

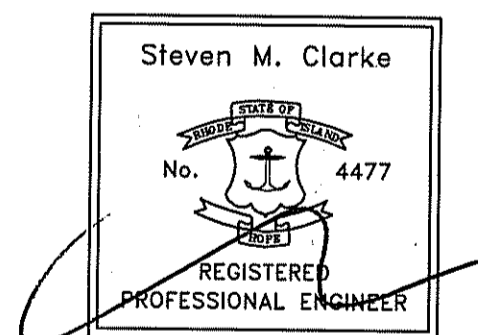
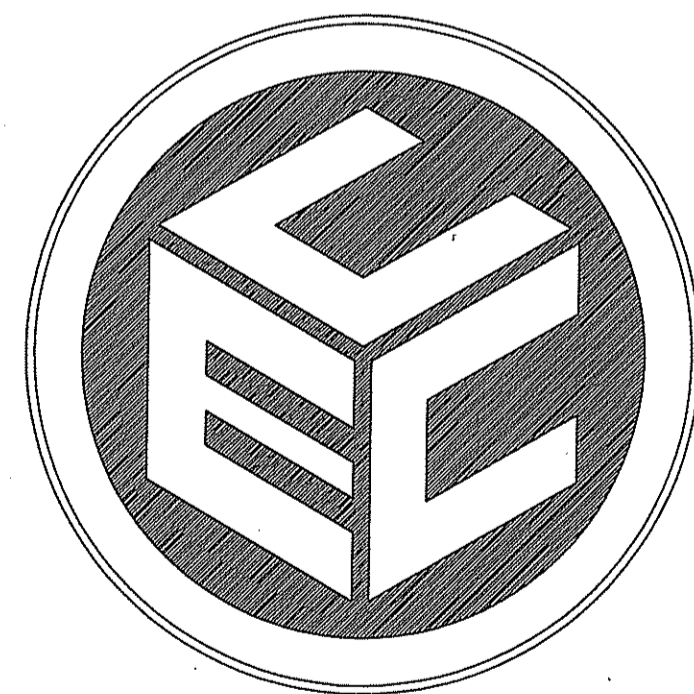
# PARKING EXPANSION PLAN

FOR  
"RISING SUN MILLS"

ASSESSORS PLAT 33 LOTS 322, 345, 350, 351, 395, 624, 654 & 656  
ON  
VALLEY STREET

IN  
PROVIDENCE, RHODE ISLAND

OWNER/APPLICANT  
IZZI & SONS, INC.  
181 VALLEY STREET  
PROVIDENCE RI 02909



**COMMONWEALTH**  
ENGINEERS & CONSULTANTS, INC.

400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908

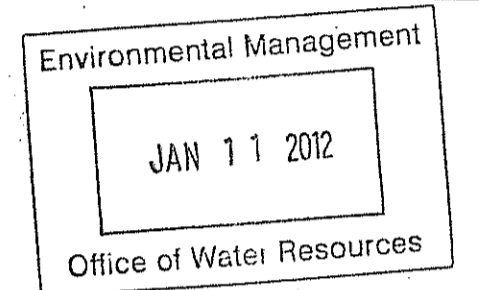
OCTOBER 20, 2011  
REVISED: JANUARY 3, 2012



LOCUS MAP  
SCALE: 1"=500'

### LIST OF DRAWINGS

1. TITLE SHEET
2. EXISTING CONDITIONS
3. DRAINAGE & UTILITY PLAN
4. GRADING PLAN
5. FLOOD PLAIN
6. EROSION CONTROL PLAN
7. CONSTRUCTION DETAILS
8. CONSTRUCTION DETAILS
9. CONSTRUCTION DETAILS

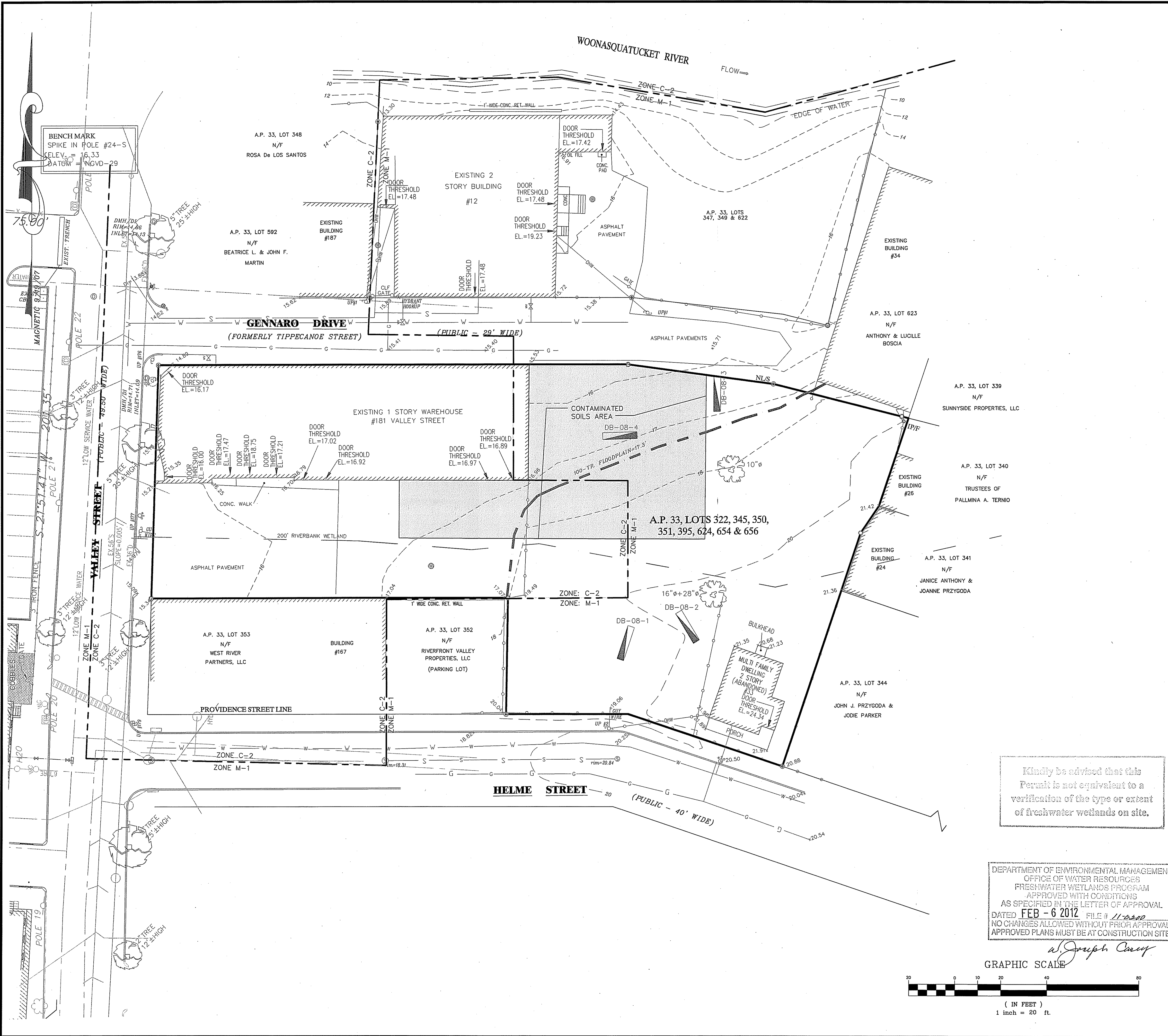


Kindly be advised that this  
Permit is not equivalent to a  
verification of the type or extent  
of freshwater wetlands on site.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED FEB - 6 2012 FILE # 11-0200  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*W. Joseph Carey*

PROJECT NO. 07056.00



**LEGEND**

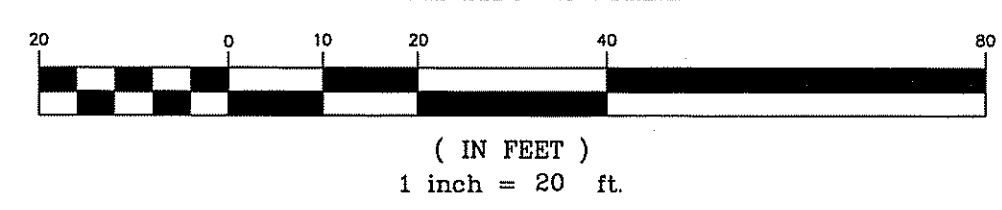
- EXISTING**
- PERIMETER LINE
  - ABUTTER LINE
  - LOT LINE
  - BUILDING
  - RIGHT OF WAY LINE
  - DIRT(GRAVEL) DRIVE(ROAD)
  - EDGE OF ROAD PAVEMENT
  - ROADWAY CENTERLINE
  - ROADWAY STATION 2+00
  - TREELINE
  - SCRUBLINE
  - SHRUBLINE
  - TREE
  - SHRUB
  - STONEWALL
  - RETAINING WALL
  - TEST HOLE
  - LEDGE TEST
  - FENCE (CHAINLINK)
  - FENCE (RAIL)
  - GUARDRAIL (STEEL)
  - GUARDRAIL (TIMBER)
  - EASEMENT
  - BUILDING SETBACK
  - CONTOUR -122-
  - SPOT GRADE x123.0
  - WETLAND EDGE
  - 50FT WETLAND
  - 100FT WETLAND
  - 200FT WETLAND
  - SURVEY BOUND
  - SURVEY DRILL HOLE
  - SURVEY IRON ROD
  - SURVEY IRON PIN
  - SURVEY BENCHMARK
  - UTILITY POLE
  - SIGN
  - SAWCUT
  - SHEETING
  - CABLE LINE
  - ELECTRIC LINE
  - TELEPHONE LINE
  - ELECTRIC, TELE, CABLE LINE
  - LIGHT POLE
  - OVERHEAD WIRE
  - FIRE SERVICE LINE
  - CATCH BASIN
  - DRAIN MANHOLE
  - DRAINLINE
  - UNDERDRAIN LINE
  - WATER SHUTOFF
  - HYDRANT
  - WATERLINE
  - WELL
  - WATER GATE VALVE
  - SEWER MANHOLE
  - SEWERLINE
  - SEWER FORCE MAIN
  - GAS LINE
  - GAS VALVE
  - LIMIT OF DISTURBANCE
  - HAYBALE LINE
  - SILT FENCE LINE
  - HAYBALE & SILT FENCE LINE

Environmental Management  
 Office of Water Resources  
 JAN 11 2012

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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 FEB - 6 2012 FILE # 11-02-00  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Joseph Conroy*



Steven M. Clarke  
 No. 4477  
 REGISTERED PROFESSIONAL ENGINEER

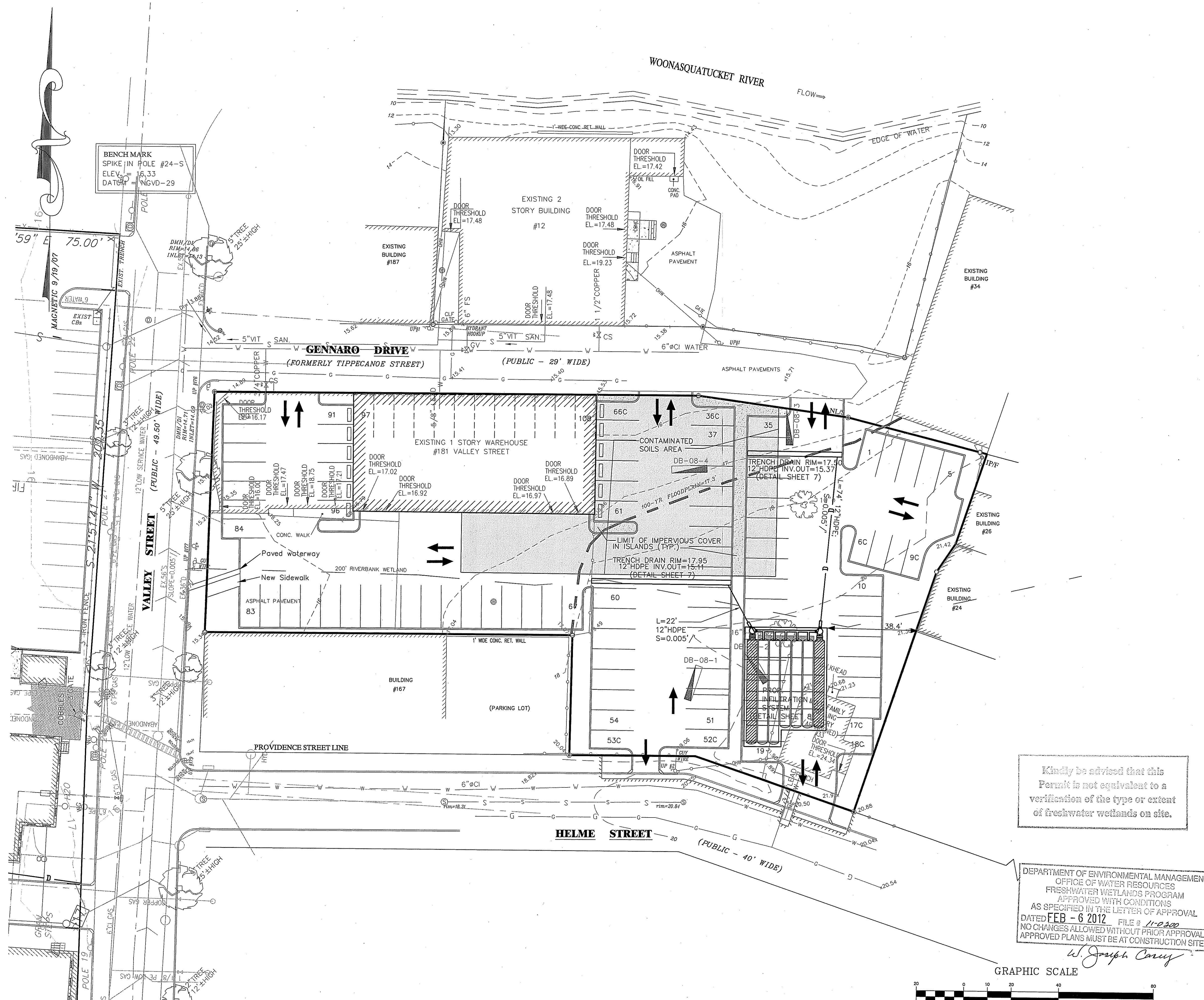
**COMMONWEALTH**  
 ENGINEERS & CONSULTANTS, INC.  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
 401-273-6600

**REVISIONS**

No.	DATE	DRWN	CHKD
1.	01/03/12	KAB	KK

**EXISTING CONDITIONS**  
 for  
**AP 33, LOTS 322,345,350,  
 351,395,624,654 & 656**  
**VALLEY STREET**  
 in  
 PROVIDENCE, RHODE ISLAND

SCALE: 1"=20'	SHEET NO: 2 of 9	
DRAWN BY: KAB	DESIGN BY: KAB	CHECKED BY: KK
DATE: 10/20/11	PROJECT NO.: 07056.00	

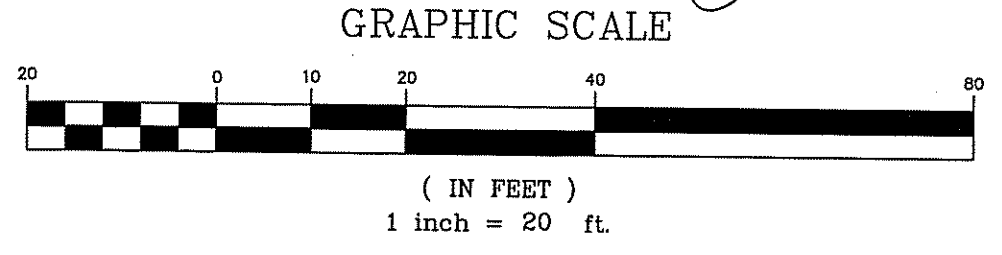


BENCH MARK  
SPIKE IN POLE #24-S  
ELEV. = 16.33  
DATE = NGVD-29

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

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED FEB - 6 2012 FILE # 11-0320  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*W. Joseph Carney*



	EXISTING	PROPOSED
PERIMETER LINE	---	---
ABUTTER LINE	---	---
LOT LINE	---	---
BUILDING	[Symbol]	[Symbol]
RIGHT OF WAY LINE	---	---
DIRT(GRAVEL) DRIVE(ROAD)	---	---
EDGE OF ROAD PAVEMENT	---	---
ROADWAY CENTERLINE	---	---
ROADWAY STATION	2+00	2+00
TREELINE	[Symbol]	[Symbol]
SCRUBLINE	[Symbol]	[Symbol]
SHRUBLINE	[Symbol]	[Symbol]
TREE	[Symbol]	[Symbol]
SHRUB	[Symbol]	[Symbol]
STONEWALL	[Symbol]	[Symbol]
RETAINING WALL	[Symbol]	[Symbol]
TEST HOLE	[Symbol]	[Symbol]
LEDGE TEST	[Symbol]	[Symbol]
FENCE (CHAINLINK)	[Symbol]	[Symbol]
FENCE (RAIL)	[Symbol]	[Symbol]
GUARDRAIL (STEEL)	[Symbol]	[Symbol]
GUARDRAIL (TIMBER)	[Symbol]	[Symbol]
EASEMENT	[Symbol]	[Symbol]
BUILDING SETBACK	[Symbol]	[Symbol]
CONTOUR	-122-	(122)
SPOT GRADE	x123.0	x123.0
WETLAND EDGE	[Symbol]	[Symbol]
50FT WETLAND	[Symbol]	[Symbol]
100FT WETLAND	[Symbol]	[Symbol]
200FT WETLAND	[Symbol]	[Symbol]
SURVEY BOUND	[Symbol]	[Symbol]
SURVEY DRILL HOLE	[Symbol]	[Symbol]
SURVEY IRON ROD	[Symbol]	[Symbol]
SURVEY IRON PIN	[Symbol]	[Symbol]
SURVEY BENCHMARK	[Symbol]	[Symbol]
UTILITY POLE	[Symbol]	[Symbol]
SIGN	[Symbol]	[Symbol]
SAWCUT	[Symbol]	[Symbol]
SHEETING	[Symbol]	[Symbol]
CABLE LINE	CTV	CTV
ELECTRIC LINE	E	E
TELEPHONE LINE	T	T
ELECTRIC, TELE, CABLE LINE	ETC	ETC
LIGHT POLE	[Symbol]	[Symbol]
OVERHEAD WIRE	DHW	DHW
FIRE SERVICE LINE	F	F
CATCH BASIN	[Symbol]	[Symbol]
DRAIN MANHOLE	[Symbol]	[Symbol]
DRAINLINE	[Symbol]	[Symbol]
UNDERDRAIN LINE	[Symbol]	[Symbol]
WATER SHUTOFF	[Symbol]	[Symbol]
HYDRANT	[Symbol]	[Symbol]
WATERLINE	[Symbol]	[Symbol]
WELL	[Symbol]	[Symbol]
WATER GATE VALVE	[Symbol]	[Symbol]
SEWER MANHOLE	[Symbol]	[Symbol]
SEWERLINE	[Symbol]	[Symbol]
SEWER FORCE MAIN	FM	FM
GAS LINE	[Symbol]	[Symbol]
GAS VALVE	[Symbol]	[Symbol]
LIMIT OF DISTURBANCE	-LOD-	-LOD-
HAYBALE LINE	[Symbol]	[Symbol]
SILT FENCE LINE	[Symbol]	[Symbol]
HAYBALE & SILT FENCE LINE	[Symbol]	[Symbol]

Steven M. Clarke  
No. 4477  
REGISTERED PROFESSIONAL ENGINEER

**COMMONWEALTH**  
ENGINEERS & CONSULTANTS, INC.  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
401-273-6600

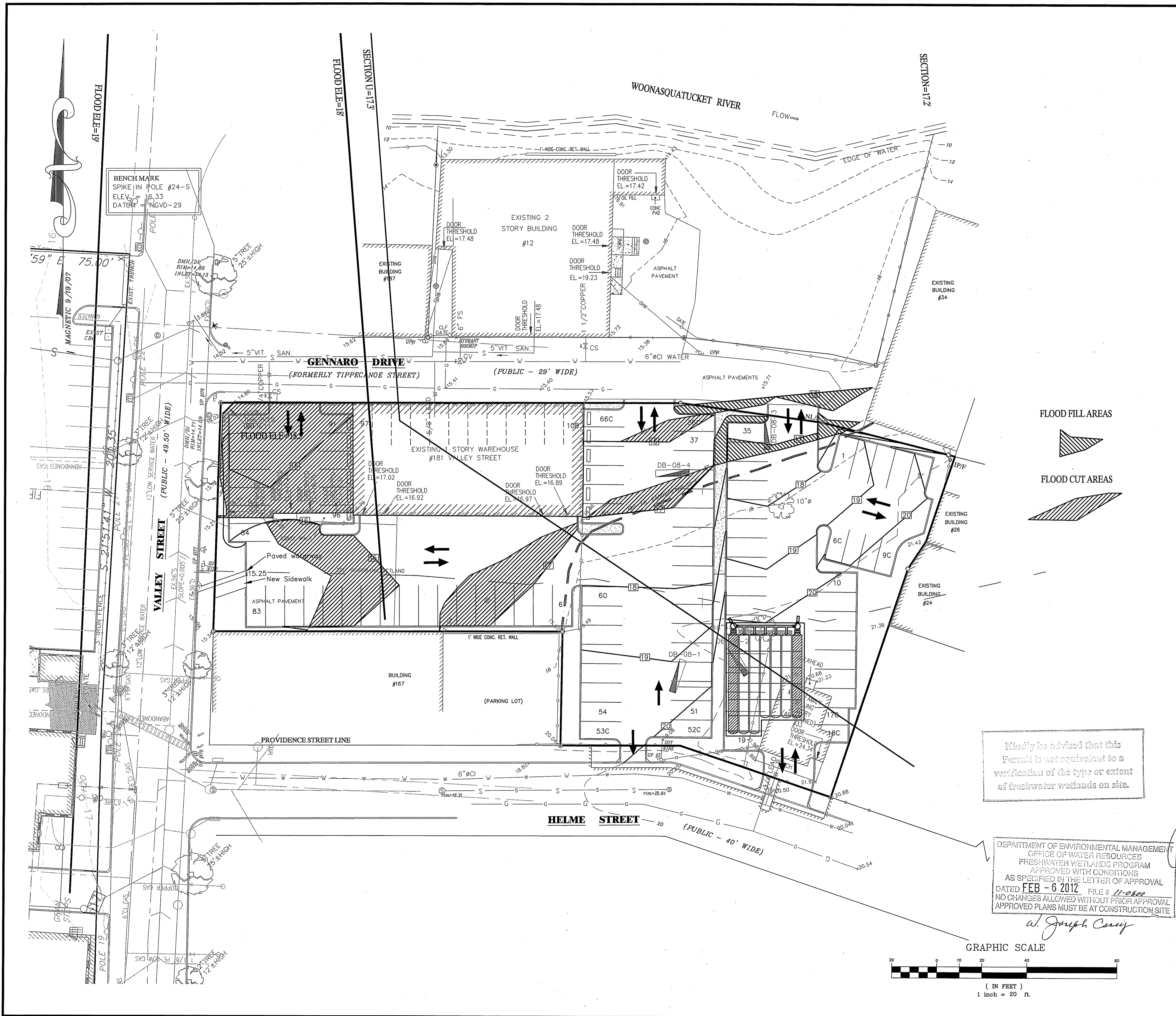
REVISIONS			
No.	DATE	DRWN	CHKD
1.	01/03/12	KAB	KK

**DRAINAGE & UTILITY PLAN**  
for  
**AP 33, LOTS 322,345,350,  
351,395,624,654 & 656**  
**VALLEY STREET**  
in  
PROVIDENCE, RHODE ISLAND

SCALE: 1"=20'  
DRAWN BY: KAB DESIGN BY: KAB CHECKED BY: KK  
DATE: 10/20/11 SHEET NO: 3 of 9 PROJECT NO.: 07056.00

C:\07056\07056.dwg Plotting: E:\Projects\07056\07056.dwg Date: 10/20/11 10:20:11 AM



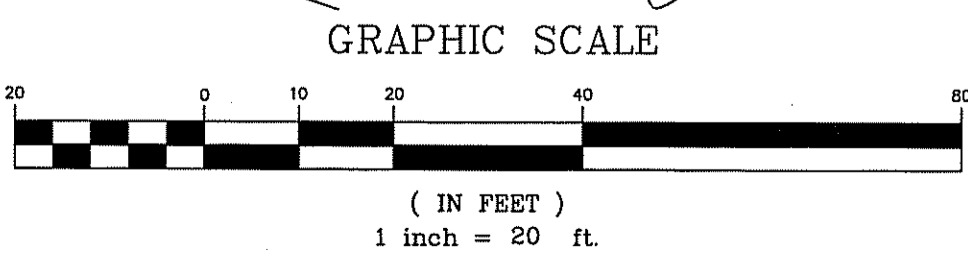


	EXISTING	PROPOSED
PERIMETER LINE	---	---
ABUTTER LINE	---	---
LOT LINE	---	---
BUILDING	[Symbol]	[Symbol]
RIGHT OF WAY LINE	---	---
DIRT(GRAVEL) DRIVE(ROAD)	---	---
EDGE OF ROAD PAVEMENT	---	---
ROADWAY CENTERLINE	---	---
ROADWAY STATION	2+00	2+00
TREELINE	[Symbol]	[Symbol]
SCRUBLINE	[Symbol]	[Symbol]
SHRUBLINE	[Symbol]	[Symbol]
TREE	[Symbol]	[Symbol]
SHRUB	[Symbol]	[Symbol]
STONEWALL	[Symbol]	[Symbol]
RETAINING WALL	[Symbol]	[Symbol]
TEST HOLE	TH	TH
LEDGE TEST	LT	LT
FENCE (CHAINLINK)	-X-X-	-X-X-
FENCE (RAIL)	--- ---	--- ---
GUARDRAIL (STEEL)	--- ---	--- ---
GUARDRAIL (TIMBER)	--- ---	--- ---
EASEMENT	---	---
BUILDING SETBACK	---	---
CONTOUR	-122-	(122)
SPOT GRADE	x123.0	x123.0
WETLAND EDGE	[Symbol]	[Symbol]
50FT WETLAND	[Symbol]	[Symbol]
100FT WETLAND	[Symbol]	[Symbol]
200FT WETLAND	[Symbol]	[Symbol]
SURVEY BOUND	[Symbol]	[Symbol]
SURVEY DRILL HOLE	[Symbol]	[Symbol]
SURVEY IRON ROD	[Symbol]	[Symbol]
SURVEY IRON PIN	[Symbol]	[Symbol]
SURVEY BENCHMARK	[Symbol]	[Symbol]
UTILITY POLE	[Symbol]	[Symbol]
SIGN	[Symbol]	[Symbol]
SAWCUT	---	---
SHEETING	---	---
CABLE LINE	CTV	CTV
ELECTRIC LINE	E	E
TELEPHONE LINE	T	T
ELECTRIC, TELE, CABLE LINE	ETC	ETC
LIGHT POLE	[Symbol]	[Symbol]
OVERHEAD WIRE	DHW	DHW
FIRE SERVICE LINE	F	F
CATCH BASIN	[Symbol]	[Symbol]
DRAIN MANHOLE	[Symbol]	[Symbol]
DRAINLINE	D	D
UNDERDRAIN LINE	UD	UD
WATER SHUTOFF	[Symbol]	[Symbol]
HYDRANT	[Symbol]	[Symbol]
WATERLINE	W	W
WELL	[Symbol]	[Symbol]
WATER GATE VALVE	[Symbol]	[Symbol]
SEWER MANHOLE	[Symbol]	[Symbol]
SEWERLINE	S	S
SEWER FORCE MAIN	FM	FM
GAS LINE	G	G
GAS VALVE	[Symbol]	[Symbol]
LIMIT OF DISTURBANCE	-LOD-	-LOD-
HAYBALE LINE	---	---
SILT FENCE LINE	---	---
HAYBALE & SILT FENCE LINE	---	---

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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 FEB - 6 2012 FILE # 11-0500  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Joseph Conroy*



Steven M. Clarke  
No. 4477  
REGISTERED PROFESSIONAL ENGINEER

**COMMONWEALTH**  
ENGINEERS & CONSULTANTS, INC.  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
401-273-6600

REVISIONS			
No.	DATE	DRWN	CHKD
1.	01/03/12	KAB	KK

**FLOOD PLAIN**  
for  
AP 33, LOTS 322,345,350,  
351,395,624,654 & 656  
VALLEY STREET  
in  
PROVIDENCE, RHODE ISLAND

SCALE: 1"=20'	SHEET NO: 5 of 9	
DRAWN BY: KAB	DESIGN BY: KAB	CHECKED BY: KK
DATE: 10/20/11	PROJECT NO.: 07056.00	

C:\07056\07056.00\_Riding\_Sun\_Wall\_Paving\_Erection\_Drawing\DWG\_Current\_Drawing\07056-SITE\_AND\_PAVING\_LAYOUT\_01-05-12.dwg, Xref: rds



**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION. FOR OTHER DIRECTION USE OPPOSITE HAND AND INCLUDE A 1/2" x 4" EPOXY COATED DOWEL.  
 3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.  
 4. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.  
 5. LEFT AND RIGHT SECTIONS SHALL BE INSTALLED AS REQUIRED.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**3'-0" PRECAST CONCRETE TRANSITION CURB**  
 R.I. STANDARD 7.1.1  
 JUNE 15, 1998

**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0".  
 3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.  
 4. CIRCULAR CURB IS REQUIRED ON CURVES WITH RADI OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.  
 5. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**PRECAST CONCRETE CURB**  
 R.I. STANDARD 7.1.0  
 JUNE 15, 1998

**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. CEMENT CONCRETE SHALL BE USED ONLY WHEN THE CURB IS SET AFTER THE BASE AND/OR BINDER COURSES ARE IN PLACE. OTHERWISE THE CEMENT CONCRETE WILL BE ELIMINATED AND THE GRAVEL BROUGHT UP TO BOTTOM OF THE BASE COURSE.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**CURB SETTING DETAIL**  
 R.I. STANDARD 7.6.0  
 JUNE 15, 1998

**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.  
 3. NO REINFORCEMENT REQUIRED.  
 4. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.  
 5. SEE STD. 7.1.0 FOR DOWEL SOCKET LOCATION.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**PRECAST CONCRETE 2'-0" RADIUS CORNER**  
 R.I. STANDARD 7.1.4  
 JUNE 15, 1998

**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER.  
 3. ALL SURFACES TO HAVE A SPONGE FLOAT FINISH.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**PRECAST CONCRETE CAR STOPS**  
 R.I. STANDARD 7.2.4  
 JUNE 15, 1998

Environmental Management  
 JAN 11 2012  
 Office of Water Resources

**NOTE:**  
 SLOPES MAY VARY TO SUIT CONDITIONS AS PER PLANS OR ENGINEER.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**BITUMINOUS CONCRETE DITCH**  
 R.I. STANDARD 8.2.0  
 JUNE 15, 1998

**NOTE:**  
 A BOND BREAKER (TAPERED OR EQUIVALENT) WILL BE PLACED 5'-0" FROM THE JOINT AND COVERED WITH THE BINDER COURSE AS THE TEMPORARY RAMP. PRIOR TO PLACING THE SURFACE COURSE, THE BINDER COURSE AND BOND BREAKER WILL BE REMOVED.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**TRANSVERSE PAVEMENT CUT AND MATCH**  
 R.I. STANDARD 47.1.1  
 JUNE 15, 1998

TRANSITION LENGTH (FT.)	BATTER (IN.)
6.0	1.5
7.0	1.3
8.0	1.2
9.5	1.0
11.5	0.8
15.0	0.6
18.0	0.5

**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. CIRCULAR CURB IS REQUIRED ON CURVES WITH RADI OF 160'-0" OR LESS. STRAIGHT CURB TO BE USED ON CURVES OF MORE THAN 160'-0" RADIUS.  
 3. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.  
 4. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.  
 5. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR CURB FILLER PIECES TO BE 3'-0" (GREATER LENGTHS PREFERRED).

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**PRECAST CONCRETE WHEELCHAIR RAMP TRANSITION CURB**  
 R.I. STANDARD 7.1.3  
 JUNE 15, 1998

**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION. FOR OTHER DIRECTION USE OPPOSITE HAND AND INCLUDE A 1/2" x 4" EPOXY COATED DOWEL.  
 3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.  
 4. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**6'-0" PRECAST CONCRETE TRANSITION CURB**  
 R.I. STANDARD 7.1.2  
 JUNE 15, 1998

**NOTES:**  
 1. SHALL BE IN ACCORDANCE WITH SECTION 904 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
**CEMENT CONCRETE SIDEWALK**  
 R.I. STANDARD 43.1.0  
 JUNE 15, 1998

**SITE PAVEMENT TYPICAL CROSS SECTION**  
 NOT TO SCALE

**TRENCH DRAIN DETAIL**  
 NOT TO SCALE  
 SHOP DRAWING SUBMITTAL REQUIRED

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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 FEB - 6 2012 FILE # 11-030  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*W. Joseph Carney*

Steven M. Clarke  
 No. 4477  
 REGISTERED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DRWN	CHKD
1.	01/03/12	KAB	KK

COMMONWEALTH ENGINEERS & CONSULTANTS, INC.  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
 401-273-6600

**CONSTRUCTION DETAILS**  
 for  
 AP 33, LOTS 322,345,350,  
 351,395,624,654 & 656  
 VALLEY STREET  
 in  
 PROVIDENCE, RHODE ISLAND

SCALE: AS NOTED SHEET NO: 7 of 9  
 DRAWN BY: JP DESIGN BY: KAB CHECKED BY: KK  
 DATE: 10/20/11 PROJECT NO.: 07056

**STORMWATER CHAMBER SPECIFICATIONS**

- CHAMBERS SHALL BE STORMTECH SC-740, SC-310 OR APPROVED EQUAL.
- CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS TESTED USING ASTM STANDARDS.
- CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE.
- ONLY CHAMBERS THAT ARE APPROVED BY THE ENGINEER WILL BE ALLOWED. THE CONTRACTOR SHALL SUBMIT (3 SETS) OF THE FOLLOWING TO THE ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
  - A STRUCTURAL EVALUATION BY A REGISTERED STRUCTURAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET. THE 50-YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2185 MUST BE USED AS A PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
- CHAMBERS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
- ALL DESIGN SPECIFICATIONS FOR CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST DESIGN MANUAL.
- THE INSTALLATION OF CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST INSTALLATION INSTRUCTIONS.

Environmental Management  
JAN 25 2012  
Office of Water Resources

**STORMTECH GENERAL NOTES**

- STORMTECH REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
- OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEMS CONSTRUCTION. CALL 1-888-892-2894 TO SPEAK TO A TECHNICAL SERVICES REPRESENTATIVE OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
- STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.) MINIMUM COVER IS 18" (457 mm) NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96" (2438 mm) INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24" (610 mm); MAXIMUM COVER IS 96" (2438 mm).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
- ASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
- STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- BACKFILLING OF THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: WWW.STORMTECH.COM. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
- THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEERS SPECIFICATIONS.
- STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CURRENT PRODUCT WARRANTY FOR DETAILS. TO ACQUIRE A COPY CALL STORMTECH AT 1-888-892-2894 OR VISIT WWW.STORMTECH.COM

**ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 AND SC-310 CHAMBER SYSTEMS**

MATERIAL LOCATION	DESCRIPTION	AASHTO M33 DESIGNATION	COMPACTION/DENSITY REQUIREMENT
1	FILL MATERIAL FOR LAYER 2 STARTS FROM THE TOP OF THE 4" LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE. NOTE THAT PAVEMENT SUB-BASE MAY BE PART OF THIS LAYER.	NA	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE DIFFERENT MATERIAL AND PREPARATION REQUIREMENTS.
2	FILL MATERIAL FOR LAYER 3 STARTS FROM THE TOP OF THE EMBEDED STONE (4" LAYER) TO 18" (457 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUB-BASE MAY BE A PART OF THIS LAYER.	3, 307, 4, 407, 5, 66, 67, 8, 67, 68, 7, 76, 8, 89, 9	DESIGN COMPACTION AFTER 10" (254 mm) OF MATERIAL OVER THE CHAMBERS IS REQUIRED. CONTACT ADDITIONAL LAYERS OF 1" (25 mm) LIFTS TO A MIN. 90% STANDARD PROCTOR DENSITY. ROLLER GROUND VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (5,443 kg). DYNAMIC FORCE NOT TO EXCEED 30,000 lbs (13,608 kg).
3	EMBEDMENT STONE SURROUNDING THE CHAMBER FROM THE FOUNDATION STONE (4" LAYER) TO THE TOP OF THE CHAMBER.	3, 307, 4, 407, 5, 66, 67	NO COMPACTION REQUIRED.
4	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	3, 35, 4, 407, 5, 66, 67	PLATE COMPACTION ON ROLL TO ACHIEVE A 90% STANDARD PROCTOR DENSITY.

PLEASE NOTE:  
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (ASHTO M33) STONE".  
2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR #4 LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (152 mm) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

**SC-740 TYPICAL CROSS-SECTION**

**NOTES:**  
1. INSPECTION PORT MUST BE CONNECTED THROUGH KNOCK-OUT LOCATED AT CENTER OF CHAMBER.  
2. ALL SCHEDULED 40 FITTINGS TO BE SOLVENT CEMENTED.

NYLOPLAST 12" (300 mm) INLINE DRAIN BODY W/ 12" (300 mm) SOLID HINGED COVER AND FRAME (SEE NYLOPLAST DWG# 7003-110-044 FOR PAVED APPLICATIONS / SEE DWG# 7003-110-045 FOR UNPAVED APPLICATIONS)

4" (100 mm) SCHED 40 SCREW-IN CAP  
CONCRETE COLLAR  
PAVEMENT  
4" (100 mm) SCHED 40 PVC  
4" (100 mm) SCHED 40 PVC COUPLING  
4" (100 mm) SCHED 40 PVC  
CORE 4.5" (114 mm) Ø HOLE IN CHAMBER (4.5" HOLE SAW REQ'D)

SC-740 CHAMBER  
NOMINAL 3/4" - 2" (19 mm - 51 mm) CLEAN CRUSHED ANGULAR STONE  
ADS 801 NON-WOVEN GEOTEXTILE (OR EQUAL)

**CONNECTION DETAIL**

**SC-740 INSPECTION PORT DETAIL**

FINISHED GRADE MIN. ELEV. = 24" +/-  
TOP OF WEIR ELEV. = 16.50'  
WATERTIGHT SEAL MADE WITH RUBBER MANHOLE BOOT (PROCS. SEAL OR EQUAL)  
INVERT IN. = 15.01'  
STORMTECH ISOLATOR ROW  
12" HDPE INLET PIPE IN. = 15.00'

**SECTION VIEW A-A**

**ISOLATOR ROW CLEAN-OUT ACCESS STRUCTURE**

SHOP DRAWINGS REQUIRED

**"INFILTRATION BASIN DETAILS"**

**CONCEPTUAL LAYOUT**

38 STORMTECH SC-740 CHAMBERS  
INSTALLED WITH COVER STONE 8" BASE STONE, 40% STONE VOID  
INSTALLED SYSTEM VOLUME (PERMETER STONE INCLUDED) = 3,288 CF

**PROPOSED ELEVATIONS**

MAX. GRADE (TOP OF PAVEMENT/UNPAVED):	25.50
MIN. GRADE (UPWARD WITH TRAFFIC):	19.00
MIN. GRADE (BASE OF FLEXIBLE PAVEMENT/UNPAVED):	19.00
MIN. GRADE (TOP OF REINFORCED CONCRETE PAVEMENT):	19.00
TOP OF STONE:	17.50
8" MANHOLE INVERT:	17.50
24" INVERT TO ISOLATOR ROWS:	15.01
BOTTOM OF CHAMBER:	15.00
BOTTOM OF STONE:	14.50

**MANIFOLD NOTE:**  
DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO ADD OR REMOVE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.

**VALLEY STREET DRAINAGE**  
PROVIDENCE, RI

DATE: 9/29/2011 PROJECT: 18408  
DRAWN: MKK SCALE: NTS  
CHECKED: PAGE: OF

**1.0 The Isolator™ Row**

**1.1 INTRODUCTION**  
The Isolator Row is a patented technology for stormwater management. It is designed to provide a clean, unobstructed flow path for stormwater while allowing for infiltration into the ground. The Isolator Row is made of high-density polyethylene (HDPE) and is available in two sizes: 12" and 18".

**1.2 THE ISOLATOR ROW**  
The Isolator Row is a clean, unobstructed flow path for stormwater. It is designed to provide a clean, unobstructed flow path for stormwater while allowing for infiltration into the ground. The Isolator Row is made of high-density polyethylene (HDPE) and is available in two sizes: 12" and 18".

**2.0 Isolator Row Inspection/Maintenance**

**2.1 INSPECTION**  
The Isolator Row should be inspected regularly to ensure that it is clean and unobstructed. The inspection should be done at least once a year, or more often if the Isolator Row is located in an area with heavy traffic or debris.

**2.2 MAINTENANCE**  
The Isolator Row should be maintained regularly to ensure that it is clean and unobstructed. The maintenance should be done at least once a year, or more often if the Isolator Row is located in an area with heavy traffic or debris.

**SC-740 INSPECTION PORT DETAIL**

ACCEPTS 4" (100 mm) SCH 40 PVC PIPE FOR INSPECTION PORT  
85.4" (2169 mm) INSTALLED  
OVERLAP NEXT CHAMBER HERE (OVER SMALL CORRUGATION)  
BUILD ROW IN THIS DIRECTION

90.7" (2304 mm) ACTUAL

782 mm  
51" (1295 mm)

**NOMINAL CHAMBER SPECIFICATIONS**

SIZE (W x H x INSTALLED LENGTH)	51.0" x 30.0" x 85.4" (1295 mm x 762 mm x 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET (1.30 m³)
MINIMUM INSTALLED STORAGE	74.9 CUBIC FEET (2.12 m³)
WEIGHT	75 lbs. (33.6 kg)

**STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "8"**  
**STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "1"**

PART#	STUB	A	B	C
SC740EPE08T	8" (150 mm)	10.90" (277 mm)	18.50" (470 mm)	N/A
SC740EPE08B	8" (150 mm)	10.90" (277 mm)	N/A	0.50" (13 mm)
SC740EPE08T	8" (150 mm)	12.20" (310 mm)	18.50" (470 mm)	N/A
SC740EPE08B	8" (150 mm)	12.20" (310 mm)	N/A	0.60" (15 mm)
SC740EPE10T	10" (250 mm)	13.40" (340 mm)	14.50" (368 mm)	N/A
SC740EPE10B	10" (250 mm)	13.40" (340 mm)	N/A	0.70" (18 mm)
SC740EPE12T	12" (300 mm)	14.70" (373 mm)	12.50" (318 mm)	N/A
SC740EPE12B	12" (300 mm)	14.70" (373 mm)	N/A	1.20" (30 mm)
SC740EPE15T	15" (375 mm)	18.40" (467 mm)	9.00" (229 mm)	N/A
SC740EPE15B	15" (375 mm)	18.40" (467 mm)	N/A	1.30" (33 mm)
SC740EPE18T	18" (450 mm)	19.70" (500 mm)	5.00" (127 mm)	N/A
SC740EPE18B	18" (450 mm)	19.70" (500 mm)	N/A	1.60" (41 mm)
SC740EPE24B	24" (600 mm)	18.50" (470 mm)	N/A	0.10" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2894.

\*FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

**SC-740 TECHNICAL SPECIFICATIONS**

SCALE: NTS  
DATE: 3/30/10  
DRAWN BY: KJL  
CHECKED:

**Save Valuable Land and Protect Water Resources**

**StormTech**  
Subsurface Stormwater Management™

**Isolator™ Row O&M Manual**  
StormTech™ Chamber System for Stormwater Management

**3.0 Isolator Row Step By Step Maintenance Procedures**

**Step 1: Inspect the Isolator Row**  
1. Inspect the Isolator Row for any debris or obstructions.  
2. If any debris or obstructions are found, remove them immediately.

**Step 2: Clean the Isolator Row**  
2.1. Use a high-pressure water hose to clean the Isolator Row.  
2.2. If the Isolator Row is heavily soiled, use a brush to scrub it clean.

**Step 3: Test the Isolator Row**  
3.1. After cleaning, test the Isolator Row by pouring water into it.  
3.2. The water should flow freely through the Isolator Row.

**StormTech Isolator Row (12" (300 mm))**

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

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED FEB - 6 2012 FILE # 11-020  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**StormTech**  
Subsurface Stormwater Management™

W. Joseph Casey

Steven M. Clarke  
No. 4477  
REGISTERED PROFESSIONAL ENGINEER

**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
401-273-6600

**CONSTRUCTION DETAILS**  
for  
AP 33, LOTS 322,345,350,  
351,395,624,654 & 656  
VALLEY STREET  
in  
PROVIDENCE, RHODE ISLAND

SCALE: AS NOTED SHEET NO: 8 of 9  
DRAWN BY: JP DESIGN BY: KAB CHECKED BY: KK  
DATE: 10/20/11 PROJECT NO.: 07056

REVISIONS

No.	DATE	DRWN	CHKD
1.	01/03/12	KAB	KK

**GENERAL NOTES:**

1. THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION, AND THE RHODE ISLAND STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2004 EDITION, AND THE RHODE ISLAND STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2004 EDITION, AND THE RHODE ISLAND STANDARD SPECIFICATIONS FOR TRANSPORTATION WEB PAGE, THESE SPECIFICATIONS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO.
2. ALL REQUIRED SITE IMPROVEMENTS SHALL BE INSPECTED BY THE TOWN ENGINEER TO ENSURE SATISFACTORY COMPLETION. IN NO CASE SHALL THE INSTALLATION OF ANY IMPROVEMENTS BE STARTED UNTIL PRIOR NOTIFICATION IS GIVEN TO THE TOWN ENGINEER. AT LEAST A 48-HOUR NOTICE SHALL BE GIVEN TO THE TOWN ENGINEER PRIOR TO ANY SUCH START OF CONSTRUCTION. A FINAL INSPECTION OF ALL SITE IMPROVEMENTS, UTILITIES AND GRADING WILL BE MADE TO DETERMINE WHETHER THE WORK IS SATISFACTORY AND IN SUBSTANTIAL AGREEMENT WITH THE APPROVED FINAL CONSTRUCTION DRAWING AND THE TOWN SPECIFICATIONS.
3. LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO EXISTING UTILITIES AS SHOWN OR NOT SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR. NO EXCAVATION SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 48-HOURS IN ADVANCE. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 48 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION AND/OR BLASTING WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION AND/OR BLASTING WORK MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
4. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN ANY AND ALL PERMITS REQUIRED BY, BUT NOT LIMITED TO, THE STATE OF RHODE ISLAND, THE FEDERAL GOVERNMENT, THE TOWN OF WEST GREENWICH AND ALL INDIVIDUAL UTILITY COMPANIES PRIOR TO COMMENCING ANY WORK.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS.
6. THE INSTALLATION OF THE WATER UTILITY IMPROVEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THE KENT COUNTY WATER DEPARTMENT AND THE AMERICAN WATER WORKS STANDARDS.
7. ALL MATERIAL FOR FILL SHALL BE CLEAN AND FREE OF MATTER WHICH COULD POLLUTE ANY DOWN STREAM WATERCOURSE.
8. VERTICAL DATUM: MEAN SEA LEVEL (NGVD 29).
9. FILL MATERIAL SHALL BE COMPACTED IN ONE FOOT (MAXIMUM) LIFTS TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D-1557 (MODIFIED PROCTOR TEST).

**STORM DRAINAGE SYSTEM MAINTENANCE PLAN:**

THE FOLLOWING LIST OF MAINTENANCE TASKS AND FREQUENCIES MUST BE ADHERED TO IN ORDER TO INSURE A SUCCESSFUL LONG TERM OPERATION OF THE STORM DRAINAGE SYSTEM.

1. DURING CONSTRUCTION ACTIVITIES ALL EROSION CONTROLS ON THE SITE SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN TWENTY FOUR (24) HOURS AFTER AN EVENT WHICH GENERATES AT LEAST 0.25 INCHES OF RAIN IN A TWENTY FOUR (24) HOUR PERIOD.
2. SEDIMENTS SHALL BE REMOVED FROM THE ALL BASINS IMMEDIATELY AFTER SITE STABILIZATION.
3. ALL TRASH, LITTER AND OTHER DEBRIS SHALL BE REMOVED FROM ALL STORM WATER INLET AND OUTLET STRUCTURES A MINIMUM OF TWICE PER YEAR. THESE STRUCTURES SHALL ALSO BE INSPECTED TWICE PER YEAR. INSPECTIONS SHALL BE PERFORMED SEVERAL TIMES WITHIN THE FIRST SIX MONTHS OF OPERATION.
4. INSPECTIONS OF ALL CATCH BASINS SHALL OCCUR ON AN ANNUAL BASIS TO CHECK FOR DEBRIS REMOVAL (SEDIMENT AND HYDROCARBONS) AND STRUCTURAL INTEGRITY OR DAMAGE. SUCH DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY.
5. REPAIRS OR REPLACEMENT OF INLET/OUTLET STRUCTURES OR ANY ELEMENT OF THE FACILITY SHALL BE DONE WITHIN THIRTY (30) DAYS OF DEFICIENCY REPORTS. IF AN EMERGENCY SITUATION IS IMMINENT THEN REPAIR/REPLACEMENT SHALL BE DONE IMMEDIATELY TO AVERT FAILURE OR DANGER TO NEARBY RESIDENTS.
6. MAKE REPAIRS IMMEDIATELY USING APPROPRIATE STONE SIZES. DO NOT PLACE STONES ABOVE FINISHED GRADE.
7. ALL REMOVED SEDIMENTS AND DEBRIS SHALL BE DISPOSED OF OFF SITE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.
8. ALL OUTLET STRUCTURES AND OUTFLOW CHANNELS WILL BE INSPECTED ANNUALLY. INSPECTIONS WILL BE ACCOMPLISHED SEVERAL TIMES DURING THE FIRST SIX MONTHS OF OPERATION, ESPECIALLY AFTER RAINFALL EVENTS TO CHECK FOR CLOGGING OR, CONVERSELY, TOO RAPID OF A RELEASE.
9. REPAIRS OR REPLACEMENT OF INLET/OUTLET STRUCTURES, RIP-RAP CHANNELS, FENCES, OR OTHER ELEMENTS OF THE FACILITY WILL BE DONE WITHIN 30 DAYS OF DEFICIENCY REPORTS. IF AN EMERGENCY SITUATION IS IMMINENT THEN REPAIR/REPLACEMENT MUST BE DONE IMMEDIATELY TO AVERT FAILURE OR DANGER TO NEARBY RESIDENTS.
10. ALL SEDIMENT GENERATED DURING CONSTRUCTION AND AS A RESULT OF MAINTENANCE OF THE DRAINAGE SYSTEM MUST BE DISPOSED OF PROPERLY. SEDIMENT SHALL NOT BE DISPOSED OF IN OR NEAR STATE OR FEDERAL REGULATED WATERS.
11. RECORDS OF THE FIRST TWO YEARS OF MAINTENANCE FOLLOWING CONSTRUCTION SHALL BE SUBMITTED TO RIDEM DIVISION OF WATER RESOURCES. MAINTENANCE RECORDS FOR SUBSEQUENT YEARS SHALL BE KEPT ON FILE AND SUBMITTED TO RIDEM, DIVISION OF WATER RESOURCES, UPON REQUEST.

**TRENCH DRAIN SEDIMENTATION CONTROL AND MAINTENANCE:**

1. AT NO TIME DURING CONSTRUCTION SHALL THE SUBGRADE OF THE SITE BE SUCH THAT SURFACE RUNOFF WILL BE PERMITTED TO DIRECTLY ENTER ANY DRAINAGE STRUCTURE. A TEMPORARY DEPRESSED AREA AROUND THE STRUCTURE SHALL BE INCORPORATED AS A SEDIMENTATION TRAP. THE MOUTH OF THE TRAP SHALL BE LINED WITH HAYBALES AROUND THE COMPLETE PERIMETER. DURING ALL PRELIMINARY STAGES, THE TOP OF THE STRUCTURE SHALL ALWAYS BE HIGHER THAN THE SUBGRADE.
2. HAYBALE EROSION CHECKS SHALL BE MAINTAINED AROUND ALL STRUCTURES UNTIL ALL UPGRADIENT DISTURBED AREAS ARE STABILIZED BY VEGETATION.
3. ALL COMPONENTS OF THE DRAINAGE SYSTEM MUST BE CLEANED OF SEDIMENT BY THE APPLICANT OR HIS REPRESENTATIVE IMMEDIATELY AFTER CONSTRUCTION IS COMPLETED.

**EROSION CONTROL AND SOIL STABILIZATION PROGRAM:**

1. DENUDED SLOPES SHALL NOT BE LEFT EXPOSED FOR EXCESSIVE PERIODS OF TIME, SUCH AS THE INACTIVE WINTER SEASONS.
2. TEMPORARY TREATMENTS SHALL CONSIST OF A HAY, STRAW, FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
3. HAY OR STRAW APPLICATIONS SHOULD BE IN THE AMOUNT OF 2000 LBS./ACRE.
4. ALL HAY BALES OR TEMPORARY PROTECTION SHALL REMAIN IN-PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
5. THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH RHODE ISLAND STANDARD SPECIFICATION M.20.01.
6. THE SEED MIX SHALL BE INOCULATED WITHIN 24-HOURS BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
7. THE DESIGN MIX UTILIZED IN ALL DISTURBED AREAS TO BE SEEDED SHALL BE COMPRISED OF THE FOLLOWING:
 

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

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

8. 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.
9. THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.
10. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
11. STOCKPILES OF TOPSOIL AND EARTH MATERIALS SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN THIRTY PERCENT (30%) AND STOCKPILE SHALL ALSO BE SEEDED AND/OR STABILIZED.
12. ON BOTH STEEP AND LONG SLOPES, CONSIDERATION SHOULD BE GIVEN TO "CRIMPING" OR "TRACKING" TO TACK DOWN MULCH APPLICATIONS.
13. TREES TO BE RETAINED SHALL BE FENCED OR ROPED OFF TO PROTECT THEM FROM CONSTRUCTION EQUIPMENT.
14. ALL PROPOSED PLANTINGS MUST BE ACCOMPLISHED AS EARLY AS POSSIBLE UPON COMPLETION OF GRADING AND CONSTRUCTION, AND AT LEAST PRIOR TO ANY ON-SITE OCCUPANCY.
15. ALL PROPOSED PLANTINGS MUST BE MAINTAINED BY THE PROPERTY OWNER TO ENSURE SURVIVAL.
16. SHOULD ANY OR ALL OF THE PROPOSED PLANTS FAIL TO SURVIVE AT LEAST ONE (1) FULL GROWING SEASON FROM THE TIME THEY HAVE BEEN PLANTED, THE OWNER SHALL BE FULLY RESPONSIBLE FOR REPLACING AND MAINTAINING THE SAME PLANT SPECIES FOR ONE (1) ADDITIONAL GROWING SEASON.
17. ALL DISTURBED AREAS MUST BE SEEDED OR PLANTED WITHIN THE CONSTRUCTION SEASON.
18. TEMPORARY SEEDING MUST BE DONE WITHIN ONE (1) MONTH AFTER DISTURBANCE.
19. ALL DISTURBED AREAS MUST BE PERMANENTLY SEEDED OR PLANTED BEFORE OCTOBER 1ST, IF NOT THEY MUST BE TEMPORARILY SEEDED.

**MAINTENANCE RESPONSIBILITY**

1. RISING SUN MILLS, LLC IS RESPONSIBLE FOR THE MAINTENANCE OF ALL DRAINAGE STRUCTURES.

**SEDIMENTATION CONTROL PROGRAM:**

1. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
2. DURING CONSTRUCTION, THE CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUN-OFF FLOW DURING STORMS AND PERIODS OF
3. SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED CLOSELY AND MAINTAINED PROMPTLY AFTER EACH RAINFALL. CARE SHALL BE TAKEN SO AS NOT TO PLACE "REMOVED SEDIMENTS" WITHIN THE PATH OF EXISTING, NEWLY CREATED (BOTH TEMPORARY AND PERMANENT) OR PROPOSED WATERCOURSES OR THOSE AREAS SUBJECTED TO STORMWATER FLOWAGE.
5. ADDITIONAL HAYBALES OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
6. SEDIMENTATION TRAPS SHALL BE PROVIDED AT ALL DRAINAGE STRUCTURES DURING CONSTRUCTION.
7. EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AT THE SITE PRIOR TO THE START OF CONSTRUCTION AND BE PROPERLY MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED INCLUDING:
  - A) THE INSTALLATION OF A CONTINUOUS LINE OF STAKED HAYBALES IN ALL LOCATIONS SHOWN ON THE APPROVED SITE PLANS AND WHERE OTHERWISE NECESSARY TO PREVENT SEDIMENTS FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
  - B) ALL DISTURBED AREAS ARE TO BE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER PRIOR TO THE COMPLETION OF THE PROJECT. AREAS EXPOSED FOR EXTENDED PERIODS ARE TO BE COMPLETELY COVERED WITH SPREAD HAY MULCH.
  - C) CATCH BASINS WILL BE PROTECTED WITH HAYBALE FILTERS THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL DISTURBED AREAS ARE THOROUGHLY STABILIZED. SUMPS ARE TO BE CLEANED IMMEDIATELY FOLLOWING INSTALLATION OF PERMANENT PAVEMENT.
  - D) OUTFALLS ARE TO BE PROTECTED BY HAYBALE FILTERS UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER.
  - E) ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.

8. THE LIMITS OF ALL CLEARING, GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE OF THE LIMITS OF DISTURBANCE SHALL REMAIN TOTALLY UNDISTURBED.

9. UPON COMPLETION OF CONSTRUCTION OF SITE IMPROVEMENTS AND THE STORMWATER DRAINAGE SYSTEM, ALL CATCH BASINS AND STORM DRAIN PIPING SHALL BE CLEANED OF SEDIMENT. DETENTION BASINS SHALL BE CLEANED OF SEDIMENT TO THE DESIGN GRADES INDICATED

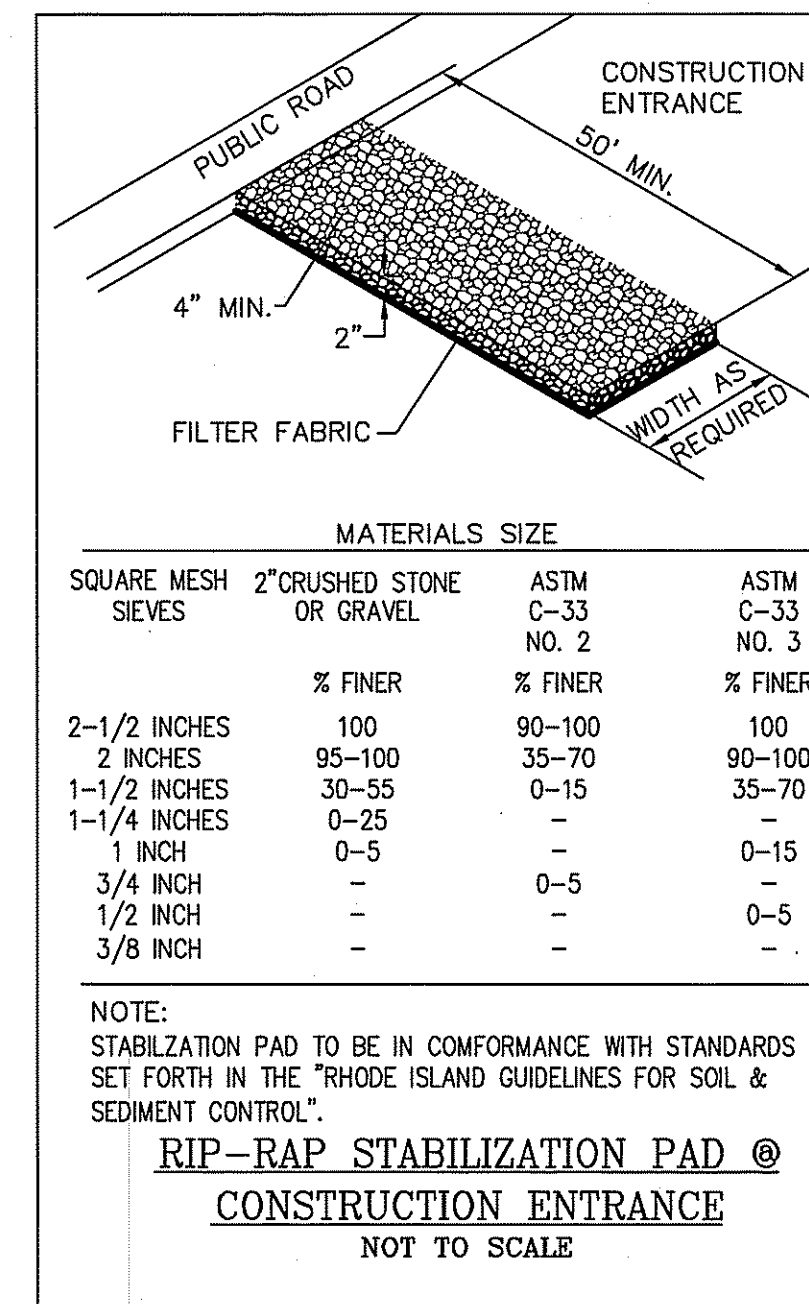
10. AT NO TIME DURING CONSTRUCTION SHALL THE SUBGRADE OF THE SITE BE SUCH THAT SURFACE RUNOFF WILL BE PERMITTED TO DIRECTLY ENTER ANY DRAINAGE STRUCTURE. A TEMPORARY DEPRESSED AREA AROUND THE STRUCTURE SHALL BE INCORPORATED AS A SEDIMENTATION TRAP. THE MOUTH OF THE TRAP SHALL BE LINED WITH HAYBALES AROUND THE COMPLETE PERIMETER. DURING ALL PRELIMINARY STAGES, THE TOP OF THE STRUCTURE SHALL ALWAYS BE HIGHER THAN THE SUBGRADE.

11. HAYBALE EROSION CHECKS SHALL BE MAINTAINED AROUND ALL CATCH BASINS UNTIL ALL UPGRADIENT DISTURBED AREAS ARE STABILIZED BY PAVEMENT OR VEGETATION.

12. ALL COMPONENTS OF THE DRAINAGE SYSTEM MUST BE CLEANED OF SEDIMENT BY THE APPLICANT OR HIS REPRESENTATIVE IMMEDIATELY AFTER CONSTRUCTION IS COMPLETED.

13. INSPECT TEMPORARY DIVERSIONS AND THEIR COMPONENTS ONCE A WEEK AND AFTER EVERY RAINFALL. DAMAGE CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHOULD BE REPAIRED BEFORE THE END OF EACH WORKING DAY. A SEDIMENTATION TRAP. THE MOUTH OF THE TRAP SHALL BE LINED WITH HAYBALES AROUND THE COMPLETE PERIMETER. DURING ALL PRELIMINARY STAGES, THE TOP OF THE STRUCTURE SHALL ALWAYS BE HIGHER THAN THE SUBGRADE.
14. CHECK DAMS SHALL BE INSTALLED EVERY 300 FEET FOR SLOPES OF 1% OR LESS, EVERY 200 FEET FOR SLOPES OF 2%, EVERY 150 FEET FOR SLOPES OF 3% TO 5%, AND EVERY 100 FEET FOR SLOPES OF 5% OR GREATER.

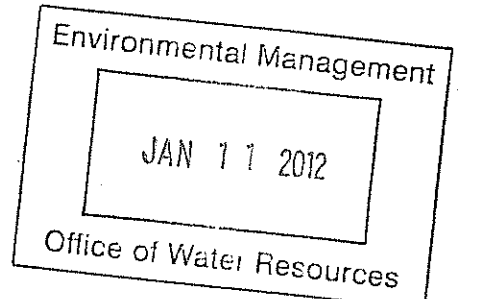
15. SEDIMENTS SHOULD BE REMOVED FROM THE CHECK DAM WHEN IT REACHES ONE-HALF THE DAM HEIGHT.



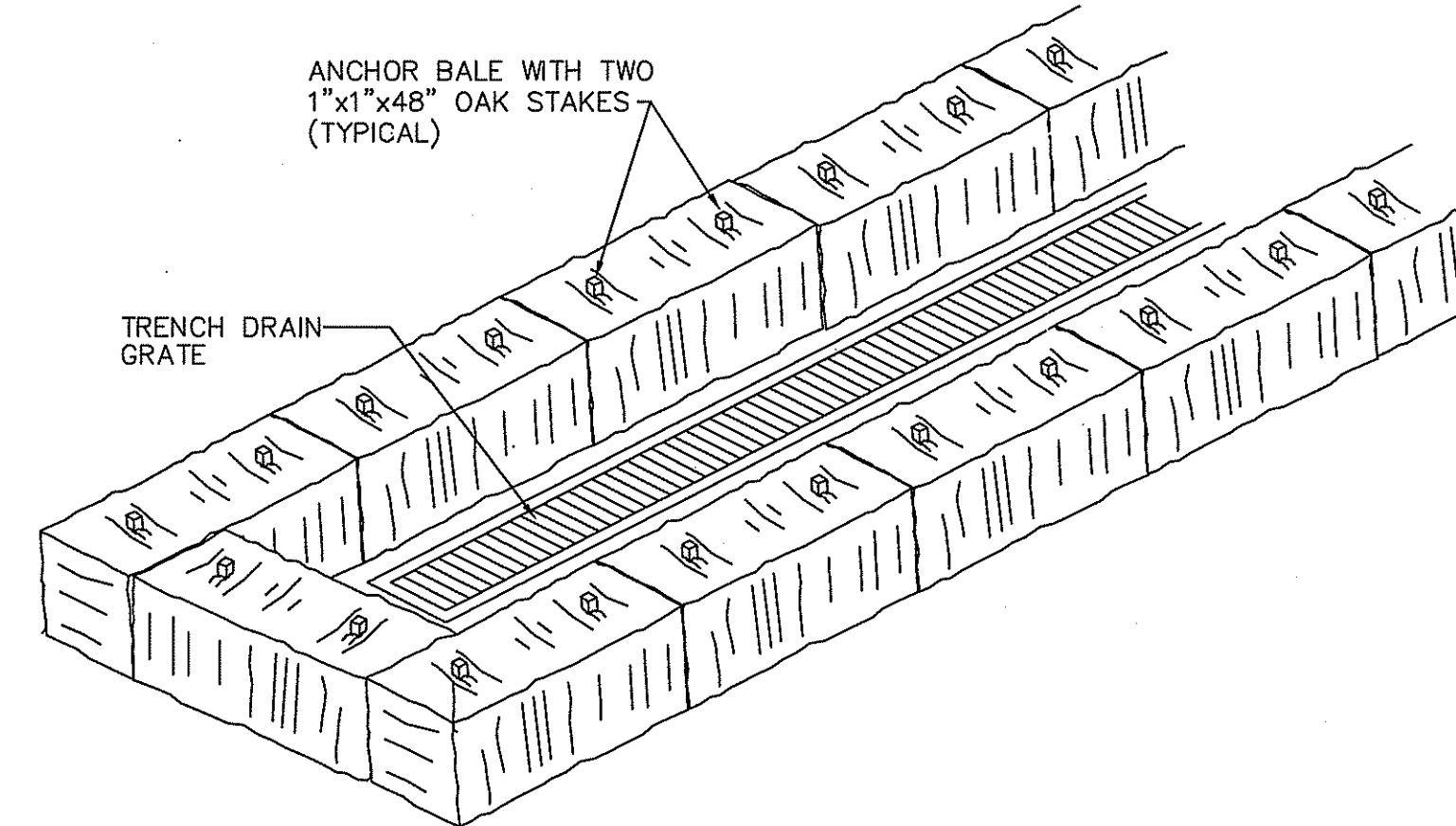
SQUARE MESH SIEVES	MATERIALS SIZE		
	2" CRUSHED STONE OR GRAVEL	ASTM C-33 NO. 2	ASTM C-33 NO. 3
2-1/2 INCHES	100	90-100	100
2 INCHES	95-100	35-70	90-100
1-1/2 INCHES	30-55	0-15	35-70
1-1/4 INCHES	0-25	-	-
1 INCH	0-5	-	0-15
3/4 INCH	-	0-5	-
1/2 INCH	-	-	0-5
3/8 INCH	-	-	-

NOTE: STABILIZATION PAD TO BE IN CONFORMANCE WITH STANDARDS SET FORTH IN THE "RHODE ISLAND GUIDELINES FOR SOIL & SEDIMENT CONTROL".

**RIP-RAP STABILIZATION PAD @ CONSTRUCTION ENTRANCE**  
NOT TO SCALE



DESIGN ELEVATION TO ALLOW FOR SEDIMENTATION. AFTER VEGETATIVE COVER HAS BEEN ESTABLISHED, RIM SHALL BE LOWERED TO DESIGN ELEVATION.



**STRAW BALE TRENCH DRAIN PROTECTION**  
NOT TO SCALE

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

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED FEB - 6 2012 FILE # 11-0300  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*W. Joseph Conroy*

Steven M. Clarke  
No. 4477  
REGISTERED PROFESSIONAL ENGINEER

**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
401-273-6600

REVISIONS

No.	DATE	DRWN	CHKD
1.	01/03/12	KAB	KK

**CONSTRUCTION DETAILS**  
for  
**AP 33, LOTS 322,345,350, 351,395,624,654 & 656**  
**VALLEY STREET**  
in  
PROVIDENCE, RHODE ISLAND

SCALE: AS NOTED	SHEET NO: 9 of 9
DRAWN BY: JP	DESIGN BY: KAB
DATE: 10/20/11	CHECKED BY: KK
	PROJECT NO.: 07056