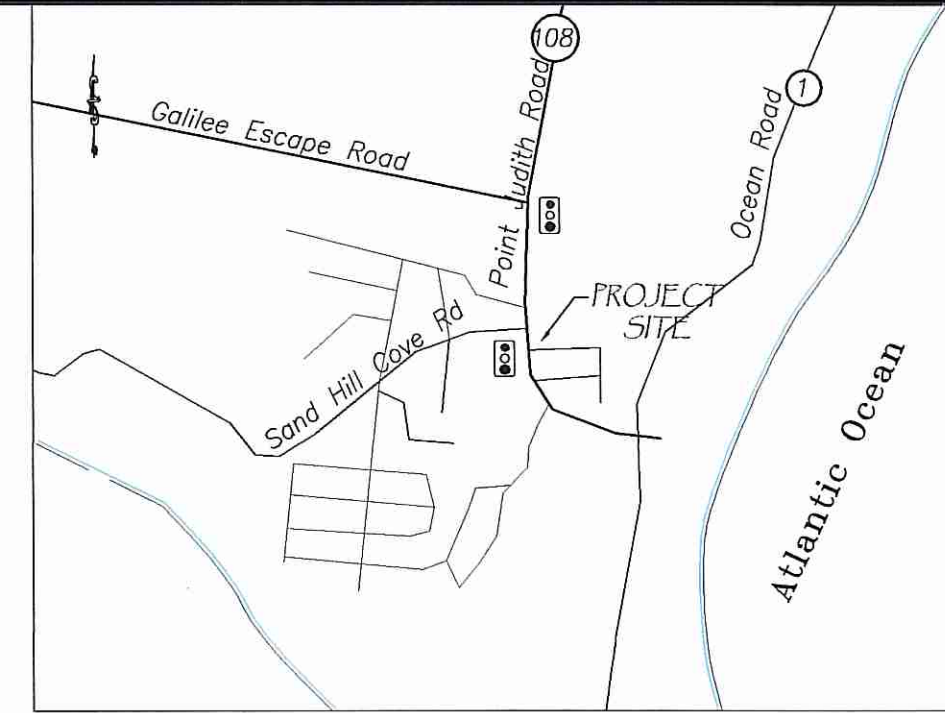


ZONING DISTRICT DIMENSIONAL REGULATIONS
ZONING DISTRICT USE: R-20
PROPOSED 2-FAMILY DUPLEX

| | MIN. | SITE |
|------------------------------|-------------|-------------|
| MINIMUM LOT AREA (SF.) | 20,000 S.F. | 50,680 S.F. |
| MINIMUM LOT WIDTH: | 200 FT. | 295± FT. |
| MINIMUM YARD SETBACKS: | | |
| FRONT | 30 FT. | 30.2 FT. |
| SIDE | 20 FT. | 20 FT. |
| REAR | 30 FT. | 229 FT. |
| MAXIMUM IMPERVIOUS COVERAGE: | 20 % | 6.5% |



LOCUS MAP
NOT TO SCALE

GENERAL NOTES

1. THE PROJECT WILL BE SERVICED BY PUBLIC SEWER & WATER UTILITIES.
2. THIS SITE IS NOT LOCATED WITHIN THE SALT POND CRITICAL RESOURCE AREA AS DEFINED BY CRMC OR RIDEM.
3. THE PARCEL IS LOCATED IN THE FOLLOWING TOWN OF NARRAGANSETT OVERLAY DISTRICTS:
 - SECTION 4.3 COASTAL & FRESHWATER WETLANDS ZONING OVERLAY DISTRICT
 - SECTION 4.5 SOIL LIMITATIONS OVERLAY DISTRICT (BASED ON USDA MAPPED SOIL UNITS)
4. ACCORDING TO FEMA FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 4409C0213 J REVISED OCT. 19, 2013 THE DEVELOPABLE PORTION OF THIS SITE LIES IN FLOOD ZONE X (UNSHADED) OUTSIDE THE HIGH RISK ZONE.

ZONING ORDINANCE SECTION 7.7 CERTIFICATION

"THIS PLAN AND ACCOMPANYING CALCULATIONS FOR PROPOSED STORMWATER MANAGEMENT WAS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF THE TOWN OF NARRAGANSETT ZONING ORDINANCE SECTION 7.7 "SUPPLEMENTARY DRAINAGE REQUIREMENTS" AND WAS DESIGNED TO CONFORM TO THE PROVISIONS THEREOF. I UNDERSTAND THAT THE TOWN OF NARRAGANSETT DOES NOT ASSUME LIABILITY FOR STORMWATER MANAGEMENT FACILITIES DESIGNED BY OTHERS."

LANDSCAPING REQUIREMENTS:

- EVERGREEN SCREEN
- STAGGER PLANTINGS 7' O.C.
- EVERGREEN TREES:
 - 5' TALL BALLED AND BURLAPPED TREES
 - TULIA OCCIDENTALIS NIGRA - ARBORVITAE
 - OR JUNIPERUS VIRGINIANA - EASTERN RED CEDAR
- NATIVE SHRUBS (EVERGREEN AND/OR BERRY PRODUCING):
 - 3' TALL BALLED AND BURLAPPED
 - MYRICA PENNSYLVANICA - NORTHERN BAYBERRY
 - VACCINIUM CORYMBOSUM - HIGH BUSH BLUEBERRY
 - ILEX VERTICILLATA - WINTERBERRY
 - VIBURNUM DENTATUM - SOUTHERN ARROWWOOD

PARKING REQUIREMENTS:

- NARRAGANSETT ZONING ORDINANCE
- REQUIRED OUTSIDE PARKING SPACES:
- ONE STALL PER BED
- SIZE: 200 SF/STALL

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
 OFFICE OF WATER RESOURCES
 FRESHWATER WETLANDS PROGRAM
 APPROVED WITH CONDITIONS
 TO BE EQUIPPED IN THE LETTER OF APPROVAL
 DATED OCT 15 2014 FILE # 14-0135
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Herbert

SITE PLAN
POINT JUDITH ROAD & GREEN MEADOW DRIVE
PLAT L / LOT 327
NARRAGANSETT, RHODE ISLAND

PREPARED BY: **JEFFREY J. CAMPOPIANO P.E.**
 16 WEST MAIN STREET
 WICKFORD, RHODE ISLAND 02852
 PHONE: (401) 295-3037 / FAX: (401) 295-1118

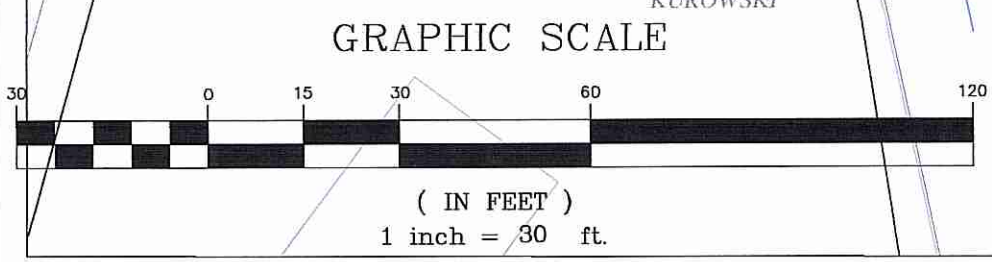
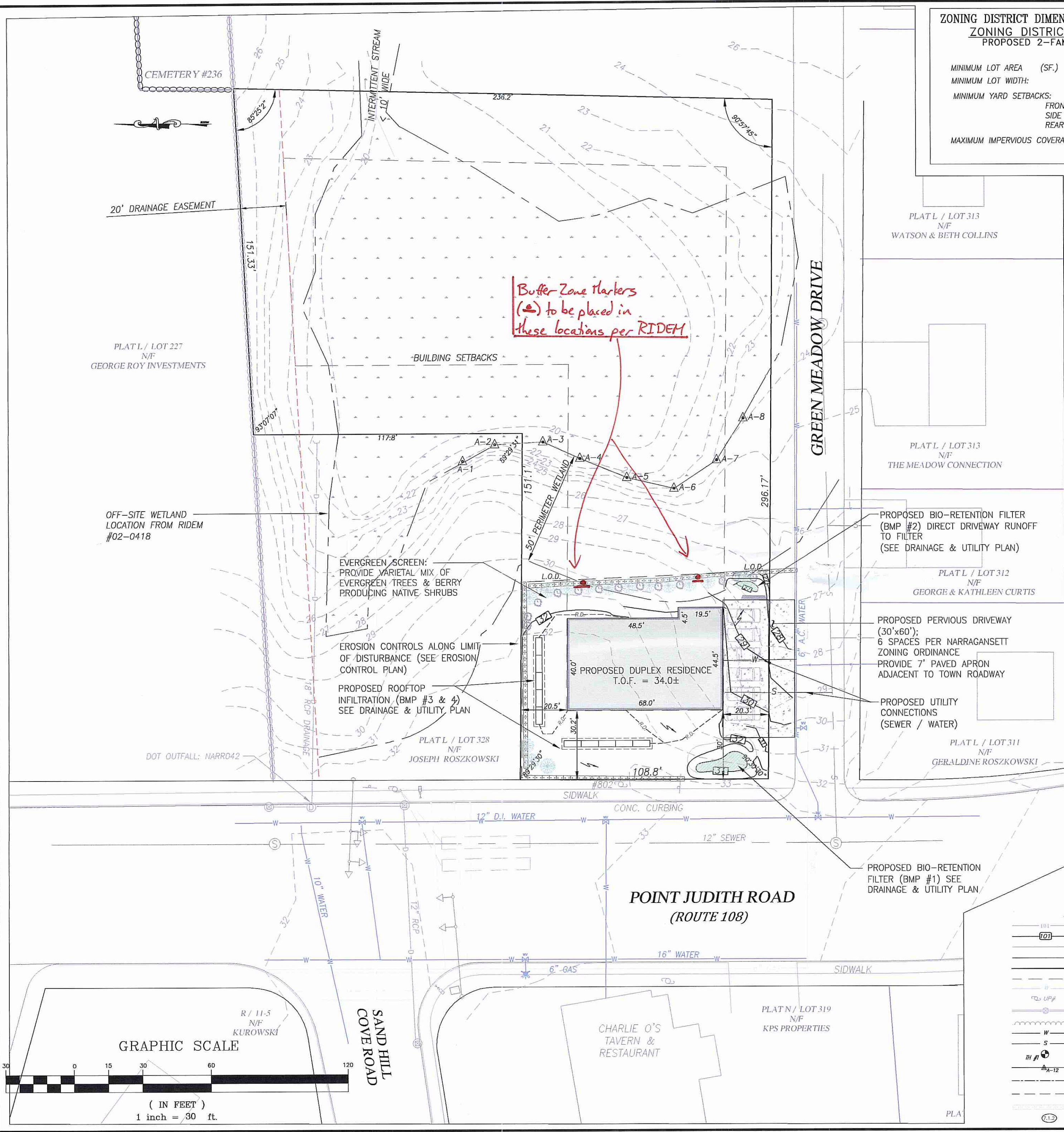
PREPARED FOR: **WILLIAM DOLAN & FRANCIS BURKE**
 54 AUTUMN LANE
 SOUTH KINGSTOWN, RI 02892

| REV. | DATE | DESCRIPTION | DATE: 7/24/14 |
|------|------|--------------------------|---------------|
| 1 | 9/14 | DRIVEWAY; TEST HOLE DATA | SCALE: 1"=30' |

1
SHEET: 1 OF 5

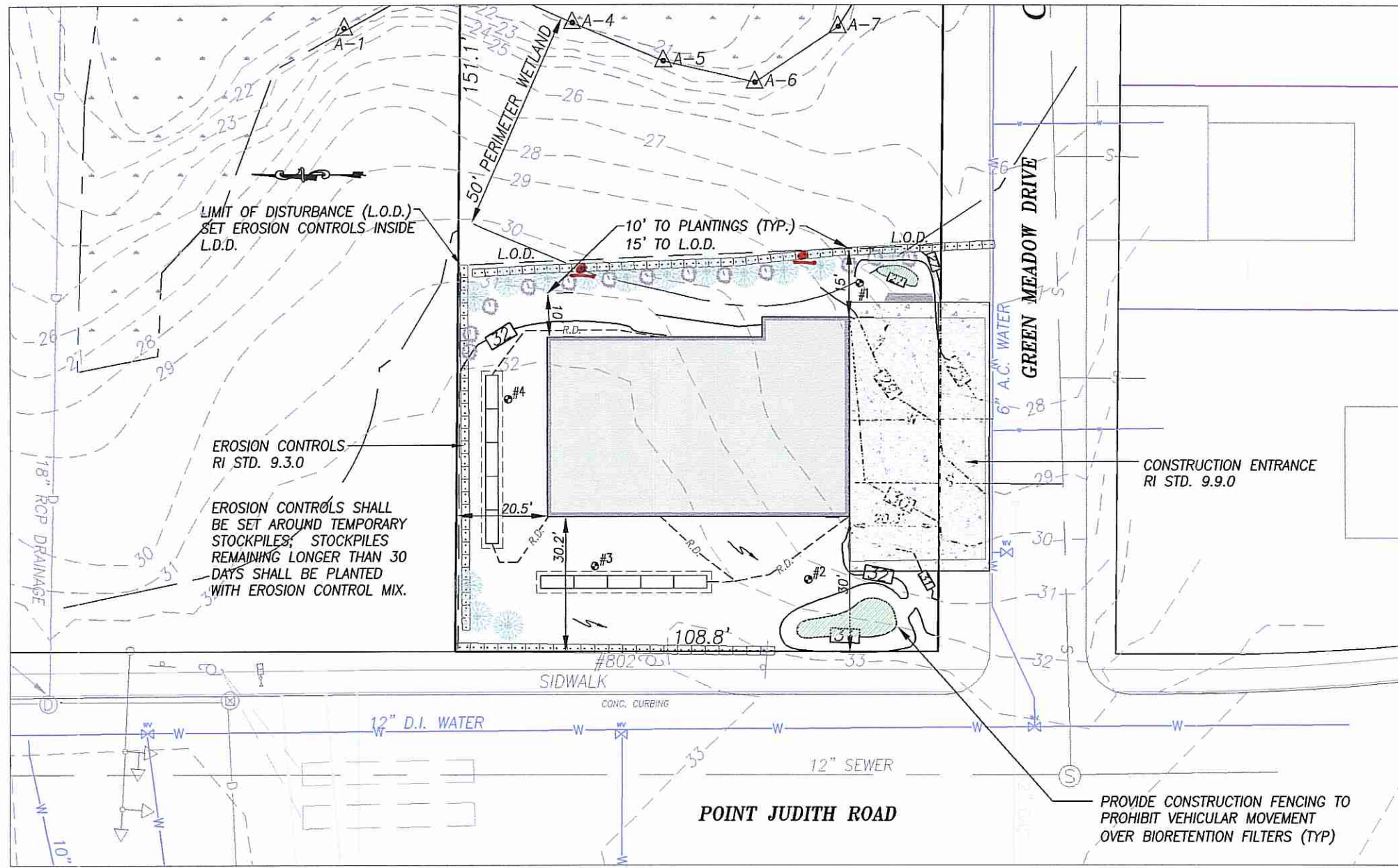
LEGEND

- EXISTING CONTOURS
- PROPOSED CONTOUR
- EXISTING SITE CONDITIONS
- PROPOSED CONDITIONS
- PROPERTY LINE
- BUILDING SETBACKS
- EXISTING WATER LINE
- EXISTING UTILITY POLE
- EXISTING DRAINAGE
- TREELINE
- PROPOSED WATERLINE
- PROPOSED SEWERLINE
- AUGER HOLES
- BIOLOGICAL WETLANDS
- WETLAND SETBACK
- LIMIT OF DISTURBANCE (LOD)
- EROSION CONTROLS (SILT FENCE)
- R.I.D.O. STANDARD DETAIL



EROSION & SEDIMENT CONTROL NOTES:

- EXTREME CARE SHALL BE EXERCISED TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING A WETLAND, STREET, OR NEIGHBORING PROPERTY. THE CONTRACTOR SHALL IMMEDIATELY CLEAN AND RESTORE ANY DISTURBED AREAS.
- ALL EROSION CONTROL METHODS, MATERIALS, AND MAINTENANCE SHALL BE ACCOMPLISHED ACCORDING TO THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, PREPARED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING ALL TEMPORARY EROSION AND SEDIMENT CONTROLS, AS SHOWN ON THE PLANS AND DIRECTED BY THE ENGINEER. ALL RUNOFF SHALL BE CONTROLLED. IN NO CASE SHALL ANY DIRECT RUNOFF BE ALLOWED TO ENTER ONTO ADJACENT PROPERTIES OR INTO THE WETLAND BUFFERS.
- HAYBALES/SILT FENCING SHALL BE PLACED IMMEDIATELY DOWN SLOPE OF SOIL DISTURBANCE AREAS AS SHOWN ON THE PLANS. BALED HAY EROSION CHECKS SHALL BE PLACED AT ALL DRAINAGE STRUCTURE INLETS, EXISTING AND PROPOSED, DURING CONSTRUCTION. ADDITIONAL HAYBALES OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
- SPOIL AND STOCKPILE MATERIALS REMAINING EXPOSED FOR LONGER THAN 30 DAYS SHALL BE ENCIRCLED WITH SILT FENCING OR HAYBALES AND COVERED WITH EROSION CONTROL MIX (NOTE 9).
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS UNTIL ALL AREAS ARE STABILIZED. CONTROLS SHALL REMAIN IN PLACE UNTIL A GOOD STAND OF VEGETATION IS ESTABLISHED.
- SEEDING - SEED IS TO BE DISTRIBUTED EVENLY OVER THE TOP 1 INCH OF TOPSOIL. SEED SHALL BE URI #2, OR APPROVED EQUAL. APPLY AT A RATE OF 5-7 # / 1,000 S.F.
- SLOPE PROTECTION BLANKETS USED AT THIS PROJECT SHALL BE THE 100% BIODEGRADABLE STRAW AND COCONUT FIBER BLANKETS WHICH SHALL DISINTEGRATE IN-PLACE, NOT REQUIRING FUTURE MAINTENANCE.
- EROSION CONTROL MATERIALS
SHOULD THE VEGETATION PLANTING SEASON BE PASSED, WINTER MULCHING OF ALL EXPOSED SURFACES SHALL BE COMPLETED BY DECEMBER 1. WINTER MULCHING SHALL CONSIST OF THE FOLLOWING EROSION CONTROL MIX.
EROSION CONTROL MIX
USE EROSION CONTROL MIX AS A LONG-TERM SOIL COVER THAT WILL EVENTUALLY ALLOW THE GROWTH OF VEGETATION, IF DESIRED.
• EROSION CONTROL MIX INCLUDES SHREDDED OR COMPOSTED BARK, STUMP GRINDINGS, OR OTHER COMPOSTED WOOD PRODUCTS. WOOD CHIPS, GROUND CONSTRUCTION DEBRIS, OR PROCESSED WOOD ARE NOT ACCEPTABLE.
• APPLY THE EROSION CONTROL MIX AS A LAYER AT LEAST THREE INCHES THICK. DO NOT COMPACT THE MIX WITH EQUIPMENT.
HAY MULCH
• USE HAY MULCH AS A TEMPORARY MEASURE TO PROTECT BARE SOILS OR TO COVER NEWLY SEEDED AREAS.
• APPLY AT A RATE OF TWO SQUARE BALES (70-90 POUNDS) PER 1000 SQ FT OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE.
• ANCHOR THE HAY MULCH USING ONE OF THE FOLLOWING METHODS:
** STAPLE JUTE OR PLASTIC NETTING OVER THE MULCH ACCORDING TO THE NET OR JUTE MANUFACTURER'S RECOMMENDATION.
** STRETCH TWINE BETWEEN PEGS IN A CRISS-CROSS PATTERN OVER THE MULCH (4-6 PEGS PER SQ YD).
• MULCHING SHALL FOLLOW GUIDELINES IN THE RI SOIL EROSION AND SEDIMENT CONTROL HANDBOOK, CHAPTER 4 & CHAPTER 5, A TEMPORARY MULCHING. STRAW / HAY SHALL BE APPLIED AT 90# / 1,000 S.F. FREE FROM WEEDS AND ANCHORED WITH MULCH NETTING.



EROSION CONTROLS - PLAN VIEW
1" = 30'

SEQUENCE OF CONSTRUCTION:

- INSTALL PERIMETER SEDIMENT CONTROL MEASURES:
 - PERFORM SELECTIVE VEGETATION REMOVAL FOR SILT FENCE INSTALLATION
 - INSTALL SILT FENCE/HAYBALES PER R.I. STATE STANDARD AROUND L.O.D.
 - INSTALL CONSTRUCTION ENTRANCE
 - INSTRUCT CONTRACTOR THAT ABSOLUTELY NO WORK OR DUMPING IS PERMITTED BEYOND THE LIMIT OF THE EROSION CONTROL BARRIERS.
- CLEAR AND GRUB AREA WITHIN PERMITTED WORKZONE.
- STRIP & STOCKPILE TOPSOIL, AS NECESSARY. PROVIDE TEMPORARY STABILIZATION AROUND STOCKPILE (SEED PILE AND INSTALL SILT FENCE AROUND TOE OF SLOPE).
- CONSTRUCT UTILITY EXTENSIONS & SITE AMENITIES.
- PERFORM MAINTENANCE INSPECTIONS OF HAYBALES AND SILT FENCE CONDITIONS WEEKLY AND AFTER EVERY RAINFALL EVENT WITH 1/2" OR MORE. REPLACE OR REPAIR THE CONTROLS AS REQUIRED AND REMOVE ANY SEDIMENT WHICH ACCUMULATES UP TO ONE-HALF THE HEIGHT OF THE BALE/FENCE.
- TEMPORARILY OR PERMANENTLY STABILIZE ALL DISTURBED AREAS WITHIN 7 DAYS OF CEASING WORK.
- CONSTRUCT RAIN GARDEN AND FINAL LANDSCAPING. INSTALL MONUMENTATION POSTS.
- PERMANENTLY STABILIZE LOT.
- REMOVE ALL TEMPORARY SOIL AND SEDIMENT EROSION CONTROLS AFTER THE SITE IS FULLY STABILIZED WITH VEGETATION.

MAINTENANCE REQUIREMENTS

- THE DEVELOPER SHALL FOLLOW ALL ADDITIONAL REQUIREMENTS REQUIRED BY THE RIDEM WETLANDS PERMIT.
- THE DEVELOPER SHALL FOLLOW ALL REQUIREMENTS REQUIRED BY NARRAGANSETT'S CODE OF ORDINANCES, "CHAPTER 7.7: SUPPLEMENTAL DRAINAGE".
- A LEGALLY BINDING MAINTENANCE AGREEMENT SHALL BE RECORDED IN THE LAND EVIDENCE RECORDS OUTLINING THE MAINTENANCE PROCEDURES FOR EACH ELEMENT OF THE DRAINAGE SYSTEM.

SHORT TERM REQUIREMENTS

- THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY OF THE MAINTENANCE PROGRAM AND THE IMPLEMENTATION OF ALL STRUCTURAL AND NON-STRUCTURAL BEST MANAGEMENT PRACTICES (BMPs) DURING CONSTRUCTION. THE SUPERINTENDENT SHALL IMPLEMENT A REGULAR INSPECTION SCHEDULE AND PROVIDE THE APPROPRIATE LABOR AND MATERIALS TO REMEDY ANY SUBSTANDARD ELEMENTS.
- ALL EROSION CONTROLS SHALL BE MAINTAINED IN WORKING ORDER BY THE CONTRACTOR THROUGHOUT THE CONSTRUCTION PERIOD AND SHALL REMAIN IN-PLACE UNTIL AN APPROVED GROUND COVER IS ESTABLISHED.
- ALL DISTURBED SLOPES SHALL BE RE-SEEDED OR PROTECTED PRIOR TO OCTOBER 15. AFTER THIS DATE, WINTER MULCHING SHALL BE PROVIDED IN AREAS WHERE VEGETATION HAS NOT BEEN ESTABLISHED.
- HAYBALES AND SILT FENCE SHALL BE CHECKED BY THE CONTRACTOR ON A DAILY BASIS AND AFTER EVERY RAINFALL EVENT FOR EFFECTIVENESS. THE CONTRACTOR SHALL REPLACE OR REPAIR THE CONTROLS AS REQUIRED AND SHALL ALSO REMOVE ANY SEDIMENT WHICH ACCUMULATES UP TO ONE-HALF THE HEIGHT OF THE BALE/FENCE.
- CONSTRUCTION ENTRANCES PROTECTED BY STONE STABILIZATION PADS SHALL BE DRESSED WITH ADDITIONAL STONE FOR THICKNESS OR LENGTH AS CONDITIONS WARRANT. AS WITH ALL EROSION CONTROLS, THE PAD SHALL BE INSPECTED EITHER PRIOR TO OR FOLLOWING ALL RAINFALL EVENTS. SEDIMENTS TRACKED OR CARRIED ONTO THE PUBLIC RIGHT OF WAY SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR.
- AT THE COMPLETION OF THE PROJECT, ACCUMULATED SEDIMENTS IN CATCHBASINS, PIPES, AND ALL DRAINAGE COMPONENTS SHALL BE REMOVED BY THE CONTRACTOR. ACCUMULATED SILTS OR SEDIMENTS SHALL BE REMOVED FROM THE GRASSED AREAS. ANY MECHANICAL MAINTENANCE SHALL BE DONE SO AS TO NOT COMPACT LOAM WITHIN LANDSCAPED AREAS. ANY SEDIMENTS OR DEPOSITED MATERIAL SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER GROWTH OF ALL VEGETATIVE FEATURES FOR A PERIOD OF ONE YEAR FOLLOWING CONSTRUCTION. ALL AREAS UNDEVELOPED SHALL BE TOPSOILED, PLANTED, SEEDED, OR SODDED AT NO ADDITIONAL COST TO THE OWNER.

NOTES:

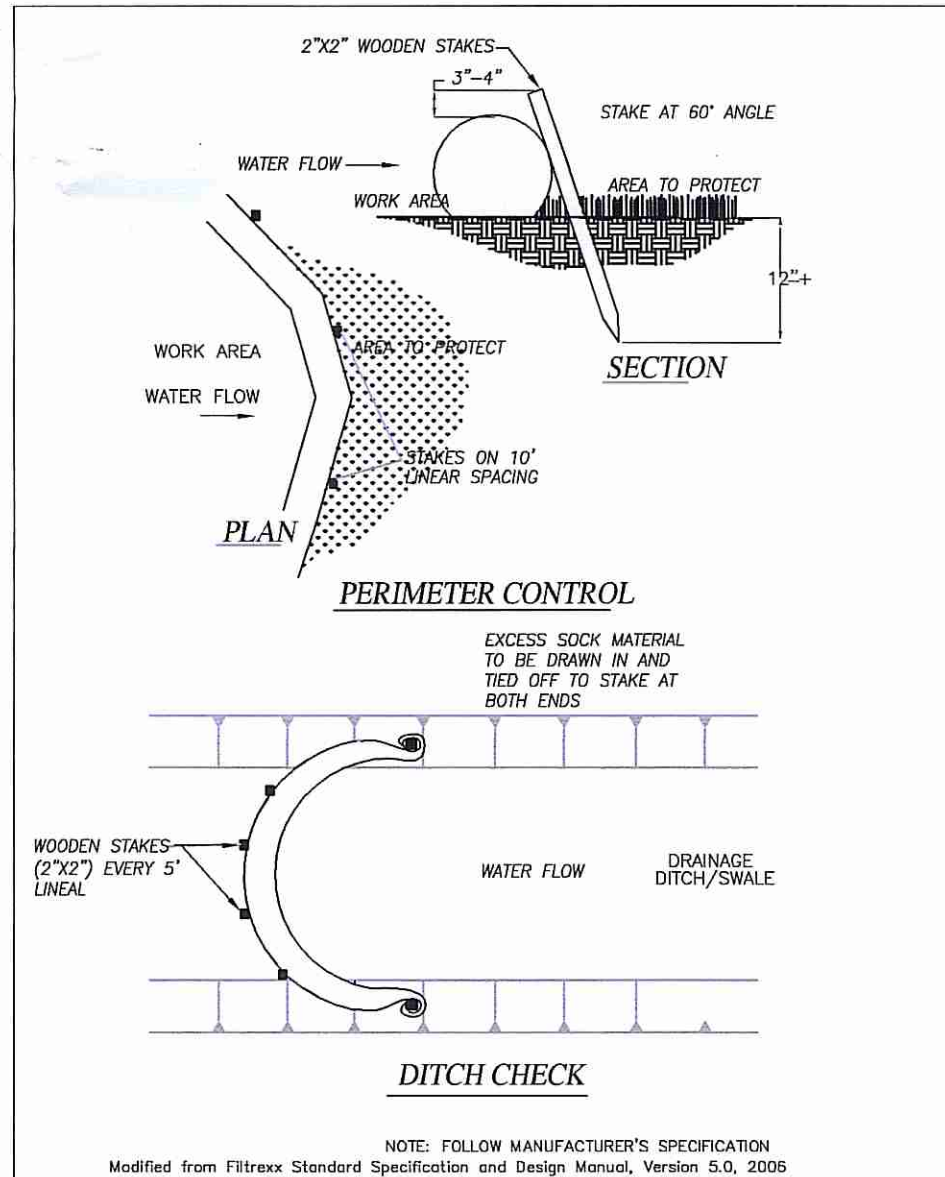
- STD. 9.1 IS INSTALLED "TIGHT" AGAINST SILT FENCE. THOROUGHLY COMPACT EXCAVATED SOILS BACK INTO TRENCH AFTER INSTALLATION OF EROSION CONTROL DEVICES. SILT FENCE FABRIC SHALL NOT BE SLIT-STD. 9.1 POST SHALL BE DRIVEN THROUGH SILT FENCE FABRIC. 2"x2"x4"-6"(MAX.) OAK POST FOR SILT FENCE SHALL BE LOCATED ON 8'-0"(MAX.) CENTERS IN WETLAND AREAS AND LOCATED ON 4'-0"(MAX.) CENTERS IN WETLAND RAVINE, GULLY OR DROPOFF AREAS AS SHOWN ON PLANS
- R.I. STD. 9.1 AND SILT FENCE WILL BE PAID FOR UNDER THE APPROPRIATE PAY ITEMS, COMPLETE IN-PLACE.



HAYBALE WITH SILT FENCE
RI STANDARD 9.3.0

LONG TERM - OPERATIONAL NOTES / MAINTENANCE

- LONG TERM MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE OWNER UPON FINAL ACCEPTANCE OF THE PROJECT.
- VEGETATION SHALL BE PRESENT IN ALL REQUIRED AREAS. GRASSES SHALL BE RE-SEEDED AND PLANTINGS REPLANTED AS REQUIRED TO THE INTENT OF THESE PROVISIONS.
- ANY SEDIMENTS OR DEPOSITED MATERIAL SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
- ALL MAINTENANCE REQUIREMENTS AS OUTLINED IN THE APPROVED STORMWATER MANAGEMENT SYSTEM OPERATION AND MAINTENANCE (O&M) AGREEMENT (PREPARED BY JEFFREY J. CAMPOPIANO, P.E.) SHALL BE STRICTLY FOLLOWED. THE O&M AGREEMENT SHALL BE RECORDED IN THE LAND EVIDENCE RECORDS OF THE TOWN OF NARRAGANSETT.



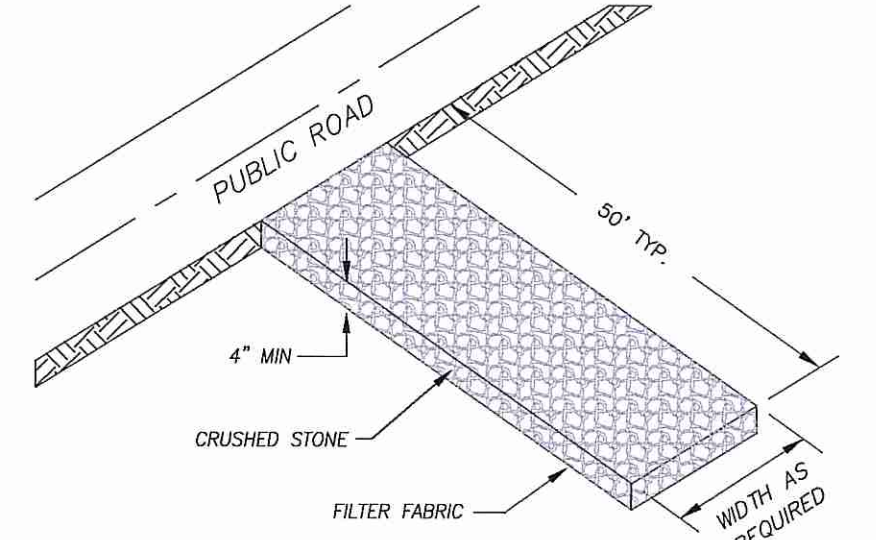
PERIMETER CONTROL

DITCH CHECK

NOTES:

- SEDIMENT CONTROL SHOULD BE INSTALLED PARALLEL TO THE BASE OF THE SLOPE OR OTHER DISTURBED AREA. IN EXTREME CONDITIONS (I.E. 2:1 SLOPES), A SECOND SEDIMENT CONTROL SHALL BE CONSTRUCTED AT THE TOP OF THE SLOPE.
- EFFECTIVE SOX HEIGHT IN THE FIELD SHOULD BE AS FOLLOWS:
8" DIAMETER SEDIMENT CONTROL = 6.5' HIGH,
12" DIAMETER SEDIMENT CONTROL = 9.5' HIGH,
18" DIAMETER SEDIMENT CONTROL = 14.5' HIGH,
24" DIAMETER SEDIMENT CONTROL = 19" HIGH.
- STAKES SHALL BE INSTALLED THROUGH THE MIDDLE OF THE SEDIMENT CONTROL ON 10 FT (3M) CENTERS, USING 2 IN (50MM) BY 2 IN (50MM) BY 3 FT (1M) HARDWOOD STAKES. IN THE EVENT STAKING IS NOT POSSIBLE, I.E., WHEN SEDIMENT CONTROL IS USED ON PAVEMENT, HEAVY CONCRETE BLOCKS SHALL BE USED BEHIND THE SEDIMENT CONTROL TO HELP STABILIZE DURING RAINFALL/RUNOFF EVENTS.
- STAKING DEPTH FOR SAND AND SILT LOAM SOILS SHALL BE 12 IN (300MM), AND 8 IN (200MM) FOR CLAY SOILS.
- SOX IS TYPICALLY FILLED WITH 100% INERT, WEED/SEED/DISEASE FREE RECYCLED KILN-DRYED INDUSTRIAL WOOD WASTE BUT CAN ALSO BE FILLED WITH LOCALLY PRODUCED COMPOST OR CHIPPED TIMBER DEBRIS. FOLLOW MANUFACTURER'S INSTRUCTIONS.

COMPOST FILTER SOCK (OPTIONAL EROSION CONTROL)



- SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE RI STANDARD SPECIFICATIONS.
- CRUSHED STONE SHALL CONFORM TO THE FOLLOWING GRADATION:

| U.S. STANDARD SIEVE SIZE | % PASSING BY WEIGHT |
|--------------------------|---------------------|
| 2" | 100 |
| 1 1/2" | 90-100 |
| 1" | 30-55 |
| 3/4" | 0-25 |
| 1/2" | 0-5 |

CONSTRUCTION ENTRANCE
NOT TO SCALE
RI STANDARD 9.9.0

ACCEPTABLE PLANTING MATERIALS:

PREPARATION: AREAS TO BE SEEDED SHALL BE BROUGHT TO AN ELEVATION 6" BELOW THE PROPOSED FINISHED GRADE. THE SUBGRADE IS TO BE SCARIFIED TO A DEPTH OF 12" WITH THE TEETH OF A BACKHOE TO RESULT IN UNCOMPACTED SOIL. THEN A 6" LAYER OF LOAM TOPSOIL IS TO BE APPLIED AND RAKED TO FINISHED GRADE. LOAM IS TO BE GOOD QUALITY TOPSOIL, FRIABLE, FERTILE AND FREE OF WEEDS, STICKS, & STONES OVER 1" IN SIZE.

GENERAL LAWN:

MIXTURES WHICH REQUIRE REGULAR FERTILIZATION SHALL NOT BE UTILIZED.

REGULATED AREAS & WATERWAYS

DISTURBED AREAS IN BUFFER ZONES WILL BE SEEDED WITH A WILDLIFE CONSERVATION MIX.

GENERAL USE - TURFGRASS SEED MIX: (URI #2)
APPLICATION RATE: 5-7 LBS / 1,000 S.F.

| MIX | % BY VOLUME |
|-----------------------------|-------------|
| CREeping RED FESCUE | 40 |
| IMPROVED KENTUCKY BLUEGRASS | 20 |
| KENTUCKY BLUE 98/85 | 20 |
| PERENNIAL RYEGRASS | 20 |

SHADE / LOW MAINTENANCE TURFGRASS SEED MIX: (URI #3)
APPLICATION RATE: 4-5 LBS / 1,000 S.F.

| MIX | % BY VOLUME |
|---------------------|-------------|
| PERENNIAL RYEGRASS | 50 |
| KENTUCKY BLUE 98/85 | 40 |
| COLONIAL BENTGRASS | 10 |

BUFFER ZONES / WETLAND AREAS:
APPLICATION RATE: 5 LBS / 1,000 S.F.

| MIX | % BY VOLUME |
|---------------------|-------------|
| PERENNIAL RYEGRASS | 25 |
| CREeping RED FESCUE | 25 |
| ANNUAL RYE | 25 |
| TALL FESCUE | 17 |
| KENTUCKY BLUEGRASS | 5 |
| COLONIAL BENTGRASS | 1 |
| RED TOP | 1 |
| WHITE CLOVER* | 1 |

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 15 2014 FILE # 14-0135
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Herbert

EROSION AND SEDIMENT CONTROL PLAN
POINT JUDITH ROAD & GREEN MEADOW DRIVE
PLAT L / LOT 327
NARRAGANSETT, RHODE ISLAND

PREPARED BY:
JEFFREY J. CAMPOPIANO P.E.
16 WEST MAIN STREET
WICKFORD, RHODE ISLAND 02852
PHONE: (401) 295-2037 FAX: (401) 295-1118

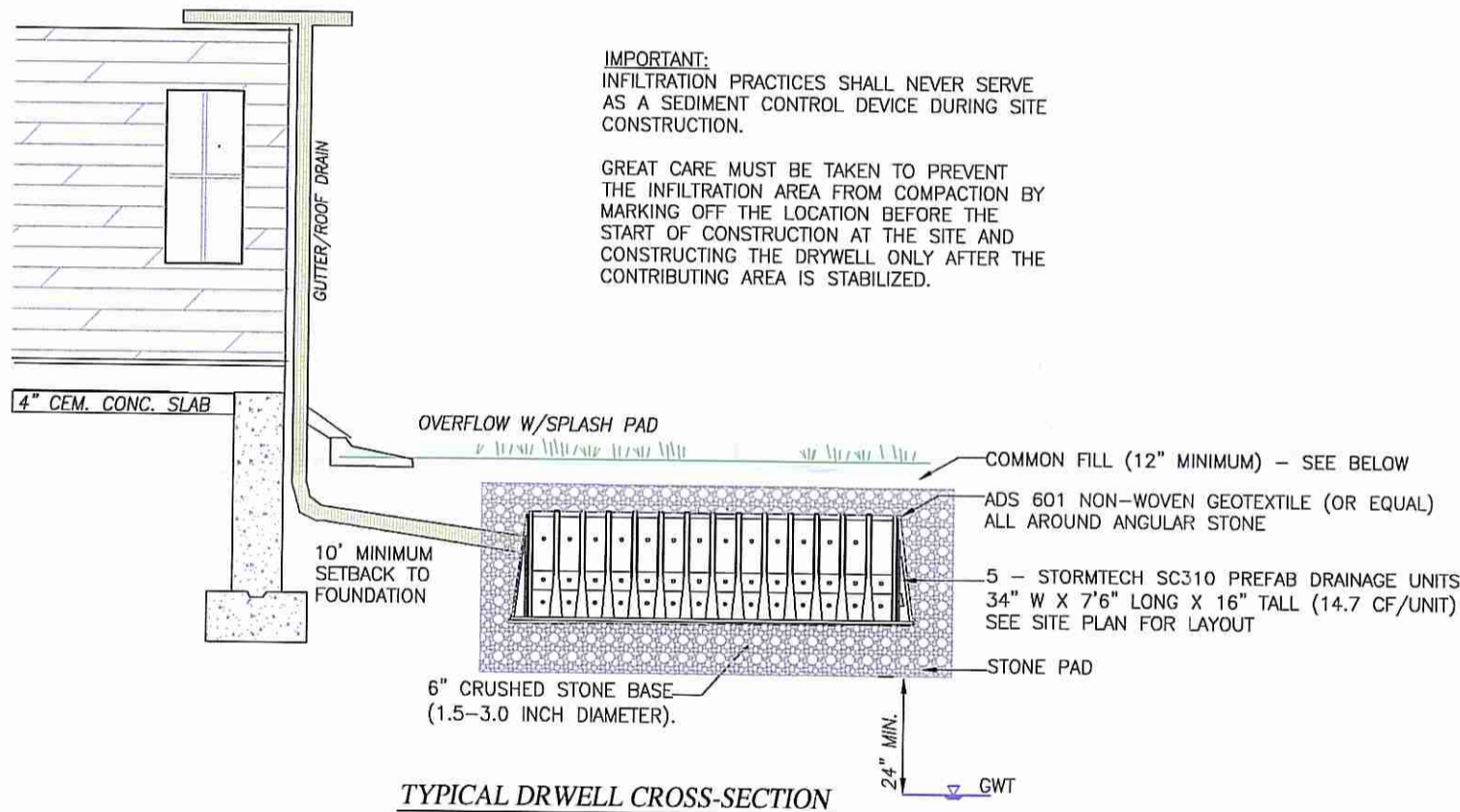
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| REV. | DATE | DESCRIPTION | DATE: 7/24/14 |
|------|------|--------------------------|---------------|
| 1 | 9/14 | DRIVEWAY; TEST HOLE DATA | SCALE: 1"=30' |

2
SHEET: 2 OF 5

INFILTRATION SYSTEM CONSTRUCTION NOTES

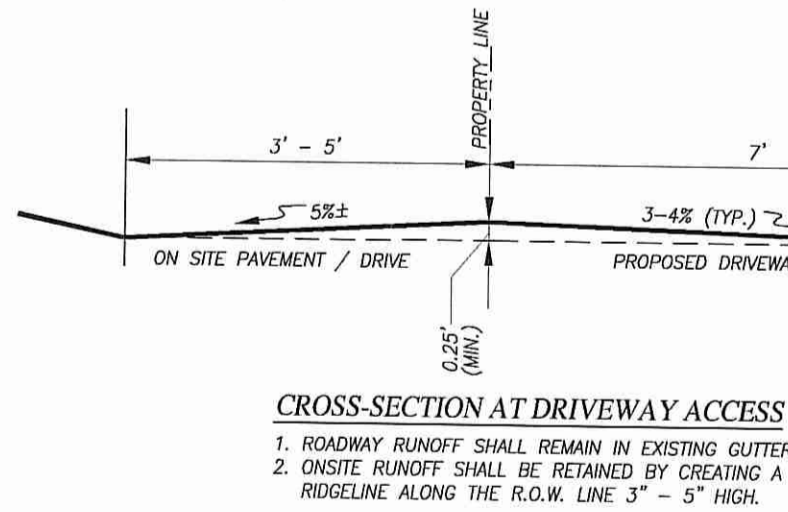
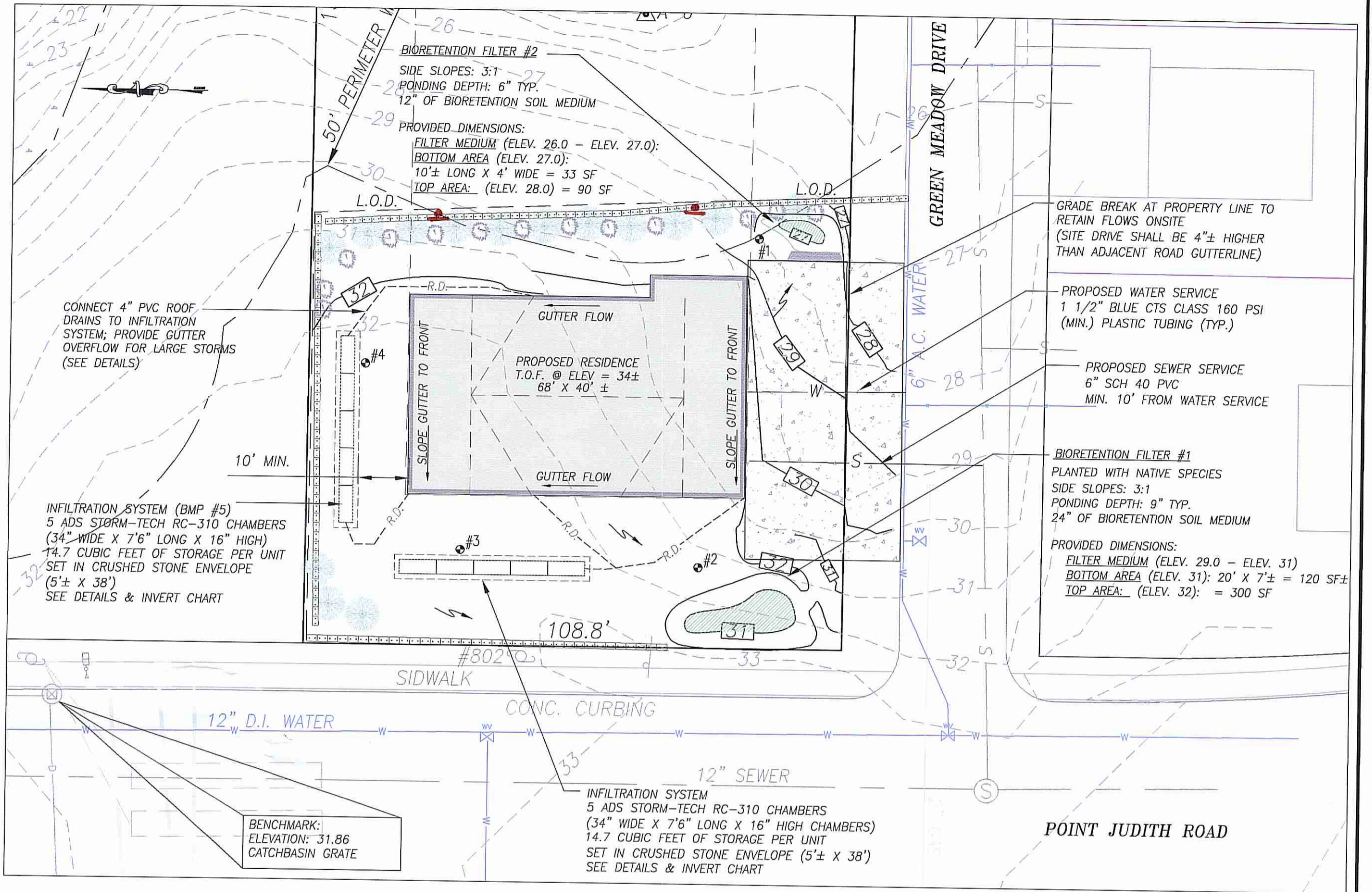
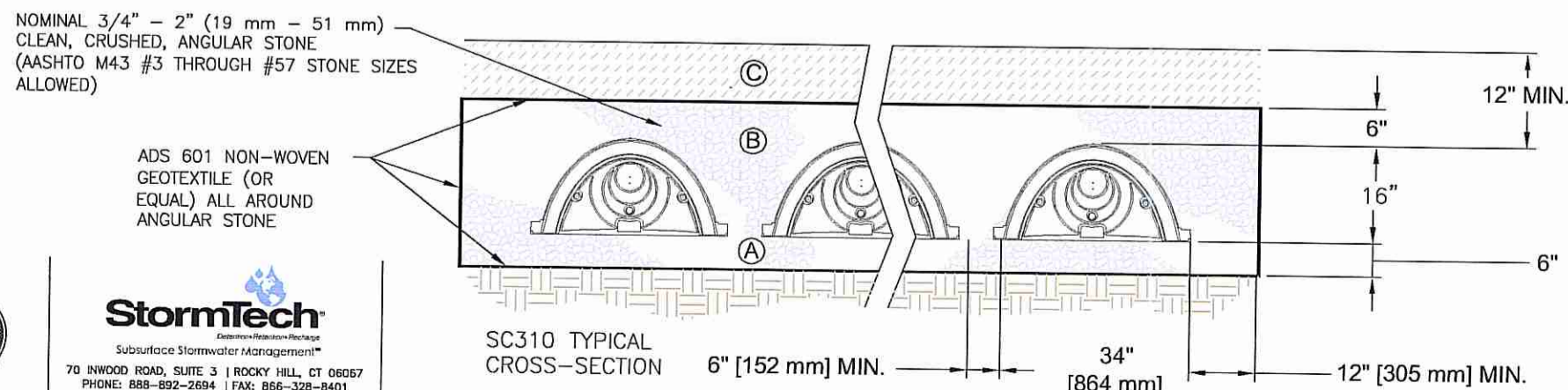
1. INFILTRATION TRENCH OR CHAMBER SYSTEMS MAY NOT RECEIVE RUN-OFF UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA TO THE INFILTRATION SYSTEM HAS RECEIVED FINAL STABILIZATION.
2. CONSTRUCTION EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM TRAVELING OVER THE INFILTRATION TRENCH OR CHAMBER AREAS TO MINIMIZE COMPACTION OF THE SOIL.
3. EXCAVATE THE INFILTRATION CHAMBER TO THE DESIGN DIMENSIONS. EXCAVATED MATERIALS SHALL BE PLACED AWAY FROM THE TRENCH/CHAMBER SIDES TO ENHANCE TRENCH WALL STABILITY. LARGE TREE ROOTS MUST BE TRIMMED FLUSH WITH THE TRENCH SIDES IN ORDER TO PREVENT FABRIC PUNCTURING OR TEARING OF THE FILTER FABRIC DURING SUBSEQUENT INSTALLATION PROCEDURES. THE SIDE WALLS OF THE TRENCH/CHAMBER SHALL BE ROUGHENED WHERE SHEARED AND SEALED BY HEAVY EQUIPMENT.
4. INFILTRATION CHAMBERS SHOULD CONSIST OF STORMTECH RC-310 UNITS. ANY SUBSTITUTIONS MUST BE OF EQUAL SIZE (STORAGE CAPACITY & HEIGHT) AND COMPRISED OF HIGH MOLECULAR WEIGHT HIGH DENSITY POLYETHYLENE (HDPE).
5. AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE CLASS "C" GEOTEXTILE OR BETTER SHALL INTERFACE BETWEEN THE TRENCH/CHAMBER SIDE WALLS AND BETWEEN THE STONE RESERVOIR AND GRAVEL FILTER LAYERS. A PARTIAL LIST OF NONWOVEN FILTER FABRICS THAT MEET THE CLASS CRITERIA IS CONTAINED INCLUDES (MIRAFI 180-N, AMOCO 4552, WEBTEC N70, GEOLON N70, CARTHAGE FX-805).
6. THE WIDTH OF THE GEOTEXTILE MUST INCLUDE SUFFICIENT MATERIAL TO CONFORM TO TRENCH/CHAMBER PERIMETER IRREGULARITIES AND FOR A 6-INCH MINIMUM TOP OVERLAP. THE FILTER FABRIC SHALL BE TUCKED UNDER THE STONE LAYER ON THE BOTTOM OF THE INFILTRATION TRENCH/CHAMBER FOR A DISTANCE OF 6 TO 12 INCHES.
7. THE STONE AGGREGATE SHOULD BE PLACED IN 8" LIFTS AND LOOSELY COMPACTED. THE GRAVEL STONE FOR THE INFILTRATION TRENCH/CHAMBER SHALL BE WASHED AND MEET ONE OF THE FOLLOWING AASHTO STD. M-43; SIZE NO. 2 OR NO. 3.
8. CARE SHALL BE EXERCISED TO PREVENT NATURAL OR FILL SOILS FROM INTERMIXING WITH THE STONE AGGREGATE. ALL CONTAMINATED STONE AGGREGATE SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED STONE AGGREGATE.
9. VOIDS CAN BE CREATED BETWEEN THE FABRIC AND THE EXCAVATION SIDES AND SHALL BE AVOIDED. REMOVING BOULDERS OR OTHER OBSTACLES FROM THE TRENCH WALLS IS ONE SOURCE OF SUCH VOIDS; THEREFORE, NATURAL SOILS SHOULD BE PLACED IN THESE VOIDS AT THE MOST CONVENIENT TIME DURING CONSTRUCTION TO ENSURE FABRIC CONFORMITY TO THE EXCAVATION SIDES.
10. PVC SHOULD BE IN ACCORDANCE WITH RIDOT SPECIFICATION SECTION M.04 DRAINAGE AND THE FOLLOWING PROVISIONS, AS APPLICABLE. PVC DISTRIBUTION PIPES SHALL BE SCHEDULE 40 AND MEET ASTM STD. D 1784. ALL FITTINGS AND PERFORATIONS (1/2 INCH IN DIAMETER) SHALL MEET ASTM STD. D 2729.
11. THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: WWW.STORMTECH.COM. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.



ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

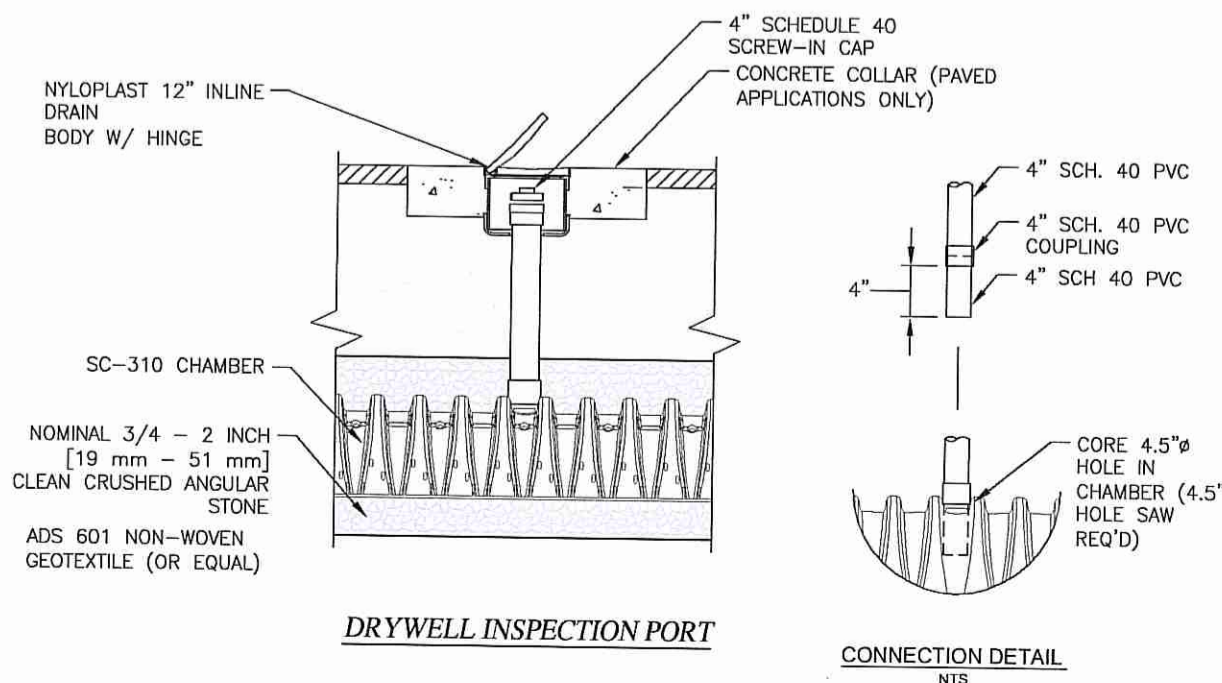
| MATERIAL LOCATION | DESCRIPTION | AASHTO M43 DESIGNATION | COMPACTION/DENSITY REQUIREMENT |
|---|--|---|--|
| (C) FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE TO 12" [457 mm] ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUB-BASE MAY BE A PART OF THIS LAYER. | GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER. | 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 76, 8, 89, 9, 10 | BEGIN COMPACTION AFTER 12" [305 mm] OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" [152 mm] LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs [53 kN]. DYNAMIC FORCE NOT TO EXCEED 20,000 lbs [89 kN]. |
| (B) EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE TO THE 'C' LAYER ABOVE. | CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm] | 3, 357, 4, 467, 5, 56, 57 | NO COMPACTION REQUIRED. |
| (A) FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER. | CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH [19 - 51 mm] | 3, 35, 4, 467, 5, 56, 57 | PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY. |

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" [229 mm] (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.



| DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF WATER RESOURCES FRESHWATER WETLANDS PROGRAM | | INFILTRATION SYSTEM INVERT SCHEDULE | |
|--|----------------------------------|-------------------------------------|--|
| APPROVED WITH COMMENTS | MIN. FINISHED GRADE ABOVE SYSTEM | ELEV. 32.83 | |
| AS SPECIFIED IN THE LETTER OF APPROVAL | TOP OF STONE ABOVE CHAMBER | ELEV. 31.83 | |
| FILE # 14-0135 | TOP OF CHAMBER | ELEV. 31.33 | |
| NO CHANGES ALLOWED WITHOUT PROH APPR | BASE OF CHAMBER - INVERT | ELEV. 30.0 | |
| APPROVED PLANS MUST BE AT CONSTRUCTION SITE | BOTTOM OF STONE | ELEV. 29.5 | |
| | ESTIMATED GWT | ELEV. 27.0± | |

Charles A. Haber



UTILITY & GRADING PLAN
POINT JUDITH ROAD & GREEN MEADOW DRIVE
PLAT L / LOT 327
NARRAGANSETT, RHODE ISLAND

PREPARED BY: **JEFFREY J. CAMPOPIANO P.E.**
16 WEST MAIN STREET
WICKFORD, RHODE ISLAND 02852
PHONE: (401) 295-2027 / FAX: (401) 295-1118

PREPARED FOR: **WILLIAM DOLAN & FRANCIS BURKE**
54 AUTUMN LANE
SOUTH KINGSTOWN, RI 02892

DATE: 7/24/14
SCALE: 1"=30'

REV. DATE DESCRIPTION

| | | |
|---|------|--------------------------|
| 1 | 9/14 | DRIVEWAY; TEST HOLE DATA |
|---|------|--------------------------|

3
SHEET: 3 OF 5



BIO-RETENTION CONSTRUCTION NOTES:

1. THE BIORETENTION AREA SHALL BE CONSTRUCTED FOLLOWING THE COMPLETION AND STABILIZATION OF OTHER SITE WORK. COMPACTION OF THE RAIN GARDEN AREA PRIOR TO AND DURING CONSTRUCTION MUST BE AVOIDED. EXCAVATION SHALL BE COMPLETED USING LIGHT EQUIPMENT WITH WIDE TRACKS. IF THE AREA DOES BECOME COMPACTED, SOIL MUST BE TILLED TO A MINIMUM DEPTH OF 12".
2. IF SPECIFIED, UNDERDRAINS SHALL BE PLACED ON A MINIMUM OF 3'0" WIDE SECTION OF FILTER CLOTH, OVERLAIN BY GRAVEL BEDDING FREE FROM FINES. PIPE SHALL BE SLOPED A MINIMUM OF 0.5%.
3. FOLLOW SOIL SPECIFICATIONS TO PROVIDE A PLANTING MEDIA WITH ADEQUATE NUTRIENTS. PLANTING MEDIA SHALL BE PLACED IN 12" LIFTS.

MATERIALS

PLANTING MEDIA - THE MATERIAL TO BE FURNISHED SHALL BE A UNIFORM MIX FREE OF SUBSOIL, REFUSE, STUMPS, ROOTS, ROCKS, BRUSH, WEEDS OR OTHER MATERIAL WHICH WOULD PREVENT THE FORMATION OF A SUITABLE SEED BED. THE MEDIA SHALL CONSIST OF THE 4 PARTS PLANTING SOIL & 1 PART WELL AGED, AERATED, LEAF COMPOST.

PLANTING SOIL:
SAND: 85-88%
SOIL FINES: 8-12% (NO MORE THAN 2% CLAY)
ORGANIC MATTER: 3-5%

A TEXTURAL ANALYSIS IS REQUIRED TO ENSURE THE BIORETENTION SOIL MEETS THE SPECIFICATION LISTED ABOVE. THE BIORETENTION SOIL SHOULD ALSO BE TESTED FOR THE FOLLOWING CRITERIA:

- PH RANGE 5.2 - 7.0
- MAGNESIUM NOT TO EXCEED 32 PPM
- PHOSPHORUS P205 NOT TO EXCEED 69 PPM
- POTASSIUM K2O NOT TO EXCEED 78 PPM
- SOLUBLE SALTS NOT TO EXCEED 500 PPM

ALL BIORETENTION AREAS SHOULD HAVE A MINIMUM OF ONE TEST. EACH TEST SHOULD CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHOULD COME FROM THE SAME TESTING FACILITY.

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

MULCH LAYER SPECIFICATIONS

A FINELY SHREDDED, WELL-AGED ORGANIC HARDWOOD MULCH IS THE PREFERRED ACCEPTED MULCH; A FINELY SHREDDED, WELL-AGED ORGANIC DARK PINE MULCH MAY BE ACCEPTED ON A CASE-BY-CASE BASIS. BARK DUST MULCHES AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE.

SHREDDED MULCH MUST BE WELL AGED (6-12 MONTHS) FOR ACCEPTANCE. MIX APPROXIMATELY 1/2 THE SPECIFIED MULCH LAYER INTO THE PLANTING SOIL TO A DEPTH OF APPROXIMATELY 4 INCHES TO HELP FOSTER A HIGHLY ORGANIC SURFACE LAYER.

INSTALLATION

1. IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION AREA IS EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF-TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES ARE NOT ACCEPTABLE.
2. COMPACTION CAN BE ALLEVATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE PERFORMED TO RESTRUCTURE THE SOIL PROFILE THROUGH THE 12-IN COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.
3. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12IN OR GREATER. DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

PLANT INSTALLATION

1. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE.
2. ROOT STOCK OF THE PLANT MATERIAL SHOULD BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE DIAMETER OF THE PLANTING PIT SHOULD BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.
3. TREES SHOULD BE BRACED USING 2 IN X 2 IN STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE TILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH.

MAINTENANCE

MAINTENANCE: REPLACE DEAD PLANTS, DEAD-HEAD AND PRUNE AS REQUIRED. MULCH ANNUALLY; FERTILIZER SHALL NOT BE UTILIZED, AMEND SOIL YEARLY WITH A COMPOST MIX.

SAMPLE PLANTING LIST FOR BIO-RETENTION FILTER

| CODE | BOTANICAL NAME | COMMON NAME | MATURE HEIGHT | SPREAD | SIZE |
|------|---|----------------------------------|---------------|----------|----------|
| CC | <i>Cercis canadensis</i> 'Forest Pansy' | Eastern Redbud | 20' | 20-30' | 3 Gallon |
| CA-S | <i>Caryopteris x clandonensis</i> 'Langwood Blue' | Blue Mist Spirea 'Langwood Blue' | 36-54" | 36"-48" | 2 Gallon |
| NB | <i>Morella pensylvanica</i> | Northern Bayberry | 48"-60" | 48"-60" | 1 Gallon |
| JS | <i>Juniperus squamata</i> 'Blue Star' | Blue Star Juniper | 12-36" | 12"-36" | 2 Gallon |
| PV | <i>Panicum virgatum</i> | Switch grass | 24-36" | 24-36" | 1 Gallon |
| IV | <i>Ilex verticillata</i> | Winterberry | 36"-48" | 36"-48" | 2 Gallon |
| VT | <i>Viburnum dentatum</i> | Arrowwood Viburnum | 60"-120" | 60"-120" | 5 Gallon |

PERENNIAL - PLANT LIST FOR RAIN-GARDENS

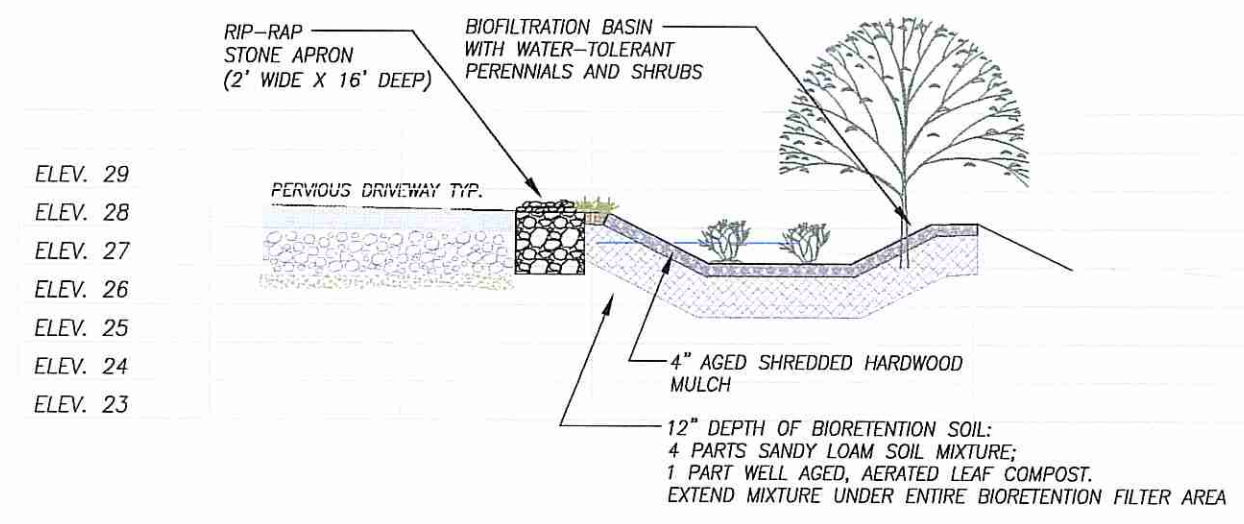
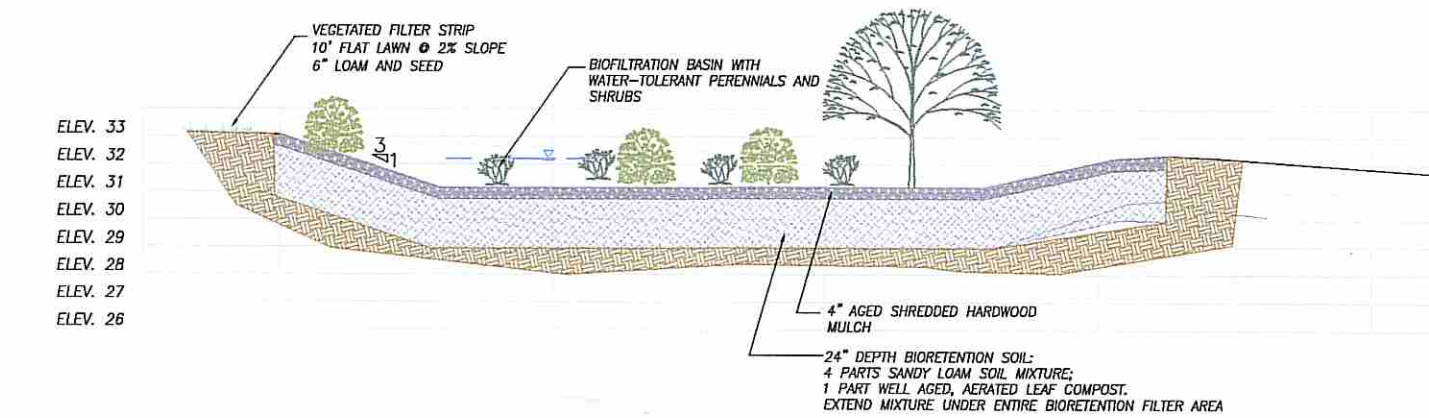
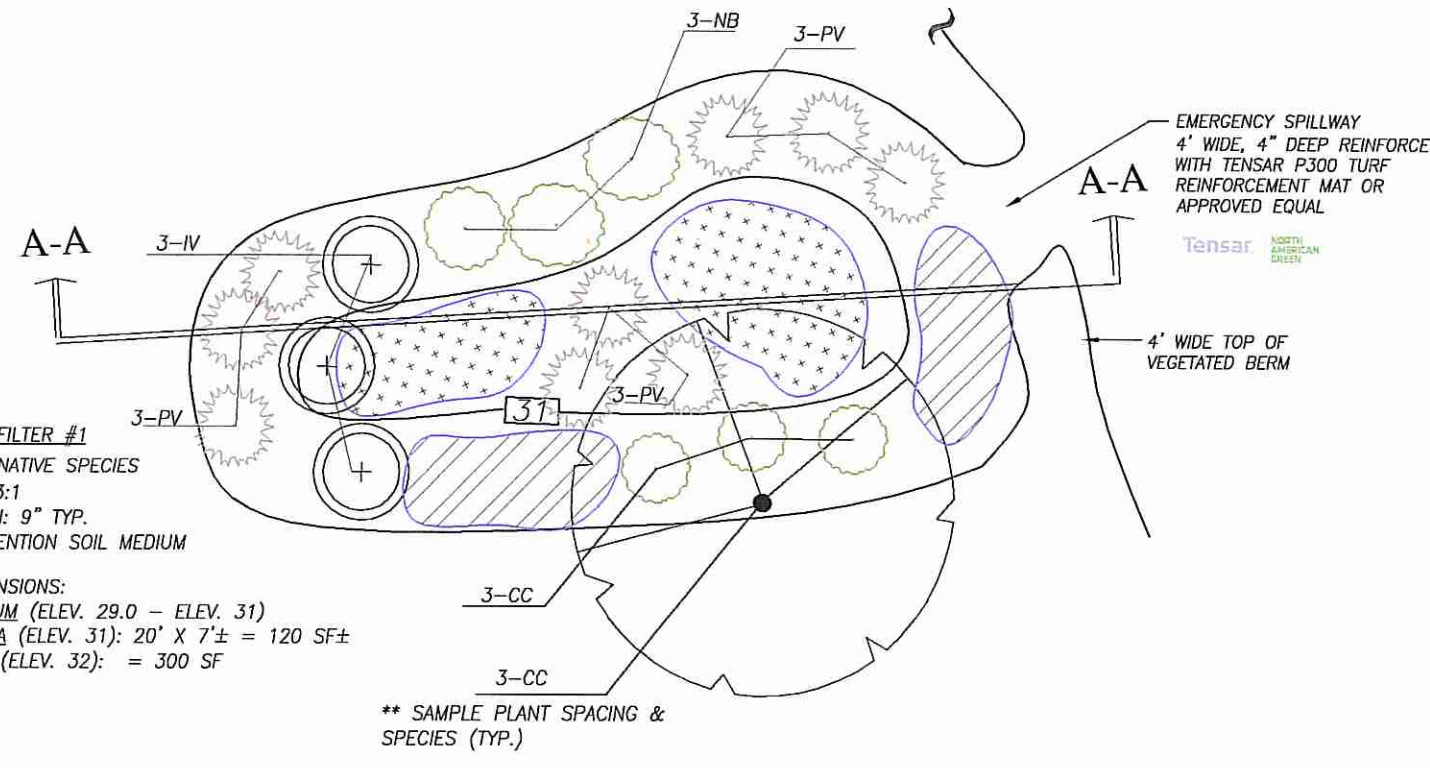
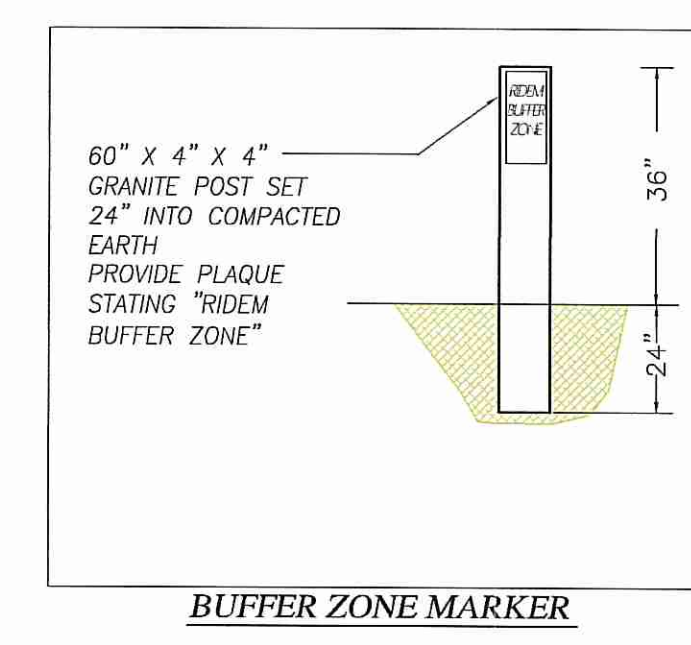
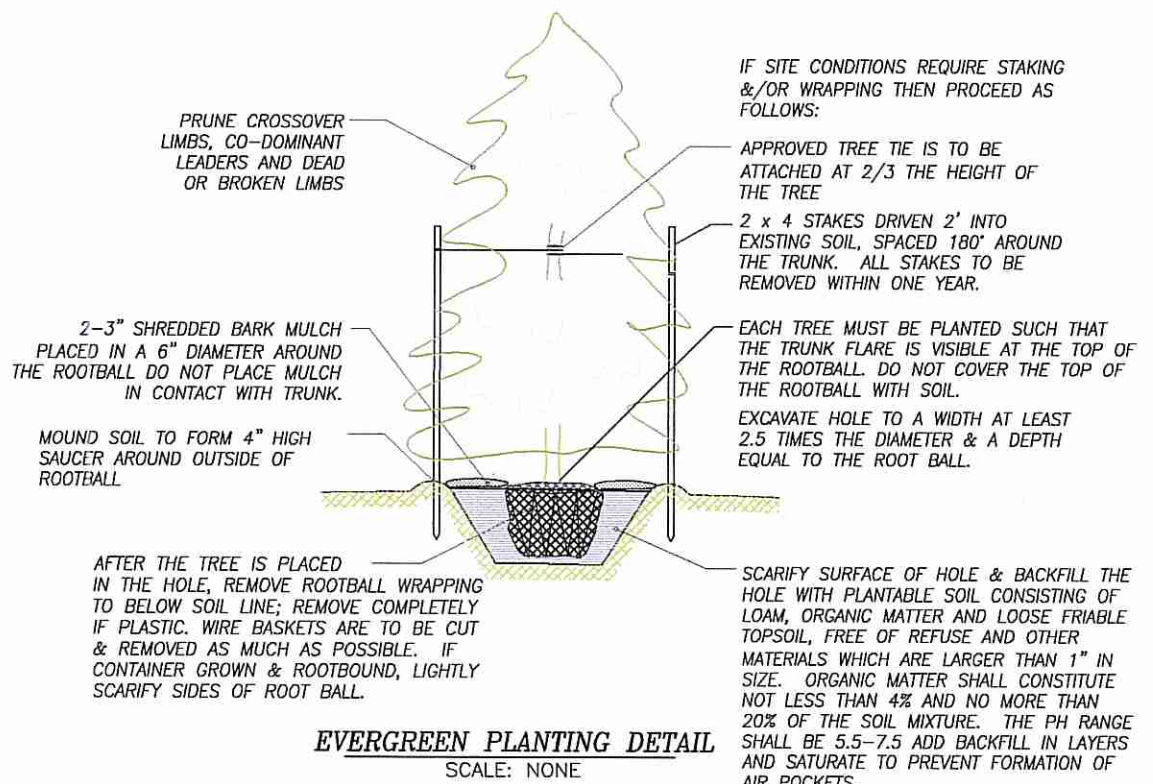
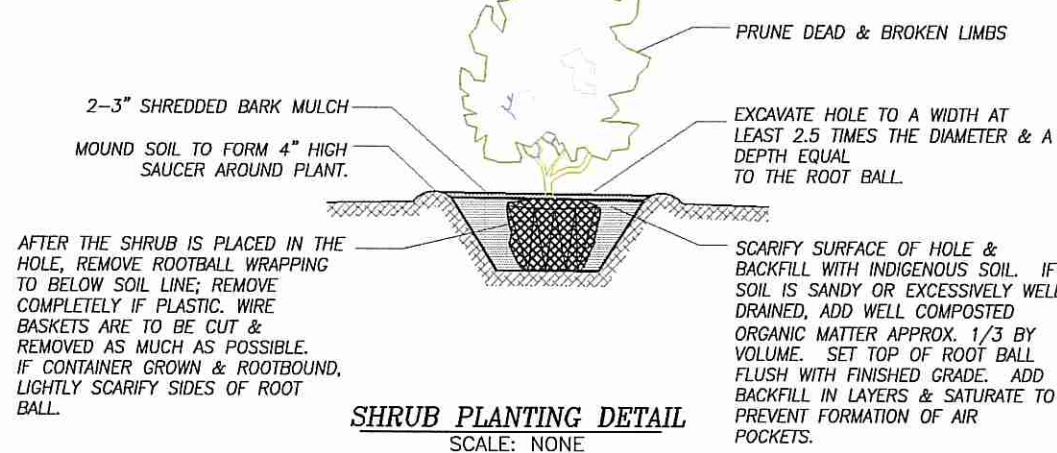
ALL PERENNIALS PLANTINGS TO BE PLANTED IN GROUPS OF THREE AND STAGGERED 18" O.C.

RAIN GARDEN PERENNIALS - LOWER LEVEL PLANTS (MOST TOLERANT OF SATURATED CONDITIONS)

| BOTANICAL NAME | COMMON NAME | HEIGHT | SPREAD | SIZE |
|---------------------------------|--------------------------|---------|--------|----------|
| <i>Monarda</i> 'Raspberry Wine' | Beebalm 'Raspberry Wine' | 24"-36" | 24" | 1 Gallon |
| <i>Iris versicolor</i> | Blue Flag Iris | 18"-24" | 15" | 1 Gallon |

RAIN GARDEN PERENNIALS - UPPER LEVEL PLANTS (LESS TOLERANT OF SATURATED CONDITIONS)

| BOTANICAL NAME | COMMON NAME | HEIGHT | SPREAD | SIZE |
|---------------------------------|--------------------------|---------|---------|----------|
| <i>Heuchera</i> 'Black Beauty' | Black Beauty Coral Bells | 10"-16" | 24" | 1 Gallon |
| <i>Campanula</i> 'Bavaria Blue' | Tussock's Bellflowers | 6-12" | 6"-10" | 1 Gallon |
| <i>Tiarella</i> | Foam Flower | 12-18" | 12"-18" | 1 Gallon |



PERVIOUS DRIVEWAY CONSTRUCTION NOTES:

MATERIALS:

CRUSHED STONE SHALL HAVE 90% FRACTURED FACES, LA ABRASION < 40 PER ASTM C131, MINIMUM CBR OF 80% PER ASTM D 1883. DO NOT USE ROUNDED RIVER GRAVEL FOR VEHICULAR APPLICATIONS. ALL STONE MATERIALS SHALL BE WASHED WITH LESS THAN 1% PASSING THE NO. 200 SIEVE. BASE, SUBBASE AND FILLER MATERIALS SHALL BE FREE OF FINES, ORGANIC MATTER AND OTHER FOREIGN SUBSTANCES, & SHALL CONFORM TO ASTM D 448 GRADATION AS SHOWN BELOW.

SUB-BASE: ASTM NO. 2

| SIEVE SIZE | % PASSING |
|------------|-----------|
| 3" | 100% |
| 2.5" | 90%-100% |
| 2" | 35%-70% |
| 1.5" | 0%-15% |
| 3/4" | 0%-5% |

BASE: OPEN GRADED GRAVEL (ASTM NO. 57)

| SIEVE SIZE | % PASSING |
|------------|-----------|
| 1.5" | 100% |
| 1" | 95%-100% |
| 1/2" | 25%-60% |
| No. 4 | 0%-10% |
| No. 8 | 0%-5% |

FILTER COURSE
ASTM C-33

| SIEVE SIZE | % PASSING |
|------------|-----------|
| 1/2" | 100% |
| 3/8" | 100% |
| No. 4 | 70%-100% |
| No. 8 | 0%-6% |

BACKFILL: BACKFILL MATERIAL SHALL BE COMPOSED OF HARD, DURABLE STONE AND COARSE TO FINE SAND, FREE OF FEAT, VEGETABLE OR ORGANIC MATTER, CLAY LUMPS & OTHER DEBRIS. THE GRANULAR FILL SHALL BE READILY COMPATIBLE AND SHALL NOT CONTAIN ANY STONES THAT ARE IN EXCESS OF 6".

FILL SHALL MEET THE FOLLOWING:

| SIEVE SIZE | % PASSING |
|------------|-----------|
| 6" | 100% |
| #4 | 30-100% |
| #200 | 0-8% |

PAVING STONES:

PAVING STONES SHALL BE OPEN CELL DESIGN MEETING THE REQUIREMENTS OF ASTM C 936-08 ("STANDARD SPECIFICATIONS FOR INTERLOCKING CONCRETE PAVING UNITS") & C140 (STANDARD TEST METHODS OF SAMPLING AND TESTING CONCRETE MASONRY UNITS).

LOAM:

LOAM - THE CONTRACTOR SHALL PROVIDED A MINIMUM OF FOUR (4") INCHES OF LOAM ON AREAS UP TO 10% IN GRADE. ALL OTHER AREAS OVER 10% GRADE SHALL RECEIVE A MINIMUM OF SIX (6") INCHES. THE MATERIAL TO BE FURNISHED SHALL CONSIST OF LOOSE, FRABLE, SANDY LOAM OR LOAM TOPSOIL, FREE OF SUBSOIL, REFUSE, STUMPS, ROOTS, ROCKS, BRUSH, WEEDS OR OTHER MATERIAL WHICH WOULD PREVENT THE FORMATION OF A SUITABLE SEED BED.

PREPARATION:

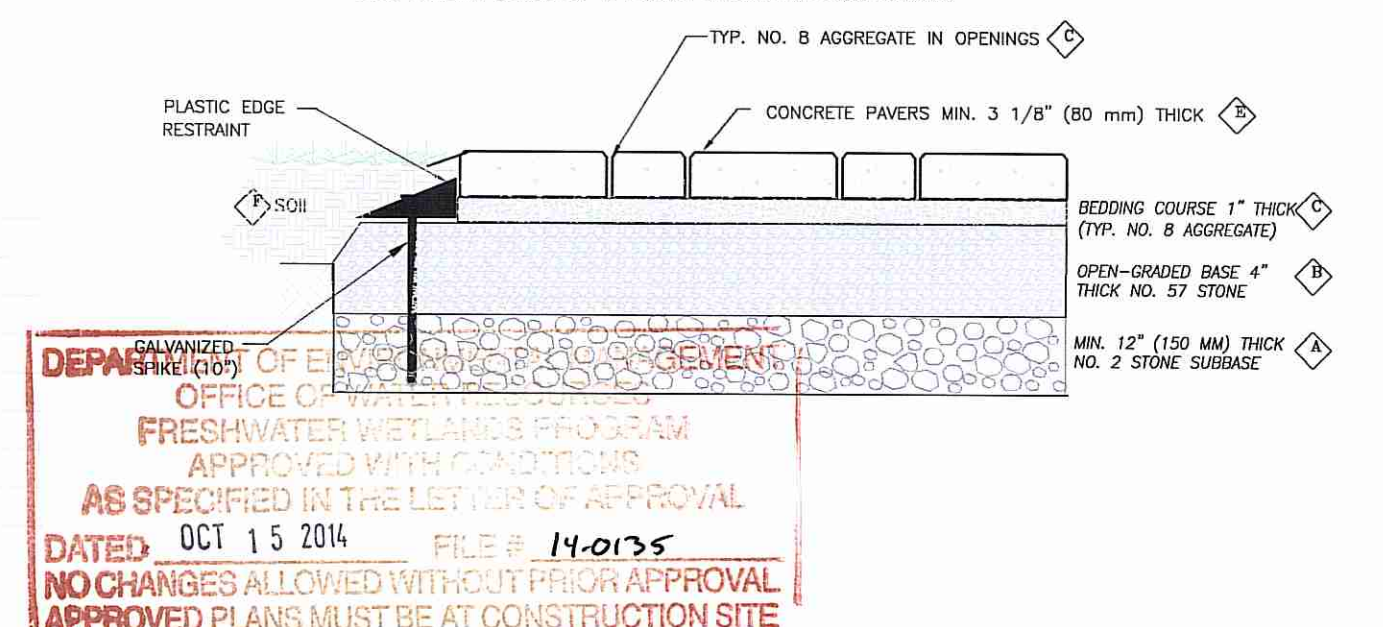
1. KEEP AREA WHERE PAVEMENT IS TO BE CONSTRUCTED FREE FROM SEDIMENTS DURING ENTIRE JOB. PREVENT OVER COMPACTION OF DRIVEWAY AREA.
2. PROVIDE BERM AT DRIVEWAY/STREET LINE TO PREVENT OFF-SITE & STREET RUNOFF FROM ENTERING DRIVEWAY. BACKFILL REQUIRED TO MEET GRADES SHALL MEET THE REQUIREMENTS ABOVE AND BE COMPACTED TO A DENSITY OF 90% USING A VIBRATORY COMPACTOR.
3. VERIFY GRADES AND SLOPES, DRIVEWAY SHALL PITCH AWAY FROM OWTS AND DWELLING AT A MINIMUM OF 1-2% TOWARDS BIORETENTION AREA.
4. INSTALL SUB-BASE: MOISTEN, SPREAD AND COMPACT THE NO. 2 SUBBASE IN 4 TO 6" LIFTS. COMPACT SUB-GRADE TO A MINIMUM OF 90% AND A MAXIMUM OF 95%. COMPACTION SHALL BE IN ACCORDANCE WITH ASTM D1557. OVER-COMPACTION SHALL BE AVOIDED.
5. INSTALL OPEN GRADED BASE: INSTALL 4" THICK BASE & LIGHTLY COMPACT. THE BASE MATERIAL SHOULD SHOW NO SIGNS OF MOVEMENT WHEN COMPACTION IS COMPLETE.

PAVER INSTALLATION:

1. PAVING STONES SHALL BE PERMEABLE OR OPEN CELL DESIGN MEETING THE REQUIREMENTS OF ASTM C 936-08 ("STANDARD SPECIFICATIONS FOR INTERLOCKING CONCRETE PAVING UNITS") & C140 (STANDARD TEST METHODS OF SAMPLING AND TESTING CONCRETE MASONRY UNITS).
2. SPREAD BEDDING SAND (MEETING ASTM NO. 8 GRADATION) IN A 1" THICK LAYER.
3. ENSURE PAVERS ARE FREE FROM FOREIGN MATERIALS, LAY PAVERS IN PATTERNS SPECIFIED WITH JOINT OPENINGS AS SPECIFIED BY MANUFACTURER (TYP. 1/8"). FILL GAPS AND CUT EDGE UNITS.
4. COMPACT AND SEAT PAVERS IN SAND USING LOW AMPLITUDE, 75-90 HZ COMPACTOR CAPABLE OF 5,000 LBS. DO NOT COMPACT WITHIN 3' OF THE UNRESTRAINED EDGES OF PAVING UNITS.

MAINTENANCE:

KEEP ADJACENT AREAS WELL MAINTAINED AND STABILIZED. REMOVE LEAVES/DEBRIS REGULARLY. RAKE & HOSE DOWN DRIVEWAY SEASONALLY TO PREVENT THE SURFACE FROM CLOGGING.



STORMWATER DETAIL PLAN
POINT JUDITH ROAD & GREEN MEADOW DRIVE
PLAT L / LOT 327
NARRAGANSETT, RHODE ISLAND

PREPARED BY: JEFFREY J. CAMPOPIANO P.E.
16 WEST MAIN STREET
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PHONE: (401) 295-3037 / FAX: (401) 295-1118

PREPARED FOR: WILLIAM DOLAN & FRANCIS BURKE
54 AUTUMN LANE
SOUTH KINGSTOWN, RI 02892

DATE: 7/24/14
SCALE: NTS
SHEET: 4 OF 5

GENERAL NOTES: WORK WITHIN RIGHT-OF-WAY

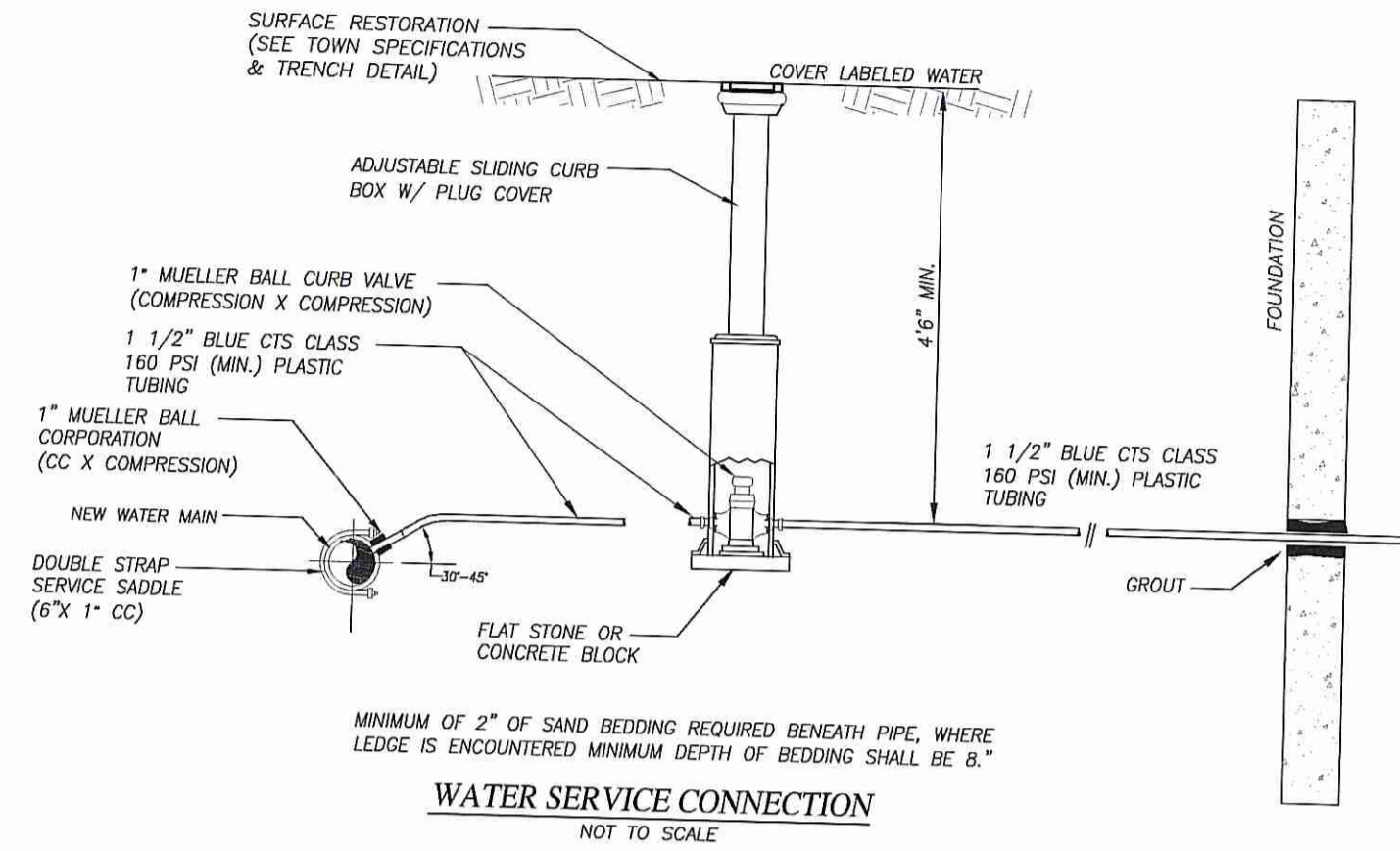
- ALL WORK PERFORMED IN THE TOWN R.O.W. SHALL CONFORM TO THE MOST RECENT REVISION OF THE TOWN OF NARRAGANSETT CODE OF ORDINANCES CHAPTER 17: "ROAD CONSTRUCTION" & CHAPTER 20 "UTILITIES".
- MATCH EXISTING ROADWAY STRUCTURE IN KIND ACCORDING TO TOWN OF NARRAGANSETT REQUIREMENTS. ALL DISTURBED AREAS SHALL BE RE-ESTABLISHED TO PRE-CONSTRUCTION CONDITIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED BY STATE AND LOCAL LAW. SUCH PERMITS INCLUDE A "RIGHT OF WAY CONSTRUCTION PERMIT" ISSUED THROUGH THE NARRAGANSETT PUBLIC WORKS DEPARTMENT & TOWN OF NARRAGANSETT APPLICATION FOR SEWER / WATER.
- CONTRACTOR SHALL MAINTAIN THE APPLICABLE STATE & LOCAL LICENSES INCLUDING A "RIGHT OF WAY CONSTRUCTION LICENSE" ISSUED BY THE PUBLIC WORKS DEPARTMENT & THE APPLICABLE DRAINLAYERS LICENSE (ISSUED BY EITHER THE TOWN OF NARRAGANSETT ENGINEERING DIVISION OR A MASTER PLUMBER LICENSE ISSUED BY THE STATE OF RHODE ISLAND).
- SHALL WORK SHALL BE IN ACCORDANCE WITH THE CONDITIONS OF APPROVAL LISTED BY THE TOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE TOWN OF NARRAGANSETT 48 HOURS BUSINESS HOUR PRIOR TO COMMENCING WORK IN ANY PUBLIC R.O.W.
- ALL ELEMENTS OF CONSTRUCTION WILL BE FIELD SUPERVISED BY THE OWNER, OR OWNER'S REPRESENTATIVE. A FINAL INSPECTION OF ALL SITE IMPROVEMENTS WILL BE MADE BY THE TOWN ENGINEER TO DETERMINE WHETHER THE WORK IS SATISFACTORY AND IN SUBSTANTIAL AGREEMENT WITH THE APPROVED FINAL CONSTRUCTION DRAWINGS AND SPECIFICATIONS. FOLLOWING THE FINAL INSPECTION CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING THE "DRAIN LAYER'S RETURN" BACK TO THE WASTEWATER/WATER DIVISION OFFICE WITH THE TOWN ENGINEER'S SIGNATURE.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL SURVEY LAYOUT SURFACES FOR THE WORK AND SHALL SUBMIT "AS-BUILT" DRAWINGS OF THE WORK.
- LOCATIONS AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS WITH "DIG SAFE." ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR. NO EXCAVATION SHALL BE INITIATED UNTIL ALL INVOLVED UTILITY COMPANIES AND/OR TOWN DEPARTMENTS WHOSE FACILITIES MIGHT BE AFFECTED BY THE WORK TO BE PERFORMED ARE CONTACTED AT LEAST 72 HOURS IN ADVANCE BY THE CONTRACTOR. THE CONTRACTOR SHALL REQUEST THAT A REPRESENTATIVE FROM THE AFFECTED UTILITY BE PRESENT ON SITE WHEN WORK RELATING TO, ADJACENT TO, OR PROXIMATE TO SUCH UTILITY OR PROPERTY IS BEING PERFORMED.
- ALL CONSTRUCTION WORK SHALL BE PERFORMED IN THE DRY. THE CONTRACTOR SHALL PROVIDE, OPERATE AND MAINTAIN ANY EQUIPMENT NECESSARY TO CONTROL ALL SURFACE AND SUBSURFACE WATER ENCOUNTERED IN THE PERFORMANCE OF THE PROJECT.
- THE CONTRACTOR SHALL PROVIDE BARRIERS TO PREVENT UNAUTHORIZED ENTRY TO CONSTRUCTION AREAS, AND TO PREVENT EXISTING FACILITIES AND ADJACENT PROPERTIES FROM DAMAGE FROM CONSTRUCTION OPERATIONS AND DEMOLITION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC INCLUDING POLICE PROTECTION. ALL TEMPORARY CONSTRUCTION SIGNS, BARRICADES, AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION OPERATIONS INCLUDING ALL ACTIONS OR OMISSIONS OF ANY SUBCONTRACTORS, AGENTS, OR EMPLOYEES. THE CONTRACTOR MUST ENSURE THAT THE CONDITIONS OF ALL PERMITS, SPECIFICATIONS, AND FEDERAL, STATE, AND LOCAL REGULATIONS ARE STRICTLY ENFORCED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ALL ASPECTS OF ON-SITE SAFETY INCLUDING WORK ZONE PROTECTION AND ANY DAMAGE TO EXISTING STRUCTURES.
- ALL SEWER INSTALLATION, JOINTS, CONSTRUCTION, METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, THE TOWN OF NARRAGANSETT WASTEWATER DIVISION "SANITARY SEWER SYSTEM TECHNICAL SPECIFICATIONS AND CONSTRUCTION INSTALLATION PROCEDURES (MARCH 25, 1997, AS REVISED)" & THE TOWN OF NARRAGANSETT "INFRASTRUCTURE IMPROVEMENT REGULATIONS"

SEWER NOTES:

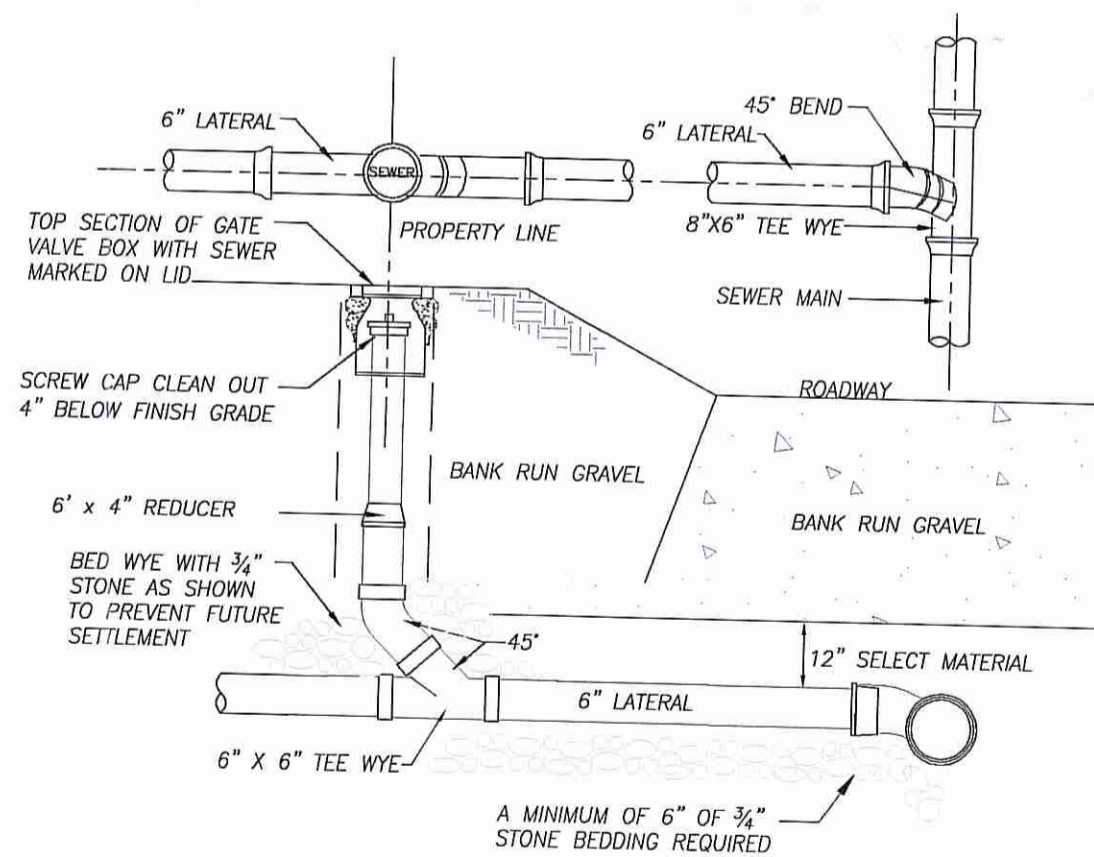
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- INSTALLATION OF SERVICE LATERALS WITHIN THE TOWN RIGHT OF WAY SHALL BE COMPLETED BY A DRAINLAYER AUTHORIZED & LICENSED BY THE TOWN.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS & SUBMITTING MANUFACTURER'S SHOP DRAWINGS & LITERATURE TO THE SEWER DEPARTMENT FOR REVIEW. CONTRACTOR SHALL INSPECT ALL PIPING, FITTINGS, AND ACCESSORY FOR DEFECTS PRIOR TO INSTALLATION.
- ADDITIONALLY CONTRACTOR SHALL ARRANGE FOR & FACILITATE INSPECTIONS BY THE NARRAGANSETT ENGINEERING DEPARTMENT AS REQUIRED. PLASTIC PIPE AND FITTINGS SHALL BE EXTRA HEAVY SOLID POLYVINYL CHLORIDE (PVC) FROM VIRGIN TYPE 1, GRADE 1 POLYVINYL CHLORIDE COMPOUNDS AS DEFINED AND DESCRIBED IN ASTM SPECIFICATIONS D-3034 SDR 35 FOR TYPE PSM POLY VINYL CHLORIDE (PVC) SEWER & PIPE FITTING.
- PIPE SHALL BE LAID IN 10' LENGTHS; JOINTS SHALL BE DOUBLE-SOCKET TYPE SEALED WITH A RUBBER "O" RING GASKET APPROVED BY THE TOWN. THE JOINT WHEN ASSEMBLED MUST BE ABLE TO WITHSTAND A HYDRAULIC PRESSURE INTERNALLY OF AT LEAST 10 PSI.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND MAINTAINING TRENCH BOXES OR OTHER APPLICABLE MEANS OF TRENCH SUPPORT. THE TRENCH SUB-BASE SHALL BE THOROUGHLY DE-WATERED. CONTRACTOR SHALL OBSERVE ALL SAFETY REGULATIONS SET FORTH BY OSHA AND THE STATE LABOR DEPARTMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING & SUPPORTING THE EXISTING PUBLIC UTILITIES BURIED IN THE PUBLIC WATER WAY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF DISTURBED OR DAMAGED UTILITIES TO THE SATISFACTION OF THE TOWN ENGINEER.
- SEWER PIPE SHALL BE LAID AT LEAST 10' HORIZONTAL FROM ANY EXISTING OR PROPOSED WATER LATERALS. THE DISTANCE SHALL BE MEASURED EDGE-TO-EDGE. IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10' SEPARATION, THE CROWN OF THE SEWER SHALL BE AT LEAST 18" BELOW THE INVERT OF THE WATERMAIN. THE TOWN ENGINEER RESERVES THE RIGHT TO REQUIRE ENCASEMENT OF THE WATER LINE IN SITUATIONS WHERE THE SEPARATION CAN NOT BE MET. ALL SEWERAGE FACILITIES SHALL MEET TESTING AND CLEANING REQUIREMENTS AS OUTLINED IN SECTION 7 OF THE NARRAGANSETT SPECIFICATIONS PRIOR TO ACCEPTANCE.
- NO FLOW SHALL BE ACCEPTED UNTIL ALL THE ABOVE STEPS ARE COMPLETED AND APPROVAL HAS BEEN GRANTED BY THE TOWN ENGINEER.

WATER SERVICE NOTES:

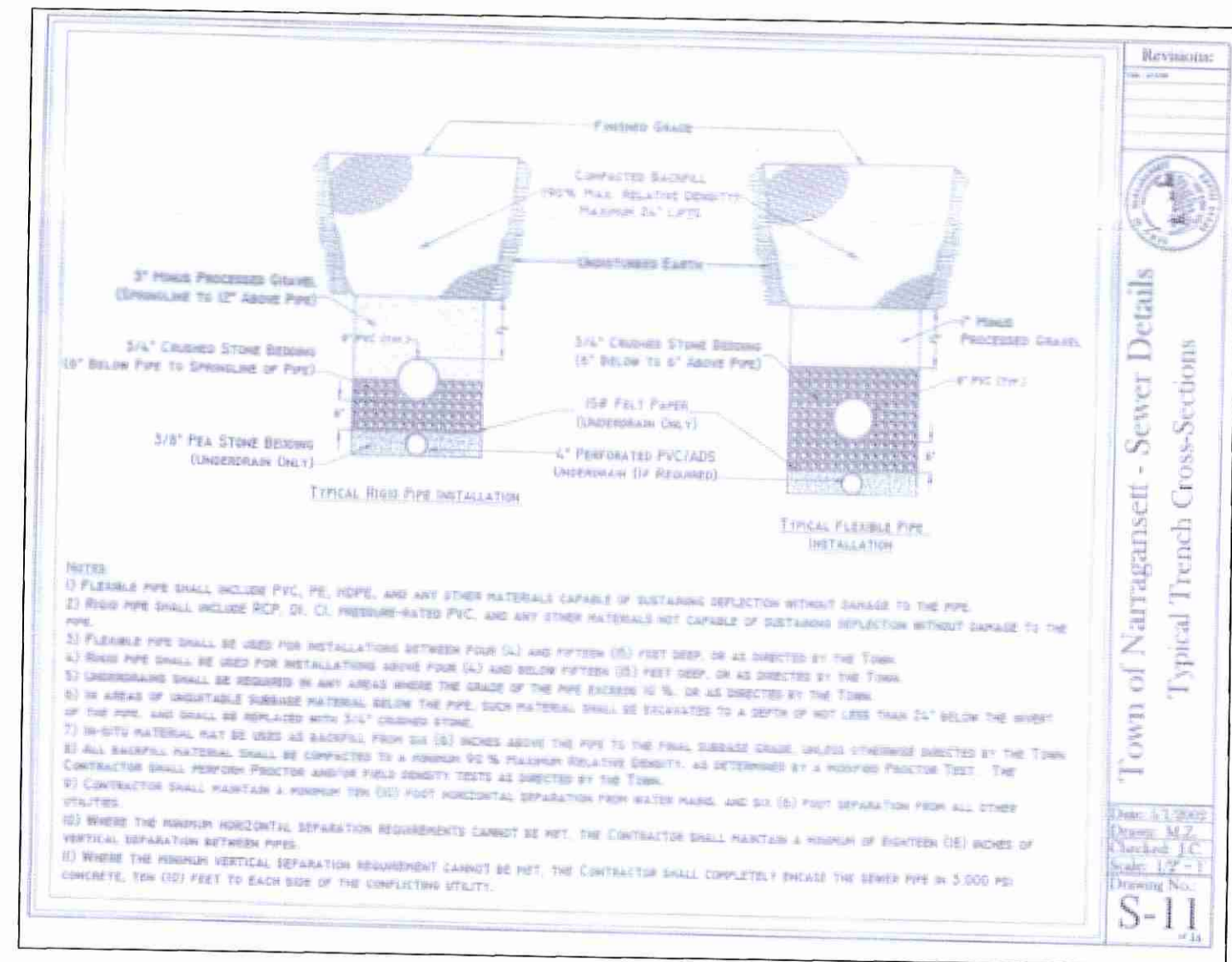
- ALL INSTALLATION, JOINTS, CONSTRUCTION, METHODS AND MATERIALS SHALL BE IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS, AWWA STANDARDS, & THE "TOWN OF NARRAGANSETT WATER DISTRIBUTION SYSTEM - GENERAL SPECIFICATIONS AND CONSTRUCTION INSTALLATION PROCEDURES" (MARCH 25, 1997, AS REVISED).
- INSTALLATION OF SERVICE LATERALS WITHIN THE TOWN RIGHT OF WAY SHALL BE BY THE TOWN OF NARRAGANSETT WATER DIVISION OR ITS DESIGNATED REPRESENTATIVE, UNLESS AUTHORIZATION IS GIVEN TO A QUALIFIED CONTRACTOR BY THE PUBLIC SERVICE DIRECTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS & SUBMITTING MANUFACTURER'S SHOP DRAWINGS & LITERATURE TO THE WATER DEPARTMENT FOR REVIEW.
- CONTRACTOR SHALL INSPECT ALL PIPING, FITTINGS, AND ACCESSORY FOR DEFECTS PRIOR TO INSTALLATION. ADDITIONALLY CONTRACTOR SHALL ARRANGE FOR & FACILITATE INSPECTIONS BY THE PUBLIC SERVICE DIRECTOR AS REQUIRED.
- LEAKAGE TESTS AND DISINFECTING PIPES SHALL BE PERFORMED BY THE CONTRACTOR IN CONFORMANCE WITH THE AMERICAN WATER WORKS ASSOCIATION (AWWA) RECOMMENDATIONS, THE NARRAGANSETT WATER DEPARTMENT REQUIREMENTS, AND OTHER GOVERNMENTAL AGENCIES HAVING JURISDICTION.
- SERVICE LINES SHALL BE CONSTRUCTED OF CLASS 160 PSI PLASTIC TUBING CONFORMING TO THE REQUIREMENTS OF AWWA C-900. THE WATER SERVICE LINE SHALL BE CONTINUOUS IN LENGTH AND WITHOUT JOINT FROM THE CURBSTOP SHUT-OFF VALVE TO THE WATER METER LOCATION. ANY OTHER APPROVALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL WATER LATERALS SHALL BE LAID IN A TRENCH OF SUCH DEPTH AS TO YIELD A FOUR AND HALF FOOT (4'-6") MINIMUM CLEAR COVER. THE MINIMUM REQUIRED COVER MUST EXTEND FOR 5 FEET BEYOND EACH SIDE OF THE PIPELINE WHEN THE PIPE IS PLACED IN FILL (IF REQUIRED).
- WATERLINE TRENCH TO BE AWWA TYPE 5 (OR APPROVED EQUAL).
- SYNTHETIC DETECTION TAPE THAT IS NOT BIODEGRADABLE SHALL BE UTILIZED AND PLACED A MINIMUM DISTANCE OF TWO FEET ABOVE TOP OF SERVICE LATERALS. TAPE SHALL STATE "WATER" OR SIMILAR APPROVED STATEMENT DEPICTING UNDERGROUND WATER UTILITIES.
- WHEN WORK IS NOT IN PROGRESS AND AT THE END OF EACH DAY, ALL OPEN ENDS OF THE PIPE AND FITTINGS SHALL BE SECURELY CLOSED. MINIMUM DEPTH OF COVER OVER PIPE IN STREET IS 4'-6". MINIMUM DEPTH CROSS COUNTRY IS 6'-FEET.



WATER SERVICE CONNECTION
NOT TO SCALE



SANITARY SEWER SERVICE CONNECTION
NOT TO SCALE



Revisions:
Town of Narragansett - Sewer Details
Typical Trench Cross-Sections
S-11

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 15 2014 FILE # 14-0135
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Charles A. Hester

UTILITY NOTES & DETAILS
POINT JUDITH ROAD & GREEN MEADOW DRIVE
PLAT L / LOT 327
NARRAGANSETT, RHODE ISLAND

PREPARED BY:
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REGISTERED PROFESSIONAL ENGINEER

| REV. | DATE | DESCRIPTION | DATE: 7/24/14 |
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SCALE: NTS
5
SHEET: 5 OF 5