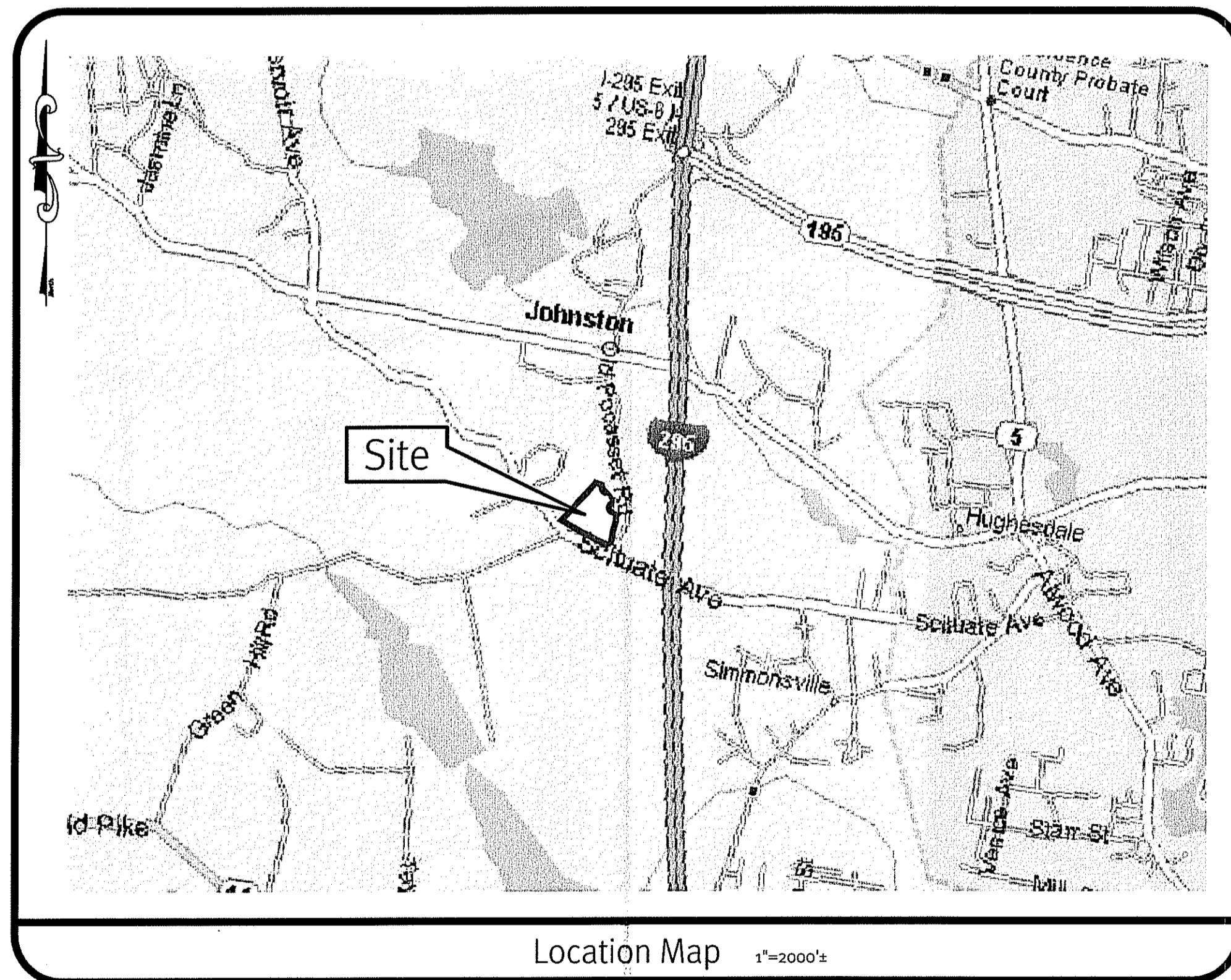


# RIDEM Permit Modification

# Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant

Scituate Avenue  
Johnston, Rhode Island

Assessor's Plat 43-7 Lot 2



## Sheet Index

1. Cover Sheet
2. Aerial 1/2 Mile Radius
3. Overall Site Plan
4. Grading & Utility Plan - 1
5. Grading & Utility Plan - 2
6. Detail Sheet - 1
7. Detail Sheet - 2
8. Detail Sheet - 3
9. Detail Sheet - 4
10. Detail Sheet - 5
11. Landscape Plan

1 of 1 Existing Conditions Plan

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED JUN 8 2015 FILE # 10-0151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Environmental Management  
MAY 20 2015

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THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.

JASON P. CLOUGH  
No. [Signature]  
REGISTERED PROFESSIONAL ENGINEER CIVIL

Cover Sheet  
**Orbit Energy Rhode Island  
3.2 MW Bio-Gas Plant**  
Assessor's Plat 43-7 Lot 2  
Johnston, Rhode Island

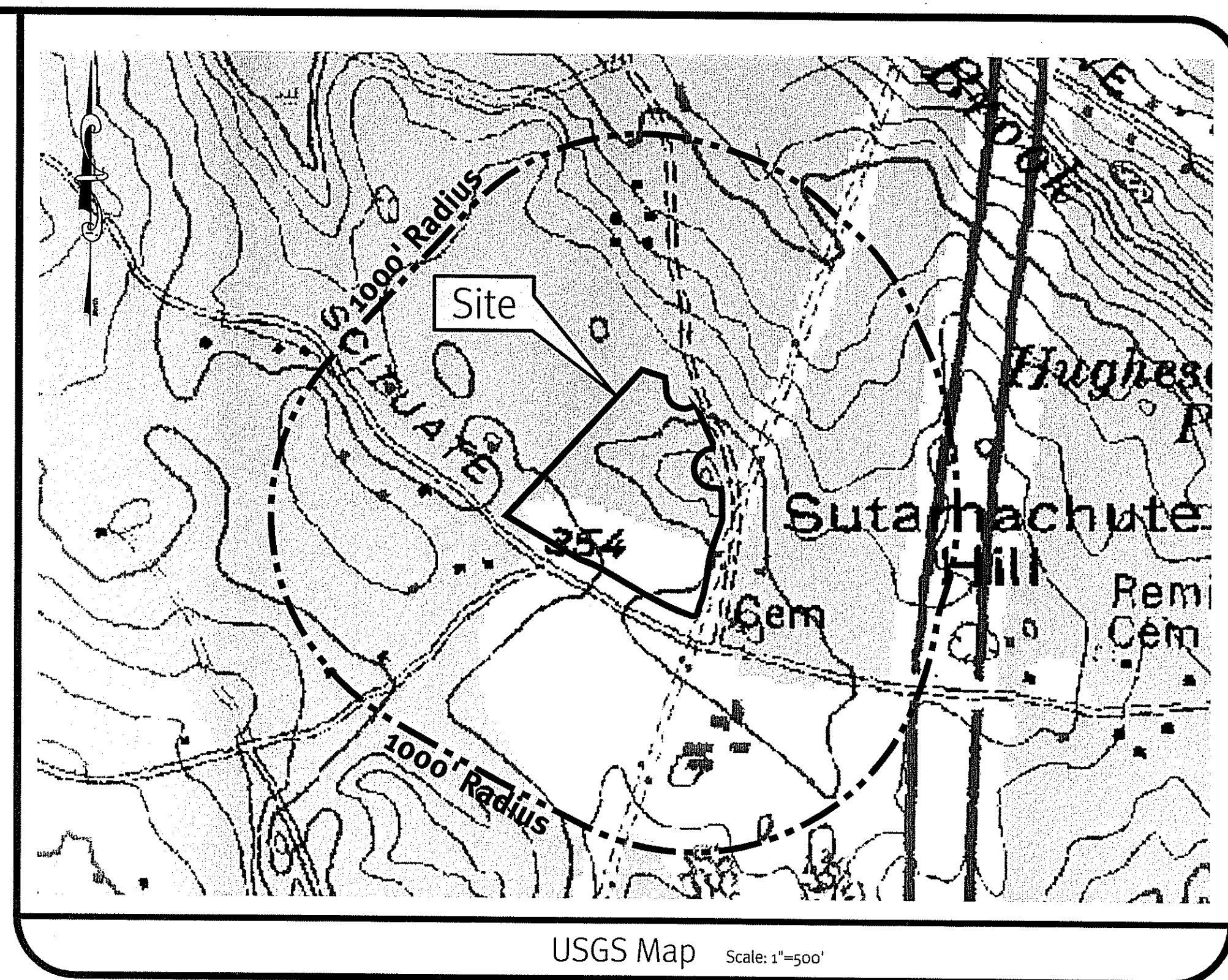
**DiPrete Engineering**  
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way  
Hope, RI 02831  
Applicant: 900 Ridgefield Drive, Suite 145  
Raleigh, North Carolina 27609

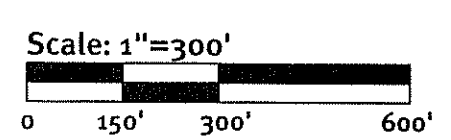
No.	Date	Description	By:
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1	9/5/2014	Industrial Site Plan Review	J.A.R.
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Drawn By: J.A.R. Design By: B.A.H.

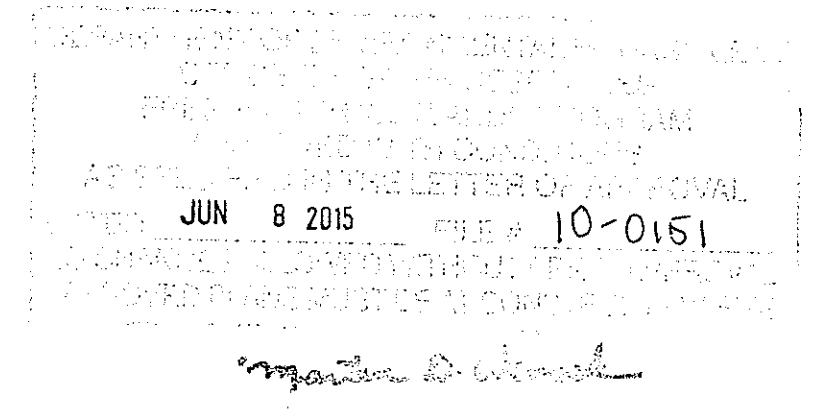
Engineers • Planners • Surveyors



USGS Map Scale: 1"=500'

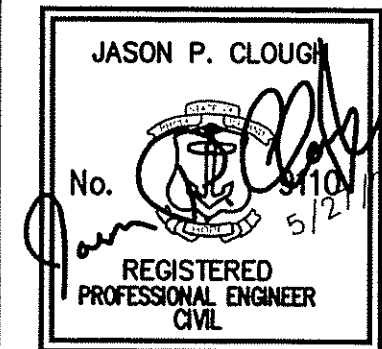


Scale: 1"=300'  
Photo obtained from the RI-GIS of 2011 Digital Orthophotography Northern Urban Areas of Rhode Island.



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### Aerial 1/2 Mile Radius Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant

Assessor's Plat 43-7 Lot 2  
Johnston, Rhode Island



Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-454-6006 www.DiPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way  
Hope, RI 02831  
900 Ridgefield Drive, Suite 145  
Raleigh, North Carolina 27609

No.	Date	Description	By:
8	5/27/2015	RIEM Permit Modification Response to Comments	J.P.C.
7	4/30/2015	RIEM Permit Modification	J.P.C.
6	02/25/2015	Final Plan	J.P.C.
5	12/19/2014	RIEM Sewer Connection Permit	B.A.H.
4	12/03/2014	Soil Erosion and Sediment Control Permit	B.A.H.
3	10/17/2014	Industrial Site Plan Review - Preliminary Plan	B.A.H.
2	10/07/2014	RIEM Permit Modification	B.A.H.
1	9/21/2014	Industrial Site Plan Review	J.A.R.
0	8/21/2014	Special Use Permit Submission	J.A.R.

Drawn By: J.A.R. Design By: B.A.H.

z:\main\projects\0384-002 bluesphere biogas project\autoexec drawings\0384-002-cv-ar.dwg Plotter: 5/26/2015

**Developmental Data**

CURRENT ZONING: N/A  
 MINIMUM LOT SIZE: N/A  
 MINIMUM DISTANCE OF STRUCTURE FROM RESIDENTIAL ZONE BOUNDARY: 100'  
 MINIMUM LOT WIDTH: N/A  
 MINIMUM FRONT YARD: 50'  
 MINIMUM SIDE YARD: 50'  
 MINIMUM REAR YARD: 40'  
 MAXIMUM STRUCTURE HEIGHT: 40'  
 MAXIMUM BUILDING COVERAGE: 40%  
 PROPOSED BUILDING COVERAGE AREA TO BE DISTURBED: 10%  
 225,800± SF

**Parking Data**

PARKING REQUIRED:  
 ONE CAR SPACE PER EVERY 2 EMPLOYEES  
 NUMBER OF EMPLOYEES PER SHIFT = 3 EMPLOYEES  
 REQUIRED PARKING = 2 PARKING SPOTS  
 PARKING PROVIDED:  
 4 SPOTS TOTAL, INCLUDING 1 ADA ACCESSIBLE PARKING SPOT.

EX SMH RIM=350.41  
 (NW) INVERT 18" PVC =343.50  
 (SW) INVERT 8" HDPE =344.06

AP 43-1 LOT 6  
 N/F  
 RI RESOURCE RECOVERY CORP  
 EX SMH RIM=342.96  
 (NW) INVERT 18" PVC =335.98  
 (SE) INVERT 18" PVC =335.84

AP 44-4 LOT 481  
 N/F  
 DIANE M. VIERA

AP 44-4 LOT 293  
 N/F  
 LOUIS JR. AKA  
 LOUIS L. VIVARO

AP 43-1 LOT 410  
 N/F  
 RI RESOURCE RECOVERY CORP

AP 43-1 LOT 584  
 N/F  
 NIALJA, LLC  
 4 FT HIGH VEGETATIVE SCREEN TO BE PLANTED 6-8 FT ON CENTER (SEE LANDSCAPE PLAN)

AP 43-1 LOT 1  
 N/F  
 RI RESOURCE RECOVERY CORP

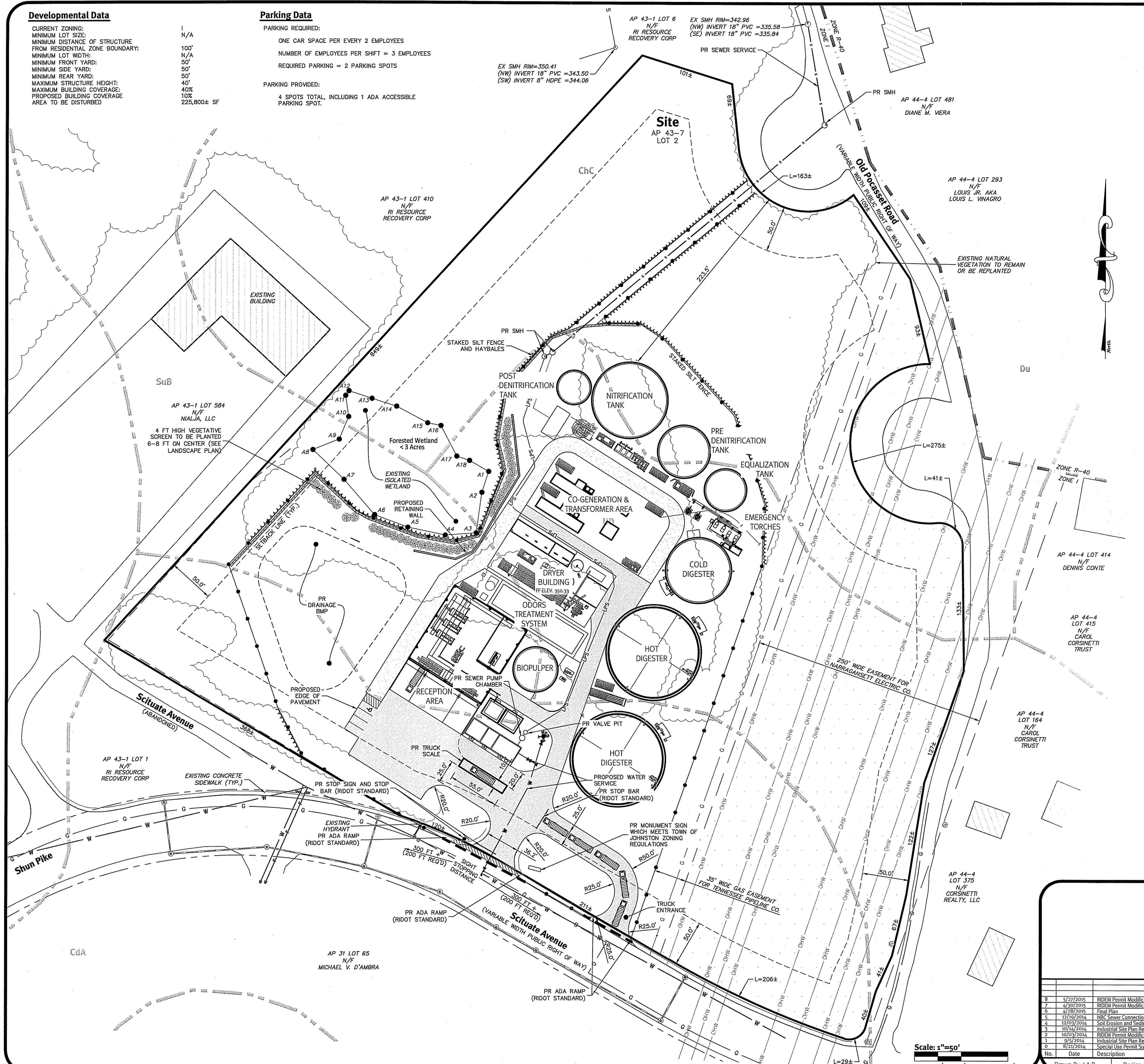
AP 31 LOT 65  
 N/F  
 MICHAEL V. D'AMBRA

AP 44-4 LOT 375  
 N/F  
 CORSINETTI REALTY, LLC

AP 44-4 LOT 164  
 N/F  
 CAROL CORSINETTI TRUST

AP 44-4 LOT 414  
 DENNIS CONTE

AP 44-4 LOT 415  
 N/F  
 CAROL CORSINETTI TRUST



**Construction Schedule**

- CONSTRUCTION TO COMMENCE IN SUMMER OF 2015, OR UPON RECEIPT OF ALL NECESSARY APPROVALS
- THE CONTRACTOR IS TO NOTIFY DIG SAFE PRIOR TO THE START OF CONSTRUCTION.
- NO STOCKPILING OF MATERIAL IS TO BE ALLOWED WITHIN A PUBLIC R.O.W.. NO OPEN TRENCHES ARE TO BE LEFT OVERNIGHT.
- CONTRACTOR TO OBTAIN ALL FEDERAL, STATE, AND MUNICIPAL APPROVALS PRIOR TO THE START OF CONSTRUCTION.
- THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER, THE DIRECTOR OF PUBLIC WORKS, THE TOWN ENGINEER, AND RI DEPT. OF ENVIRONMENTAL MANAGEMENT AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
- ALL WORK PERFORMED HEREIN SHALL BE GOVERNED BY THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AND TOWN OF JOHNSTON STANDARD SPECIFICATIONS AND DETAILS.
- ALL EXCESS SOIL, STUMPS, TREES, ROCKS, BOULDERS AND OTHER REFUSE, SHALL BE DISCARDED IN AN APPROVED MANNER AT AN APPROVED LOCATION.
- THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING FINISH GRADING AND DRAINAGE AROUND THE BUILDINGS TO ENSURE SURFACE WATER AND/OR GROUND WATER ARE DIRECTED AWAY FROM THE STRUCTURES. THIS PLAN SHOWS GENERAL GRADING ONLY AND ADDITIONAL DETAIL IS LIKELY TO BE REQUIRED AROUND THE BUILDINGS.
- ALL LOAM IN DISTURBED AREAS TO BE STOCKPILED FOR FUTURE USE.
- ALL PROPOSED DRAINAGE PIPE TO BE HDPE UNLESS OTHERWISE NOTED.
- OIL WATER SEPARATOR TO BE INSTALLED IN (CB-13) CATCH BASIN 13 (SNOUT OR PRE-APPROVED EQUAL).
- THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR UTILITY CONNECTIONS.
- ABOVEGROUND UTILITIES ARE PROPOSED ONSITE. UNDERGROUND UTILITIES MAY BE INSTALLED AS AN ALTERNATIVE.
- ALL CUT AND FILL AREAS ARE TO BE DONE UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER WITH TESTING AND CERTIFICATION TO BE PROVIDED TO THE OWNER UPON THE COMPLETION OF THE PROJECT. DIPRETE ENGINEERING ASSOCIATES, INC. HAS NOT PROVIDED THE FILL SPECIFICATION, GEOTECHNICAL ENGINEERING, STRUCTURAL ENGINEERING SERVICES, OR SUPERVISION AS PART OF THESE DRAWINGS.
- ALL EXISTING UTILITIES SHOWN ARE SCHEMATIC IN NATURE AND DIPRETE ENGINEERING ASSOCIATES, INC. DOES NOT CERTIFY ITS ACCURACY. THE CONTRACTOR IS TO VERIFY THE UTILITY LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
- THE PROPOSED WORK INCLUDING GRADING, ACCESS DRIVEWAY, AND UTILITIES REQUIRES COORDINATION THROUGH UTILITY EASEMENTS. CONTRACTOR SHALL VERIFY ALL APPROVALS ARE IN PLACE PRIOR TO START OF CONSTRUCTION.

**Construction Notes**

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED JUN 9 2015 FILE # 10-0151  
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 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**Existing Conditions Legend:**

- EX MAJOR FOOT CONTOUR -160-
- EX MINOR FOOT CONTOUR -156-
- SETBACK
- PROPERTY LINE
- ASSESSOR LINE
- WETLAND EDGE
- WETLAND FLAG
- EDGE OF PAVEMENT
- ASPHALT PAVEMENT
- BUILDING
- TREELINE
- OVERHEAD WIRES
- UNDERGROUND ELECTRIC
- GAS LINE
- WATER LINE
- FIRE SERVICE LINE
- SEWER LINE
- DRAIN LINE
- HYDRANT
- SEWER MANHOLE
- DRAINAGE MANHOLE
- CATCH BASIN
- EXISTING WELL
- LIGHT POLE
- UTILITY POLE
- SOIL EVALUATION
- TEST PIT
- SEWER VALVE
- WATER VALVE
- GAS VALVE

**Proposed Conditions Legend:**

- PR FOOT CONTOUR
  - PR TOP/BOTTOM OF POND
  - EASEMENT
  - EASEMENT HATCH
  - POND/RAIN GARDEN OUTLINE
  - RIP-RAP
  - BUILDING FOOTPRINT
  - LIMIT OF WORK
  - STAKED SILT FENCE
  - STAKED HAY BALES
  - CONCRETE CURB
  - ASPHALT PAVEMENT
  - UNDERGROUND TRENCH
  - GAS LINE
  - WATER LINE
  - SEWER LINE
  - DRAIN LINE
  - OVERHEAD WIRES
  - LOW PRESSURE SEWER MAIN PAVEMENT STRIPING (4" WHITE STRIPING 2' ON CENTER @ 45°)
  - ACCESSIBLE PARKING SPACE SYMBOL
  - MANHOLE
  - CATCH BASIN
- Abbreviations:**
- EXISTING EX
  - PROPOSED PR
  - FINISH FLOOR ELEVATION FFE

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JASON P. CLOUGH  
 No. [Stamp]  
 REGISTERED PROFESSIONAL ENGINEER  
 CIVIL

**Overall Site Plan**  
**Orbit Energy Rhode Island**  
**3.2 MW Bio-Gas Plant**  
 Assessor's Plat 43-7 Lot 2  
 Johnston, Rhode Island

Environmental Management  
 MAY 29 2015  
 Office of Water Resources

**DiPrete Engineering**  
 Two Stafford Court Cranston, RI 02920  
 tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

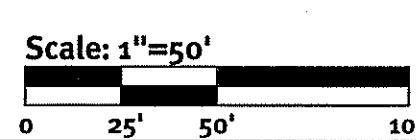
Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
 24 Armand Way Hope, RI 02831

Applicant: 900 Ridgfield Drive, Suite 145 Raleigh, North Carolina 27609

By: [Signature]

Drawn By: J.A.R. Design By: B.A.H.

SHEET 3 OF 11



No.	Date	Description	By:
8	5/27/2015	RIDEM Permit Modification Response to Comments	J.P.C.
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0	8/27/2014	Special Use Permit Submission	J.A.R.

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See Sheet 5

AP 43-1 LOT 584  
N/F  
NALJA, LLC

4 FT HIGH EVERGREENS  
TREES TO BE PLANTED  
6'-8FT ON CENTER

Forested Wetland  
< 3 Acres

Infiltration Basin (Pond 1)

Scituate Avenue

AP 43-1 LOT 1  
N/F  
RI RESOURCE  
RECOVERY CORP

AP 31 LOT 65  
N/F  
MICHAEL V. D'AMBRA

Scituate Avenue  
(VARIABLE WIDTH PUBLIC RIGHT OF WAY)

Old Pocasset Road  
(VARIABLE WIDTH PUBLIC RIGHT OF WAY)

PROPOSED UNDERGROUND ELECTRIC  
CONDUIT LOCATION, SIZE & TYPE TO  
BE DETERMINED BY AN ELECTRICAL  
ENGINEER TO CONNECT TO OVERHEAD  
WIRES AT A LOCATION DETERMINED BY  
NATIONAL GRID.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
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IMPLEMENTATION OF THIS PLAN AND DESIGN.

Scale: 1"=30'  
0 15' 30' 60'

JASON P. CLOUGH  
No. [Stamp]  
REGISTERED  
PROFESSIONAL ENGINEER  
CIVIL

No.	Date	Description	By:
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Drawn By: J.A.R. Design By: B.A.H.

### Grading & Utility Plan - 1

## Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant

Assessor's Plat 43-7 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**

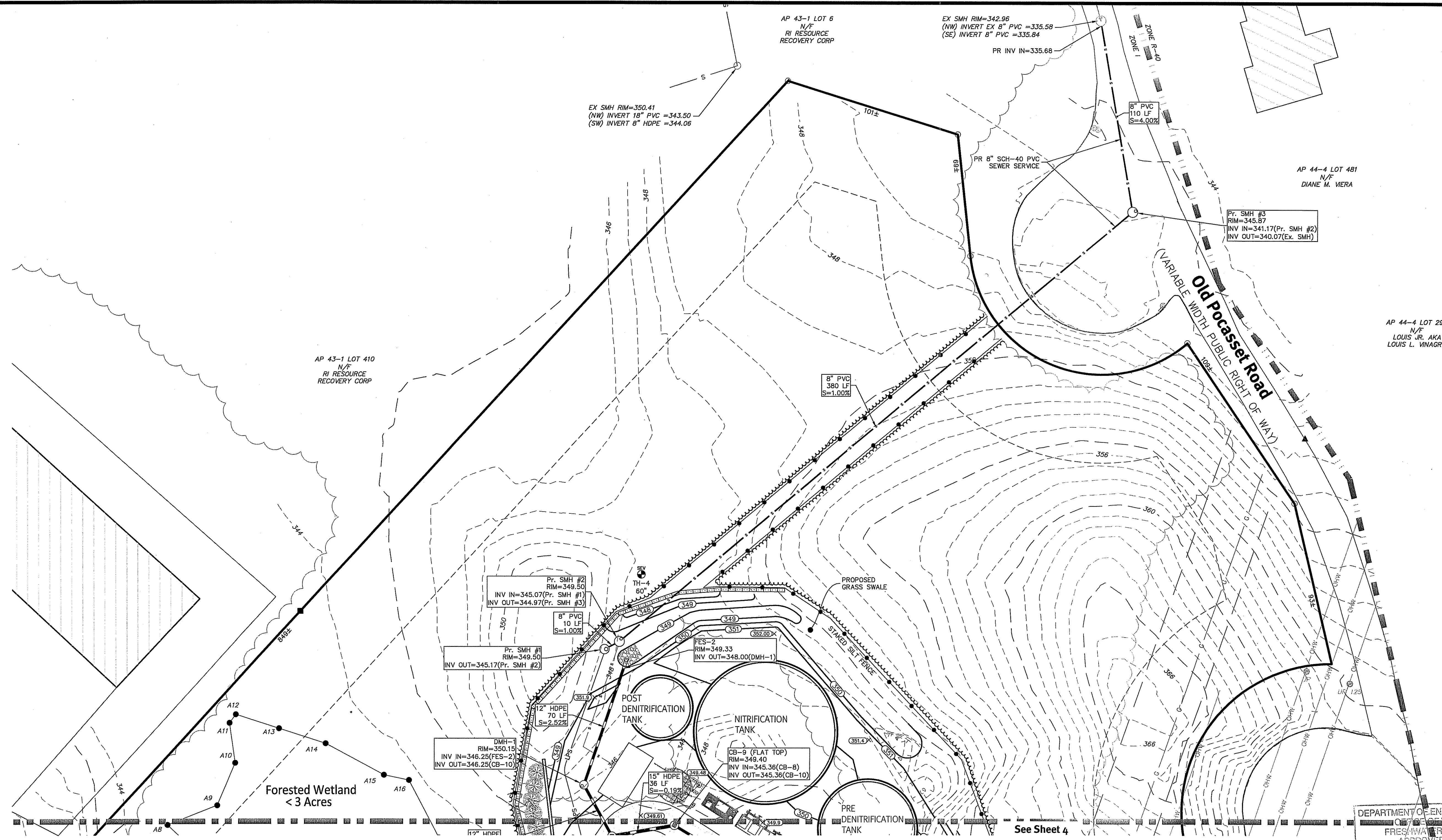
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way  
Hope, RI 02831  
900 Ridgfield Drive, Suite 145  
Raleigh, North Carolina 27609

Environmental Management  
May 29 2015  
Orbit Energy Resources

Engineers • Planners • Surveyors

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 CLEAN WATER RESOURCES  
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**JASON P. CLOUGH**  
 No. 5110  
 REGISTERED PROFESSIONAL ENGINEER CIVIL

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No.	Date	Description	By:

Drawn By: J.A.R. Design By: B.A.H.

**Grading & Utility Plan -2**

**Orbit Energy Rhode Island**  
**3.2 MW Bio-Gas Plant**  
 Assessor's Plat 43-7 Lot 2  
 Johnston, Rhode Island

**DiPrete Engineering**

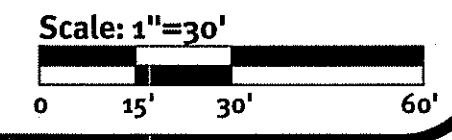
Two Stafford Court Cranston, RI 02920  
 tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

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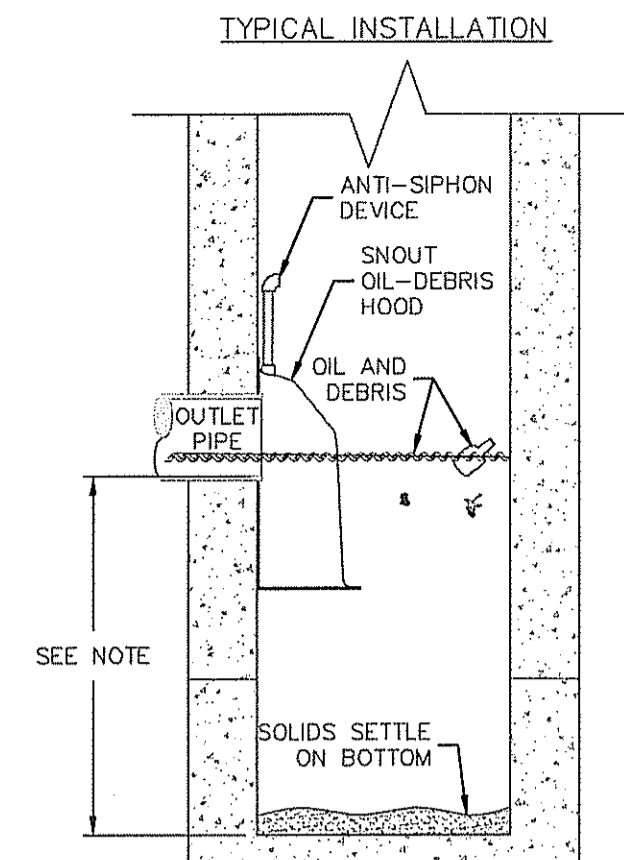
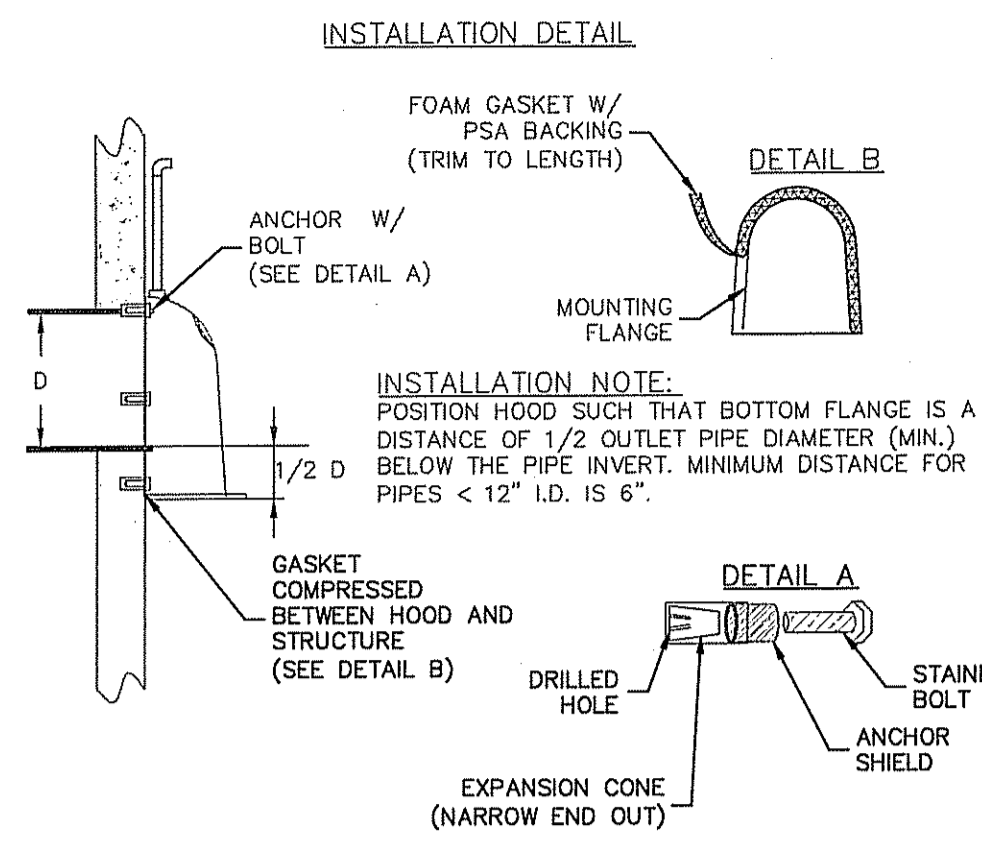
Applicant: **Orbit Energy Rhode Island, LLC**

Environmental Management  
 May 29 2015  
 Office of Water Resources

SHEET 5 OF 11

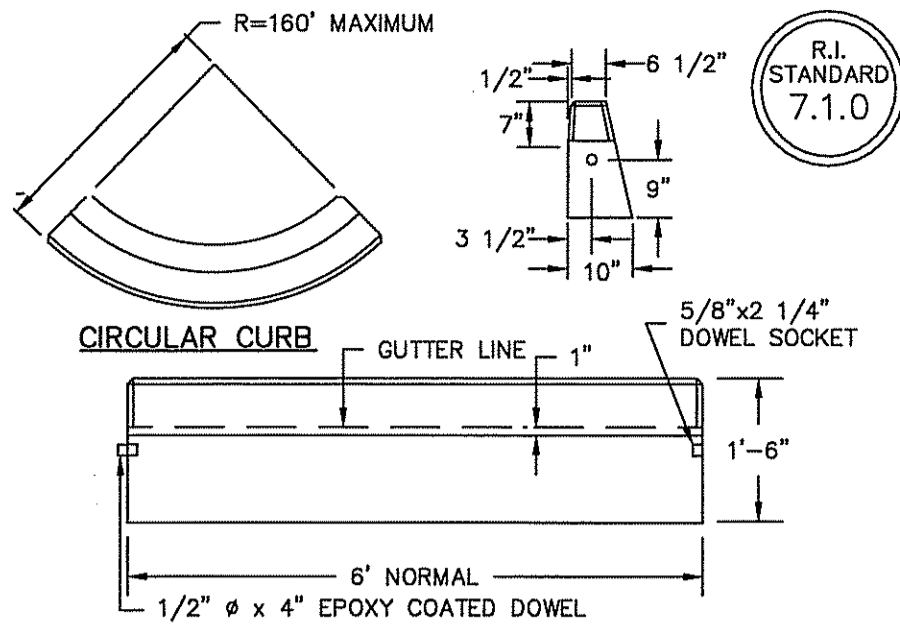


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- NOTES:**
- ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY: BEST MANAGEMENT PRODUCTS, INC. 53 MT. ARCHER RD. LYME, CT 06371 (860) 434-0277, (860) 434-3195 FAX TOLL FREE: (800) 504-8008 OR (888) 354-7585 WEB SITE: www.bestmp.com OR PRE-APPROVED EQUAL.
  - ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
  - ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT AS DRAWN. (SEE CONFIGURATION DETAIL).
  - THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION.
  - THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A DISTANCE EQUAL TO 1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
  - THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 24" ACCORDING TO STRUCTURE CONFIGURATION.
  - THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
  - THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH 3/8" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL).
  - INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
  - INSTALLATION KIT SHALL INCLUDE:
    - INSTALLATION INSTRUCTIONS
    - PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    - OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    - 3/8" STAINLESS STEEL BOLTS
    - ANCHOR SHIELDS

**NOTE:** SNUMP DEPTH OF 36" MIN. FOR < OR = 12" DIAM. OUTLET. FOR OUTLETS > OR = 15", DEPTH = 2.5 - 3.0 X DIAMETER.



- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
  - MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0".
  - EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
  - CIRCULAR CURB IS REQUIRED ON CURVES WITH RADIUS OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.
  - EXPOSED EDGES TO HAVE A 3/4" CHAMFER.

**Precast Concrete Curb**  
NOT TO SCALE

**LEGEND**

SIGN NUMBER	R1-1
COLOR	RED
BACKGROUND	WHITE
COPY	STOP
SIGN WIDTH	24" 30" 36" 48"
SIGN HEIGHT	24" 30" 36" 48"

**LEGEND**

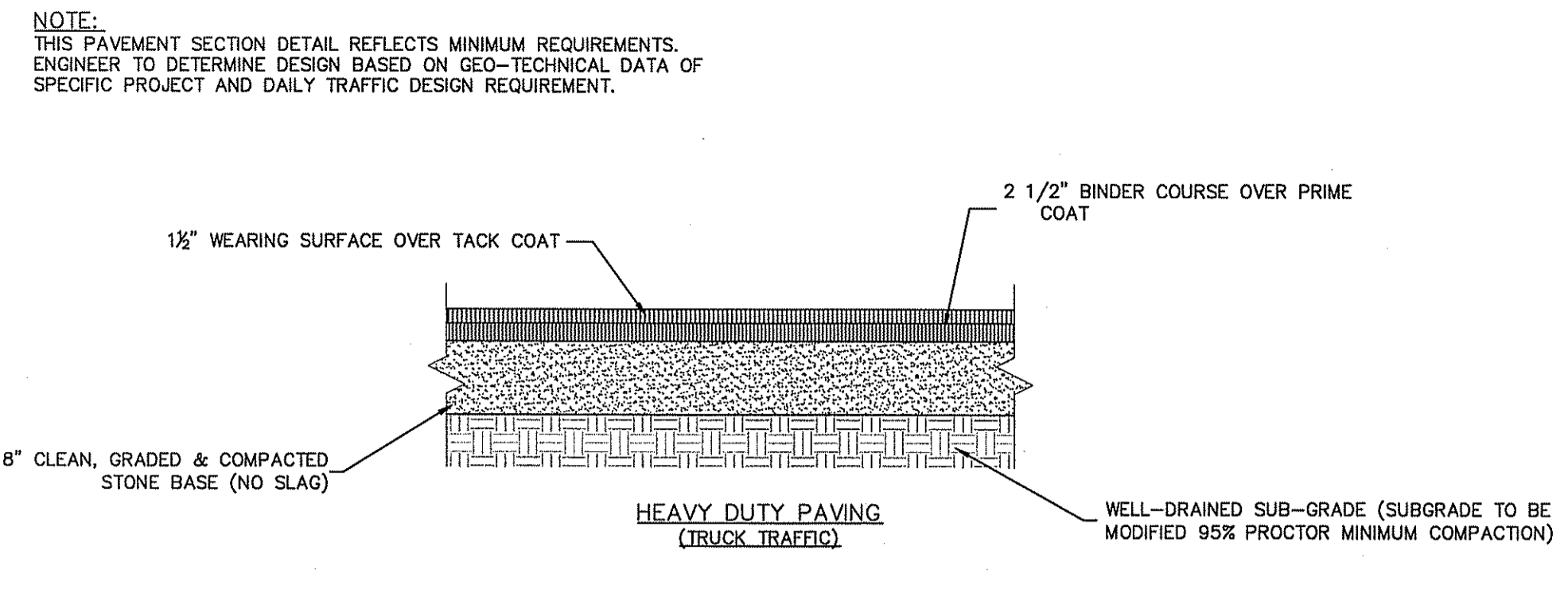
SIGN NUMBER	R15-1
COLOR	RED
BACKGROUND	WHITE
COPY	DONOT ENTER
SIGN WIDTH	30" 36" 48"
SIGN HEIGHT	30" 36" 48"

**LEGEND**

SIGN NUMBER	R6-1 (R OR L)
COLOR	BLACK
BACKGROUND	BLACK-ARROW WHITE
COPY	ONE WAY
SIGN WIDTH	36"
SIGN HEIGHT	12"

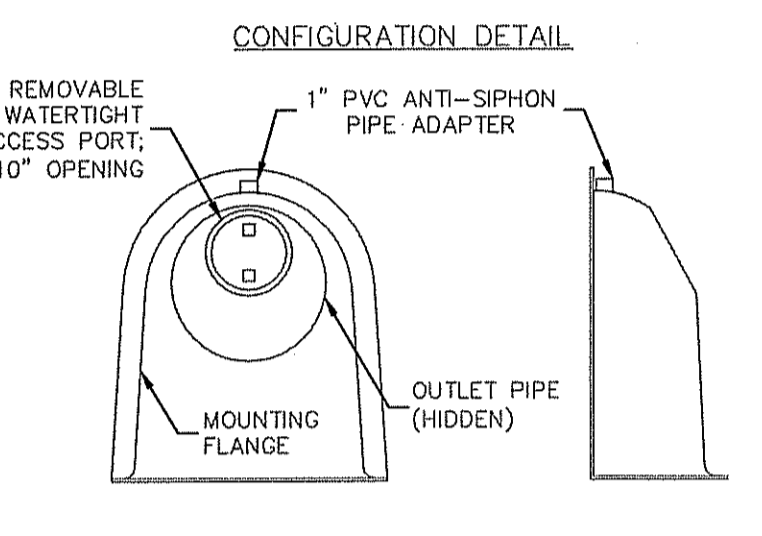
- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION T.15 OF THE R.I. STANDARD SPECIFICATIONS.
  - \* DENOTES TYPE VI GRADE SHEETING.
  - REGULATORY SIGNS SHALL BE MOUNTED IN ACCORDANCE WITH STD. 24.1.0, 24.2.0 OR 24.6.0.
  - THICKNESS OF ALUMINUM SIGN PLATES: LESS THAN 10 SQ. FT. - 0.081 IN. 10 SQ. FT. TO 36 SQ. FT. - 0.102 IN. GREATER THAN 36 SQ. FT. - 0.125 IN. FOR ADDITIONAL SIGNS SEE THE MUTCD.
  - SHALL MEET OR EXCEED GUIDELINES OF RIDOT STANDARD DETAIL 27.1.0

**REGULATORY SIGNS**  
NOT TO SCALE



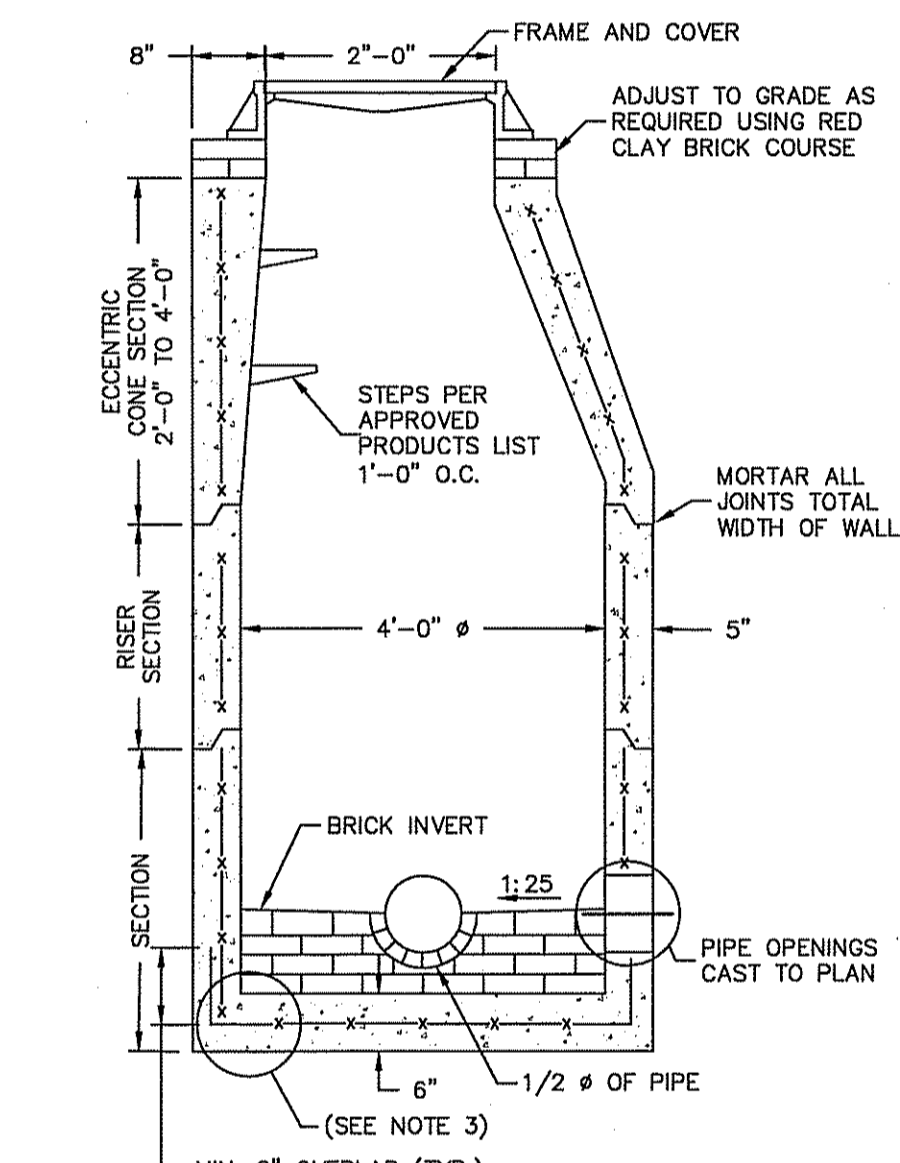
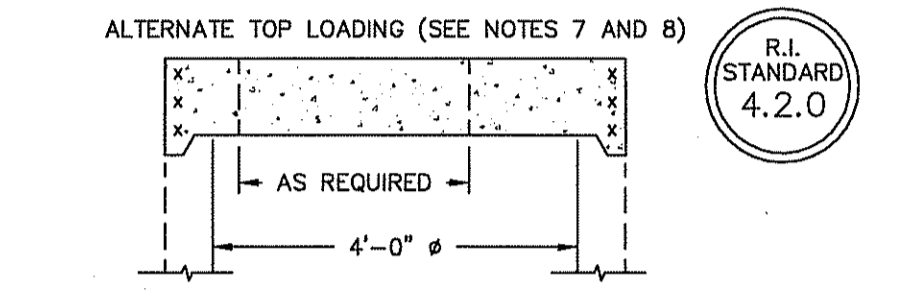
**TYPICAL PAVEMENT SECTION**  
NOT TO SCALE

**OIL SEPARATOR DETAIL**  
NOT TO SCALE



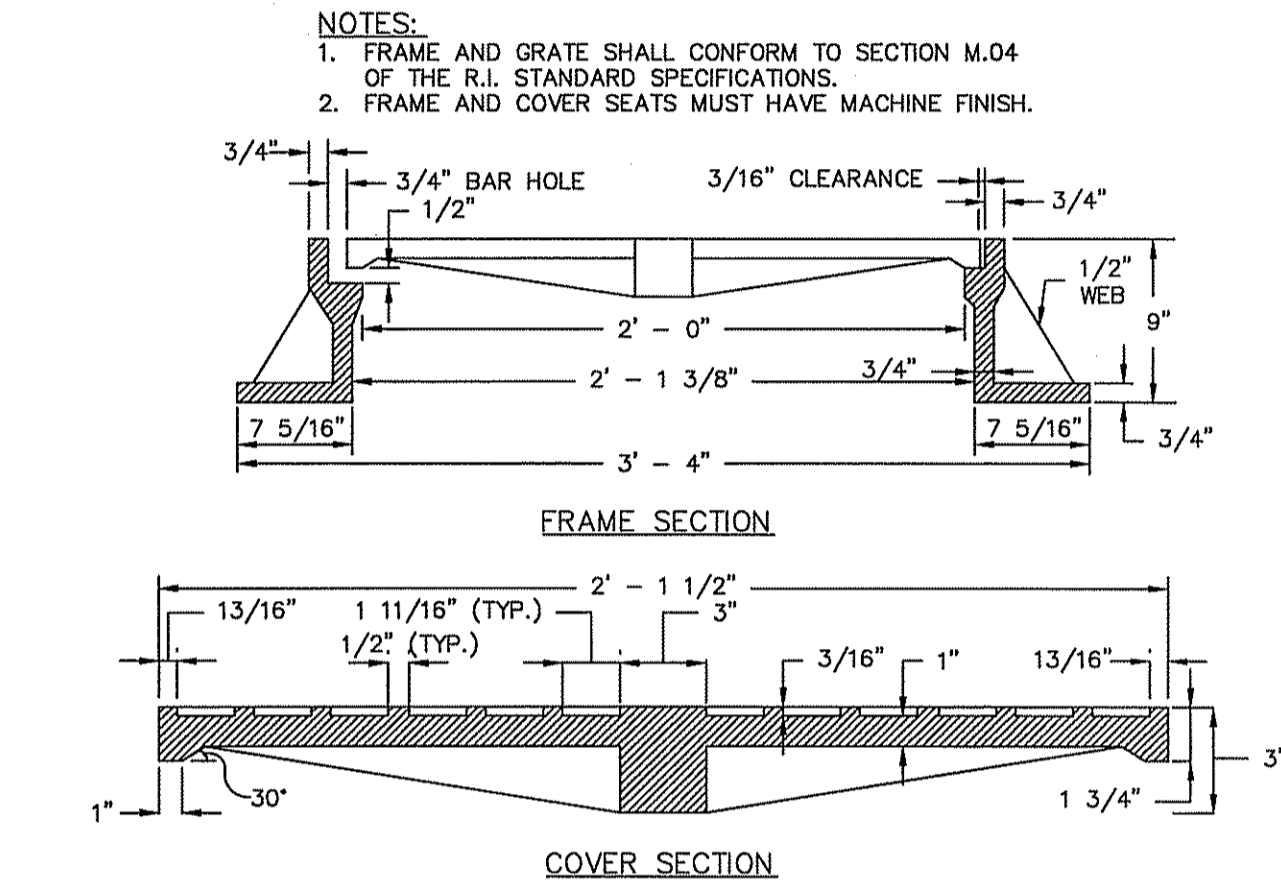
**FRONT VIEW SIDE VIEW**  
SNOUT OIL-WATER-DEBRIS SEPARATOR

DESCRIPTION	DATE	SCALE
OIL-DEBRIS HOOD SPECIFICATION AND INSTALLATION (TYPICAL)	09/08/00	NONE
	DRAWING NUMBER	
	SP-SN	
	US Patent # 6126817	

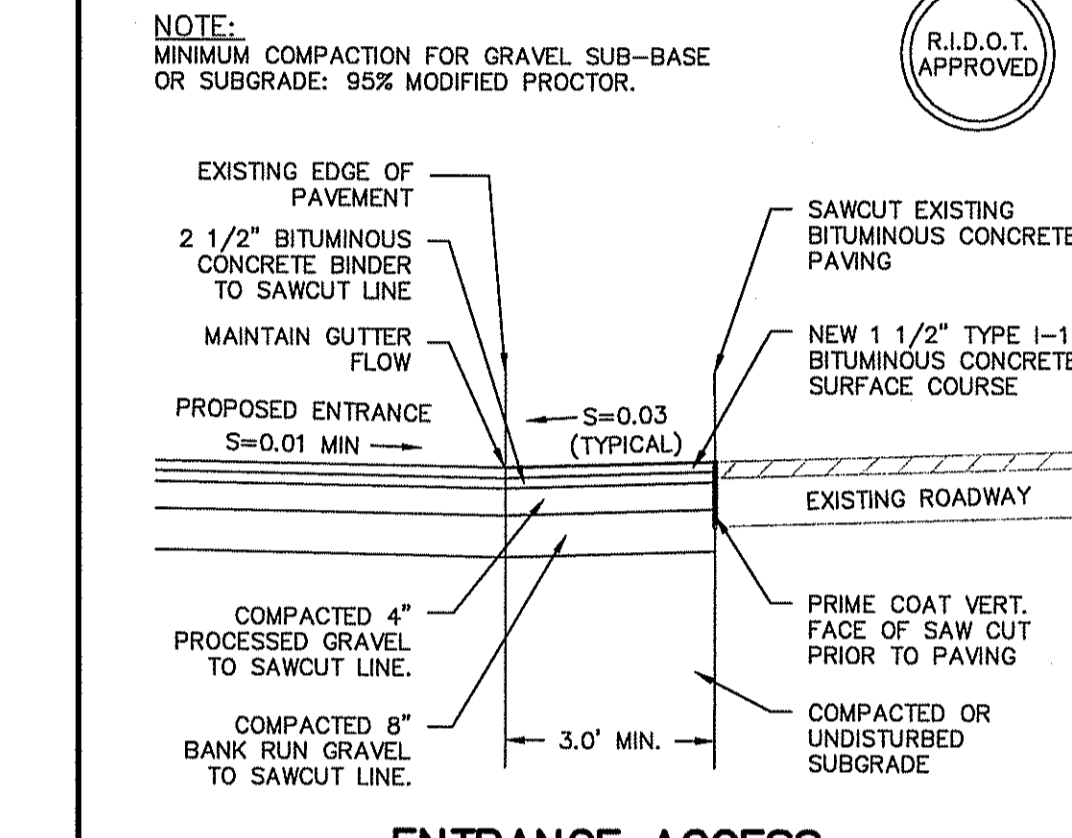
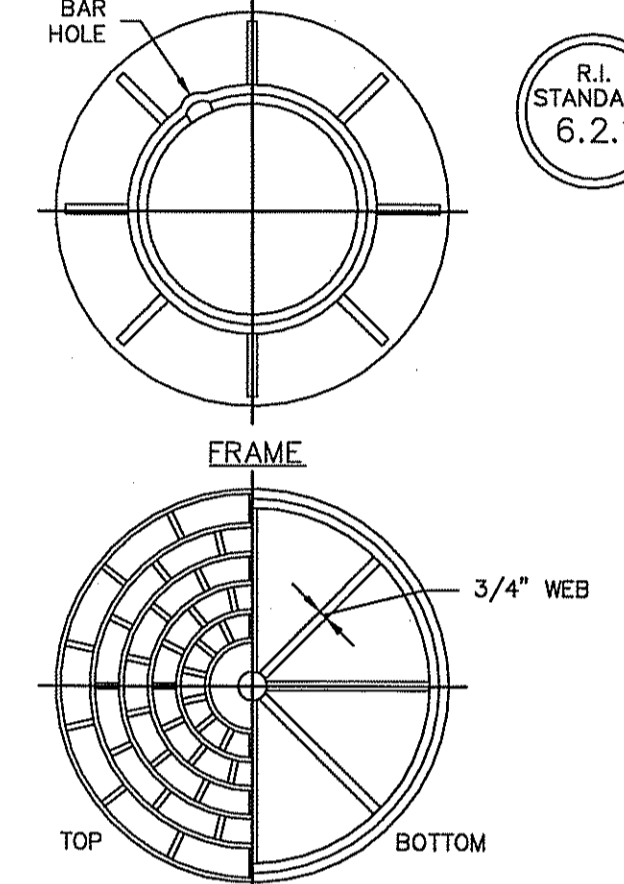


- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  - CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED = 0.12 SQ. IN./LIN. FT. MINIMUM.
  - STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
  - ONE POUR MONOLITHIC BASE SECTION.
  - ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
  - ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  - STEPS SHALL CONFORM TO STD. 5.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
  - ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2).
  - ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  - REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.

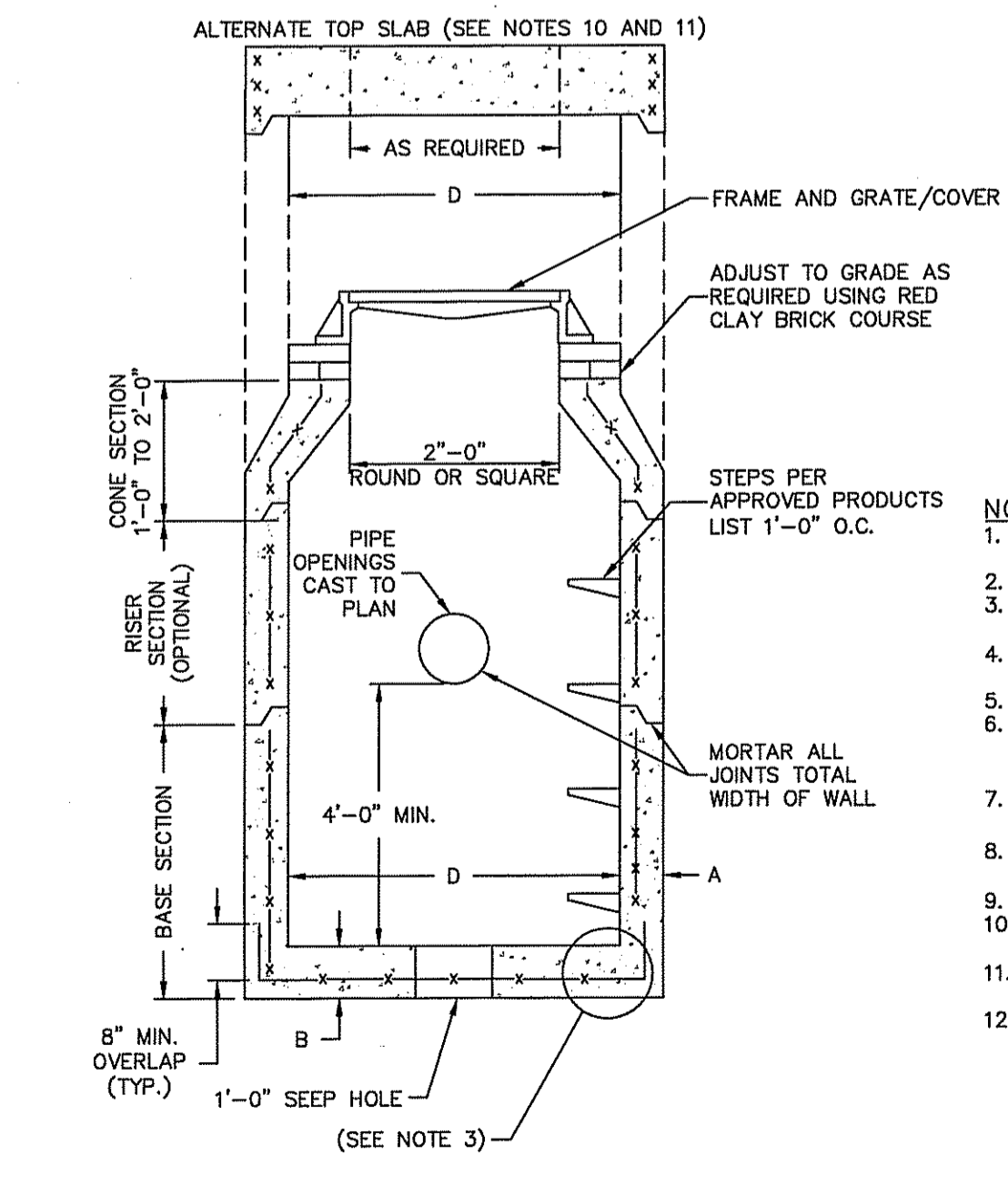
**PRECAST 4'-0" ROUND MANHOLE**  
NOT TO SCALE



**HEAVY-DUTY ROUND FRAME AND COVER**  
NOT TO SCALE



**ENTRANCE ACCESS SAWCUT & MATCH**  
NOT TO SCALE



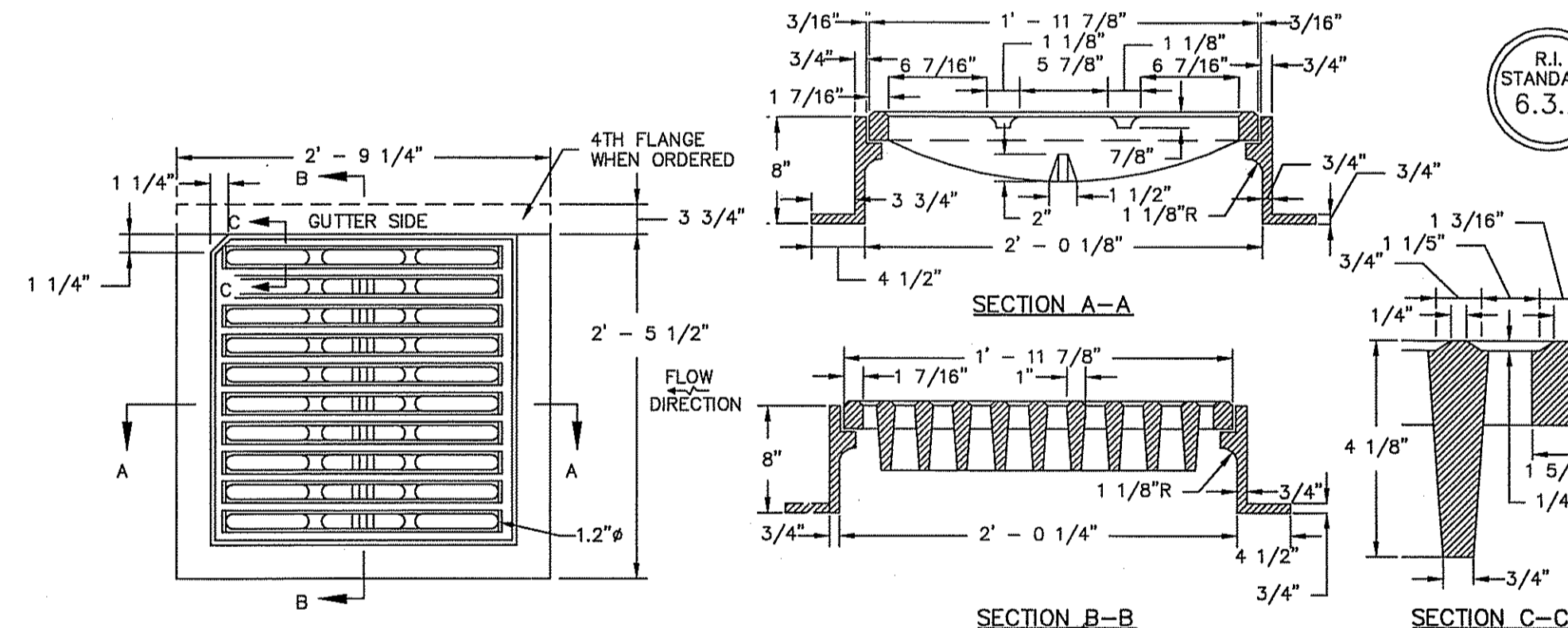
**TABLE 1**

CATCH BASIN DIAMETER (D)	A	B	CIRCUMFERENTIAL STEEL REINFORCEMENT REQUIRED*
4'-0"	5"	6"	0.12 SQ. IN./LIN. FT.
5'-0"	6"	7"	0.15 SQ. IN./LIN. FT.
6'-0"	7"	8"	0.18 SQ. IN./LIN. FT.

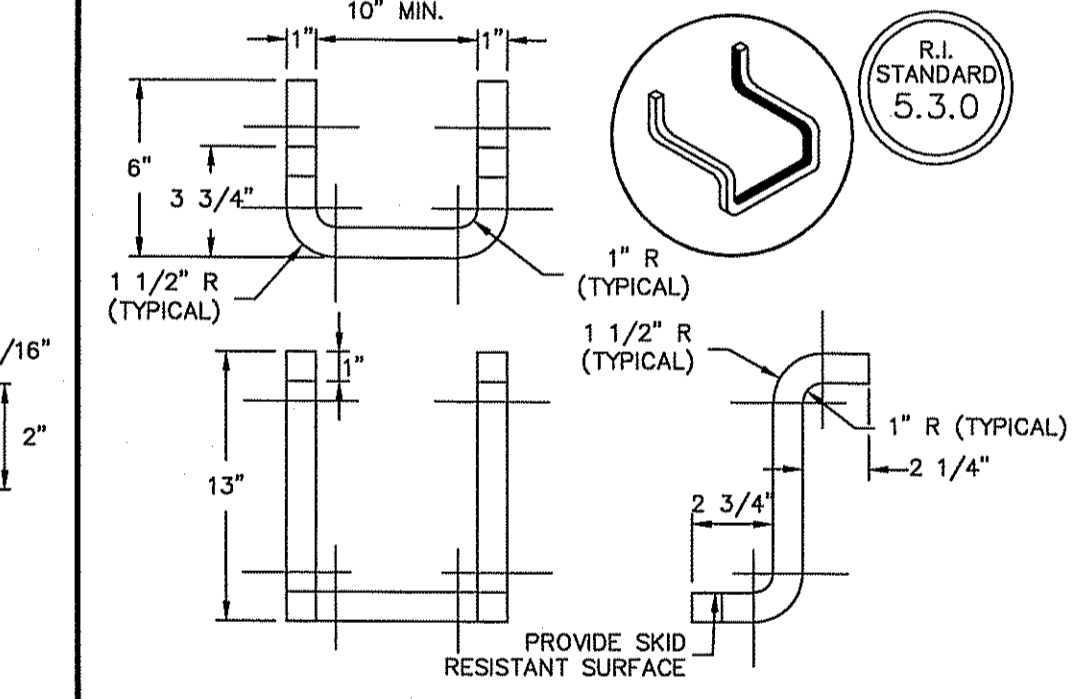
\* FOR LONGITUDINAL (VERTICAL STANDING) REINFORCEMENT REFER TO ASTM C478, ITEM 8.1.2

- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  - SEE TABLE 1 FOR STEEL REINFORCEMENT REQUIREMENTS.
  - STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
  - STEPS SHALL CONFORM TO STD. 5.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
  - ONE POUR MONOLITHIC BASE SECTION.
  - ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
  - CORBEL MADE OF RED CLAY BRICK WILL BE PERMITTED FOR THE "CONE SECTION" OF THE 4'-0" CATCH BASIN ONLY.
  - FOR CATCH BASIN TYPES "D" AND "E" STEPS MUST BE INSTALLED ON THE CURB SIDE OF THE STRUCTURE.
  - THE CENTERLINE OF THE OPENING MUST BE WITHIN 2'-0" FROM THE STEPS.
  - ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2).
  - ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
  - REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.

**PRECAST ROUND CATCH BASIN**  
NOT TO SCALE



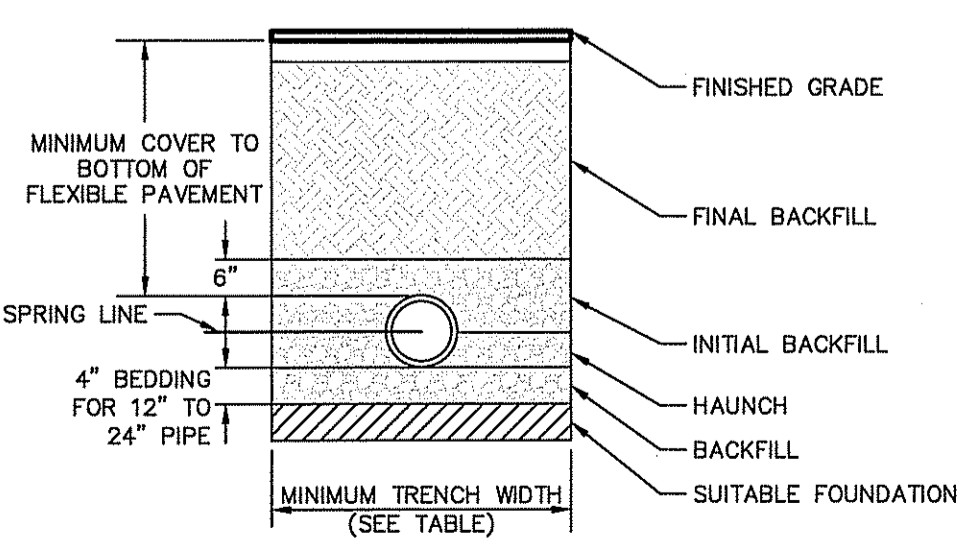
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
**Square Frame And Grate (Bicycle Safe)**  
AS SPECIFIED IN THE R.I. STANDARD SPECIFICATIONS  
DATED JUN 8 2015 FILE # 10-D151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



- NOTES:**
- STEPS SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.
  - CROSS SECTION AREA MAY BE REDUCED UPON SUBMISSION OF CERTIFIED LOAD TESTS. STEPS MUST SUPPORT 300 LBS.
  - STOCK SHOWN IS 1" SQUARE WHICH MAY BE REPLACED BY 1" DIAMETER.

**CATCH BASIN AND MANHOLE STEP**  
NOT TO SCALE

PIPE #	MINIMUM TRENCH WIDTH
6"	23"
8"	26"
12"	30"
15"	34"
24"	39"



**HDPE Trench Detail**  
NOT TO SCALE

JASON P. CLOUGH  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

5/27/2015 RIDEM Permit Modification Response to Comments I.P.C.  
4/28/2015 RIDEM Permit Modification I.P.C.  
4/28/2015 Final Plan I.P.C.  
12/19/2014 NBC Sewer Connection Permit B.A.H.  
12/19/2014 Industrial Site Plan Review - Preliminary Plan B.A.H.  
12/19/2014 Soil Erosion and Sediment Control Permit B.A.H.  
12/19/2014 Industrial Site Plan Review - Preliminary Plan B.A.H.  
12/19/2014 RIDEM Permit Modification B.A.H.  
8/5/2014 Industrial Site Plan Review J.A.R.  
8/27/2014 Special Use Permit Submission J.A.R.

Drawn By: J.A.R. Design By: B.A.H.

Detail Sheet - 1

**Orbit Energy Rhode Island  
3.2 MW Bio-Gas Plant**

Assessor's Plat 49-7 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**

Two Stafford Court Cranston, RI 02920  
Tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

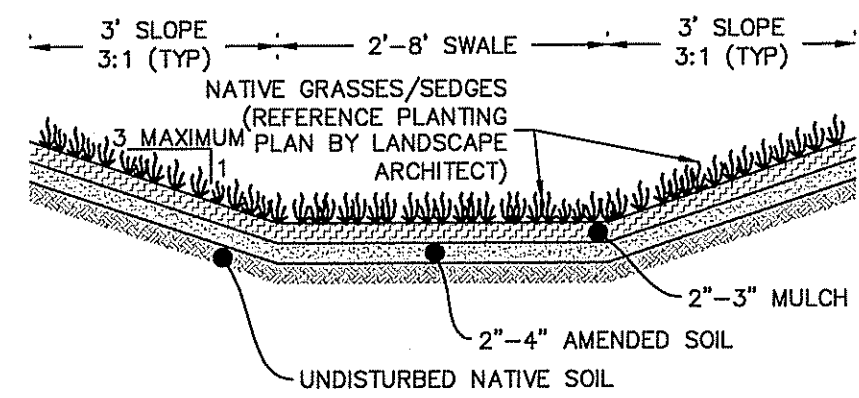
Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831

Applicant: 900 Ridgefield Drive, Suite 145 Raleigh, North Carolina 27609

DATE: MAY 29 2015  
PLACE OF WATER RESOURCES

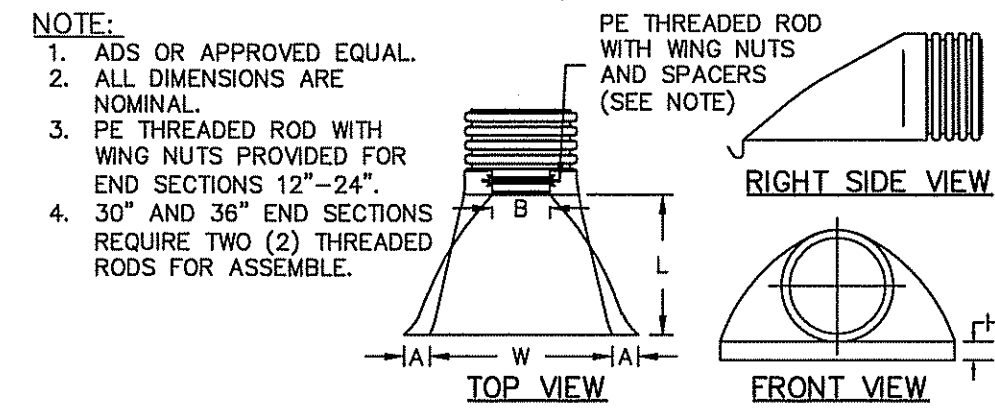
Engineers • Planners • Surveyors

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**Vegetated Swale Cross Section**

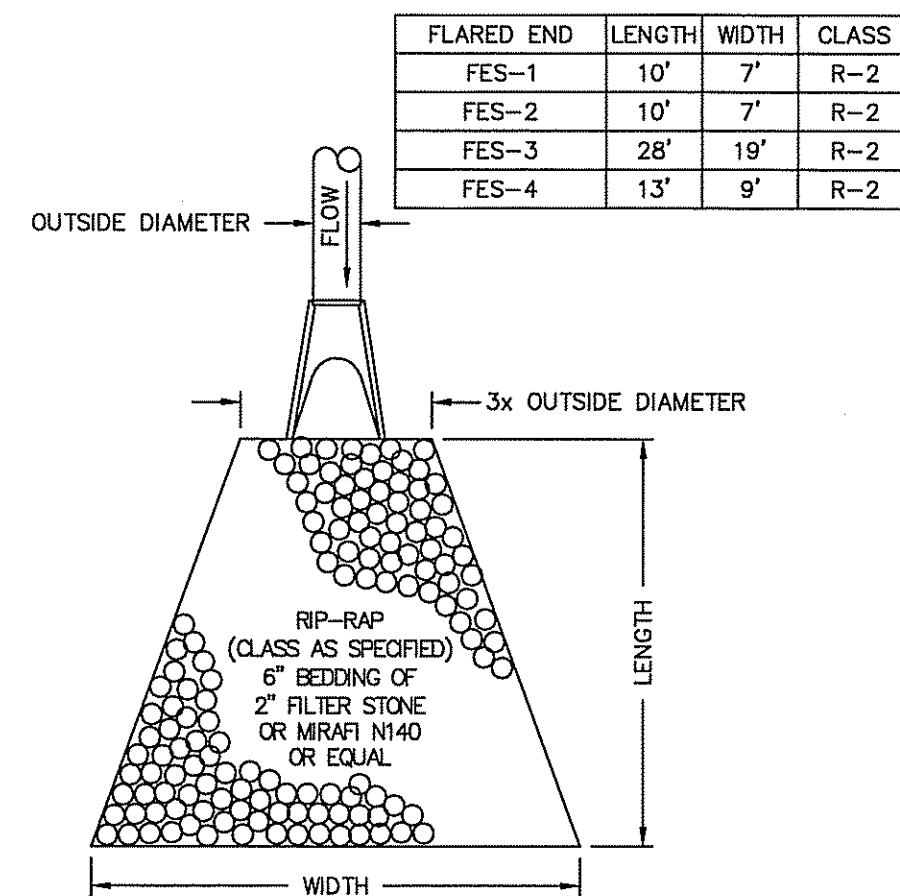
NOT TO SCALE



PART #	PIPE SIZE	A	B (MAX)	H	L	W
1210NP	12 IN (300 MM)	6.50 IN (165 MM)	10 IN (254 MM)	6.50 IN (165 MM)	25 IN (635 MM)	29 IN (737 MM)
1510NP	15 IN (375 MM)	6.50 IN (165 MM)	10 IN (254 MM)	6.50 IN (165 MM)	25 IN (635 MM)	29 IN (737 MM)
1810 NP	18 IN (450 MM)	7.50 IN (191 MM)	15 IN (381 MM)	6.50 IN (165 MM)	32 IN (813 MM)	35 IN (889 MM)
2410NP	24 IN (600 MM)	7.50 IN (191 MM)	18 IN (457 MM)	6.50 IN (165 MM)	36 IN (914 MM)	45 IN (1143 MM)
3015NP	30 IN (750 MM)	7.50 IN (191 MM)	12 IN (305 MM)	8.60 IN (218 MM)	58 IN (1473 MM)	63 IN (1600MM)
3615NP	36 IN (900 MM)	7.50 IN (191 MM)	25 IN (635 MM)	8.60 IN (218 MM)	58 IN (1473 MM)	63 IN (1600 MM)

**HDPE Flared End Section**

NOT TO SCALE

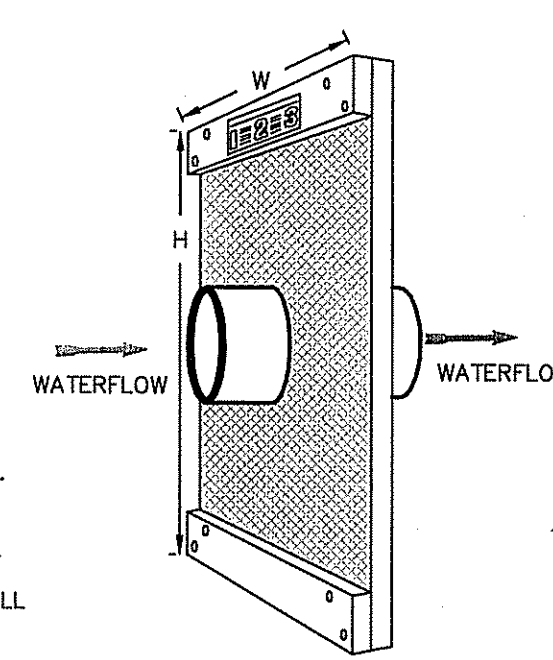


**RIP-RAP APRON/ FE DETAIL**

NOT TO SCALE

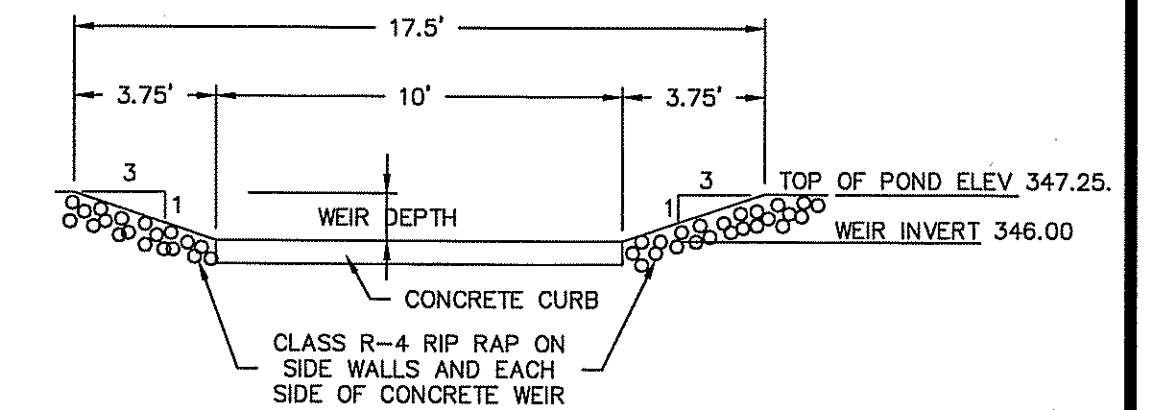
LOCATION	WIDTH	HEIGHT	QUANTITY
POND 1	4.0'	4.0'	1

**INSTALLATION NOTES:**  
 1. UNROLL THE ANTI-SEEP AND ATTACH THE BOARDS TO THE EDGES TO FORM A SQUARE. (USE THE BOARDS AND NAILS PROVIDED.) (4"x4" AND LARGER)  
 2. CUT A ROUND HOLE IN THE CENTER OF THE RUBBER THAT IS SMALLER THAN THE PIPE SIZE (APPROX. 25% SMALLER). THIS WILL ALLOW THE RUBBER TO STRETCH OVER THE PIPE WHEN THE ANTI-SEEP IS INSTALLED ON THE PIPE. THIS SHOULD PROVIDE A NEARLY WATERPROOF SEAL BETWEEN THE PIPE AND THE ANTI-SEEP.  
 3. SLIP THE PIPE THROUGH THE ANTI-SEEP. INSPECT THE SEAL BETWEEN THE PIPE AND THE ANTI-SEEP. CAREFULLY BACKFILL AND COMPACT WITH SUITABLE SOIL.



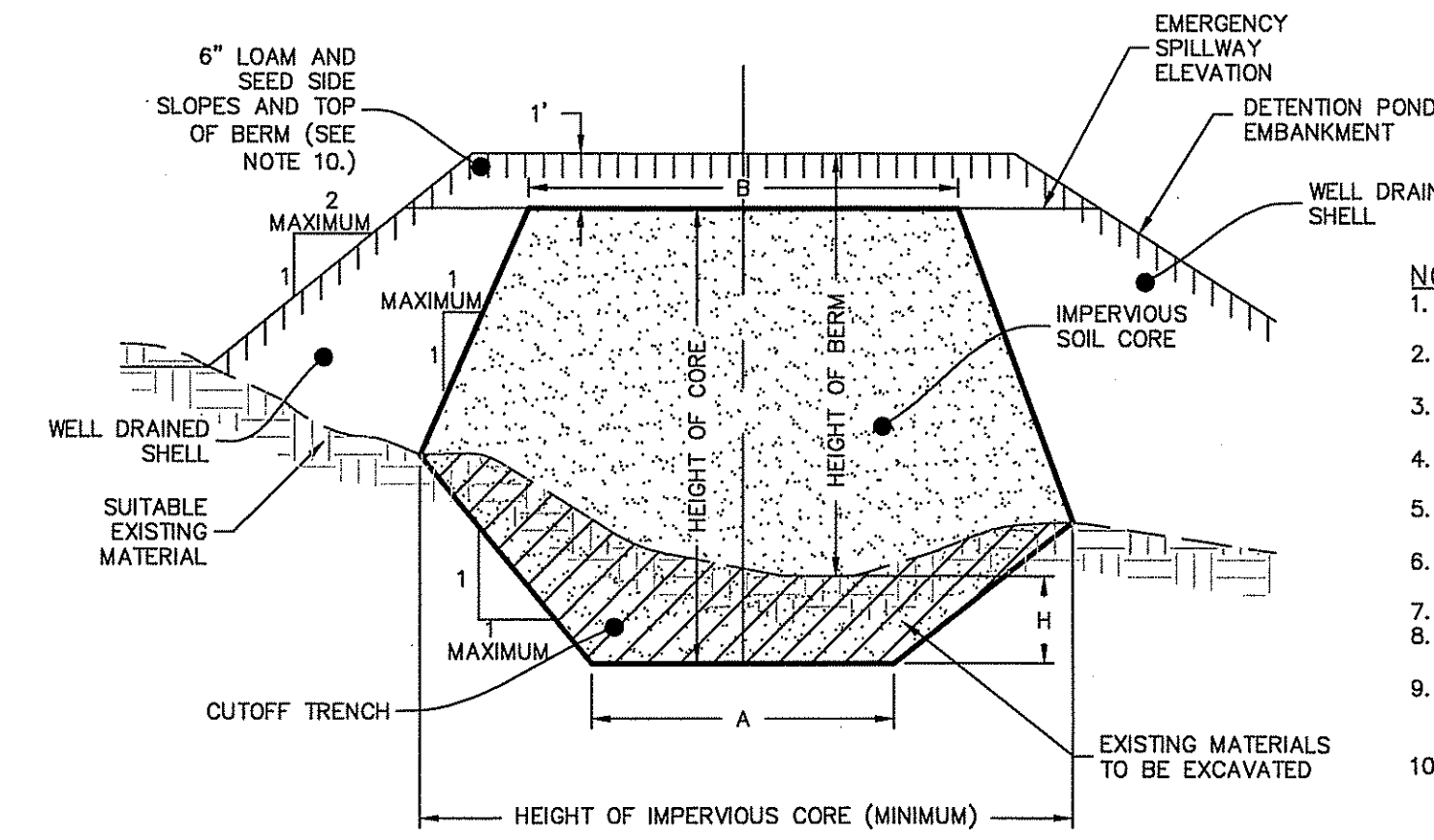
**Anti-Seep Collar**

NOT TO SCALE



**Emergency Spillway Detail**

NOT TO SCALE

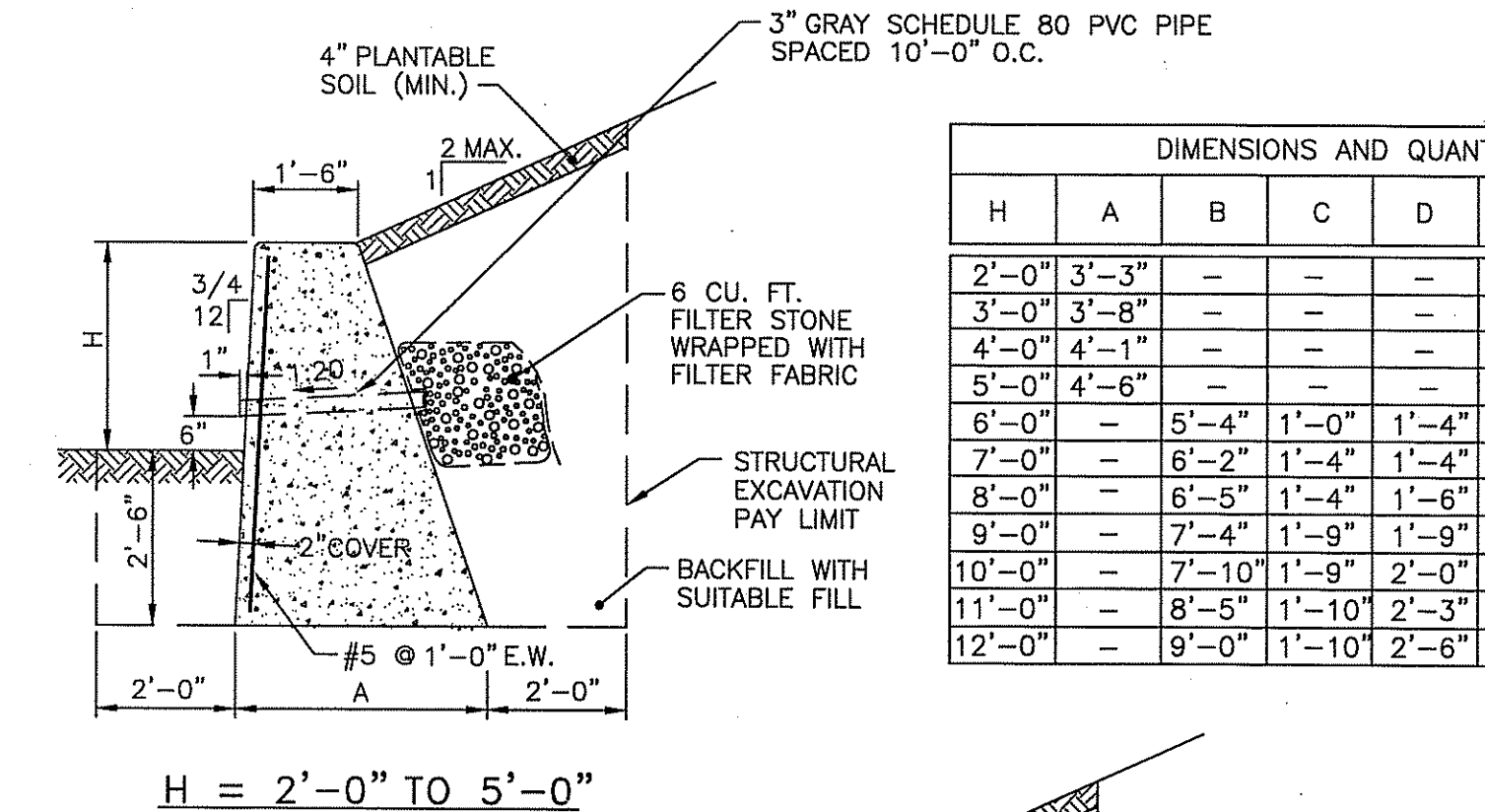


**Detention Pond Earthen Embankment**

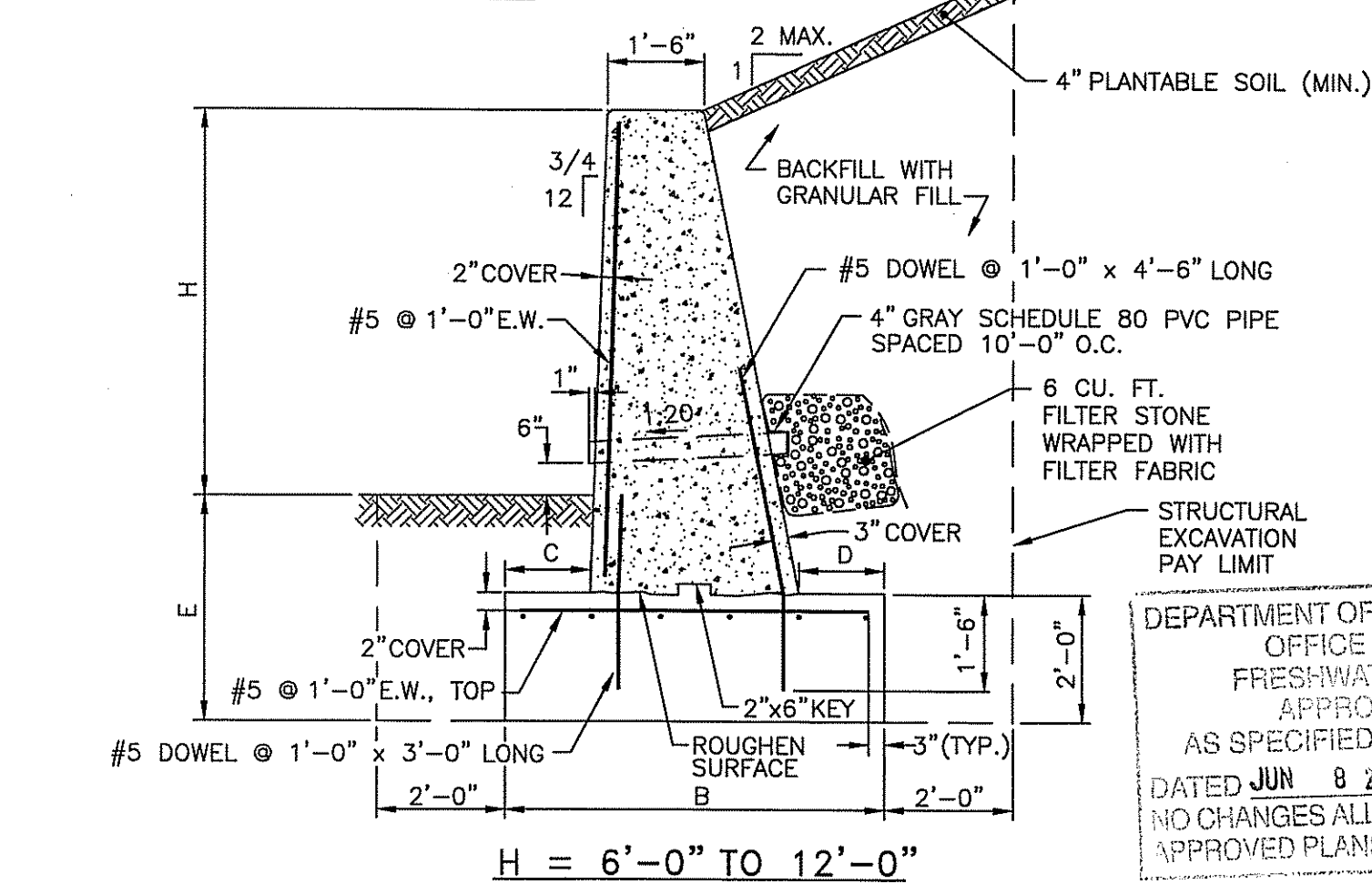
NOT TO SCALE

BERM HEIGHT (FT)	TOP WIDTH OF CORE - B (FT)
0-6.5	8.2
6.6-9.8	9.2
9.9-13.1	9.8
13.2-16.4	10.8
16.5-19.7	11.5

- NOTES:**
- IMPERVIOUS SOIL CORE TO BE PROVIDED FOR ALL DETENTION POND EMBANKMENTS.
  - IMPERVIOUS SOIL CORE TO BE CONSTRUCTED OF MATERIAL CONSISTING OF SILT OR <200 SOIL.
  - WELL DRAINED SHELL TO BE CONSTRUCTED OF GRAVEL AND/OR SAND WITH LESS THAN 5% PASSING THE #200 SIEVE.
  - MINIMUM DEPTH OF CUTOFF TRENCH (H) SHALL BE 3/4 OF THE TOTAL BERM HEIGHT.
  - THE IMPERVIOUS CORE AT A MINIMUM SHALL EXTEND UP BOTH ABUTMENTS TO THE EMERGENCY SPILLWAY ELEVATION.
  - THE MINIMUM BOTTOM WIDTH (A) SHALL BE 5'-8", AND WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT.
  - SIDE SLOPES OF THE TRENCH SHALL BE NO STEEPER THAN 1:1.
  - IF BEDROCK IS ENCOUNTERED BELOW THE DAM THE CUT OFF TRENCH CAN BE REDUCED TO 1'x1' (A'xH).
  - COMPACTION REQUIREMENTS FOR THE SHELL AND IMPERVIOUS CORE TO BE 95% OF THE MODIFIED PROCTOR PER ASTM D1557. ALL FILL TO BE PLACED IN LIFTS NOT EXCEEDING 12".
  - SIDE SLOPE OF DETENTION POND EMBANKMENT TO BE 2:1 MAXIMUM. IF SIDE SLOPES ARE STEEPER THAN 3:1, SLOPE PROTECTION MUST BE UTILIZED ON POND EMBANKMENT. THIS INCLUDES, BUT NOT LIMITED TO, RIPRAP AND EROSION CONTROL MATS.
  - THE IMPERVIOUS CORE SHALL BE KEPT FREE FROM STANDING WATER DURING THE BACKFILL OPERATION.
  - ALL EMBANKMENTS TO BE DESIGNED BY A GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION. ALL EMBANKMENT INSTALLATIONS TO BE SUPERVISED BY A GEOTECHNICAL ENGINEER.



H = 2'-0" TO 5'-0"



H = 6'-0" TO 12'-0"

DIMENSIONS AND QUANTITIES						
H	A	B	C	D	E	C.F./L.F. OF WALL
2'-0"	3'-3"	-	-	-	2'-6"	10.69
3'-0"	3'-8"	-	-	-	2'-6"	14.21
4'-0"	4'-1"	-	-	-	2'-6"	18.14
5'-0"	4'-6"	-	-	-	2'-6"	22.50
6'-0"	-	5'-4"	1'-0"	1'-4"	3'-6"	27.54
7'-0"	-	6'-2"	1'-4"	1'-4"	3'-6"	33.59
8'-0"	-	6'-5"	1'-4"	1'-6"	3'-6"	36.98
9'-0"	-	7'-4"	1'-9"	1'-9"	3'-6"	42.66
10'-0"	-	7'-10"	1'-9"	2'-0"	3'-6"	47.76
11'-0"	-	8'-5"	1'-10"	2'-3"	3'-6"	53.30
12'-0"	-	9'-0"	1'-10"	2'-6"	3'-6"	59.63

- NOTES:**
- FINAL RETAINING WALL DESIGN TO BE DESIGN BY A STRUCTURAL AND/OR GEOTECHNICAL ENGINEER
  - SHALL BE IN ACCORDANCE WITH SECTION 808 OF THE R.I. STANDARD SPECIFICATIONS.
  - USE 1/2" PREFORMED JOINT FILLER AND BEVEL EXPOSED EDGES WITH CHAMFER.
  - SEAL BACKFACE WITH 1/4"x1/2" JOINT SEALANT.
  - SURFACE RUB EXPOSED FACE AND TOP
  - ALL REINFORCING TO BE EPOXY COATED.
  - PROVIDE EXPANSION JOINTS EVERY 25'-0" IN STEMS.

**CONCRETE RETAINING WALL**

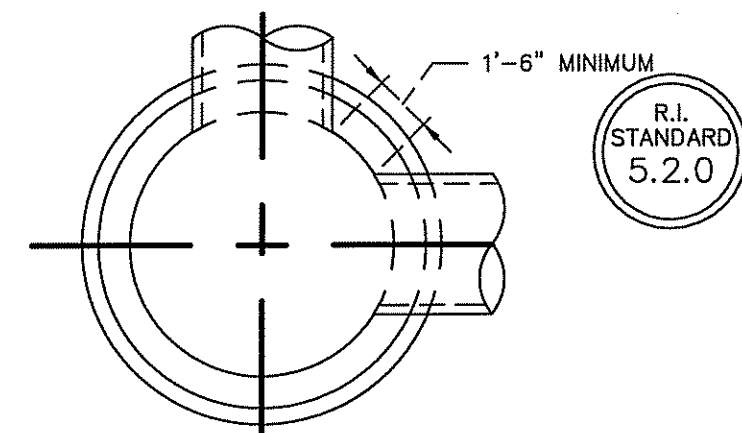
NOT TO SCALE

R.I. STANDARD 10.3.0

**NOTE:** WALL AND MANUFACTURER OR TYPE MAY BE SUBSTITUTED WITH APPROVAL BY PROFESSIONAL ENGINEER. SHOP DRAWINGS MUST BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.



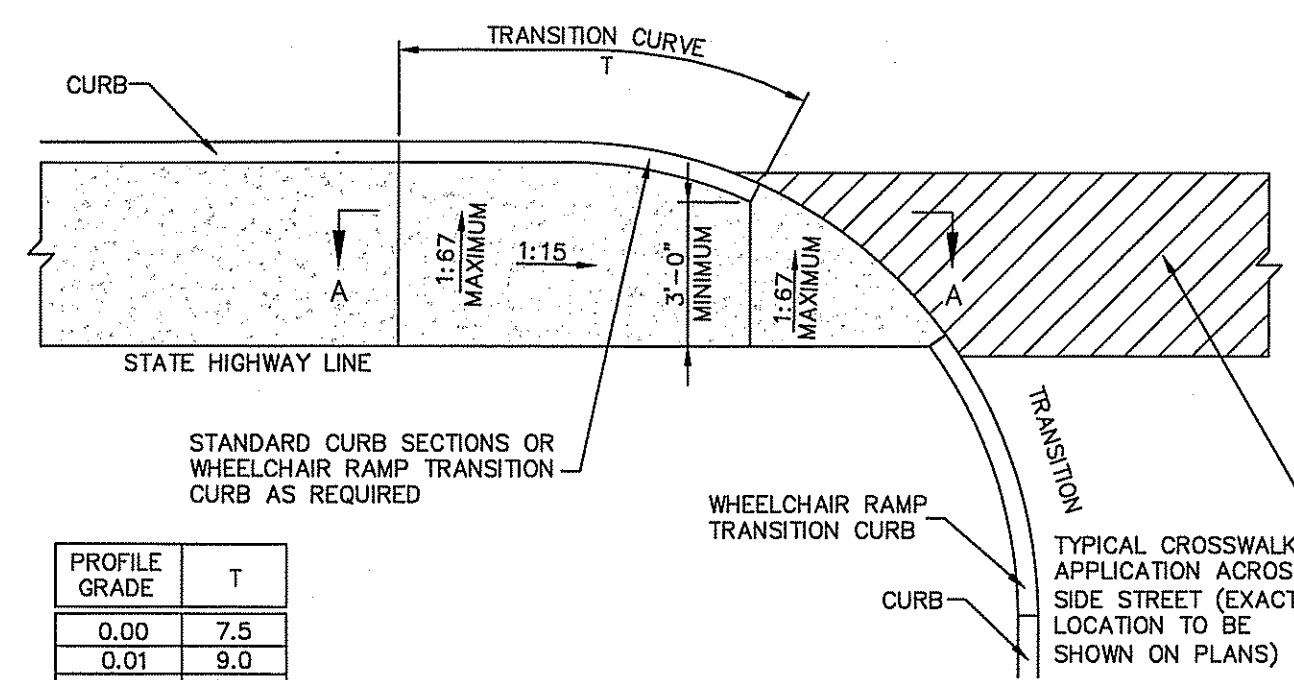
**CROSS SECTION OF MANHOLE OR CATCH BASIN**

	4" MANHOLE OR CATCH BASIN	5" MANHOLE OR CATCH BASIN	6" MANHOLE OR CATCH BASIN
MAXIMUM PIPE O.D. [STRAIGHT THROUGH] TO 45' DEFLECTION	33 1/2" O.D. 27" R.C. PIPE	44" O.D. 36" R.C. PIPE	51" O.D. 42" R.C. PIPE
MAXIMUM PIPE O.D. 90' DEFLECTION	23" O.D. 18" R.C. PIPE	33 1/2" O.D. 27" R.C. PIPE	37" O.D. 30" R.C. PIPE

- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
  - THE MINIMUM DISTANCE BETWEEN PIPES ENTERING MANHOLES AND CATCH BASINS MUST BE 1'-6". THE SIZE OF THE CATCH BASIN WILL BE DETERMINED BY THE PIPE SIZE AND ENTRY ANGLE. (SEE TABLE ABOVE.)

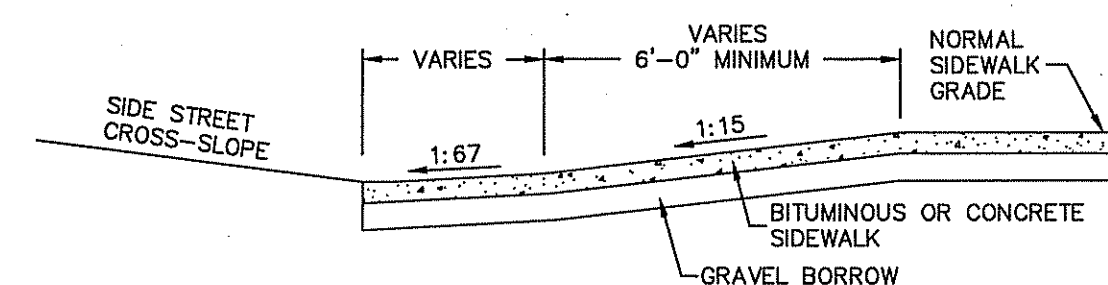
**Round Manholes And Catch Basins Maximum Pipe Size**

Standard NOT TO SCALE



**PLAN**

PROFILE GRADE	T
0.00	7.5
0.01	9.0
0.02	11.0
0.03	13.5
0.04	19.0
0.05	30.0



**SECTION A-A**

- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 904 OF THE R.I. STANDARD SPECIFICATIONS.
  - THIS DETAIL IS TO BE USED ONLY WHEN STATE RIGHT-OF-WAY IS LIMITED TO BACK OF SIDEWALK, AND SIDEWALK IS NARROW WITH NO PEDESTRIAN TRAFFIC FROM SIDE STREET.
  - WHEN ANY OBSTRUCTION LOCATED IN THE SIDEWALK FALLS WITHIN A CROSSWALK AREA, IF POSSIBLE, THE OBSTRUCTION WILL BE PLACED SUCH THAT IT FALLS OUTSIDE OF THE RAMP.
  - AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP TO BE LOCATED OUTSIDE OF THE CROSSWALK, AND IT IS TO BE CENTERED WHENEVER POSSIBLE.
  - DRAINAGE FACILITIES ARE TO BE LOCATED UP-GRADE OF ALL WHEELCHAIR RAMPS.
  - LOCATION OF WHEELCHAIR RAMPS IS AS SHOWN ON CONTRACT DRAWINGS.
  - ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER COST OF CURB.
  - THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
  - MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0" (GREATER LENGTHS PREFERRED).
  - AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-0" SHALL BE MAINTAINED.
  - MEETS OR EXCEEDS GUIDELINES OF RIDOT STANDARD DETAIL 433.1.

**Wheelchair Ramp**  
For Limited Right-Of-Way Areas (ADA)

NOT TO SCALE

JASON P. CLOUGH  
 No. [Stamp]  
 REGISTERED PROFESSIONAL CIVIL ENGINEER

**Detail Sheet - 2**

**Orbit Energy Rhode Island**  
**3.2 MW Bio-Gas Plant**

Assessor's Plat 437 Lot 2  
 Johnston, Rhode Island

**DiPrete Engineering**

Two Stafford Court Cranston, RI 02920  
 tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

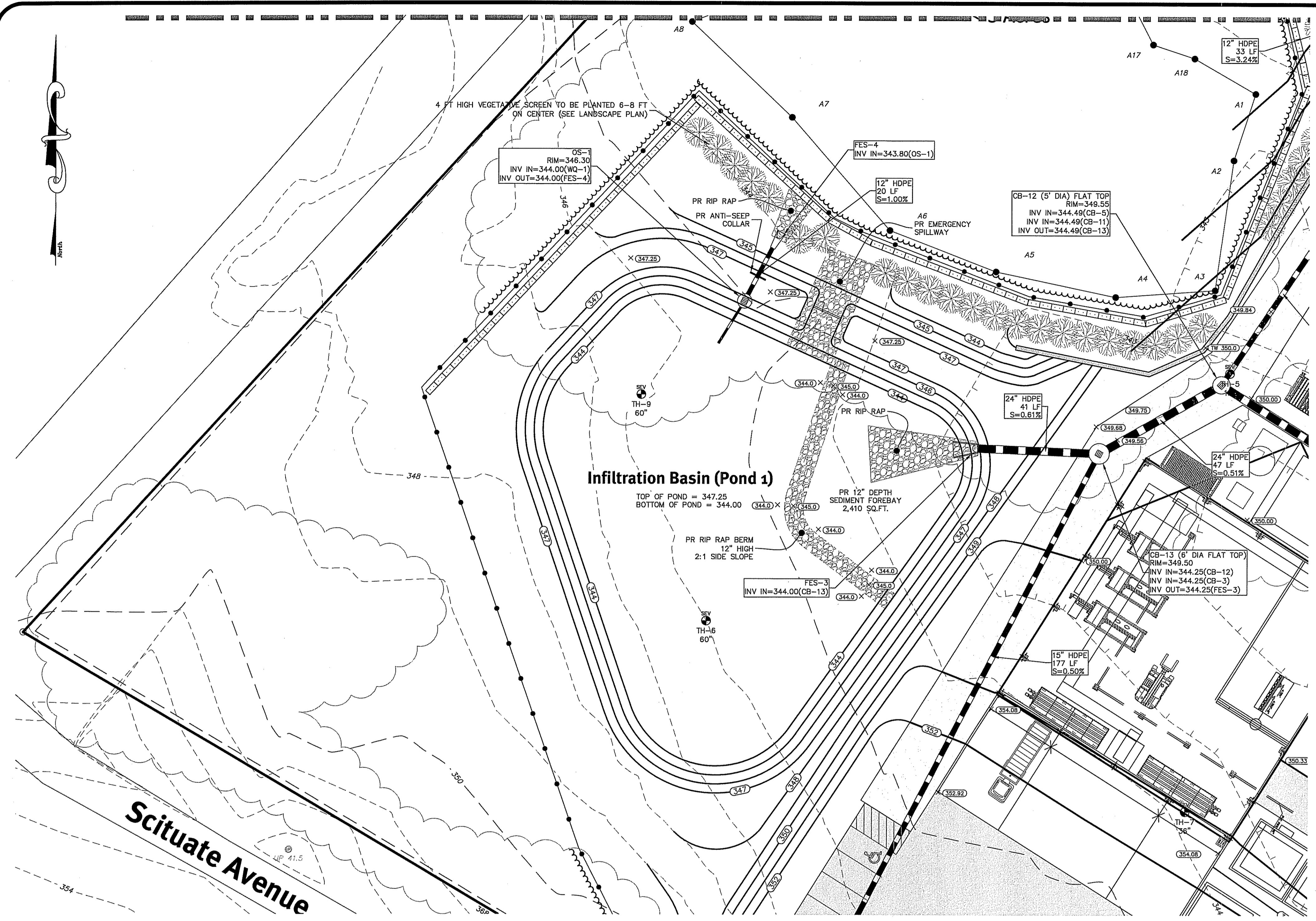
Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
 24 Armand Way Hope, RI 02831  
 900 Ridgfield Drive, Suite 145 Raleigh, North Carolina 27609

Environmental Management  
 MAY 29 2015  
 Office of Water Resources

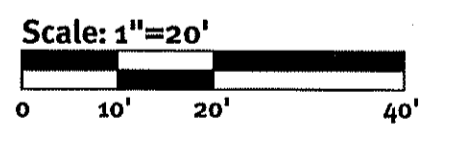
Engineers • Planners • Surveyors

SHEET 7 OF 11

DE Job No: 0384-002 Copyright 2015 by DiPrete Engineering Associates, Inc.

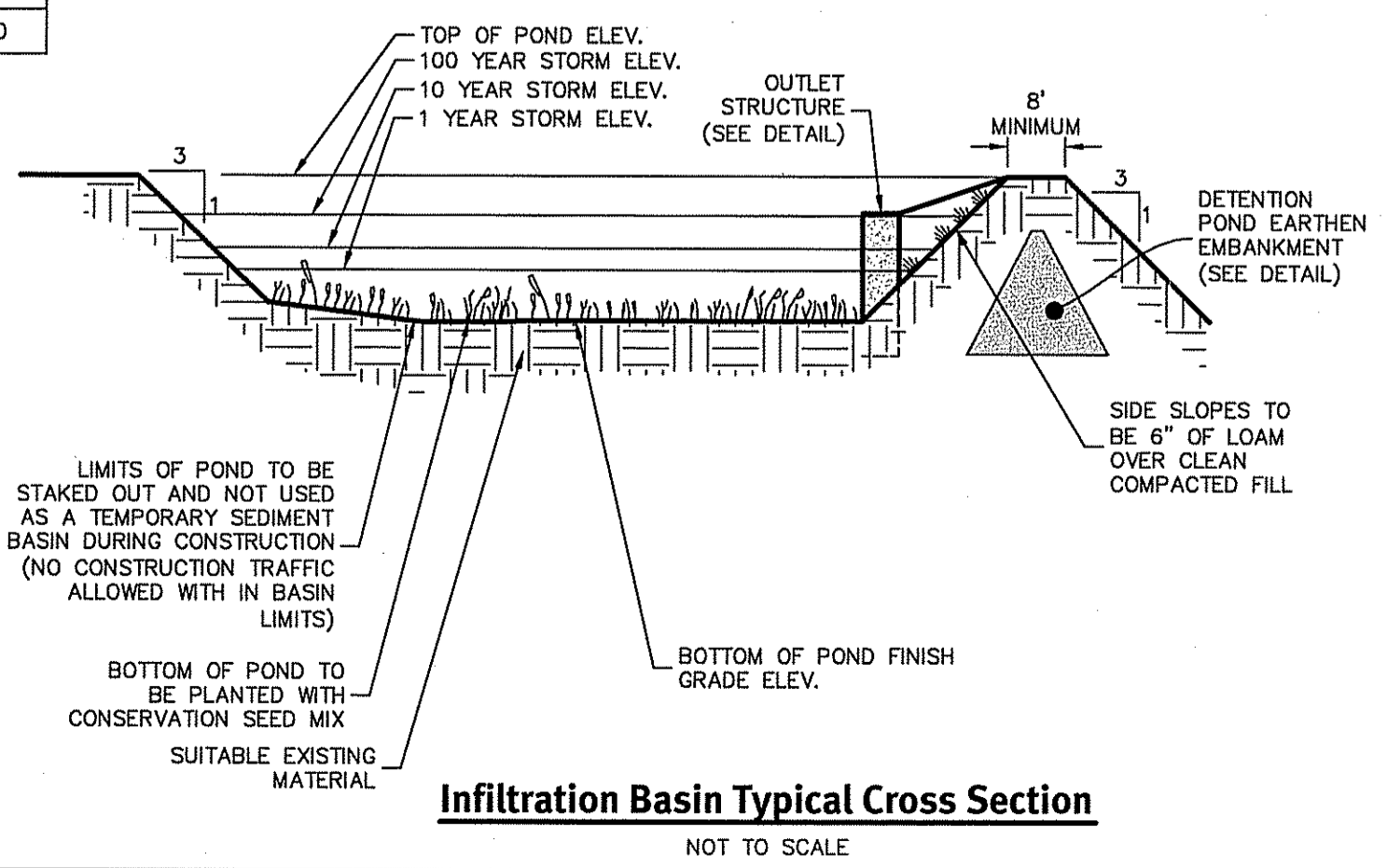


INFILTRATION/ DETENTION BASIN (POND 1)

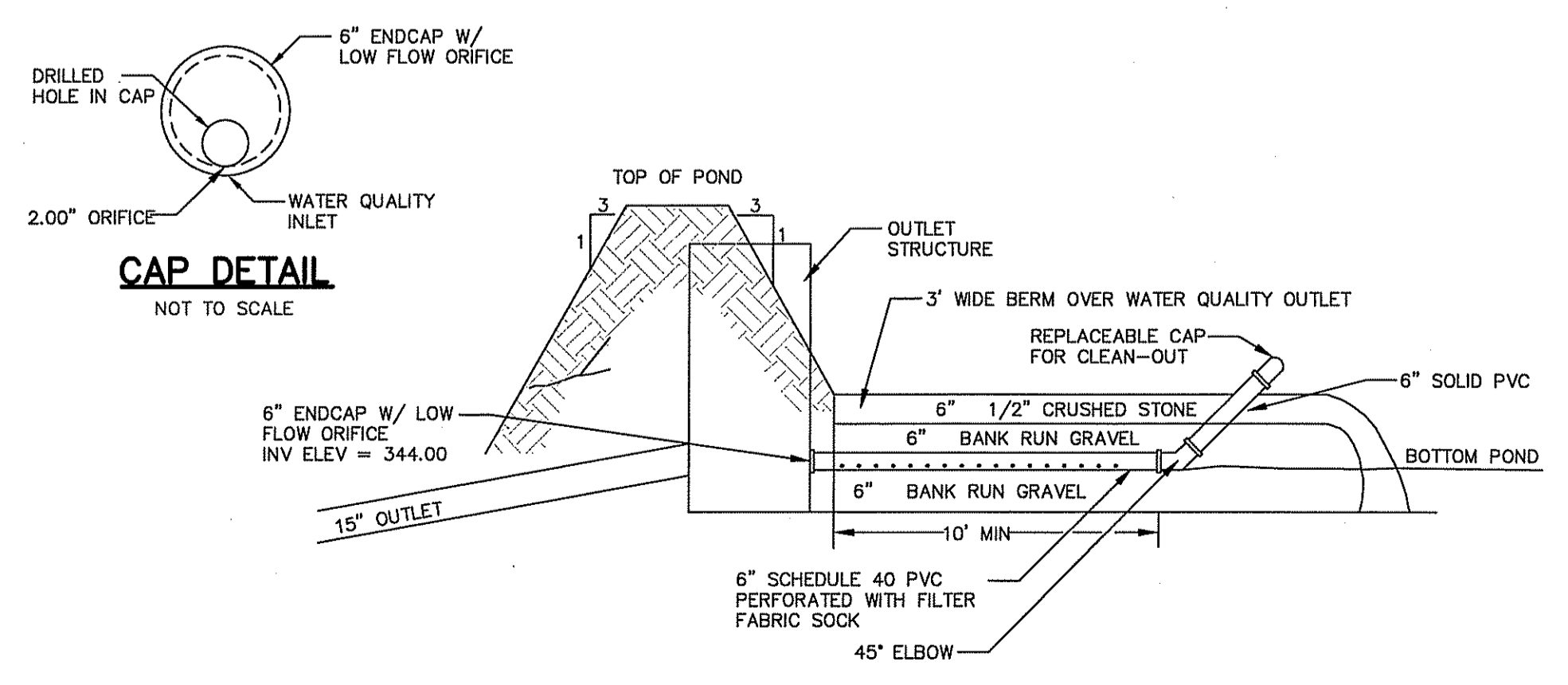


DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED JUN 8 2015 FILE # 10-0151  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

DESCRIPTION	POND 1
TOP OF POND ELEVATION	347.25
BOTTOM OF POND	344.00
100 YEAR STORM ELEVATION	346.21
25 YEAR STORM ELEVATION	345.80
10 YEAR STORM ELEVATION	345.35
2 YEAR STORM ELEVATION	344.58
SEASONAL HIGH GWL ELEVATION	341.00

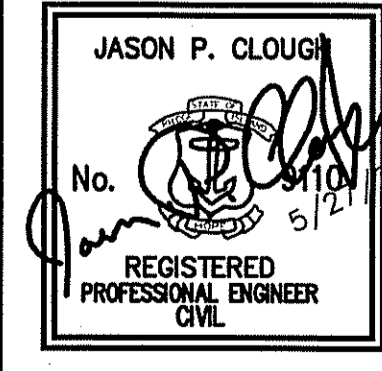


Infiltration Basin Typical Cross Section  
 NOT TO SCALE



WATER QUALITY OUTLET (WITH STRUCTURE)  
 NOT TO SCALE

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED 'ISSUED FOR CONSTRUCTION' AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.  
 THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.



Detail Sheet - 3  
**Orbit Energy Rhode Island**  
**3.2 MW Bio-Gas Plant**  
 Assessor's Plat 43-7 Lot 2  
 Johnston, Rhode Island



Two Stafford Court Cranston, RI 02920  
 tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com  
 Owners: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
 24 Armand Way  
 Hope, RI 02831  
 900 Ridgefield Drive, Suite 145  
 Raleigh, North Carolina 27609  
 SHEET 8 OF 11

No.	Date	Description	By:
8	5/27/2015	RIDEM Permit Modification Response to Comments	J.P.C.
7	4/30/2015	RIDEM Permit Modification	J.P.C.
6	4/28/2015	Final Plan	J.P.C.
5	12/19/2014	NIS Sewer Connection Permit	B.A.H.
4	12/03/2014	Soil Erosion and Sediment Control Permit	B.A.H.
3	10/14/2014	Industrial Site Plan Review - Preliminary Plan	B.A.H.
2	10/03/2014	RIDEM Permit Modification	B.A.H.
1	8/6/2014	Industrial Site Plan Review	J.A.R.
0	8/21/2014	Special Use Permit Submission	J.A.R.
No.	Date	Description	By:

Drawn By: J.A.R. Design By: B.A.H.

**5.0 SEQUENCE OF CONSTRUCTION AND STAGING OF LAND DISTURBING ACTIVITIES:**

- 5.1.1 CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL (SE & SC) ON-SITE. SEQUENCE OF CONSTRUCTION PROVIDED MAY BE MODIFIED AS FIELD CONDITIONS WARRANT WITH PRIOR APPROVAL FROM THE OWNER OR OWNER'S REPRESENTATIVE.
- 5.1.2 CONSTRUCTION TO BEGIN IN THE IN THE SUMMER OF 2015 OR UPON RECEIPT OF ALL NECESSARY APPROVALS.
- 5.1.3 SURVEY AND STAKE PARKING AREAS, BUILDINGS, INFILTRATION BASINS, DRAINAGE LINES, AND LIMIT OF SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE.
- 5.1.4 PLACE SEDIMENTATION BARRIERS (HAY BALES OR SILT FENCE) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS. NO CONSTRUCTION TRAFFIC IS PERMITTED IN INFILTRATION AREAS.
- 5.1.5 BEGIN CLEARING AND GRUBBING IN AREA OF PARKING. TOPSOIL IS TO BE STRIPPED AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIERS AND COVERED OR TEMPORARILY SEEDED.
- 5.1.6 EXCAVATE AND GRADE THE PROPOSED INFILTRATION BASINS AND PARKING AND DRIVE AISLES. THE DRAINAGE BMP'S SHALL BE PERMANENTLY SEEDS FOLLOWING FINISH GRADING, EXCEPT FOR INFILTRATION BASINS.
- 5.1.7 INSTALL DRAIN PIPING, DRAINAGE MANHOLES AND CATCH BASINS BEGINNING AT THE INFILTRATION BASIN AND WORKING UP-GRADE. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. PLACE EROSION CONTROLS AT THE DISCHARGE POINTS AND SEED THE DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED. THE INFILTRATION BASINS AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM RUNOFF UNTIL ALL UNSTABILIZED AREAS ARE STABILIZED WITH VEGETATION.
- 5.1.8 ONCE THE INSTALLATION OF THE DRAINAGE NETWORK IS COMPLETE INSTALL THE UNDERGROUND UTILITIES SUCH AS: SEWER, WATER, ELECTRIC, TELEPHONE, AND CABLE IN ACCORDANCE WITH THE APPROVED FINAL PLANS.
- 5.1.9 ROUGH GRADE THE PARKING IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH THE TOWN OF JOHNSTON, RHODE ISLAND, LAND DEVELOPMENT AND SUBDIVISION REGULATIONS.
- 5.1.10 PLACE BITUMINOUS ASPHALT BINDER PER SITE PLANS.
- 5.1.11 ONCE BITUMINOUS ASPHALT BINDER COURSE IS PLACED, CONSTRUCTION OF BUILDINGS MAY COMMENCE. CONSTRUCTION TO INCLUDE SURVEYING AND STAKING OF THE PROPOSED LIMIT OF CLEARING, INSTALLATION OF SEDIMENTATION BARRIERS, CLEARING AND GRUBBING FOR BUILDINGS, REMOVAL OF TOPSOIL, GRADING, EXCAVATION FOR FOUNDATION, PARKING LOT INSTALLATION AND LANDSCAPING.
- 5.1.12 SWEEP THE PARKING LOTS TO REMOVE ALL SEDIMENTS.
- 5.1.13 ONCE THE ENTIRE SITE IS STABILIZED THE INFILTRATION BASINS AND DRAINAGE NETWORK MAY BE BROUGHT ONLINE WITH THE APPROVAL OF THE DESIGN ENGINEER, AND THE TOWN OF JOHNSTON.
- 5.1.14 FINISH PERMANENT STABILIZATION. REPAIR DRAINAGE OUTLETS AND BASINS AS REQUIRED. TREE LIMBS, LEAVES, COBBLES, BOULDERS, ETC. SHALL BE REMOVED FROM THE BOTTOM OF THE BASINS BEFORE THE APPLICATION OF TOPSOIL.
- 5.1.15 THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENTS IN THE INFILTRATION BASINS SHALL BE REMOVED.
- 5.1.16 REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS.

**6.0 EROSION AND SEDIMENTATION CONTROL MEASURES, PERMANENT STABILIZATION, AND MAINTENANCE:**

- THE SOIL EROSION, SEDIMENT STABILIZATION, AND RUNOFF CONTROL WILL BE ACCOMPLISHED BY THE USE OF THE FOLLOWING PRACTICES DURING AND AFTER CONSTRUCTION:
- ESTABLISHMENT OF VEGETATIVE COVER
  - NON-STRUCTURAL MEASURES
  - STRUCTURAL MEASURES
  - MAINTENANCE: SHORT TERM/LONG TERM
- THE OVERALL RESPONSIBILITY FOR IMPLEMENTING THE EROSION AND SEDIMENTATION CONTROL MEASURES, STABILIZATION, AND MAINTENANCE IS AS FOLLOWS:
- CONTRACTOR IS RESPONSIBLE FOR ESTABLISHMENT OF VEGETATIVE COVER
  - CONTRACTOR IS RESPONSIBLE FOR NON-STRUCTURAL MEASURES
  - CONTRACTOR IS RESPONSIBLE FOR STRUCTURAL MEASURES
  - CONTRACTOR IS RESPONSIBLE FOR SHORT TERM MAINTENANCE (UNTIL APPROVAL BY THE ENGINEER AND ACCEPTANCE OF THE STORMWATER SYSTEM BY THE OWNER)
  - CONTRACTOR IS RESPONSIBLE FOR LONG TERM MAINTENANCE (UNTIL APPROVAL BY THE ENGINEER AND ACCEPTANCE OF THE STORMWATER SYSTEM BY THE OWNER)

**6.1 ESTABLISHMENT OF VEGETATIVE COVER**

- 6.1.1 SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON. THE CONTRACTOR SHALL INITIATE APPROPRIATE VEGETATIVE PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS.
- 6.1.2 ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED OR PROTECTED.
- 6.1.3 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 DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, M.18.01.
- 6.1.4 THE TEMPORARY SEEDING DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT
ANNUAL RYE GRASS	60
PERENNIAL RYE GRASS	40

THE NEW ENGLAND EROSION CONTROL/RESTORATION SEED MIX SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT
UPLAND BENTGRASS	1.0
CREeping BENTGRASS	1.0
BIG BLUESTEM	8.0
NEW ENGLAND ASTER	8.0
FOX SEDGE	2.0
VIRGINIA WILD RYE	28.0
BONSET	1.0
GRASS LEAVED GOLDENROD	24.0
CREeping RED FESCUE	24.0
SOFT RUSH	0.5
SENSITIVE FERN	1.0
SWITCH GRASS	8.0
LITTLE BLUESTEM	15.0
GREEN BULLRUSH	0.5
WOOL GRASS	0.5
BLUE VERNAIN	1.0

THE GENERAL PURPOSE SEED MIX SHALL BE URI #2 AND COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT
CREeping RED FESCUE	40
IMPROVED PERENNIAL RYE GRASS	20
IMPROVED KENTUCKY BLUEGRASS	30
KENTUCKY BLUEGRASS	10

EARLY SPRING OR LATE SUMMER SEEDING IS RECOMMENDED. SEEDING SCHEDULE SHOULD CONFORM TO RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION, L.02.03.1 SEEDING DATES. PERMANENT SEEDING SHALL BE DONE BETWEEN APRIL 1 TO MAY 31 OR AUGUST 15 TO OCTOBER 15. TEMPORARY SEEDING MAY BE DONE ANYTIME BETWEEN MARCH 15 AND NOVEMBER 15 WITH THE APPROVAL OF THE ENGINEER OF RECORD. SEEDING AT TIMES NOT DEFINED ABOVE SHALL ONLY BE ALLOWED WITH WRITTEN PERMISSION OF THE ENGINEER. FERTILIZE AS REQUIRED BY SOIL TESTING TO COMPLEMENT OR UPGRADE EXISTING CONDITIONS. THE SEED MIX SHALL BE INCULCATED WITHIN 24 HOURS AND BEFORE MIXING AND PLANTING, WITH APPROPRIATE NODULES FOR EACH VARIETY.

- 6.1.5 TEMPORARY TREATMENTS SHALL CONSIST OF HAY, STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING. TEMPORARY HAY MULCH TO BE PACKED IN PLACE WITH NORTH AMERICAN GREEN EROSION CONTROL BLANKETS. SLOPES OF BASINS SHALL BE TREATED WITH NORTH AMERICAN GREEN EROSION CONTROL BLANKETS SUCH AS SISO OR EQUIV. THEY SHALL BE INCULCATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER. HAY OR STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 2 TONS/ACRE.
- 6.1.6 ALL HAY BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED. AN ACCEPTABLE STAND OF GRASS OR GROUND COVER SHALL BE DEFINED AS A NON ERODIBLE SURFACE.
- 6.1.7 ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH THE TOWN OF JOHNSTON REQUIREMENTS AND THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE SECTION 202.
- 6.1.8 STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SLOPES NO GREATER THAN 2:1 AND SHALL BE TEMPORARILY SEEDED AND/OR STABILIZED.
- 6.1.9 ALL AREAS PROPOSED TO BE VEGETATED BY ARE DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING FOLLOWING FINISH GRADING ACCORDING TO DATES LISTED ABOVE AND THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION L.02.03.1. PERMANENTLY SEEDED AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH MULCH. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND OF VEGETATION IS MAINTAINED. WELL ESTABLISHED VEGETATION SHALL MAINTAIN. BARE OR ERODED AREAS SHALL BE IMMEDIATELY REPAIRED AND RESEDED BY THE CONTRACTOR. ACTIVITIES SHALL BE CONFINED TO WITHIN THE LIMIT OF WORK AS SHOWN ON THE PLANS.
- 6.1.10 MAXIMUM PERMANENT GRADED SLOPE WITHIN THE SITE IS TO BE 3:1 UNLESS NOTED OTHERWISE.

6.1.11 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.

6.1.12 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989 AS A GUIDE.

**6.2 NON-STRUCTURAL MEASURES**

- 6.2.1 CONSTRUCTION TRAFFIC SHALL BE LIMITED TO THE ACCESS ROAD, UTILITY EASEMENTS AND AREAS TO BE GRADED.
- 6.2.2 TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATIONS SHALL BE SUBJECT TO APPROVAL BY THE PROJECT ENGINEER. A SEDIMENT BARRIER SHALL SURROUND ALL TOPSOIL STOCKPILES.
- 6.2.3 ALL TYPES OF WASTE GENERATED AT THE SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH FEDERAL, STATE AND LOCAL REGULATIONS. CONSTRUCTION DEBRIS SHALL BE DISPOSED OF DAILY TO AVOID EXPOSURE TO PRECIPITATION.
- 6.2.4 DUST CONTROL SHALL BE USED THROUGHOUT CONSTRUCTION. DUST CONTROL CAN BE ACCOMPLISHED THROUGH THE USE OF VEGETATIVE COVER AND SPRINKLING OF COARSE SANDS.
- 6.2.5 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- 6.2.6 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

**6.3 STRUCTURAL MEASURES**

- 6.3.1 RUNOFF WATER QUALITY IS IMPROVED BY UTILIZING INFILTRATION AREAS, PEASTONE DIAPHRAGMS, AND GRASS FILTER STRIPS. CONSTRUCTION OF THE INFILTRATION BASINS SHALL BE SUPERVISED BY THE PROJECT ENGINEER. THE BMP'S SHALL BE LIMITED TO CONTROL RUNOFF FOR 2 THROUGH 100 YEAR STORM FREQUENCIES.
- 6.3.2 HAY BALES OR SILT FENCE SHALL BE INSTALLED DOWNSTREAM OUTSIDE THE LIMITS OF ANY PROPOSED CONSTRUCTION AS SHOWN ON THE SITE PLANS AND PRIOR TO THE COMMENCEMENT OF THE PROPOSED ALTERATION.
- 6.3.3 INLET PROTECTIONS SHALL BE USED AROUND CATCH BASIN GRATES. CONTRACTOR SHALL MAINTAIN INLET PROTECTION THROUGHOUT CONSTRUCTION. INLET PROTECTION SHOULD BE REMOVED ONCE THE CONTROLLING AREAS HAVE BEEN COMPLETELY STABILIZED.
- 6.3.4 SURFACE ROUGHENING SHALL BE USED AS A TEMPORARY MEASURE TO IMPROVE THE SUCCESS OF VEGETATION STABILIZATION, ENCOURAGE WATER INFILTRATION AND DECREASE RUNOFF VELOCITY. THE SOIL SURFACE IS ROUGHENED BY THE CREATION OF HORIZONTAL GROOVES OR SLIGHT DEPRESSIONS (1"-3" DEEP AND 6"-12" APART) PARALLEL TO THE SLOPE CONTOUR. ROUGHENING CAN BE USED WITH BOTH SEEDING AND PLANTING AND TEMPORARY MULCHING TO STABILIZE AN AREA.
- 6.3.5 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE THE OVERALL RESPONSIBILITY FOR STRUCTURAL MEASURE IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- 6.3.6 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

**6.4 MAINTENANCE: SHORT TERM / LONG TERM**

- 6.4.1 ALL HAY BALES/SILT FENCE, TEMPORARY TREATMENTS (HAY, STRAW, ETC.), AND TEMPORARY PROTECTION SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION. HAY BALES/SILT FENCE SHALL BE INSPECTED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH STORM EVENT OR EVERY 7 DAYS, WHICHEVER COMES FIRST, FOR UNDERMINING AND DESTRUCTION. INSPECTIONS SHALL ALSO OCCUR AT LEAST DAILY DURING PROLONGED STORM EVENTS. A STORM EVENT SHALL BE DEFINED AS 0.25 INCHES OF RAIN WITHIN A 24-HOUR PERIOD. THE HAY BALES/SILT FENCE SHALL BE REPAIRED OR REPLACED AS WARRANTED. THE CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE HAY BALES/SILT FENCE BECOMES FILLED IN WITH SEDIMENT. THE HAY BALES/SILT FENCE SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED. FOLLOWING CONFIRMATION FROM THE OWNER AND OR THE ENGINEER OF RECORD THAT AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER HAS BEEN ESTABLISHED THE HAY BALES/SILT FENCE SHALL BE REMOVED.
- 6.4.2 THE CONTRACTOR SHALL MAINTAIN ALL TOPSOIL STOCKPILES AND SEDIMENT BARRIERS THROUGHOUT CONSTRUCTION. EXTREME CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT SPILL OVER THE SEDIMENT BARRIER. HAY BALES OR SILT FENCE SHALL BE STAKED AROUND THE STOCKPILES.
- 6.4.3 ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED, PROTECTED, AND MAINTAINED BY THE CONTRACTOR FOLLOWING FINAL GRADING AND CONSTRUCTION. THE CONTRACTOR SHALL CHECK ALL SEEDED AREAS REGULARLY TO SEE THAT A GOOD STAND OF VEGETATION IS MAINTAINED. THE CONTRACTOR MUST REPAIR OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
- 6.4.4 THE CONSTRUCTION SUPERINTENDENT IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF THE STORMWATER MANAGEMENT SYSTEM UNTIL COMPLETION OF CONSTRUCTION AND UNTIL ACCEPTANCE BY THE ENGINEER AND THE OWNER. THE OWNER/CONSTRUCTION SUPERINTENDENT IS RESPONSIBLE FOR ALL EXISTING AND PROPOSED DRAINAGE INFRASTRUCTURE LOCATED ON-SITE.

DURING CONSTRUCTION THE CONSTRUCTION SUPERINTENDENT'S MAINTENANCE/INSPECTION RESPONSIBILITIES SHALL INCLUDE:

- RESEEDING ANY UN-STABILIZED AREAS AT NO ADDITIONAL EXPENSE TO THE OWNER;
- REMOVING ACCUMULATED SILT WHEN SEDIMENTS IN THE BMP'S REACH THE HEIGHT SPECIFIED IN THE SEDIMENT VOLUME CALCULATIONS;
- INSPECTION OF RIP RAP PADS AFTER EACH STORM AND REPAIR AS NECESSARY;
- INSPECTION, MAINTENANCE AND REPAIR TO THE DRAINAGE NETWORK INCLUDING STRUCTURES AND RELATED APPURTENANCES. ACCUMULATED SEDIMENTS IN ALL STRUCTURES SHALL BE REMOVED AND DRAINAGE PIPES FLUSHED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION;
- NEIGHBORING CATCH BASIN SUMPS SHALL BE CHECKED WEEKLY AND SEDIMENTS SHALL BE REMOVED IF THEY EXCEED 6" DEPTH;
- CHECK BMP'S FOR STANDING WATER OR OTHER EVIDENCE OF CLOGGING;
- CHECK FOR SEDIMENT ACCUMULATION, TRASH, AND DEBRIS;
- CHECK FOR BLOCKAGES, STRUCTURAL INTEGRITY, AND EVIDENCE OF EROSION AT INLETS, OUTLETS, AND OVERFLOW SPILLWAYS;
- CHECK FOR RAPID RELEASE OF STORM WATER.

FOLLOWING ACCEPTANCE BY THE ENGINEER AND THE OWNER, THE OWNER IS RESPONSIBLE FOR INSPECTIONS, MAINTENANCE, AND IMPLEMENTING THE MAINTENANCE PROGRAM FOR ALL EXISTING AND PROPOSED DRAINAGE INFRASTRUCTURE LOCATED ON-SITE. LEGALLY BINDING AND ENFORCEABLE MAINTENANCE AGREEMENT SHALL BE EXECUTED BETWEEN THE OWNER AND THE RESPONSIBLE AUTHORITY TO ENSURE THE MAINTENANCE SCHEDULES OUTLINED IN THIS REPORT ARE FOLLOWED.

THE RESPONSIBLE PARTY AND FUNDING SOURCE FOR THE STORMWATER MANAGEMENT PROGRAM WILL BE ORBIT ENERGY OF RHODE ISLAND:

ORBIT ENERGY OF RHODE ISLAND  
900 RIDGEFIELD DRIVE, SUITE 145  
RALEIGH, NORTH CAROLINA 27609

THE RESPONSIBLE PARTY MAINTENANCE/INSPECTION RESPONSIBILITIES SHALL INCLUDE:

**INFILTRATION BASIN MAINTENANCE PROCEDURE:**

- DURING THE FIRST SIX MONTHS FOLLOWING CONSTRUCTION INFILTRATION FACILITIES SHOULD BE INSPECTED AT LEAST TWICE OR MORE FOLLOWING PRECIPITATION EVENTS OF AT LEAST 1.0 INCH TO ENSURE THAT THE SYSTEM IS FUNCTIONING PROPERLY. THEREAFTER, INSPECTIONS SHOULD BE CONDUCTED ON AN ANNUAL BASIS AND AFTER STORM EVENTS OF GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR TYPE III PRECIPITATION EVENT;
- ANNUAL INSPECTION OF SEDIMENT IN THE BOTTOM OF THE INFILTRATION BASIN OR WHEN DEPTH IS GREATER THAN 1.0 INCHES, WHICHEVER COMES FIRST;
- ANNUAL INSPECTION OF INFLOW PIPES CLEAR OF DEBRIS;
- ANNUAL INSPECTION OF OVERFLOW SPILLWAY CLEAR OF DEBRIS;
- ANNUAL INSPECTION OF INLET AREA CLEAR OF DEBRIS;
- SEMI-ANNUAL MOVING OF INFILTRATION PONDS;
- CHECKING OF STRUCTURAL INTEGRITY AND EVIDENCE OF EROSION AT INLETS AND OUTLETS;
- SEASONALLY PLANTS NEED TO BE WATERED, MULCH ADDED TO VOID AREAS, TREATING OF DISEASED TREES AND SHRUBS, INSPECTION OF SOIL AND REPAIR ERODED AREAS, AND REMOVAL OF LITTER AND DEBRIS;
- IF 50% OF VEGETATION COVERAGE IS NOT ESTABLISHED AFTER 2 YEARS REINFORCEMENT PLANTING IS REQUIRED;
- IF THERE IS STANDING WATER IN INFILTRATION AREAS 48 HOURS AFTER A STORM EVENT FAILURE HAS OCCURRED AND THE SURFACE OF THE INFILTRATION AREA MUST BE ROTOTILLED OR CULTIVATED TO BREAK UP ANY HARD PACKED SEDIMENT AND REVEGETATED.

**GRASS SWALE MAINTENANCE:**

- SEMI-ANNUALLY INSPECT EROSION AND REPAIR IF OBSERVED;
- MOW GRASS AS APPLICABLE TO MAINTAIN A HEIGHT OF 4"-6". WHEN MOWING REMOVE ANY TRASH AND DEBRIS PRESENT.

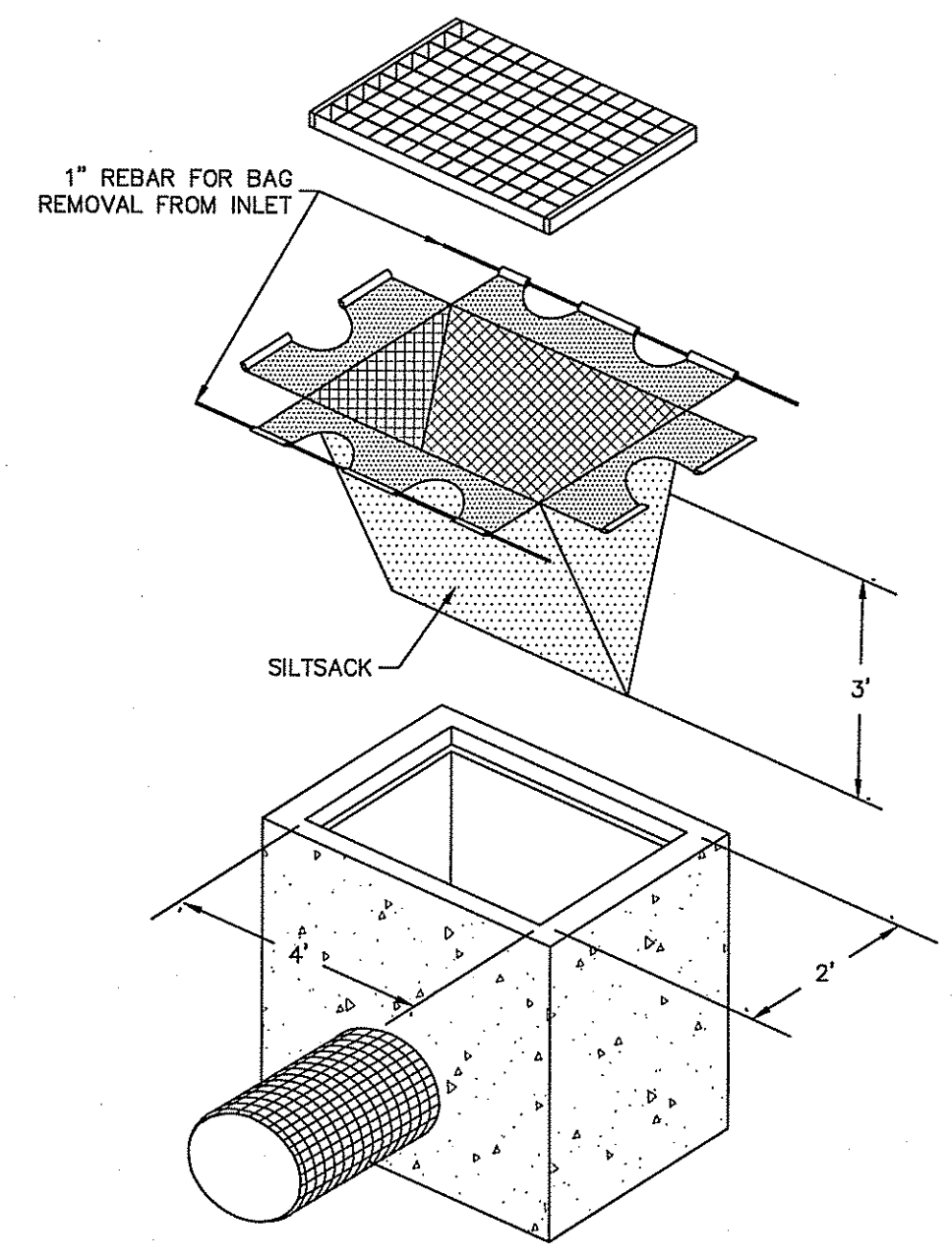
**DRAINAGE STRUCTURES (CATCH BASINS, DRAINAGE MANHOLES, OUTLET STRUCTURES) MAINTENANCE:**

- SEMI-ANNUALLY INSPECT DRAINAGE STRUCTURES FOR DAMAGE;
- ANNUALLY USE A VACUUM TRUCK TO CLEAN OUT ANY SEDIMENT OR DEBRIS PRESENT IN ANY DRAINAGE STRUCTURE OR WHENEVER SEDIMENTS REACH 1/2 OF THE SUMP DEPTH, WHICHEVER COMES FIRST.

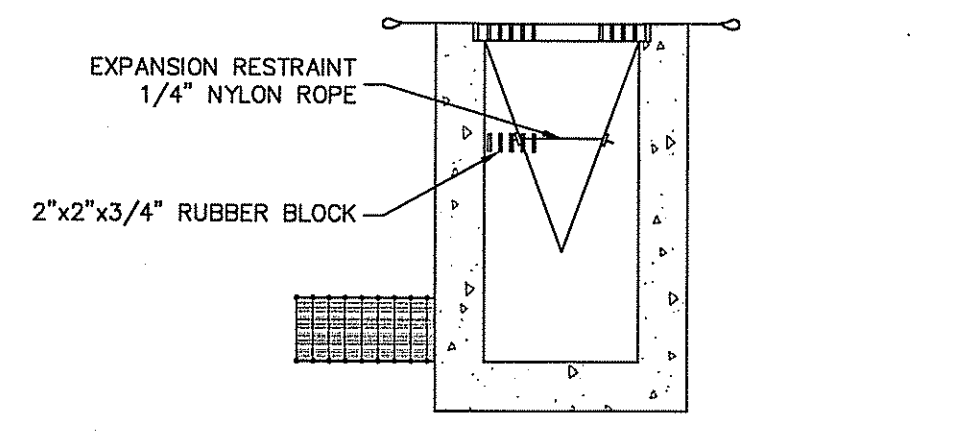
**STREET SWEEPING:**

- VACUUM SWEEP ALL ROADWAYS FOUR TIMES PER YEAR. ONE OF THESE SWEEPINGS MUST OCCUR FOLLOWING WINTER SANDING OPERATIONS HAVE CONCLUDED.

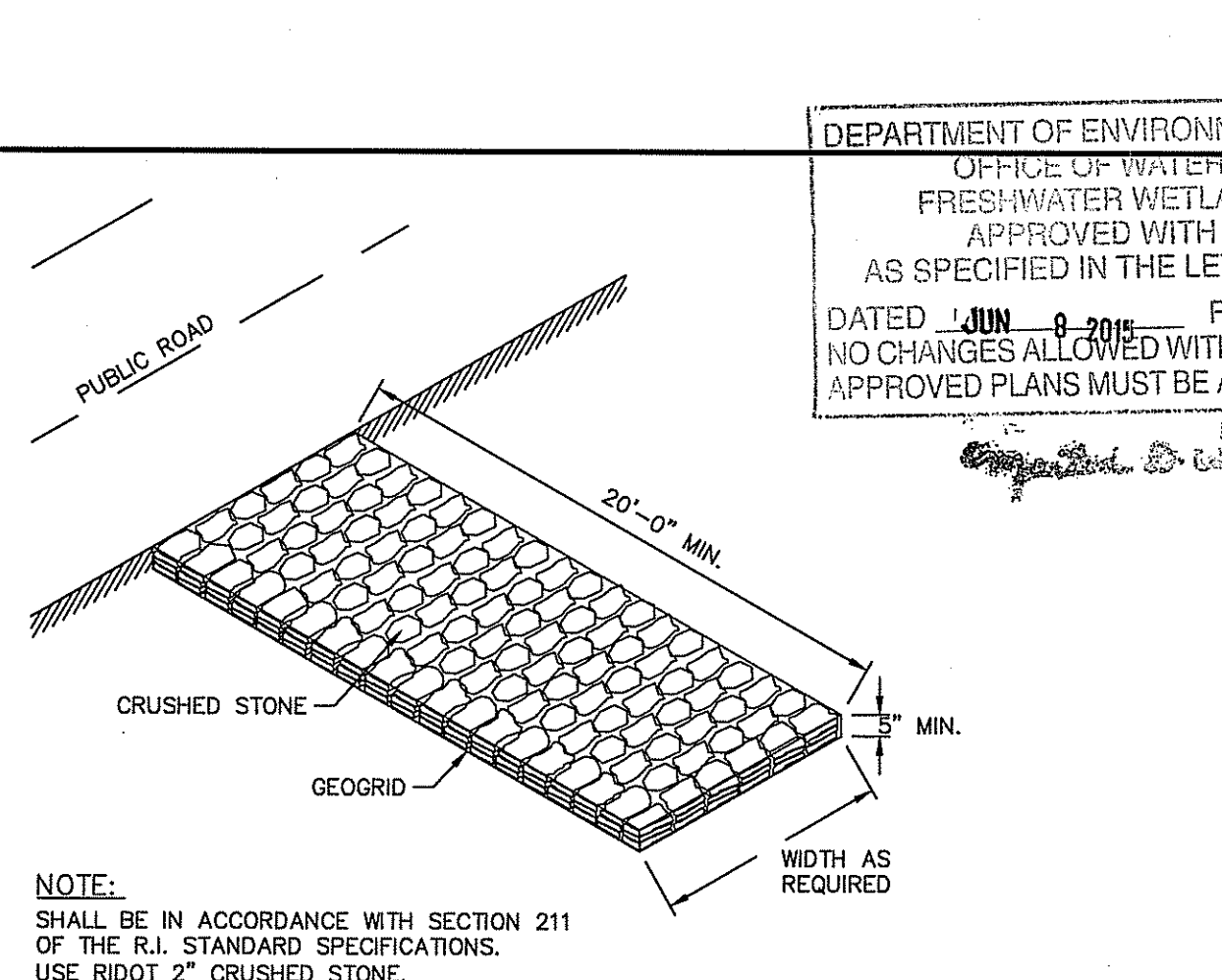
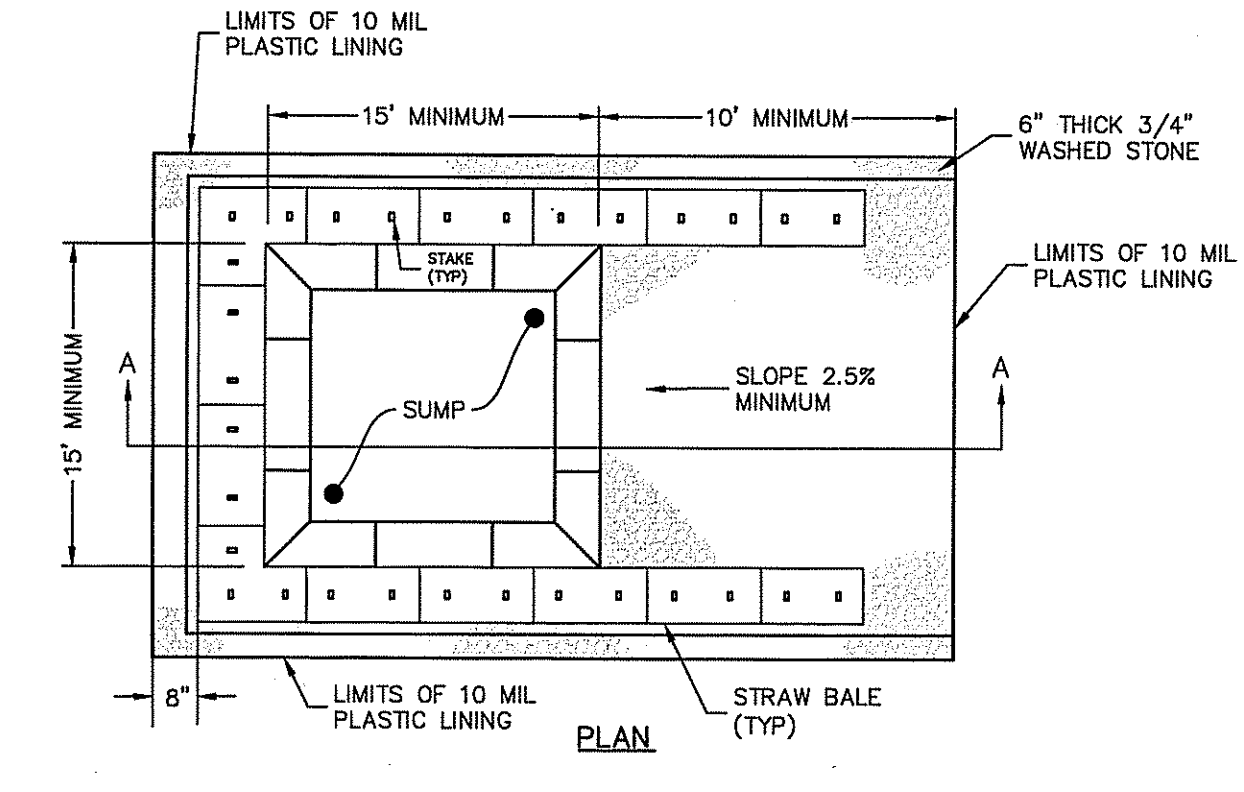
NOTE: SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS. USE RIDOT 2" CRUSHED STONE.



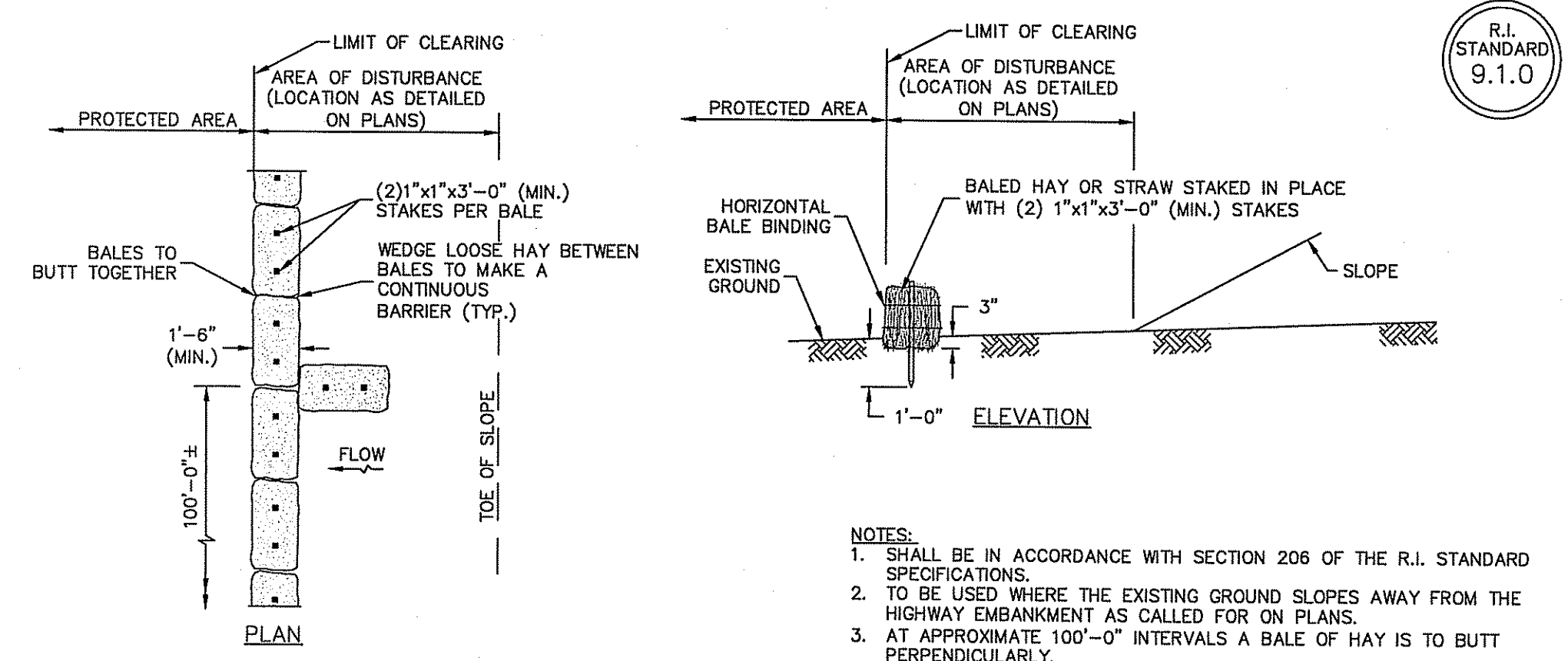
NOTE: REGULAR FLOW=40 GAL./MIN/SF  
HIGH FLOW=200 GAL./MIN/SF



**Silt Sack Detail**  
NOT TO SCALE

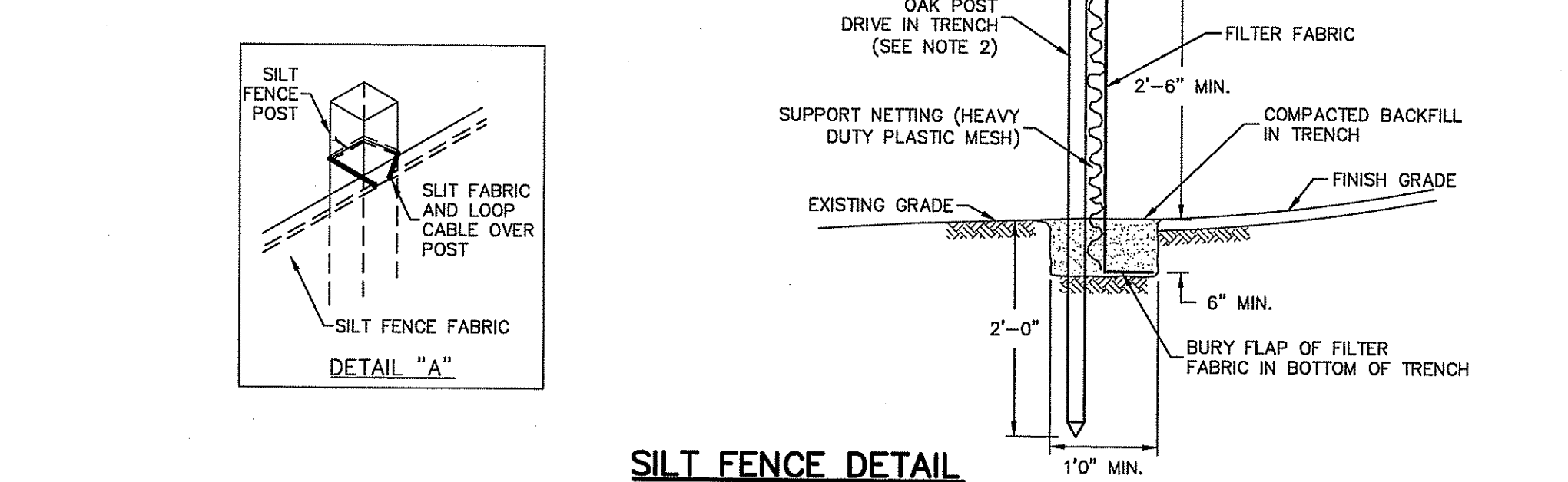


**Construction Access**  
NOT TO SCALE

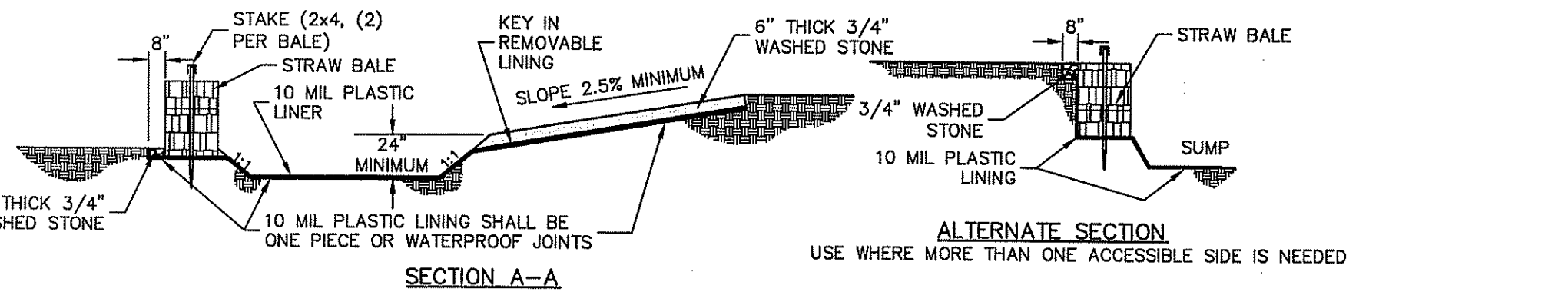


**BALED HAY EROSION CHECK**  
NOT TO SCALE

- 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**  
NOT TO SCALE



**ALTERNATE SECTION**  
USE WHERE MORE THAN ONE ACCESSIBLE SIDE IS NEEDED

- NOTES:
1. PIT IS SPECIFICALLY DESIGNATED, DIKED AND IMPERVIOUS CONTAINMENT TO PREVENT CONTACT BETWEEN CONCRETE WASH AND STORMWATER.
  2. WASH WATER SHALL NOT BE ALLOWED TO FLOW TO SURFACE WATER.
  3. FACILITY MUST HOLD SUFFICIENT VOLUME TO CONTAIN CONCRETE WASTE WITH A MINIMUM FREEBOARD OF 12."
  4. FACILITY SHALL NOT BE FILLED BEYOND 95% CAPACITY UNLESS A NEW FACILITY IS CONSTRUCTED.
  5. SAWCUT PORTLAND CEMENT CONCRETE, RESIDUE FROM SAWCUT AND GRINDING TO BE DISPOSED OF IN THE PIT.
  6. CONCRETE WASHOUTS SHALL BE LOCATED A MINIMUM OF 100' FROM DRAINAGE WAYS, INLETS, AND SURFACE WATERS.
  7. MANUFACTURED CONCRETE WASHOUT DEVICES MAY BE USED IF REMOVED FROM THE SITE WHEN 95% FULL CAPACITY.

**Concrete Washout Area** (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 JUN 9 2015 FILE # 10-0151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

JASON P. CLOUGH  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

**Detail Sheet - 4**  
**Orbit Energy Rhode Island**  
**3.2 MW Bio-Gas Plant**  
Assessor's Plat 43-7 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**  
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner:  
**Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way  
Hope, RI 02831

900 Ridgefield Drive, Suite 145  
Raleigh, North Carolina 27609

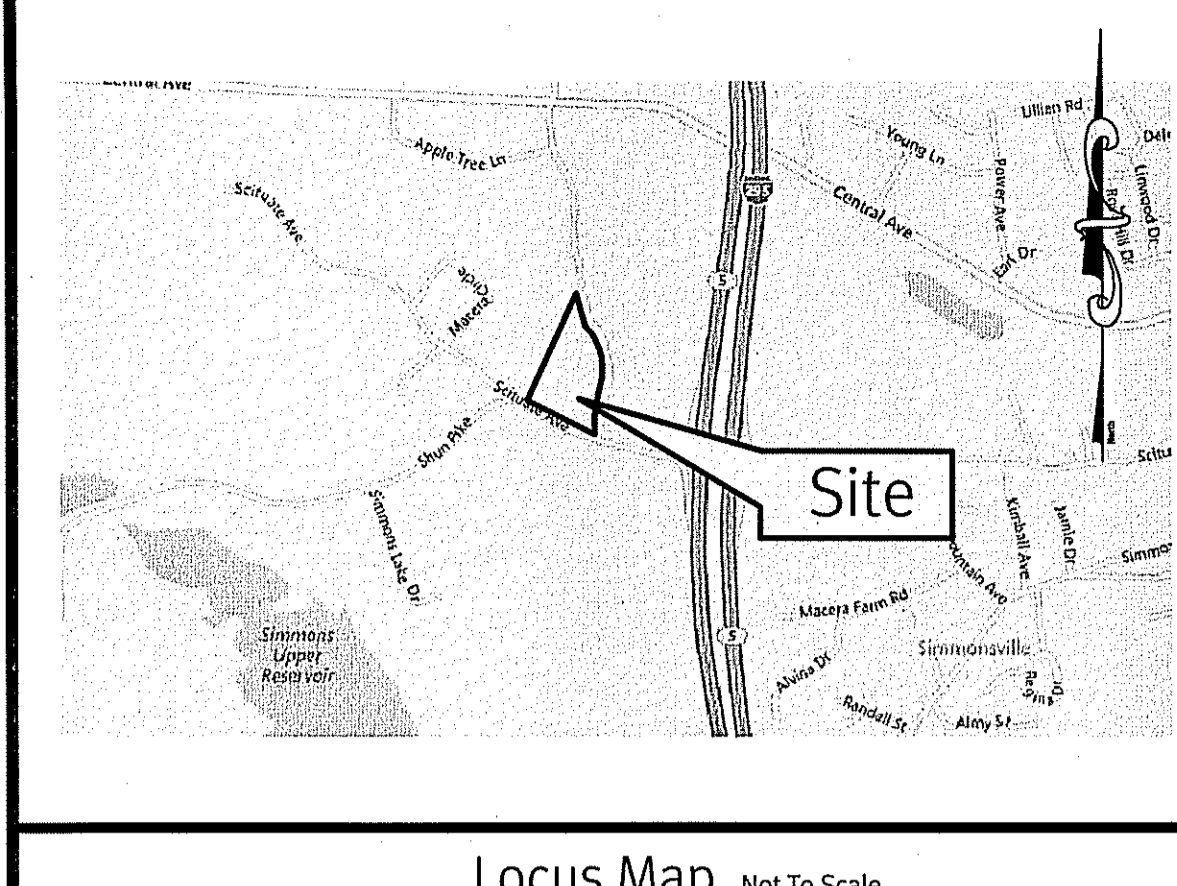
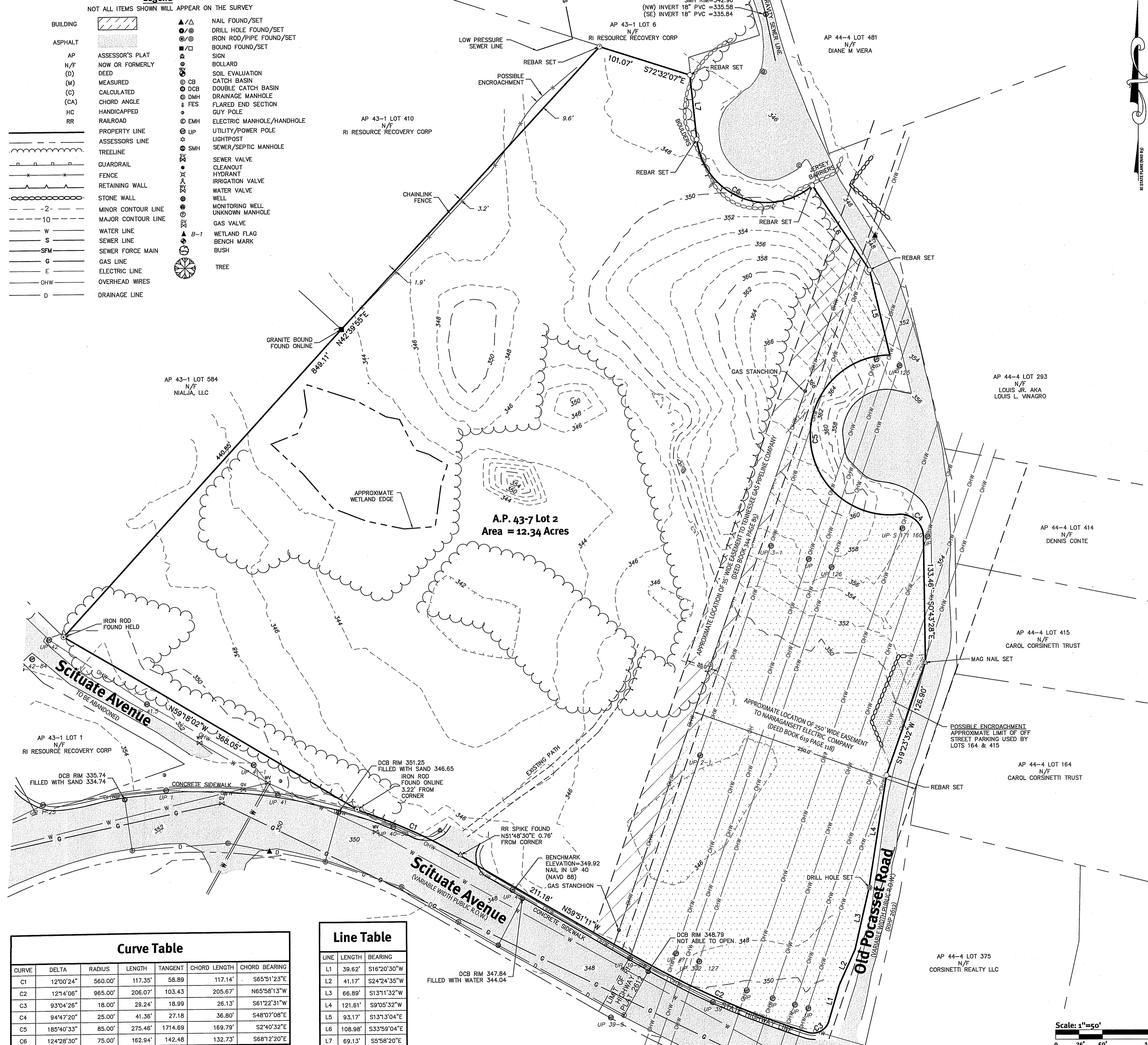
Engineers + Planners + Surveyors





**Legend**  
NOT ALL ITEMS SHOWN WILL APPEAR ON THE SURVEY

BUILDING		▲/△	NAIL FOUND/SET
ASPHALT		●/◎	DRILL HOLE FOUND/SET
AP	ASSESSOR'S PLAT	○/⊙	IRON ROD/PIPE FOUND/SET
N/F	NOW OR FORMERLY	□/◻	BOUND FOUND/SET
(D)	DEED	⊙	SIGN
(M)	MEASURED	⊙	SOIL ELEVATION
(C)	CALCULATED	⊙	CATCH BASIN
(CA)	CHORD ANGLE	⊙	DOUBLE CATCH BASIN
HC	HANDICAPPED	⊙	DRAINAGE MANHOLE
RR	RAILROAD	⊙	FLARED END SECTION
	PROPERTY LINE	⊙	GUY POLE
	ASSESSORS LINE	⊙	ELECTRIC MANHOLE/HANDHOLE
	TREELINE	⊙	UTILITY/POWER POLE
	GUARDRAIL	⊙	LIGHTPOST
	FENCE	⊙	SEWER/SEPTIC MANHOLE
	RETAINING WALL	⊙	SEWER VALVE
	STONE WALL	⊙	CLEANOUT
	MINOR CONTOUR LINE	⊙	HYDRANT
	MAJOR CONTOUR LINE	⊙	IRRIGATION VALVE
	W	⊙	WATER VALVE
	S	⊙	WELL
	W	⊙	MONITORING WELL
	S	⊙	UNKNOWN MANHOLE
	W	⊙	GAS VALVE
	S	⊙	WETLAND FLAG
	SFM	⊙	BENCH MARK
	G	⊙	BUSH
	E	⊙	TREE
	OHW	⊙	
	D	⊙	



- General Notes**
- THE PARCEL IS FOUND ON ASSESSOR'S PLAT 43-7, LOT 2 IN THE TOWN OF JOHNSTON, PROVIDENCE COUNTY, RHODE ISLAND.
  - THE OWNER PER DEED BOOK 1821, PAGE 243 IS SHELBY REALTY, INC.
  - THE PARCEL IS LOCATED IN ZONE X PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP 440070292G, DATED MARCH 2, 2009.
  - THERE WERE NO CEMETERIES, GRAVE SITES AND OR BURIAL GROUNDS OBSERVED WITHIN THE LIMITS OF THE SURVEY.
  - FIELD SURVEY PERFORMED BY DIPRETE ENGINEERING IN 2009 & 2010 AND UPDATED ON AUGUST 26, 2014. THIS PLAN REFLECTS ON THE GROUND CONDITIONS AS OF THAT DATE.
  - ALL UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY OBSERVATIONS ONLY TOGETHER WITH EXISTING PLANS BY OTHERS. DIPRETE ENGINEERING IS NOT RESPONSIBLE FOR MISSING UNDERGROUND UTILITIES, EITHER IN SERVICE OR ABANDONED, NOT OBSERVED AT THE TIME OF THE SURVEY. (PLEASE CONTACT DIGSAFE 72 WORKING HOURS PRIOR TO ANY CONSTRUCTION AT 1-888-344-7233).
  - THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. DIPRETE ENGINEERING IS NOT RESPONSIBLE FOR ANY UNKNOWN OR UNRECORDED EASEMENTS, DEEDS OR CLAIMS THAT A TITLE REPORT WOULD DISCLOSE.
  - THERE WERE NO EXTRAORDINARY/UNUSUAL NATURAL FEATURES OBSERVED ONSITE.
- Datum Note:**
- ELEVATIONS SHOWN HEREON, IN U.S. SURVEY FEET, ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), AS DETERMINED BY DIPRETE ENGINEERING USING REAL TIME KINEMATIC G.P.S. OBSERVATIONS.

- Plan References:**
- STATE OF TRANSPORTATION PLANS, PROFILES AND SECTIONS OF PROPOSED FREEWAY CONSTRUCTION INTERSTATE ROUTE 295 AND SCITUATE AVENUE INTERCHANGE, TOWN OF JOHNSTON COUNTY OF PROVIDENCE, RHODE ISLAND CONTRACT NO. 2002-04-048 FEDERAL AID PROJECT NO. RRC-2950(001) VOLUME I OF II, SHEETS 16-19 OF 265, PLANS BY CROSSMAN ENGINEERING, INC. SIGNED MAY 17, 2002.
  - STATE OF RHODE ISLAND FIELD BOOK 3836 FOR RTE 295 SCITUATE AVE DATED 10-17-02.
  - TOWN OF JOHNSTON ORDINANCE 2005-2 DATED FEBRUARY, 8 2005.
  - "SCITUATE AVENUE ABANDONMENT PLAN" PLAN BY CROSSMAN ENGINEERING, INC. SCALE 1"=180' DATED OCTOBER, 2003. SHEETS 1-4 OF 4. UNRECORDED.
  - STREET LAYOUT SHOWING LAND IN THE TOWN OF JOHNSTON, RHODE ISLAND TAKEN FOR TOWN LAYOUT PURPOSES STREET LAYOUT, RECONSTRUCTION OF SHUN PIKE AND SCITUATE AVENUE, SHEETS 1-12 OF 12. PLAN BY MICHAEL J. PAOLINO DATED 8-18-08.
  - "PLAT OF LAND IN JOHNSTON RI FOR RALPH MACERA LIMITED/MACERA TERRACE" ASSESSORS PLAT 43/1 LOT 384, PLAN BY ANTHONY EMUSCATELLI AND ASSOCIATES, INC. RECORDED OCTOBER 28, 1983/ PLAT CARD 242.
  - RHODE ISLAND HIGHWAY PLAT 2612 SHEETS 1-12 OF 12 RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
  - ADMINISTRATIVE SUBDIVISION AP 43-2 LOTS 263, 273, 409, 410, 411, 584, & 585, SCITUATE AVENUE/MACERA CIRCLE RHODE ISLAND SOLID WASTE MANAGEMENT CORPORATION JOHNSTON, RHODE ISLAND PREPARED FOR: RHODE ISLAND RESOURCE RECOVERY CORPORATION, PLAN BY GAROFALO AND ASSOCIATES, INC. SCALE 1"=40' DATED NOVEMBER 13, 2001. PLAT BOOK 3 PAGE 125.
- Zoning Notes**
- THE PARCEL IS ZONED I PER THE ASSESSOR'S ONLINE DATABASE.
  - THE ZONING ORDINANCE LISTS THE DIMENSIONAL REGULATIONS AS FOLLOWS:  
MINIMUM FRONT YARD 50 FEET  
MINIMUM SIDE YARD 50 FEET  
MINIMUM REAR YARD 50 FEET

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED JUN 8 2015 FILE # 10-0151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**This Plan Should Be Indexed  
By The Following Streets:**

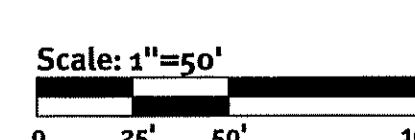
- Old Pocasset Road
- Scituate Avenue

**Curve Table**

CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C1	12°00'24"	560.00'	117.35'	58.89	117.14'	S65°51'23"E
C2	12°14'06"	965.00'	206.07'	103.43	205.67'	N65°58'13"W
C3	93°04'26"	18.00'	29.24'	18.99	26.13'	S61°22'31"W
C4	94°47'20"	25.00'	41.36'	27.18	36.80'	S48°07'08"E
C5	185°40'33"	85.00'	275.46'	1714.69	169.79'	S2°40'32"E
C6	124°28'30"	75.00'	162.94'	142.48	132.73'	S68°12'20"E

**Line Table**

LINE	LENGTH	BEARING
L1	39.82'	S16°20'30"W
L2	41.17'	S24°24'35"W
L3	66.89'	S13°11'32"W
L4	121.61'	S9°05'32"W
L5	93.17'	S13°13'04"E
L6	108.98'	S33°59'04"E
L7	69.13'	S5°58'20"E



**DiPrete Engineering**  
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-664-6006 www.diprete-eng.com

**MICHAEL E. GAVITT**  
18/9/14  
PROFESSIONAL  
LAND SURVEYOR

CERTIFICATION:  
THIS SURVEY AND PLAN CONFORMS TO THE FOLLOWING CLASS STANDARDS AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS EFFECTIVE APRIL 1, 1994.  
BOUNDARY SURVEY, CLASS I TOPOGRAPHIC SURVEY, CLASS III

NO.	DATE	DESCRIPTION	BY
1	05/19/14	Existing Conditions Plan	MTI
2	05/19/14	Existing Conditions Plan	MTI
3	05/19/14	Existing Conditions Plan	MTI
4	05/19/14	Existing Conditions Plan	MTI

Drawn By: MTI

**Existing/Conditions Plan**  
**Orbit Energy Rhode Island**  
**3-2 MW Bio-Gas Plant**

Applicant: Orbit Energy Rhode Island, LLC  
900 Ridgely Drive, Suite 445  
Raleigh, North Carolina 27609

Shelby Realty Inc.  
Hope, RI 02831

DE Job No: 0384-002, Copyright 2014 by DiPrete Engineering Associates, Inc.

Environmental Management  
MAY 29 2015

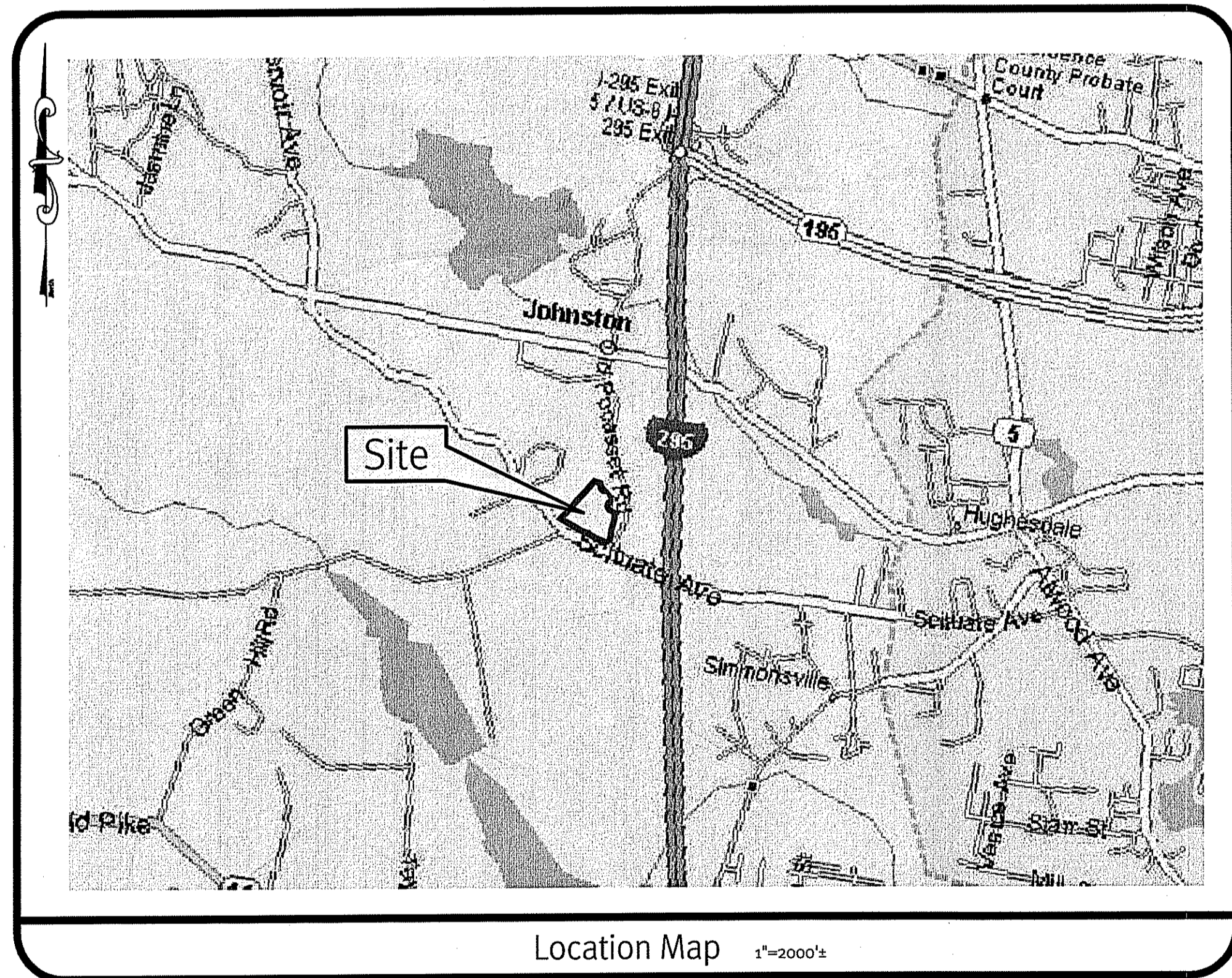
SHEET 1 OF 1

# RIDEM Permit Modification

# Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant

Scituate Avenue  
Johnston, Rhode Island

Assessor's Plat 43 Lot 2



Location Map 1"=2000'

## Sheet Index

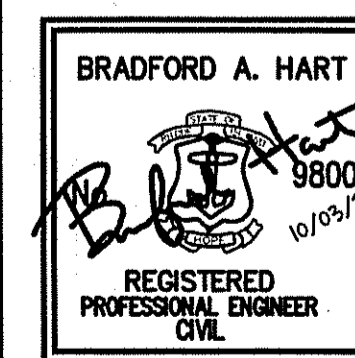
1. Cover Sheet
2. Aerial 1/2 Mile Radius
3. Overall Site Plan
4. Grading & Utility Plan - 1
5. Grading & Utility Plan - 1
6. Detail Sheet - 1
7. Detail Sheet - 2
8. Detail Sheet - 3
9. Detail Sheet - 4

1 of 1 Existing Conditions Plan

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED 10-23-2014 FILE # 10-0151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES  
UNLESS STAMPED ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING  
REPRESENTATIVE.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY  
PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE  
IMPLEMENTATION OF THIS PLAN AND DESIGN.



## Cover Sheet

**Orbit Energy Rhode Island  
3.2 MW Bio-Gas Plant**

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**

Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831  
Applicant: 900 Ridgefield Drive, Suite 145 Raleigh, North Carolina 27609

No.	Date	Description	By:
2	10/09/2014	RIDEM Permit Modification	B.A.H.
1	9/15/2014	Industrial Site Plan Review	J.A.R.
0	8/21/2014	Special Use Permit Submission	J.A.R.
No.	Date	Description	By:

Drawn By: J.A.R. Design By: B.A.H.

Engineers • Planners • Surveyors

z:\demah\projects\0384-002 bluesphere biogas project\autocad drawing\0384-002 cov.dwg Plotfile: 10/7/2014

Printed on 70% recycled paper. Please consider the environment and recycle.

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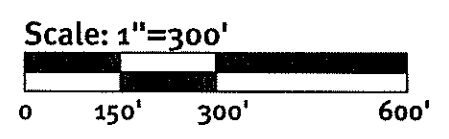
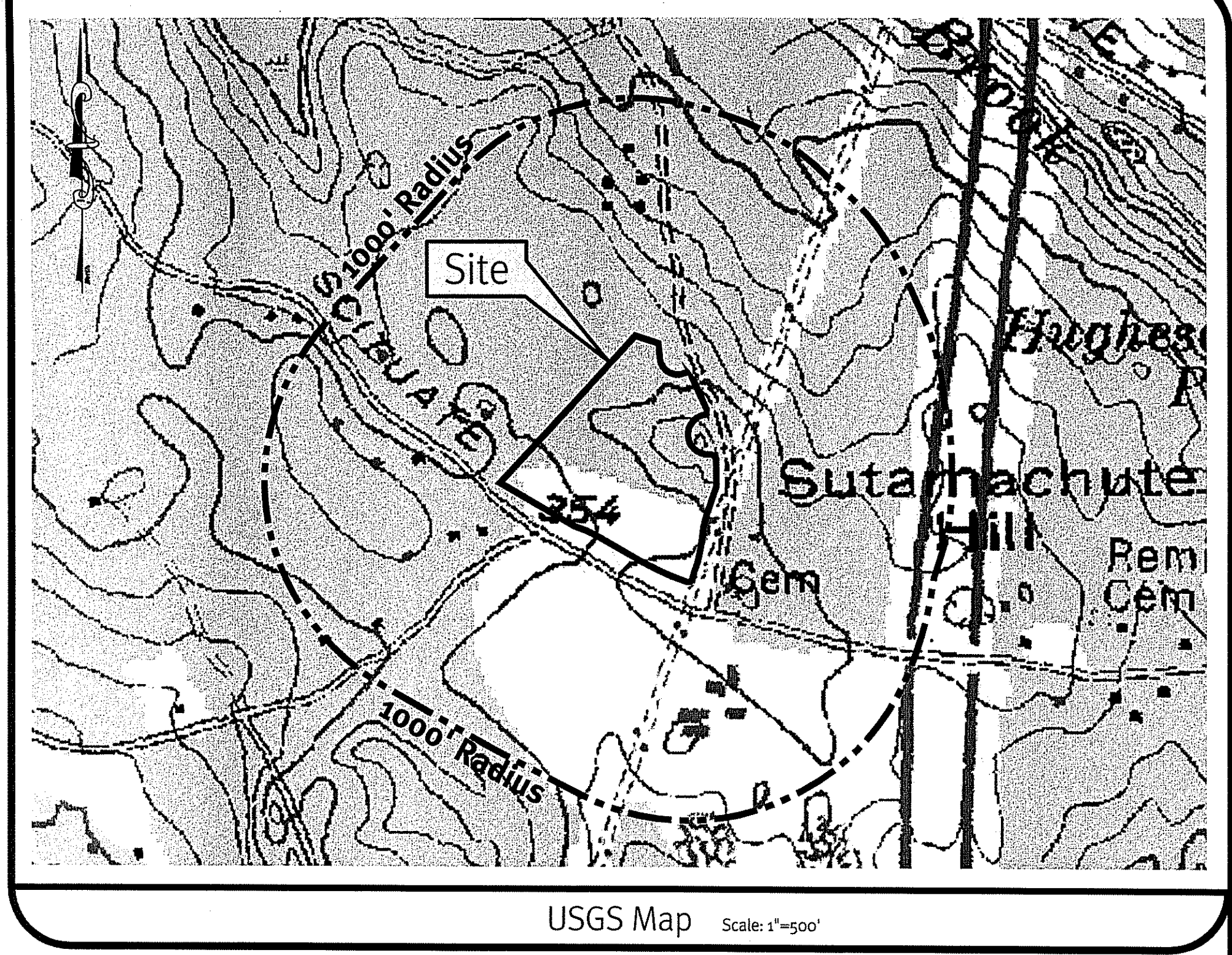
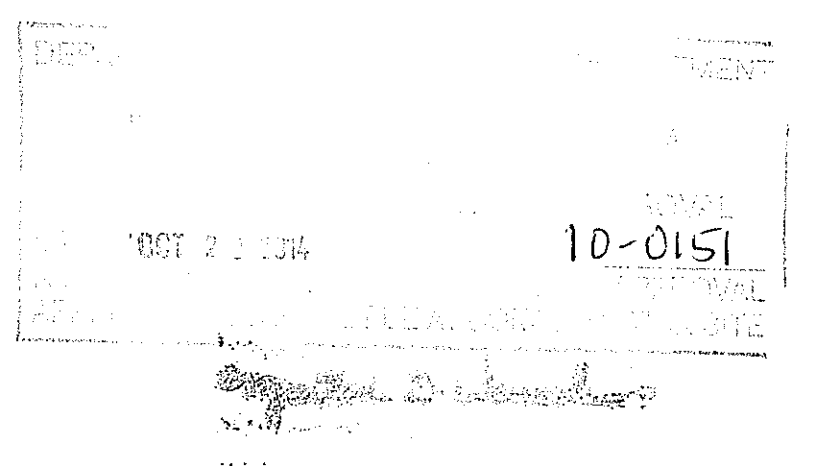
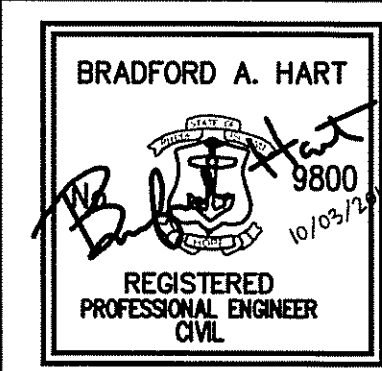


Photo obtained from the RI-GIS of 2011 Digital Orthophotography Northern Urban Areas of Rhode Island.



THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED 'ISSUED FOR CONSTRUCTION' AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.



### Aerial 1/2 Mile Radius Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island



Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DIPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831  
Applicant: **Orbit Energy Rhode Island, LLC**  
900 Ridgfield Drive, Suite 145 Raleigh, North Carolina 27609

No.	Date	Description	By:
2	10/03/2014	RIDEM Permit Modification	B.A.H.
1	9/15/2014	Industrial Site Plan Review	I.A.R.
0	8/27/2014	Special Use Permit submission	I.A.R.
Drawn By: I.A.R.		Design By: B.A.H.	

Engineers • Planners • Surveyors

Printed on 70% recycled paper. Please consider the environment and recycle.

**Developmental Data**

CURRENT ZONING: N/A  
 MINIMUM LOT SIZE: 100'  
 MINIMUM DISTANCE OF STRUCTURE FROM RESIDENTIAL ZONE BOUNDARY: N/A  
 MINIMUM LOT WIDTH: 50'  
 MINIMUM FRONT YARD: 50'  
 MINIMUM SIDE YARD: 40'  
 MINIMUM REAR YARD: 40'  
 MAXIMUM STRUCTURE HEIGHT: 40'  
 MAXIMUM BUILDING COVERAGE: 40%  
 AREA TO BE DISTURBED: 334,874± SF

**Parking Data**

PARKING REQUIRED:  
 ONE CAR SPACE PER EVERY 2 EMPLOYEES  
 NUMBER OF EMPLOYEES PER SHIFT = 3 EMPLOYEES  
 REQUIRED PARKING = 2 PARKING SPOTS  
 PARKING PROVIDED:  
 9 SPOTS TOTAL, INCLUDING 1 ADA ACCESSIBLE PARKING SPOT.

**General Notes**

1. THE SITE IS TO BE SERVED BY PUBLIC WATER AND SEWER.
2. THE DRAINAGE SYSTEM IS DESIGNED TO MEET THE TOWN OF JOHNSTON SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WITH THE USE OF CATCH BASINS AND DRAINAGE BASINS. THE STORMWATER MANAGEMENT SYSTEM MEETS THE RIDEM BEST MANAGEMENT PRACTICES.
3. THE OVERALL SITE IS PROPOSED TO BE BUILT IN 1 PHASE.
4. THE SITE HAS BEEN PREVIOUSLY APPROVED UNDER RIDEM PERMIT NO. 10-0151. A PERMIT MODIFICATION IS REQUIRED FOR THIS PROPOSED WORK. THE LIMIT OF DISTURBANCE IS SMALLER THAN THE PREVIOUSLY APPROVED LIMIT OF DISTURBANCE.
5. CONSTRUCTION TO COMMENCE UPON RECEIPT OF ALL NECESSARY APPROVALS.
6. THE SITE HAS RECEIVED A SPECIAL USE PERMIT FOR THE PROPOSED USE.

**Construction Notes**

1. THE CONTRACTOR IS TO NOTIFY DIG SAFE PRIOR TO THE START OF CONSTRUCTION.
2. NO STOCKPILING OF MATERIAL IS TO BE ALLOWED WITHIN A PUBLIC R.O.W. NO OPEN TRENCHES ARE TO BE LEFT OVERNIGHT.
3. CONTRACTOR TO OBTAIN ALL FEDERAL, STATE, AND MUNICIPAL APPROVALS PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER, THE DIRECTOR OF PUBLIC WORKS, THE TOWN ENGINEER, AND RI DEPT. OF ENVIRONMENTAL MANAGEMENT AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
5. ALL WORK PERFORMED HEREIN SHALL BE GOVERNED BY THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AND TOWN OF JOHNSTON STANDARD SPECIFICATIONS AND DETAILS.
6. ALL EXCESS SOIL, STUMPS, TREES, ROCKS, BOULDERS AND OTHER REFUSE, SHALL BE DISCARDED IN AN APPROVED MANNER AT AN APPROVED LOCATION.
7. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING FINISH GRADING AND DRAINAGE AROUND THE BUILDINGS TO ENSURE SURFACE WATER AND/OR GROUND WATER ARE DIRECTED AWAY FROM THE STRUCTURES. THIS PLAN SHOWS GENERAL GRADING ONLY AND ADDITIONAL DETAIL IS LIKELY TO BE REQUIRED AROUND THE BUILDINGS.
8. ALL LOAM IN DISTURBED AREAS TO BE STOCKPILED FOR FUTURE USE.
9. ALL PROPOSED DRAINAGE PIPE TO BE HDPE UNLESS OTHERWISE NOTED.
10. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR UTILITY CONNECTIONS.
11. ABOVEGROUND UTILITIES ARE PROPOSED ONSITE. UNDERGROUND UTILITIES MAY BE INSTALLED AS AN ALTERNATIVE.
12. ALL CUT AND FILL AREAS ARE TO BE DONE UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER WITH TESTING AND CERTIFICATION TO BE PROVIDED TO THE OWNER UPON THE COMPLETION OF THE PROJECT. DIPRETE ENGINEERING ASSOCIATES, INC. HAS NOT PROVIDED THE FILL SPECIFICATION, GEOTECHNICAL ENGINEERING, STRUCTURAL ENGINEERING SERVICES, OR SUPERVISION AS PART OF THESE DRAWINGS.
13. ALL EXISTING UTILITIES SHOWN ARE SCHEMATIC IN NATURE AND DIPRETE ENGINEERING ASSOCIATES, INC. DOES NOT CERTIFY ITS ACCURACY. THE CONTRACTOR IS TO VERIFY THE UTILITY LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
14. THE PROPOSED WORK INCLUDING GRADING, ACCESS DRIVEWAY, AND UTILITIES REQUIRES COORDINATION THROUGH UTILITY EASEMENTS. CONTRACTOR SHALL VERIFY ALL APPROVALS ARE IN PLACE PRIOR TO START OF CONSTRUCTION.

**Existing Conditions Legend:**

- EX MAJOR FOOT CONTOUR -160-
- EX MINOR FOOT CONTOUR -158-
- PROPERTY LINE
- ASSESSOR LINE
- WETLAND EDGE
- WETLAND FLAG
- RIP-RAP
- BUILDING FOOTPRINT
- LIMIT OF WORK
- STAKED SILT FENCE
- STAKED HAY BALES
- CONCRETE CURB
- ASPHALT PAVEMENT
- GAS LINE
- WATER LINE
- FIRE SERVICE LINE
- SEWER LINE
- DRAIN LINE
- HYDRANT
- SEWER MANHOLE
- DRAINAGE MANHOLE
- CATCH BASIN
- EXISTING WELL
- LIGHT POLE
- UTILITY POLE
- SOIL EVALUATION
- TEST PIT
- SEWER VALVE
- WATER VALVE
- GAS VALVE

**Proposed Conditions Legend:**

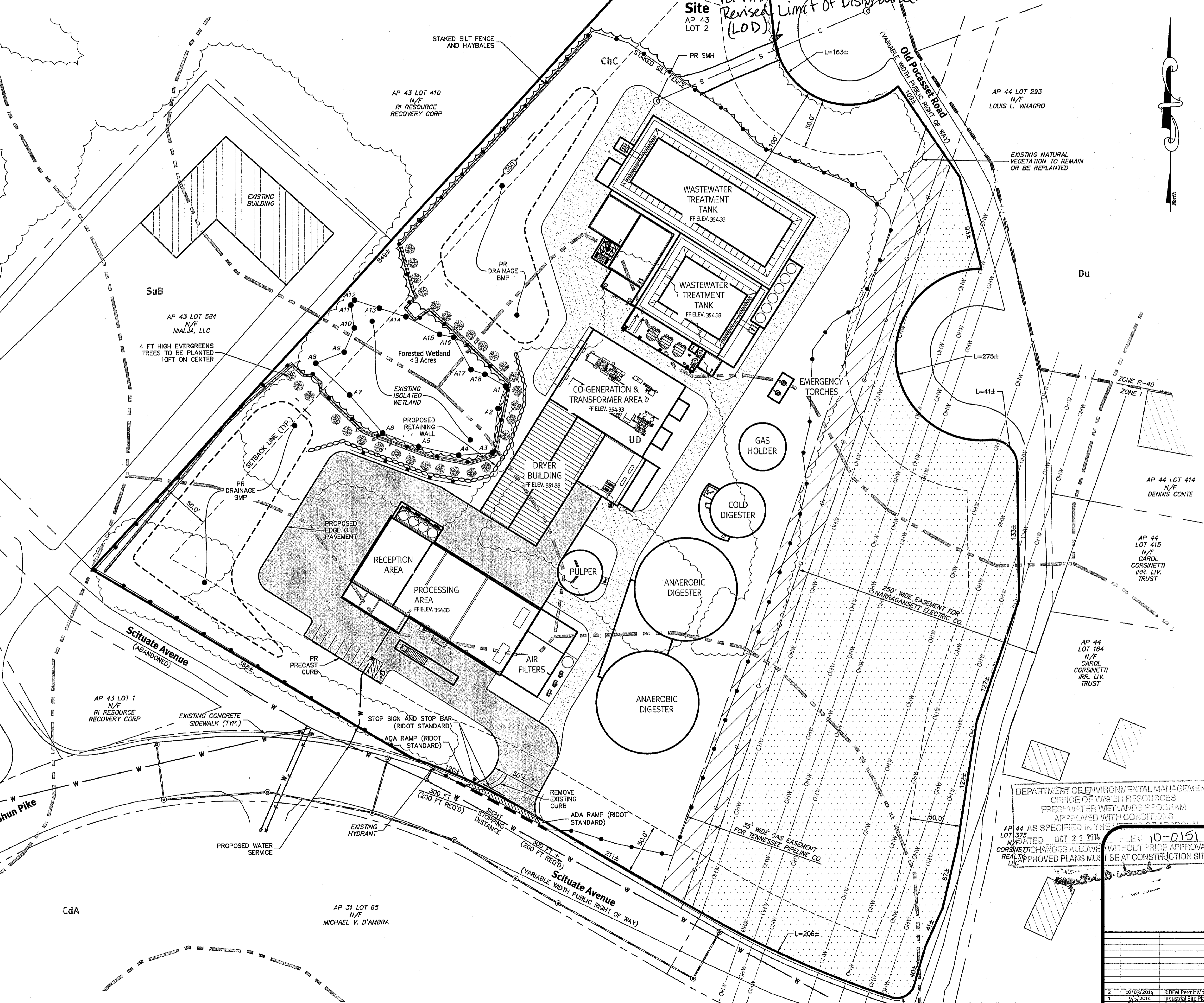
- PR FOOT CONTOUR
- PR TOP/BOTTOM OF POND
- EASEMENT
- EASEMENT HATCH
- POND/RAIN GARDEN OUTLINE
- BUILDING FOOTPRINT
- LIMIT OF WORK
- STAKED SILT FENCE
- STAKED HAY BALES
- CONCRETE CURB
- ASPHALT PAVEMENT
- GAS LINE
- WATER LINE
- SEWER LINE
- DRAIN LINE
- OVERHEAD WIRES
- PAVEMENT STRIPING (4" WHITE STRIPING 2' ON CENTER @ 45°)
- ACCESSIBLE PARKING SPACE SYMBOL
- MANHOLE
- CATCH BASIN

**Abbreviations:**

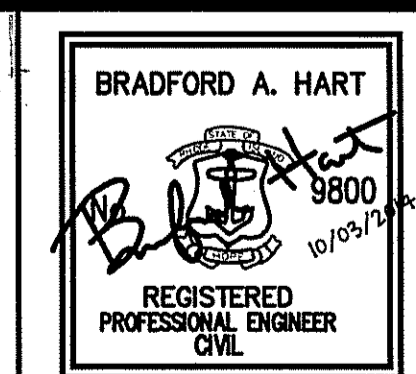
- EXISTING EX
- PROPOSED PR
- FINISH FLOOR ELEVATION FFE

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED, ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE PERMIT  
 FILE # 10-0151  
 DATE: OCT 23 2014  
 CORRECTIVE CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 REALTY APPROVED PLANS MUST BE AT CONSTRUCTION SITE

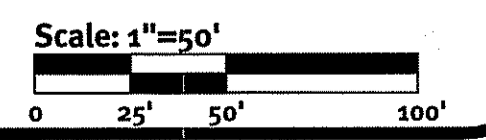


**Overall Site Plan**  
**Orbit Energy Rhode Island**  
**3.2 MW Bio-Gas Plant**  
 Assessor's Plat 43 Lot 2  
 Johnston, Rhode Island

**DiPrete Engineering**  
 Two Stafford Court Cranston, RI 02920  
 tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com  
 Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
 24 Armand Way Hope, RI 02831  
 Applicant: 900 Ridgefield Drive, Suite 145 Raleigh, North Carolina 27609  
 SHEET 3 OF 9

No.	Date	Description	By:
2	10/09/2014	RIDEM Permit Modification	B.A.H.
1	9/5/2014	Industrial Site Plan Review	J.A.R.
0	8/21/2014	Special Use Permit Submission	J.A.R.
0			

Drawn By: J.A.R. Design By: B.A.H.



z:\deman\proj\0384-002\_biosphere\_bogas\_project\vertical\drawing\0384-002-dsm.dwg Pictur: 10/17/2014

Engineers • Planners • Surveyors

AP 43 LOT 584  
N/F  
NIALJA, LLC

4 FT HIGH EVERGREENS  
TREES TO BE PLANTED  
10FT ON CENTER

Infiltration  
Basin 2

Forested Wetland  
< 3 Acres

CO-GENERATION &  
TRANSFORMER AREA  
FF ELEV. 354.33

DRYER  
BUILDING  
FF ELEV. 351.33

EMERGENCY  
TORCHES

GAS  
HOLDER

COLD  
DIGESTER

PULPER

ANAEROBIC  
DIGESTER

RECEPTION  
AREA

PROCESSING  
AREA  
FF ELEV. 354.33

AIR  
FILTERS

ANAEROBIC  
DIGESTER

Scituate Avenue

AP 43 LOT 1  
N/F  
RI RESOURCE  
RECOVERY CORP

AP 31 LOT 65  
N/F  
MICHAEL V. D'AMBRA

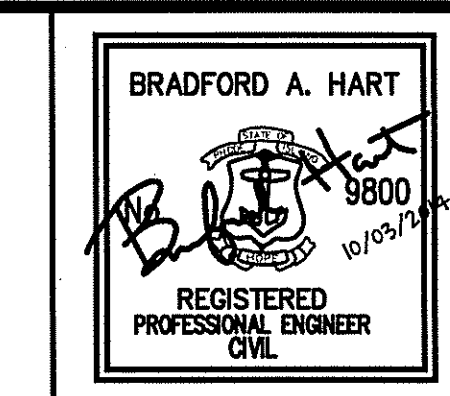
Scituate Avenue  
(VARIABLE WIDTH PUBLIC RIGHT OF WAY)

APPROXIMATE  
EXISTING 12"  
WATERLINE

Scale: 1"=30'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED 10/23/2014 FILE # 10-051  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

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REPRESENTATIVE.  
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IMPLEMENTATION OF THIS PLAN AND DESIGN.



### Grading & Utility Plan -1

## Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

### DiPrete Engineering

Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

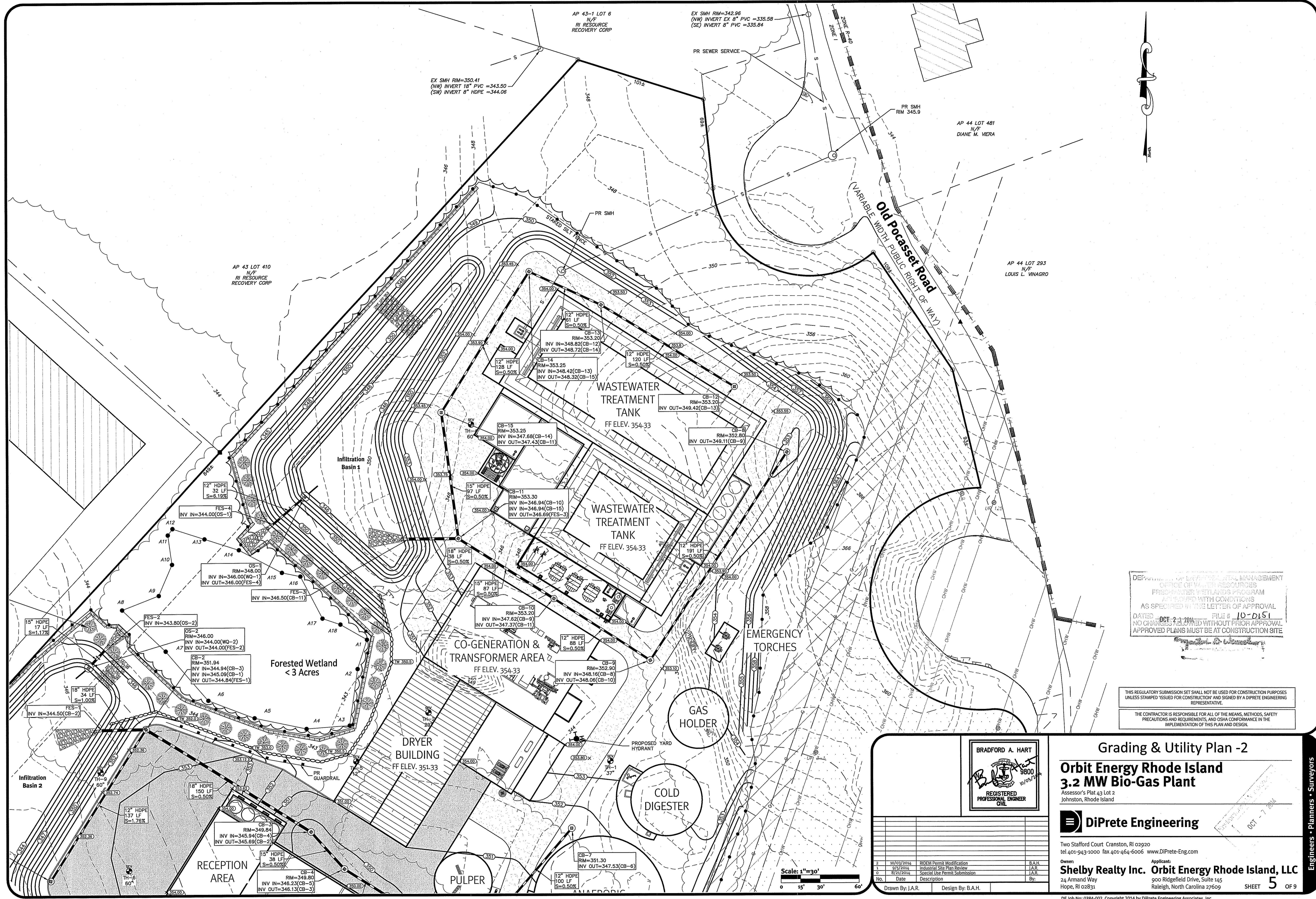
Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831  
Applicant: 900 Ridgfield Drive, Suite 145 Raleigh, North Carolina 27609

No.	Date	Description	By:
2	10/09/2014	RIDEM Permit Modification	B.A.H.
1	07/07/2014	Industrial Site Plan Review	J.A.R.
0	8/21/2014	Special Use Permit Submission	J.A.R.
0			

Drawn By: J.A.R.

Design By: B.A.H.

SHEET 4 OF 9



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED OCT-2-2014 FILE # 10-0151  
NO CHANGES TO BE MADE WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES  
UNLESS STAMPED ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING  
REPRESENTATIVE.  
THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY  
PRECAUTIONS AND REQUIREMENTS, AND OSHA COMPLIANCE IN THE  
IMPLEMENTATION OF THIS PLAN AND DESIGN.

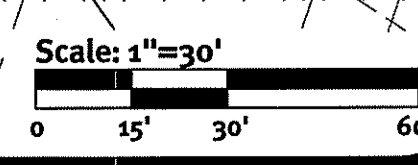
BRADFORD A. HART  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

Grading & Utility Plan -2  
**Orbit Energy Rhode Island**  
3.2 MW Bio-Gas Plant  
Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**  
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com  
Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831  
Applicant: 900 Ridgfield Drive, Suite 145 Raleigh, North Carolina 27609

No.	Date	Description	By:
2	10/05/2014	RIDEM Permit Modification	B.A.H.
1	09/14/2014	Industrial Site Plan Review	J.A.R.
0	8/21/2014	Special Use Permit Submission	J.A.R.

Drawn By: J.A.R. Design By: B.A.H.

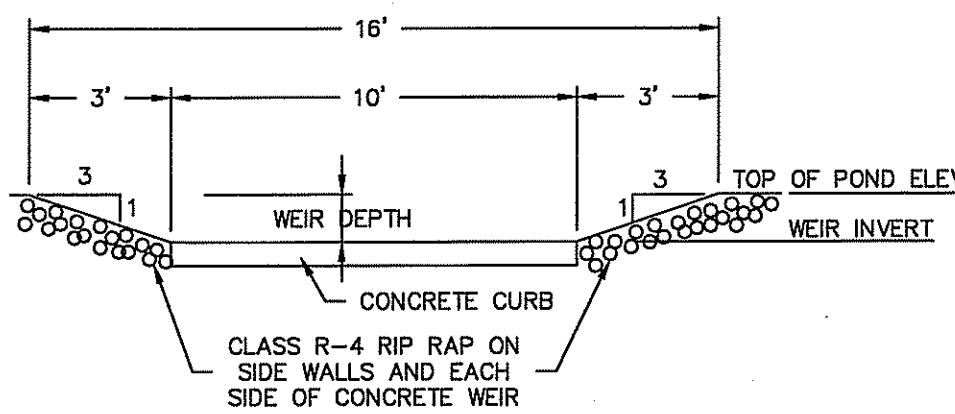


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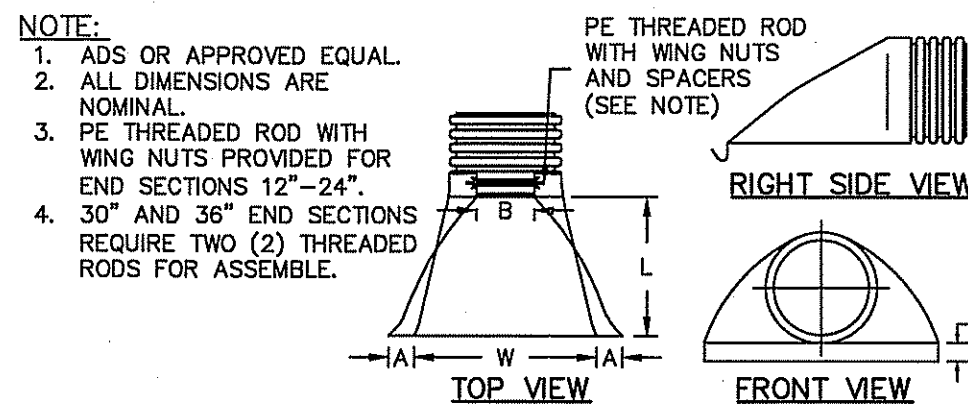
Engineers • Planners • Surveyors



LOCATION	TOP OF POND ELEV.	WEIR INVERT	WEIR DEPTH
POND 1	350.00	349.00	1.0'
POND 2	346.00	345.50	0.5'

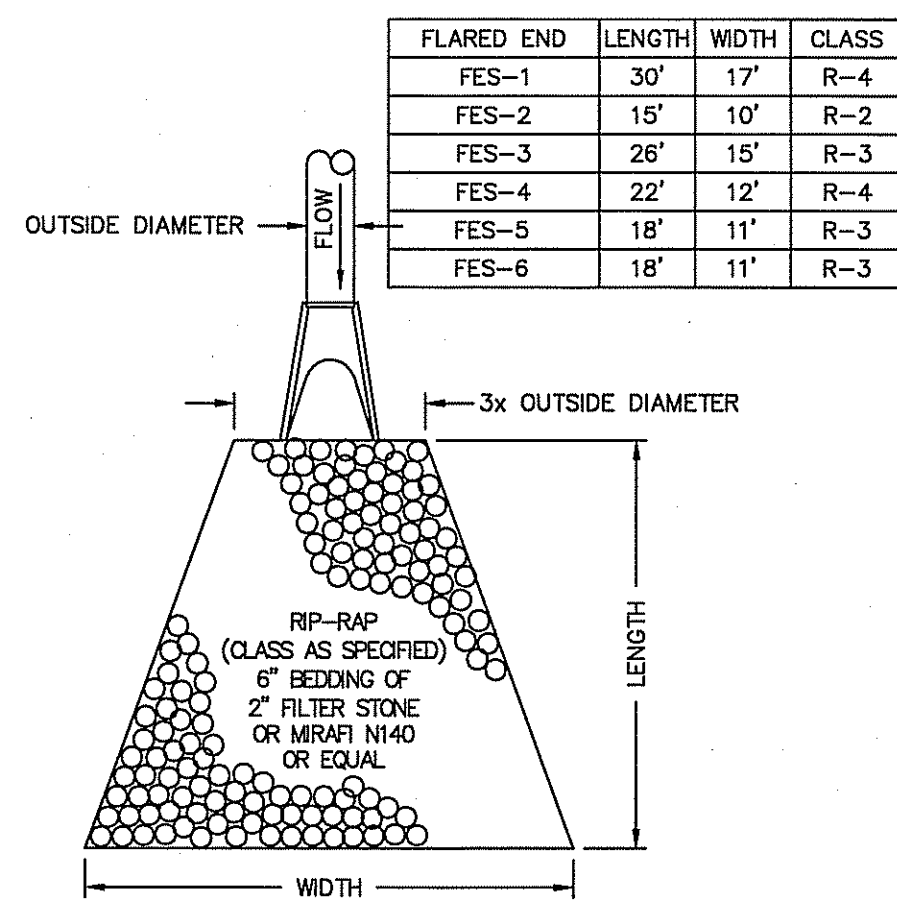


**Emergency Spillway Detail**  
NOT TO SCALE



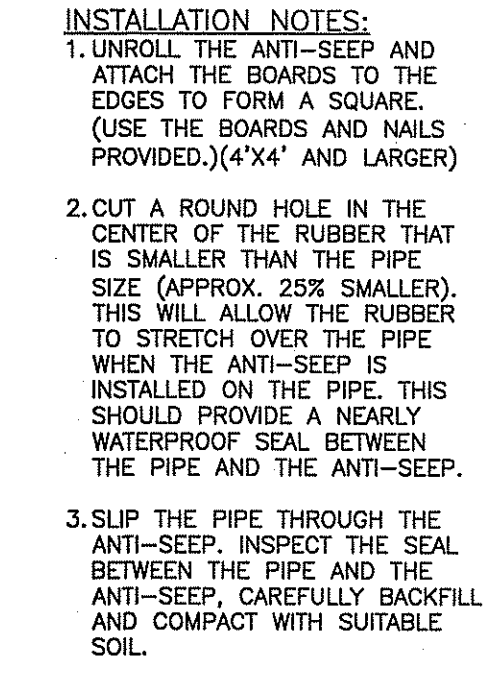
PART #	PIPE SIZE	A	B (MAX)	H	L	W
1210NP	12 IN (300 MM)	6.50 IN (165 MM)	10 IN (254 MM)	8.50 IN (215 MM)	25 IN (635 MM)	29 IN (737 MM)
1510NP	15 IN (375 MM)	6.50 IN (165 MM)	10 IN (254 MM)	8.50 IN (215 MM)	25 IN (635 MM)	29 IN (737 MM)
1810 NP	18 IN (450 MM)	7.50 IN (191 MM)	15 IN (381 MM)	8.50 IN (215 MM)	32 IN (813 MM)	35 IN (889 MM)
2410NP	24 IN (600 MM)	7.50 IN (191 MM)	15 IN (381 MM)	8.50 IN (215 MM)	36 IN (914 MM)	45 IN (1143 MM)
3015NP	30 IN (750 MM)	7.50 IN (191 MM)	12 IN (305 MM)	8.60 IN (218 MM)	58 IN (1473 MM)	63 IN (1600MM)
3615NP	36 IN (900 MM)	7.50 IN (191 MM)	25 IN (635 MM)	8.60 IN (218 MM)	58 IN (1473 MM)	63 IN (1600 MM)

**HDPE Flared End Section**  
NOT TO SCALE

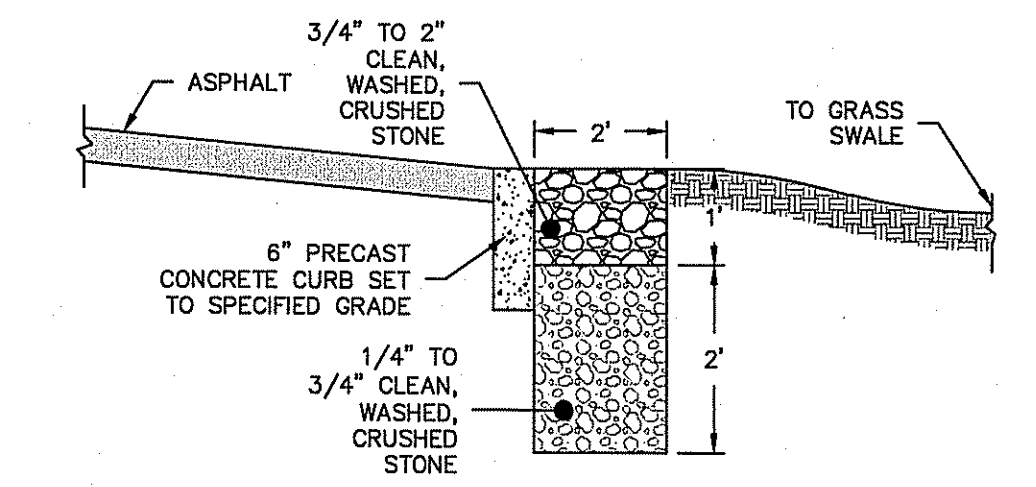


**RIP-RAP APRON/ FE DETAIL**  
NOT TO SCALE

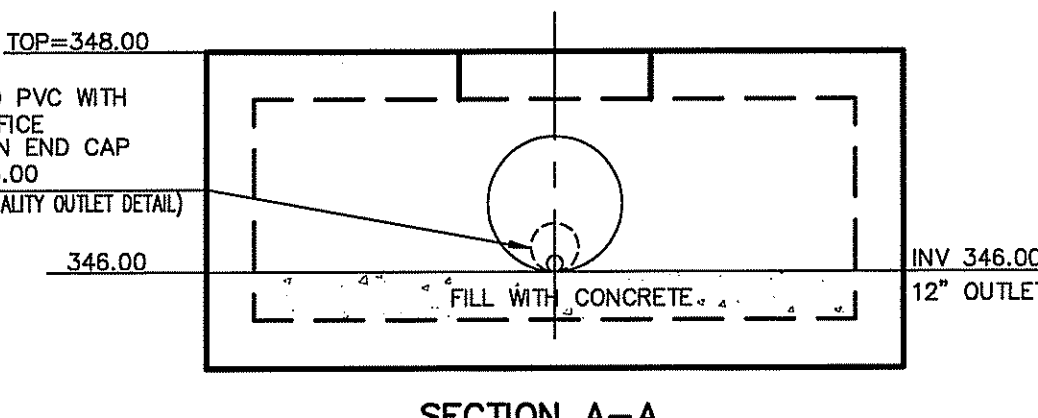
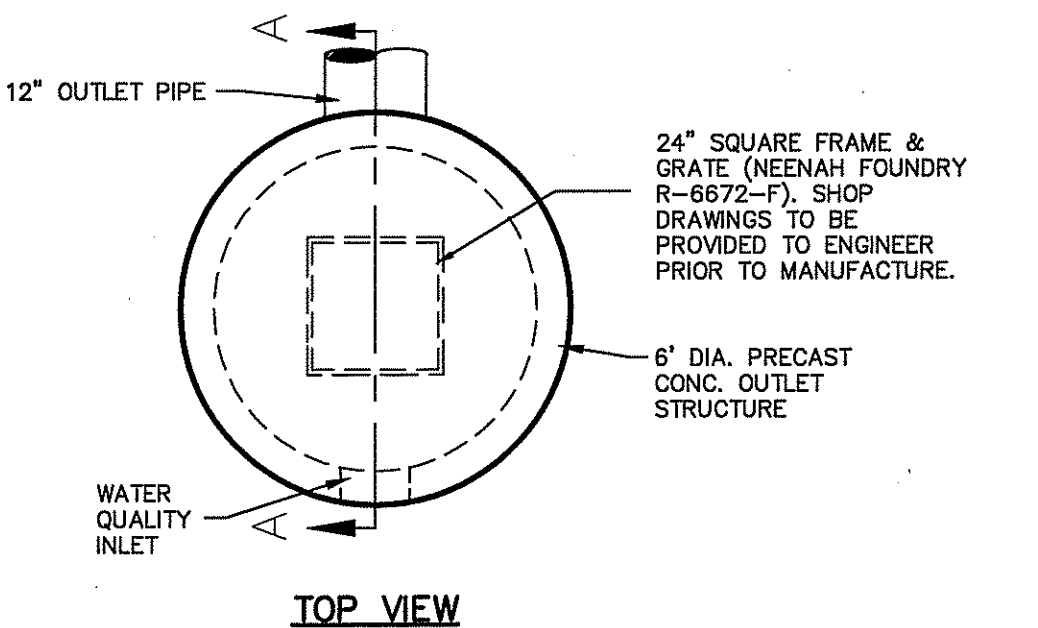
LOCATION	WIDTH	HEIGHT	QUANTITY
POND 1	4.0'	4.0'	1
POND 2	4.0'	4.0'	1



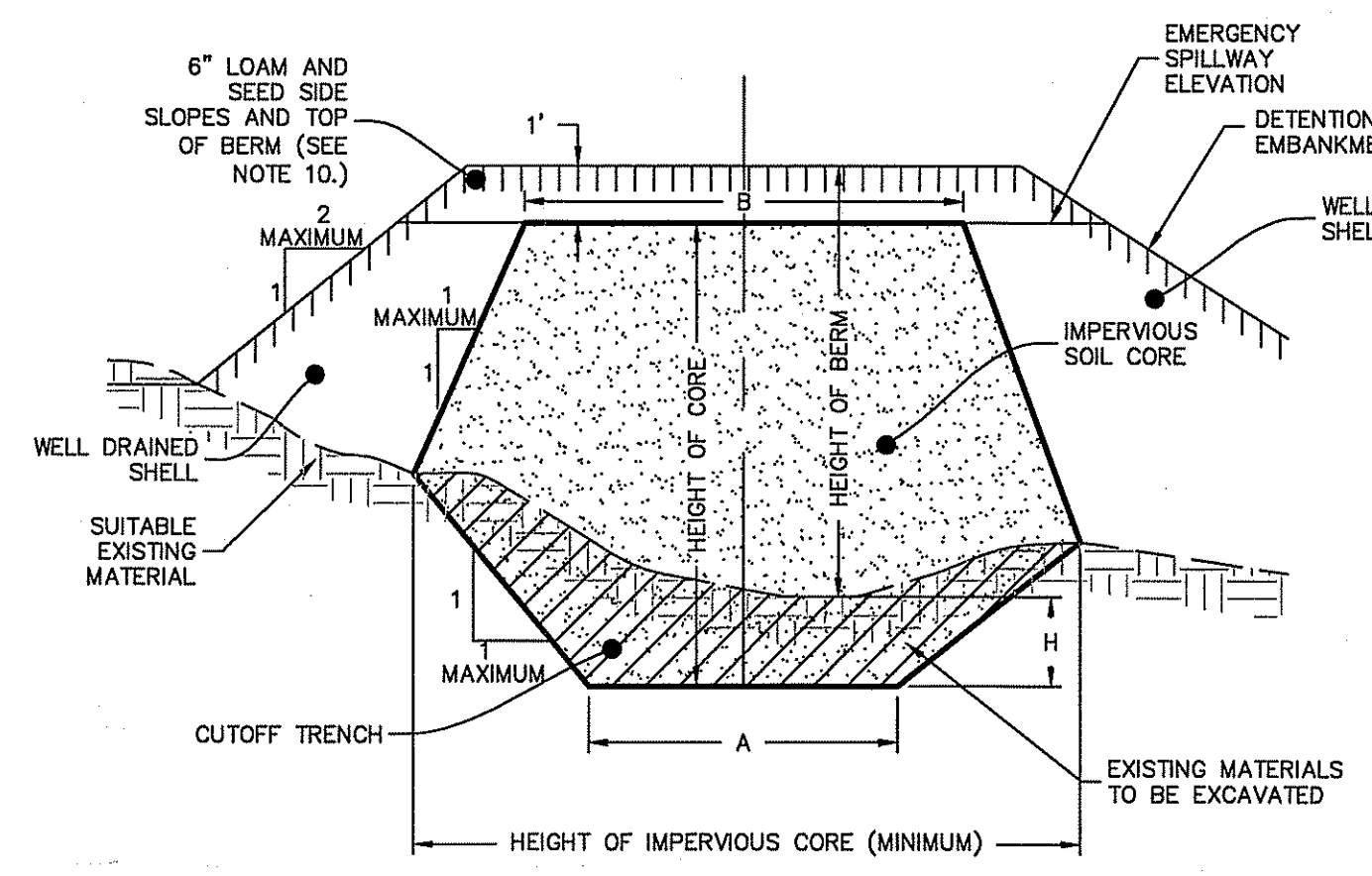
**Anti-Seep Collar**  
NOT TO SCALE



**Pea Stone Diaphragm**  
NOT TO SCALE



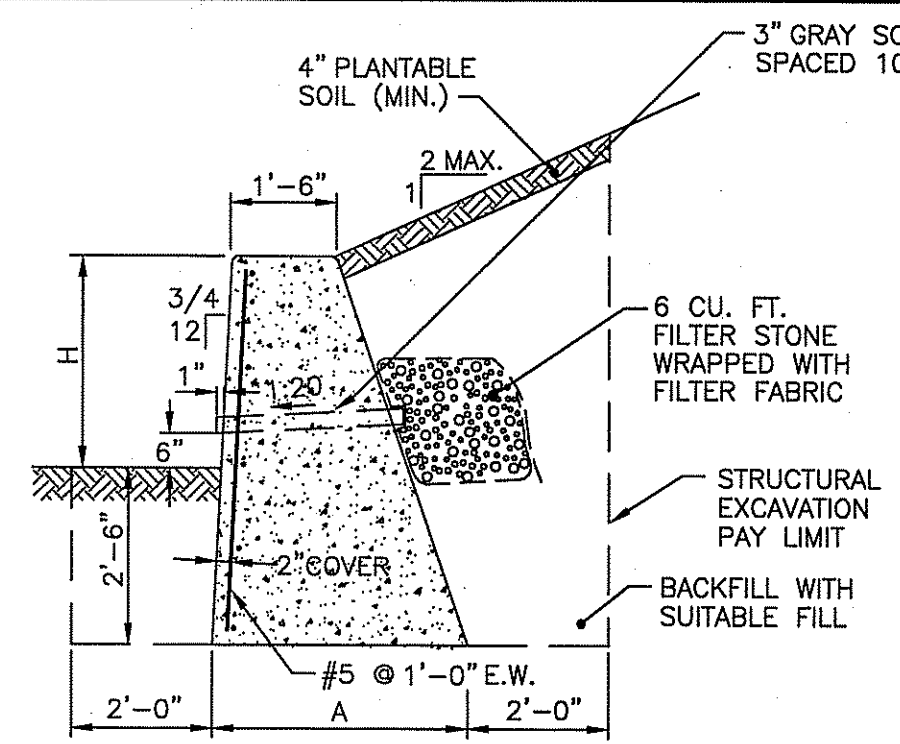
**POND 1 OUTLET STRUCTURE (OS-1)**  
N.T.S.



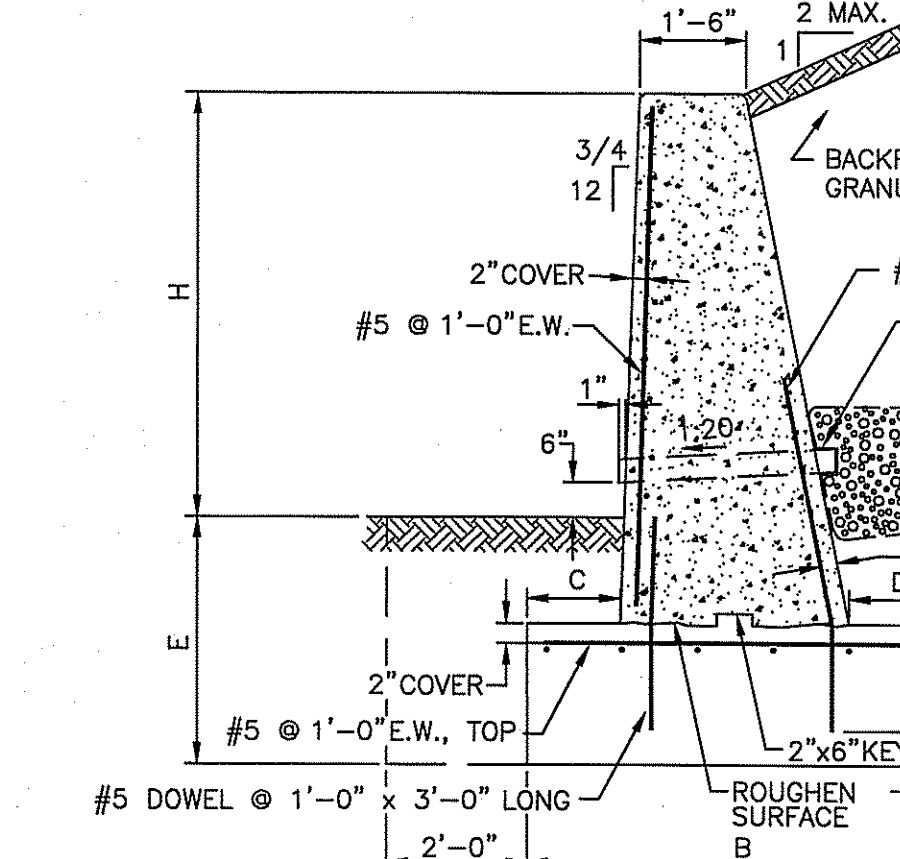
**Detention Pond Earthen Embankment**  
NOT TO SCALE

BERM HEIGHT (FT)	TOP WIDTH OF CORE - B (FT)
0-6.5	8.2
6.6-9.8	9.2
9.9-13.1	9.8
13.2-16.4	10.8
16.5-19.7	11.5

- NOTES:**
- IMPERVIOUS SOIL CORE TO BE PROVIDED FOR ALL DETENTION POND EMBANKMENTS.
  - IMPERVIOUS SOIL CORE TO BE CONSTRUCTED OF MATERIAL CONSISTING OF SILT OR #200 SOIL.
  - WELL DRAINED SHELL TO BE CONSTRUCTED OF GRAVEL AND/OR SAND WITH LESS THAN 5% PASSING THE #200 SIEVE.
  - MINIMUM DEPTH OF CUTOFF TRENCH (H) SHALL BE 3/4 OF THE TOTAL BERM HEIGHT TO A MINIMUM SHALL EXTEND UP BOTH ABUTMENTS TO THE EMERGENCY SPILLWAY ELEVATION.
  - THE IMPERVIOUS CORE AT A MINIMUM SHALL EXTEND UP BOTH ABUTMENTS TO THE EMERGENCY SPILLWAY ELEVATION.
  - THE MINIMUM BOTTOM WIDTH (A) SHALL BE 5'-8" AND WIDE ENOUGH TO PERMIT OPERATION OF COMPACTION EQUIPMENT.
  - SIDE SLOPES OF THE TRENCH SHALL BE NO STEEPER THAN 1:1.
  - IF BEDROCK IS ENCOUNTERED BELOW THE DAM THE CUT OFF TRENCH CAN BE REDUCED TO 1'x1' (A<sub>MIN</sub>).
  - COMPACTION REQUIREMENTS FOR THE SHELL AND IMPERVIOUS CORE TO BE 95% OF THE MODIFIED PROCTOR PER ASTM D1557. ALL FILL TO BE PLACED IN LIFTS NOT EXCEEDING 12".
  - SIDE SLOPE OF DETENTION POND EMBANKMENT TO BE 2:1 MAXIMUM. IF SIDE SLOPES ARE STEEPER THAN 3:1, SLOPE PROTECTION MUST BE UTILIZED ON POND EMBANKMENT. THIS INCLUDES, BUT NOT LIMITED TO, RIPRAP AND EROSION CONTROL MATS.
  - THE IMPERVIOUS CORE SHALL BE KEPT FREE FROM STANDING WATER DURING THE BACKFILL OPERATION.
  - ALL EMBANKMENTS TO BE DESIGNED BY A GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION. ALL EMBANKMENT INSTALLATIONS TO BE SUPERVISED BY A GEOTECHNICAL ENGINEER.



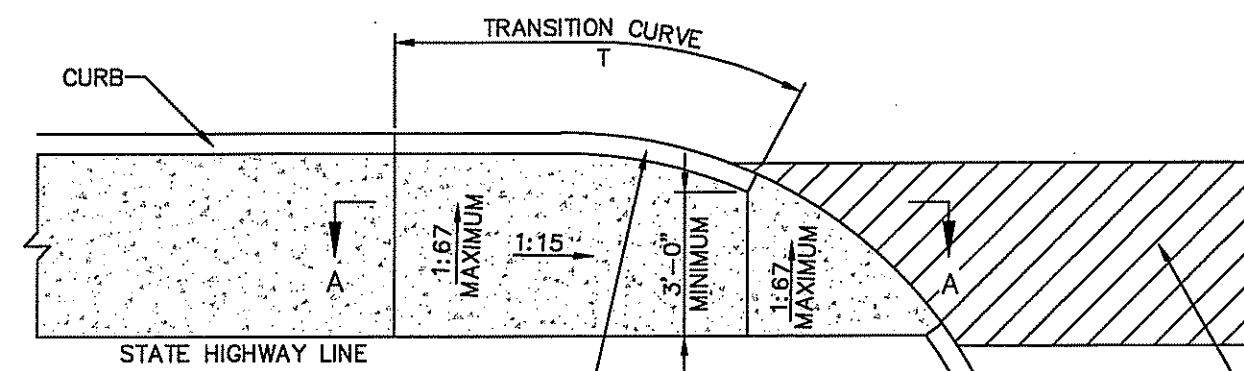
**H = 2'-0" TO 5'-0"**



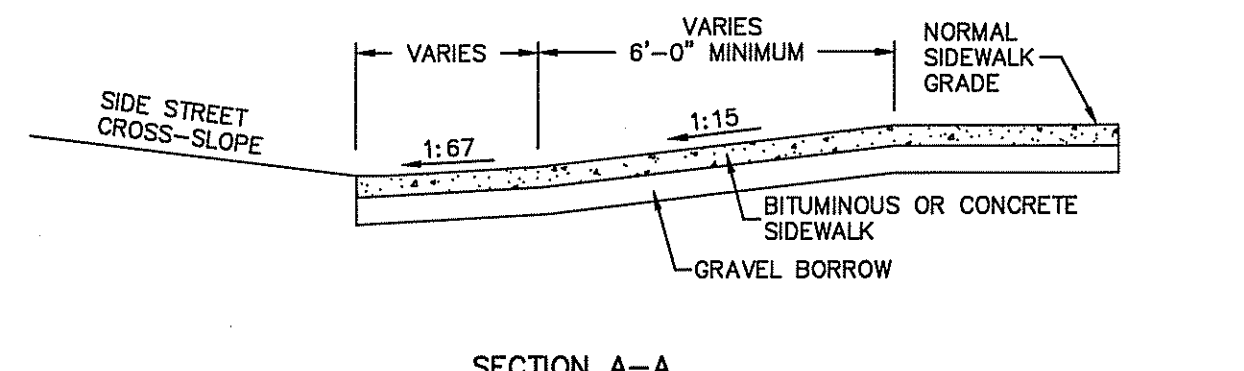
**H = 6'-0" TO 12'-0"**

- NOTES:**
- FINAL RETAINING WALL DESIGN TO BE DESIGN BY A STRUCTURAL AND/OR GEOTECHNICAL ENGINEER
  - SHALL BE IN ACCORDANCE WITH SECTION 808 OF THE R.I. STANDARD SPECIFICATIONS.
  - USE 1/2" PREFORMED JOINT FILLER AND BEVEL EXPOSED EDGES WITH CHAMFER.
  - SEAL BACKFACE WITH 1/4"x1/2" JOINT SEALANT.
  - SURFACE RUB EXPOSED FACE AND TOP.
  - ALL REINFORCING TO BE EPOXY COATED.
  - PROVIDE EXPANSION JOINTS EVERY 25'-0" IN STEMS.

**CONCRETE RETAINING WALL**  
NOT TO SCALE

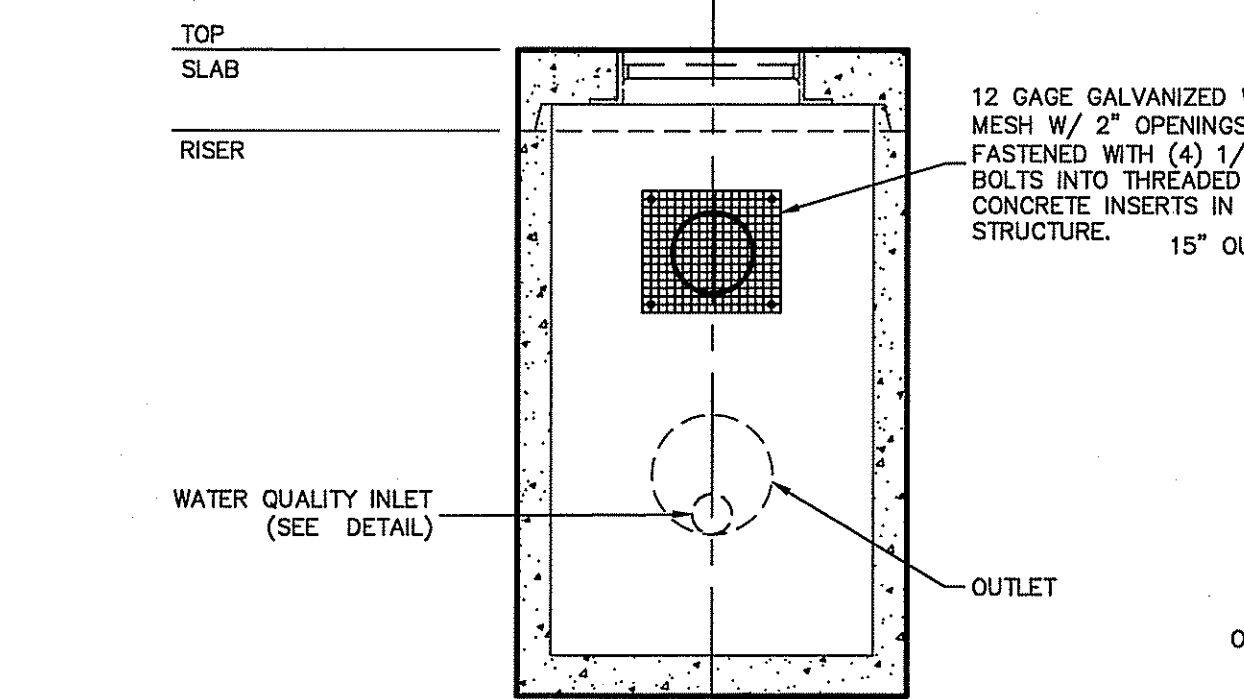
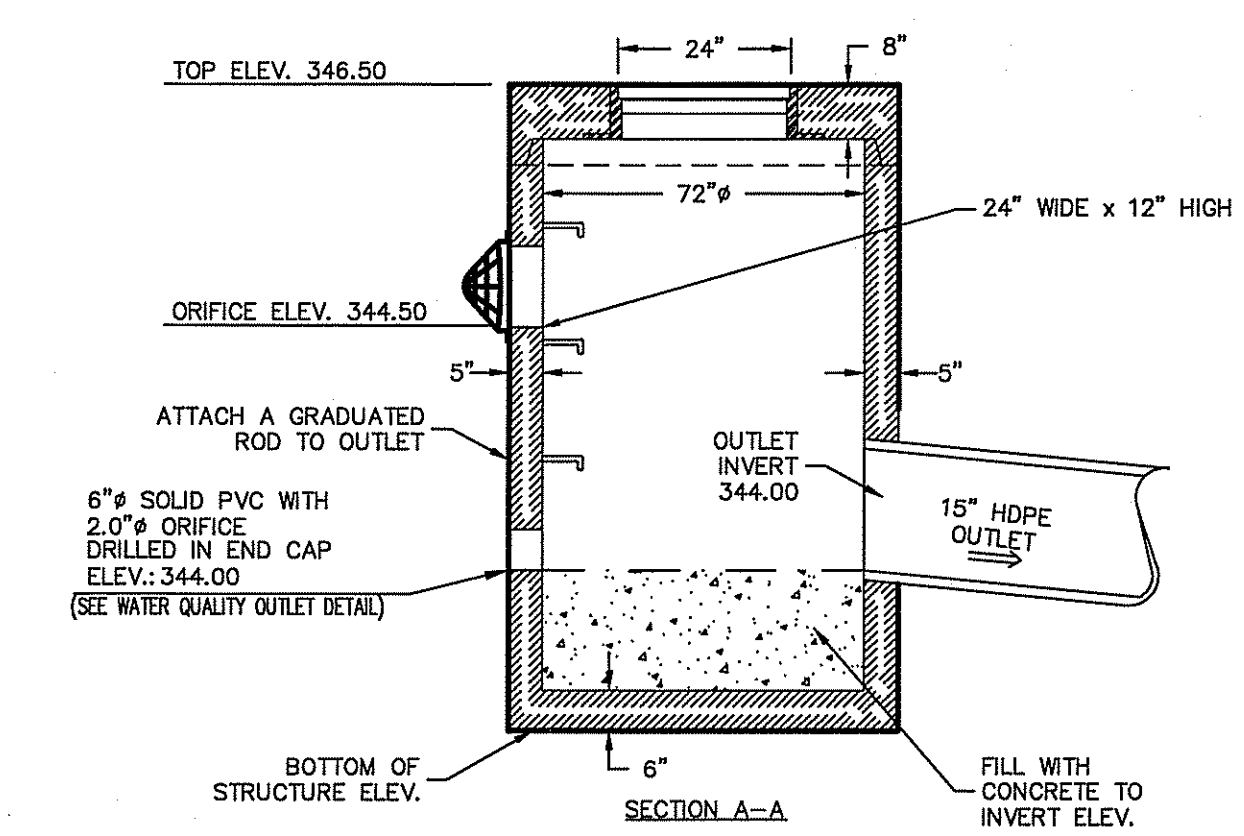


PROFILE GRADE	T
0.00	7.5
0.01	9.0
0.02	11.0
0.03	13.5
0.04	19.0
0.05	30.0

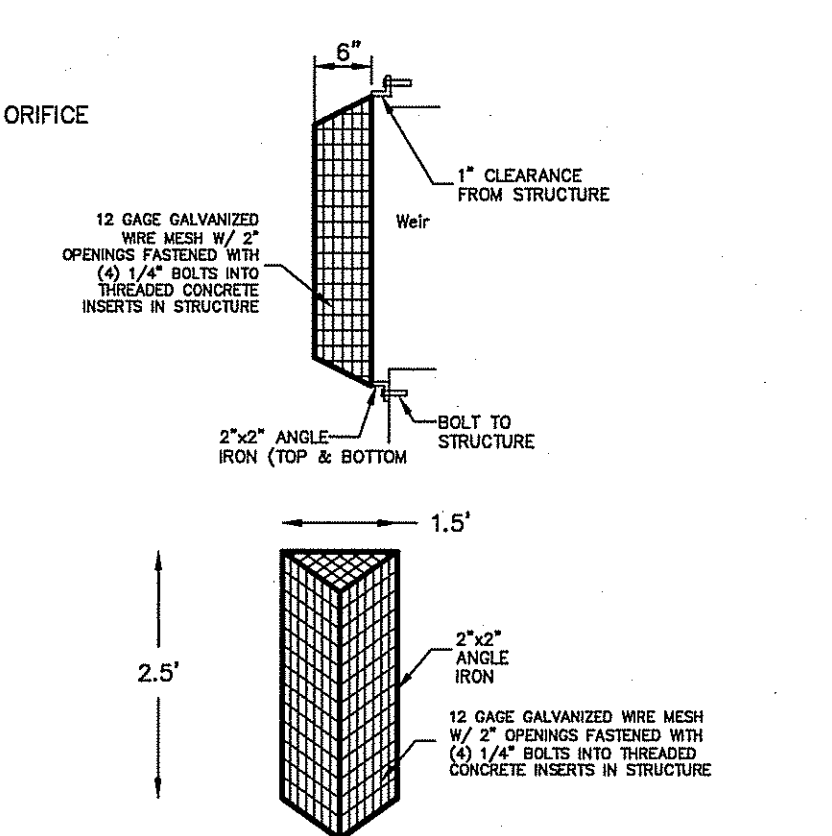


- NOTES:**
- SHALL BE IN ACCORDANCE WITH SECTION 904 OF THE R.I. STANDARD SPECIFICATIONS.
  - THIS DETAIL IS TO BE USED ONLY WHEN STATE RIGHT-OF-WAY IS LIMITED TO BACK OF SIDEWALK, AND SIDEWALK IS NARROW WITH NO PEDESTRIAN TRAFFIC FROM SIDE STREET.
  - WHEN ANY OBSTRUCTION LOCATED IN THE SIDEWALK FALLS WITHIN A CROSSWALK AREA, IF POSSIBLE, THE OBSTRUCTION WILL BE PLACED SUCH THAT IT FALLS OUTSIDE OF THE RAMP.
  - AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP TO BE LOCATED OUTSIDE OF THE CROSSWALK, AND IT IS TO BE CENTERED WHENEVER POSSIBLE.
  - DRAINAGE FACILITIES ARE TO BE LOCATED UP-GRADE OF ALL WHEELCHAIR RAMPS.
  - LOCATION OF WHEELCHAIR RAMPS IS AS SHOWN ON CONTRACT DRAWINGS.
  - ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER COST OF CURB.
  - THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
  - MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0" (GREATER LENGTHS PREFERRED).
  - AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-0" SHALL BE MAINTAINED.
  - MEETS OR EXCEEDS GUIDELINES OF RIDOT STANDARD DETAIL 43.3.1.

**Wheelchair Ramp For Limited Right-Of-Way Areas (ADA)**  
NOT TO SCALE



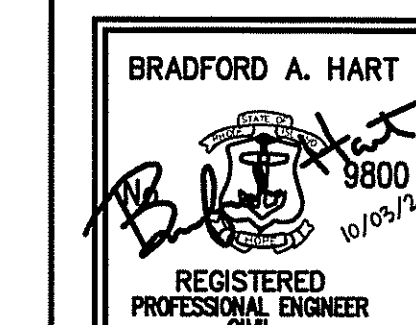
**POND 2 OUTLET STRUCTURE (OS-2)**  
NOT TO SCALE



**TRASH RACK DETAIL**  
N.T.S.

NOTE: WALL AND MANUFACTURER OR TYPE MAY BE SUBSTITUTED WITH APPROVAL BY PROFESSIONAL ENGINEER. SHOP DRAWINGS MUST BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED 'ISSUED FOR CONSTRUCTION' AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.  
THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.



**Detail Sheet - 2**

**Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant**

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**

Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831

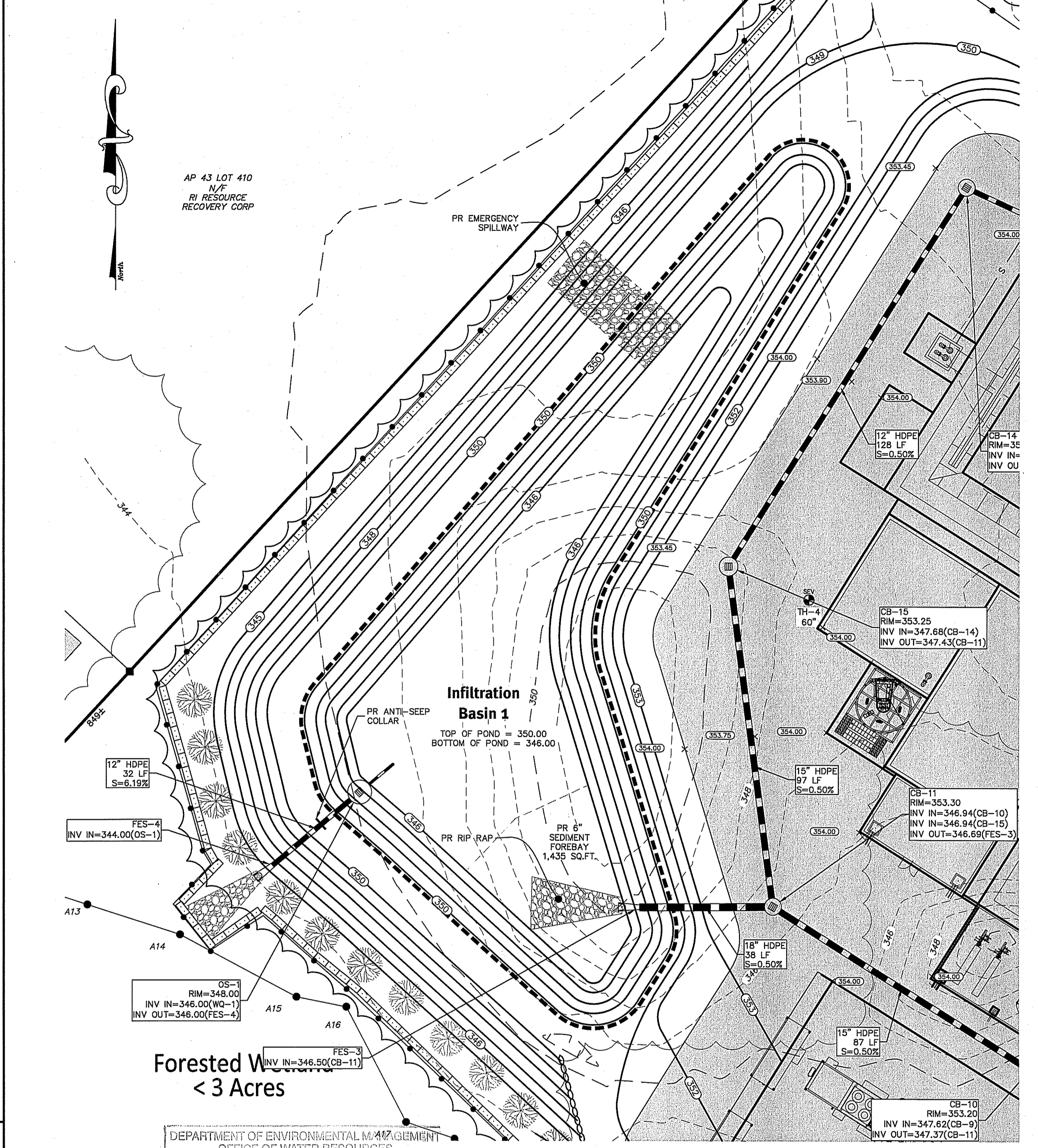
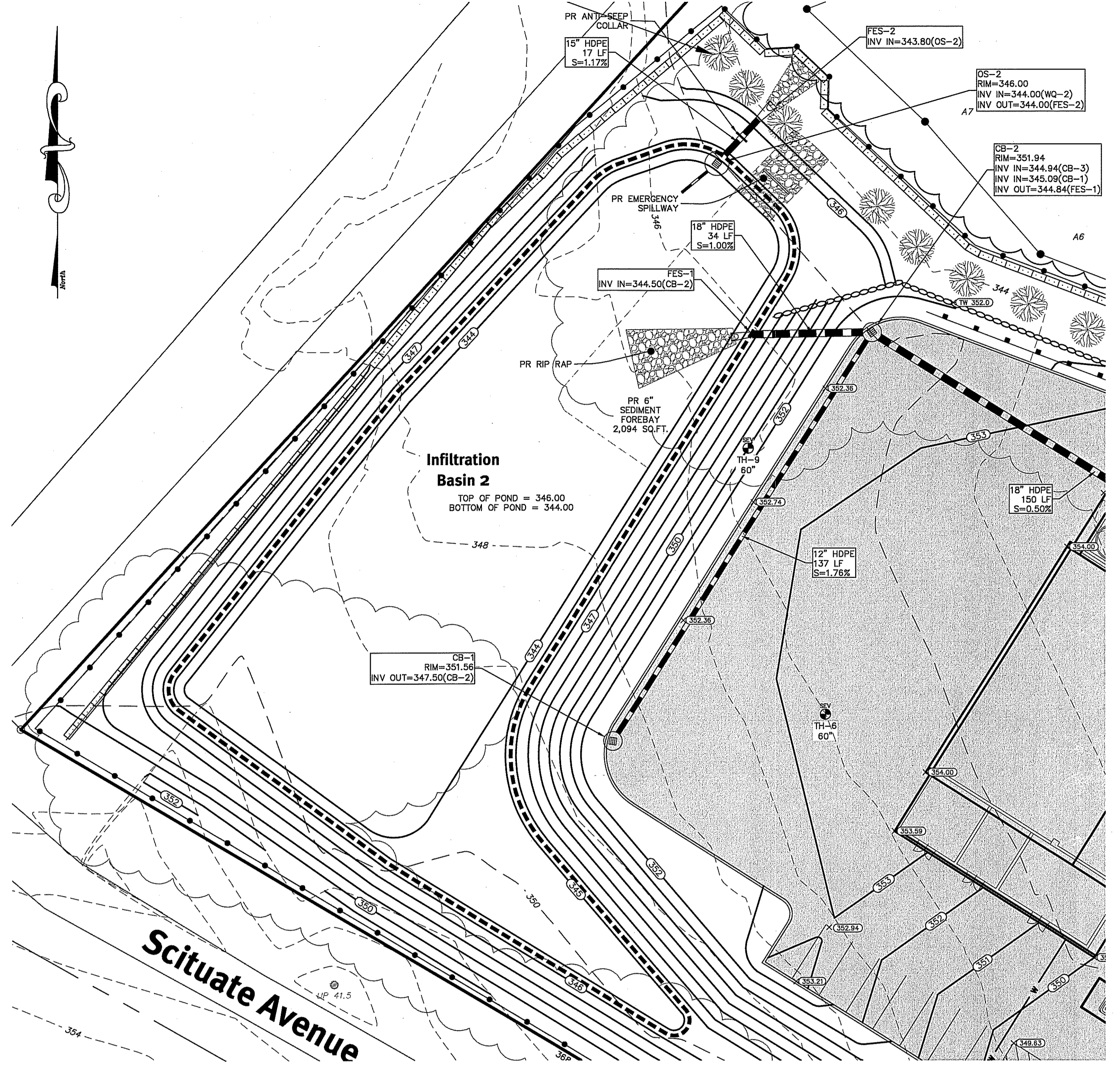
Applicant: **Orbit Energy Rhode Island, LLC**  
900 Ridgfield Drive, Suite 145 Raleigh, North Carolina 27609

Drawn By: J.A.R. Design By: B.A.H.

2 10/03/2014 RIDEM Permit Modification B.A.H.  
1 09/25/2014 Industrial Site Plan Review J.A.R.  
0 07/21/2014 Special Use Permit Submission J.A.R.

No. Date Description By:

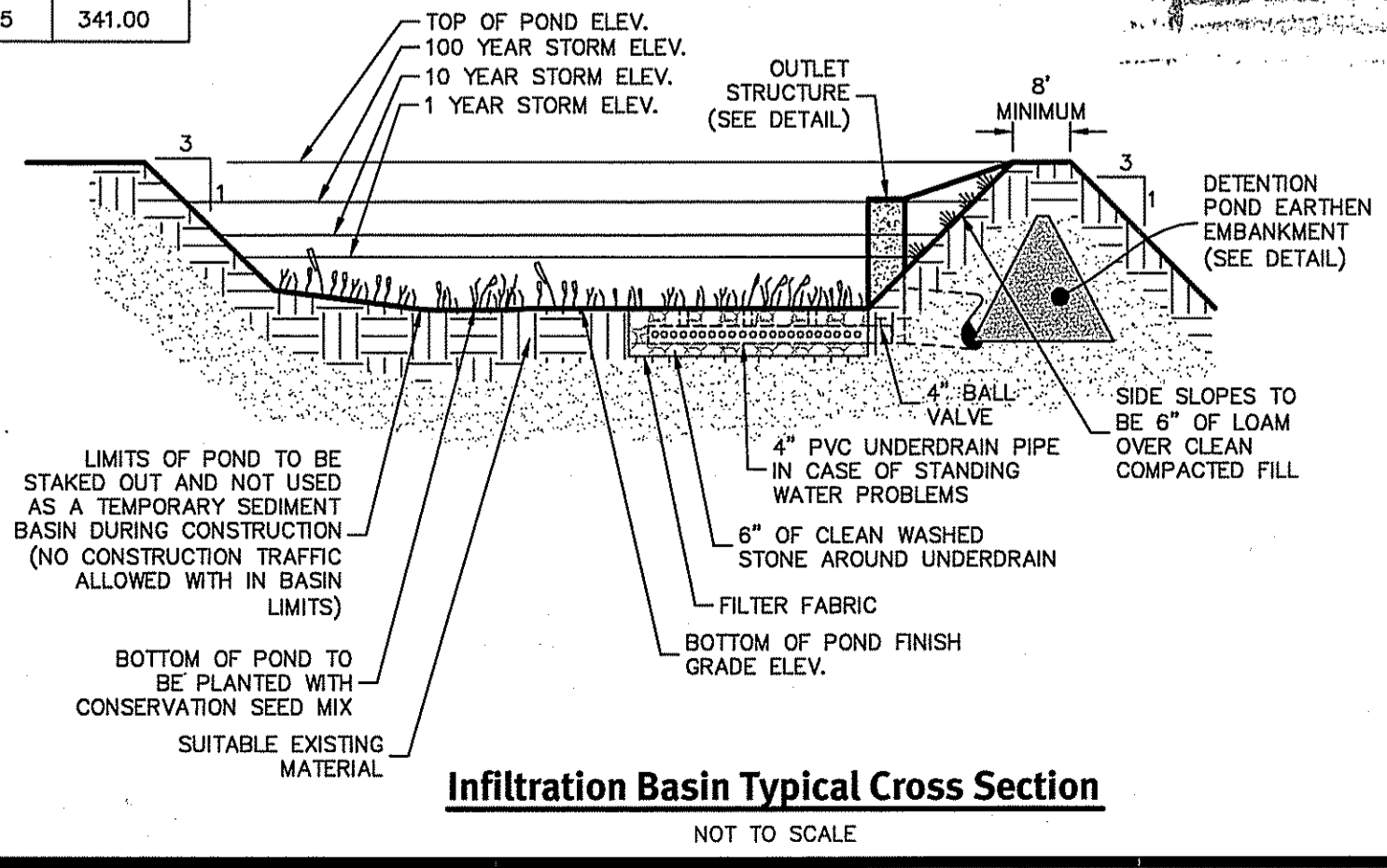
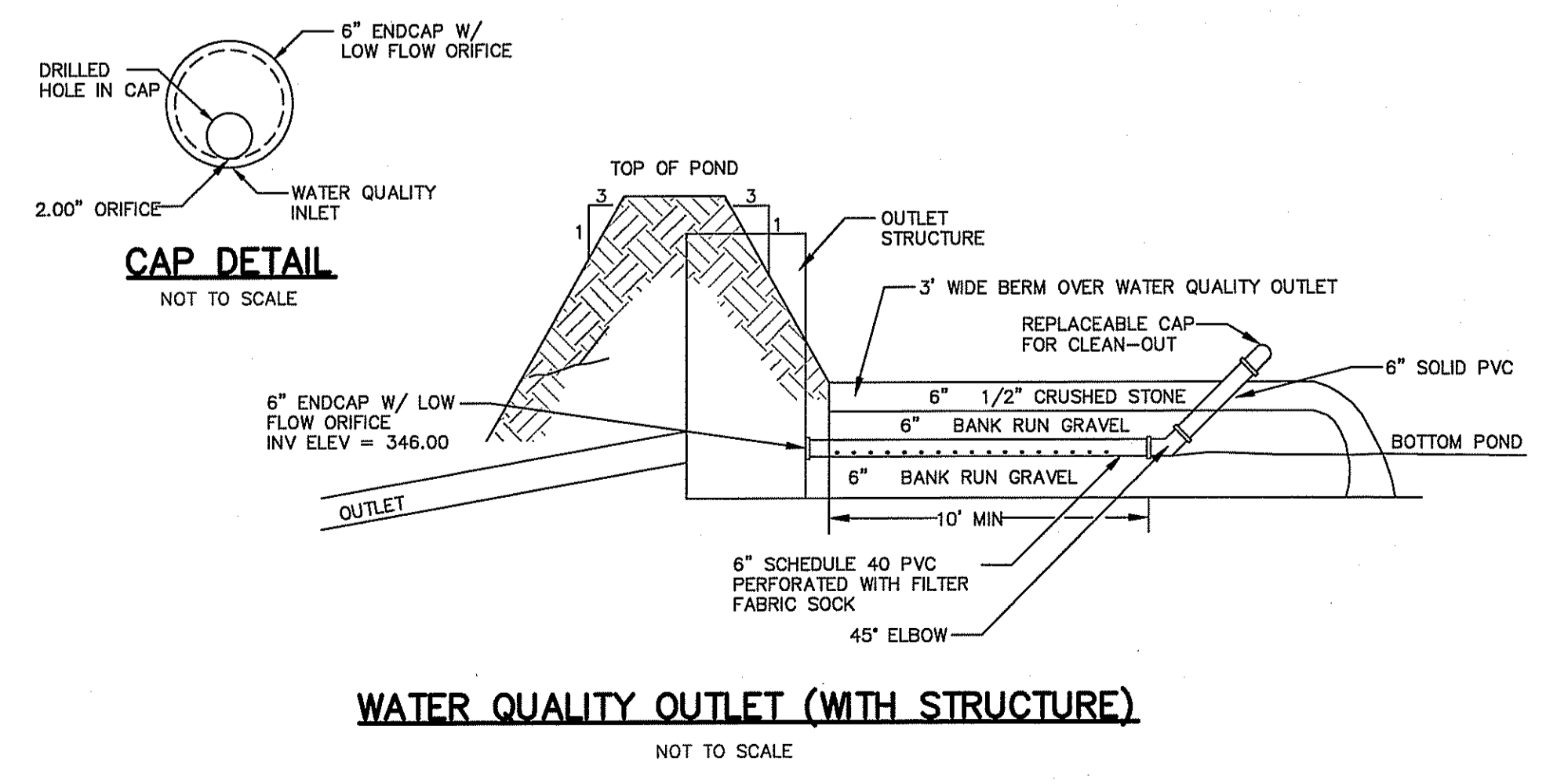
SHEET 7 OF 9



DESCRIPTION	POND 1	POND 2
TOP OF POND ELEVATION	350.00	346.00
BOTTOM OF POND	346.00	344.00
100 YEAR STORM ELEVATION	348.27	345.45
25 YEAR STORM ELEVATION	347.99	345.14
10 YEAR STORM ELEVATION	347.59	344.94
2 YEAR STORM ELEVATION	346.84	344.52
SEASONAL HIGH GWT ELEVATION	341.75	341.00

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED OCT 23 2014 FILE # 10-015  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.  
THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA COMPLIANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.



**BRADFORD A. HART**  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

10/09/2014  
9/5/2014  
8/21/2014

10/09/2014  
9/5/2014  
8/21/2014

10/09/2014  
9/5/2014  
8/21/2014

10/09/2014  
9/5/2014  
8/21/2014

**Detail Sheet - 3**

**Orbit Energy Rhode Island  
3.2 MW Bio-Gas Plant**

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**

Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831

Applicant: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
900 Ridgefield Drive, Suite 145 Raleigh, North Carolina 27609

Drawn By: J.A.R. Design By: B.A.H.

SHEET 8 OF 9

**5.0 SEQUENCE OF CONSTRUCTION AND STAGING OF LAND DISTURBING ACTIVITIES:**

- 5.1.1 CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL (SE & SC) ON-SITE. SEQUENCE OF CONSTRUCTION PROVIDED MAY BE MODIFIED AS FIELD CONDITIONS WARRANT WITH PRIOR APPROVAL FROM THE OWNER OR OWNER'S REPRESENTATIVE.
- 5.1.2 CONSTRUCTION TO BEGIN IN THE WINTER OF 2014 OR UPON RECEIPT OF ALL NECESSARY APPROVALS.
- 5.1.3 SURVEY AND STAKE PARKING AREAS, BUILDINGS, INFILTRATION BASINS, DRAINAGE LINES, AND LIMIT OF SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE.
- 5.1.4 PLACE SEDIMENTATION BARRIERS (HAY BALES OR SILT FENCE) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS. NO CONSTRUCTION TRAFFIC IS PERMITTED IN INFILTRATION AREAS.
- 5.1.5 BEGIN CLEARING AND GRUBBING IN AREA OF PARKING. TOPSOIL IS TO BE STRIPPED AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIERS OR COVERED OR TEMPORARILY SEEDED.
- 5.1.6 EXCAVATE AND GRADE THE PROPOSED INFILTRATION BASINS AND PARKING AND DRIVE AISLES. THE DRAINAGE BMP'S SHALL BE PERMANENTLY SEEDS FOLLOWING FINISH GRADING, EXCEPT FOR INFILTRATION BASINS.
- 5.1.7 INSTALL DRAIN PIPING, DRAINAGE MANHOLES AND CATCH BASINS BEGINNING AT THE INFILTRATION BASIN AND WORKING UP-GRADE. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. PLACE EROSION CONTROLS AT THE DISCHARGE POINTS AND SEED THE DISTURBED AREAS OUTSIDE OF THE AREA TO BE GRADED. THE INFILTRATION BASINS AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM RUNOFF UNTIL ALL UNSTABILIZED AREAS ARE STABILIZED WITH VEGETATION.
- 5.1.8 ONCE THE INSTALLATION OF THE DRAINAGE NETWORK IS COMPLETE, INSTALL THE UNDERGROUND UTILITIES SUCH AS SEWER, WATER, ELECTRIC, TELEPHONE, AND CABLE IN ACCORDANCE WITH THE APPROVED FINAL PLANS.
- 5.1.9 ROUGH GRADE THE PARKING IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH THE TOWN OF JOHNSTON, RHODE ISLAND, LAND DEVELOPMENT AND SUBDIVISION REGULATIONS.
- 5.1.10 PLACE BITUMINOUS ASPHALT BINDER PER SITE PLANS.
- 5.1.11 ONCE BITUMINOUS ASPHALT BINDER COURSE IS PLACED, CONSTRUCTION OF BUILDINGS MAY COMMENCE. CONSTRUCTION TO INCLUDE SURVEYING AND STAKING OF THE PROPOSED LIMIT OF CLEARING, INSTALLATION OF SEDIMENTATION BARRIERS, CLEARING AND GRUBBING FOR BUILDINGS, REMOVAL OF TOPSOIL, GRADING, EXCAVATION FOR FOUNDATION, PARKING LOT INSTALLATION AND LANDSCAPING.
- 5.1.12 SWEEP THE PARKING LOTS TO REMOVE ALL SEDIMENTS.
- 5.1.13 ONCE THE ENTIRE SITE IS STABILIZED THE INFILTRATION BASINS AND DRAINAGE NETWORK MAY BE BROUGHT ONLINE WITH THE APPROVAL OF THE DESIGN ENGINEER, AND THE TOWN OF JOHNSTON.
- 5.1.14 FINISH PERMANENT STABILIZATION. REPAIR DRAINAGE OUTLETS AND BASINS AS REQUIRED. TREE LIMBS, BRANCHES, BOULDERS, ETC. SHALL BE REMOVED FROM THE BOTTOM OF THE BASINS BEFORE THE APPLICATION OF TOPSOIL.
- 5.1.15 THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENTS IN THE INFILTRATION BASINS SHALL BE REMOVED.
- 5.1.16 REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS.

**6.0 EROSION AND SEDIMENTATION CONTROL MEASURES, PERMANENT STABILIZATION, AND MAINTENANCE:**

- THE SOIL EROSION, SEDIMENT, STABILIZATION, AND RUNOFF CONTROL WILL BE ACCOMPLISHED BY THE USE OF THE FOLLOWING PRACTICES DURING AND AFTER CONSTRUCTION:
- ESTABLISHMENT OF VEGETATIVE COVER
  - NON-STRUCTURAL MEASURES
  - STRUCTURAL MEASURES
  - MAINTENANCE: SHORT TERM/LONG TERM
- THE OVERALL RESPONSIBILITY FOR IMPLEMENTING THE EROSION AND SEDIMENTATION CONTROL MEASURES, STABILIZATION, AND MAINTENANCE IS AS FOLLOWS:
- CONTRACTOR IS RESPONSIBLE FOR ESTABLISHMENT OF VEGETATIVE COVER
  - CONTRACTOR IS RESPONSIBLE FOR NON-STRUCTURAL MEASURES
  - CONTRACTOR IS RESPONSIBLE FOR STRUCTURAL MEASURES
  - CONTRACTOR IS RESPONSIBLE FOR SHORT TERM MAINTENANCE (UNTIL APPROVAL BY THE ENGINEER AND ACCEPTANCE OF THE STORMWATER SYSTEM BY THE OWNER)
  - CONTRACTOR IS RESPONSIBLE FOR LONG TERM MAINTENANCE (UNTIL APPROVAL BY THE ENGINEER AND ACCEPTANCE OF THE STORMWATER SYSTEM BY THE OWNER)

**6.1 ESTABLISHMENT OF VEGETATIVE COVER**

- 6.1.1 SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON. THE CONTRACTOR SHALL INITIATE APPROPRIATE VEGETATIVE PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS.
- 6.1.2 ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED OR PROTECTED.
- 6.1.3 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 DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, M.18.01.
- 6.1.4 THE TEMPORARY SEEDING DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT
ANNUAL RYE GRASS	40
PERENNIAL RYE GRASS	60

THE NEW ENGLAND EROSION CONTROL/RESTORATION SEED MIX SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT
UPLAND BENTGRASS	1.0
CHEERING BENTGRASS	1.0
BIG BLUESTEM	8.0
NEW ENGLAND ASTER	1.0
FOX SEDGE	8.0
VIRGINIA WILD RYE	28.0
BONESET	1.0
GRASS LEAVED GOLDENROD	1.0
CREeping RED FESCUE	24.0
SOFT RUSH	0.5
SENSITIVE FERN	1.0
SWITCH GRASS	8.0
LITTLE BLUESTEM	15.0
GREEN BULLRUSH	1.0
WOOL GRASS	0.5
BLUE VERVAIN	1.0

THE GENERAL PURPOSE SEED MIX SHALL BE URI #2 AND COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT
CREeping RED FESCUE	40
IMPROVED PERENNIAL RYE GRASS	20
IMPROVED KENTUCKY BLUEGRASS	30
KENTUCKY BLUEGRASS	10

EARLY SPRING OR LATE SUMMER SEEDING IS RECOMMENDED. SEEDING SCHEDULE SHOULD CONFORM TO RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION, L02.03.1 SEEDING DATES. PERMANENT SEEDING SHALL BE DONE BETWEEN APRIL 1 TO MAY 31 OR AUGUST 15 TO OCTOBER 15. TEMPORARY SEEDING MAY BE DONE ANYTIME BETWEEN MARCH 15 AND NOVEMBER 15 WITH THE APPROVAL OF THE ENGINEER OF RECORD. SEEDING AT TIMES NOT DEFINED ABOVE SHALL ONLY BE ALLOWED WITH WRITTEN PERMISSION OF THE ENGINEER. FERTILIZE AS REQUIRED BY SOIL TESTING TO COMPLEMENT OR UPGRADE EXISTING CONDITIONS. THE SEED MIX SHALL BE INOCULATED WITHIN 24 HOURS AND BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULANTS FOR EACH VARIETY.

- 6.1.5 TEMPORARY TREATMENTS SHALL CONSIST OF HAY, STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING. TEMPORARY HAY MULCH TO BE TACKED IN PLACE WITH NYLON MESH NETTING, JUTE NETTING OR APPROVED EQUAL. SLOPES OF BASINS SHALL BE TREATED WITH NORTH AMERICAN GREEN EROSION CONTROL BLANKETS SUCH AS S150 OR APPROVED EQUAL. THE S150 SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER. HAY OR STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 2 TONS/ACRE.
- 6.1.6 ALL HAY BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED, AN ACCEPTABLE STAND OF GRASS OR GROUND COVER SHALL BE DEFINED AS A NON ERODIBLE SURFACE.
- 6.1.7 ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH THE TOWN OF JOHNSTON REQUIREMENTS AND THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE SECTION 202.
- 6.1.8 STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 2:1 AND SHALL BE TEMPORARILY SEEDED AND/OR STABILIZED.
- 6.1.9 ALL AREAS PROPOSED TO BE VEGETATED THAT ARE DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING FOLLOWING FINISH GRADING ACCORDING TO DATES LISTED ABOVE AND RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION L02.03.1. PERMANENTLY SEEDED AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH MULCH. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STANDARD IS MAINTAINED. WELL ESTABLISHED VEGETATION SHALL BE MAINTAINED. BARE OR ERODED AREAS SHALL BE IMMEDIATELY REPAIRED AND RESEEDED BY THE CONTRACTOR. ACTIVITIES SHALL BE CONFINED TO WITHIN THE LIMIT OF WORK AS SHOWN ON THE PLANS.
- 6.1.10 MAXIMUM PERMANENT GRADED SLOPE WITHIN THE SITE IS TO BE 3:1 UNLESS NOTED OTHERWISE.

- 6.1.11 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
- 6.1.12 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989 AS A GUIDE.

**6.2 NON-STRUCTURAL MEASURES**

- 6.2.1 CONSTRUCTION TRAFFIC SHALL BE LIMITED TO THE ACCESS ROAD, UTILITY EASEMENTS AND AREAS TO BE GRADED.
- 6.2.2 TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATIONS SHALL BE SUBJECT TO APPROVAL BY THE PROJECT ENGINEER. A SEDIMENT BARRIER SHALL SURROUND ALL TOPSOIL STOCKPILES.
- 6.2.3 ALL TYPES OF WASTE GENERATED AT THE SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH APPROVED LOCAL, STATE AND FEDERAL REGULATIONS. CONSTRUCTION DEBRIS SHALL BE DISPOSED OF DAILY TO AVOID EXPOSURE TO PRECIPITATION.
- 6.2.4 DUST CONTROL SHALL BE USED THROUGHOUT CONSTRUCTION. DUST CONTROL CAN BE ACCOMPLISHED THROUGH THE USE OF VEGETATIVE COVER AND SPRINKLING OF CONSTRUCTION ROADS.
- 6.2.5 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION OF NON-STRUCTURAL MEASURES AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- 6.2.6 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

**6.3 STRUCTURAL MEASURES**

- 6.3.1 RUNOFF WATER QUALITY IS IMPROVED BY UTILIZING INFILTRATION AREAS, PEASTONE DIAPHRAGMS, AND GRASS FILTER STRIPS. CONSTRUCTION OF THE INFILTRATION BASINS SHALL BE SUPERVISED BY THE PROJECT ENGINEER. THE BMP'S SHALL BE BUILT TO CONTROL RUNOFF FOR 2 THROUGH 100 YEAR STORM FREQUENCIES.
- 6.3.2 HAY BALES OR SILT FENCE SHALL BE INSTALLED DOWNSTREAM OUTSIDE THE LIMITS OF ANY PROPOSED CONSTRUCTION AS SHOWN ON THE SITE PLANS AND PRIOR TO THE COMMENCEMENT OF THE PROPOSED ALTERATION.
- 6.3.3 INLET PROTECTIONS SHALL BE USED AROUND CATCH BASIN GRATES. CONTRACTOR SHALL MAINTAIN INLET PROTECTION THROUGHOUT CONSTRUCTION. INLET PROTECTION SHOULD BE REMOVED ONCE THE CONTRIBUTING AREAS HAVE BEEN COMPLETELY STABILIZED.
- 6.3.4 SURFACE ROUGHENING SHALL BE USED AS A TEMPORARY MEASURE TO IMPROVE THE SUCCESS OF VEGETATION STABILIZATION, ENCOURAGE WATER INFILTRATION AND DECREASE RUNOFF VOLUME. THE SOIL SURFACE IS ROUGHENED BY THE CREATION OF HORIZONTAL GROOVES OR SLIGHT DEPRESSIONS (1-3" DEEP) PARALLEL TO THE SLOPE. CONTOUR ROUGHENING CAN BE USED WITH BOTH SEEDING AND PLANTING AND TEMPORARY MULCHING TO STABILIZE AN AREA.
- 6.3.5 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE THE OVERALL RESPONSIBILITY FOR STRUCTURAL MEASURE IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- 6.3.6 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

**6.4 MAINTENANCE: SHORT TERM / LONG TERM**

- 6.4.1 ALL HAY BALES/SILT FENCE, TEMPORARY TREATMENTS (HAY, STRAW, ETC.) AND TEMPORARY PROTECTION SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION. HAY BALES/SILT FENCE SHALL BE INSPECTED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH STORM EVENT OR EVERY 7 DAYS, WHICHEVER COMES FIRST. FOR UNDERMINING AND DEFACEMENT, INSPECTIONS SHALL OCCUR AT LEAST DAILY DURING PROLONGED STORM EVENTS. A STORM EVENT SHALL BE DEFINED AS 0.25 INCHES OF RAIN WITHIN A 24-HOUR PERIOD. THE HAY BALES/SILT FENCE SHALL BE REPAIRED OR REPLACED AS WARRANTED. THE CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE HAY BALES/SILT FENCE BECOMES FILLED IN WITH SEDIMENT. THE HAY BALES/SILT FENCE SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED. FOLLOWING CONFIRMATION FROM THE OWNER AND/OR THE ENGINEER OF RECORD THAT AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER HAS BEEN ESTABLISHED THE HAY BALES/SILT FENCE SHALL BE REMOVED.
- 6.4.2 THE CONTRACTOR SHALL MAINTAIN ALL TOPSOIL STOCKPILES AND SEDIMENT BARRIERS THROUGHOUT CONSTRUCTION. EXTREME CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT SPILL OVER THE SEDIMENT BARRIER. HAY BALES OR SILT FENCE SHALL BE STAKED AROUND THE STOCKPILES.
- 6.4.3 ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED, PROTECTED, AND MAINTAINED BY THE CONTRACTOR FOLLOWING FINAL GRADING AND CONSTRUCTION. THE CONTRACTOR SHALL CHECK ALL SEEDED AREAS REGULARLY TO SEE THAT A GOOD STAND OF VEGETATION IS MAINTAINED. THE CONTRACTOR MUST REPAIR OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
- 6.4.4 THE CONSTRUCTION SUPERINTENDENT IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF THE STORMWATER MANAGEMENT SYSTEM UNTIL COMPLETION OF CONSTRUCTION AND UNTIL ACCEPTANCE BY THE ENGINEER AND THE OWNER. THE OWNER/CONSTRUCTION SUPERINTENDENT IS RESPONSIBLE FOR ALL EXISTING AND PROPOSED DRAINAGE INFRASTRUCTURE LOCATED ON-SITE.

- 6.4.5 DURING CONSTRUCTION THE CONSTRUCTION SUPERINTENDENT'S MAINTENANCE/INSPECTION RESPONSIBILITIES SHALL INCLUDE:
  - RESEEDING ANY UN-STABILIZED AREAS AT NO ADDITIONAL EXPENSE TO THE OWNER;
  - REMOVING ACCUMULATED SILT WHEN SEDIMENTS IN THE BMP'S REACH THE HEIGHT SPECIFIED IN THE SEDIMENT VOLUME CALCULATIONS;
  - INSPECTION OF RIP RAP PADS AFTER EACH STORM AND REPAIR AS NECESSARY;
  - INSPECTION, MAINTENANCE AND REPAIR TO THE DRAINAGE NETWORK INCLUDING STRUCTURES AND RELATED APPURTENANCES. ACCUMULATED SEDIMENTS IN ALL STRUCTURES SHALL BE REMOVED AND DRAINAGE PIPES FLUSHED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION;
  - NEIGHBORING CATCH BASIN SUMPS SHALL BE CHECKED WEEKLY AND SEDIMENTS SHALL BE REMOVED IF THEY EXCEED 6" DEPTH;
  - CHECK BMP'S FOR STANDING WATER OR OTHER EVIDENCE OF CLOGGING;
  - CHECK FOR SEDIMENT ACCUMULATION, TRASH, AND DEBRIS;
  - CHECK FOR BLOCKAGES, STRUCTURAL INTEGRITY, AND EVIDENCE OF EROSION AT INLETS, OUTLETS, AND OVERFLOW SPILLWAYS;
  - CHECK FOR RAPID RELEASE OF STORM WATER

- 6.4.5 FOLLOWING ACCEPTANCE BY THE ENGINEER AND THE OWNER, THE OWNER IS RESPONSIBLE FOR INSPECTIONS, MAINTENANCE, AND IMPLEMENTING THE MAINTENANCE PROGRAM FOR ALL EXISTING AND PROPOSED DRAINAGE INFRASTRUCTURE LOCATED ON-SITE. A LEGALLY BINDING AND ENFORCEABLE MAINTENANCE AGREEMENT SHALL BE EXECUTED BETWEEN THE OWNER AND THE RESPONSIBLE AUTHORITY TO ENSURE THE MAINTENANCE SCHEDULES OUTLINED IN THIS REPORT ARE FOLLOWED.

THE RESPONSIBLE PARTY AND FUNDING SOURCE FOR THE STORMWATER MANAGEMENT PROGRAM WILL BE ORBIT ENERGY OF RHODE ISLAND:

ORBIT ENERGY OF RHODE ISLAND  
900 RIDGEFIELD DRIVE, SUITE 145  
RALEIGH, NORTH CAROLINA 27608

THE RESPONSIBLE PARTY MAINTENANCE/INSPECTION RESPONSIBILITIES SHALL INCLUDE:

**INFILTRATION BASIN MAINTENANCE PROCEDURE:**

- DURING THE FIRST SIX MONTHS FOLLOWING CONSTRUCTION INFILTRATION FACILITIES SHOULD BE INSPECTED AT LEAST TWICE OR MORE FOLLOWING PRECIPITATION EVENTS OF AT LEAST 1.0 INCH TO ENSURE THAT THE SYSTEM IS FUNCTIONING PROPERLY. THEREAFTER, INSPECTIONS SHOULD BE CONDUCTED ON AN ANNUAL BASIS AND AFTER STORM EVENTS OF GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR TYPE III PRECIPITATION EVENT.
- ANNUAL INSPECTION OF SEDIMENT IN THE BOTTOM OF THE INFILTRATION BASIN OR WHEN DEPTH IS GREATER THAN 1.0 INCHES, WHICHEVER COMES FIRST.
- ANNUAL INSPECTION OF INFLOW PIPES CLEAR OF DEBRIS.
- ANNUAL INSPECTION OF OVERFLOW SPILLWAY CLEAR OF DEBRIS.
- ANNUAL INSPECTION OF INLET AREA CLEAR OF DEBRIS.
- SEMI-ANNUAL MOVING OF INFILTRATION PODS.
- CHECKING OF STRUCTURAL INTEGRITY AND EVIDENCE OF EROSION AT INLETS AND OUTLETS.
- SEASONALLY PLANTS NEED TO BE WATERED, MULCH ADDED TO VOID AREAS, TREATING OF DISEASED TREES AND SHRUBS, INSPECTION OF SOIL AND REPAIR ERODED AREAS AND REMOVAL OF LITTER AND DEBRIS.
- IF SOIL OF VEGETATION COVERAGE IS NOT ESTABLISHED AFTER 2 YEARS REINFORCEMENT PLANTING IS REQUIRED.
- IF THERE IS STANDING WATER IN INFILTRATION AREAS 48 HOURS AFTER A STORM EVENT FAILURE HAS OCCURRED AND THE SURFACE OF THE INFILTRATION AREA MUST BE ROTOTILLED OR CULTIVATED TO BREAK UP ANY HARD PACKED SEDIMENT AND REVEGETATED.

**PEA STONE DIAPHRAGM MAINTENANCE:**

- MONTHLY INSPECT FOR TRASH AND DEBRIS AND REMOVE IF PRESENT.
- MONTHLY INSPECT FOR EVIDENCE OF CHANNELIZED FLOWS, EROSION AND CHANNELS MUST BE CORRECTED IMMEDIATELY BY RE-ESTABLISHING ORIGINAL GRADE BY RAKING EXISTING STONE OR APPLYING NEW STONE AS NECESSARY.
- SEMI-ANNUALLY INSPECT FOR EXCESSIVE SEDIMENTS AND REMOVE SEDIMENTS IF PRESENT. IF SEDIMENT SOURCE IS OBSERVED, ELIMINATE SOURCE.
- EVERY 5 YEARS, REMOVE AND WASH PEA STONE OR REPLACE WITH NEW PEA STONE.

**GRASS FILTER STRIP MAINTENANCE:**

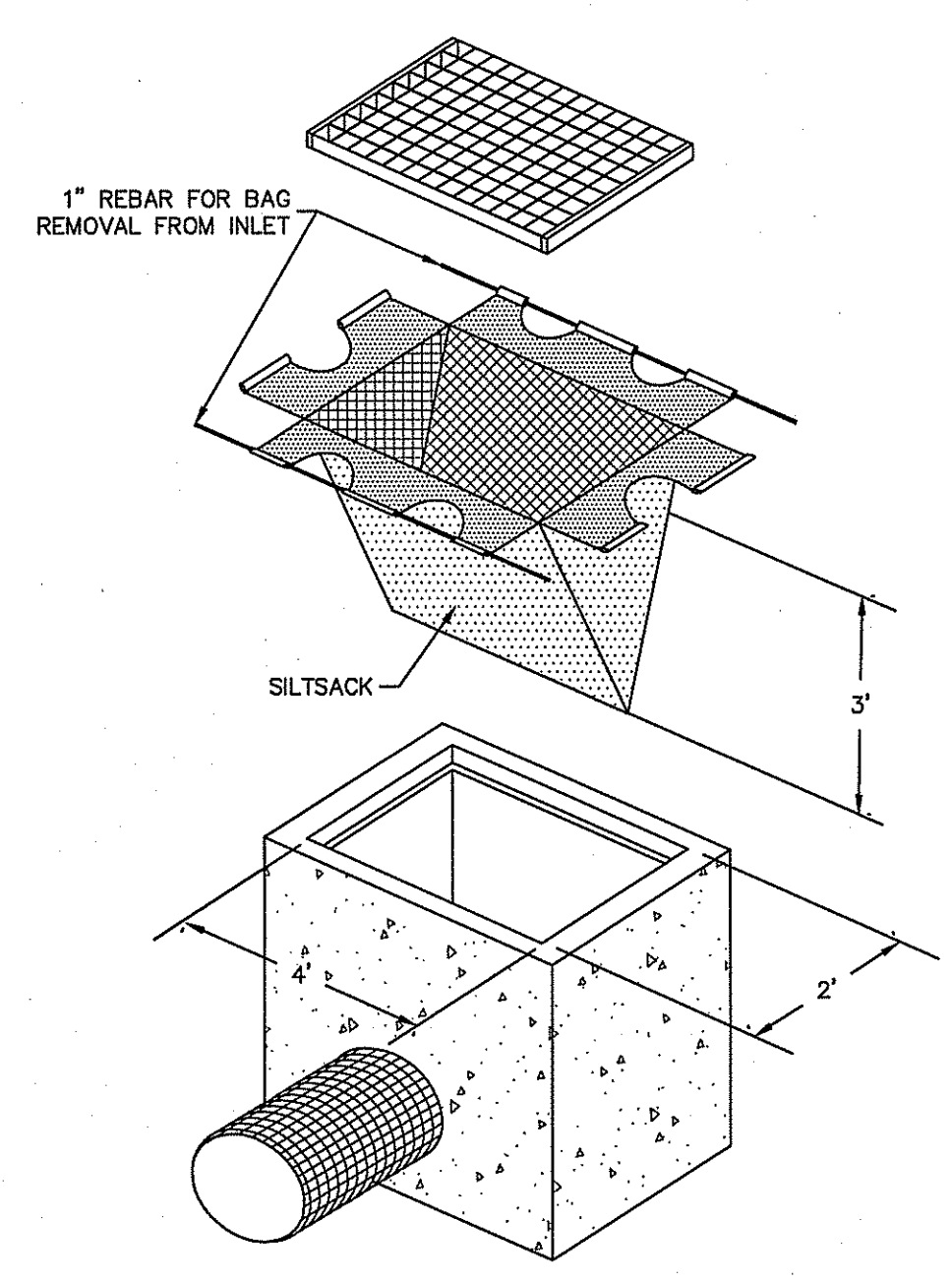
- SEMI-ANNUALLY INSPECT EROSION AND REPAIR IF OBSERVED.
- MOW GRASS AS APPLICABLE TO MAINTAIN A HEIGHT OF 4"-6". WHEN MOWING REMOVE ANY TRASH AND DEBRIS PRESENT.

**DRAINAGE STRUCTURES (CATCH BASINS, DRAINAGE MANHOLES, OUTLET STRUCTURES) MAINTENANCE:**

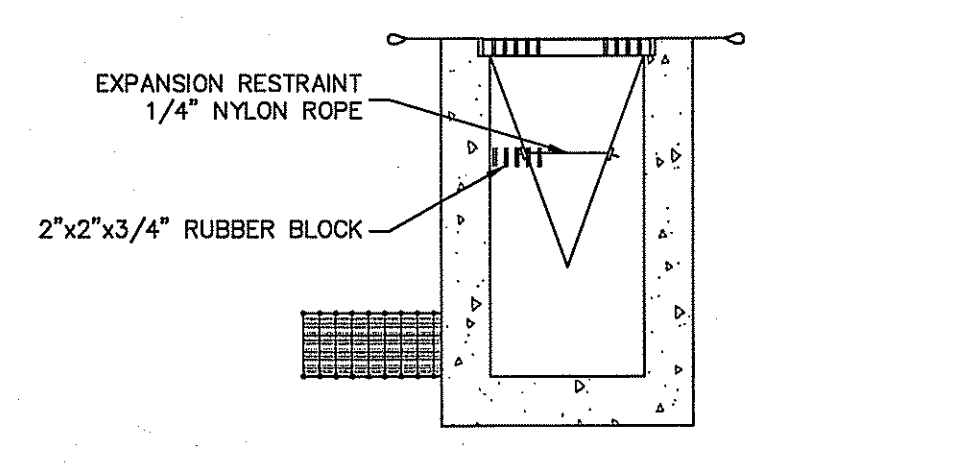
- SEMI-ANNUALLY INSPECT DRAINAGE STRUCTURES FOR DAMAGE.
- ANNUALLY USE A VACUUM TRUCK TO CLEAN OUT ANY SEDIMENT OR DEBRIS PRESENT IN ANY DRAINAGE STRUCTURE OR WHENEVER SEDIMENTS REACH 3" OF THE SUMP DEPTH, WHICHEVER COMES FIRST.

**STREET SWEEPING:**

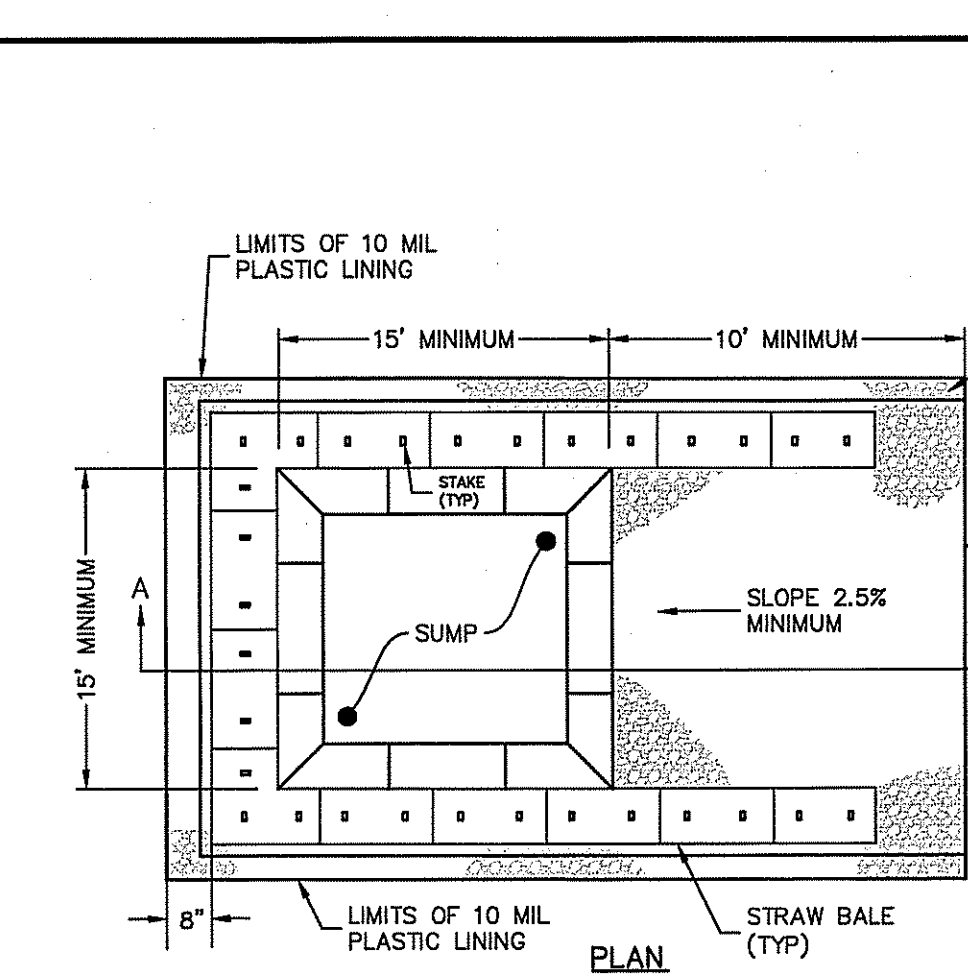
- VACUUM SWEEP ALL ROADWAYS FOUR TIMES PER YEAR. ONE OF THESE SWEEPINGS MUST OCCUR FOLLOWING WINTER SANDING OPERATIONS HAVE CONCLUDED.



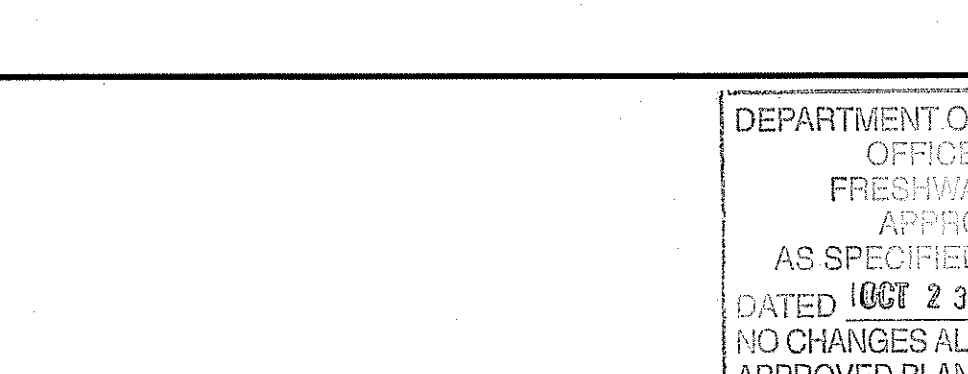
**Silt Sack Detail**  
NOT TO SCALE



**BALED HAY EROSION CHECK**  
NOT TO SCALE



**Concrete Washout Area**  
(NOT TO SCALE)



**ALTERNATE SECTION**  
USE WHERE MORE THAN ONE ACCESSIBLE SIDE IS NEEDED

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED OCT 23 2014 FILE # 10-015  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

BRADFORD A. HART  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

THE REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA COMPLIANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.

Detail Sheet - 4

**Orbit Energy Rhode Island 3.2 MW Bio-Gas Plant**

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**

Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**  
24 Armand Way Hope, RI 02831  
900 Ridgefield Drive, Suite 145 Raleigh, North Carolina 27609

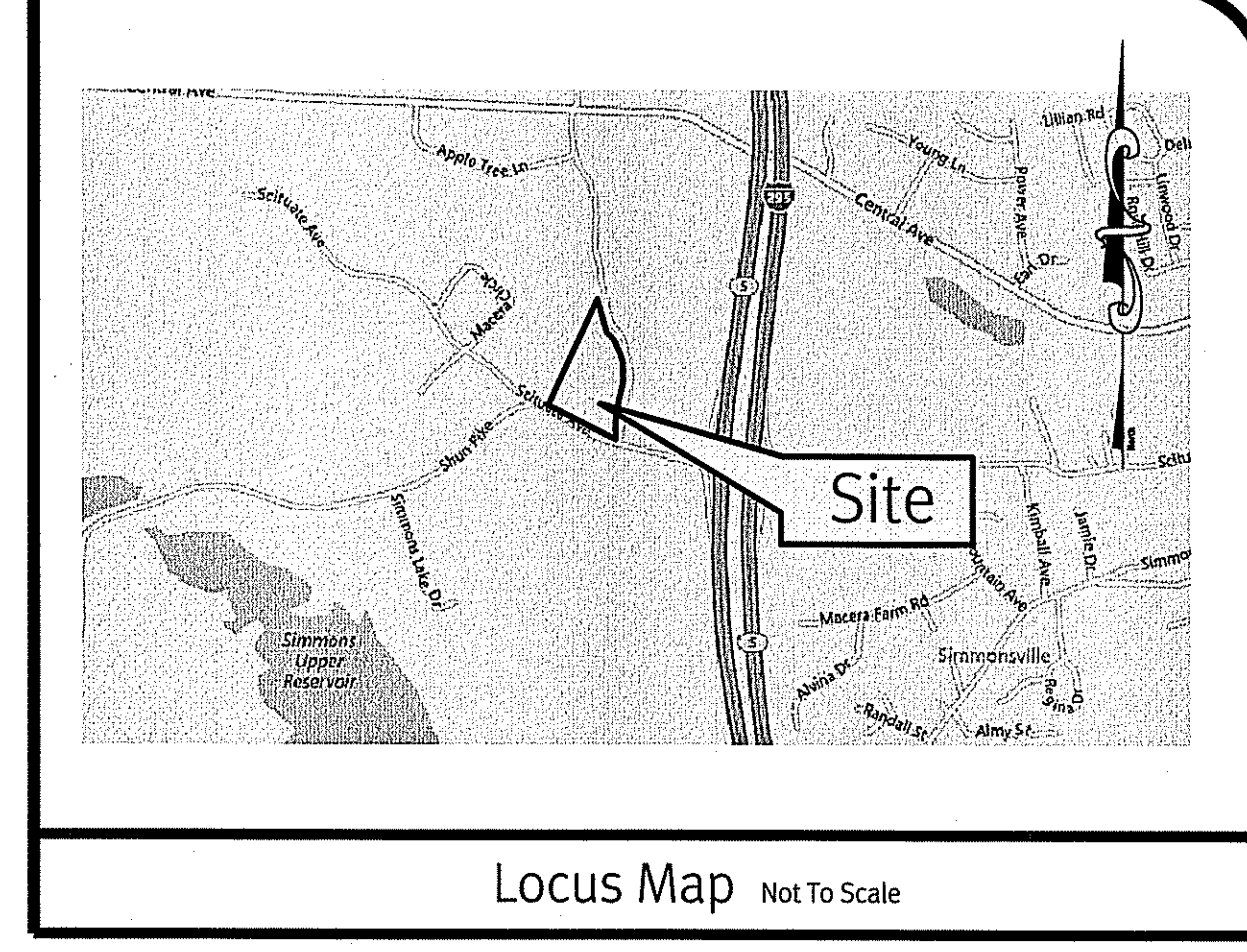
Applicant: **Shelby Realty Inc. Orbit Energy Rhode Island, LLC**

Drawn By: J.A.R. Design By: B.A.H.

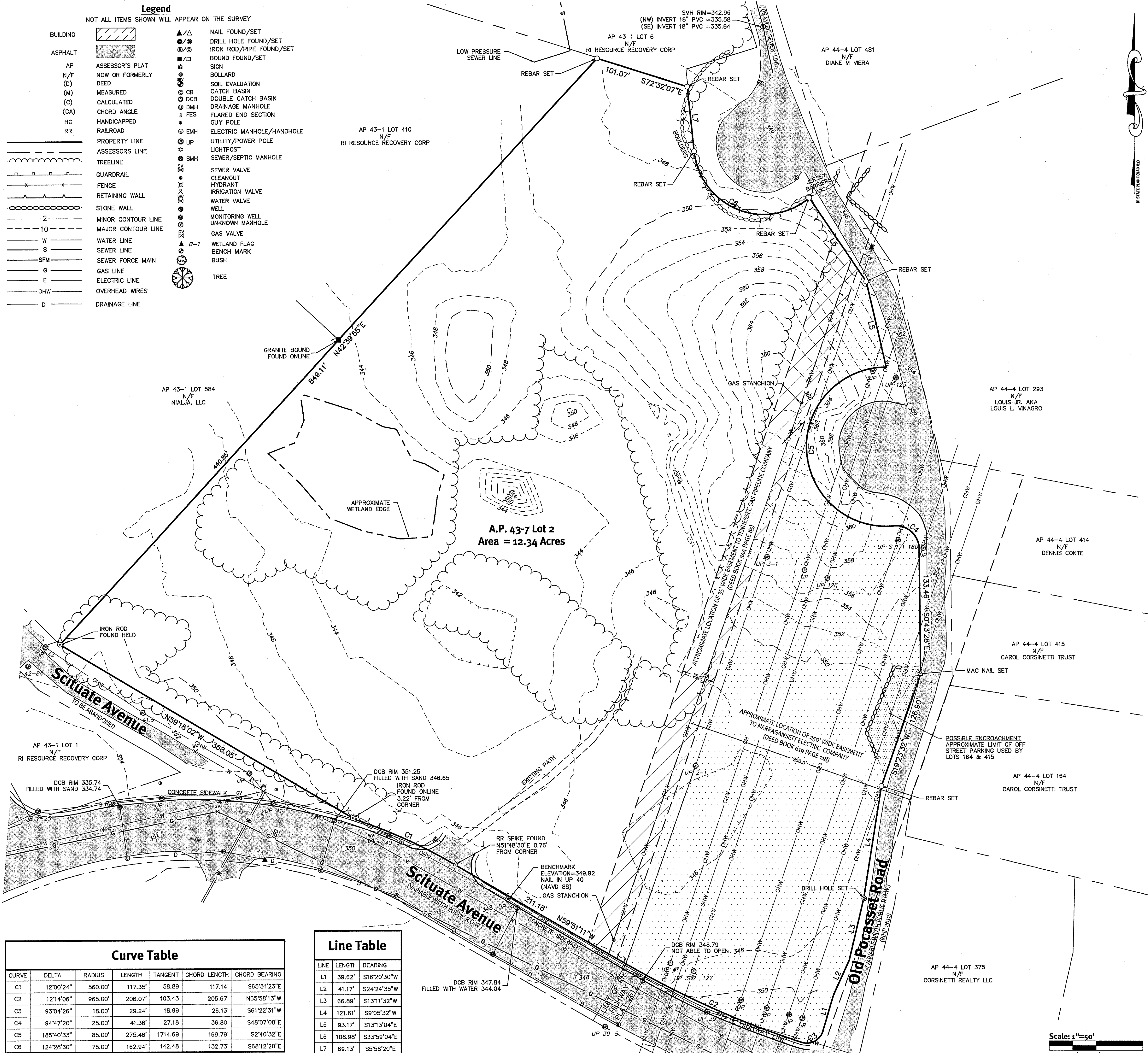
No.	Date	Description	By:
1	10/03/2014	RIDEM Permit Modification	B.A.H.
2	9/23/2014	Indirect Plan Review	J.A.R.
3	8/21/2014	Special Use Permit Submission	J.A.R.

Printed on 70% recycled paper. Please consider the environment and recycle.

- Legend**  
NOT ALL ITEMS SHOWN WILL APPEAR ON THE SURVEY
- |          |                    |     |                           |
|----------|--------------------|-----|---------------------------|
| BUILDING |                    | ▲/△ | NAIL FOUND/SET            |
| ASPHALT  |                    | ●/○ | IRON ROD/PIPE FOUND/SET   |
| AP       | ASSESSOR'S PLAT    | ■/□ | BOUND FOUND/SET           |
| N/F      | NOW OR FORMERLY    | ⊙   | SIGN                      |
| (D)      | DEED               | ⊙   | BOLLARD                   |
| (M)      | MEASURED           | ⊙   | SOIL EVALUATION           |
| (C)      | CALCULATED         | ⊙   | CATCH BASIN               |
| (CA)     | CHORD ANGLE        | ⊙   | DOUBLE CATCH BASIN        |
| HC       | HANDICAPPED        | ⊙   | DRAINAGE MANHOLE          |
| RR       | RAILROAD           | ⊙   | FLARED END SECTION        |
|          | PROPERTY LINE      | ⊙   | GUY POLE                  |
|          | ASSESSORS LINE     | ⊙   | ELECTRIC MANHOLE/HANDHOLE |
|          | TREELINE           | ⊙   | UTILITY/POWER POLE        |
|          | GUARDRAIL          | ⊙   | LIGHTPOST                 |
|          | FENCE              | ⊙   | SEWER/SEPTIC MANHOLE      |
|          | RETAINING WALL     | ⊙   | SEWER VALVE               |
|          | STONE WALL         | ⊙   | CLEANOUT                  |
|          | MINOR CONTOUR LINE | ⊙   | HYDRANT                   |
|          | MAJOR CONTOUR LINE | ⊙   | IRRIGATION VALVE          |
|          | W                  | ⊙   | WATER VALVE               |
|          | S                  | ⊙   | WELL                      |
|          | SFM                | ⊙   | MONITORING WELL           |
|          | G                  | ⊙   | UNKNOWN MANHOLE           |
|          | E                  | ⊙   | GAS VALVE                 |
|          | OHW                | ⊙   | WETLAND FLAG              |
|          | D                  | ⊙   | BENCH MARK                |
|          |                    | ⊙   | BUSH                      |
|          |                    | ⊙   | TREE                      |



- General Notes**
- THE PARCEL IS FOUND ON ASSESSOR'S PLAT 43-7, LOT 2 IN THE TOWN OF JOHNSTON, PROVIDENCE COUNTY, RHODE ISLAND.
  - THE OWNER PER DEED BOOK 1821, PAGE 243 IS SHELBY REALTY, INC.
  - THE PARCEL IS LOCATED IN ZONE X PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP 440700292G, DATED MARCH 2, 2009.
  - THERE WERE NO CEMETERIES, GRAVE SITES AND OR BURIAL GROUNDS OBSERVED WITHIN THE LIMITS OF THE SURVEY.
  - FIELD SURVEY PERFORMED BY DIPRETE ENGINEERING IN 2009 & 2010 AND UPDATED ON AUGUST 26, 2014. THIS PLAN REFLECTS ON THE GROUND CONDITIONS AS OF THAT DATE.
  - ALL UNDERGROUND UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY OBSERVATIONS ONLY TOGETHER WITH EXISTING PLANS BY OTHERS. DIPRETE ENGINEERING IS NOT RESPONSIBLE FOR MISSING UNDERGROUND UTILITIES, EITHER IN SERVICE OR ABANDONED, NOT OBSERVED AT THE TIME OF THE SURVEY. (PLEASE CONTACT DIGSAFE 72 WORKING HOURS PRIOR TO ANY CONSTRUCTION AT 1-888-344-7233).
  - THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT. DIPRETE ENGINEERING IS NOT RESPONSIBLE FOR ANY UNKNOWN OR UNRECORDED EASEMENTS, DEEDS OR CLAIMS THAT A TITLE REPORT WOULD DISCLOSE.
  - THERE WERE NO EXTRAORDINARY/UNUSUAL NATURAL FEATURES OBSERVED ONSITE.
- Datum Note:**
- ELEVATIONS SHOWN HEREON, IN U.S. SURVEY FEET, ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), AS DETERMINED BY DIPRETE ENGINEERING USING REAL TIME KINEMATIC G.P.S. OBSERVATIONS.
- Plan References:**
- STATE OF TRANSPORTATION PLANS, PROFILES AND SECTIONS OF PROPOSED FREEWAY CONSTRUCTION INTERSTATE ROUTE 295 AND SCITUATE AVENUE INTERCHANGE, TOWN OF JOHNSTON COUNTY OF PROVIDENCE, RHODE ISLAND CONTRACT NO. 2002-GH-049 FEDERAL AID PROJECT NO. RRC-2850(001) VOLUME 1 OF 11, SHEETS 16-19 OF 265. PLANS BY CROSSMAN ENGINEERING, INC. SIGNED MAY 17, 2002.
  - STATE OF RHODE ISLAND FIELD BOOK 3836 FOR RTE 295 SCITUATE AVE DATED 10-17-02.
  - TOWN OF JOHNSTON ORDINANCE 2005-2 DATED FEBRUARY, 8 2005.
  - "SCITUATE AVENUE ABANDONMENT PLAN" PLAN BY CROSSMAN ENGINEERING, INC. SCALE 1"=180' DATED OCTOBER, 2003. SHEETS 1-4 OF 4. UNRECORDED.
  - STREET LAYOUT SHOWING LAND IN THE TOWN OF JOHNSTON, RHODE ISLAND TAKEN FOR TOWN LAYOUT PURPOSES STREET LAYOUT, RECONSTRUCTION OF SHUN PIKE AND SCITUATE AVENUE, SHEETS 1-12 OF 12. PLAN BY MICHAEL J. PAOLINO DATED 8-18-08.
  - "PLAT OF LAND IN JOHNSTON RI FOR RALPH MACERA LIMITED 'MACERA TERRACE' ASSESSORS PLAT 43/1 LOT 384" PLAN BY ANTHONY MUSCATELLI AND ASSOCIATES, INC. RECORDED OCTOBER 28, 1983/ PLAT CARD 242.
  - RHODE ISLAND HIGHWAY PLAT 2612 SHEETS 1-12 OF 12 RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
  - ADMINISTRATIVE SUBDIVISION AP 43-2 LOTS 263, 273, 409, 410, 411, 584, & 585. SCITUATE AVENUE/MACERA CIRCLE RHODE ISLAND SOLID WASTE MANAGEMENT CORPORATION, JOHNSTON, RHODE ISLAND PREPARED FOR: RHODE ISLAND RESOURCE RECOVERY CORPORATION. PLAN BY GAROFALO AND ASSOCIATES, INC. SCALE 1"=40' DATED NOVEMBER 13, 2001. PLAT BOOK 3 PAGE 125.
- Zoning Notes**
- THE PARCEL IS ZONED I PER THE ASSESSOR'S ONLINE DATABASE.
  - THE ZONING ORDINANCE LISTS THE DIMENSIONAL REGULATIONS AS FOLLOWS:  
MINIMUM FRONT YARD 50 FEET  
MINIMUM SIDE YARD 50 FEET  
MINIMUM REAR YARD 50 FEET



**Curve Table**

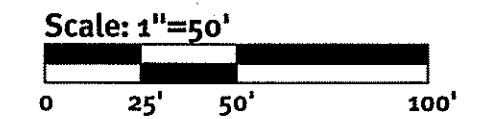
CURVE	DELTA	RADIUS	LENGTH	TANGENT	CHORD LENGTH	CHORD BEARING
C1	12'00"24"	560.00'	117.35'	58.89	117.14'	S65°51'23"E
C2	12'14"06"	965.00'	206.07'	103.43	205.67'	N65°58'13"W
C3	93'04"26"	18.00'	29.24'	18.99	26.13'	S61°22'31"W
C4	94°47'20"	25.00'	41.36'	27.18	36.80'	S48°07'08"E
C5	185°40'33"	85.00'	275.46'	1714.69	169.79'	S2°40'32"E
C6	124°28'30"	75.00'	162.94'	142.48	132.73'	S68°12'20"E

**Line Table**

LINE	LENGTH	BEARING
L1	39.62'	S16°20'30"W
L2	41.17'	S24°24'35"W
L3	66.89'	S13°11'32"W
L4	121.61'	S9°05'32"W
L5	93.17'	S13°13'04"E
L6	108.98'	S33°59'04"E
L7	69.13'	S5°58'20"E

**This Plan Should Be Indexed  
By The Following Streets:**

- Old Pocasset Road
- Scituate Avenue



**Diprete Engineering**  
Two Stafford Court, Cranston, RI 02920  
Tel: 401-943-1000 Fax: 401-464-6006 www.diprete-eng.com

Boston • Providence • Newport

MICHAEL E. GAVITT  
1981  
5/14  
PROFESSIONAL  
LAND SURVEYOR

**CERTIFICATION:**  
THIS SURVEY AND PLAN CONFORMS TO THE FOLLOWING CLASS STANDARDS AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS EFFECTIVE APRIL 1, 1984.  
BOUNDARY SURVEY: CLASS I  
TOPOGRAPHIC SURVEY: CLASS III

No.	Date	Existing Conditions Plan	Description	Drawn By: MIT
0	07/13/14			

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED 10/23/2014 FILE # 10-0151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

**Existing Conditions Plan**  
**Orbit Energy Rhode Island**  
**3.2 MW Bio-Gas Plant**

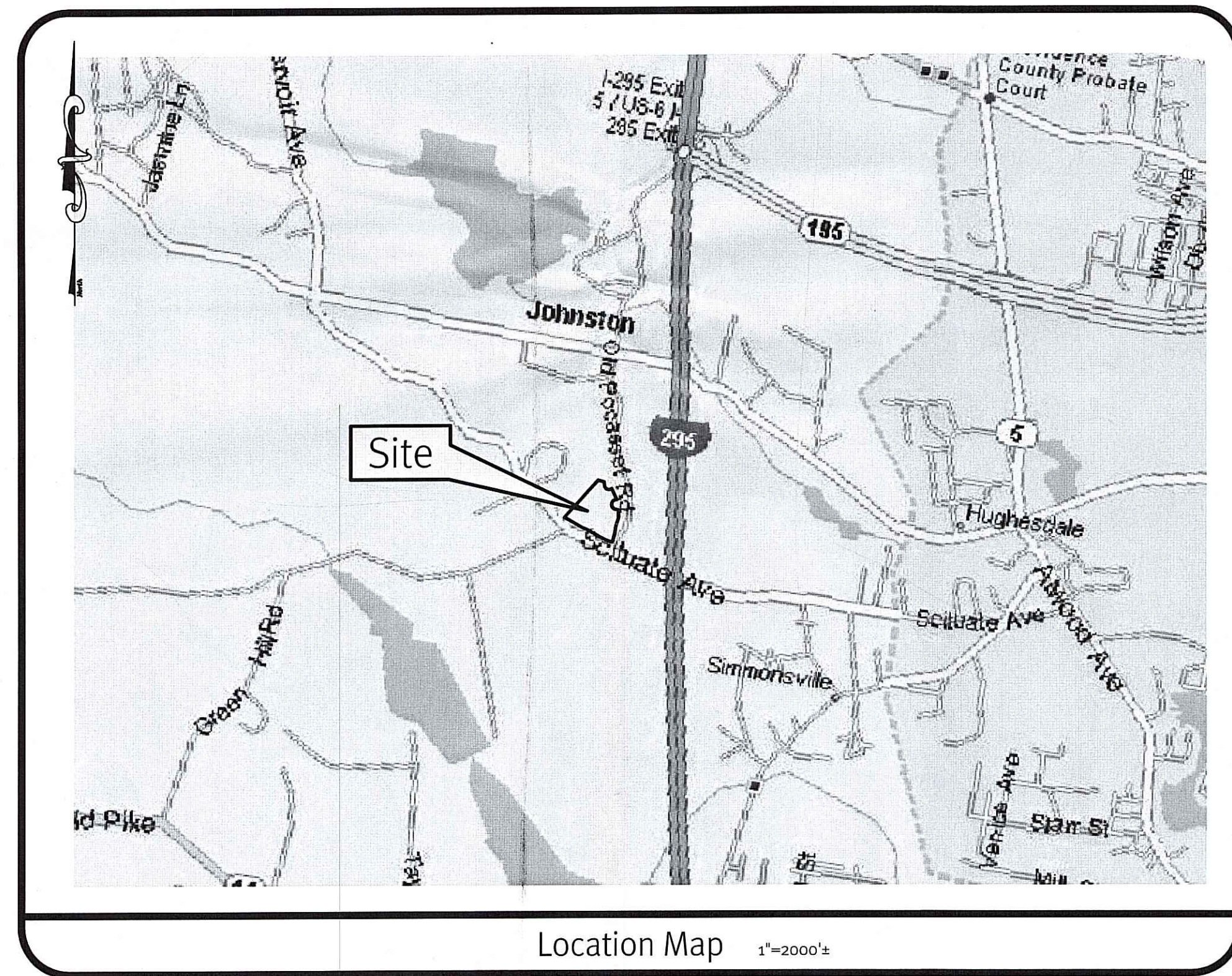
Applicant: Orbit Energy Rhode Island, LLC  
Assessor's Plat: 43 Lot 2 Johnston, Rhode Island  
Shelby Realty Inc. 900 Ridgely Drive, Suite 145  
Hopk, RI 02831  
Copyright: 2014 by Diprete Engineering Associates, Inc.

# RIDEM Preliminary Determination

## A.P. 43 Lot 2

Scituate Avenue  
Johnston, Rhode Island

Assessor's Plat 43 Lot 2



### Sheet Index

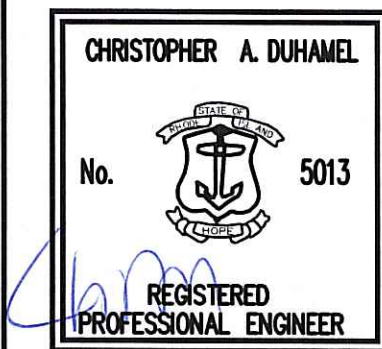
1. Cover Sheet
2. Aerial 1/2 Mile Radius Plan
3. Existing Conditions Plan
4. Overall Plan
5. Site Plan - 1
6. Site Plan - 2
7. Detail Sheet -1
8. Detail Sheet -2
9. Detail Sheet -3

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED NOV 26 2010 FILE # 10-0151  
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*W. Joseph Casey*

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THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.



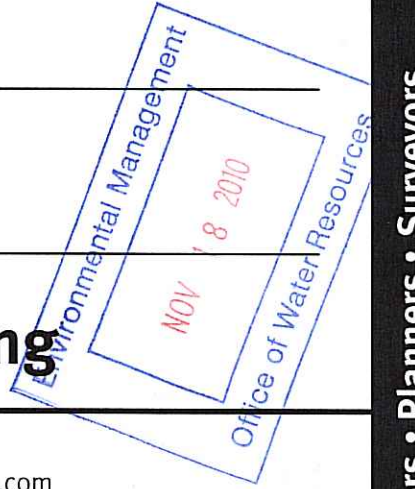
Cover Sheet  
**Scituate Avenue**  
Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

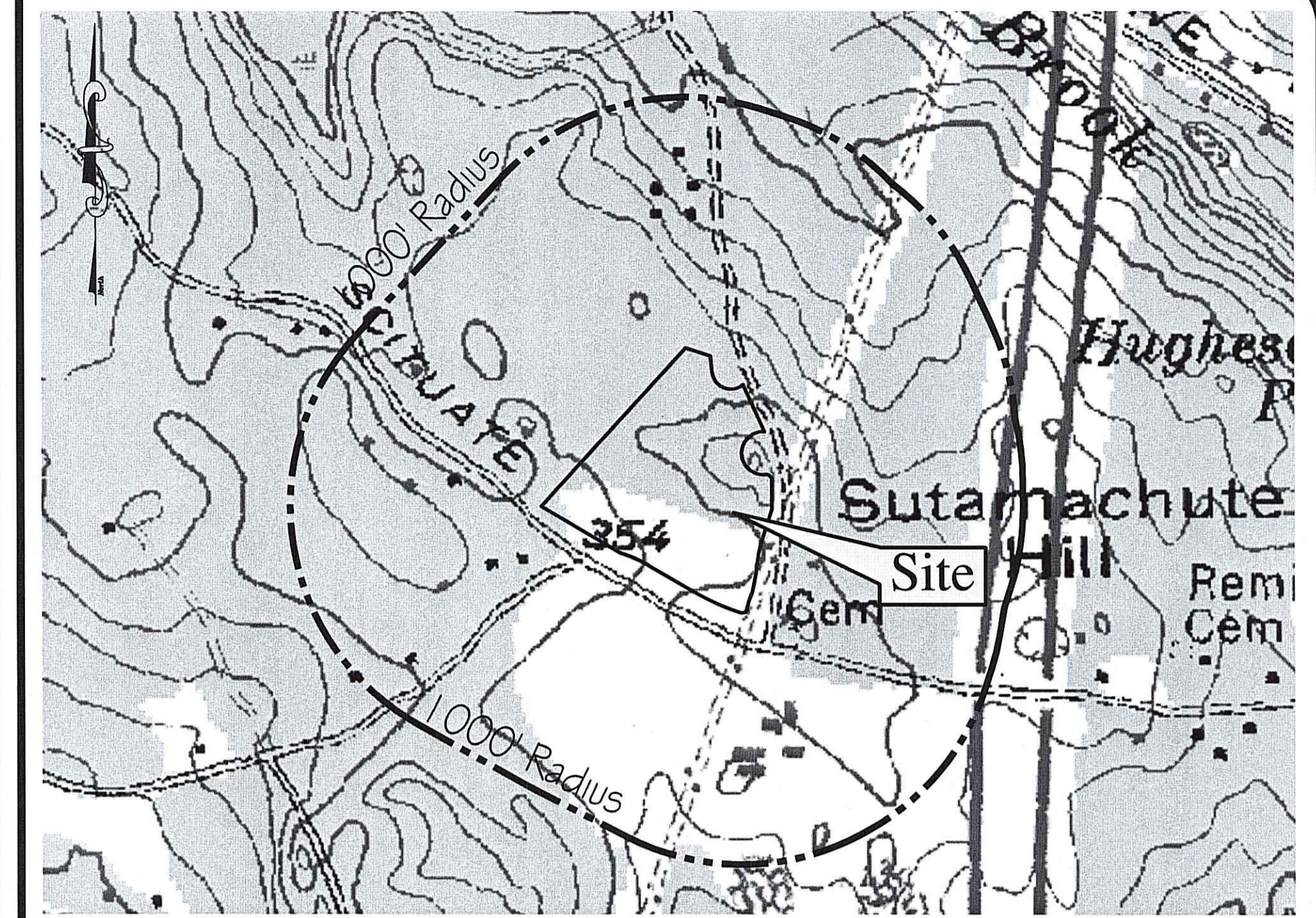
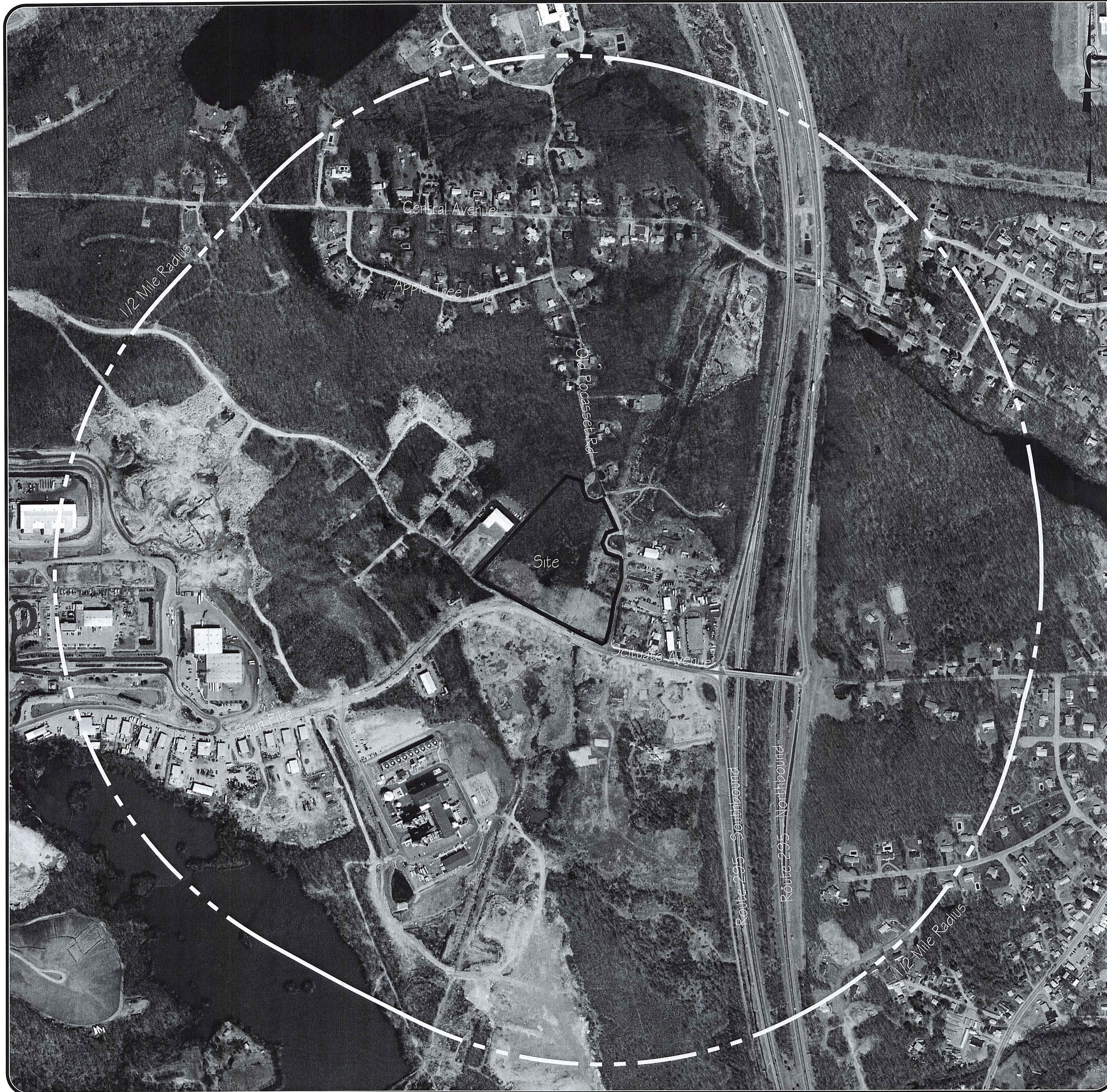


Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner:  
**Shelby Realty Inc.**  
121 Phenix Avenue  
Cranston, RI 02920

No.	Date	Description	By
1	11-22-10	RIDEM Preliminary Determination Resubmission	D.A.R.
0	7-26-10	RIDEM Preliminary Determination	T.L.L.
Drawn By:	T.L.L.	Design By:	T.L.L.



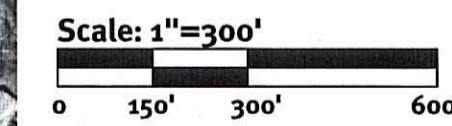


USGS Map Scale: 1"=500'

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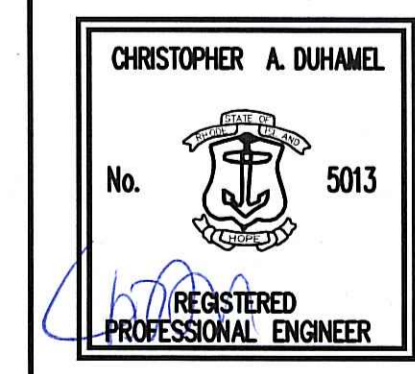
*W. Joseph Conroy*



Scale: 1"=300'  
 Photo obtained from the RI-GIS of 2004 Digital Orthophotography Northern Urban Areas of Rhode Island.

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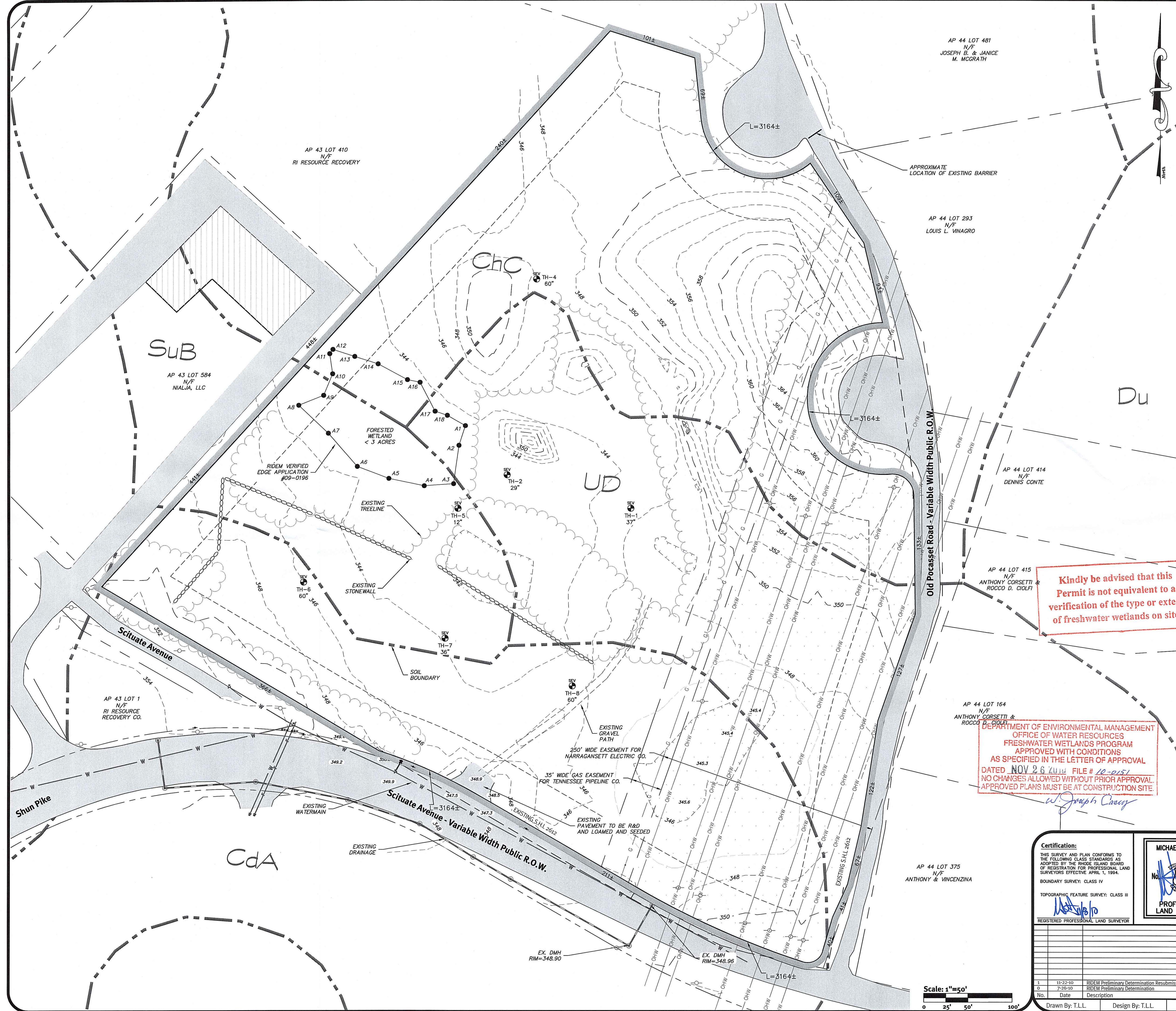
**Aerial 1/2 Mile Radius  
 Scituate Avenue**  
 Assessor's Plat 43 Lot 2  
 Johnston, Rhode Island



Two Stafford Court Cranston, RI 02920  
 tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com  
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No.	Date	Description	By:
1	11-22-10	RIDEM Preliminary Determination Resubmission	D.A.R.
0	7-28-10	RIDEM Preliminary Determination	T.L.L.
Drawn By: T.L.L.		Design By: T.L.L.	





- General Notes:**
- THE SITE IS LOCATED ON AP 43 LOT 2 AND IS APPROXIMATELY 12.5± ACRES.
  - THE OWNER OF AP 43 LOT 2 IS:
    - SHELBY REALTY INC.
    - C/O JOSEPH A. SCIACCI
    - 121 PHENIX AVENUE
    - CRANSTON, RI 02920
  - SOIL MAPPING OBTAINED FROM SOIL SURVEY OF RHODE ISLAND, PREPARED BY U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE.
  - THERE IS NO 100 YEAR FLOOD PLAIN LOCATED ON THE SITE ACCORDING TO F.E.M.A. FLOOD INSURANCE RATE MAP FOR THE TOWN OF JOHNSTON, RI COMMUNITY PANEL 44001-002920 REVISED MARCH 2, 2009. THE SITE IS LOCATED WITHIN THE FOLLOWING FLOOD INSURANCE ZONES, THE BOUNDARIES OF WHICH, AS SHOWN APPROXIMATELY HEREON, HAVE BEEN DIGITIZED FROM THE ABOVE REFERENCED FLOOD INSURANCE RATE MAP:
    - ZONE C - [AREAS OF MINIMAL FLOODING]
  - TOPOGRAPHY OBTAINED FROM CROSSMAN ENGINEERING, INC. WARWICK, RI 02886 AND ADDITIONAL LIMITED FIELD SURVEY PERFORMED BY DIPRETE ENGINEERING, 2 STAFFORD COURT, CRANSTON, RI 02920. HORIZONTAL DATUM IS RI STATE PLANE COORDINATE-NAD 83 AND VERTICAL DATUM IS NGVD 29 (MSL).
  - WETLANDS DELINEATED AND FIELD LOCATED BY DIPRETE ENGINEERING. THE WETLAND EDGE WAS VERIFIED UNDER RIDEM PERMIT #09-0196, DATED AUGUST 24, 2009.
  - THE SITE IS NOT WITHIN A GROUNDWATER PROTECTION AREA, NATURAL HERITAGE AREA, GROUNDWATER RESERVOIR, OR A WELLHEAD PROTECTION AREA.
  - THERE ARE NO EXISTING STRUCTURES ON THE SITE LOCATED IN THE NATIONAL HISTORIC REGISTER OR THAT HAVE BEEN RECOGNIZED AS HAVING HISTORICAL VALUE. THERE ARE NO KNOWN HISTORIC CEMETERIES LOCATED WITHIN OR ADJACENT TO THE SUBJECT PROPERTY.
  - ALL EXISTING UTILITIES SHOWN ARE FROM VISIBLE INFORMATION, DRAWINGS FROM OTHERS, OR INFORMATION PROVIDED TO DIPRETE ENGINEERING AND ARE SUBJECT TO CHANGE. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM AFOREMENTIONED PLANS OF RECORD AND ARE APPROXIMATE ONLY. PRIOR TO CONSTRUCTION, THE PROPER UTILITY ENGINEERING DEPARTMENTS SHALL BE CONTACTED AND THE ACTUAL LOCATION OF SUBSURFACE STRUCTURES SHALL BE DETERMINED IN THE FIELD. CALL THE DIG SAFE CENTER TOLL FREE AT 1-888-7233, 72 HOURS PRIOR TO EXCAVATION. ANY DAMAGE TO UTILITIES WHICH ARE SHOWN ON THE PLANS OR DETAILED BY DIG SAFE SHALL BE THE SITE CONTRACTORS RESPONSIBILITY.

**Soil Information**  
(REFERENCE: SOIL SURVEY OF RHODE ISLAND, U.S.D.A. SOIL CONSERVATION SERVICE)

SOIL NAME	DESCRIPTION
SuB	SUTTON, VERY STONY, FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES
CdA	CANTON AND CHARLTON, FINE SANDY LOAMS, 0 TO 3 PERCENT SLOPES
ChC	CANTON AND CHARLTON, VERY STONY, FINE SANDY LOAMS, 8 TO 15 PERCENT SLOPES
UD	UDORTHERNTS- URBAN LAND COMPLEX

**Legend**

ASSESSOR'S LINES	---	EXISTING SPOT GRADE	X 346
PROPERTY LINE	---	PROPOSED SPOT GRADE	X 349.2
SOIL BOUNDARY LINE	---	SOIL EVALUATION	SEV
WETLAND FLAG	WF C14 ●	HAYBALES	GWT=15'
WETLAND EDGE	---		
EXISTING TREELINE	---		
EXISTING PAVED AREA	---		
BUILDING SETBACKS	---		
EXISTING GAS LINE	G		
EXISTING WATER MAIN	W		
SOIL IDENTIFICATION	Du		
EXISTING STONEWALL	---		
EXISTING BUILDING	---		
EXISTING UTILITY POLE	---		
EXISTING MAJOR CONTOUR	---	240	
EXISTING MINOR CONTOUR	---	242	
PROPOSED CONTOUR	---	242	
GUARDRAIL	---		
LIMIT OF WORK	---		
OVERHEAD WIRES	---	OHW	

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*W Joseph Carey*

**Certification:**  
THIS SURVEY AND PLAN CONFORMS TO THE FOLLOWING CLASS STANDARDS AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS EFFECTIVE APRIL 1, 1994.  
BOUNDARY SURVEY: CLASS IV  
TOPOGRAPHIC FEATURE SURVEY: CLASS III

**MICHAEL E. GAVITT**  
No. 1081  
PROFESSIONAL LAND SURVEYOR

Drawn By: T.L.L. Design By: T.L.L.

**Existing Conditions Plan**  
**Scituate Avenue**  
Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

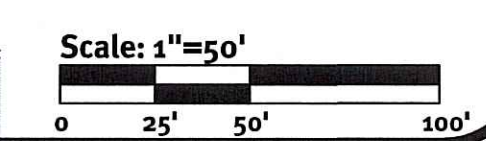
**DiPrete Engineering**  
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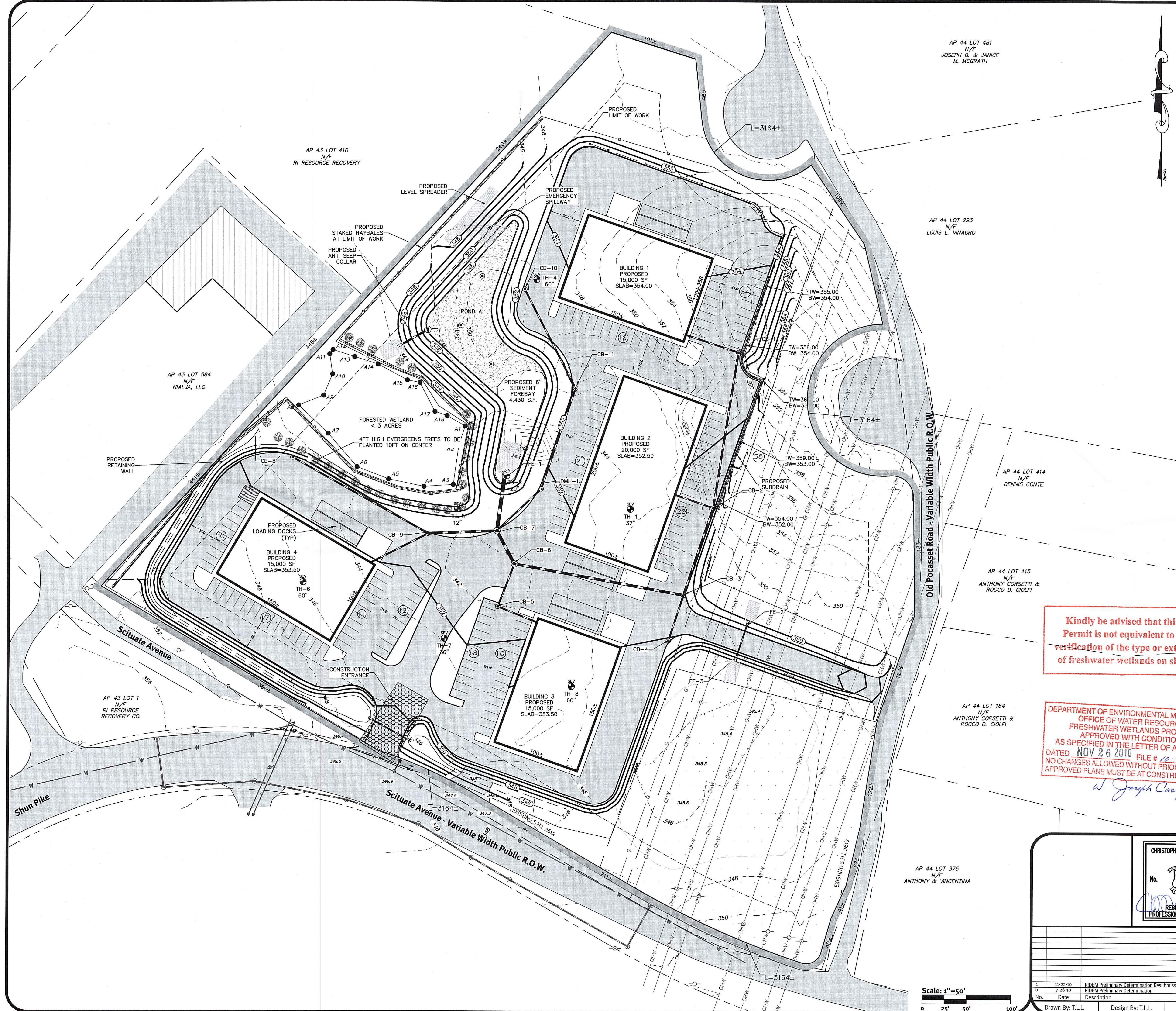
Owner:  
**Shelby Realty Inc.**  
121 Phenix Avenue  
Cranston, RI 02920

NOV 18 2010  
Office of Water Resources

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SHEET 3 OF 10





- General Notes**
1. THE SITE IS TO BE SERVICED BY PUBLIC WATER AND SEWER.
  2. THE DRAINAGE SYSTEM IS DESIGNED TO MEET THE TOWN OF JOHNSTON SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WITH THE USE OF CATCH BASINS AND DRAINAGE BASINS. THE STORMWATER MANAGEMENT SYSTEM WILL MEET THE RIDEM BEST MANAGEMENT PRACTICES.
  3. THE OVERALL SITE IS PROPOSED TO BE BUILT IN 1 PHASE. THE PROPOSED BUILDING CONSTRUCTION MAY BE PHASED.
- Construction Notes**
1. THE CONTRACTOR IS TO NOTIFY DIG SAFE PRIOR TO THE START OF CONSTRUCTION.
  2. NO STOCKPILING OF MATERIAL IS TO BE ALLOWED WITHIN A PUBLIC R.O.W.. NO OPEN TRENCHES ARE TO BE LEFT OVERNIGHT.
  3. CONTRACTOR TO OBTAIN ALL FEDERAL, STATE, AND MUNICIPAL APPROVALS PRIOR TO THE START OF CONSTRUCTION.
  4. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER, THE DIRECTOR OF PUBLIC WORKS, THE TOWN ENGINEER, AND RI DEPT. OF ENVIRONMENTAL MANAGEMENT AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
  5. ALL WORK PERFORMED HEREIN SHALL BE GOVERNED BY THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AND TOWN OF JOHNSTON STANDARD SPECIFICATIONS AND DETAILS.
  6. ALL EXCESS SOIL, STUMPS, TREES, ROCKS, BOULDERS AND OTHER REFUSE, SHALL BE DISCARDED IN AN APPROVED MANNER AT AN APPROVED LOCATION.
  7. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING FINISH GRADING AND DRAINAGE AROUND THE BUILDINGS TO ENSURE SURFACE WATER AND/OR GROUND WATER ARE DIRECTED AWAY FROM THE STRUCTURES. THIS PLAN SHOWS GENERAL GRADING ONLY AND ADDITIONAL DETAIL IS LIKELY TO BE REQUIRED AROUND THE BUILDINGS.
  8. ALL LOAM IN DISTURBED AREAS TO BE STOCKPILED FOR FUTURE USE.
  9. ALL PROPOSED DRAINAGE PIPE TO BE HDPE UNLESS OTHERWISE NOTED.
  10. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR UTILITY CONNECTIONS.
  11. ABOVEGROUND UTILITIES ARE PROPOSED ONSITE. UNDERGROUND UTILITIES MAY BE INSTALLED AS AN ALTERNATIVE.
  12. ALL STEEP SLOPES ARE SHOWN SCHEMATICALLY ONLY AND DIPRETE ENGINEERING ASSOCIATES, INC. IS NOT PROVIDING THE DESIGN OF THESE ITEMS. THE ACTUAL SLOPES ARE TO BE BUILT UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER AND CERTIFIED TO THE OWNER PRIOR TO THE COMPLETION OF THE PROJECT. SHOP DRAWINGS TO BE SUBMITTED PRIOR TO CONSTRUCTION.
  13. ALL CUT AND FILL AREAS ARE TO BE DONE UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER WITH TESTING AND CERTIFICATION TO BE PROVIDED TO THE OWNER AT THE COMPLETION OF THE PROJECT. DIPRETE ENGINEERING ASSOCIATES, INC. HAS NOT PROVIDED THE FILL SPECIFICATION, GEOTECHNICAL ENGINEERING, STRUCTURAL ENGINEERING SERVICES, OR SUPERVISION AS PART OF THESE DRAWINGS.
  14. ALL EXISTING UTILITIES SHOWN ARE SCHEMATIC IN NATURE AND DIPRETE ENGINEERING ASSOCIATES, INC. DOES NOT CERTIFY ITS ACCURACY. THE CONTRACTOR IS TO VERIFY THE UTILITY LOCATIONS PRIOR TO THE START OF CONSTRUCTION.
  15. ALL CATCH BASINS ARE TO BE HIGH CAPACITY (HC) AND INSTALLED WITH OIL WATER SEPARATORS.
  16. ROOF LEADERS TO BE INSTALLED PER BUILDING PLAN. CONTRACTOR TO COORDINATE INSTALLATION WITH ENGINEER OF RECORD.
  17. THE PROPOSED WORK INCLUDING GRADING, ACCESS DRIVEWAY, AND UTILITIES REQUIRES COORDINATION THROUGH UTILITY EASEMENTS. CONTRACTOR SHALL VERIFY ALL APPROVALS ARE IN PLACE PRIOR TO START OF CONSTRUCTION.

- ADA Notes**
1. ALL IMPROVEMENTS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) BY THE DEPARTMENT OF JUSTICE.
  2. MAXIMUM RUNNING SLOPE ALONG ALL ACCESSIBLE PATHS OF TRAVEL SHALL BE 0.045'/' AND MAXIMUM CROSS SLOPE ALONG ALL ACCESSIBLE PATHS OF TRAVEL SHALL BE 0.015'/'.
  3. MAXIMUM SLOPE IN ANY DIRECTION FOR ALL ACCESSIBLE PARKING SPACES AND LOADING AREAS SHALL BE 0.015'/'.
  4. AT A MINIMUM, A 5' X 5' LANDING WITH A MAXIMUM SLOPE OF 0.015'/' IN ANY DIRECTION SHALL BE PROVIDED IN FRONT OF ALL PUBLICLY ACCESSIBLE BUILDING ENTRANCES/EGRESSES.
  5. SIDEWALK CURB RAMPS SHALL COMPLY WITH DIPRETE ENGINEERING DETAILS MEETING OR EXCEEDING RIDOT STANDARDS 43.3.0, 43.3.1 & 43.4.1 AS SHOWN ON THE DETAIL SHEET.
  6. PLEASE NOTE THAT THE GRADING AND PLAN VIEWS AS WELL AS THE STANDARD DETAILS MAY NOT SHOW THE DETAIL NECESSARY TO CONSTRUCT WALKWAYS AND RAMPS TO ADA STANDARDS. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE LEVEL OF CARE NECESSARY TO BE CERTAIN THAT THE CONSTRUCTED PRODUCT MEETS ADA STANDARDS. IN THE EVENT OF ANY CONFLICTS THE CONTRACTOR SHALL NOTIFY THE DESIGNER BEFORE CONSTRUCTION FOR ADVICE IN FINDING A RESOLUTION.

**Developmental Data**

CURRENT ZONING:	I
MINIMUM LOT SIZE:	N/A
MINIMUM DISTANCE FROM RESIDENTIAL ZONE:	100'
MINIMUM LOT WIDTH:	N/A
MINIMUM FRONT YARD:	50'
MINIMUM SIDE YARD:	50'
MINIMUM REAR YARD:	50'
MAXIMUM STRUCTURE HEIGHT:	40'
MAXIMUM BUILDING COVERAGE:	40%

TOTAL SITE AREA:	12.5 ± ACRES
TOTAL NUMBER OF NEW BUILDINGS:	FOUR (4)
TOTAL SQUARE FOOTAGE:	65,000 SF
PROPOSED BUILDING COVERAGE:	11.9% ±

PARKING SPACES PROVIDED:	157 SPACES
PAVEMENT WIDTH:	VARIES

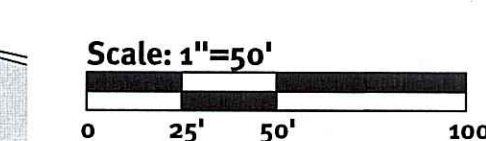
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OFFICE OF WATER RESOURCES  
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*W. Joseph Conroy*



CHRISTOPHER A. DUHAMEL

No. 5013

REGISTERED PROFESSIONAL ENGINEER

1	11-22-10	RIDEM Preliminary Determination Resubmission	D.A.R.
0	7-26-10	RIDEM Preliminary Determination	T.L.L.
No.	Date	Description	By:
Drawn By: T.L.L.		Design By: T.L.L.	

**Overall Plan**

**Scituate Avenue**

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

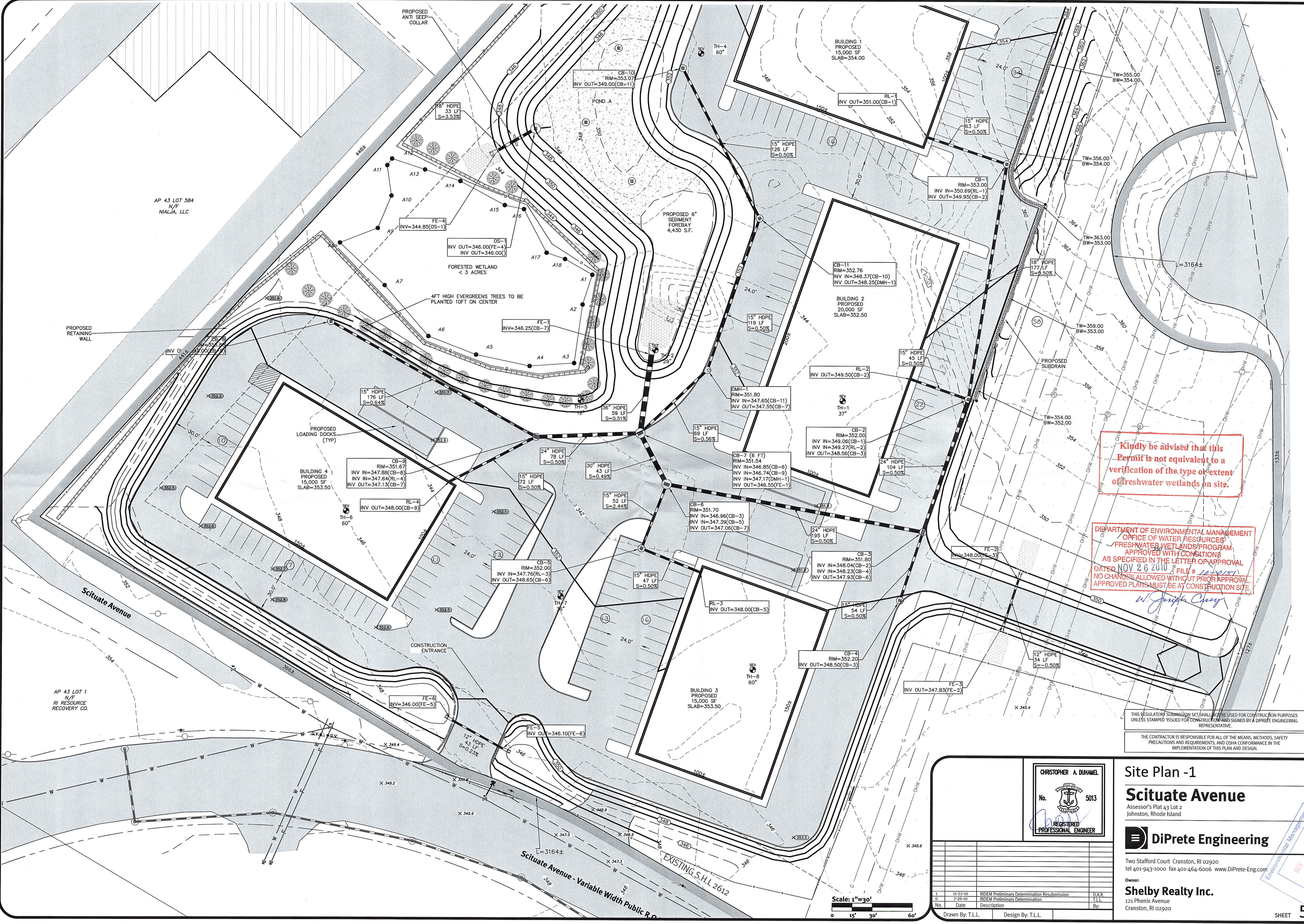
**DiPrete Engineering**

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tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

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SHEET **4** OF 10

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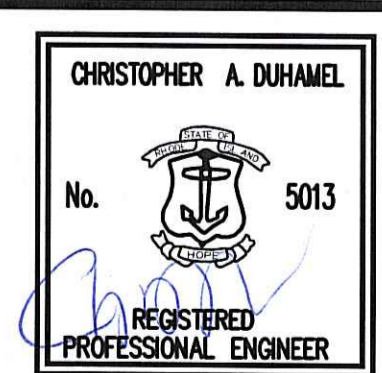


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### Site Plan -1

## Scituate Avenue

Assessor's Plat 43 Lot 2  
Johnston, Rhode Island



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No.	Date	Description	By
Drawn By: T.L.L. Design By: T.L.L.			



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AP 44 LOT 481  
N/F  
JOSEPH B. & JANICE  
M. MCCRATH

AP 43 LOT 410  
N/F  
RI RESOURCE RECOVERY

AP 44 LOT 293  
N/F  
LOUIS L. VINGRO

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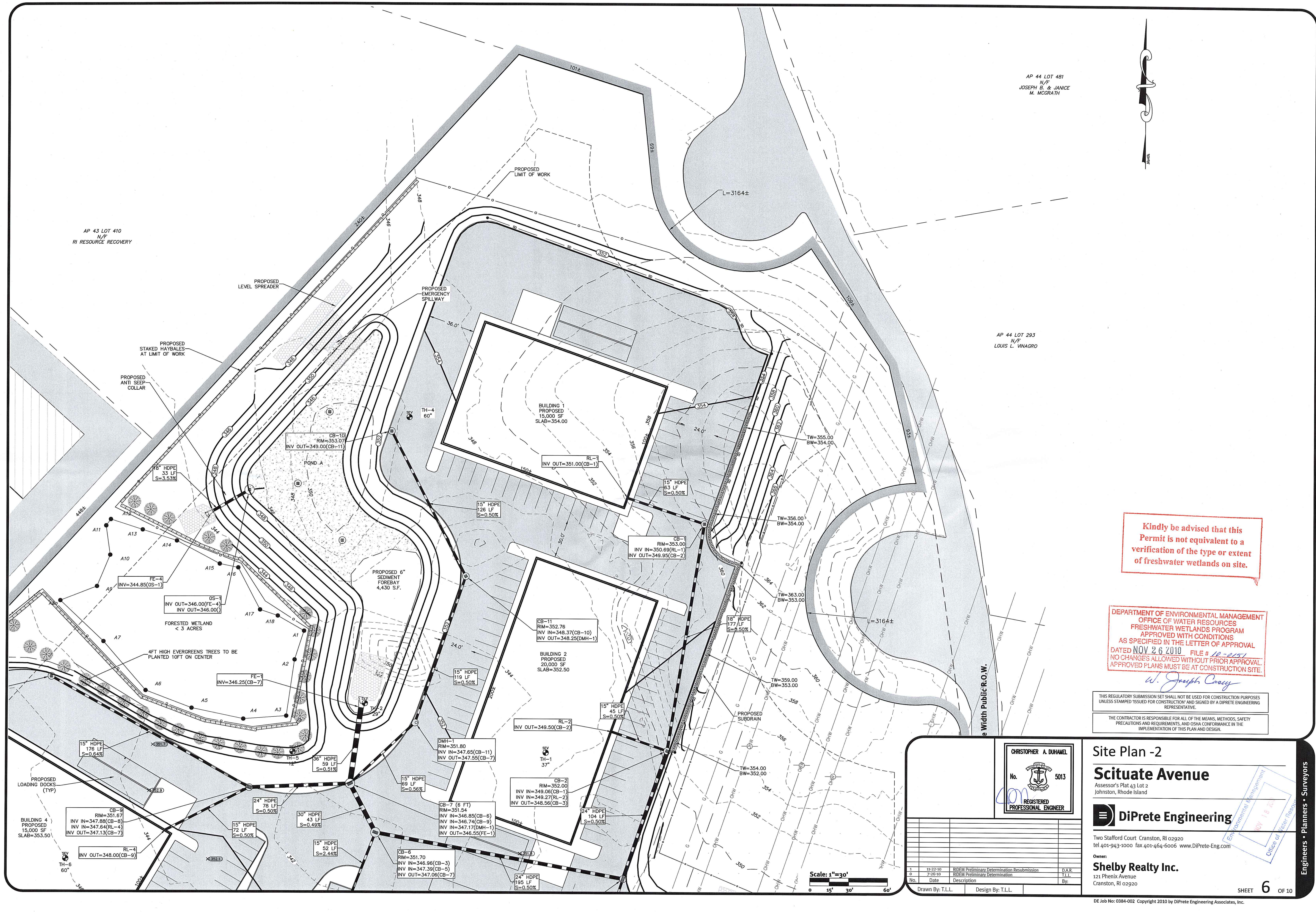
Site Plan -2  
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Johnston, Rhode Island

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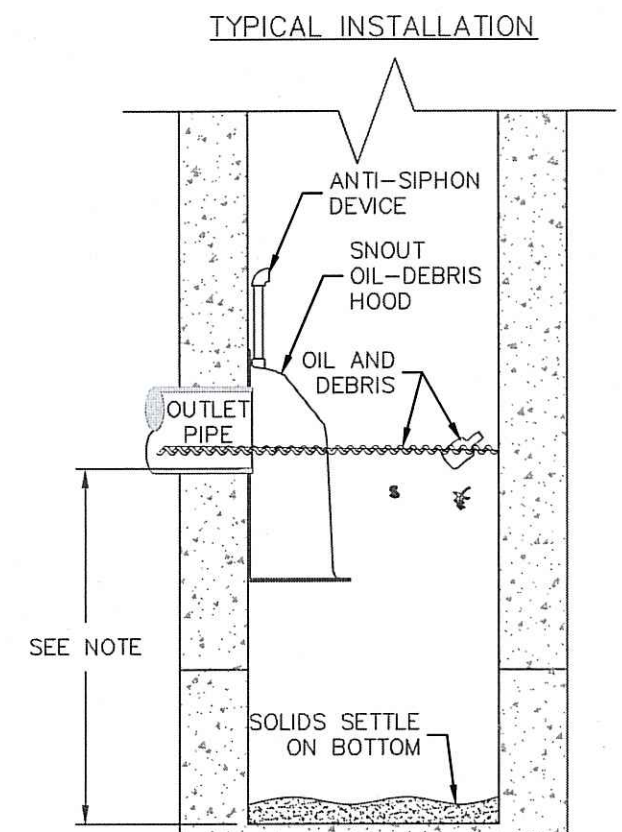
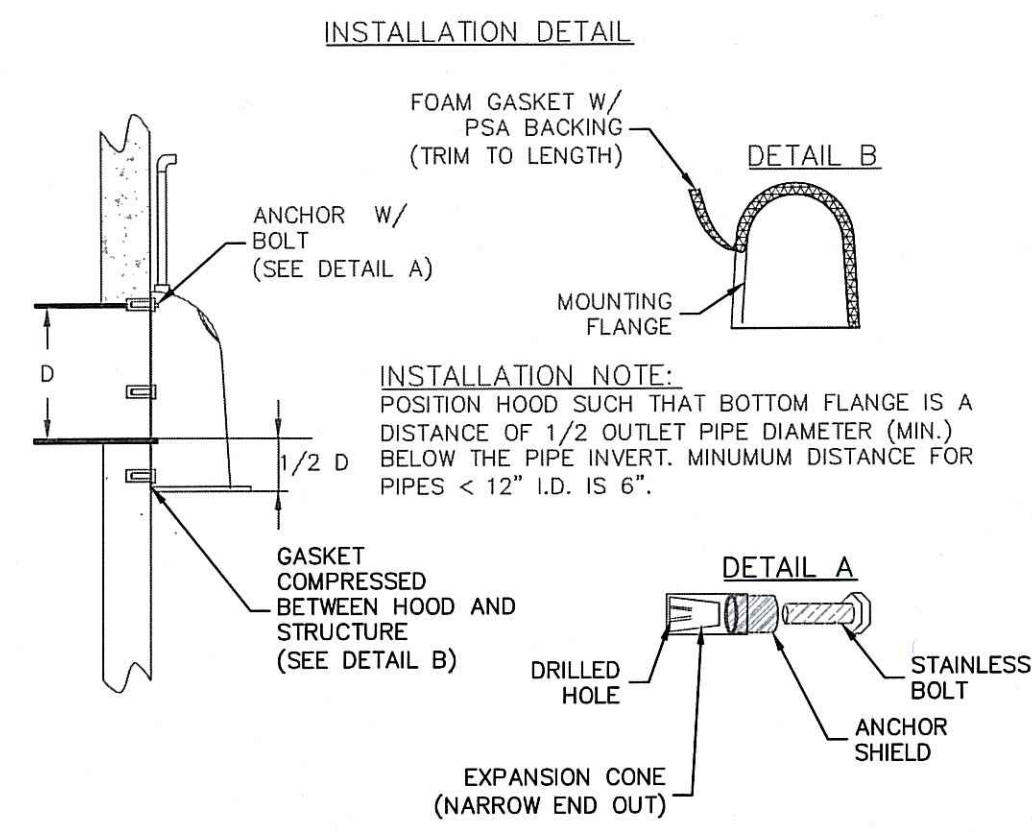
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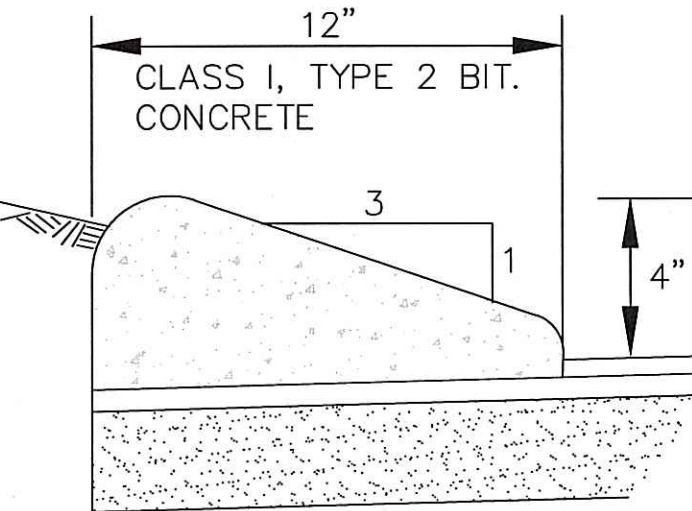
**NOTES:**

- ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY: BEST MANAGEMENT PRODUCTS, INC. 53 MT. ARCHER RD. LYME, CT 06371 (860) 434-0277, (860) 434-3195 FAX (860) 434-0277, (860) 434-3195 TOLL FREE: (800) 504-8008 OR (888) 354-7585 WEB SITE: www.bestmp.com
- ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
- ALL HOODS SHALL BE EQUIPPED WITH A WATER TIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT AS DRAWN. (SEE CONFIGURATION DETAIL).
- THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION.
- THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A DISTANCE EQUAL TO 1/2 THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES <12" I.D.
- THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 24" ACCORDING TO STRUCTURE CONFIGURATION.
- THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
- THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH 3/8" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS SUPPLIED BY MANUFACTURER. (SEE INSTALLATION DETAIL).
- INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.

INSTALLATION KIT SHALL INCLUDE:

- INSTALLATION INSTRUCTIONS
- PVC ANTI-SIPHON VENT PIPE AND ADAPTER
- OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
- 3/8" STAINLESS STEEL BOLTS
- ANCHOR SHIELDS

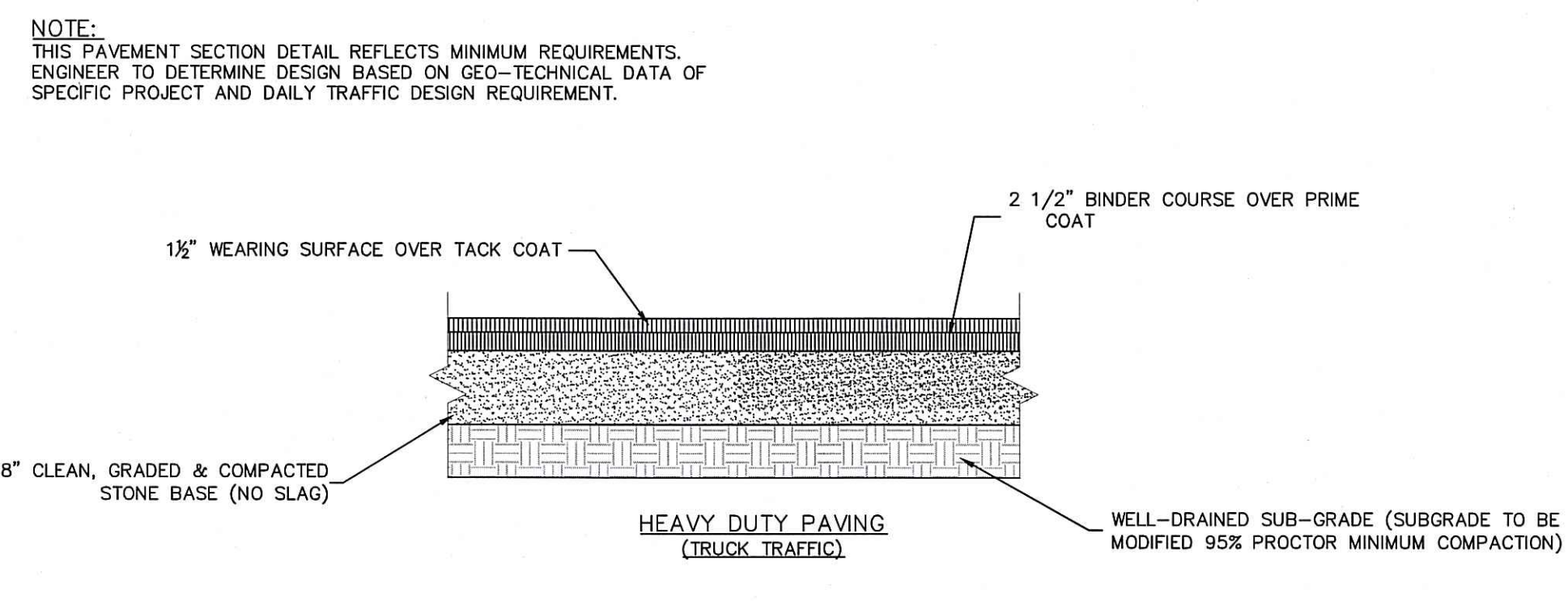
**NOTE:**  
SUMP DEPTH OF 36" MIN. FOR < OR = 12" DIAM. OUTLET. FOR OUTLETS > OR = 15", DEPTH = 2.5 - 3.0 X DIAMETER.



**CAPE COD BERM DETAIL**  
N.T.S.

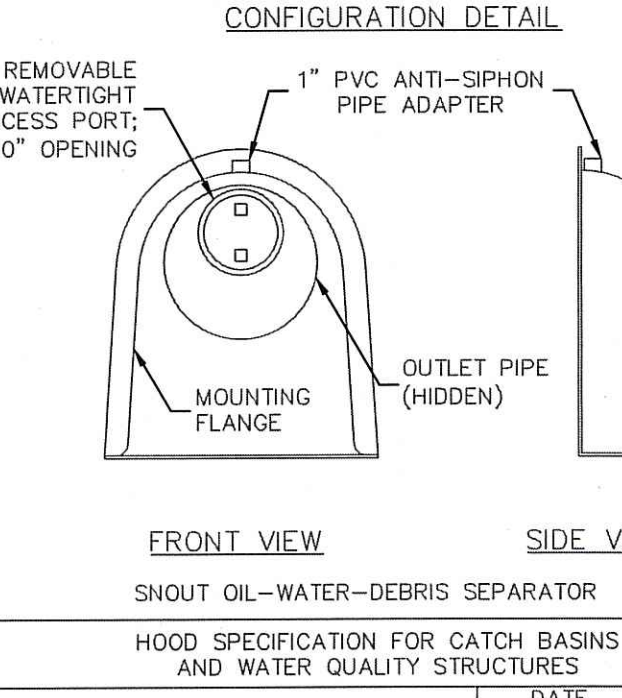
SIGN NUMBER		R1-1
LEGEND		
COLOR	BACKGROUND	WHITE
COPY		WHITE
SIGN	WIDTH	24" 30" 36" 48"
DIMENSION	HEIGHT	24" 30" 36" 48"
SIGN NUMBER		R6-1
LEGEND		
COLOR	BACKGROUND	RED
COPY		WHITE
SIGN	WIDTH	30" 36" 48"
DIMENSION	HEIGHT	30" 36" 48"
SIGN NUMBER		R6-1 (R OR L)
LEGEND		
COLOR	BACKGROUND	BLACK-ARROW WHITE
COPY		BLACK
SIGN	WIDTH	36"
DIMENSION	HEIGHT	12"

**REGULATORY SIGNS**  
NOT TO SCALE

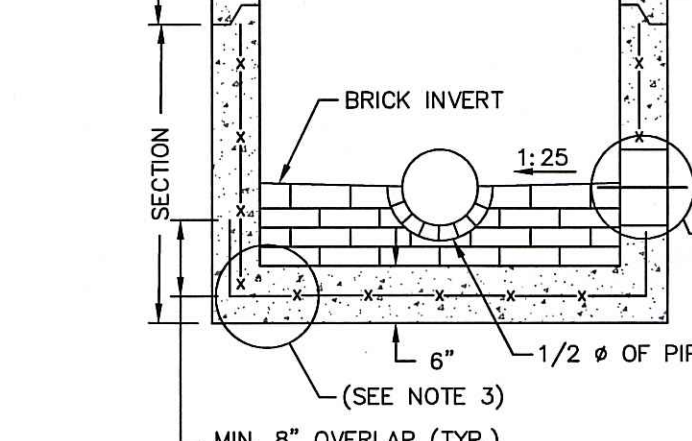
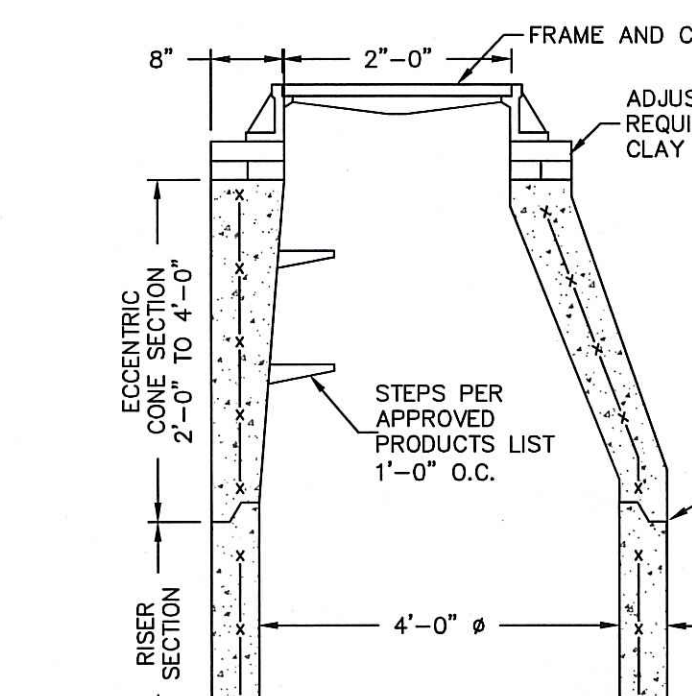
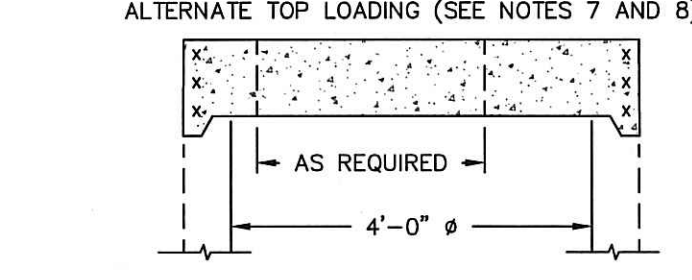


**TYPICAL PAVEMENT SECTION**  
NOT TO SCALE

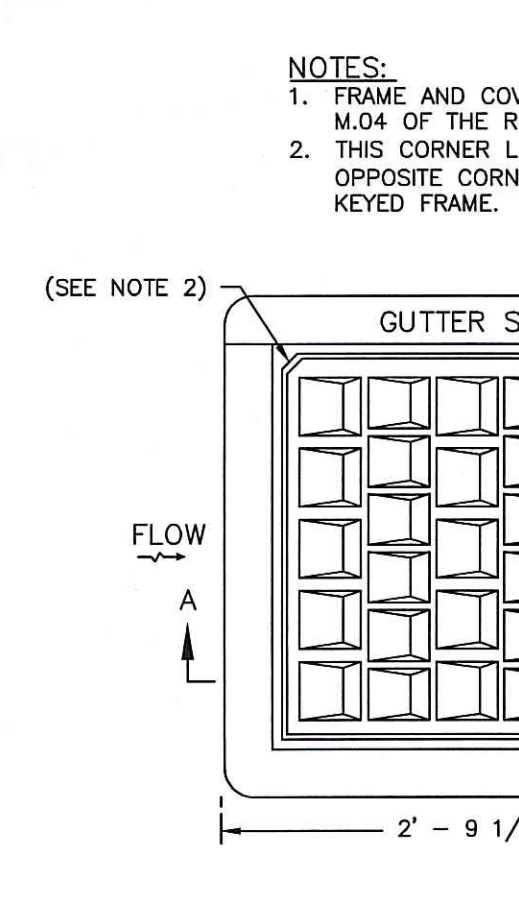
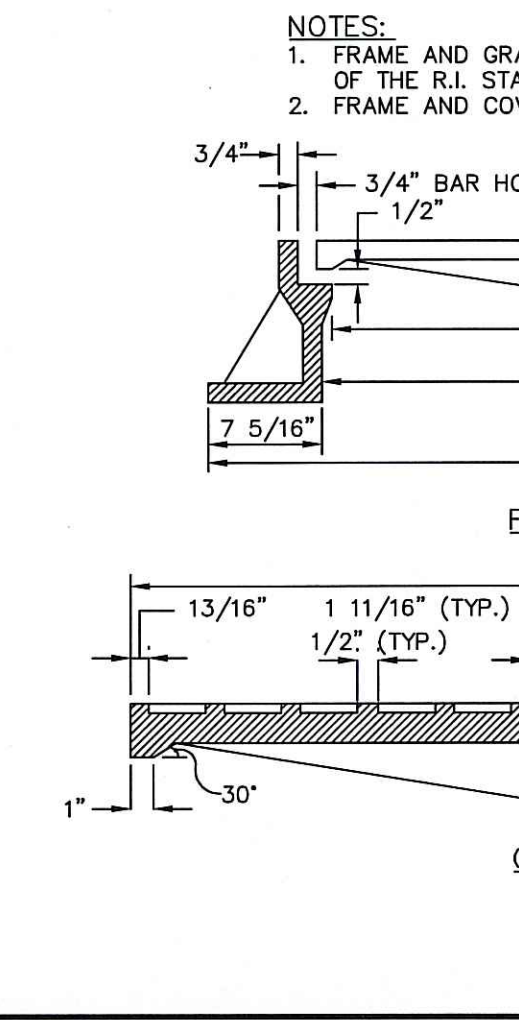
**OIL SEPARATOR DETAIL**  
NOT TO SCALE



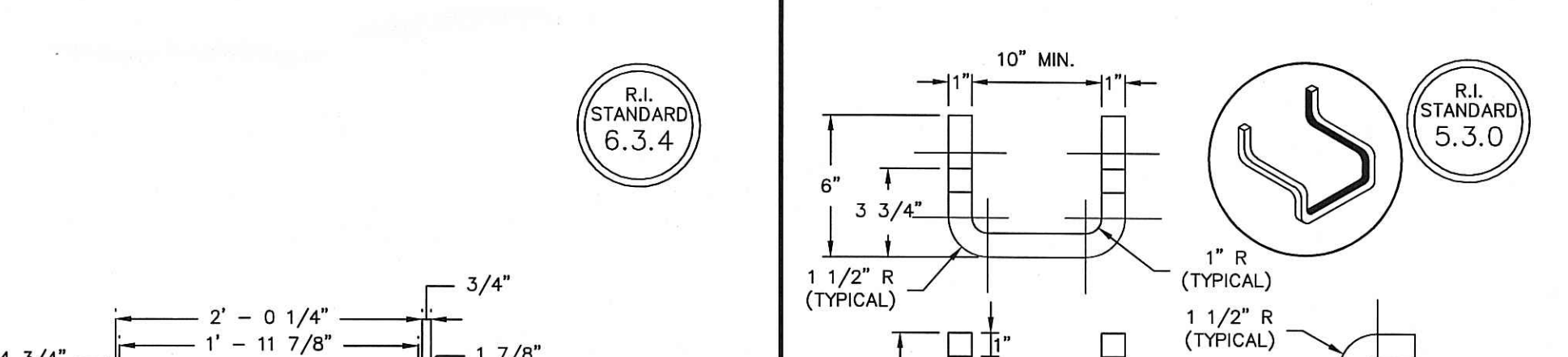
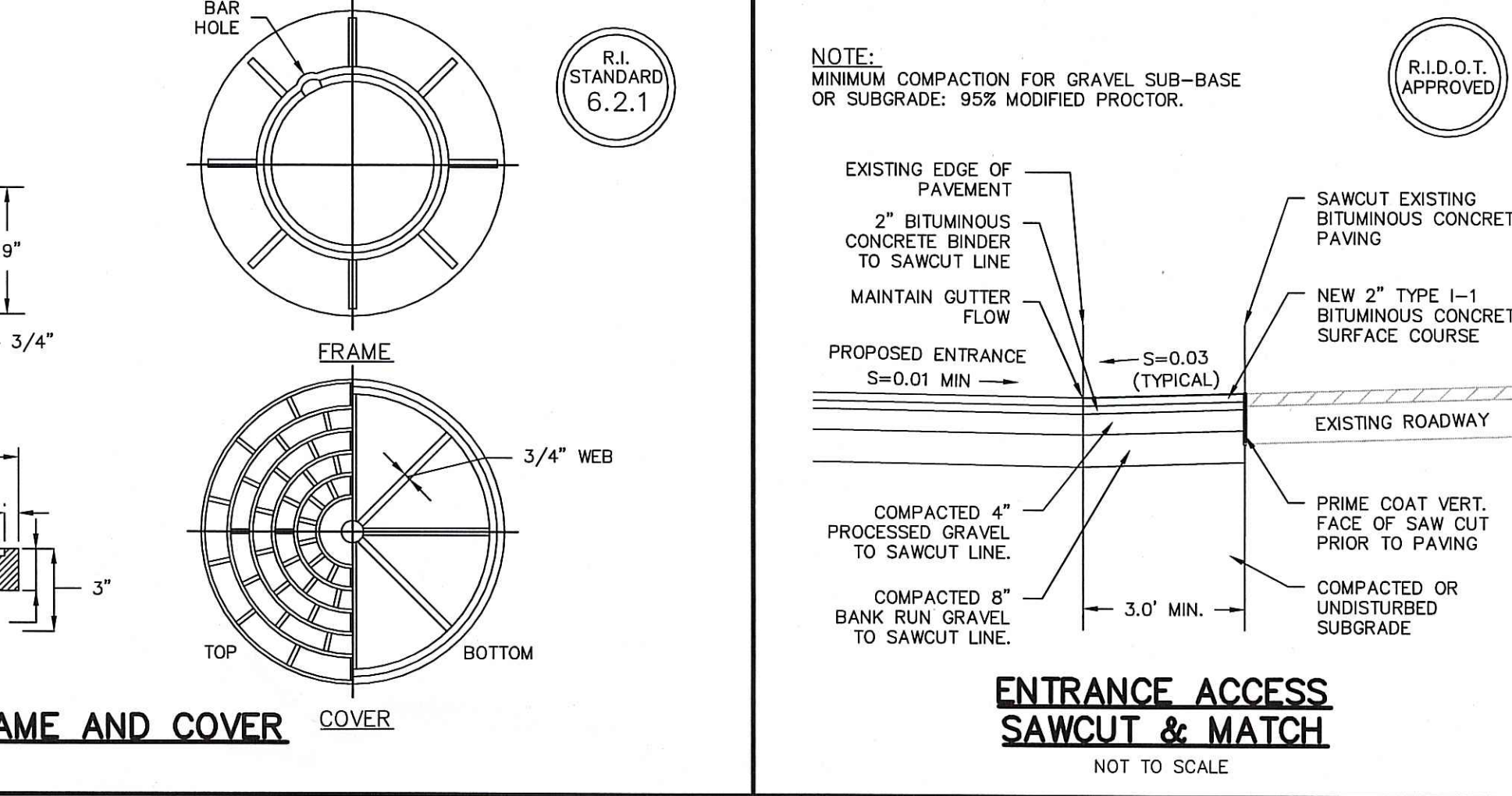
DESCRIPTION	DATE	SCALE
OIL-DEBRIS HOOD SPECIFICATION AND INSTALLATION (TYPICAL)	09/08/00	NONE
	DRAWING NUMBER	SP-SN
	US Patent #	6126817



**TYPE CATCH BASIN AS REQUIRED**



**HIGH CAPACITY FRAME AND GRATE (BICYCLE SAFE)**  
NOT TO SCALE



**CATCH BASIN AND MANHOLE STEP**  
NOT TO SCALE

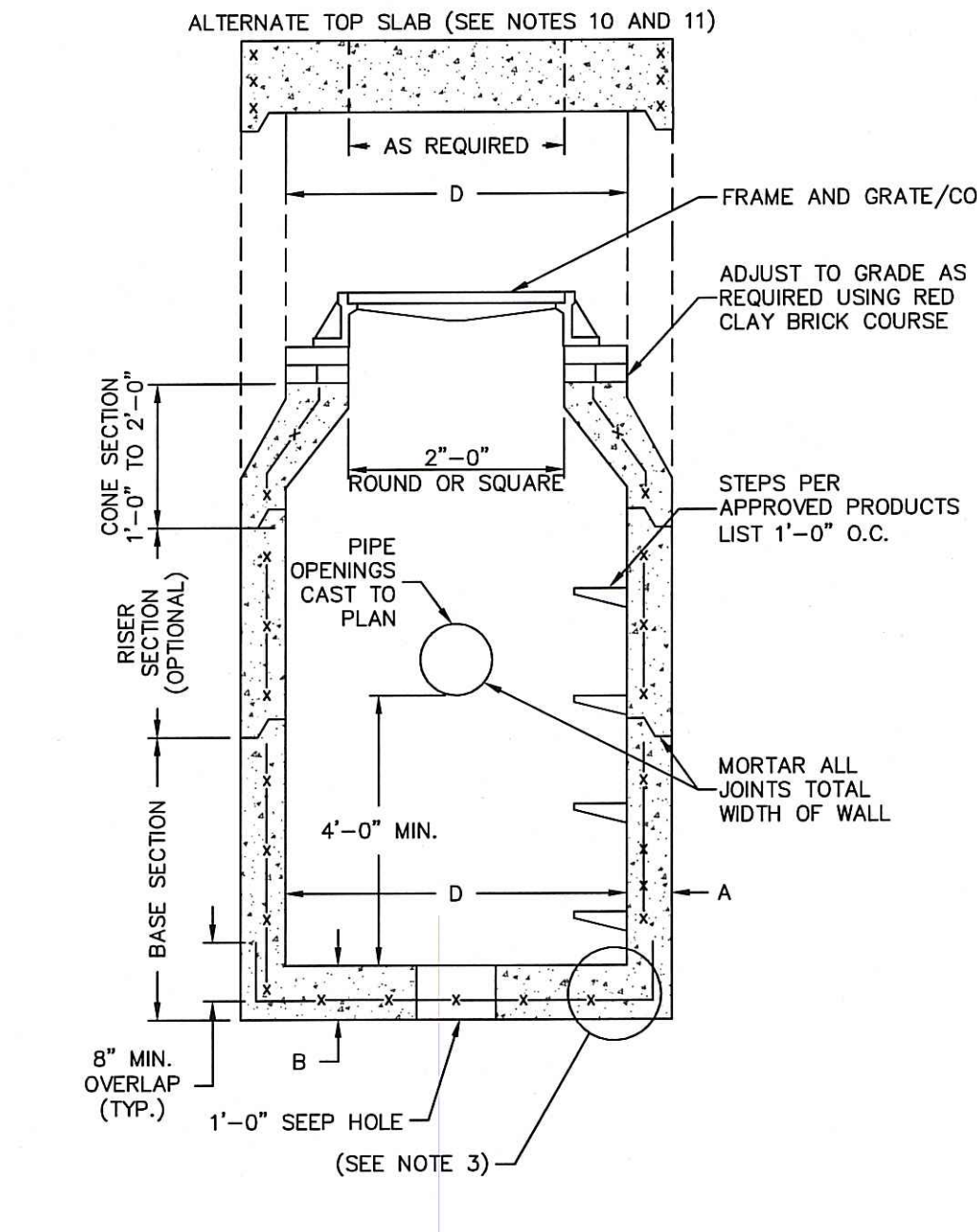


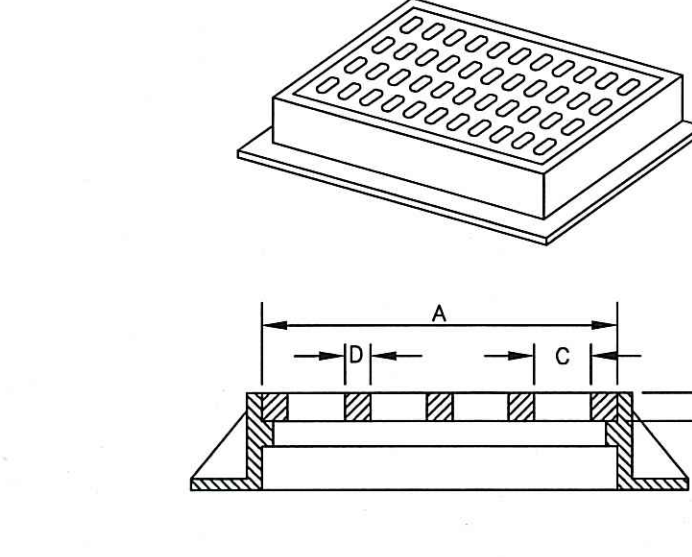
TABLE 1		
CATCH BASIN DIAMETER (D)	A	B
4'-0"	5"	6"
5'-0"	6"	8"
6'-0"	7"	10"

\* FOR LONGITUDINAL (VERTICAL STANDING) REINFORCEMENT REFER TO ASTM C478, ITEM 8.1.2

**NOTES:**

- SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
- SEE TABLE 1 FOR STEEL REINFORCEMENT REQUIREMENTS.
- STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
- ONE POUR MONOLITHIC BASE SECTION.
- ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
- CORBEL MADE OF RED CLAY BRICK WILL BE PERMITTED FOR THE "CONE SECTION" OF THE 4'-0" CATCH BASIN ONLY.
- FOR CATCH BASIN TYPES "D" AND "F" STEPS MUST BE INSTALLED ON THE CURB SIDE OF THE STRUCTURE.
- THE CENTERLINE OF THE OPENING MUST BE WITHIN 2'-0" FROM THE STEPS.
- ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 4.7.2).
- ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
- REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.

**PRECAST 4'-0" ROUND MANHOLE**  
NOT TO SCALE



CAT. NO.	A	B	C	D	WT. (LBS)
R-4853-A	24"x45"	3"	1 1/2"x 6 1/2"	1 1/2"	520

**DOUBLE FRAME & GRATE**  
NEENAH FOUNDRY CORP. (OR EQUAL)  
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 NOV 9 6 2010 FILE # 10-2015  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.  
*W. Joseph Cray*

**Detail Sheet - 1**  
**Scituate Avenue**  
Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**  
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner:  
**Shelby Realty Inc.**  
121 Phenix Avenue  
Cranston, RI 02920

CHRISTOPHER A. DUHAMEL  
No. 5013  
REGISTERED PROFESSIONAL ENGINEER

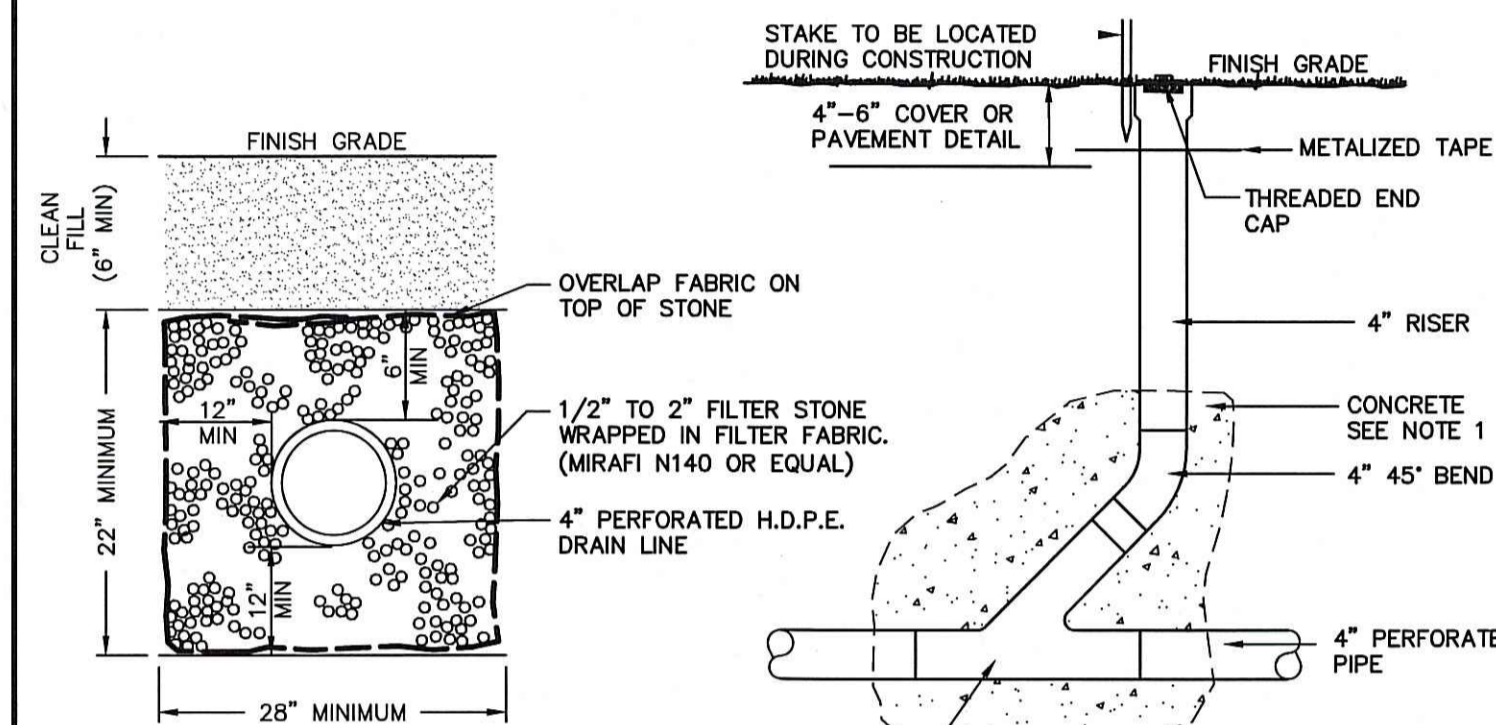
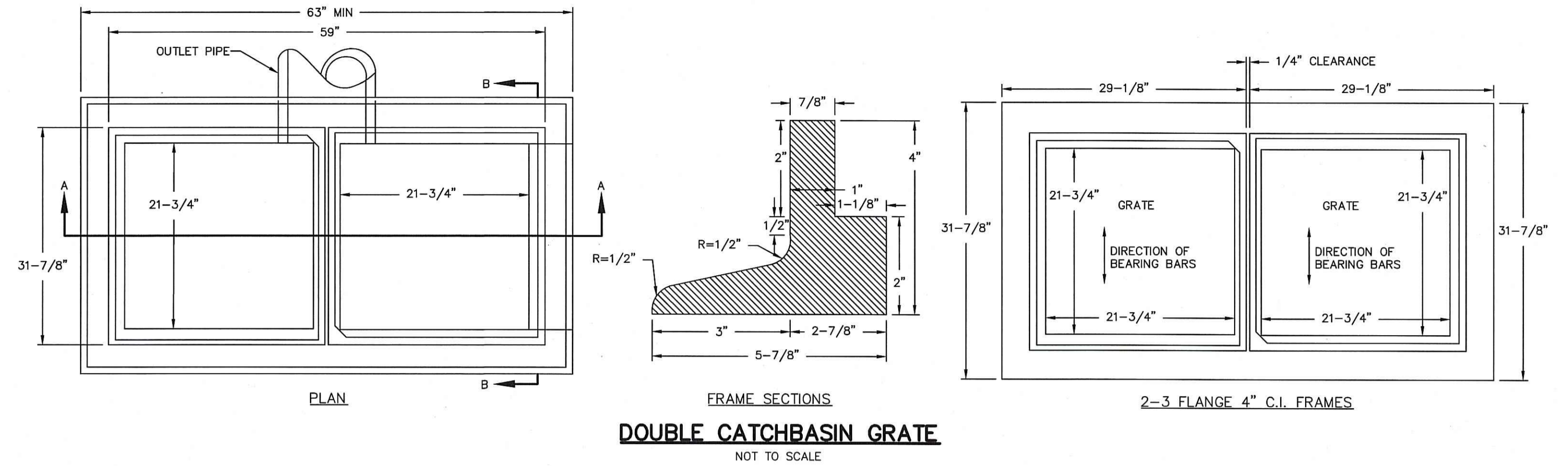
Kindly be advised that this permit is not equivalent to a verification of the type or extent of freshwater wetlands on site.

Drawn By: T.L.L. Design By: T.L.L.

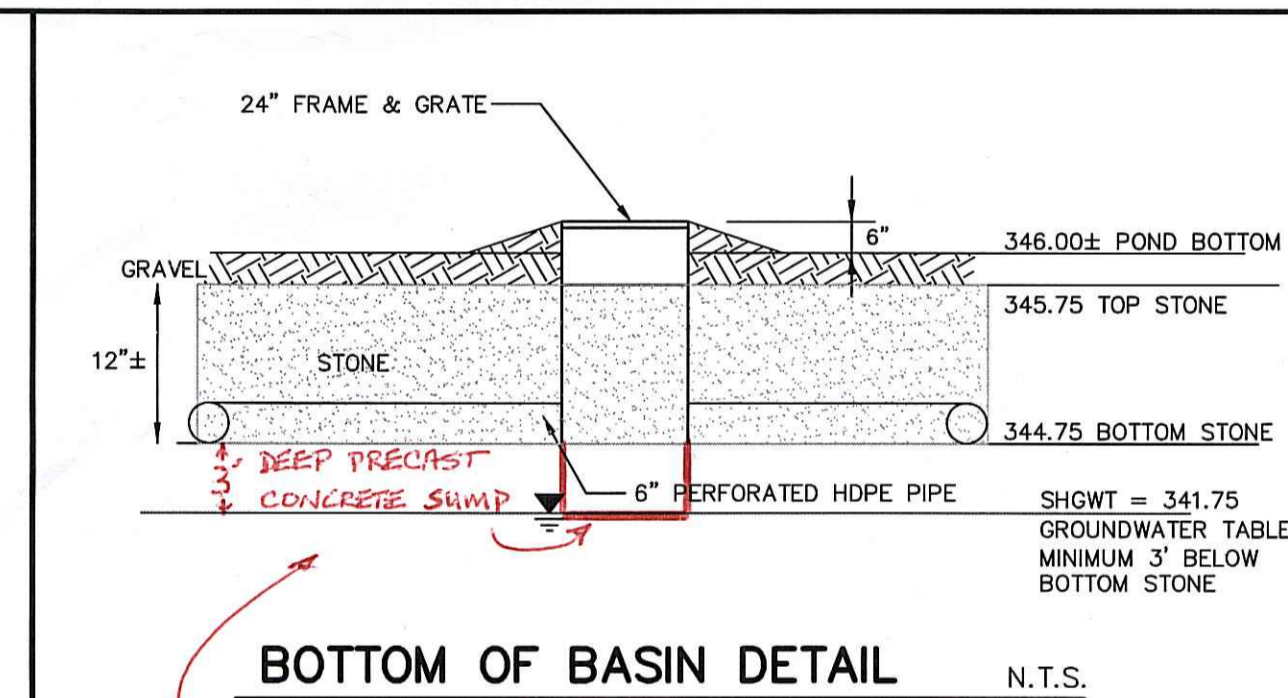
11-22-10 RIDEM Preliminary Determination Resubmission D.A.R.  
7-26-10 RIDEM Preliminary Determination T.L.L.  
No. Date Description By:

- SUBDRAIN AREA IS TO BE STAKED, MARKED AND IS TO REMAIN UNDISTURBED PRIOR TO CONSTRUCTION. NO CONSTRUCTION TRAFFIC OVER THE SUBDRAIN AREA PRIOR TO CONSTRUCTION IS ALLOWED.
- SEE CONSTRUCTION SEQUENCE OUTLINED IN SUBDRAIN TRENCH DETAIL.
- CONTRACTOR SHALL PROVIDE AS-BUILT PLANS OF THE DETENTION BASINS, SHOWING THE FIELD-LOCATED SUBDRAIN LOCATIONS, INVERTS AND SIZES.
- IF AS-BUILT PLAN INDICATES THAT DETENTION BASIN AND SUBDRAINS ARE NOT INSTALLED AS SHOWN ON THE CONSTRUCTION PLANS AND DETAILS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECONSTRUCTING SUBDRAINS ACCORDING TO DESIGN PLANS.
- OWNER SHALL MONITOR THE WATER LEVELS WITHIN THE CLEAN-OUTS AT VARIOUS TIME INTERVALS AFTER RAINFALL EVENTS THAT WILL INDICATE THE EFFECTIVENESS OF THE SYSTEM. IF WATER IS STANDING IN THE SUBDRAIN AFTER A STORM EVENT, SYSTEM FAILURE HAS OCCURRED AND WILL REQUIRE FLUSHING MAINTENANCE, REPAIR OR REPLACEMENT OF SUBDRAIN BY OWNER.
- THE DETENTION BASINS SHOULD DRAIN AS DESIGNED. STANDING WATER SHOULD NOT BE PRESENT IN THE BASIN 72 HOURS AFTER A RAINFALL EVENT. IF STANDING WATER DOES NOT DRAIN WITHIN 72 HOURS, THE BASIN SHALL BE CONSIDERED DEFICIENT AND SHALL BE REPAIRED IMMEDIATELY BY THE OWNER.
- THE INSTALLATION OF THE SUBDRAIN BENEATH THE DETENTION BASINS IS TO BE RECORDED IN THE PROPERTY DEED(S).
- THE OWNER AND / OR THE CONTRACTOR SHALL TAKE SPECIAL CARE SO AS TO AVOID DAMAGING THE SUBDRAIN. HEAVY EQUIPMENT SHALL NOT OPERATED DIRECTLY OVER THE SUBDRAIN PIPE. MORE SPECIFICALLY, THEY SHALL NOT PLACE EQUIPMENT STABILIZERS OVER THE SUB DRAIN PIPE. THE LOCATION OF THE SUBDRAIN SHALL BE VERIFIED AND LOCATED PRIOR TO COMMENCEMENT OF INSPECTION, MAINTENANCE OR REPAIRS WITHIN THE DETENTION BASINS.

**SUBDRAIN INSTALLATION, INSPECTION & MAINTENANCE NOTE**  
NOT TO SCALE



**4\"/> SUBDRAIN CLEANOUT AND TRENCH (TYPICAL)**  
NOT TO SCALE

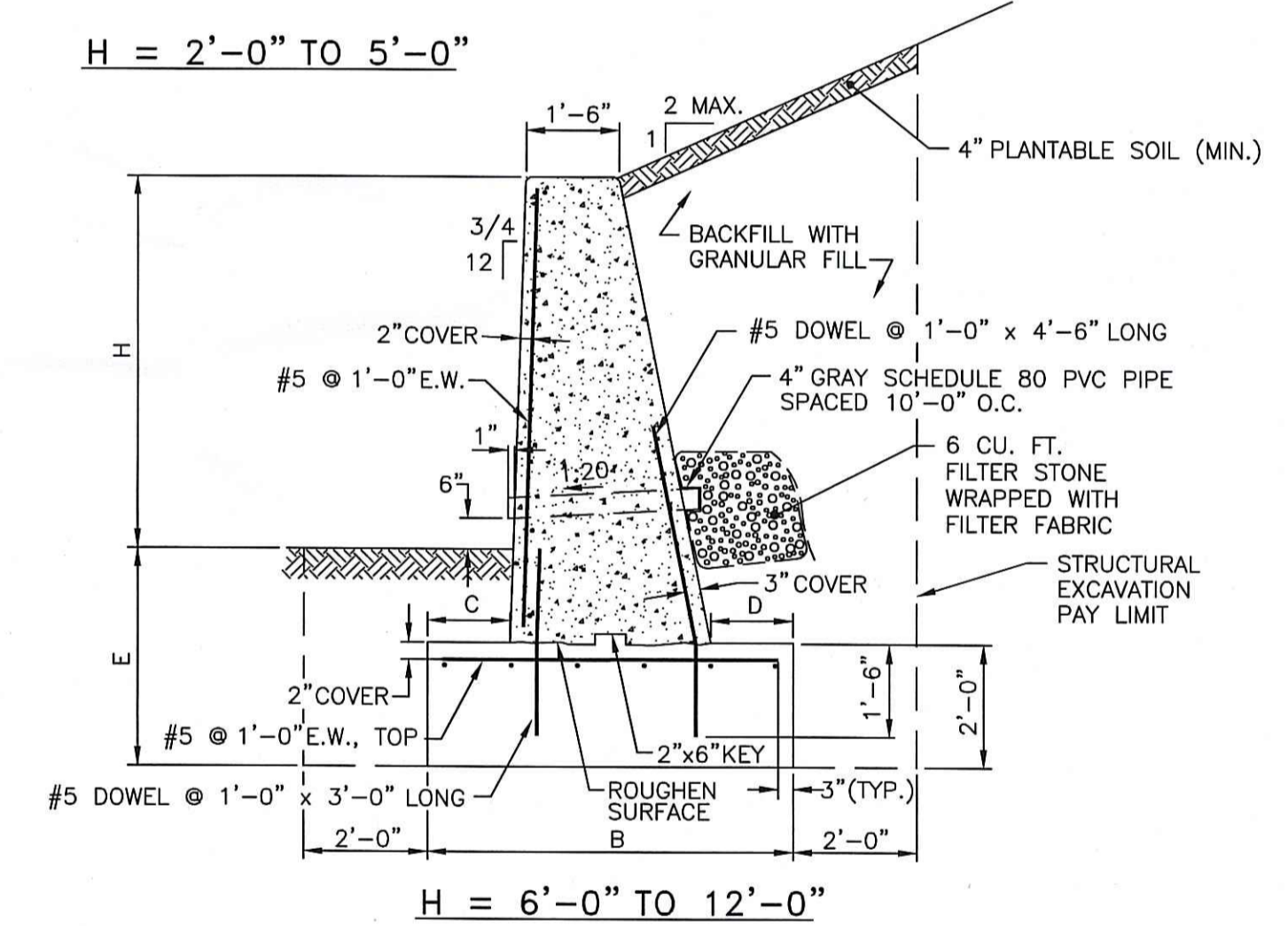


**BOTTOM OF BASIN DETAIL** N.T.S.

Revised per DEM:

- NOTES:
- ENCASE CLEANOUT IN CONCRETE WHEN INVERT IS 12\"/>
  - AT TERMINAL CLEANOUT REPLACE WYE WITH 45\"/>
  - SUBDRAIN AREA TO BE STAKED, MARKED, AND REMAIN UNDISTURBED PRIOR TO CONSTRUCTION. THERE IS TO BE NO CONSTRUCTION TRAFFIC ON SUBDRAIN AREA PRIOR TO CONSTRUCTION.
  - MONITORING WATER LEVELS WITHIN THE CLEAN-OUTS AT VARIOUS TIME INTERVALS AFTER A RAINFALL EVENT WILL INDICATE THE EFFECTIVENESS OF THE SYSTEM. IF WATER IS STANDING IN SUBDRAIN 3 DAYS AFTER A STORM EVENT, SYSTEM FAILURE HAS OCCURRED AND WILL REQUIRE REPAIR OR REPLACEMENT OF SUBDRAIN BY THE HOMEOWNER.
  - FOLLOWING THE COMPLETION OF CONSTRUCTION OF THE PROPOSED DEVELOPMENT AND THE ASSOCIATED DRAINAGE IMPROVEMENTS, AND THE ACCEPTANCE OF THE WORK BY THE ENGINEER AND THE TOWN OR CITY, THE HOMEOWNER SHALL BE RESPONSIBLE TO HAVE A CERTIFIED INSPECTOR CHECK THE SUBDRAINS AROUND THE BASIN NO LESS THAN TWICE PER YEAR - ONCE IN THE SPRING AND ONCE IN THE FALL - TO ENSURE THAT THE SUBDRAINS ARE FUNCTIONING PROPERLY.

DIMENSIONS AND QUANTITIES						
H	A	B	C	D	E	C.F./L.F. OF WALL
2'-0"	3'-3"	-	-	-	2'-6"	10.69
3'-0"	3'-8"	-	-	-	2'-6"	14.21
4'-0"	4'-1"	-	-	-	2'-6"	18.14
5'-0"	4'-6"	-	-	-	2'-6"	22.50
6'-0"	-	5'-4"	1'-0"	1'-4"	3'-6"	27.54
7'-0"	-	6'-2"	1'-4"	1'-4"	3'-6"	33.59
8'-0"	-	6'-5"	1'-4"	1'-6"	3'-6"	36.98
9'-0"	-	7'-4"	1'-9"	1'-9"	3'-6"	42.66
10'-0"	-	7'-10"	1'-9"	2'-0"	3'-6"	47.76
11'-0"	-	8'-5"	1'-10"	2'-3"	3'-6"	53.30
12'-0"	-	9'-0"	1'-10"	2'-6"	3'-6"	59.63



- NOTES:
- SHALL BE IN ACCORDANCE WITH SECTION 808 OF THE R.I. STANDARD SPECIFICATIONS.
  - USE 1/2\"/>
  - SEAL BACKFACE WITH 1/4"x1/2" JOINT SEALANT.
  - SURFACE RUB EXPOSED FACE AND TOP.
  - ALL REINFORCING TO BE EPOXY COATED.
  - PROVIDE EXPANSION JOINTS EVERY 25'-0" IN STEMS.

**CONCRETE RETAINING WALL**  
NOT TO SCALE

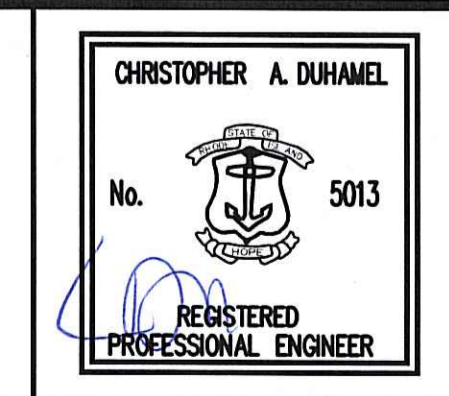
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED NOV 26 2010 FILE # 10-0151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

NOTE:  
WALL AND MANUFACTURER OR TYPE MAY BE SUBSTITUTED WITH APPROVAL BY PROFESSIONAL ENGINEER. SHOP DRAWINGS MUST BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA CONFORMANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.

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



**Detail Sheet - 2**  
**Scituate Avenue**  
Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

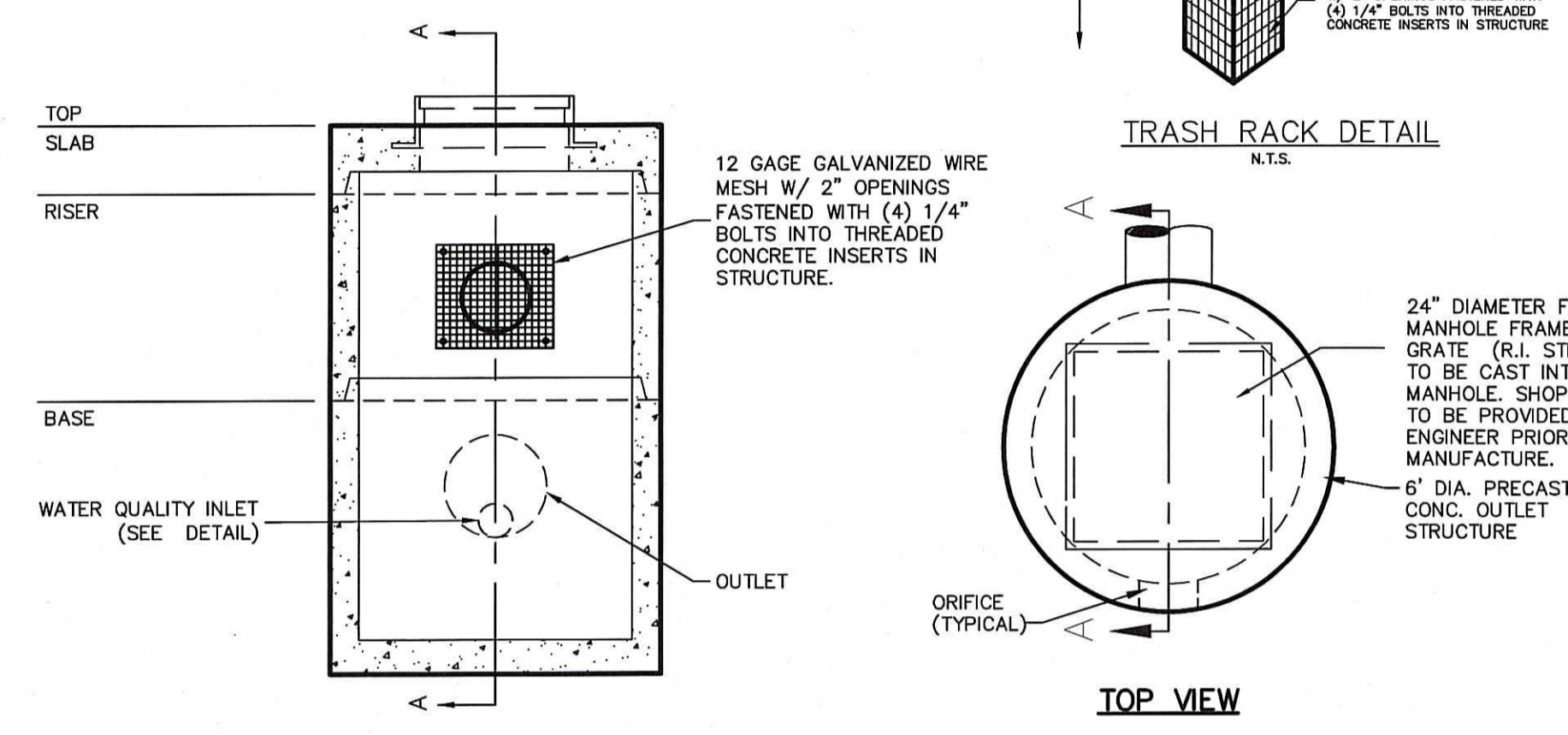
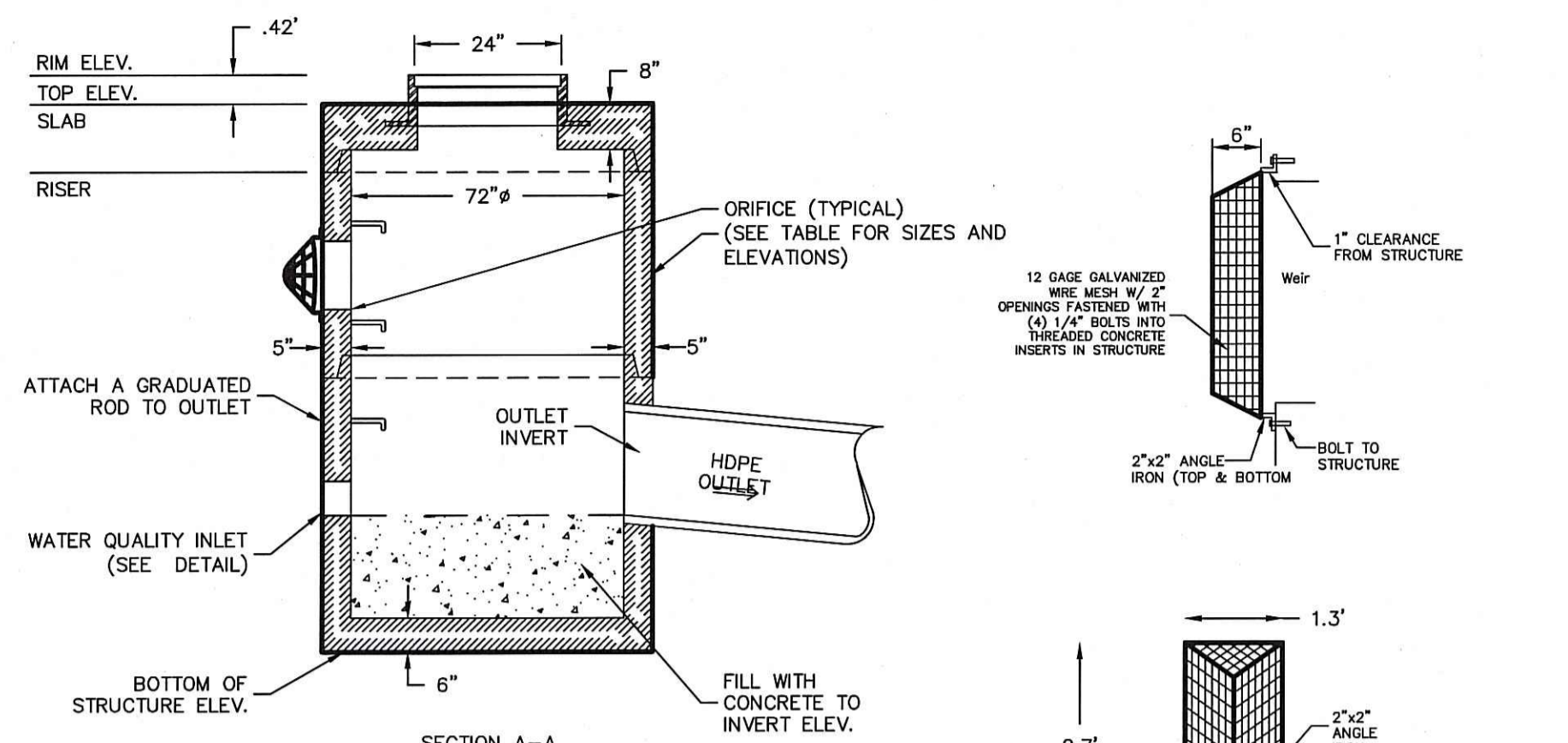
**DiPrete Engineering**  
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner:  
**Shelby Realty Inc.**  
121 Phenix Avenue  
Cranston, RI 02920

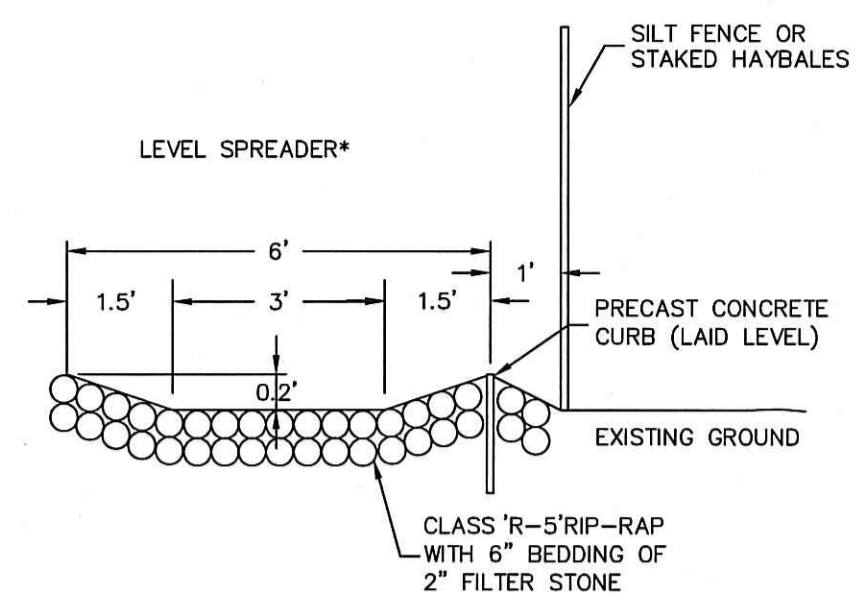
DE Job No: 0984-002 Copyright 2010 by DiPrete Engineering Associates, Inc.

No.	Date	Description	By:
1	11-22-10	RIDEM Preliminary Determination Resubmission	D.A.R.
0	7-26-10	RIDEM Preliminary Determination	T.L.L.
No.	Date	Description	By:

Drawn By: T.L.L. Design By: T.L.L.

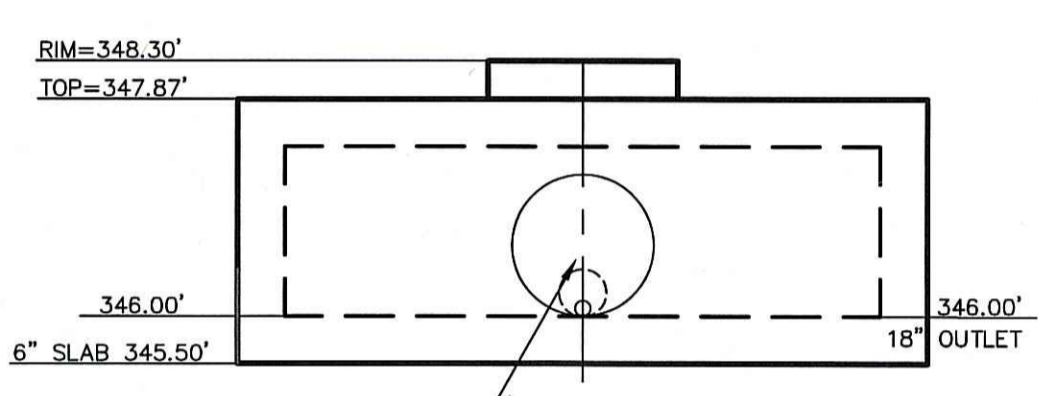


**6" DIA. OUTLET STRUCTURE**  
NOT TO SCALE



NOTE:  
\* LENGTHS AS SPECIFIED ON SITE PLANS

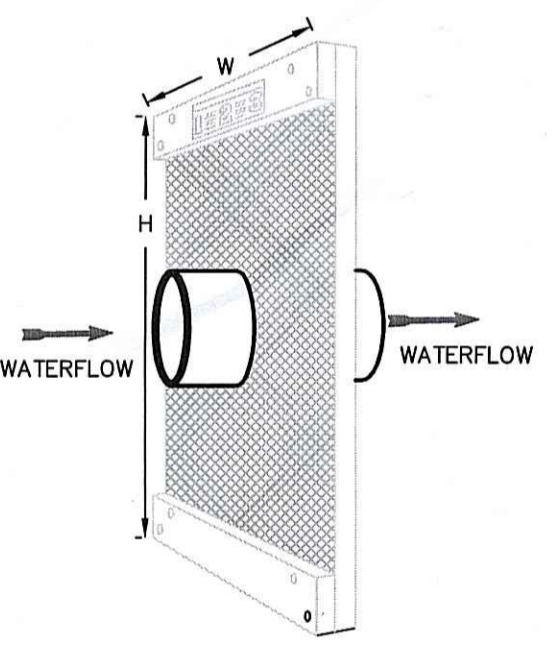
**LEVEL SPREADER**  
NOT TO SCALE



**POND A OUTLET STRUCTURE (OS-A)**  
SCALE: 1"=2'

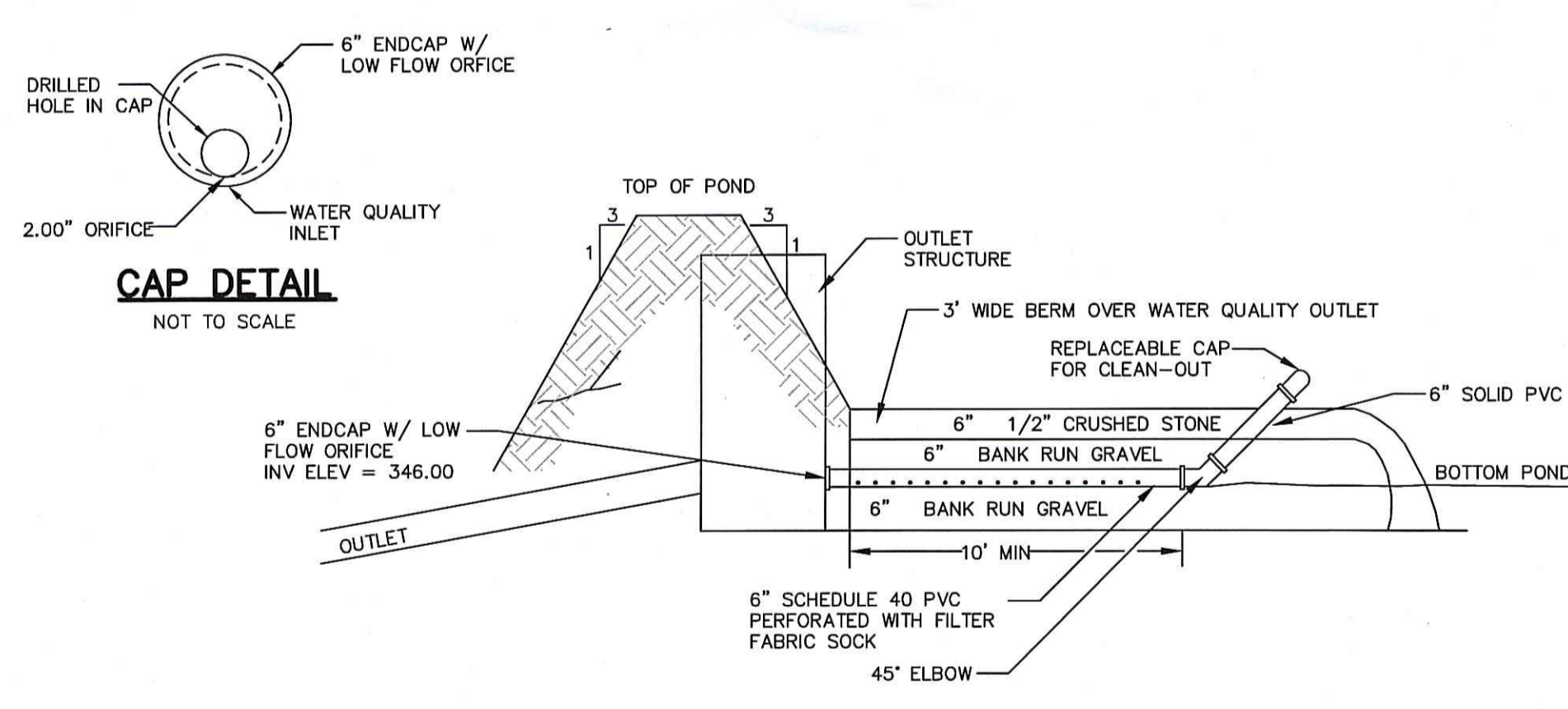
LOCATION	WIDTH	HEIGHT	QUANTITY
POND A	4.0'	4.0'	1

- INSTALLATION NOTES:**
- UNROLL THE ANTI-SEEP AND ATTACH THE BOARDS TO THE EDGES TO FORM A SQUARE. (USE THE BOARDS AND NAILS PROVIDED.) (4'x4' & LARGER)
  - CUT A ROUND HOLE IN THE CENTER OF THE RUBBER THAT IS SMALLER THAN THE PIPE SIZE (APPROX. 25% SMALLER). THIS WILL ALLOW THE RUBBER TO STRETCH OVER THE PIPE WHEN THE ANTI-SEEP IS INSTALLED ON THE PIPE. THIS SHOULD PROVIDE A NEARLY WATERPROOF SEAL BETWEEN THE PIPE AND THE ANTI-SEEP.
  - SLIP THE PIPE THROUGH THE ANTI-SEEP, INSPECT THE SEAL BETWEEN THE PIPE AND THE ANTI-SEEP, CAREFULLY BACKFILL AND COMPACT WITH SUITABLE SOIL.

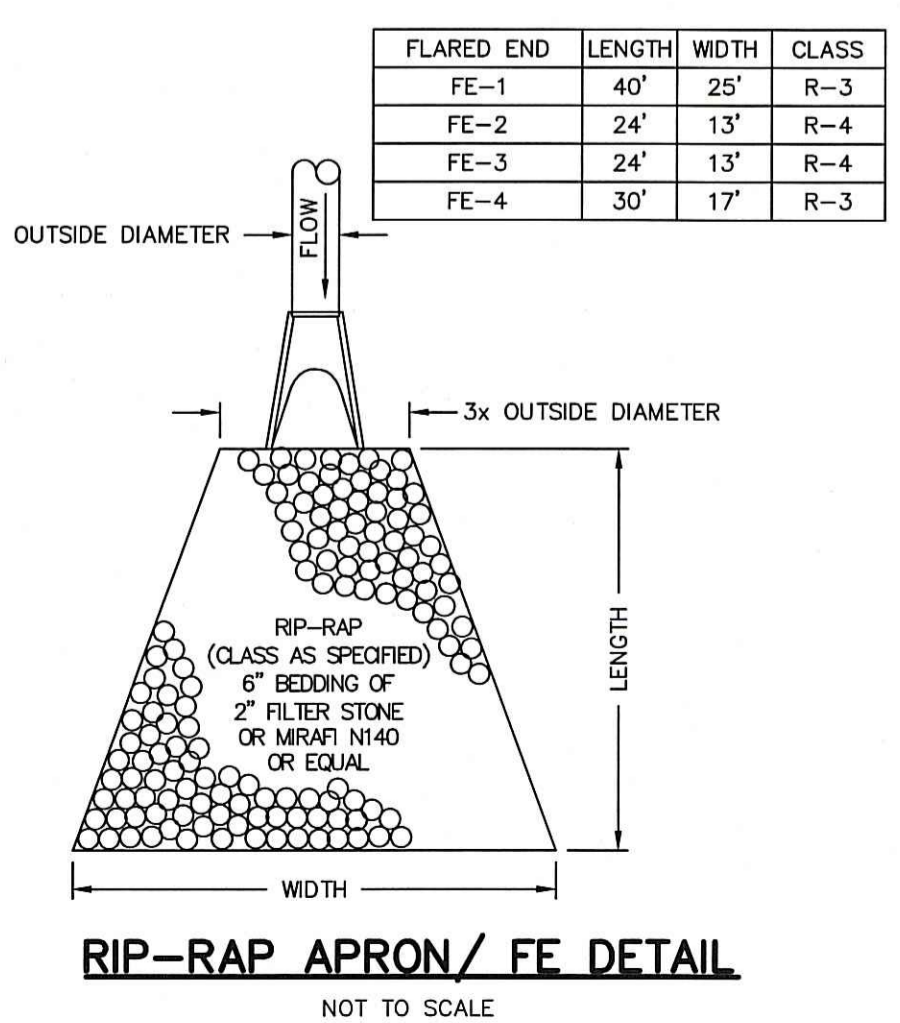


NOTE:  
AGRI DRAIN CORP. OR EQUAL

**ANTI-SEEP COLLAR**  
NOT TO SCALE

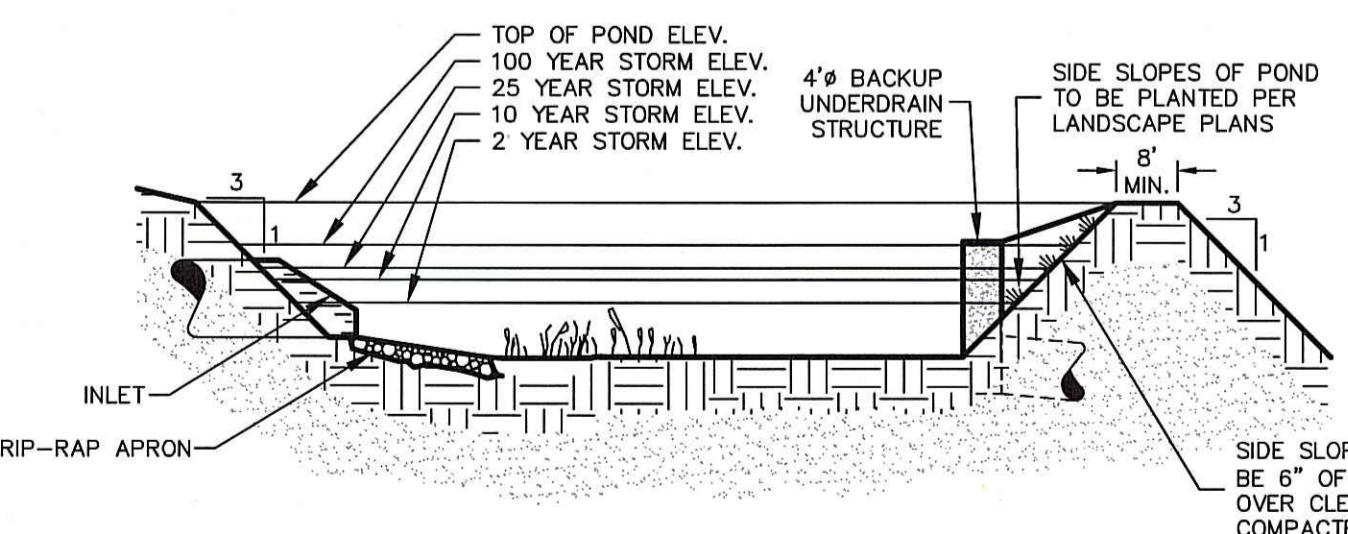


**POND A WATER QUALITY OUTLET (WITH STRUCTURE)**  
NOT TO SCALE



**RIP-RAP APRON/ FE DETAIL**  
NOT TO SCALE

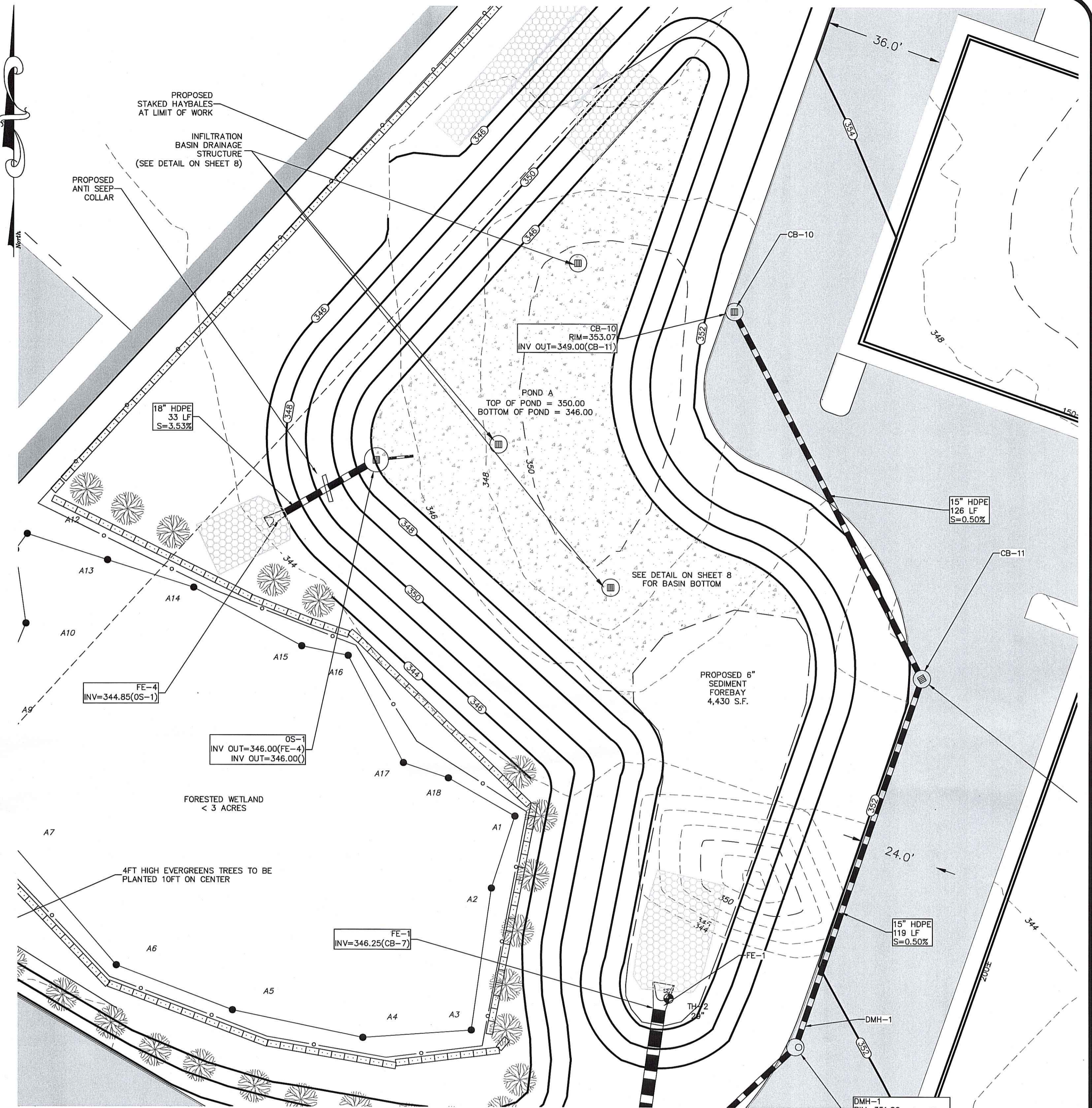
DESCRIPTION	ELEVATION
TOP OF POND ELEVATION	350.00
BOTTOM OF POND	346.00
100 YEAR STORM ELEVATION	348.96
25 YEAR STORM ELEVATION	348.64
10 YEAR STORM ELEVATION	348.39
2 YEAR STORM ELEVATION	347.42
SEASONAL HIGH GWT ELEVATION	341.75



**BASIN TYPICAL CROSS SECTION**  
NOT TO SCALE

ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
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*W. Joseph C...*



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CHRISTOPHER A. DURHAM  
No. 5013  
REGISTERED PROFESSIONAL ENGINEER

**Detail Sheet - 3**  
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Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**  
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121 Phenix Avenue  
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No.	Date	Description	By
1	11-22-10	RIDEM Preliminary Determination Resubmission	D.A.R.
2	7-26-10	RIDEM Preliminary Determination	T.L.L.

Drawn By: T.L.L. Design By: T.L.L.

**6.0 SEQUENCE OF CONSTRUCTION AND STAGING OF LAND DISTURBING ACTIVITIES**

- 6.1.1 CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL (SE & SC) ON-SITE. SEQUENCE OF CONSTRUCTION PROVIDED MAY BE MODIFIED AS FIELD CONDITIONS WARRANT WITH PRIOR APPROVAL FROM THE OWNER OR OWNER'S REPRESENTATIVE.
- 6.1.2 CONSTRUCTION TO BEGIN UPON RECEIPT OF ALL NECESSARY APPROVALS.
- 6.1.3 SURVEY AND STAKE CENTERLINE OF THE PROPOSED ROADS, DETENTION BASIN, DRAINAGE LINES, AND LIMIT OF SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE.
- 6.1.4 PLACE SEDIMENTATION BARRIERS (HAY BALES OR SILT FENCE) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS.
- 6.1.5 BEGIN CLEARING AND GRUBBING IN AREA OF ROADWAYS AND DETENTION BASIN. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED ROADWAYS AND DETENTION BASINS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIERS AND COVERED OR TEMPORARILY SEEDED.
- 6.1.6 EXCAVATE AND GRADE THE PROPOSED DETENTION BASIN WITH INFILTRATION AND ROADWAYS. THE DETENTION BASIN SHALL BE PERMANENTLY SEEDED FOLLOWING FINISH GRADING.
- 6.1.7 INSTALL DRAIN PIPING, DRAINAGE MANHOLES AND CATCH BASINS BEGINNING AT THE DETENTION BASIN AND WORKING UPSTREAM. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. PLACE EROSION CONTROLS AT THE DISCHARGE POINTS AND SEED THE DETENTION BASIN AND DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED. THE DETENTION BASIN AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM RUNOFF UNTIL ALL UNSTABILIZED AREAS ARE STABILIZED WITH VEGETATION.
- 6.1.8 ONCE THE INSTALLATION OF THE DRAINAGE NETWORK IS COMPLETE INSTALL THE WATERLINE, INDIVIDUAL WATER SERVICES FOR BUILDINGS AND OTHER UNDERGROUND UTILITIES SUCH AS, ELECTRIC, TELEPHONE, AND CABLE IN ACCORDANCE WITH THE APPROVED FINAL PLANS.
- 6.1.9 PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE ROADWAY IN ACCORDANCE WITH THE SITE PLANS.
- 6.1.10 PLACE BITUMINOUS ASPHALT BINDER PER SITE PLANS.
- 6.1.11 ONCE BITUMINOUS ASPHALT BINDER COURSE IS PLACED, CONSTRUCTION OF PROPOSED BUILDING MAY COMMENCE. CONSTRUCTION TO INCLUDE SURVEYING AND STAKING OF THE PROPOSED LIMIT OF CLEARING (IF NOT COMPLETED WITH 8.2), EXCAVATION FOR FOUNDATION AND UTILITY INSTALLATION.
- 6.1.12 ONCE THE MAJORITY OF THE SITE IS STABILIZED THE DETENTION BASIN AND DRAINAGE NETWORK MAY BE BROUGHT ONLINE WITH THE APPROVAL OF THE DESIGN ENGINEER.
- 6.1.13 FINISH PERMANENT STABILIZATION. REPAIR DRAINAGE OUTLETS AND BASIN AS REQUIRED. TREE LIMBS, LEAVES, COBBLES, BouldERS, ETC. SHALL BE REMOVED FROM THE BOTTOM OF THE BASINS BEFORE THE APPLICATION OF TOPSOIL.
- 6.1.14 SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS.
- 6.1.15 THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENTS IN THE DETENTION BASINS SHALL BE REMOVED.
- 6.1.16 REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS.

**8.0 EROSION AND SEDIMENTATION CONTROL MEASURES, PERMANENT STABILIZATION, AND MAINTENANCE**

**8.1 ESTABLISHMENT OF VEGETATIVE COVER**

- 8.1.1 SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME. THE CONTRACTOR SHALL INITIATE APPROPRIATE VEGETATIVE PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS.
- 8.1.2 ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED OR PROTECTED.
- 8.1.3 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'S STANDARD SPECIFICATION, M.20.
- 8.1.4 THE TEMPORARY SEEDING DESIGN MIX SHALL BE COMPRISED OF THE FOLLOWING:
 

TYPE	LBS/AC
WINTER RYE	100
MILLET OR SUDAGRASS	40
ANNUAL OR PERENNIAL RYE GRASS	60
- 8.1.5 THE CONSERVATION SEED MIX SHALL BE COMPRISED OF THE FOLLOWING:
 

TYPE	% BY WEIGHT
FOW, MANNGRASS	20
PENNSYLVANIA SMARTWEE	20
JAPANESE MILLET	20
VIRGINIA WILD RYE	20
FOX SEDGE	10
DEER TONGUE	5
BLACKWELL SWITCHGRASS	5
- 8.1.6 THE GENERAL PURPOSE SEED MIX SHALL BE COMPRISED OF THE FOLLOWING:
 

TYPE	LBS/AC
RED FESCUE	75
KENTUCKY BLUEGRASS	15
COLONIAL BENTGRASS	5
PERENNIAL RYEGRASS	5

EARLY SPRING OR LATE SUMMER SEEDING IS RECOMMENDED. SEEDING SCHEDULE SHOULD CONFORM WITH RHODE ISLAND'S STANDARD SPECIFICATION, L.02.03.1 SEEDING DATES. PERMANENT SEEDING SHALL BE DURING THE APRIL 1 TO MAY 31 OR AUGUST 15 TO OCTOBER 15. TEMPORARY SEEDING MAY BE DONE ANYTIME BETWEEN MARCH 15 AND NOVEMBER 15 WITH THE APPROVAL OF THE ENGINEER. RECORD, FERTILIZE AS REQUIRED BY SOIL TESTING TO COMPLEMENT OR UPGRADE EXISTING CONDITIONS. THE SEED MIX SHALL BE INOCULATED WITHIN 24 HOURS AND BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULANTS FOR EACH VARIETY.

- 8.1.7 TEMPORARY TREATMENTS SHALL CONSIST OF HAY, STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING. TEMPORARY HAY MULCH TO BE TACKED IN PLACE WITH NYLON MESH NETTINGS. SIDE SLOPES OF BASINS SHALL BE TREATED WITH NORTH AMERICAN GREEN EROSION CONTROL BLANKETS SUCH AS SIS5 OR APPROVED EQUAL. THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER. HAY OR STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 2 TONS/ACRE.
- 8.1.8 ALL HAY BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
- 8.1.9 ALL FILL SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH LOCAL MUNICIPAL REQUIREMENTS AND THE RHODE ISLAND STANDARD SPECIFICATION FOR ROAD AND BRIDGE SECTION 202.
- 8.1.10 STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 2:1 AND SHALL BE TEMPORARILY SEEDED AND/OR STABILIZED.
- 8.1.11 ALL AREAS PROPOSED TO BE VEGETATED THAT ARE DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. PERMANENTLY SEEDED AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH MULCH. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. WELL ESTABLISHED VEGETATION SHALL BE MAINTAINED. BARE OR ERODED AREAS SHALL BE IMMEDIATELY REPAIRED AND RESEEDED BY THE CONTRACTOR. ACTIVITIES SHALL BE CONFINED TO WITHIN THE LIMIT OF WORK AS SHOWN ON THE PLANS.
- 8.1.12 MAXIMUM PERMANENT GRADED SLOPE WITHIN THE SITE IS TO BE 3:1 UNLESS NOTED OTHERWISE.

- 8.1.13 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
- 8.1.14 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989 AS A GUIDE.

**8.2 NON-STRUCTURAL MEASURES**

- 8.2.1 CONSTRUCTION TRAFFIC SHALL BE LIMITED TO THE ACCESS ROAD, UTILITY EASEMENTS AND AREAS TO BE GRADED.
- 8.2.2 TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATION SHALL BE SUBJECT TO APPROVAL BY THE PROJECT ENGINEER. A SEDIMENT BARRIER SHALL SURROUND ALL TOPSOIL STOCKPILES.
- 8.2.3 ALL TYPES OF WASTE GENERATED AT THE SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND TOWN OF JOHNSTON REGULATIONS. CONSTRUCTION DEBRIS SHALL BE DISPOSED OF DAILY TO AVOID EXPOSURE TO PRECIPITATION.
- 8.2.4 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION OF NON-STRUCTURAL MEASURES AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- 8.2.5 REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

**8.3 STRUCTURAL MEASURES**

- 8.3.1 RUNOFF WATER QUALITY IS IMPROVED UTILIZING WATER QUALITY/SEDIMENTATION AND EXTENDED DRY DETENTION BASIN WITH INFILTRATION. CONSTRUCTION OF THE DETENTION BASIN SHALL BE SUPERVISED BY THE PROJECT ENGINEER. THE DETENTION BASIN SHALL BE BUILT TO CONTROL RUNOFF FOR 2 THROUGH 100 YEAR STORM FREQUENCIES. SIDE SLOPES WITHIN THE DETENTION BASINS SHALL BE 3:1 MAXIMUM, UNLESS NOTED OTHERWISE. ALL EMBANKMENTS OF THE BASINS SHALL BE THOROUGHLY COMPACTED UPON PLACEMENT IN STRICT CONFORMANCE WITH R.I. STANDARD SPECIFICATION SECTION 202. THE EMERGENCY SPILLWAY SHALL BE PROTECTED BY RIP RAP DOWNSTREAM AND UPSTREAM. A GRADUATED GAGE IS TO BE SET WITHIN THE BASIN TO MONITOR ACCUMULATED SEDIMENTS. A REPORT AND PLAN OF AS-BUILT CONSTRUCTION SHALL BE AVAILABLE TO THE TOWN OF JOHNSTON.
- 8.3.2 A STONE STABILIZATION PAD IS LOCATED AT THE SITE ENTRANCE TO REDUCE THE TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT OF WAY.
- 8.3.3 RIP RAP APRONS AND/OR LEVEL SPREADERS SHALL BE INSTALLED AT THE OUTLETS OF ALL DRAINAGE PIPES.
- 8.3.4 HAY BALES OR SILT FENCE SHALL BE INSTALLED DOWNSTREAM OUTSIDE THE LIMITS OF ANY PROPOSED CONSTRUCTION AS SHOWN ON THE SITE PLANS AND PRIOR TO THE COMMENCEMENT OF THE PROPOSED ALTERATION.
- 8.3.5 TEMPORARY BERMS/ OR SWALES SHALL BE USED TO DIRECT SURFACE RUNOFF TO DRAINAGE FACILITIES TO CAPTURE AND TREAT THE MAXIMUM AMOUNT OF STORM WATER.
- 8.3.6 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE THE OVERALL RESPONSIBILITY FOR STRUCTURAL MEASURE IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- 8.3.7 REFERENCE THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK PREPARED BY THE USDA SOIL CONSERVATION SERVICE 1989, AS A GUIDE.

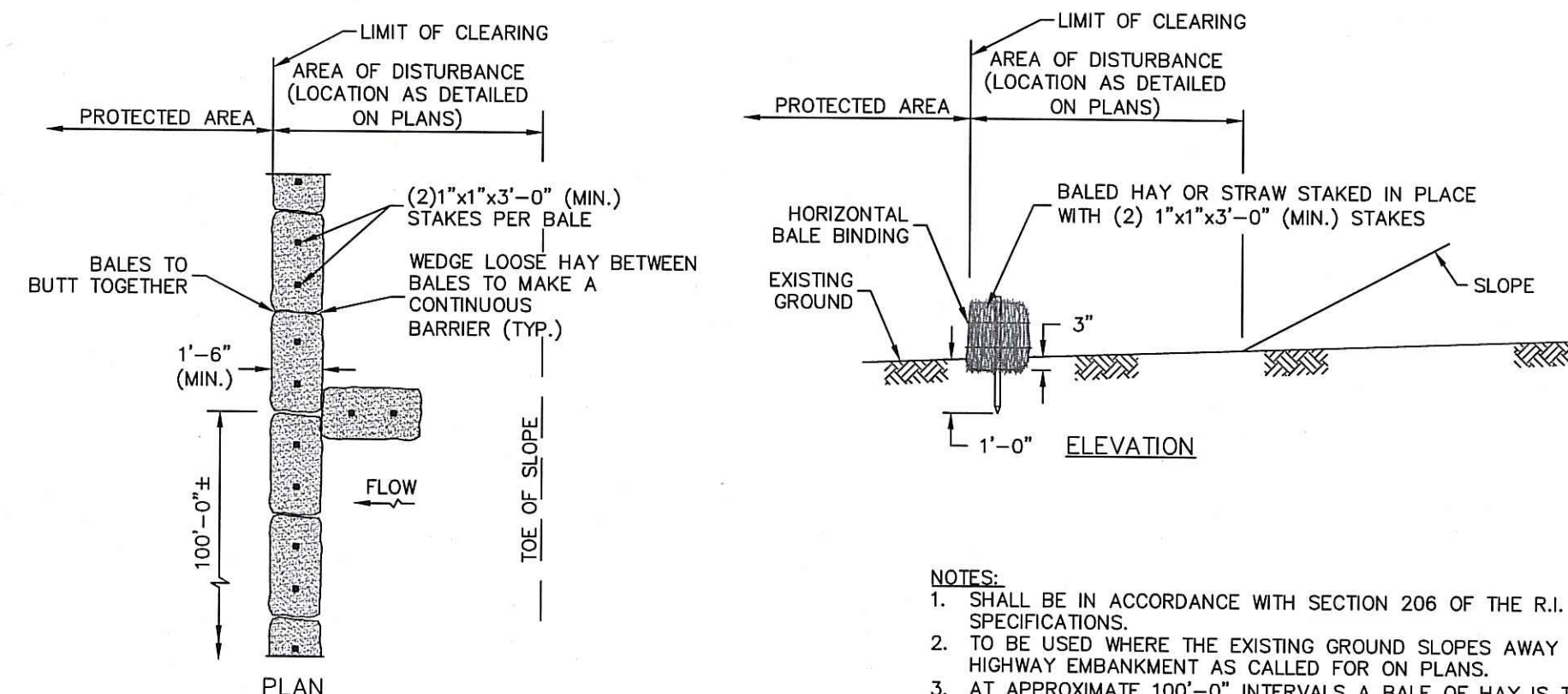
**8.4 MAINTENANCE: SHORT TERM / LONG TERM**

- 8.4.1 THE STONE STABILIZATION PADS AT THE SITE ENTRANCE SHALL BE MAINTAINED BY THE CONTRACTOR. THE MAINTENANCE SHALL INCLUDE TOP PRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND OR AS DIRECTED BY THE ENGINEER. ALL SEDIMENTS SPILLED, DROPPED, WASHED, OR TRACKED ON THE PUBLIC RIGHT OF WAY MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
- 8.4.2 ALL HAY BALES/SILT FENCE, TEMPORARY TREATMENTS (HAY, STRAW, ETC.), AND TEMPORARY PROTECTION SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION. HAY BALES/SILT FENCE SHALL BE INSPECTED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH STORM EVENT OR EVERY 7 DAYS, WHICHEVER COMES FIRST, FOR UNDERMINING AND DETRIORATION. A STORM EVENT SHALL BE DEFINED AS 0.25 INCHES OF RAIN WITHIN A 24-HOUR PERIOD. THE HAY BALES/SILT FENCE SHALL BE REPAIRED OR REPLACED AS WARRANTED. THE CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE HAY BALES/SILT FENCE BECOMES FILLED IN WITH SEDIMENT. THE HAY BALES/SILT FENCE SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED. FOLLOWING CONFIRMATION FROM THE TOWN OF JOHNSTON AND OR THE PROJECT ENGINEER THAT AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER HAS BEEN ESTABLISHED THE HAY BALES/SILT FENCE SHALL BE REMOVED.
- 8.4.3 THE CONTRACTOR SHALL MAINTAIN ALL TOPSOIL STOCKPILES AND SEDIMENT BARRIERS THROUGHOUT CONSTRUCTION. EXTREME CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT SPILL OVER THE SEDIMENT BARRIER. HAY BALES OR SILT FENCE SHALL BE STAKED AROUND THE STOCKPILES.
- 8.4.4 ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED, PROTECTED, AND MAINTAINED BY THE CONTRACTOR FOLLOWING FINAL GRADING AND CONSTRUCTION. THE CONTRACTOR SHALL CHECK REGULARLY ALL SEEDED AREAS TO SEE THAT A GOOD STAND OF VEGETATION IS MAINTAINED. THE CONTRACTOR MUST REPAIR OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
- 8.4.5 THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF THE BASIN DURING AND UP TO A YEAR AFTER COMPLETION OF CONSTRUCTION AND ACCEPTANCE BY THE OWNER. THE OWNER IS RESPONSIBLE FOR INSPECTIONS AND MAINTENANCE THEREAFTER. THE CONTRACTOR'S MAINTENANCE/INSPECTION RESPONSIBILITIES SHALL INCLUDE RESEEDING ANY UNSTABILIZED AREAS WITHIN THE BASIN AT NO ADDITIONAL EXPENSE TO THE OWNER, REMOVING ACCUMULATED SILT WHEN SEDIMENTS IN THE BASIN REACHES THE HEIGHT SPECIFIED IN THE SEDIMENT VOLUME CALCULATIONS AND MAINTAINING THE GRASS TO A GROWING HEIGHT BETWEEN 2-10". THE CONTRACTOR SHALL INSPECT RIP RAP PADS AFTER EACH STORM AND REPAIR AS NECESSARY. THE OWNER'S MAINTENANCE/INSPECTION RESPONSIBILITIES SHALL INCLUDE INSPECTION OF THE BASIN AND RIP RAP PADS SEMIANNUALLY AND AFTER MAJOR STORMS. IF REPAIRS ARE NEEDED, THEY SHALL BE CARRIED OUT IMMEDIATELY. THE OWNER SHALL MAINTAIN A GOOD VEGETATIVE COVER (GRASS BETWEEN 2-10" OR VEGETATION AS SPECIFIED). THE BOTTOM OF THE DETENTION BASIN SHALL BE INSPECTED ON A SEMI-ANNUAL BASIS AND ACCUMULATED SEDIMENTS SHALL BE REMOVED WHEN THEY REACH 1.5" FOR POND A OR EVERY 10 YEARS, WHICHEVER COMES FIRST.
- 8.4.6 THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION, MAINTENANCE AND REPAIR TO ALL DRAINAGE STRUCTURES AND RELATED APPURTENANCES ON SITE DURING CONSTRUCTION AND IMMEDIATELY FOLLOWING CONSTRUCTION FOR A MAXIMUM OF ONE YEAR, OR UNTIL ACCEPTANCE BY THE ENGINEER AND THE OWNER. THE OWNER IS RESPONSIBLE FOR INSPECTIONS AND MAINTENANCE THEREAFTER.
- 8.4.7 THE FOLLOWING MAINTENANCE PROCEDURES SHALL BE FOLLOWED FOR THE INFILTRATION BASIN.
 

**REVISED PER DEM!**

STORMWATER WETLANDS REF. TABLE 11-9-5, R1 STORMWATER DESIGN AND INSTALLATION STANDARDS DRAFT MANUAL (INSPECTION SCHEDULE)

  - INSPECT FOR INVASIVE VEGETATION AND REMOVE WHERE POSSIBLE (SEMI-ANNUAL)
  - INSPECT FOR DAMAGE TO THE EMBANKMENT AND INLET/ OUTLET STRUCTURES. REPAIR AS NECESSARY (ANNUAL)
  - NOTE SIGNS OF HYDROCARBON BUILD-UP, AND DEAL WITH APPROPRIATELY (ANNUAL)
  - MONITOR FOR SEDIMENT ACCUMULATION IN THE FACILITY AND FOREBAY (ANNUAL)
  - EXAMINE TO ENSURE THAT INLET AND OUTLET DEVICES ARE FREE OF DEBRIS AND ARE OPERATIONAL (ANNUAL)
  - REPAIR UNDERCUT OR ERODED AREAS (AS NEEDED) MAINTENANCE
  - CLEAN AND REMOVE DEBRIS FROM INLET AND OUTLET STRUCTURES (FREQUENT MAINTENANCE, 3-4 TIMES/YEAR)
  - MOW SIDE SLOPES (FREQUENT MAINTENANCE, 3-4 TIMES/YEAR)
  - REMOVAL OF SEDIMENT FROM THE FOREBAY. (AS NEEDED MINIMUM 5 YEAR MAINTENANCE)
  - WHEN INFILTRATION RATES ARE SIGNIFICANTLY REDUCED BASIN REGENERATION IS REQUIRED. REGENERATION SHALL INCLUDE REPLACEMENT OF STONE AND/OR VACUUMING OF STONE TO REMOVE SEDIMENT.
- 8.4.8 THE CONTRACTOR SHALL MAINTAIN THE DRAINAGE NETWORK DURING CONSTRUCTION. THE ACCUMULATED SEDIMENTS IN THE CATCH BASINS SHALL BE REMOVED AND DRAINAGE PIPES FLUSHED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION. CATCH BASIN SLUMPS SHALL BE CHECKED WEEKLY AND SEDIMENTS SHALL BE REMOVED IF THEY EXCEED 6" DEPTH OR EVERY 10 YEARS, WHICHEVER COMES FIRST.
- 8.4.9 IF STANDING WATER PERSISTS THREE DAYS AFTER A STORM EVENT WITHIN THE DETENTION BASIN, THEN FAILURE OF THE SYSTEM HAS OCCURRED AND SHALL BE ADDRESSED THROUGH REPAIR OR REPLACEMENT.
- 8.4.10 DURING THE FIRST 6 MONTHS OF OPERATION, INSPECTIONS SHALL BE ACCOMPLISHED IN THE DETENTION BASIN AFTER EVERY RAINFALL EVENT TO CHECK FOR CLOGGING, OR CONVERSELY, TOO RAPID A RELEASE. FOLLOWING THE FIRST (6) MONTHS, INSPECTIONS SHALL BE CONDUCTED AT MINIMUM, ANNUALLY.
- 8.4.11 THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR THE MAINTENANCE PROGRAM DURING THE CONSTRUCTION PHASE AND FOR A PERIOD OF ONE YEAR AFTER CONSTRUCTION. THE SUPERINTENDENT SHALL SEE THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- 8.4.12 AFTER ACCEPTANCE BY THE OWNER, THE OWNER SHALL HAVE OVERALL RESPONSIBILITY FOR IMPLEMENTING THE MAINTENANCE PROGRAM FOR THE STORMWATER MANAGEMENT PLAN.

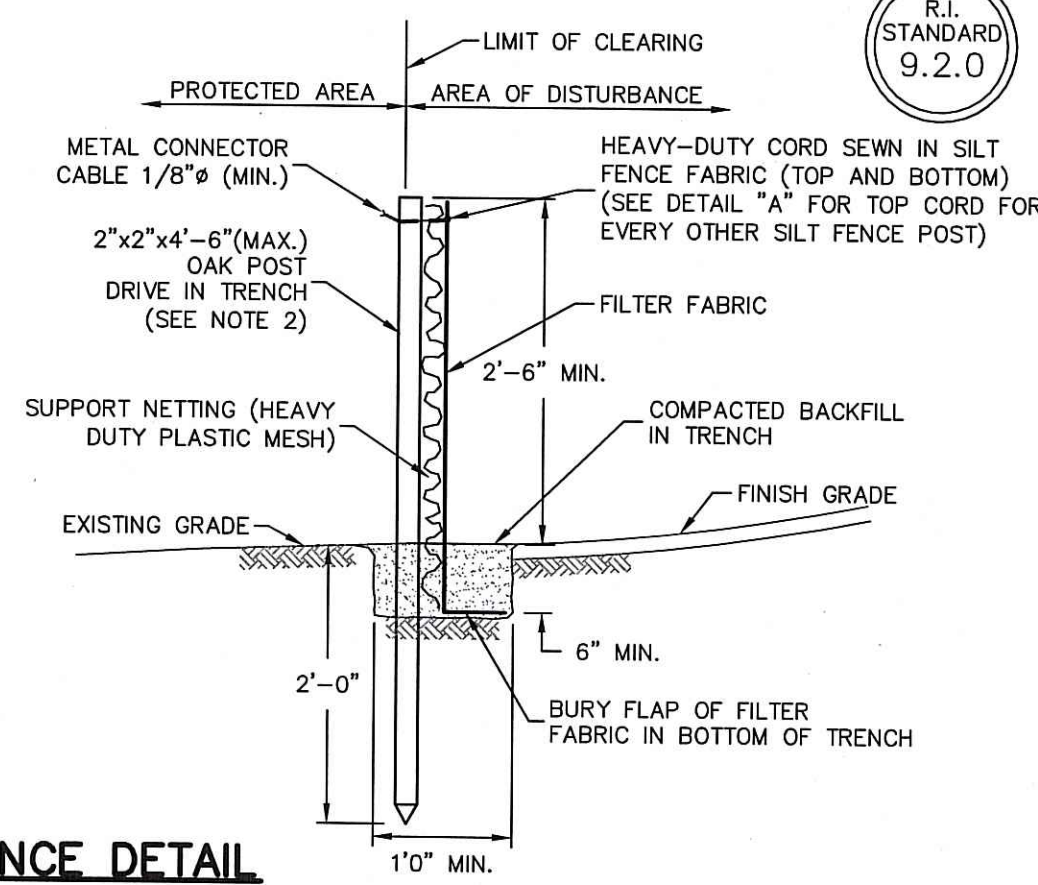
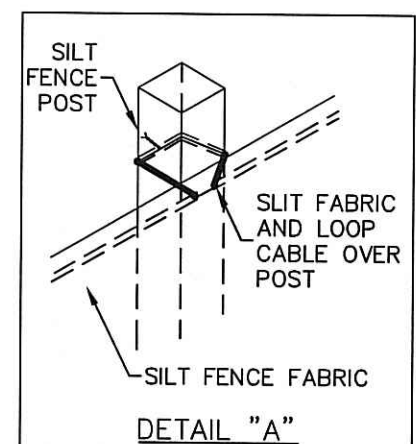


- NOTES:
- SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
  - TO BE USED WHERE THE EXISTING GROUND SLOPES AWAY FROM THE HIGHWAY EMBANKMENT AS CALLED FOR ON PLANS.
  - AT APPROXIMATE 100'-0" INTERVALS A BALE OF HAY IS TO BUTT PERPENDICULARLY.

**BALED HAY EROSION CHECK**

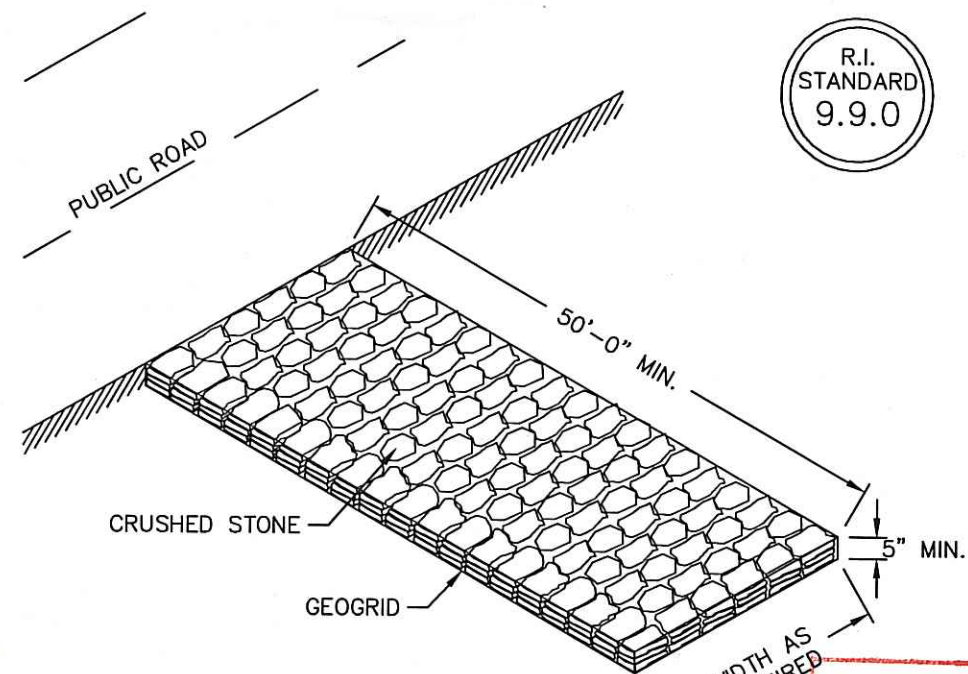
NOT TO SCALE

- NOTES:
- SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
  - 2"x2"x4'-6" (MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 6'-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.
  - 1"x1"x4'-6" (MIN.) POSTS PERMITTED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.
  - SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.



**SILT FENCE DETAIL**

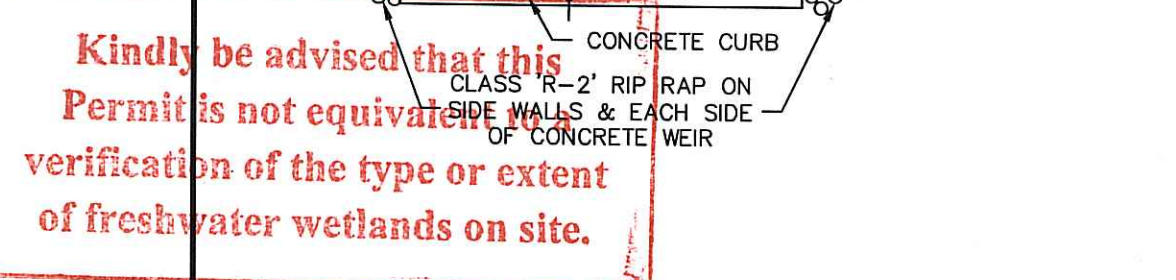
NOT TO SCALE



NOTE: SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS.

**CONSTRUCTION ACCESS**

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED NOV 26 2010 FILE # 10-0151  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



**EMERGENCY SPILLWAY DETAIL**

NOT TO SCALE

THIS REGULATORY SUBMISSION SET SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNLESS STAMPED ISSUED FOR CONSTRUCTION AND SIGNED BY A DIPRETE ENGINEERING REPRESENTATIVE.

THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE MEANS, METHODS, SAFETY PRECAUTIONS AND REQUIREMENTS, AND OSHA COMPLIANCE IN THE IMPLEMENTATION OF THIS PLAN AND DESIGN.

**Detail Sheet - 4**

**Scituate Avenue**  
Assessor's Plat 43 Lot 2  
Johnston, Rhode Island

**DiPrete Engineering**  
Two Stafford Court Cranston, RI 02920  
tel 401-943-1000 fax 401-464-6006 www.DiPrete-Eng.com

Owner:  
**Shelby Realty Inc.**  
121 Phenix Avenue  
Cranston, RI 02920

CHRISTOPHER A. DUHAMEL  
No. 5013  
REGISTERED PROFESSIONAL ENGINEER

No.	Date	Description	By:
1	11-22-10	RIDEM Preliminary Determination Resubmission	D.A.R.
0	7-26-10	RIDEM Preliminary Determination	T.L.L.

Engineers • Planners • Surveyors  
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