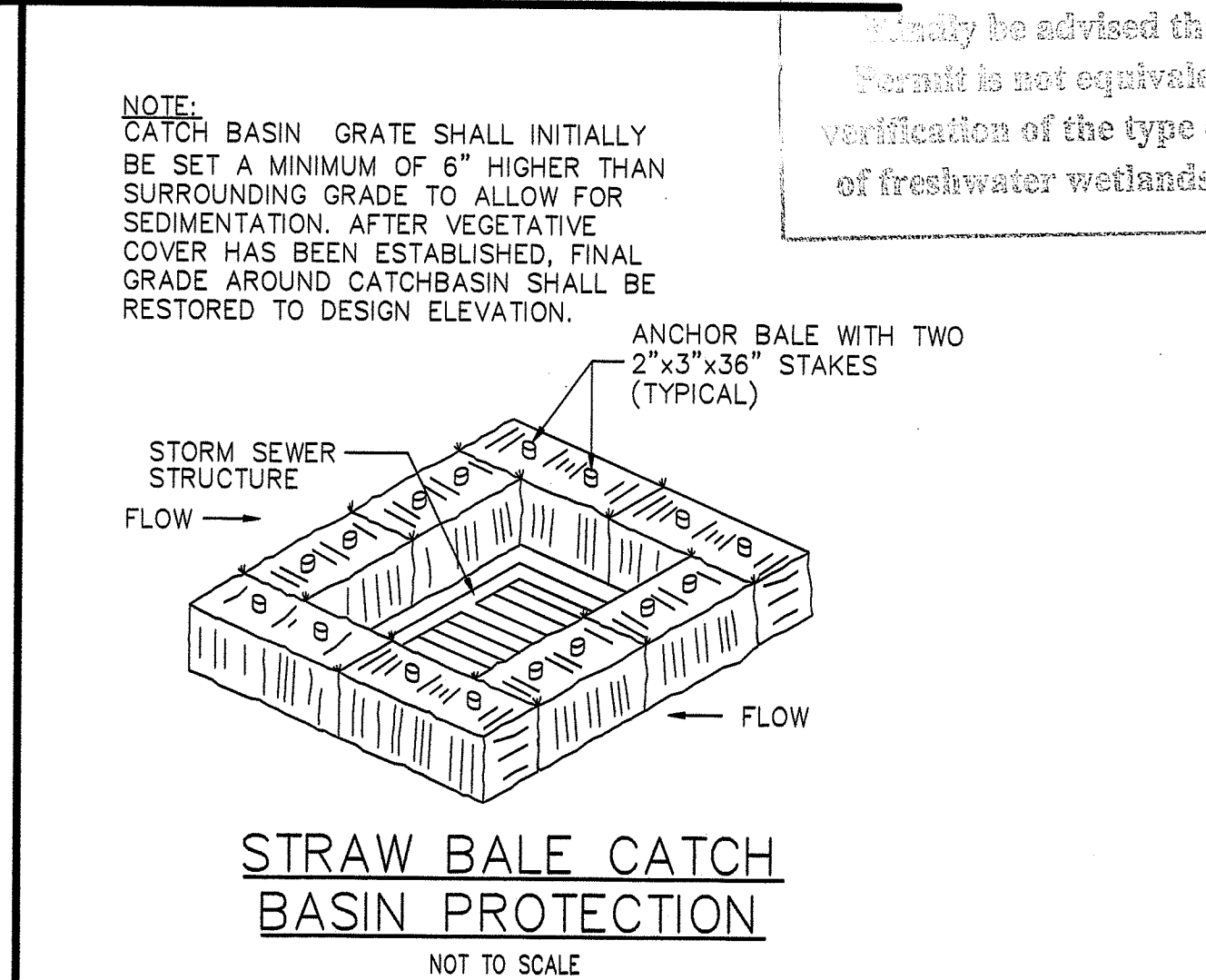
TH#	DATE	SOIL DATA	SHWPT DEPTH	TOTAL DEPTH
D-1	2/15/2016	A 0'-6" SL		
		B 6"-20" SL	10'	12'
		C 20"-144" S/GCOS		
D-2	2/15/2016	A 0'-8" SL		
		B 8"-24" SL	10'	12'
		C 24"-144" S/GCOS		
D-3	2/15/2016	A 0'-7" FSL		
		B 7"-26" FSL	10'	10'
		C 26"-120" VGS/CBGS		
D-4	2/15/2016	A 0'-7" FSL		
		B 7"-30" FSL	10'	10'
		C 30"-120" CB,VGCOSS		
D-6	2/15/2016	A 0'-10" SIL		
		B 10"-24" SIL	10'	12'
		C 24"-32" SIL 2C 32"-108" GLS		
D-7	2/15/2016	A 0'-5" FSL		
		B 5"-13" SL	10'	12'
		C 13"-144" VGS		
D-8	2/15/2016	A 0'-8" FSL		
		B 8"-15" GSL	10'	12'
		C 15"-144" G/S		
D-13	2/16/2016	A 0'-144" VGCOSS/COS	10'	12'
		B 0'-6" FSL		
		C 6"-20" GFSL	10'	12'
D-16	2/16/2016	A 0'-2" FSL	2'	8'
		B 2"-24" FSL		
		C 24"-96" VFSL		



CONCRETE WASHOUT & DEWATERING BASIN
NOT TO SCALE

INSTALLATION:
• REMOVE DRAIN GRATE
• INSERT SILTSACK
• REMOVE FILLED SILTSACKS
• CLEAN AND REUSE

SILT SAC
SCALE: NOT TO SCALE



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED SEP 10 2019 FILE # 19-0167
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Environmental Management
SEP 9 2019
Permit Application Center

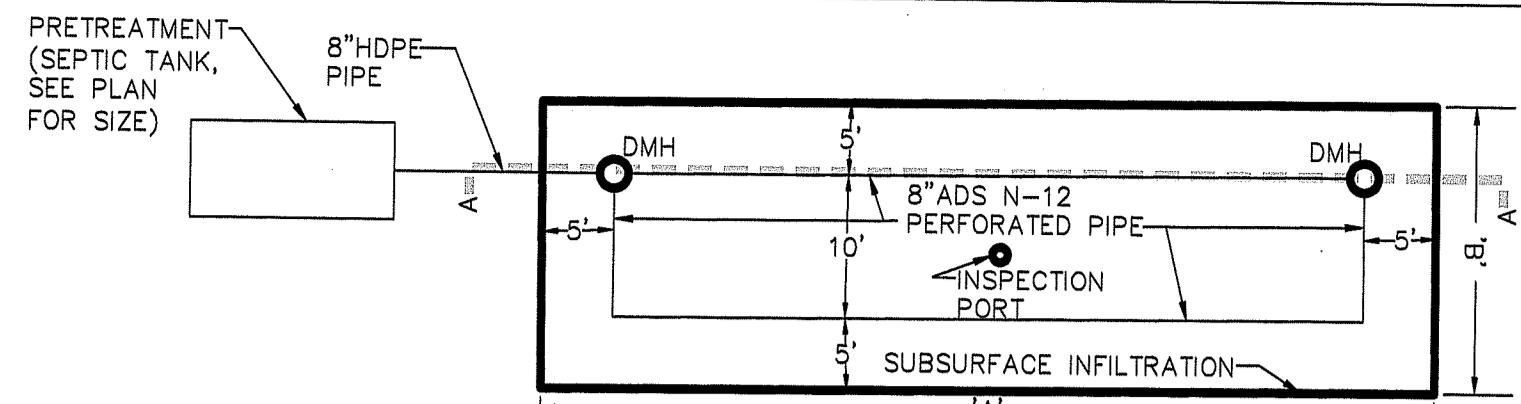
DETAIL SHEET - 1
A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
87 KINGSTOWN ROAD
RICHMOND, RHODE ISLAND
PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
SCALE: AS SHOWN DATE: 05/25/19 SHEET 13 OF 15

REVISIONS:

NO.	DATE	DESCRIPTION	BY
1.	08/14/19	DEM COMMENTS	DKM

REGISTRATIONS:
CARRIGAN ENGINEERING, INC.
REGISTERED PROFESSIONAL ENGINEER
CRAIG RICHARD CARRIGAN

CARRIGAN ENGINEERING, INC.
CIVIL AND ENVIRONMENTAL ENGINEERING
86 BROOK FARM ROAD SOUTH
WAKEFIELD, RI 02879
PHONE: (401) 789-6865

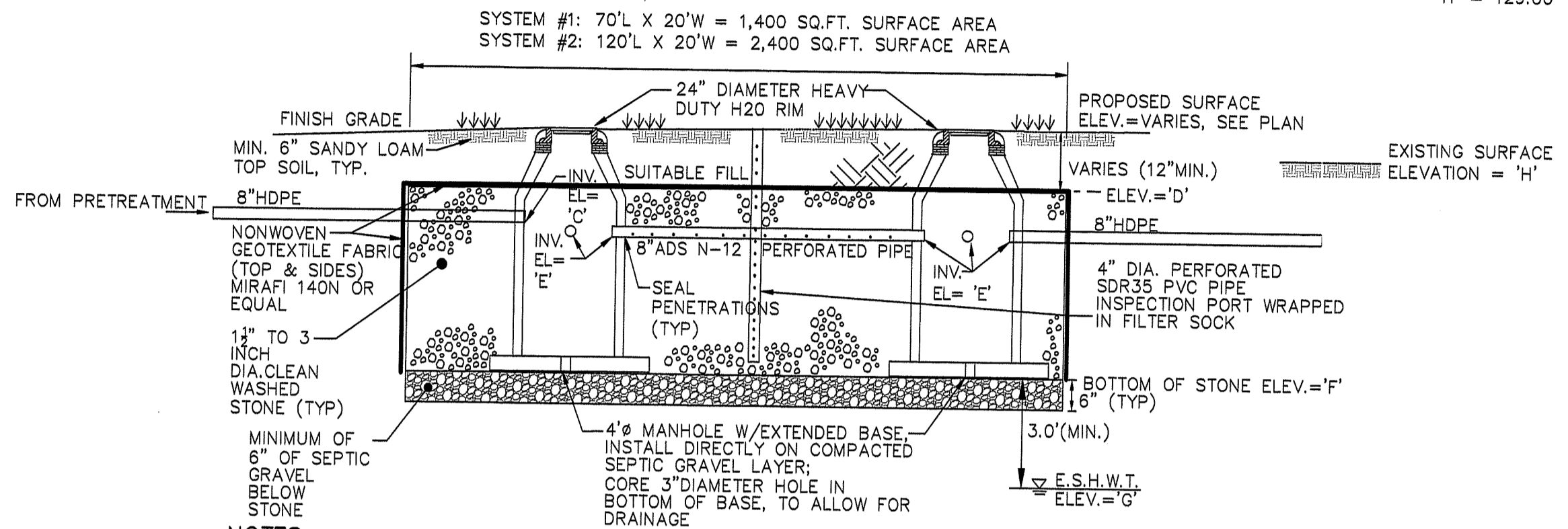


DIMENSION/ELEVATION SCHEDULE:

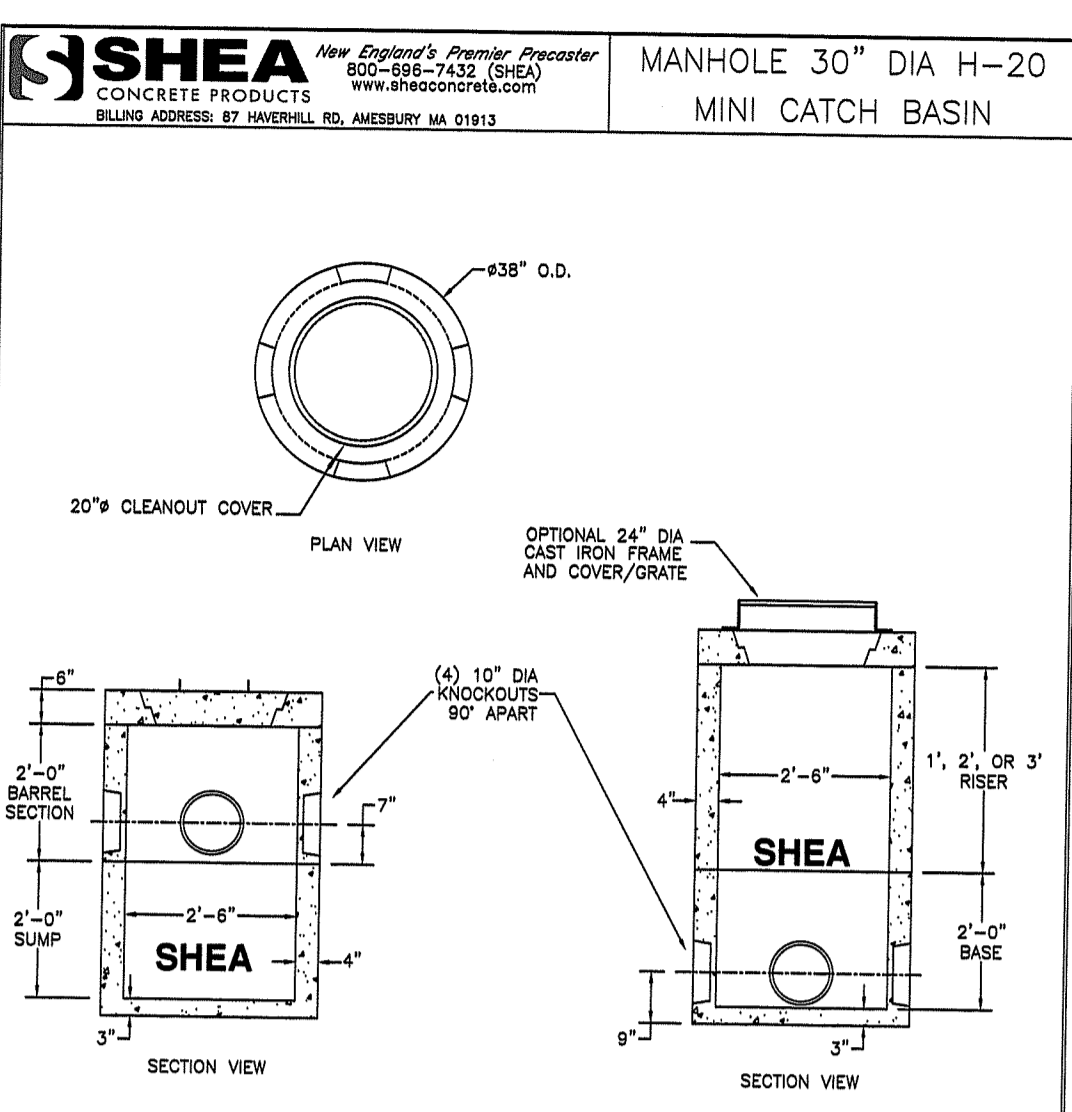
SYSTEM #1	SYSTEM #2	SYSTEM #3
A' = 70'	A' = 120'	A' = 60'
B' = 20'	B' = 20'	B' = 40'
C' = 125.50'	C' = 125.50'	C' = 125.00'
D' = 127.50'	D' = 127.50'	D' = 124.00'
E' = 125.50'	E' = 125.50'	E' = 123.00'
F' = 123.00'	F' = 123.00'	F' = 122.00'
G' = 119.00'	G' = 119.00'	G' = 119.00'
H' = 129.5'	H' = 129.5'	H' = 129.5'

SYSTEM #4	SYSTEM #5
A' = 48'	A' = 42'
B' = 20'	B' = 10'
C' = 124.57'	C' = 126.10'
D' = 127.00'	D' = 126.00'
E' = 124.50'	E' = 125.00'
F' = 123.00'	F' = 122.00'
G' = 120.00'	G' = 119.00'
H' = 130.5'	H' = 129.00'

SUBSURFACE INFILTRATION SYSTEM PLAN VIEW
NOT TO SCALE

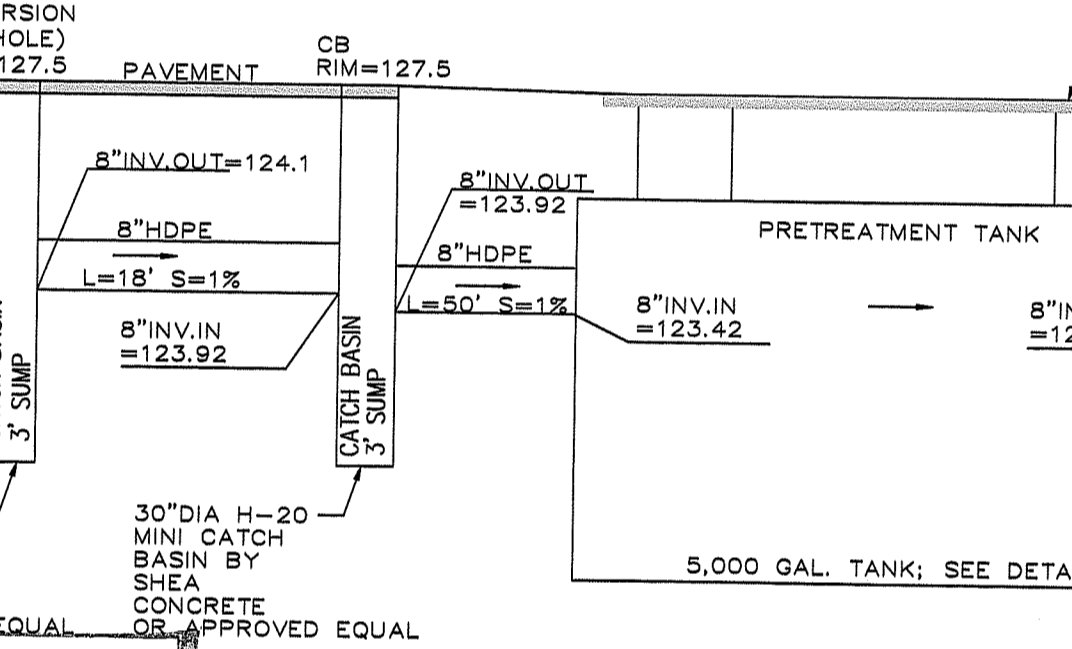


SUBSURFACE INFILTRATION SYSTEM SECTION A-A
NOT TO SCALE

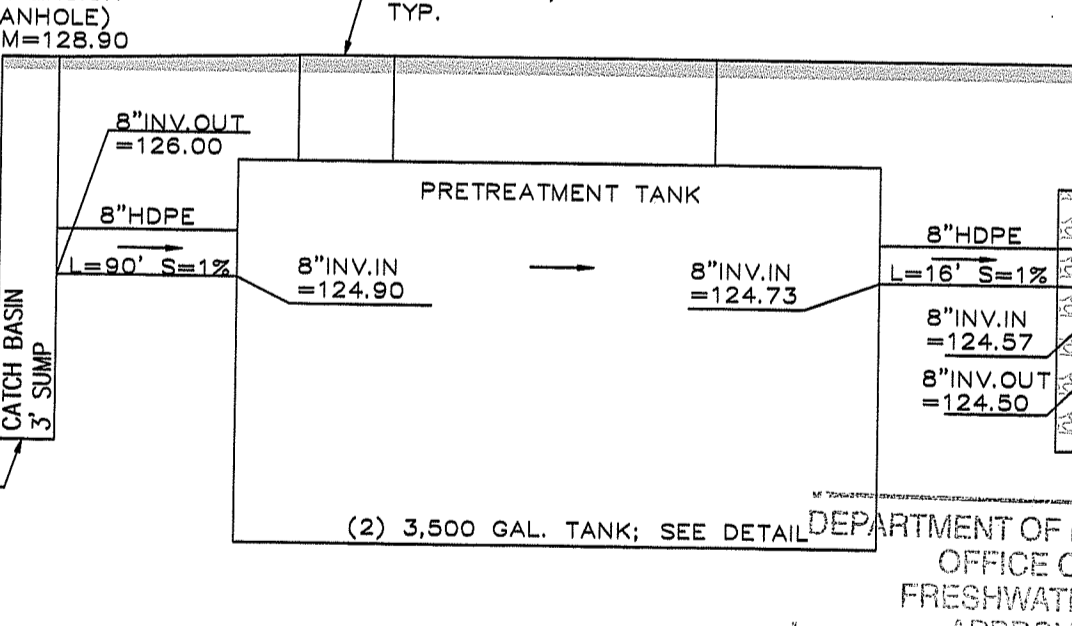


ITEM NO. WEIGHT

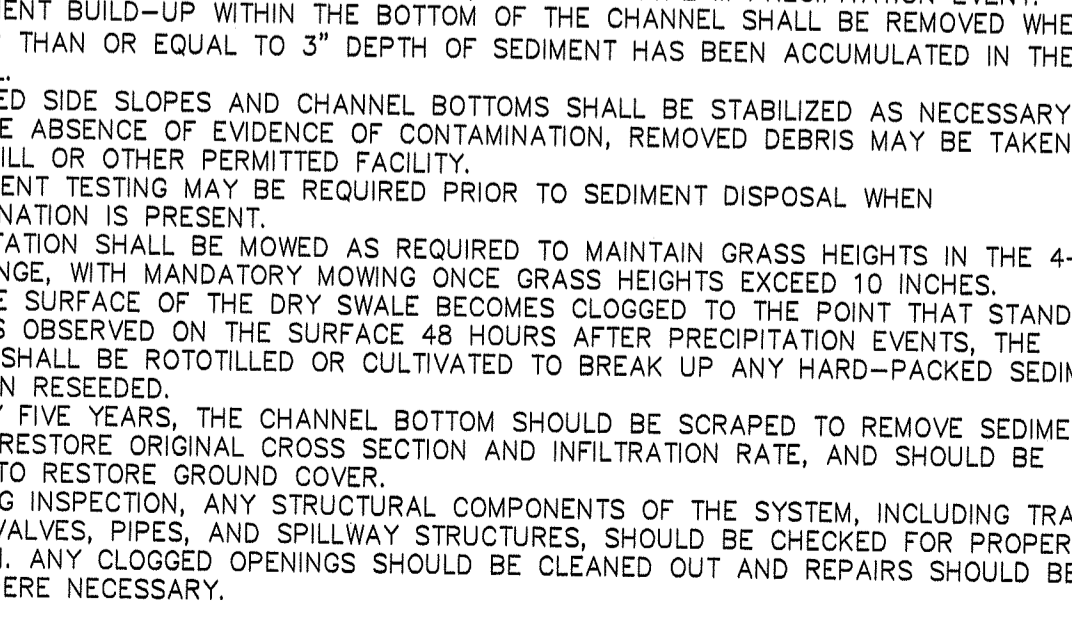
ITEM NO.	WEIGHT
1-0\"/>	440
2-0\"/>	800
3-0\"/>	1300
4-0\"/>	1100
5-0\"/>	550



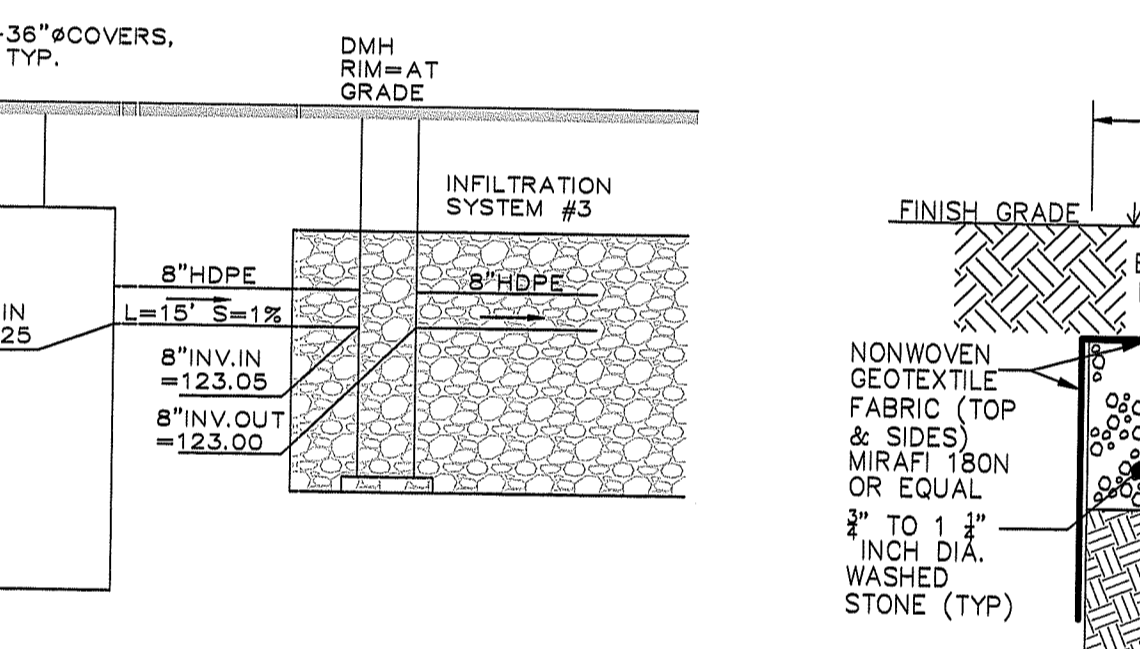
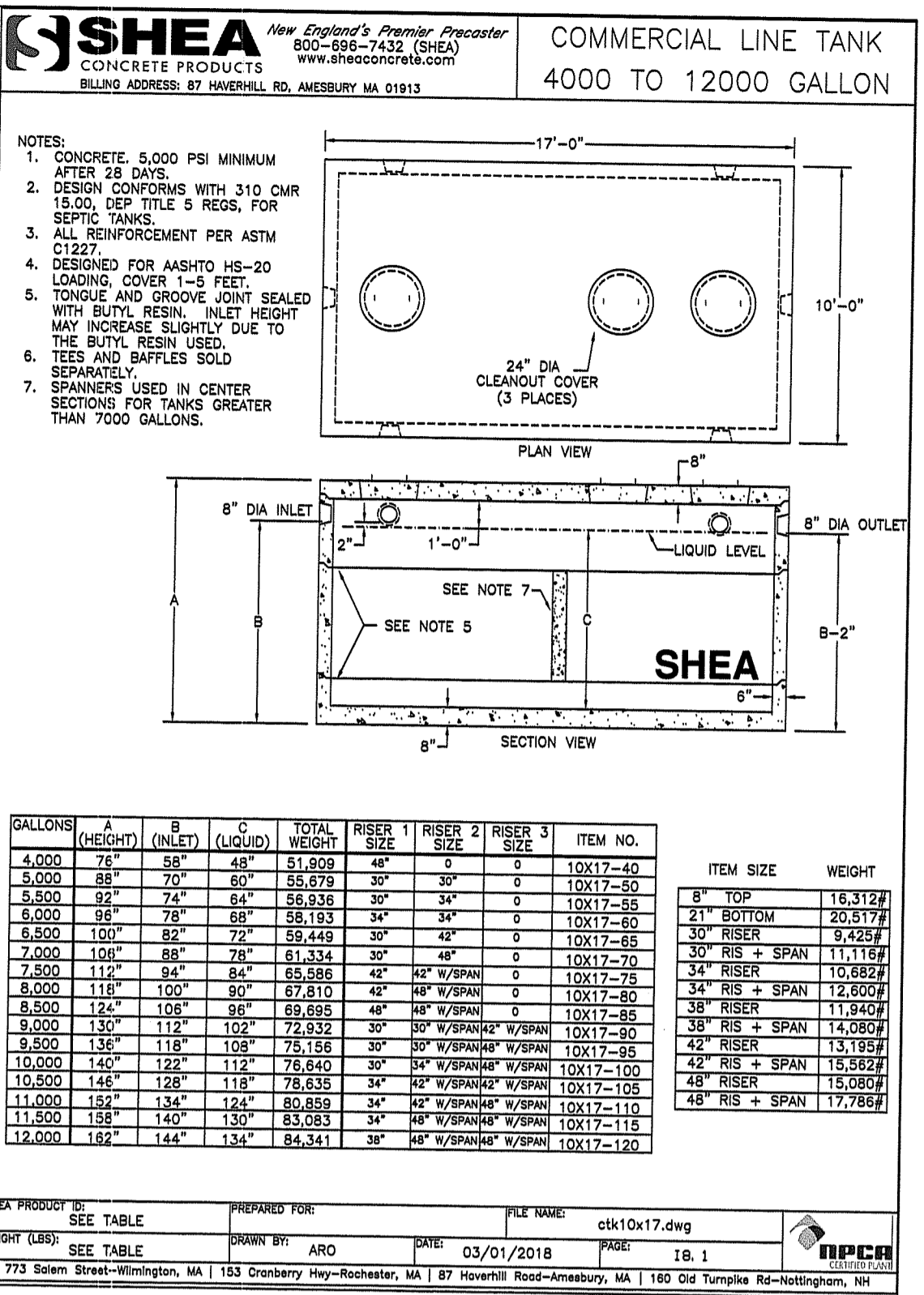
SUBSURFACE INFILTRATION SYSTEM #3 PRETREATMENT PROFILE
NOT TO SCALE



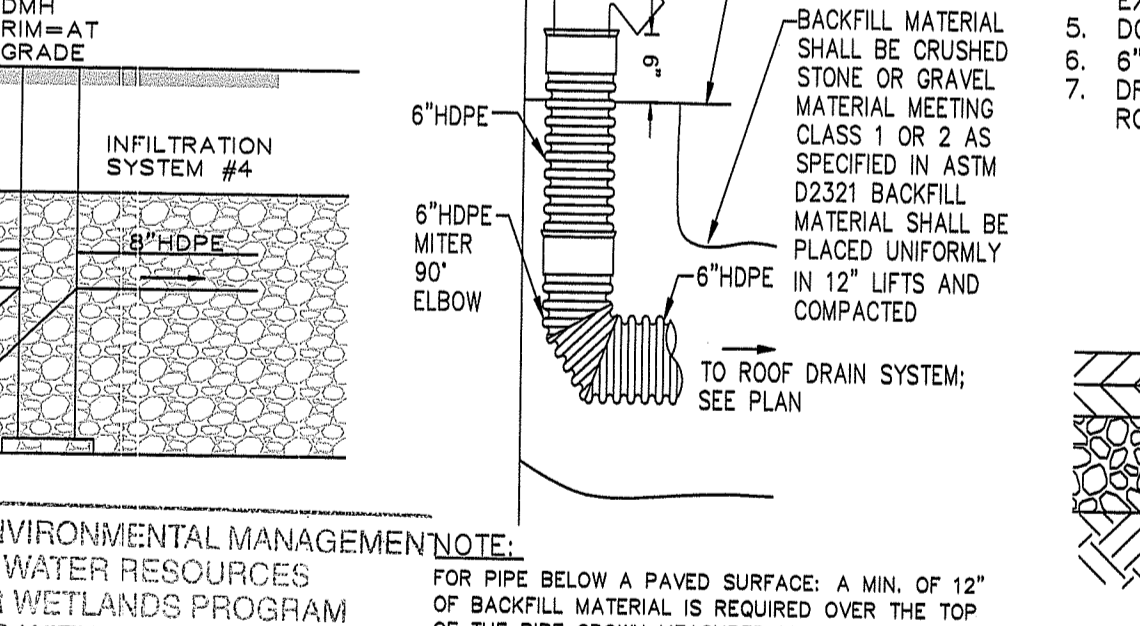
SUBSURFACE INFILTRATION SYSTEM #2 PRETREATMENT PROFILE
NOT TO SCALE



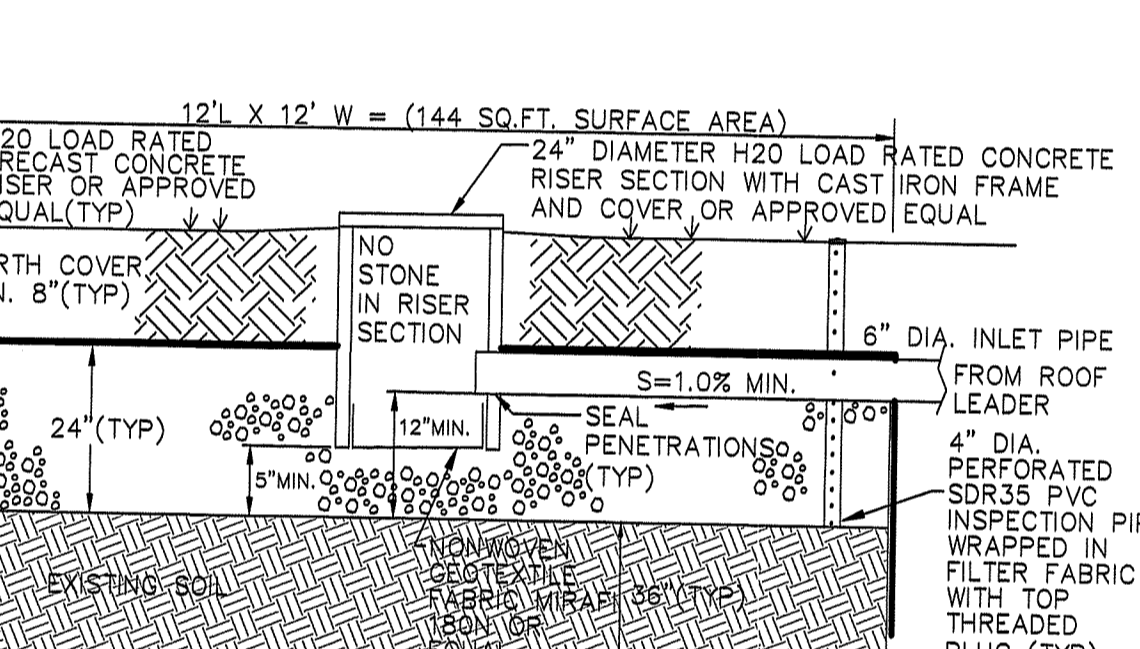
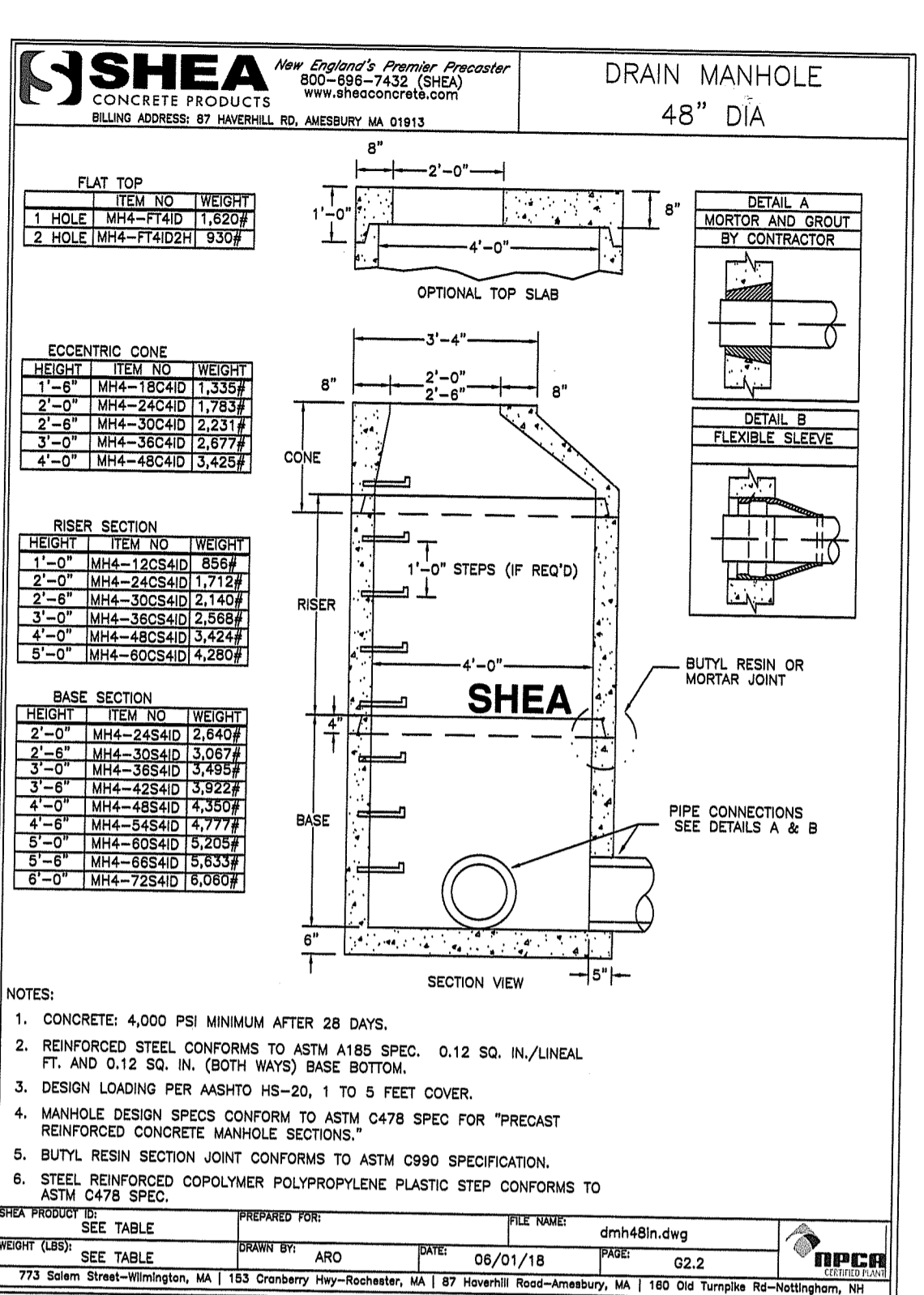
SUBSURFACE INFILTRATION SYSTEM #4 PRETREATMENT PROFILE
NOT TO SCALE



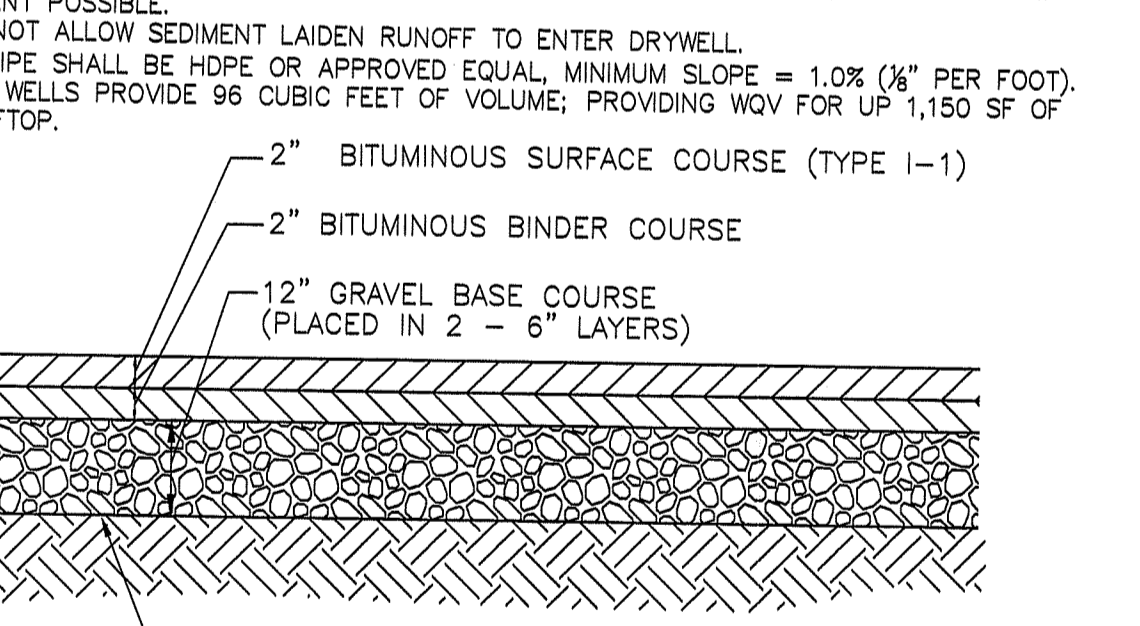
SUBSURFACE INFILTRATION SYSTEM #1 PRETREATMENT PROFILE
NOT TO SCALE



SUBSURFACE INFILTRATION SYSTEM #4 PRETREATMENT PROFILE
NOT TO SCALE



TYPICAL ACCESSORY STRUCTURE DRYWELL SECTION VIEW
NOT TO SCALE



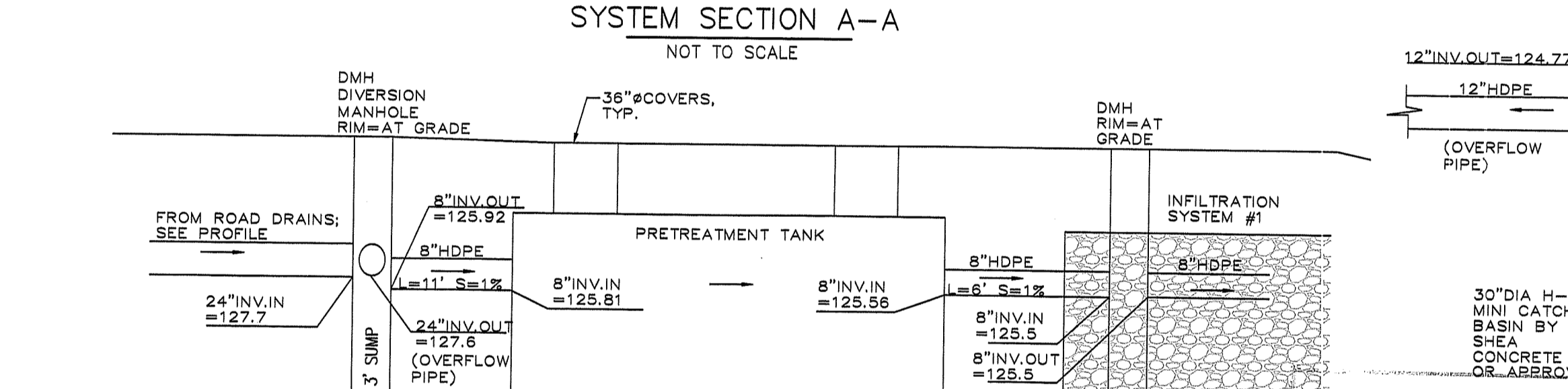
SITE DRIVEWAYS AND PARKING AREAS
NOT TO SCALE

- NOTES:**
- CRUSHED STONE SHALL BE CLEAN AND WASHED WITH NO FINES.
 - CRUSHED STONE SHALL BE WRAPPED WITH FABRIC ON TOP & SIDES.
 - SCARIFY BOTTOM PRIOR TO PLACEMENT OF GRAVEL AND STONE.
 - DO NOT ALLOW SEDIMENT LAIDEN RUNOFF TO ENTER SYSTEM. DISTURBED AREAS SHALL BE FULLY STABILIZED WITH GRASS PRIOR TO ALLOWING RUNOFF TO ENTER SYSTEM.
 - THE BOTTOM OF ALL PROPOSED SUBSURFACE INFILTRATION SYSTEMS LIE WITHIN SOILS DEFINED AS STRUCTURELESS, SINGLE-GRAIN, LOOSE, SAND, VERY GRAVELLY SAND, COBBLY GRAVELLY SAND, AND COARSE SAND.

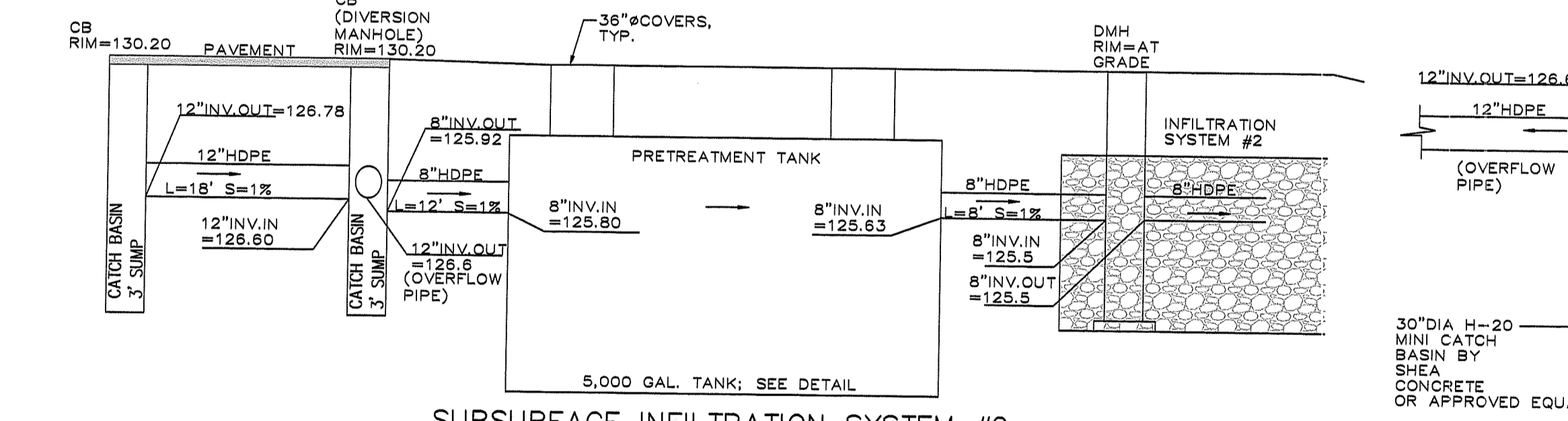
- NOTES:**
- CONCRETE 5,000 PSI MINIMUM AFTER 28 DAYS.
 - DESIGNED FOR AASHTO HS-20 LOADING, 1-5 FEET COVER.

- NOTES:**
- CONCRETE 5,000 PSI MINIMUM AFTER 28 DAYS.
 - DESIGN CONFORMS WITH 310 DMR 15.00, DEP TITLE 5 REGS. FOR SEPTIC TANKS.
 - ALL REINFORCEMENT PER ASTM C1937.
 - DESIGNED FOR AASHTO HS-20 LOADING COVER 1-5 FEET.
 - TONGUE AND GROOVE JOINT SEALED WITH BUTYL RESIN. HEIGHT MAY INCREASE SLIGHTLY DUE TO THE BUTYL RESIN USED.
 - TEES AND BAFFLES SOLD SEPARATELY.
 - SPANNERS USED IN CENTER SECTIONS FOR TANKS GREATER THAN 7000 GALLONS.

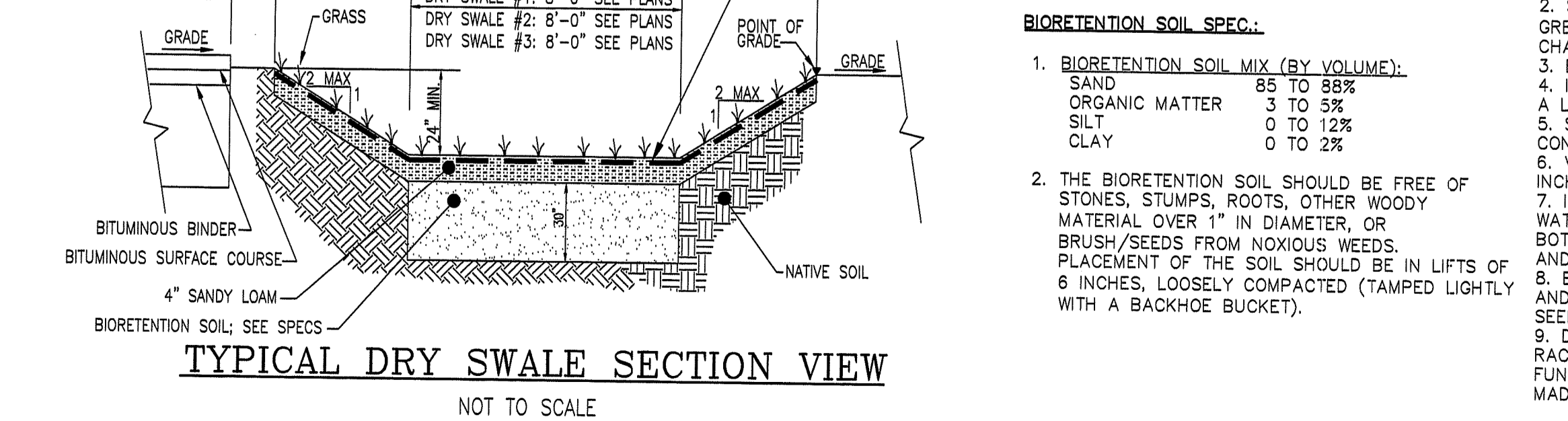
- NOTES:**
- CONCRETE 4,000 PSI MINIMUM AFTER 28 DAYS.
 - REINFORCED STEEL CONFORMS TO ASTM A165 SPEC. 0.12 SD. IN./LIN. FT. AND 0.12 SD. IN. (BOTH WAYS) BASE BOTTOM.
 - DESIGN LOADING PER AASHTO HS-20, 1 TO 5 FEET COVER.
 - MANHOLE DESIGN SPECS CONFORM TO ASTM C478 SPEC FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.
 - BUTYL RESIN SECTION JOINT CONFORMS TO ASTM C990 SPECIFICATION.
 - STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC STEP CONFORMS TO ASTM C478 SPEC.



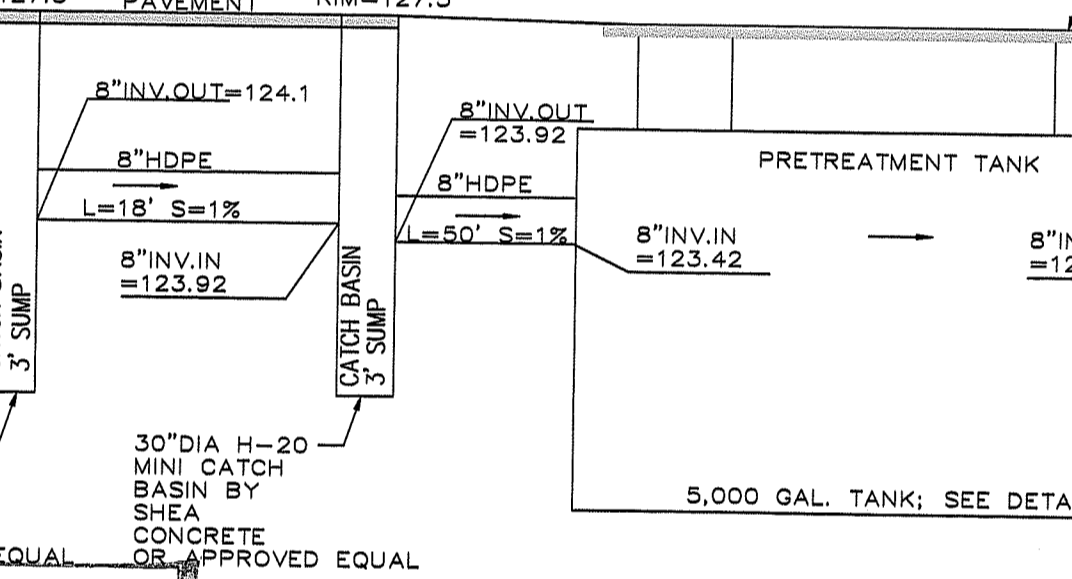
SUBSURFACE INFILTRATION SYSTEM #1 PRETREATMENT PROFILE
NOT TO SCALE



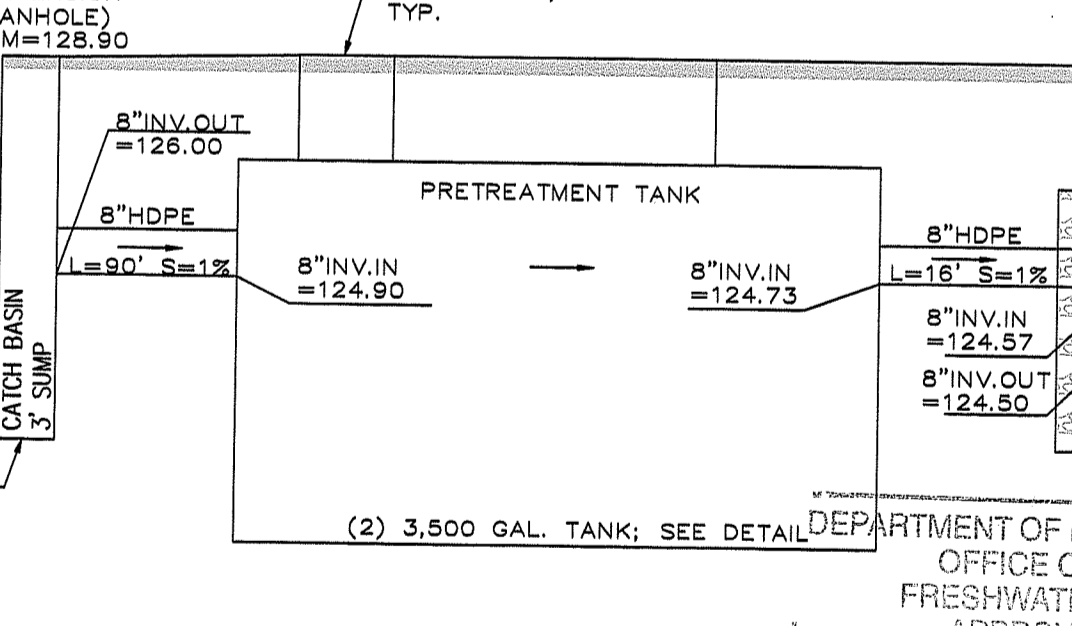
SUBSURFACE INFILTRATION SYSTEM #2 PRETREATMENT PROFILE
NOT TO SCALE



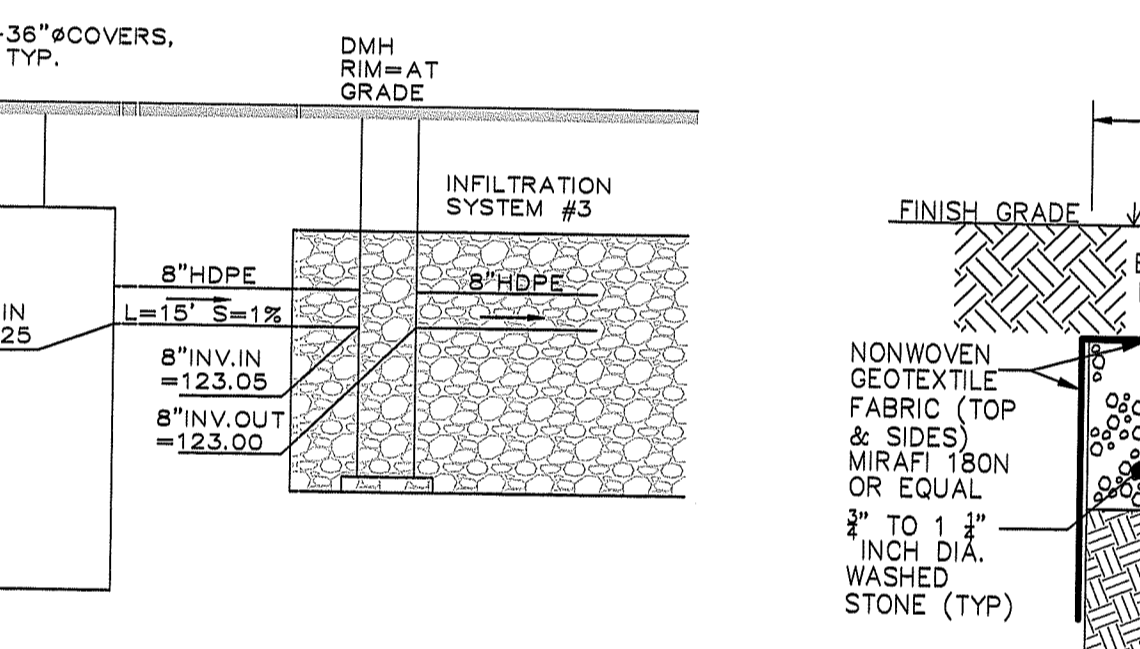
TYPICAL DRY SWALE SECTION VIEW
NOT TO SCALE



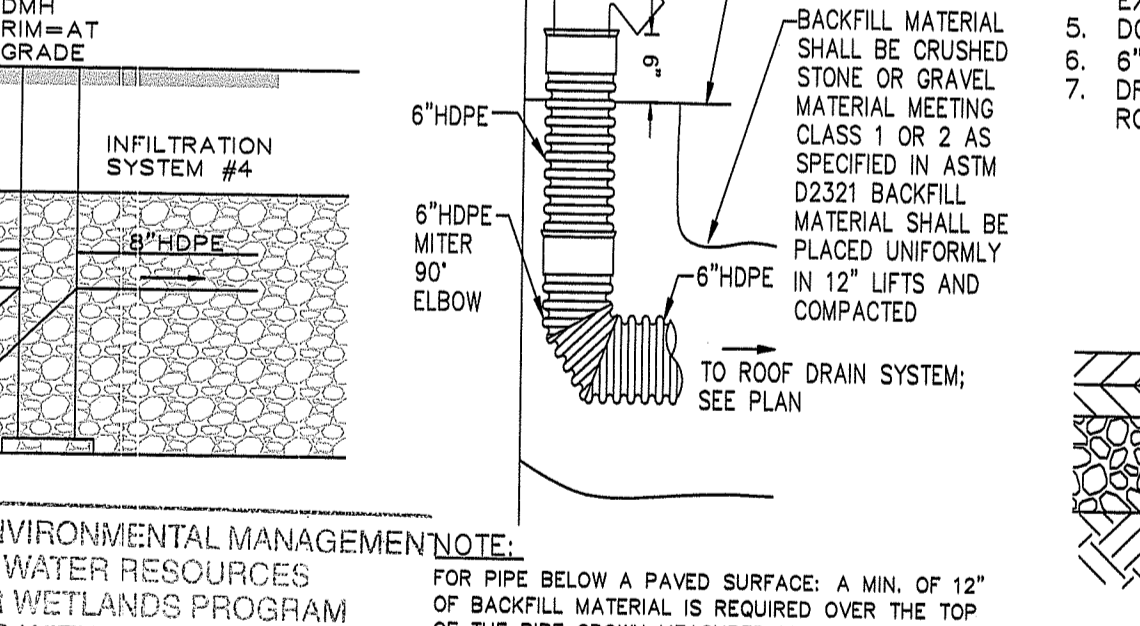
SUBSURFACE INFILTRATION SYSTEM #3 PRETREATMENT PROFILE
NOT TO SCALE



SUBSURFACE INFILTRATION SYSTEM #4 PRETREATMENT PROFILE
NOT TO SCALE



ROOF LEADER DETAIL
NOT TO SCALE



SAND FILTER #1 SYSTEM DETAIL
NOT TO SCALE

- BIORETENTION SOIL SPEC.:**
- | BIORETENTION SOIL MIX (BY VOLUME): | PERCENT |
|------------------------------------|-----------|
| SAND | 85 TO 88% |
| ORGANIC MATTER | 3 TO 5% |
| SILT | 0 TO 12% |
| CLAY | 0 TO 2% |
- BIORETENTION SOIL SPEC.:**
- THE BIORETENTION SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OTHER WOODY MATERIAL OVER 1" IN DIAMETER, OR BRUSH/SEEDS FROM NOXIOUS WEEDS. PLACEMENT OF THE SOIL SHOULD BE IN LIFTS OF 6 INCHES, LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET).
 - THE BIORETENTION SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OTHER WOODY MATERIAL OVER 1" IN DIAMETER, OR BRUSH/SEEDS FROM NOXIOUS WEEDS. PLACEMENT OF THE SOIL SHOULD BE IN LIFTS OF 6 INCHES, LOOSELY COMPACTED (TAMPED LIGHTLY WITH A BACKHOE BUCKET).

- DRY SWALE & VEGETATED SWALE MAINTENANCE NOTES:**
- OPEN CHANNEL PRACTICES SHALL BE INSPECTED ANNUALLY AND AFTER STORMS OF GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR TYPE III PRECIPITATION EVENT.
 - SEDIMENT BUILD-UP WITHIN THE BOTTOM OF THE CHANNEL SHALL BE REMOVED WHEN GREATER THAN OR EQUAL TO 3" DEPTH OF SEDIMENT HAS ACCUMULATED IN THE CHANNEL.
 - ERODED SIDE SLOPES AND CHANNEL BOTTOMS SHALL BE STABILIZED AS NECESSARY.
 - IN THE ABSENCE OF EVIDENCE OF CONTAMINATION, REMOVED DEBRIS MAY BE TAKEN TO A LANDFILL OR OTHER PERMITTED FACILITY.
 - SEDIMENT TESTING MAY BE REQUIRED PRIOR TO SEDIMENT DISPOSAL WHEN CONTAMINATION IS PRESENT.
 - VEGETATION SHALL BE MAINTAINED AS REQUIRED TO MAINTAIN GRASS HEIGHTS IN THE 4-6 INCH RANGE, WITH MANDATORY MOWING ONCE GRASS HEIGHTS EXCEED 10 INCHES.
 - IF THE SURFACE OF THE DRY SWALE BECOMES CLOGGED TO THE POINT THAT STANDING WATER IS OBSERVED ON THE SURFACE 48 HOURS AFTER PRECIPITATION EVENTS, THE BOTTOM SHALL BE ROTOTILLED OR CULTIVATED TO BREAK UP ANY HARD-PAKED SEDIMENT, AND THEN RESEDED.
 - EVERY FIVE YEARS, THE CHANNEL BOTTOM SHOULD BE SCRAPED TO REMOVE SEDIMENT AND TO RESTORE ORIGINAL CROSS SECTION AND INFILTRATION RATE, AND SHOULD BE SEED TO RESTORE GROUND COVER.
 - DURING INSPECTION, ANY STRUCTURAL COMPONENTS OF THE SYSTEM, INCLUDING TRASH RACKS, VALVES, PIPES, AND SPILLWAY STRUCTURES, SHOULD BE CHECKED FOR PROPER FUNCTION. ANY CLOGGED OPENINGS SHOULD BE CLEANED OUT AND REPAIRS SHOULD BE MADE WHERE NECESSARY.

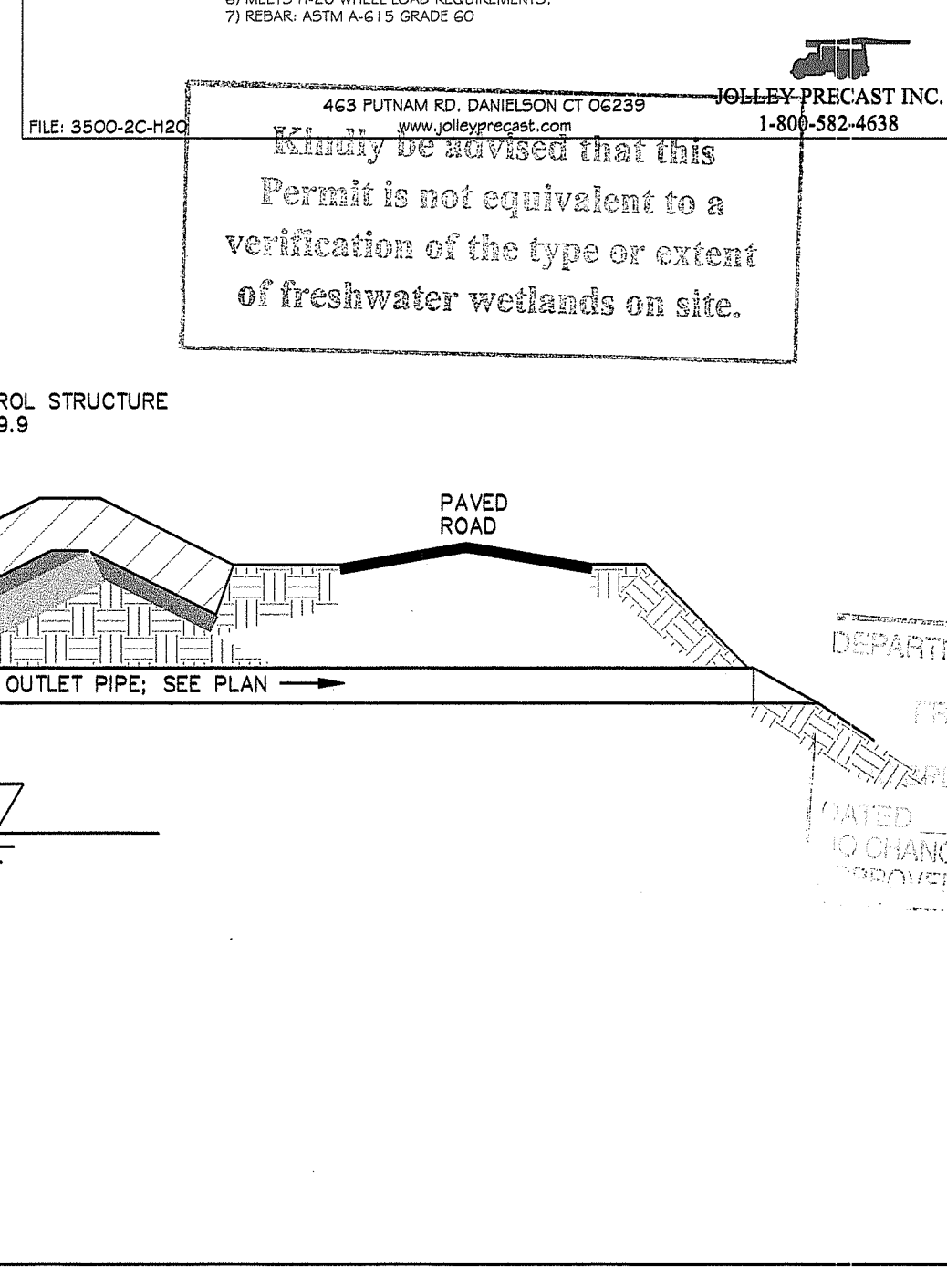
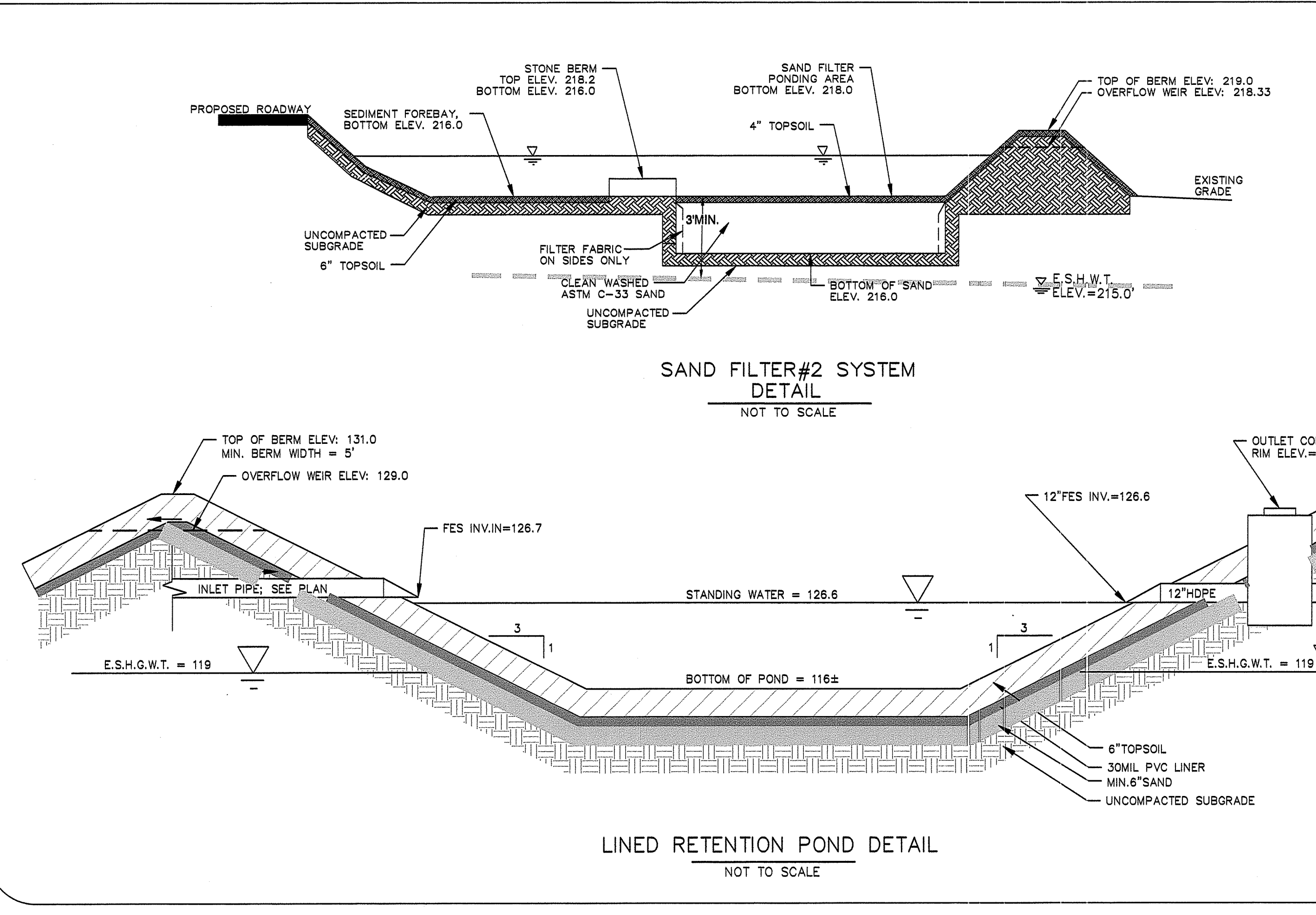
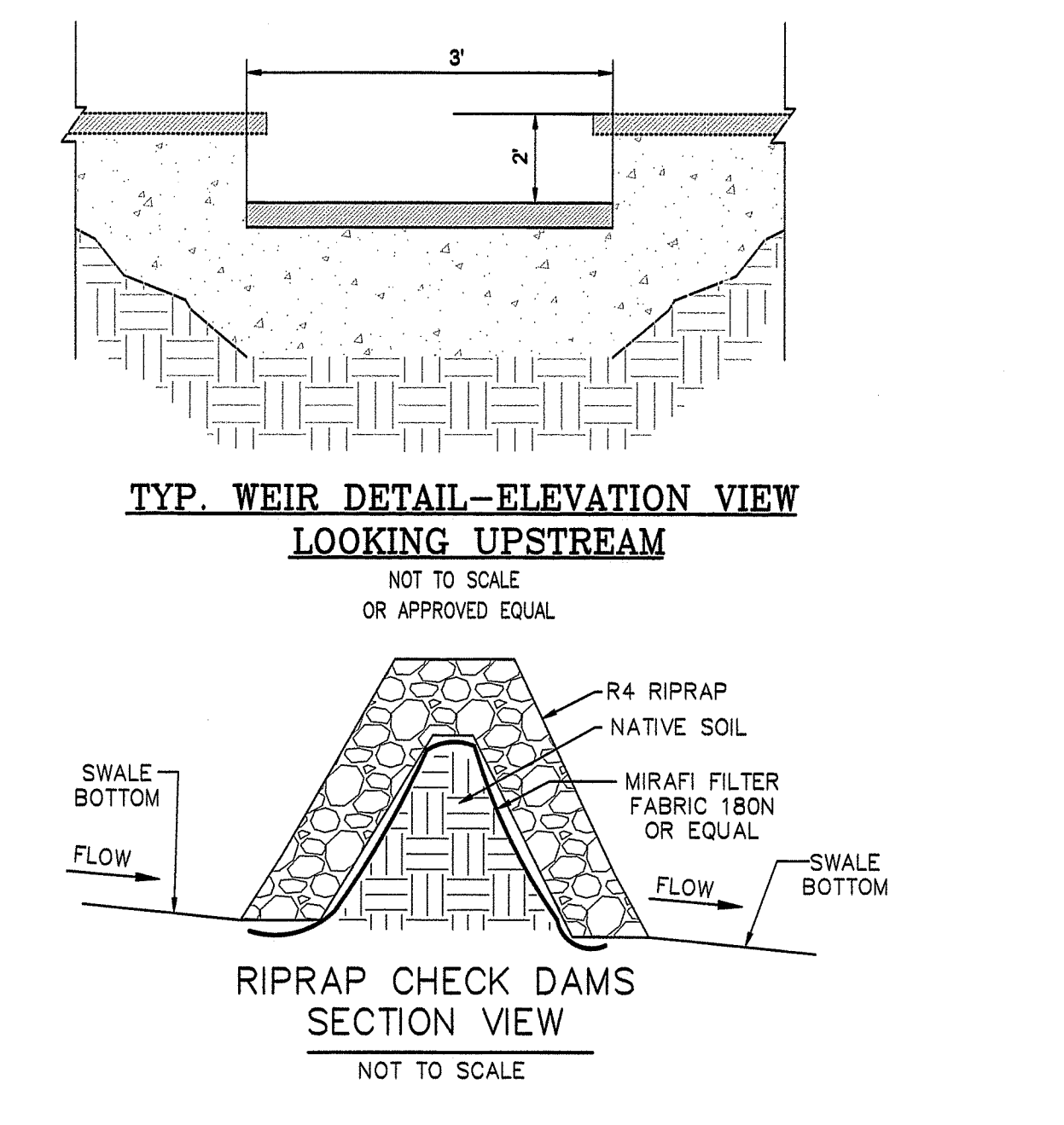
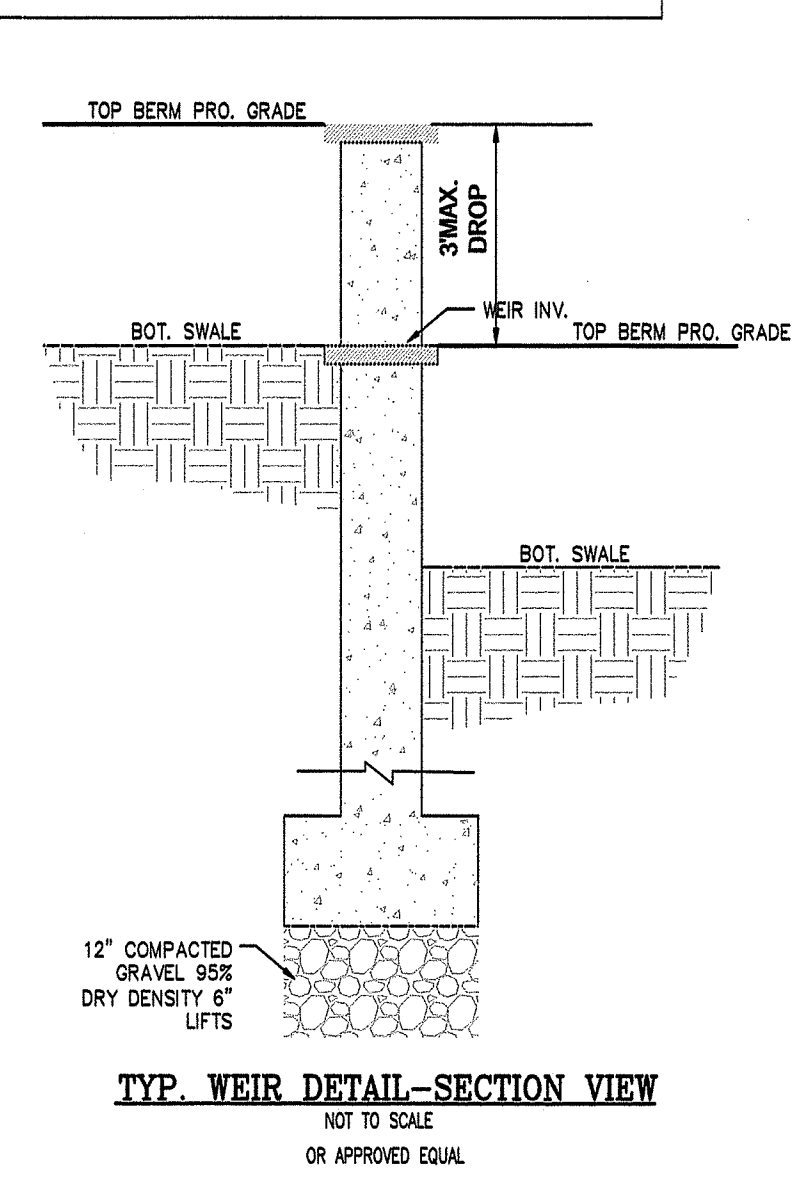
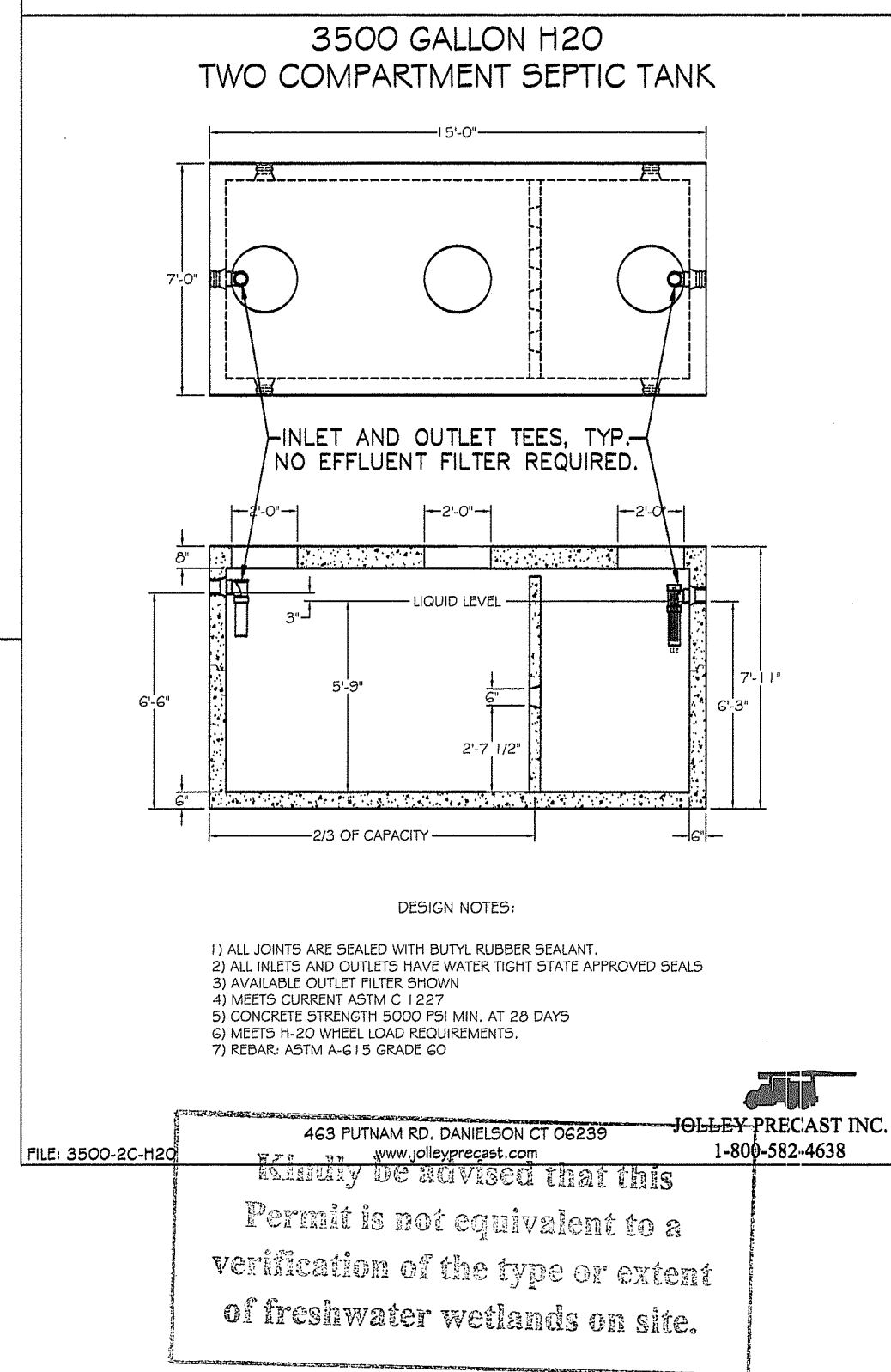
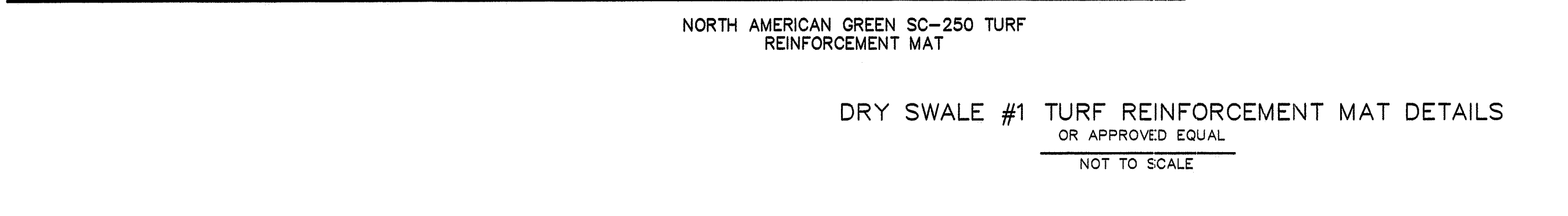
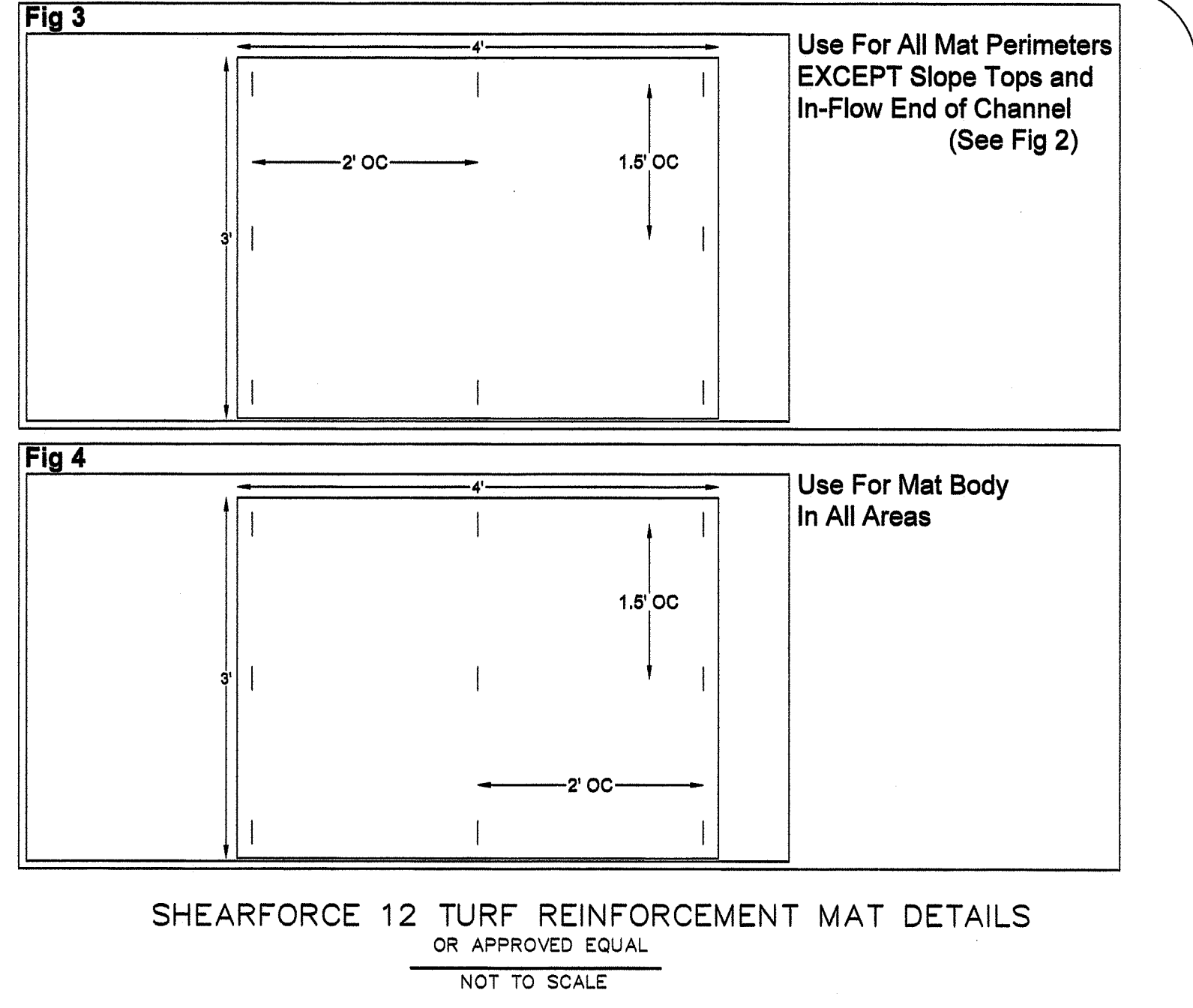
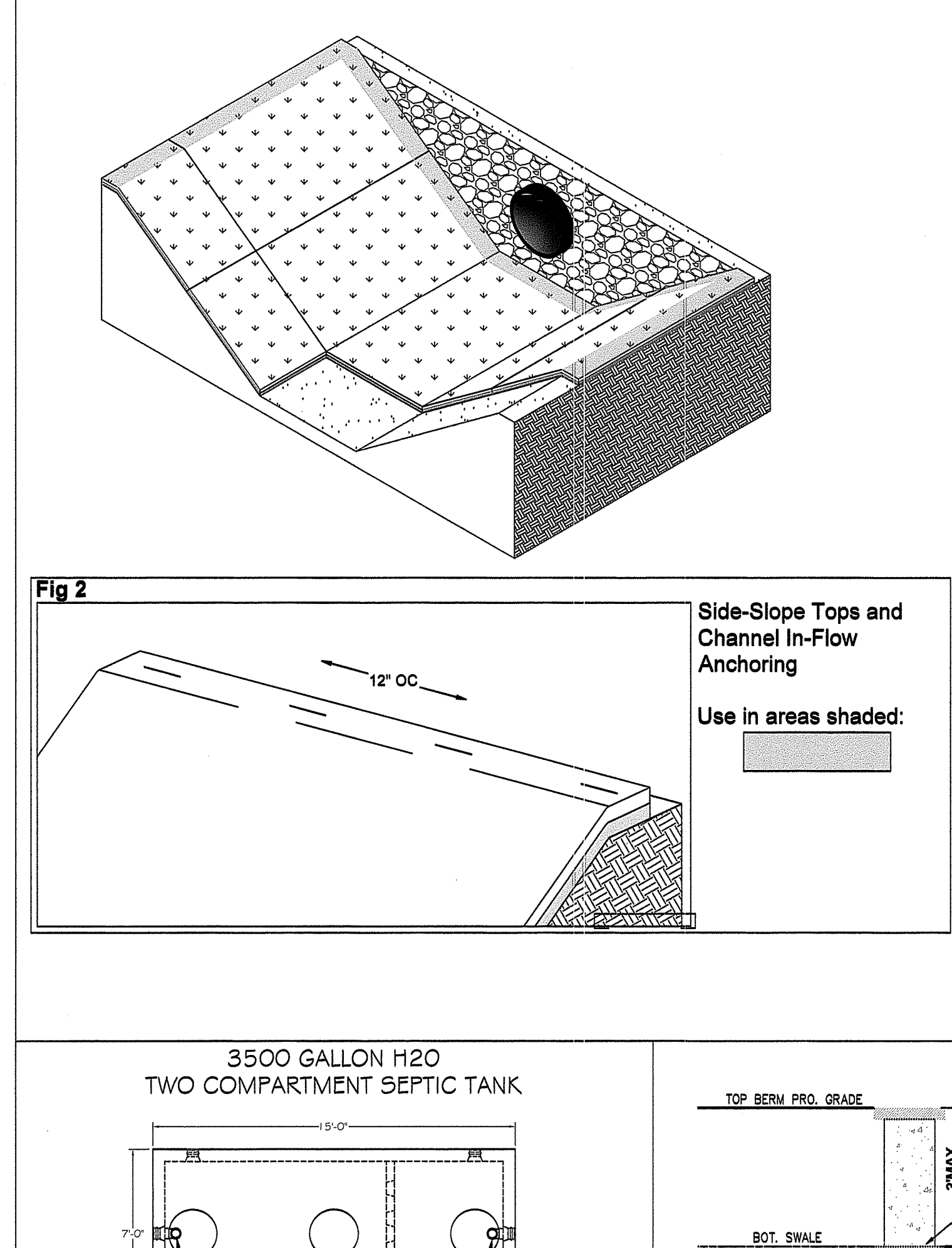
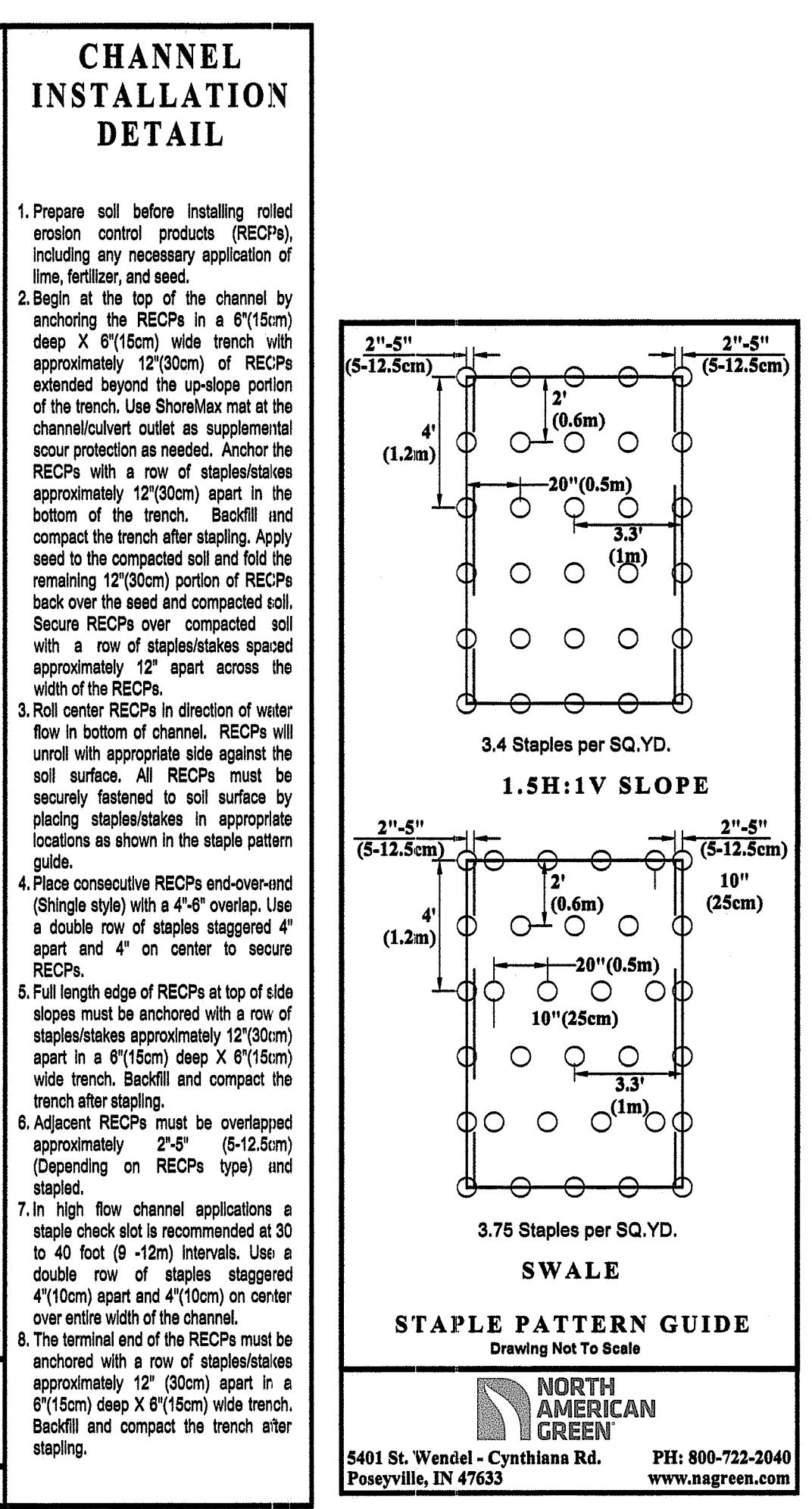
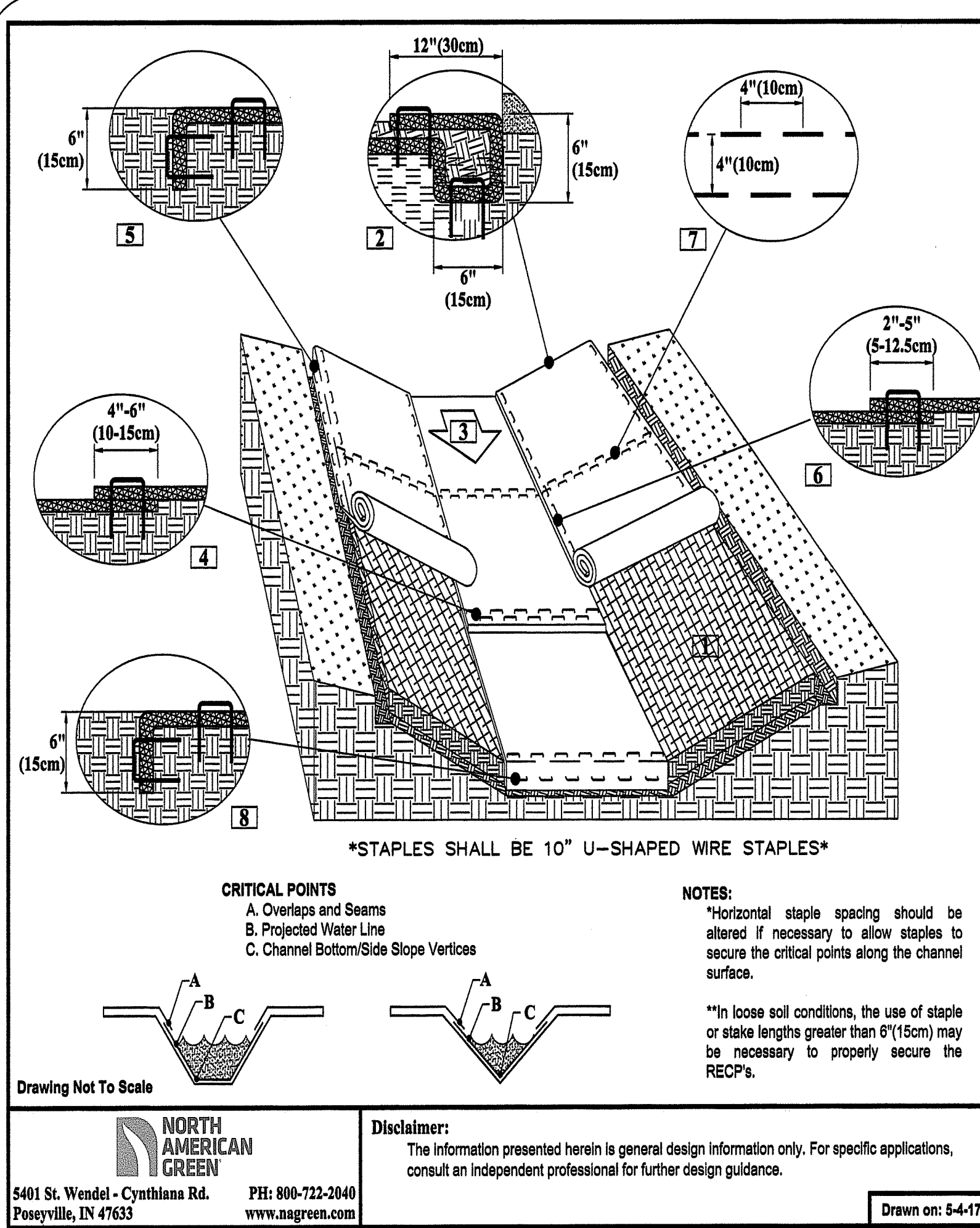
DETAIL SHEET - 2
A.P. 5B, LOT 38 / A.P. 6B, LOT 2 / A.P. 6B, LOT 4
87 KINGSTOWN ROAD
RICHMOND, RHODE ISLAND
PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
SCALE: AS SHOWN DATE: 05/25/19 SHEET 14 OF 15

REVISIONS:

NO.	DATE	DESCRIPTION
1.	08/14/19	

REGISTRATIONS:
CRAIG RICHARD CARRIGAN
REGISTERED PROFESSIONAL ENGINEER

CARRIGAN ENGINEERING, INC.
CIVIL AND ENVIRONMENTAL ENGINEERING
86 BROOK FARM ROAD SOUTH
WAKEFIELD, RI 02879
PHONE: (401) 789-6865
AUG 14 2019
Permit Application Center



DETAIL SHEET - 3

ASSESSOR'S PLAT 6B LOT 4D (ZONE "PDR")
 87 KINGSTOWN ROAD
 RICHMOND, RHODE ISLAND

PREPARED FOR: THE PRESERVE AT BOULDER HILLS LLC.
 SCALE: AS SHOWN DATE: 2/5/19 SHEET 15 OF 15

TITLE:

NO.	DATE	DESCRIPTION	BY
2.	09/08/19	DEM COMMENTS	DKM
1.	08/14/19	DEM COMMENTS	DKM

REVISIONS:

REGISTRATIONS:
 CRAIG RICHARD CARRIGAN
 REGISTERED PROFESSIONAL ENGINEER

CARRIGAN ENGINEERING, INC.
 CIVIL AND ENVIRONMENTAL ENGINEERING
 86 BROOK FARM ROAD SOUTH
 WAKEFIELD, RI 02879
 PHONE: (401) 789-6865

Environmental Management
 SEP 9 2019
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