

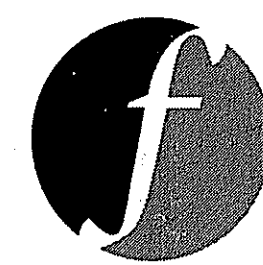
# JOHN M. "JAY" CRONAN RIVER ACCESS REHABILITATION

ROUTE 91 · RICHMOND · RHODE ISLAND  
PERMITTING DRAWING SET

JUNE 2016

REVISED AUGUST 2016

PREPARED FOR  
**WOOD-PAWCATUCK  
WATERSHED ASSOCIATION**  
203 ARCADIA ROAD  
HOPE VALLEY, RHODE ISLAND 02832



PREPARED BY  
**FUSS & O'NEILL**  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
401.861.3070  
www.fando.com

## SHEET INDEX

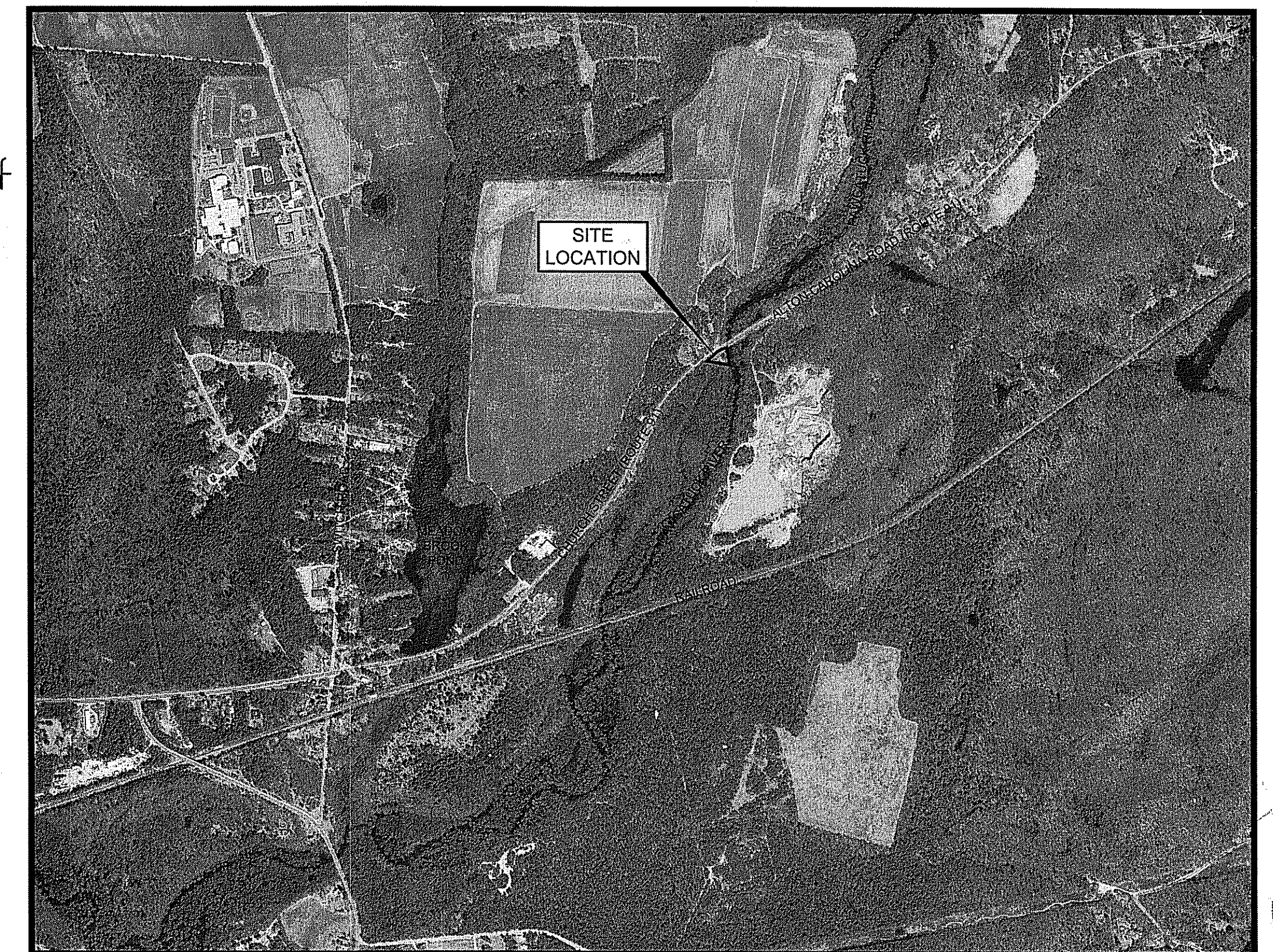
SHEET No.	SHEET TITLE
GI-001	COVER SHEET
CN-001	GENERAL NOTES AND LEGEND
CS-101	EXISTING CONDITIONS PLAN
CS-102	SITE DEMOLITION AND EROSION CONTROL PLAN
CS-103	SITE LAYOUT AND GRADING PLAN
CS-104	SITE RESTORATION PLAN
CD-501 - CD-503	CONSTRUCTION DETAILS

## PROJECT TEAM

DESIGN ENGINEER  
**FUSS & O'NEILL, INC.**  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
P: 401-861-3070

PERMITTING BIOLOGIST  
**NATURAL RESOURCE  
SERVICES, INC.**  
PO BOX 311  
HARRISVILLE, RI 02830  
P: 401-568-7390

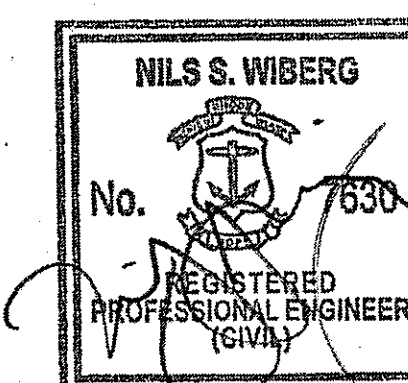
LAND SURVEYOR  
**NATIONAL LAND SURVEYORS-  
DEVELOPERS, INC.**  
42 HAMLET AVENUE  
WOONSOCKET, RI 02895  
P: 401-769-7779



**LOCATION MAP**

SCALE: 1" = 1000'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED OCT 21 2016 FILE # 16-0182  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



Environmental Management  
AUG 26 2016  
Office of Water Resources

PROJ. No.: 20111470C10  
DATE: JUNE 2016

**GI-001**  
1 OF 9

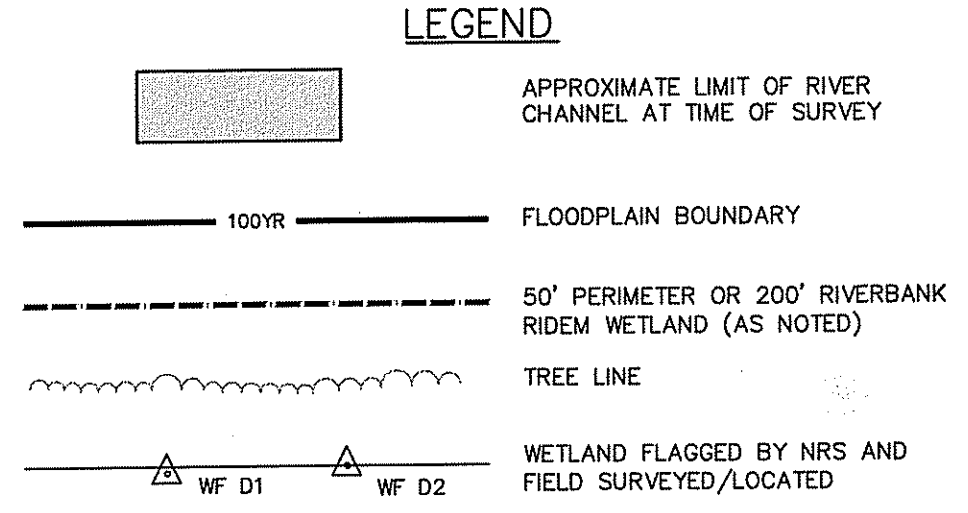


**BASE FLOW AND HIGH SEASONAL WATER SUMMARY TABLE**

BASE FLOW EL. = 45.4± FEET (U/S WEIR) / 41.7± FEET (D/S WEIR)  
 5% NON-EXCEEDANCE FLOW EL. = 45.5± (U/S WEIR) / 42.0± (D/S WEIR)  
 50% NON-EXCEEDANCE FLOW EL. = 46.1± (U/S WEIR) / 43.0± (D/S WEIR)  
 95% NON-EXCEEDANCE FLOW EL. = 46.9± (U/S WEIR) / 44.8± (D/S WEIR)

**FLOOD ELEVATION SUMMARY TABLE (PER FIS)**

10% ANNUAL CHANCE FLOOD WATER EL. = 49.2± FEET (NAVD88)  
 2.0% ANNUAL CHANCE FLOOD WATER EL. = 50.0± FEET (NAVD88)  
 1.0% ANNUAL CHANCE FLOOD WATER EL. = 50.3± FEET (NAVD88)  
 0.2% ANNUAL CHANCE FLOOD WATER EL. = 51.9± FEET (NAVD88)



**NOTES:**

- WETLAND FLAGGING ALONG THE RIVER WITHIN THE PROJECT LIMITS WAS PERFORMED BY NATURAL RESOURCE SERVICES, INC. AND FIELD LOCATED BY NATIONAL LAND SURVEYORS, INC.

FLAG SERIES	RIDEM CLASSIFICATION	REGULATORY SETBACK
A1-A23	SWAMP	50-FOOT PERIMETER WETLAND
B1-B12	SWAMP	50-FOOT PERIMETER WETLAND
NOT FLAGGED	RIVER	200-FOOT RIVERBANK WETLAND

- SWAMP AREAS ALONG THE RIVER THAT ARE SHOWN ON THIS PLAN SHALL HAVE A 50 FOOT PERIMETER WETLAND ASSOCIATED WITH THEM.
- THE PAWCATUCK RIVER IS GREATER THAN 10 FEET IN WIDTH AND SHALL HAVE AN ASSOCIATED 200-FOOT RIVERBANK WETLAND THAT WILL EXTEND 200 FEET FROM BOTH SIDES OF THE RIVER'S EDGE.
- THERE ARE NO NATURAL HERITAGE AREAS OR RARE SPECIES AREAS LOCATED WITHIN THE PROJECT LIMITS. THIS SITE DOES NOT LIE WITHIN ANY KNOWN AGRICULTURAL USE, CIVIC STRUCTURAL USE, OR FARMLAND CONSERVATION AREAS.
- PROPERTY BOUNDARIES ARE APPROXIMATE ONLY AND WERE OBTAINED FROM THE TOWN OF RICHMOND AND CHARLESTOWN'S GEOGRAPHIC INFORMATION SYSTEM (GIS) DATABASES. THIS PLAN IS SUBSTANTIALLY CORRECT IN ACCORDANCE WITH A CLASS IV STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS. THIS PLAN IS NOT TO BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY AND IS SUBJECT TO SUCH CHANGES AS AN ACCURATE BOUNDARY SURVEY MAY DISCLOSE. ALL PROPERTIES WHERE WORK WILL BE PROPOSED OR ACCESS REQUIRED MUST BE VERIFIED.

BENCH MARK:  
SPIKE SET IN UP#3535  
ELEVATION 54.76  
NAVD 88 DATUM

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

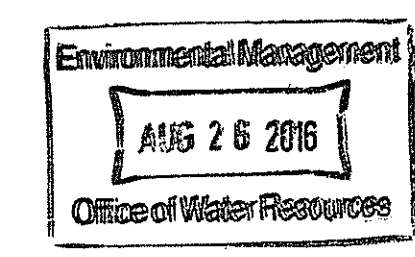
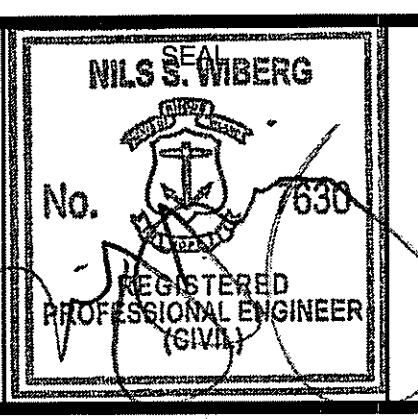
BENCH MARK:  
DRILL HOLE FOUND  
ELEVATION 48.49  
NAVD 88 DATUM

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED OCT 21 2016 FILE # 16-0182  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

File Path: J:\DWG\20111470C10\DWG\20111470C10.dwg Layout: CS-101 Plotted: Fri, August 26, 2016 - 3:57 PM User: samuda  
 Plotter: DWG TO PDF PLOTTER CTB File: F0.STB  
 LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.	8/26/16	LAYOUT REVISIONS PER RIDEM MEETING	SDA	NSW

SEAL



SCALE:

HORIZ.: 1"= 10'

VERT.:

DATUM:

HORIZ.: NAD83

VERT.: NAVD88

GRAPHIC SCALE

**FUSS & O'NEILL**  
 317 IRON HORSE WAY, SUITE 204  
 PROVIDENCE, RI 02908  
 401.861.3070  
 www.fundo.com

WOOD-PAWCATUCK WATERSHED ASSOCIATION

EXISTING CONDITIONS PLAN

JOHN M. "JAY" CRONAN PUBLIC ACCESS  
REHABILITATION

RICHMOND RHODE ISLAND

PROJ. No.: 20111470.C10  
DATE: JUNE 2016

**CS-101**

3 OF 9

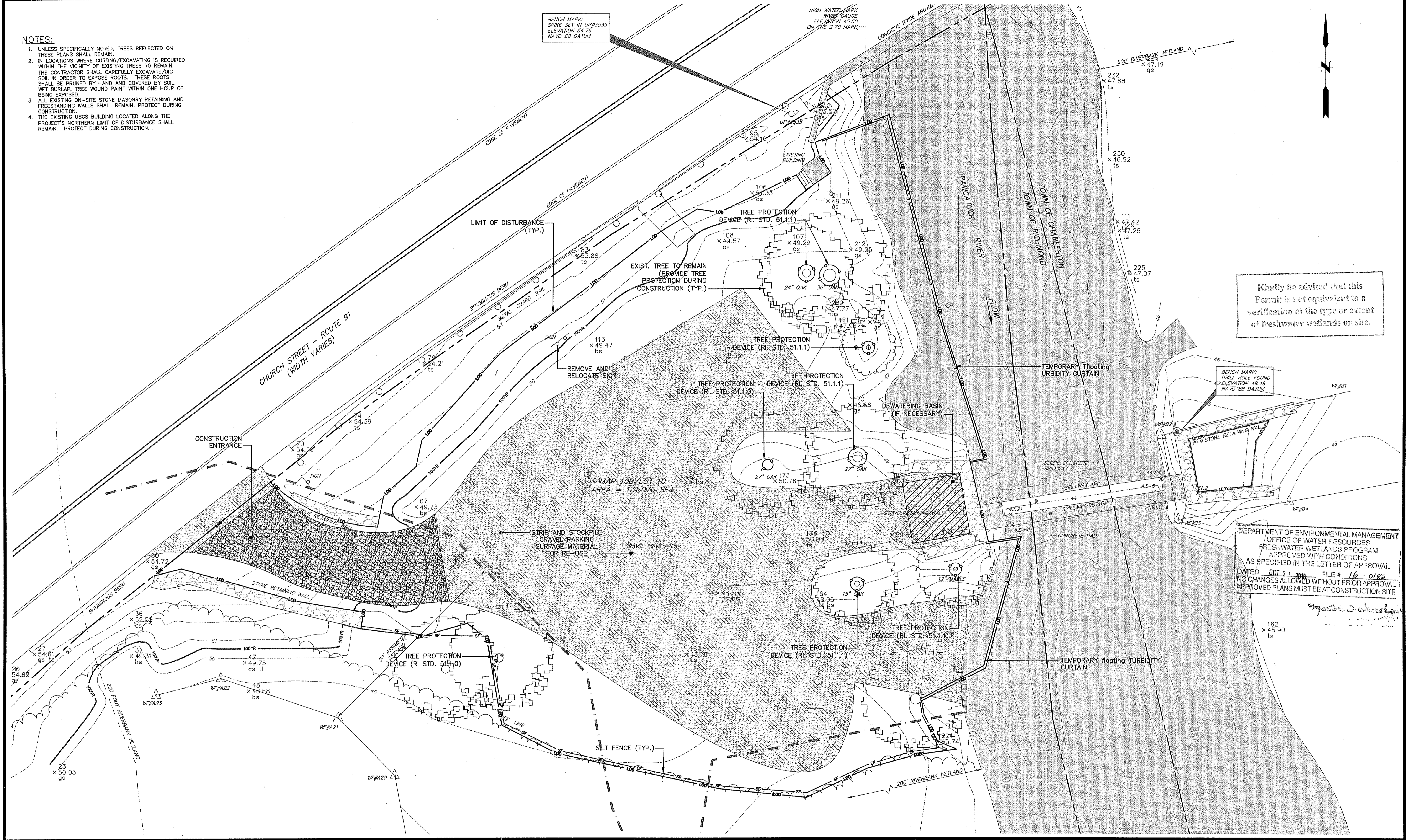
**NOTES:**

1. UNLESS SPECIFICALLY NOTED, TREES REFLECTED ON THESE PLANS SHALL REMAIN.
2. IN LOCATIONS WHERE CUTTING/EXCAVATING IS REQUIRED WITHIN THE VICINITY OF EXISTING TREES TO REMAIN, THE CONTRACTOR SHALL CAREFULLY EXCAVATE/DIG SOIL IN ORDER TO EXPOSE ROOTS. THESE ROOTS SHALL BE PRUNED BY HAND AND COVERED BY SOIL, WET BURLAP, TREE WOUND PAINT WITHIN ONE HOUR OF BEING EXPOSED.
3. ALL EXISTING ON-SITE STONE MASONRY RETAINING AND FREESTANDING WALLS SHALL REMAIN. PROTECT DURING CONSTRUCTION.
4. THE EXISTING USGS BUILDING LOCATED ALONG THE PROJECT'S NORTHERN LIMIT OF DISTURBANCE SHALL REMAIN. PROTECT DURING CONSTRUCTION.

BENCH MARK:  
SPIKE SET IN UP#3335  
ELEVATION 54.76  
NAVD 88 DATUM

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

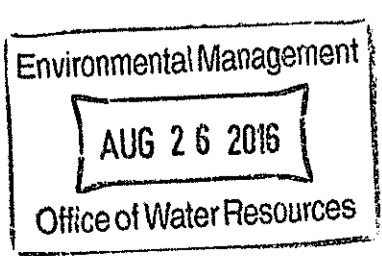
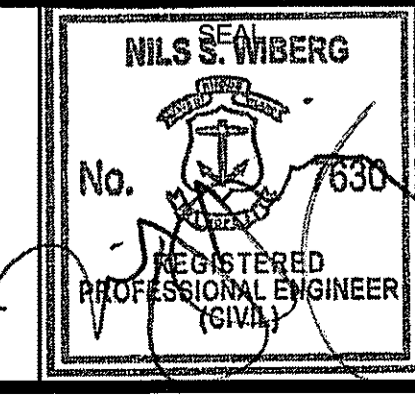
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED OCT 21 2016 FILE # 16-0182  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



File Path: J:\DWG\F2011\1470\C10\DWG\Plan\20111470C10.dwg Layout: CS-102 Plotted: Fri, August 26, 2016 - 3:58 PM User: samuda  
 Plotter: DWG TO PDF PC3 CTB File: FO.STB  
 LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.	8/26/16	LAYOUT REVISIONS PER RIDEM MEETING	SDA	NSW

SEAL



SCALE:

HORIZ.:	1" = 10'
VERT.:	
DATUM:	
HORIZ.:	NAD83
VERT.:	NAVD88

GRAPHIC SCALE

**f** **FUSS & O'NEILL**  
 317 IRON HORSE WAY, SUITE 204  
 PROVIDENCE, RI 02908  
 401.861.3070  
 www.fandco.com

WOOD-PAWCATUCK WATERSHED ASSOCIATION  
 SITE DEMOLITION AND EROSION CONTROL PLAN  
 JOHN M. "JAY" CRONAN PUBLIC ACCESS REHABILITATION  
 RICHMOND RHODE ISLAND

PROJ. No.: 20111470.C10  
 DATE: JUNE 2016  
**CS-102**  
 4 OF 9

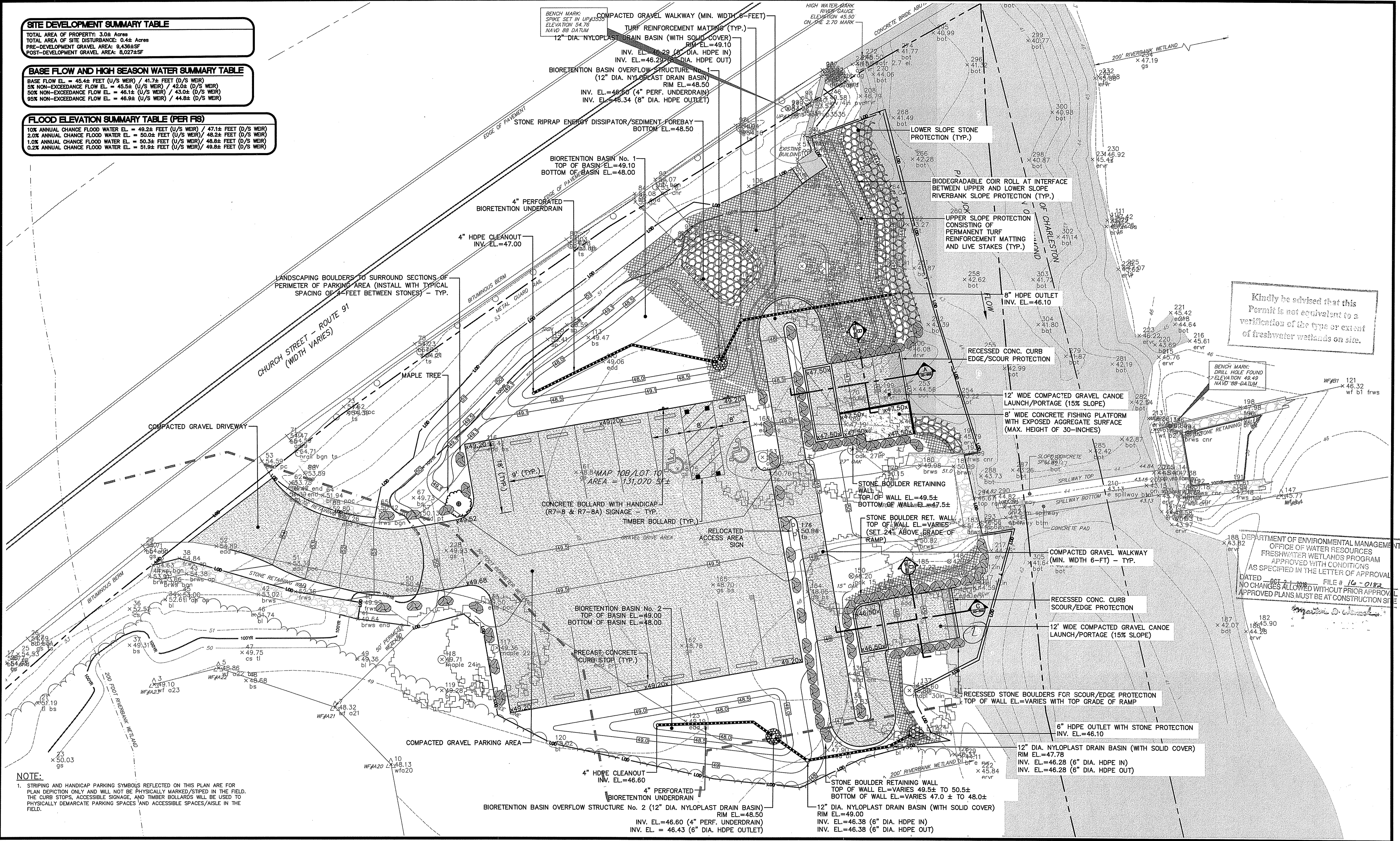
SITE DEVELOPMENT SUMMARY TABLE	
TOTAL AREA OF PROPERTY:	3.0± Acres
TOTAL AREA OF SITE DISTURBANCE:	0.4± Acres
PRE-DEVELOPMENT GRAVEL AREA:	9,438±SF
POST-DEVELOPMENT GRAVEL AREA:	8,027±SF

BASE FLOW AND HIGH SEASON WATER SUMMARY TABLE	
BASE FLOW EL. =	45.4± FEET (U/S WEIR) / 41.7± FEET (D/S WEIR)
5% NON-EXCEEDANCE FLOW EL. =	45.5± (U/S WEIR) / 42.0± (D/S WEIR)
50% NON-EXCEEDANCE FLOW EL. =	46.1± (U/S WEIR) / 43.0± (D/S WEIR)
95% NON-EXCEEDANCE FLOW EL. =	46.9± (U/S WEIR) / 44.8± (D/S WEIR)

FLOOD ELEVATION SUMMARY TABLE (PER FRS)	
10% ANNUAL CHANCE FLOOD WATER EL. =	49.2± FEET (U/S WEIR) / 47.1± FEET (D/S WEIR)
2.0% ANNUAL CHANCE FLOOD WATER EL. =	50.0± FEET (U/S WEIR) / 48.2± FEET (D/S WEIR)
1.0% ANNUAL CHANCE FLOOD WATER EL. =	50.3± FEET (U/S WEIR) / 48.8± FEET (D/S WEIR)
0.2% ANNUAL CHANCE FLOOD WATER EL. =	51.9± FEET (U/S WEIR) / 49.8± FEET (D/S WEIR)



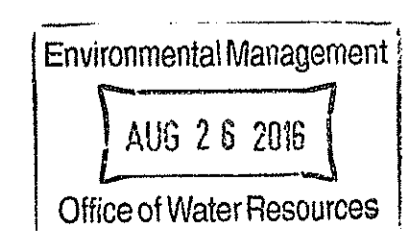
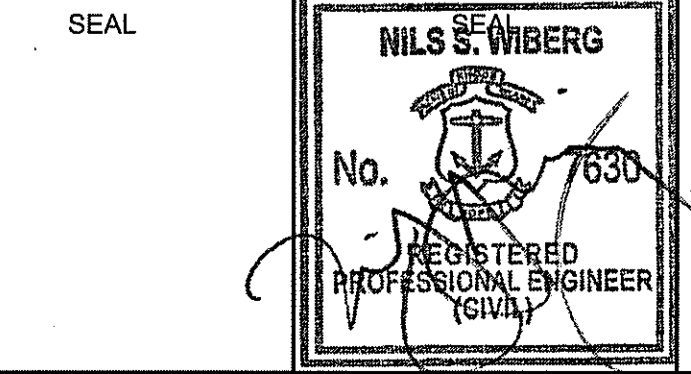
Kindly be advised that this Permit is not equivalent to a verification of the type or extent of freshwater wetlands on site.

188 DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED OCT 21 2016 FILE # 16-0182  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**NOTE:**  
 1. STRIPING AND HANDICAP PARKING SYMBOLS REFLECTED ON THIS PLAN ARE FOR PLAN DEPICTION ONLY AND WILL NOT BE PHYSICALLY MARKED/STIPED IN THE FIELD. THE CURB STOPS, ACCESSIBLE SIGNAGE, AND TIMBER BOLLARDS WILL BE USED TO PHYSICALLY DEMARCATe PARKING SPACES AND ACCESSIBLE SPACES/AISLE IN THE FIELD.

File Path: J:\DWG\20111470C10\_STP01.dwg Layout: CS-103 Plotted: Fri, August 26, 2016 - 3:58 PM User: samuda  
 Plotter: DWG TO PDF PC3 CTB File: FOSTB  
 LAYER STATE:

No.	DATE	LAYOUT REVISIONS PER RIDEM MEETING	DESCRIPTION	DESIGNER	REVIEWER
1.	8/26/16	LAYOUT REVISIONS PER RIDEM MEETING		SDA	NSW



SCALE:  
 HORZ.: 1"=10'  
 VERT.:  
 DATUM:  
 HORZ.: NAD83  
 VERT.: NAVD88

WOOD-PAWCATUCK WATERSHED ASSOCIATION  
 SITE LAYOUT AND GRADING PLAN  
 JOHN M. "JAY" CRONAN PUBLIC ACCESS  
 REHABILITATION  
 RICHMOND RHODE ISLAND

PROJ. No.: 20111470.C10  
 DATE: JUNE 2016  
**CS-103**  
 5 OF 9

**LEGEND**

- WETLAND SEED MIX
- WETLAND SEED MIX AND LIVE STAKES
- CONSERVATION SEED MIX
- EROSION CONTROL/RESTORATION MIX

**RESTORATION SEED MIXES AND LIVE STAKE PLANTINGS:**

**NEW ENGLAND CONSERVATION/WILDLIFE MIX**

CONSERVATION SEED MIX FOR RESTORATION OF DISTURBED AREAS EXCLUDING BIOTRETENTION BASINS AND SLOPES ALONG THE RIVER:

BOTANICAL NAME	COMMON NAME	IND.
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW-
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
FESTUCA RUBRA	CREeping RED FESCUE	FACU
ANDROPOGON GERARDII	BIG BLUESTEM	FAC
GHAMAECRISTA FASCICULATA	PARTRIDGE PEA	FACU
PANICUM CLANDESTINUM	DEER TONGUE	FAC+
PANICUM VIRGATUM	SWITCHGRASS	FAC
SORGHASTRUM NUTANS	INDIAN GRASS	UPL
HELENIUM AUTUMNALE	COMMON SNEEZEWEED	FACW+
HELIOPSIS HELIANTHOIDES	OX EYE SUNFLOWER	UPL
VERBENA HASTATA	BLUE VERVAIN	FACW
ASCLEPIAS SYRIACA	COMMON MILKWEED	FACU-
ASTER UMBELLATUS	FLAT TOPPED UMBRELLA ASTER	FACW
EUPATORIUM PURPUREUM	PURPLE JOE PYE WEED	FAC
SOLIDAGO JUNCEA	EARLY GOLDENROD	NI
ZIZIA AUREA	GOLDEN ALEXANDERS	FAC

**NEW ENGLAND WETMIX (WETLAND SEED MIX)**

WETLAND SEED MIX FOR RESTORATION OF SLOPED AREAS ALONG THE RIVER:

BOTANICAL NAME	COMMON NAME	IND.
CAREX LURIDA	LURID SEDGE	OBL
CAREX SCOPARIA	BLUNT BROOM SEDGE	FACW
VERBENA HASTATA	BLUE VERVAIN	FACW
CAREX LUPULINA	HOP SEDGE	OBL
SCIRPUS ATROVIRENS	GREEN BULRUSH	OBL
DESCHAMPSIA CESPITOSA	TUFTED HAIRGRASS	FACW
BIDENS ARISTOSA	TICKSEED SUNFLOWER/BUR MARIGOLD	FACW
ELEOCHARIS PALUSTRIS	CREeping SPIKE RUSH	OBL
JUNCUS EFFUSUS	SOFT RUSH	FACW+
CAREX CRINITA	FRINGED SEDGE	OBL
MIMULUS RINGENS	SQUARE STEMMED MONKEY FLOWER	OBL
ASTER PUNICEUS	SWAMP ASTER	OBL
EUPATORIUM PERFORIATUM	BONESET	FACW
GLYCERIA CANADENSIS	RATTLESNAKE GRASS	OBL
ASCLEPIAS INCARNATA	SWAMP MILKWEED	OBL
HELENIUM AUTUMNALE	COMMON SNEEZEWEED	FACW+
PENTHORUM SEDOIDES	DITCH STONECROP	OBL

**NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES (RESTORATION SEED MIX)**

WETLAND SEED MIX FOR RESTORATION OF BIOTRETENTION BASINS:

BOTANICAL NAME	COMMON NAME	IND.
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	FACW-
FESTUCA RUBRA	CREeping RED FESCUE	FACU
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	FACU
ANDROPOGON GERARDII	BIG BLUESTEM	FAC
PANICUM VIRGATUM	SWITCH GRASS	FAC
VERBENA HASTATA	BLUE VERVAIN	FACW
AGROSTIS SCABRA	ROUGH BENTGRASS/TICKLEGRASS	FAC
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	FACW-
EUPATORIUM MACULIATUM	SPOTTED JOE PYE WEED	FACW
EUPATORIUM PERFORIATUM	BONESET	FACW
JUNCUS EFFUSUS	SOFT RUSH	FACW+
SCIRPUS CYPERINUS	WOOL GRASS	FACW

**RESTORATION NOTES:**

ALL SEED MIXES SHALL BE FREE OF INVASIVE NON-NATIVE PLANT SPECIES.

**CONSERVATION SEED MIX**

MIXTURE: CONSERVATION MIX  
ANNUAL RYEGRASS (TEMPORARY COVER)  
APPLICATION RATE: CONSERVATION SEED MIX = 25 LBS/ACRE  
ANNUAL RYEGRASS = 25 LBS/ACRE

**WETLAND SEED MIX**

MIXTURE: WETLAND SEED MIX  
ANNUAL RYEGRASS (TEMPORARY COVER)  
APPLICATION RATE: WETLAND SEED MIX = 18 LBS/ACRE  
ANNUAL RYEGRASS = 25 LBS/ACRE

**RESTORATION SEED MIX**

MIXTURE: RESTORATION SEED MIX  
ANNUAL RYEGRASS (TEMPORARY COVER)  
APPLICATION RATE: RESTORATION SEED MIX = 35 LBS/ACRE  
ANNUAL RYEGRASS = 25 LBS/ACRE

**GENERAL RESTORATION SEQUENCE:**

FOLLOWING COMPLETION OF PARKING LOT AND PORTAGE/BOAT LAUNCH CONSTRUCTION, BIOTRETENTION BASIN CONSTRUCTION, AND RIVERBANK STABILIZATION:

1. INSTALL BIODEGRADABLE COIR ROLLS AT BANKFULL ELEVATION ALONG RIGHT SIDE OF RIVER.
2. INSTALL EROSION CONTROL, BLANKETING AND LIVE STAKES ON RIVERBANKS AS INDICATED ON THIS PLAN.
3. SEED ALL DISTURBED AREAS ABOVE THE BASE CONDITION WATER LEVEL AS INDICATED ON THIS PLAN UNLESS OTHERWISE NOTED.

**LIVE STAKE SPECIES**

Planting Density: One (1) live stake every 3' o.c.  
SELECT AT LEAST THREE (3) OF THE FOLLOWING SPECIES IN EQUAL QUANTITIES:

- Black Willow (*Salix nigra*)
- Red-osier Dogwood (*Cornus sericea*)
- Silky Dogwood (*Cornus amomum*)
- Pussy Willow (*Salix discolor*)
- Silky Willow (*Salix sericea*)
- Speckled Alder (*Alnus incana*)

**RESTORATION TREE/SHRUB PLANTINGS**

Trees - Use following tree species as noted on this plan.  
Red Maple (*Acer rubrum*)

Note: Tree shall be 4' to 6' in height at time of planting.

Shrubs - Use following three (3) species in quantities shown:

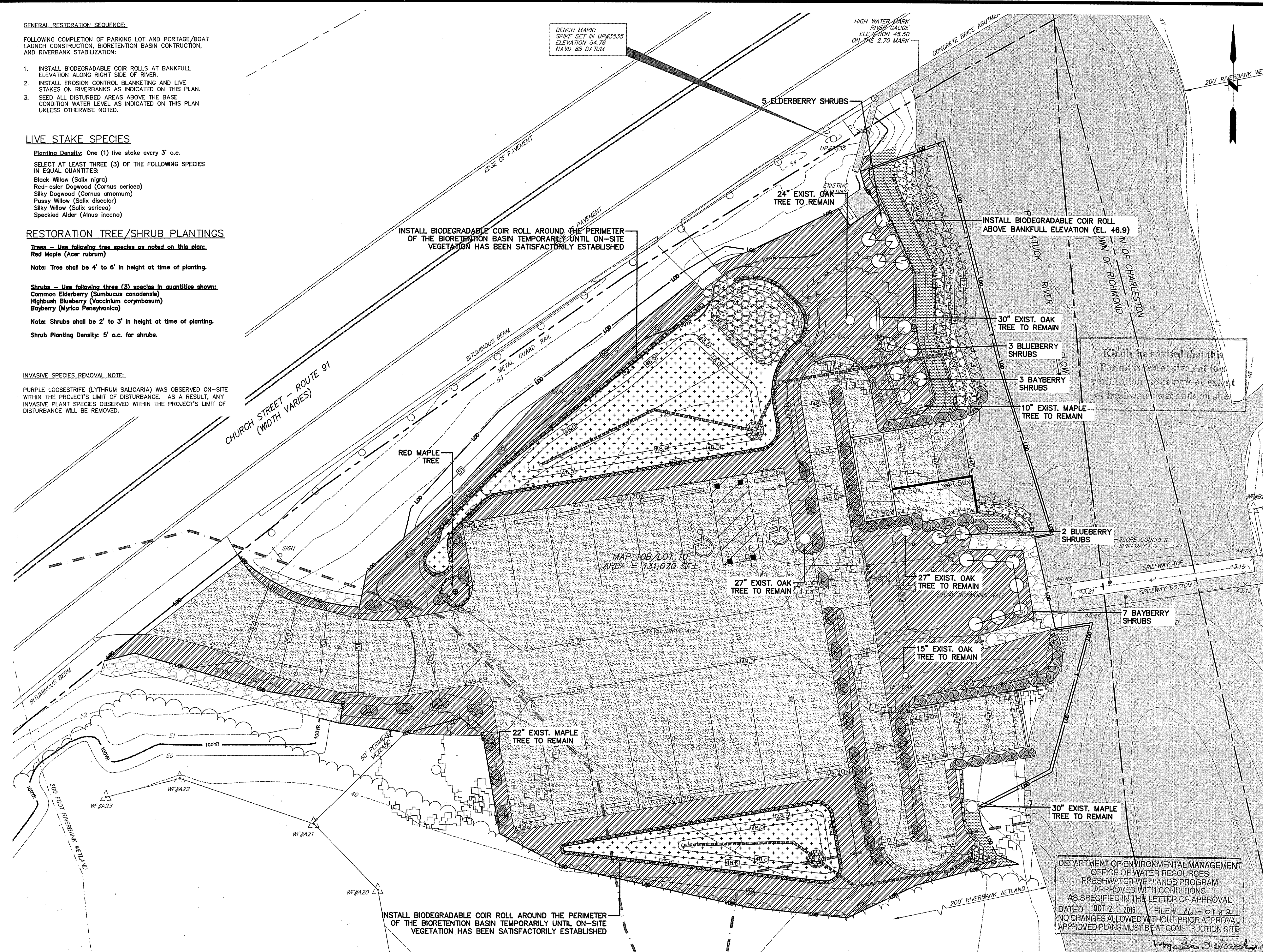
- Common Elderberry (*Sambucus canadensis*)
- Highbush Blueberry (*Vaccinium corymbosum*)
- Bayberry (*Myrica Pensylvanica*)

Note: Shrubs shall be 2' to 3' in height at time of planting.

Shrub Planting Density: 5' o.c. for shrubs.

**INVASIVE SPECIES REMOVAL NOTE:**

PURPLE LOOSESTRIFE (*LYTHRUM SALICARIA*) WAS OBSERVED ON-SITE WITHIN THE PROJECT'S LIMIT OF DISTURBANCE. AS A RESULT, ANY INVASIVE PLANT SPECIES OBSERVED WITHIN THE PROJECT'S LIMIT OF DISTURBANCE WILL BE REMOVED.



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 OCT 21 2016 FILE # 16-0192  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

File Path: J:\DWG\20111470C10\DWG\20111470C10\_RES01.dwg Layout: CS-104 Plotted: Fri, August 26, 2016 - 4:03 PM User: sarrudo  
Printer: NONE CTB File: FO.STB  
LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.	8/26/16	LAYOUT REVISIONS PER RIDEM MEETING	SDA	NSW

SEAL

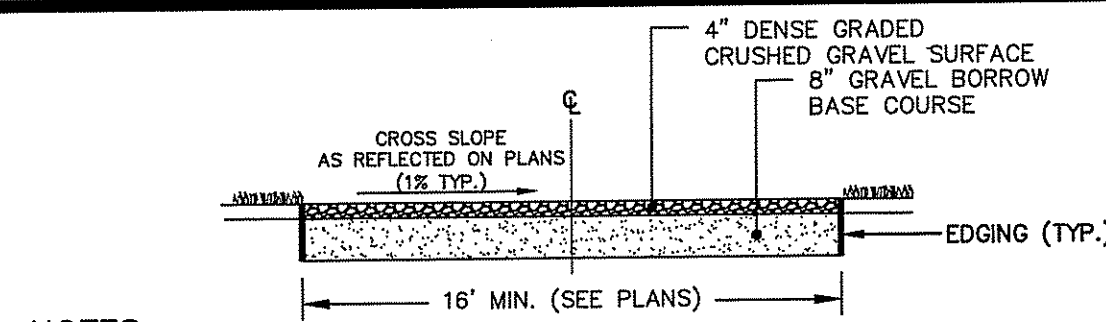
Environmental Management  
AUG 26 2016  
Office of Water Resources

SCALE:  
HORZ.: 1"= 10'  
VERT.:  
DATUM:  
HORZ.: NAD83  
VERT.: NAVD88  
GRAPHIC SCALE

**f** **FUSS & O'NEILL**  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
401.861.3070  
www.fando.com

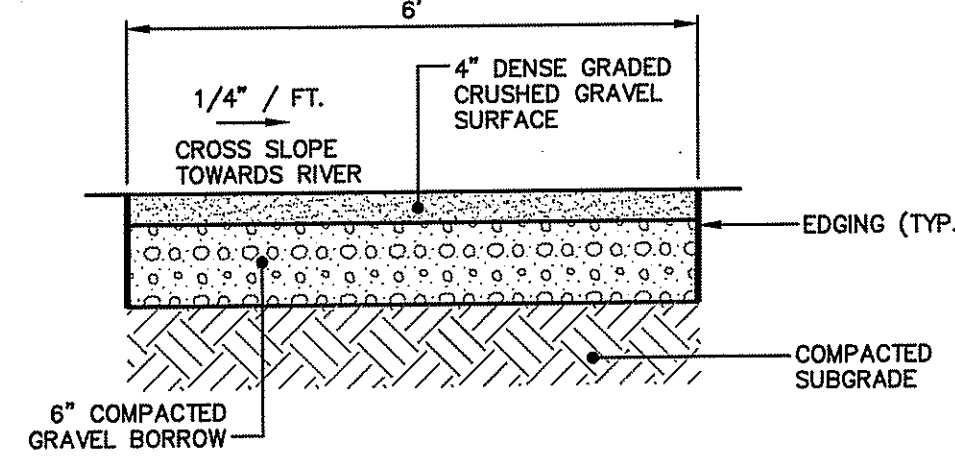
WOOD-PAWCATUCK WATERSHED ASSOCIATION  
SITE RESTORATION PLAN  
JOHN M. "JAY" CRONAN PUBLIC ACCESS  
REHABILITATION  
RICHMOND RHODE ISLAND

PROJ. No.: 20111470.C10  
DATE: JUNE 2016  
**CS-104**  
6 OF 9



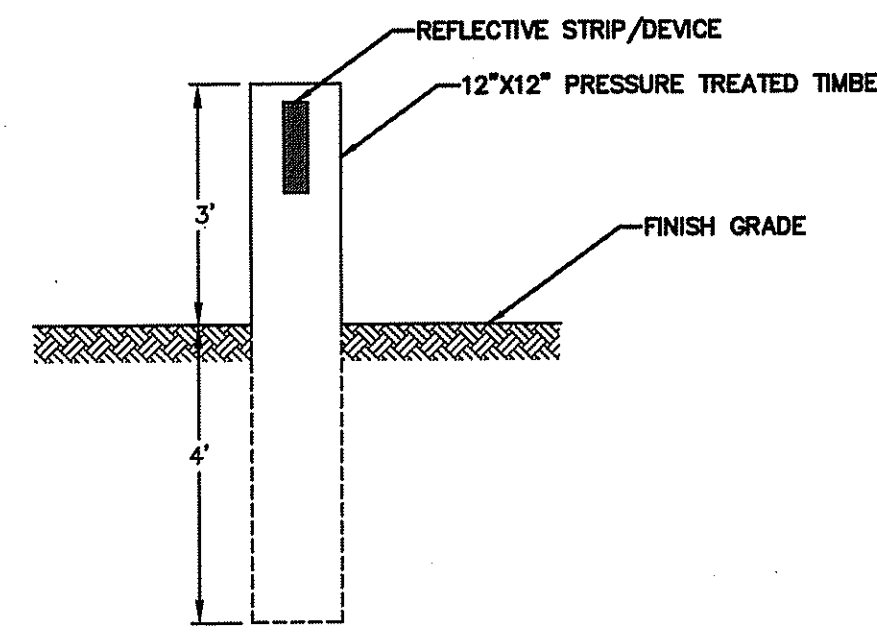
- NOTES:**
- GRAVEL BORROW BASE COURSE SHALL CONSIST OF REUSED ON-SITE GRAVEL OR IMPORTED GRAVEL MEETING THE GRADATION REQUIREMENTS OF TABLE 1, COLUMN 1A OF SECTION M.01.09 OF THE RHODE ISLAND STANDARD SPECIFICATIONS.
  - DENSE GRADED CRUSHED GRAVEL SURFACE SHALL CONSIST OF RE-USED ON-SITE GRAVEL SURFACE MATERIAL.

**COMPACTED GRAVEL DRIVEWAY/PARKING AREA RESTORATION**  
NOT TO SCALE

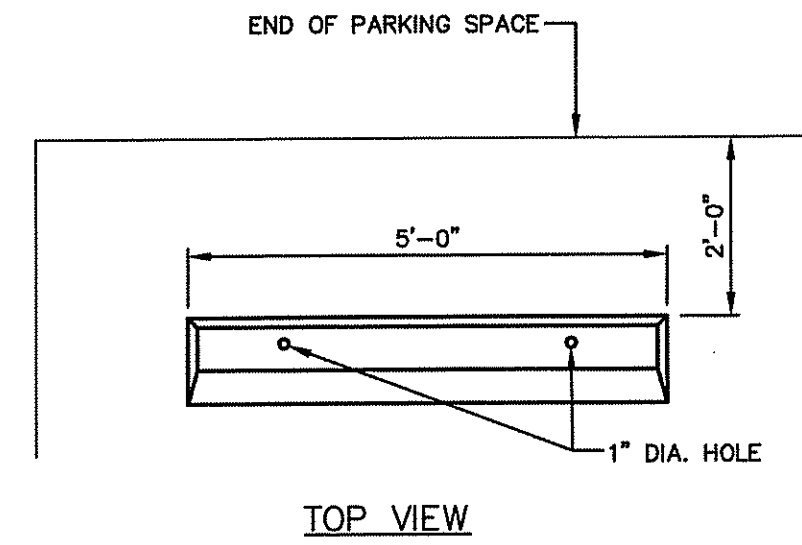


- NOTES:**
- GRAVEL BORROW BASE COURSE SHALL CONSIST OF REUSED ON-SITE GRAVEL OR IMPORTED GRAVEL MEETING THE GRADATION REQUIREMENTS OF TABLE 1, COLUMN 1A OF SECTION M.01.09 OF THE RHODE ISLAND STANDARD SPECIFICATIONS.
  - DENSE GRADED CRUSHED GRAVEL SURFACE SHALL CONSIST OF RE-USED ON-SITE GRAVEL SURFACE MATERIAL.

**COMPACTED GRAVEL WALKWAY**  
NOT TO SCALE

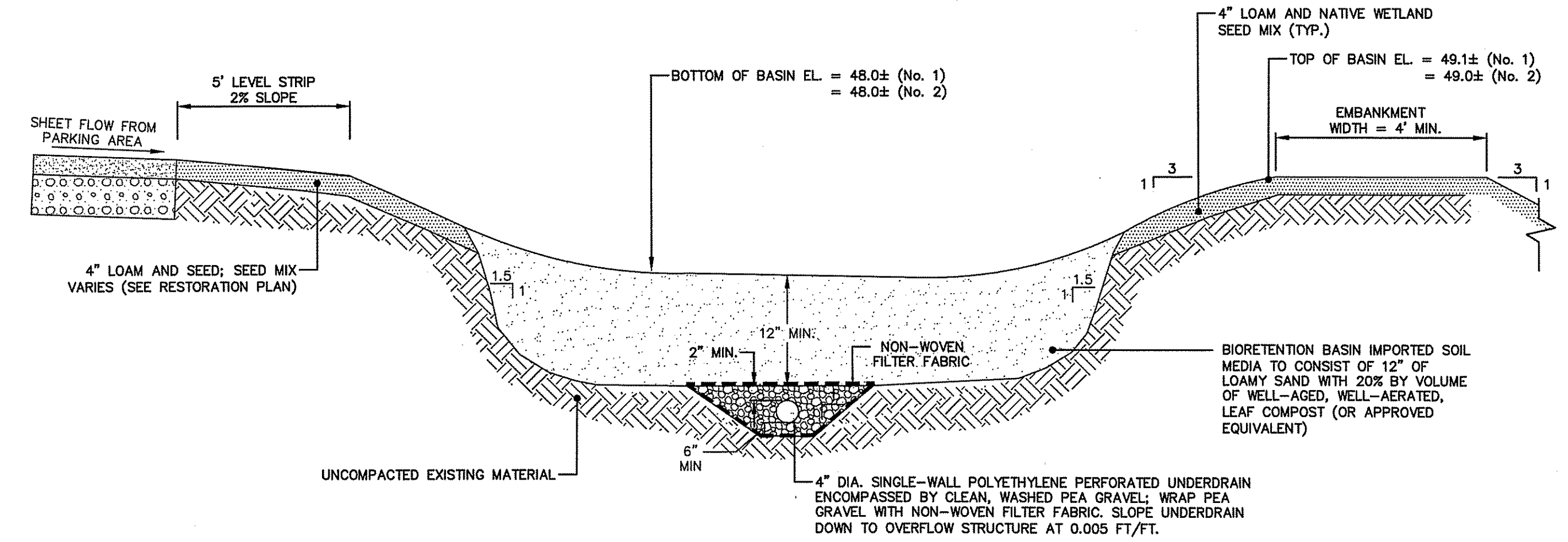


**TIMBER BOLLARD**  
NOT TO SCALE



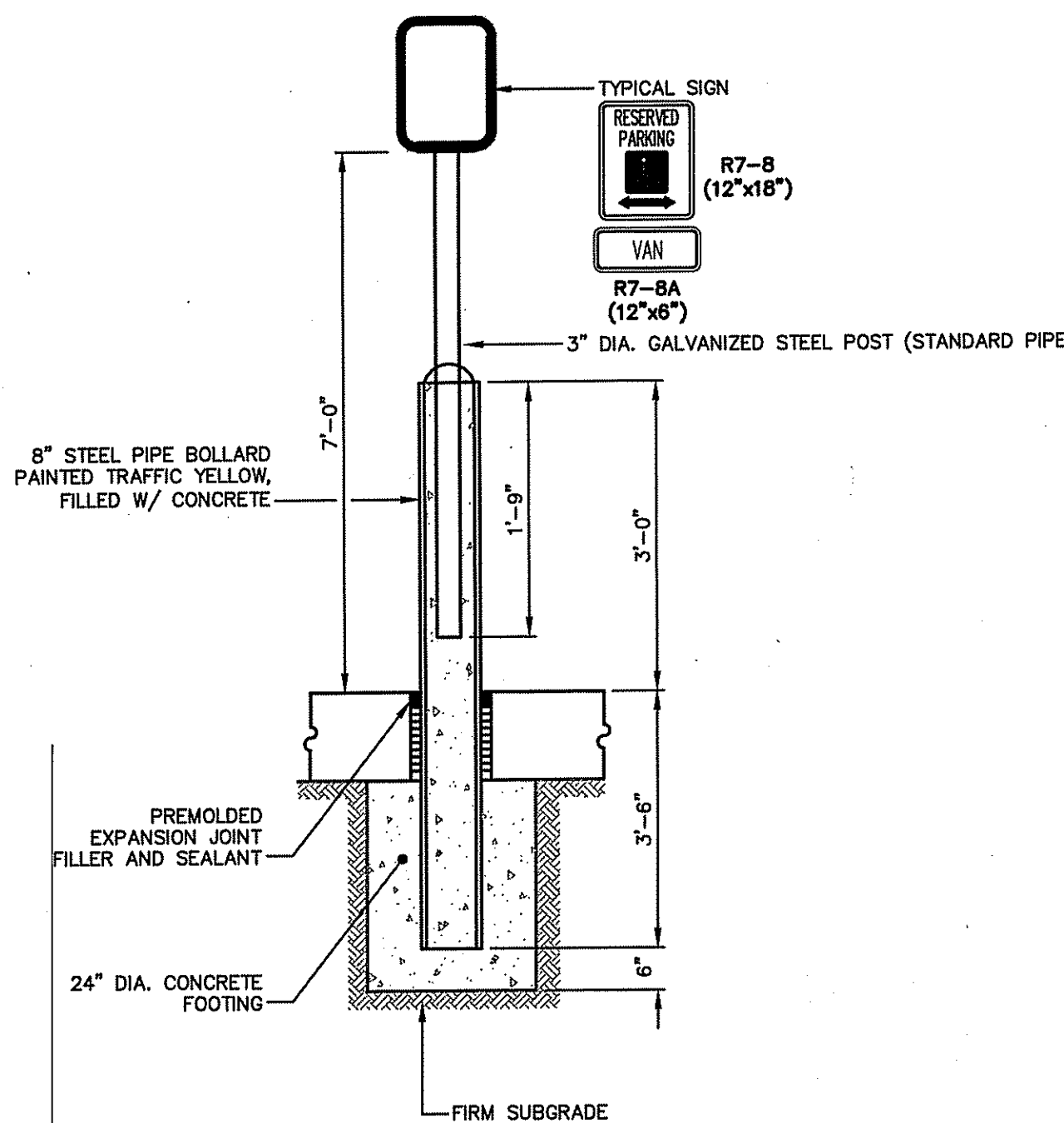
- NOTES:**
- ALL SURFACES TO HAVE A SPONGE FLOAT FINISH.
  - EACH PRECAST CONCRETE CURB STOP SHALL BE FURNISHED WITH TWO 3/4" X 18" STEEL RODS.
  - ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER.
  - SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE RHODE ISLAND STANDARD SPECIFICATIONS.

**PRECAST CONCRETE CURB STOP (R.I. STD. 7.2.4)**  
NOT TO SCALE

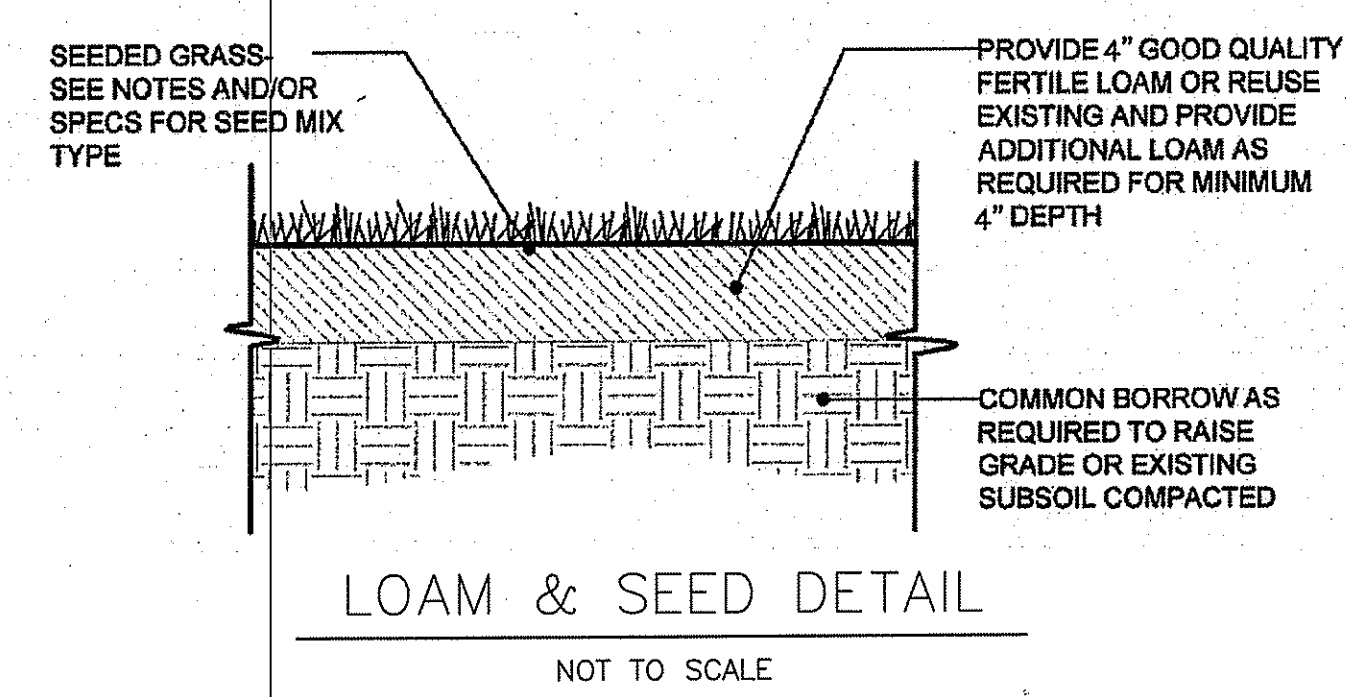


- NOTES:**
- THE BOTTOM AND SIDESLOPES OF THE BIORETENTION BASIN SHALL BE SEED WITH NATIVE WETLAND SEED MIX AS INDICATED ON SITE RESTORATION PLAN.
  - NON-WOVEN FILTER FABRIC SHALL MEET THE PROPERTIES OF MIRAFI 180N OR APPROVED EQUAL.
  - PROPER CONSTRUCTION TECHNIQUES ARE CRITICAL TO ACHIEVE LONG-TERM FUNCTIONALITY OF BIORETENTION SYSTEMS. PREVENTING AND ALLEVIATING COMPACTION ARE CRUCIAL DURING CONSTRUCTION OF INFILTRATION PRACTICES, AS COMPACTION CAN SUBSTANTIALLY REDUCE INFILTRATION RATES. THEREFORE, IT IS CRITICAL TO KEEP HEAVY CONSTRUCTION EQUIPMENT FROM COMPACTING OR SMEARING SOILS AT THE BOTTOM OF THE EXCAVATION. EXCAVATE THE SOIL FROM THE PERIMETER OF THE INFILTRATION DEVICE. IT IS HIGHLY RECOMMENDED TO EXCAVATE DURING DRY CONDITIONS TO PREVENT SMEARING OF THE SOIL, WHICH HAS BEEN SHOWN TO REDUCE THE SOIL INFILTRATION RATE. DURING THE FINAL PASS WITH THE EXCAVATOR BUCKET (I.E. BOTTOM OF EXCAVATION), IT IS HIGHLY RECOMMENDED TO RAKE THE SOIL WITH THE TEETH OF THE BUCKET TO LOOSEN ANY COMPACTION. SOIL RIPPING HAS ALSO BEEN SHOWN TO INCREASE INFILTRATION AND REDUCE COMPACTION FROM CONSTRUCTION ACTIVITIES.

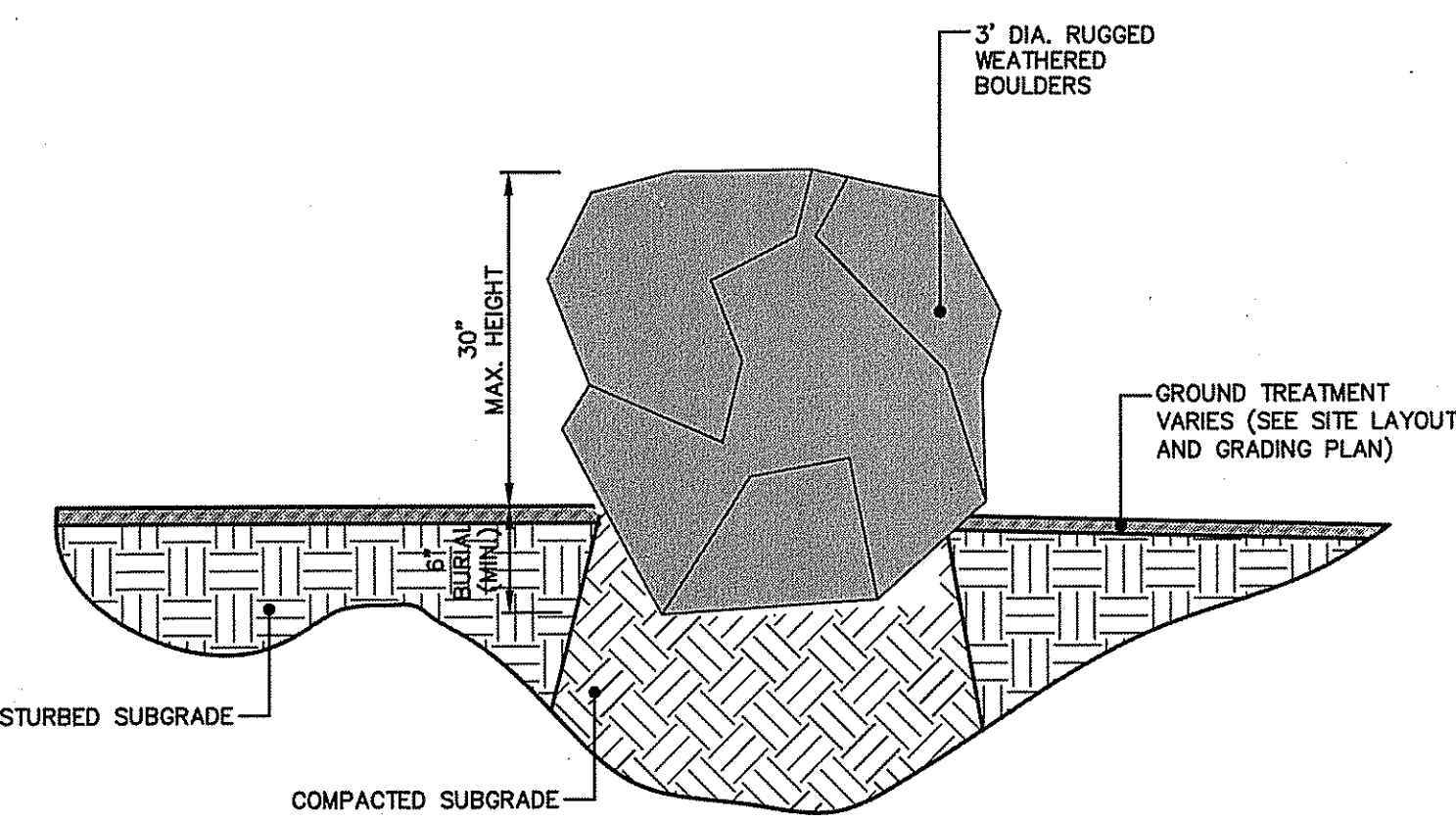
**BIORETENTION BASIN**  
NOT TO SCALE



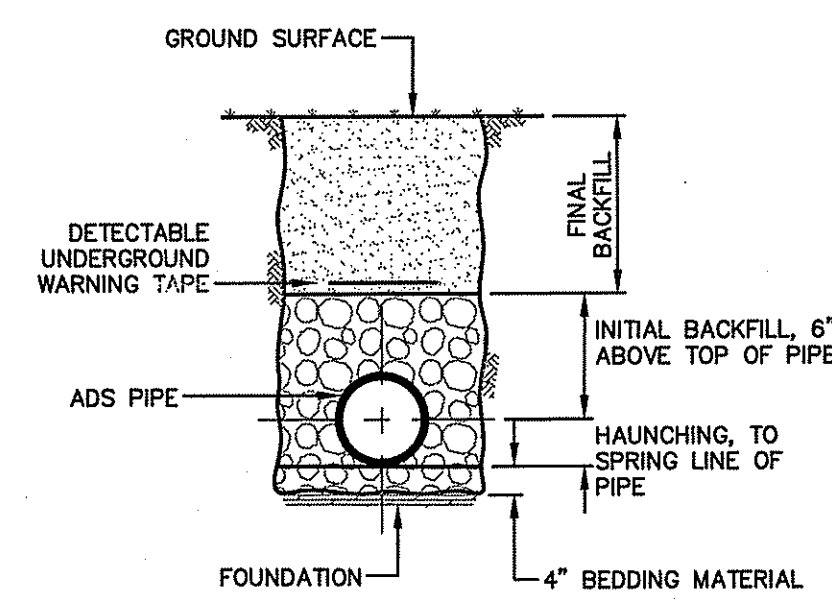
**BOLLARD WITH HANDICAP SIGNAGE**  
NOT TO SCALE



**LOAM & SEED DETAIL**  
NOT TO SCALE

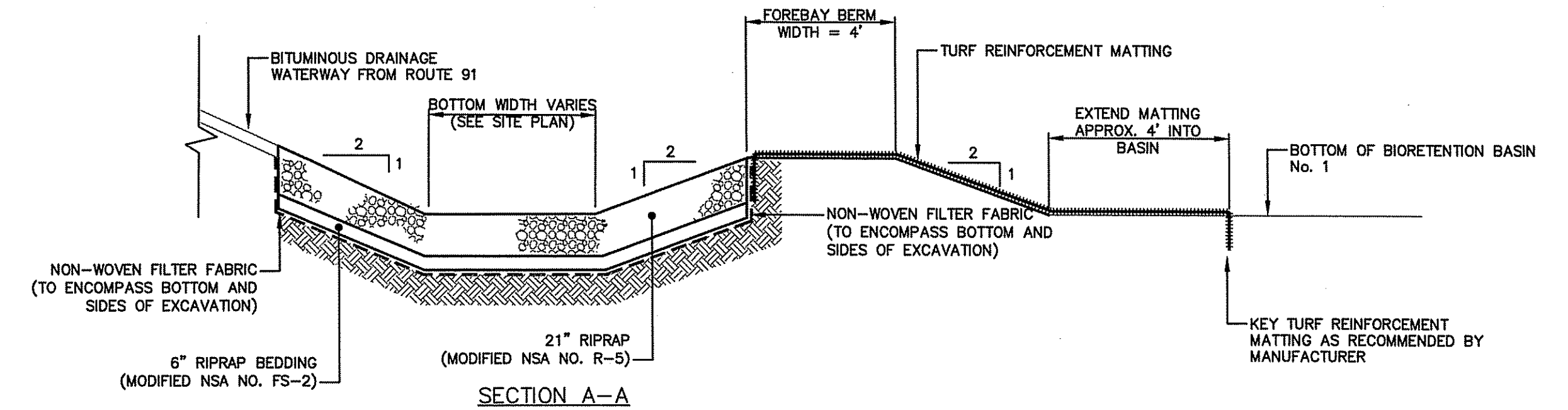


**BOULDER DETAIL**  
NOT TO SCALE



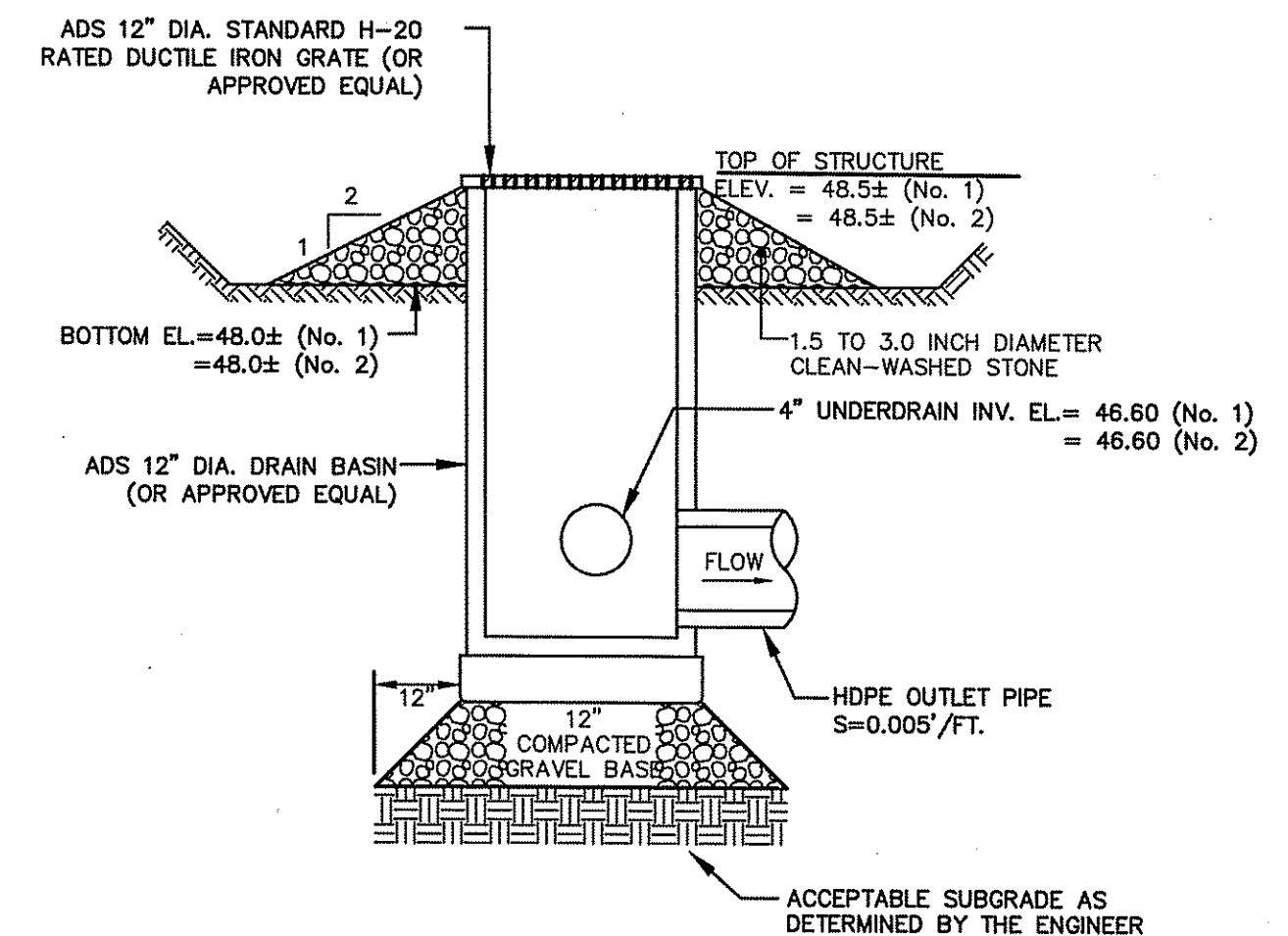
**TYPICAL STORM DRAIN TRENCH DETAIL (FOR HDPE PIPE)**  
NOT TO SCALE

NOMINAL Ø	MIN. RECOMMENDED TRENCH WIDTH
8 (150)	23 (580)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	31 (790)



- NOTES:**
- THE BOTTOM AND SIDESLOPES OF THE BIORETENTION BASIN SHALL BE SEED WITH NATIVE WETLAND SEED MIX AS INDICATED ON SITE RESTORATION PLAN.
  - NON-WOVEN FILTER FABRIC SHALL MEET THE PROPERTIES OF MIRAFI 180N OR APPROVED EQUAL.

**STONE ENERGY DISSIPATOR/SEDIMENT FOREBAY**  
NOT TO SCALE



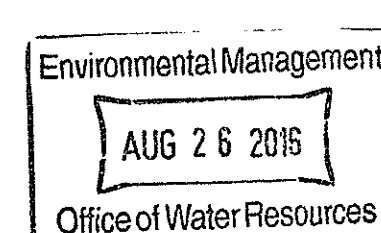
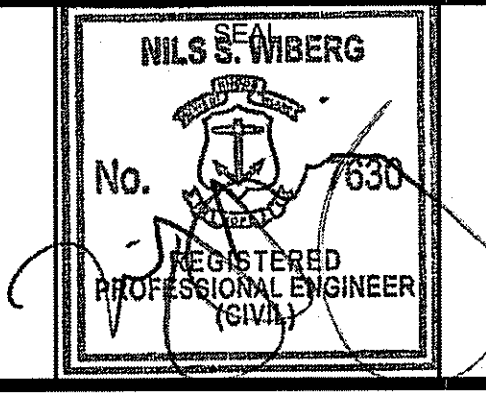
**BIORETENTION BASIN OVERFLOW STRUCTURE**  
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED 10/21/2016 FILE # 16-0182  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

File Path: J:\DWG\2011\14700\14700.DWG Layout: CD-501 Plotted: Fri, August 26, 2016 - 3:46 PM User: samuda Plotter: NONE CTB File: FOSTB

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.	8/26/16	LAYOUT REVISIONS PER RIDEM MEETING	SDA	NSW

SEAL



SCALE:

HORIZ.: AS NOTED

VERT.:

DATUM:

HORIZ.:

VERT.:

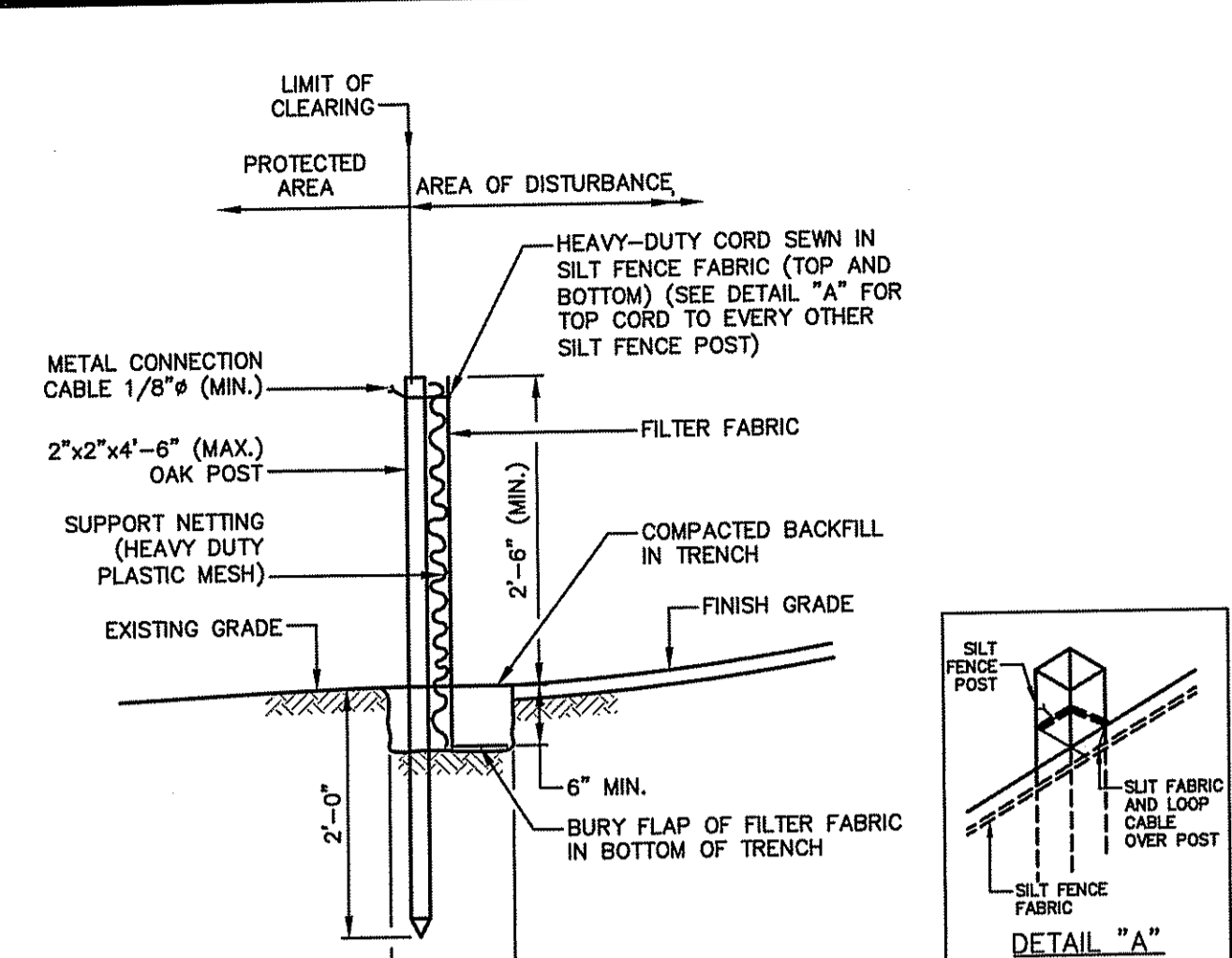
GRAPHIC SCALE

**FUSS & O'NEILL**  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
401.861.3070  
www.fandco.com

WOOD-PAWCATUCK WATERSHED ASSOCIATION  
CONSTRUCTION DETAILS  
JOHN M. "JAY" CRONAN PUBLIC ACCESS  
REHABILITATION  
RICHMOND RHODE ISLAND

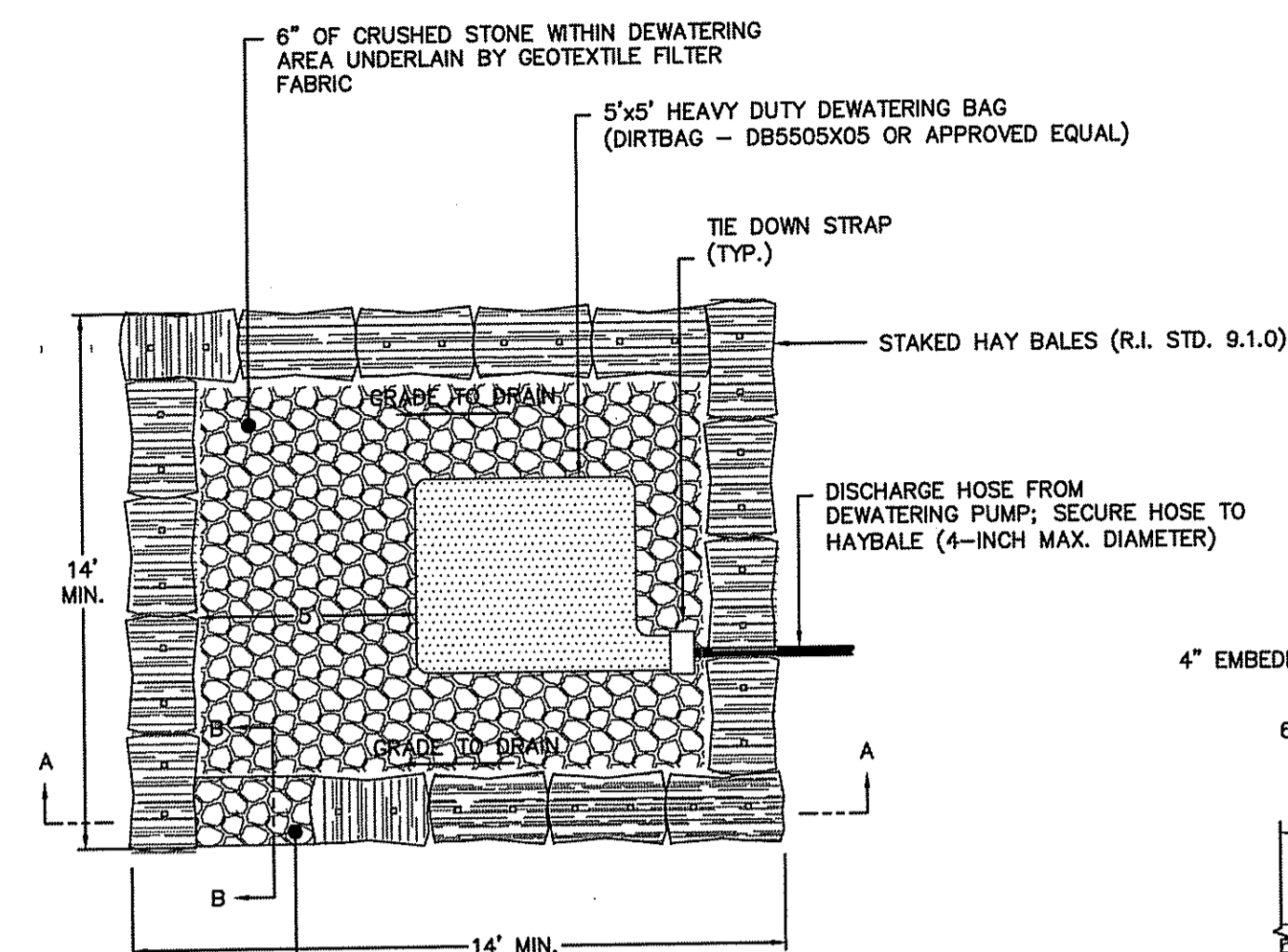
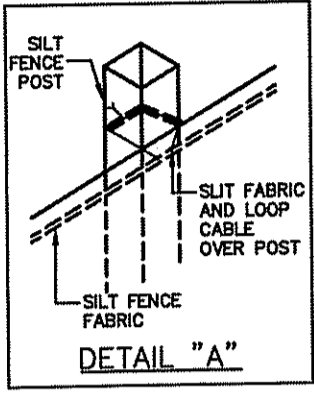
PROJ. No.: 20111470.C10  
DATE: JUNE 2016  
**CD-501**  
7 OF 9





- NOTES:**
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
  2. 2"x2"x4"-6" (MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 8'-0" (MAX.) O.C. IN WETLAND AREAS AND 4'-0" (MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP-OFF AREAS AS SHOWN ON PLANS.
  3. 1"x1"x4"-6" (MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
  4. SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

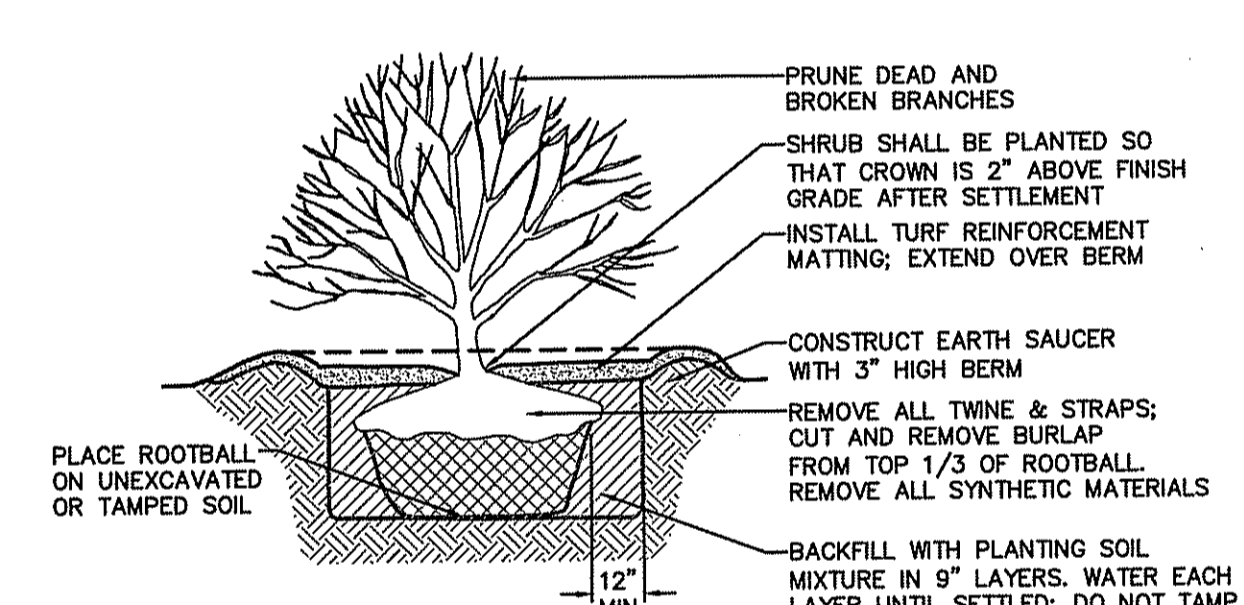
**SILT FENCE DETAIL (R.I. STD. 9.2.0)**  
NOT TO SCALE



**PLAN VIEW DETAIL FOR DEWATERING AREA**  
NOT TO SCALE

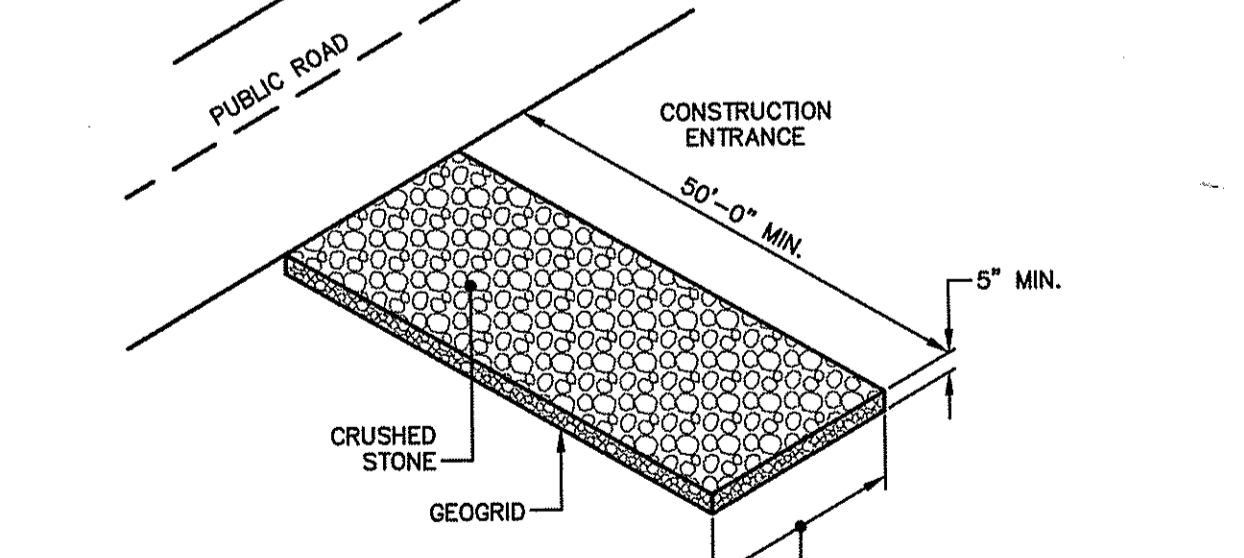
- MATERIAL NOTES:**
1. HAY BALES FOR EROSION CONTROL SHALL CONFORM TO SECTION 206 OF THE LATEST RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION INCLUDING MATERIALS AND CONSTRUCTION METHODS.
  2. BALES OF HAY SHALL BE FASTENED WITH WIRE AND HAVE A MINIMUM SIZE OF 1"x1.5"x3" AND WEIGH AT LEAST 40 LBS.
  3. FILTER STONE SHALL CONSIST OF 2 INCH MINUS STONE CONFORMING TO PS-2 FILTER STONE PER SUBSECTION M.10.0.3.1 OF THE LATEST RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
  4. FILTER FABRIC SHALL BE A NON-WOVEN GEOTEXTILE FILTER FABRIC.
  5. THE DEWATERING BAG SHALL BE REUSABLE, 4"x6" HEAVY DUTY DEWATERING BAG (DIRTBAG - DB550406 OR APPROVED EQUAL).
  6. THE DEWATERING BAG SHALL HAVE A FILL SPOUT LARGE ENOUGH TO ACCOMMODATE A 4-INCH DISCHARGE HOSE. THE BAG SHALL BE PROVIDED WITH MANUFACTURER RECOMMENDED STRAPS (OR SIMILAR) TO SECURE THE HOSE AND PREVENT PUMPED WATER FROM ESCAPING WITHOUT FILTERED.
  7. FILTER BAGS ARE INTENDED TO RECEIVE WATER THAT IS TURBID DUE TO CONSTRUCTION ACTIVITY. ANY WATER TURBIDITY THAT DOES NOT EXCEED BACKGROUND LEVELS CAN BE PUMPED DIRECTLY OVER COFFERDAM BARRIERS.
- CONSTRUCTION/INSTALLATION NOTES:**
1. INSTALL FILTER BAG AS SHOWN ON DETAIL.
  2. STRAP THE NECK OF THE FILTER BAG TIGHTLY TO THE DISCHARGE HOSE.
  3. FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFECTIVELY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE. FLOW RATES WILL VARY DEPENDING ON THE SIZE OF THE FILTER BAG, THE TYPE AND AMOUNT OF SEDIMENT DISCHARGED INTO THE FILTER BAG. THE TYPE OF GROUND, ROCK OR OTHER SUBSTANCE UNDER THE BAG AND THE DEGREE OF THE SLOPE ON WHICH THE BAG LIES. THE FILTER BAG SPECIFIED WILL ACCOMMODATE FLOW RATES UP TO 90 GALLONS PER MINUTE. USE OF EXCESSIVE FLOW RATES OR OVERFILLING FILTER BAG WITH SEDIMENT WILL CAUSE THE BAG TO RUPTURE OR FAILURE OF THE HOSE ATTACHMENT STRAPS.
  4. THE FILTER BAG MUST BE MONITORED DURING USE.
  5. INSTALL DEWATERING BAG AND FILTER STONE BEDDING WITH A SLOPE SO INCOMING WATER FLOWS DOWNHILL THROUGH THE BAG WITHOUT CREATING MORE EROSION.
- MAINTENANCE NOTES:**
1. INSPECT THE FILTER BAG CONTINUOUSLY DURING USE.
  2. SOME SHOULD ALWAYS BE TAKEN TO PROPERLY MONITOR PERFORMANCE TO ENSURE THAT PUMP RATES OR CONCENTRATIONS OF SEDIMENT ARE NOT EXCESSIVE.
  3. ONCE THE FILTER BAG HAS REACHED ITS MAXIMUM CAPACITY TO RETAIN SEDIMENTS, THE UNIT SHALL BE TAKEN OFFLINE. A STANDBY FILTER BAG SHOULD BE ON-SITE AND PUMPED DISCHARGE SHALL THEN BE CONNECTED TO THE STANDBY FILTER BAG.
  4. THE SEDIMENT BAG SHALL THEN BE CLEANED. AFTER BEING CLEANED, RETURN FILTER/DEWATERING BAG TO DEWATERING AREA TO FUNCTION AS THE STANDBY FILTER BAG.
  5. DISPOSE OF RETAINED SEDIMENT OFF-SITE. IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

**DEWATERING AREA WITH FILTER BAG**  
NOT TO SCALE

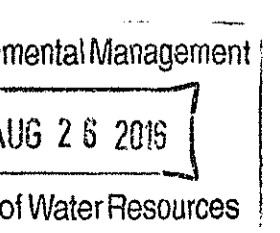


- NOTES:**
1. FOR CONTAINER GROWN SHRUBS, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
  2. INCORPORATE COMMERCIALY PREPARED MYCORRHIZA SPORES IN THE SOIL IMMEDIATELY AROUND THE ROOT BALL AT RATES SPECIFIED BY THE MANUFACTURER.

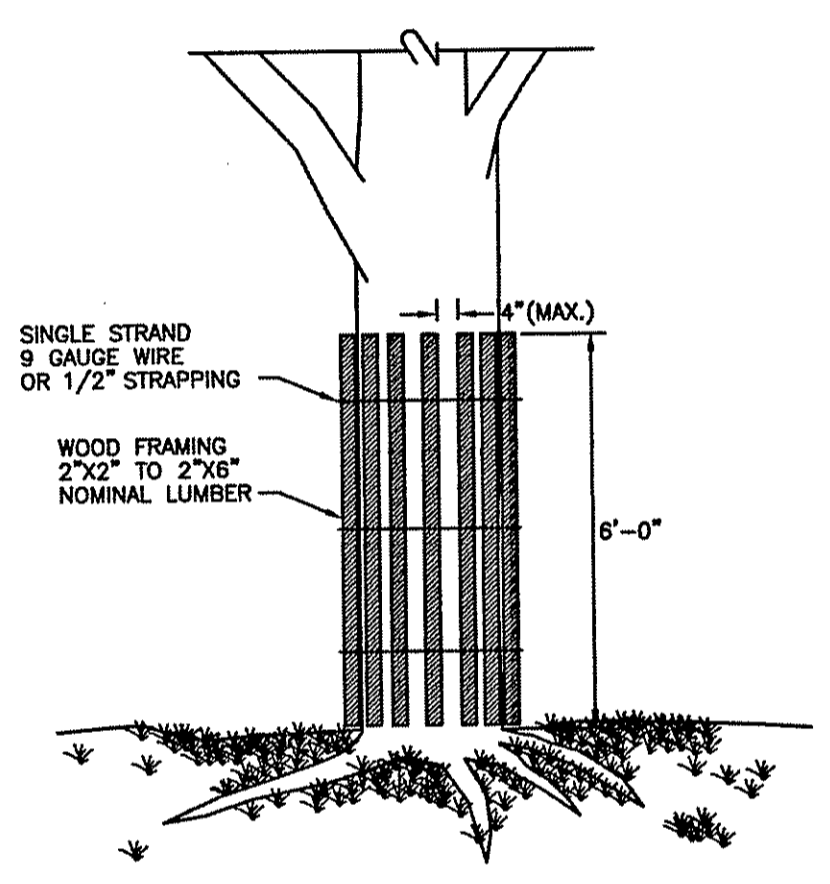
**SHRUBS BALLED & BURLAPPED**  
NOT TO SCALE



**CONSTRUCTION ACCESS (R.I. STD. 9.9.0)**  
NOT TO SCALE

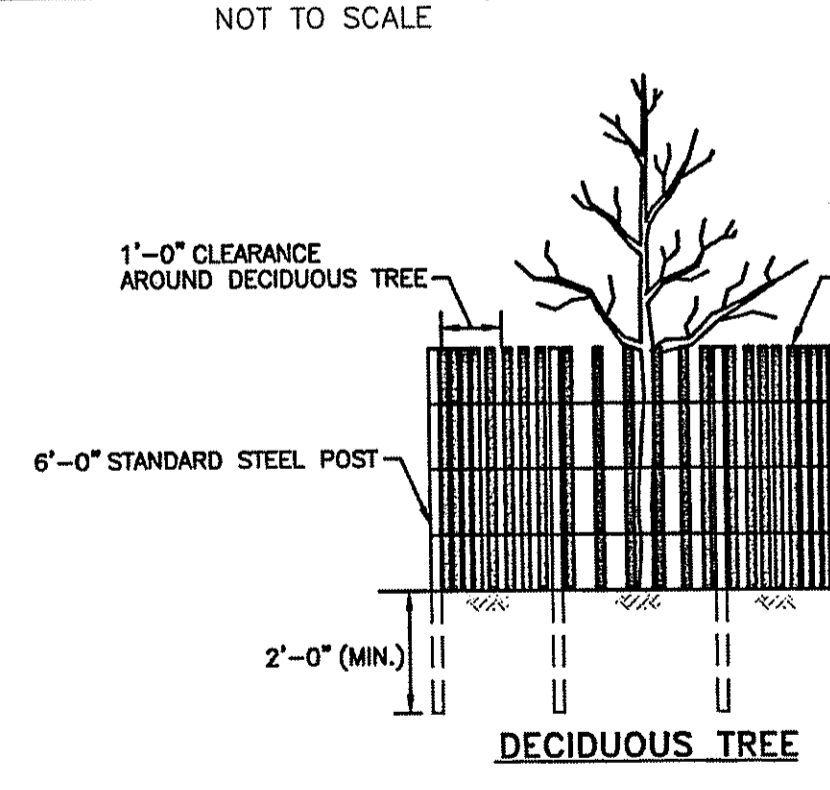


Environmental Management  
AUG 26 2016  
Office of Water Resources

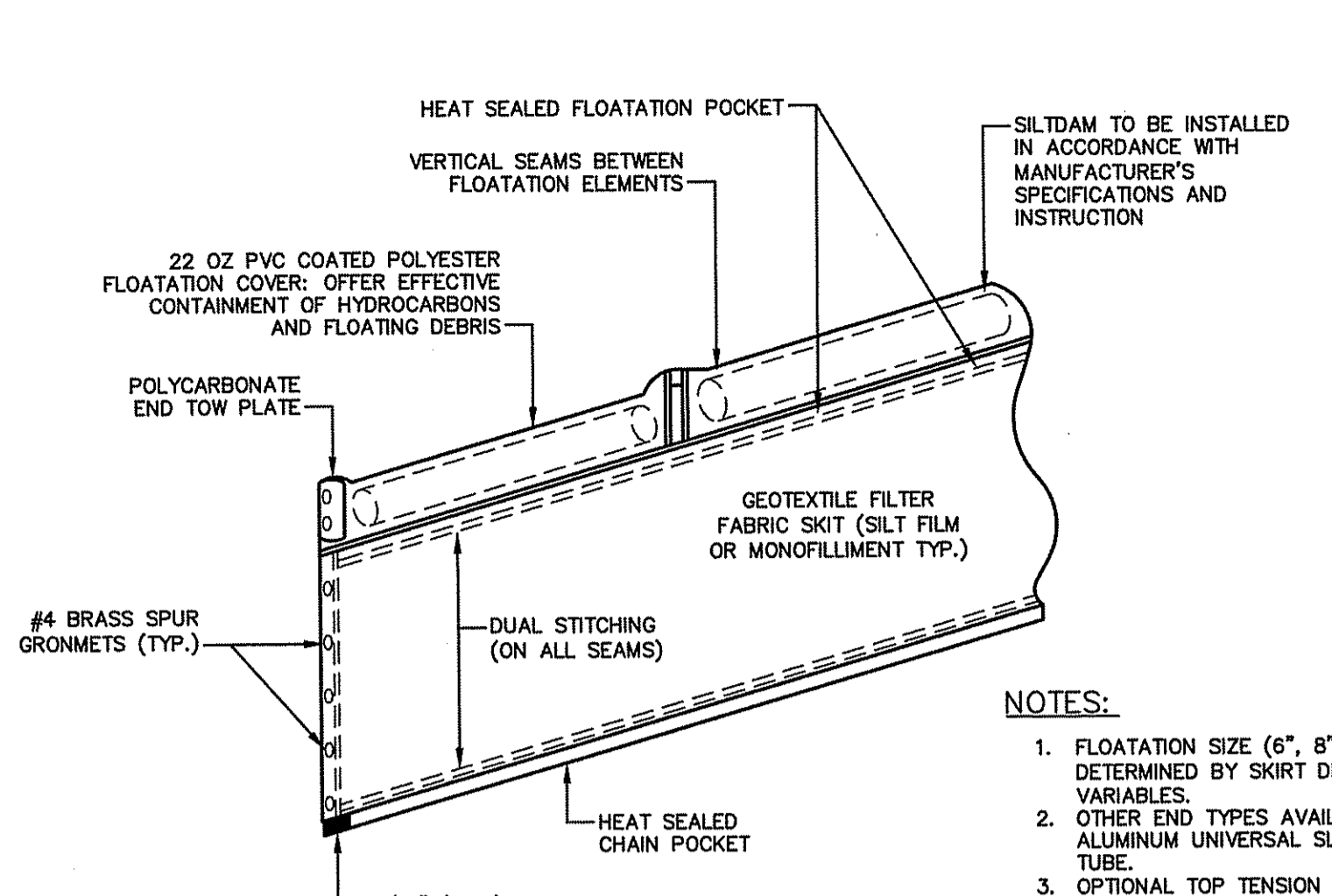


**TREE PROTECTION DEVICE (R.I. STD. 51.1.0)**  
NOT TO SCALE

**TREE PROTECTION DEVICE (R.I. STD. 51.1.1)**  
NOT TO SCALE



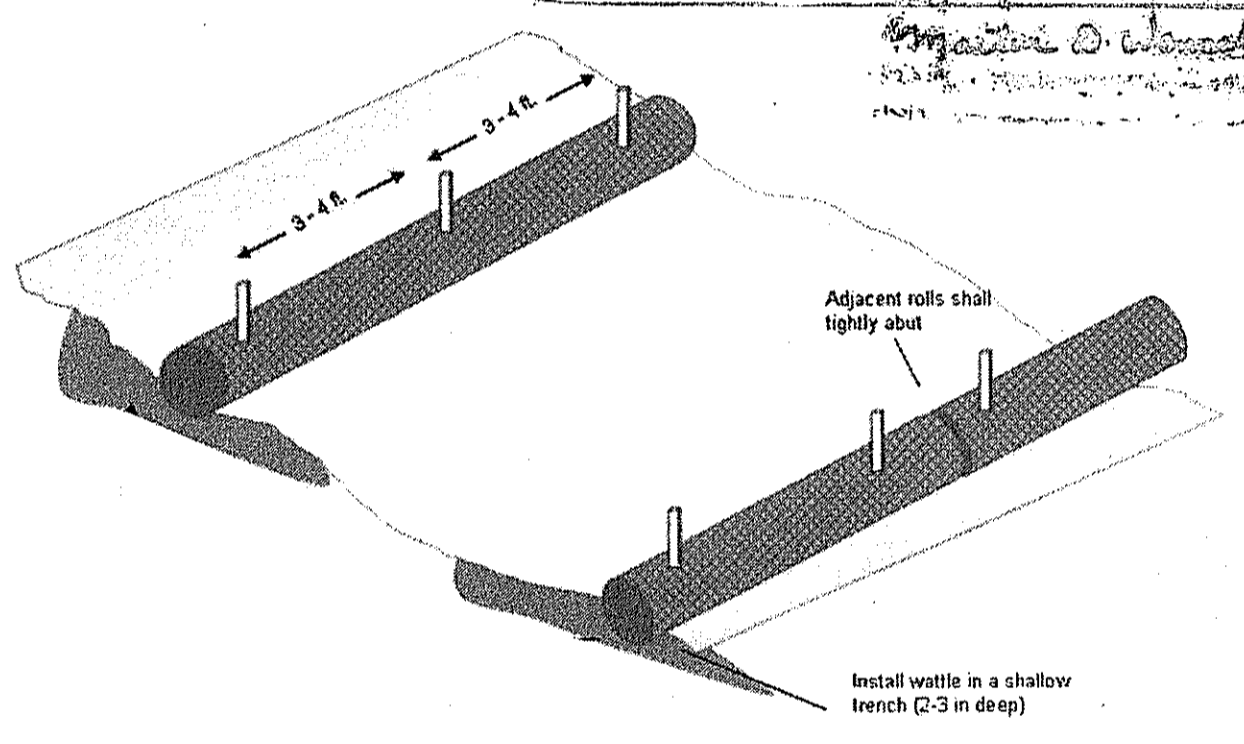
**DECIDUOUS TREE**  
NOT TO SCALE



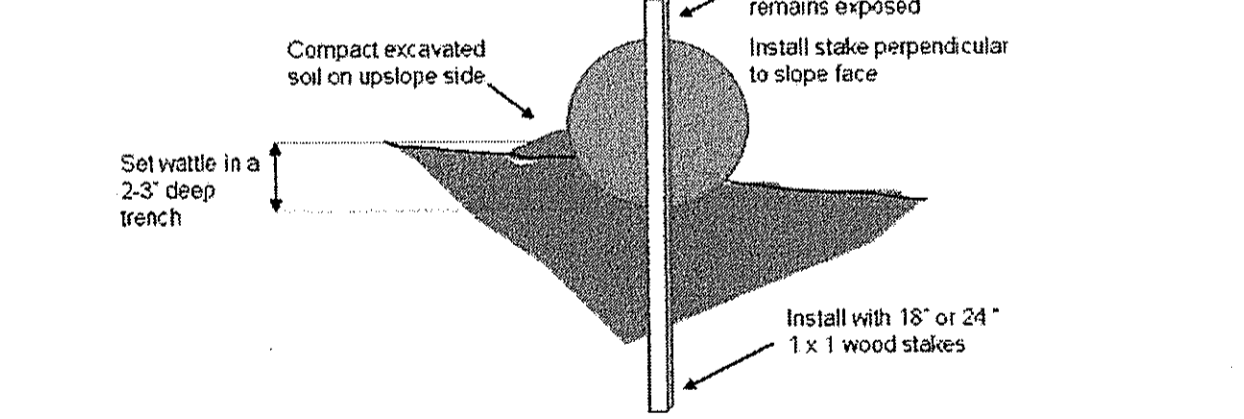
- NOTES:**
1. FLOATATION SIZE (6", 8" OR 12" DIA.) DETERMINED BY SKIRT DEPTH/SITE VARIABLES.
  2. OTHER END TYPES AVAILABLE SUCH AS ALUMINUM UNIVERSAL SLIDE OR SLOTTED TUBE.
  3. OPTIONAL TOP TENSION CABLE (5/16" TYP.) AVAILABLE FOR INCREASED STRENGTH.
- SILTDAM CONTAINMENT BARRIER: INSTALL TO FORM A STURDY BARRIER WHICH CAN ACCOMMODATE A WIDE VARIETY OF WIND, RIVER AND CURRENT CONDITIONS. FLOTATION SHALL BE PROVIDED THROUGH A SERIES OF CLOSED CELL EXPANDED POLYETHYLENE LOGS, WHICH ARE RESILIENT IN NATURE AND CAPABLE OF BEING SUBJECTED TO ROUGH SERVICE DURING THE DEPLOYMENT AND RECOVERY OF THE CONTAINMENT BARRIER. THE FLOTATION LOGS ARE COMPLETELY ENCLOSED IN A VINYL COATED FABRIC WHICH IS HEAT SEALED TO PROVIDE A WATERTIGHT FLOTATION COMPARTMENT AND GREATER STRENGTH. THE CONTAINMENT BARRIER MATERIAL CONSISTS OF A FILTER FABRIC COMPOSED OF WOVEN POLYPROPYLENE WHICH ALLOWS THE PASSAGE OF WATER, BUT RETAINS SOIL PARTICLES.

**SILTDAM FLOATING TURBIDITY BARRIER**  
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
OCT 21 2016 FILE # 16-0182  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLAN # 16-0182 AT CONSTRUCTION SITE



**Typical Wattle Installation Guide**



**Entrenchment Detail**

- NOTES:**
1. COIR ROLL SHALL BE INSTALLED BY THE CONTRACTOR AS INDICATED ON THE CONTRACT DRAWINGS. A ROW OF TEMPORARY COIR ROLLS OR SILT FENCING SHALL ALSO BE INSTALLED AROUND ANY SOIL STOCKPILE AREAS UTILIZED BY THE CONTRACTOR DURING CONSTRUCTION IN UNPAVED AREAS.
  2. COIR ROLLS SHALL BE TRENCHED APPROXIMATE 2-3 INCHES AND STAKED SUCH THAT WATTLES DIRECTLY CONTACT SOIL AND PRECLUDE UNDERMINING OR BLOWOUTS. THE TRENCH SHALL BE APPROXIMATELY 9 INCHES WIDE. STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE WATTLE AT A SPACING OF 3-4 FEET ON CENTER AND NO GREATER THAN 6" FROM THE EACH END OF THE WATTLE. STAKES SHALL BE 1-INCH BY 1-INCH WOODEN STAKES WITH A LENGTH OF 18-24 INCHES. COMPACT SOIL EXCAVATED TO CREATE TRENCH ON UPHILL SIDE.
  3. ENDS OF ADJACENT ROLLS SHALL BE TIGHTLY BUTTED OR OVERLAPPED SO THAT NO OPENING EXISTS FOR WATER TO PASS THROUGH. WATTLES SHALL BE FREE OF DAMAGE OR DEFECTS WHEN DELIVERED TO THE SHIPPER. NO VEHICLES SHALL BE DRIVEN OVER WATTLES.

**BIODEGRADABLE COIR ROLL**  
NOT TO SCALE

File Path: J:\DWG\20111470C\10\_DET01.dwg Layout: CD-503 Plotted: Fri, August 26, 2016 - 3:46 PM User: samuda Plotter: NONE CTB File: F0.STB LAYER STATE:

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
1.	8/26/16	LAYOUT REVISIONS PER RIDEM MEETING	SDA	NSW

WOOD-PAWCATUCK WATERSHED ASSOCIATION  
CONSTRUCTION DETAILS  
JOHN M. "JAY" CRONAN PUBLIC ACCESS  
REHABILITATION  
RICHMOND RHODE ISLAND

PROJ. No.: 20111470.C10  
DATE: JUNE 2016

**CD-503**  
9 OF 9

SCALE:  
HORZ.: AS NOTED  
VERT.:  
DATUM:  
HORZ.:  
VERT.:  
GRAPHIC SCALE

**FUSS & O'NEILL**  
317 IRON HORSE WAY, SUITE 204  
PROVIDENCE, RI 02908  
401.861.3070  
www.fando.com