STILLHOUSE COVE STORMWATER BMP PROJECT

NARRAGANSETT BOULEVARD · CRANSTON · RHODE ISLAND

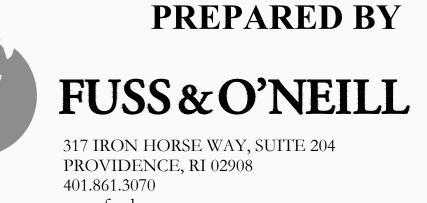
PERMITTING SET

APRIL 2017

PREPARED FOR

CITY OF CRANSTON

869 PARK AVENUE CRANSTON, RI 02910



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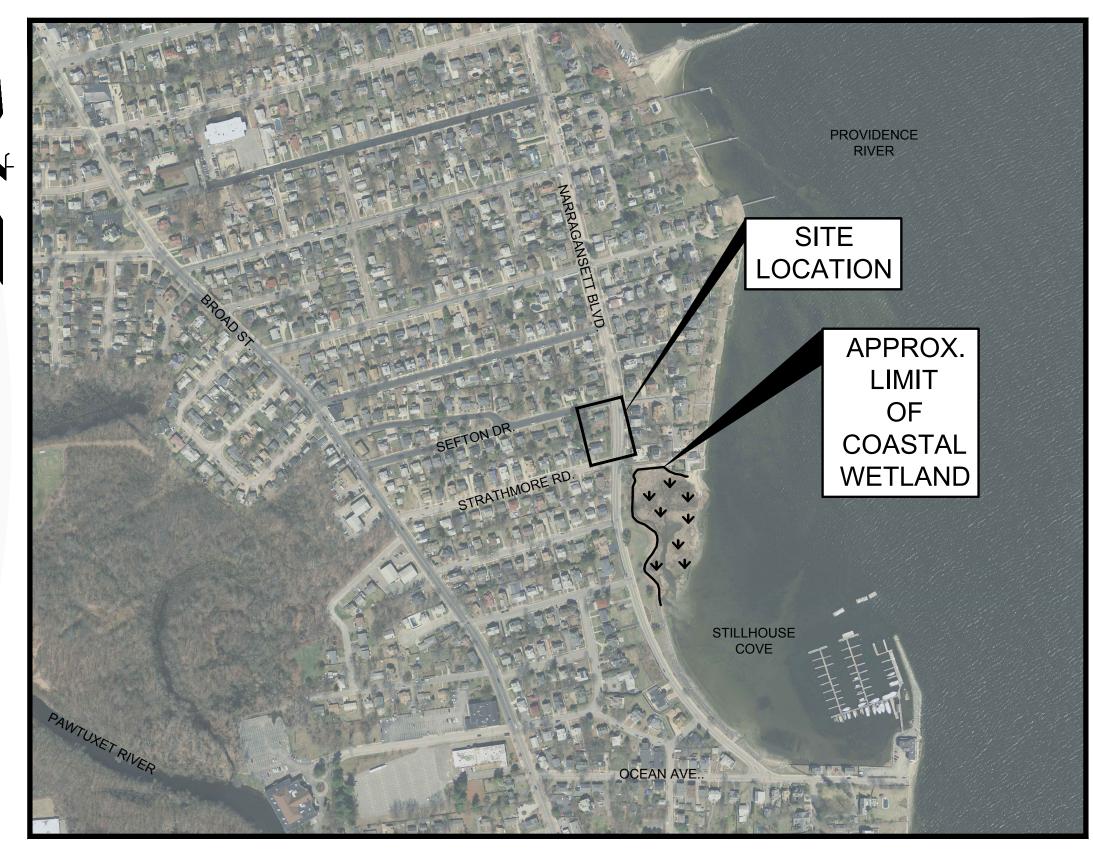
CS-105 TRAFFIC MANAGEMENT PLAN

CD-501 - CD-503 DETAILS

PROJECT TEAM

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

SURVEYOR
THE CITY OF CRANSTON
869 PARK AVENUE
CRANSTON, RI 02910
P: 401-461-1000



LOCATION MAP

SCALE: 1" = 400'

n: JNDWGNP2014\0594\A20\Civil\Plan\20140594A20_COV01 dwg_Lavout: GI-001_Plotted: Friday_April 21_2017_User: rweiter Plotter

DATE: APRIL 2017

GENERAL NOTES

EXISTING CONDITIONS:

<u>SURVEY:</u>
PROPERTY BOUNDARY AND TOPOGRAPHICAL INFORMATION WERE OBTAINED FROM A PLAN BY THE CITY OF CRANSTON, DATED OCTOBER 21, 2016, REVISED FEBRUARY 3, 2017, ENTITLED "EXISTING CONDITIONS: NARRAGANSETT BLVD. SEFTON DR. TO STRATHMORE RD. WEST SIDE SIDEWALK."

THE SUBJECT SITE LIES OUTSIDE OF THE FLOODZONE, PER FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 4400760319J FOR PROVIDENCE COUNTY, RHODE ISLAND.

UTILITIES:
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE ONLY AND HAVE NOT YET BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR IS TO CONTACT 'DIG SAFE' AT 1-888-344-7233, 72-HOURS PRIOR, EXCLUDING WEEKENDS AND HOLIDAYS, TO ANY EXCAVATION PERFORMED ON SITE.

2. THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2010 EDITION, REVISIONS AND ALL CURRENT ADDENDA, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF, AS IF ATTACHED HERETO. WHERE USED THROUGHOUT THE DRAWINGS, "STANDARD SPECIFICATIONS" SHALL REFER TO

UTILITIES:

LOCATION AND ELEVATIONS: HE LOCATION AND ELEVATIONS OF ALL EXISTING UTILITIES AS SHOWN ON THESE PLANS SHALL BE VERIFIED BY

THE CONTRACTOR PRIOR TO CONSTRUCTION.

REGULATIONS OF THE APPROPRIATE UTILITY COMPANIES.

GAS AND ELECTRIC:
THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE OWNERS OF GAS, ELECTRIC, AND COMMUNICATIONS UTILITIES WITHIN THE PROJECT SITE, AND WORK IN ACCORDANCE WITH THE RULES AND

GENERAL CONSTRUCTION REQUIREMENTS

THE CONTRACTOR SHALL VERIFY THE PROPOSED LAYOUT WITH ITS RELATIONSHIP TO THE EXISTING SITE SURVEY. THE CONTRACTOR SHALL ALSO VERIFY ALL DIMENSIONS, SITE CONDITIONS, AND MATERIAL SPECIFICATIONS AND SHALL NOTIFY THE OWNER AND ENGINEER OF ANY ERRORS, OMISSIONS OR DISCREPANCIES BEFORE COMMENCING OR

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS, INSPECTIONS, BONDS, ETC. AND OTHER APPROVAL RELATED ITEMS WITH THE CITY OF CRANSTON. NO CONSTRUCTION SHALL COMMENCE UNTIL SUCH PERMITS HAVE BEEN SECURED.

3. DEVIATIONS OR CHANGES FROM THESE PLANS WILL NOT BE ALLOWED UNLESS APPROVED BY THE OWNER.

4. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS AND LOCATE ANY EXISTING UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF NECESSARY. THE EXISTENCE AND/OR LOCATION OF UTILITIES SHOWN ON THESE PLANS MAY BE ONLY APPROXIMATELY CORRECT AND THE CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN HEREON AND ANY OTHER EXISTING UTILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, AT HIS/HER EXPENSE, ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.

PROPOSED EXCAVATION AT LEAST TWO WORKING DAYS, BUT NOT MORE THAN TEN WORKING DAYS, PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. ALL WATER, GAS, SEWER AND OTHER UTILITY SERVICES SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.

THE CONTRACTOR SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING, WITH MATCHING MATERIALS, ANY PAVEMENT, WALKS, CURBS. ETC. THAT MUST BE CUT OR THAT ARE DAMAGED DURING CONSTRUCTION.

7. AN APPROVED SET OF DRAWINGS, THE PROJECT MANUAL, AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT

8. CONTRACTOR AGREES THAT HE/SHE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.

OTHER EXISTING VEGETATION SHALL BE RETAINED.

SEAL

9. NO TREES OR SHRUBS SHALL BE REMOVED WITHOUT PRIOR APPROVAL FROM THE OWNER. 10. THE CONTRACTOR SHALL RESTORE DISTURBED AREAS TO ORIGINAL CONDITION. AREAS DAMAGED DURING

CONSTRUCTION SHALL BE RESODDED, RESEEDED, OR OTHERWISE RESTORED TO THEIR ORIGINAL STATE. TREES AND

11. ALL EXCESS EXCAVATED MATERIALS, EXCESS FILL, EXCESS CONSTRUCTION MATERIALS, AND DEBRIS SHALL BE REMOVED FROM THE SITE AND SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS.

EROSION CONTROL

AUGUST 15 THROUGH OCTOBER 1.

- DISTURBANCE OF SOIL SURFACES IS REGULATED BY STATE LAW AND LOCAL ORDINANCE. ALL WORK SHALL COMPLY WITH THE FOLLOWING CRITERIA TO PREVENT OR MINIMIZE SOIL EROSION.
- THE INSTALLATION AND MAINTENANCE OF EROSION CONTROL DEVICES IS THE RESPONSIBILITY OF THE CONTRACTOR. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE PLAN, OR AS DIRECTED BY THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND THE CITY OF CRANSTON. ALL EROSION CONTROL DEVICES SHALL BE MAINTAINED IN EFFECTIVE CONDITION DURING CONSTRUCTION.
- THE CONTRACTOR SHALL USE THE LATEST EDITION OF THE "STATE OF RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" IN CONSTRUCTING THE EROSION AND SEDIMENT CONTROLS INDICATED ON THE PLANS. ALL EROSION AND SEDIMENT CONTROL MEASURES OR WORKS AND REHABILITATION MEASURES MUST CONFORM TO OR EXCEED THE SPECIFICATIONS OR STANDARDS SET OUT IN THIS HANDBOOK.
- THE CONTRACTOR IS RESPONSIBLE FOR THE TIMELY INSTALLATION, INSPECTION, MAINTENANCE, AND/OR REPLACEMENT OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES TO ENSURE PROPER OPERATION THROUGHOUT THE LIFE OF THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF PERMANENT MEASURES UNTIL CONSTRUCTION OF THE PROJECT IS COMPLETED OR UNTIL IT IS ACCEPTED BY THE OWNER. THE OWNER IS RESPONSIBLE THEREAFTER.
- 5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CLEAN ROADS, CONTROL DUST, AND TAKE ALL NECESSARY MEASURES TO ENSURE THAT THE SITE AND ALL ROADS BE MAINTAINED IN A MUD- AND DUST-FREE CONDITION AT ALL TIMES THROUGHOUT THE LIFE OF THE CONTRACT. DUST CONTROL SHALL INCLUDE, BUT IS NOT LIMITED TO, WATER AND/OR CRUSHED STONE OR COARSE GRAVEL, SUBJECT TO THE APPROVAL OF THE OWNER.
- 6. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO THE SURROUNDING ROADWAYS MUST BE REMOVED IMMEDIATELY. ADDITIONAL ENTRANCES FOR CONSTRUCTION PHASING SHALL BE INSTALLED AS REQUIRED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS.
- THE CONTRACTOR SHALL INSTALL ALL PERIMETER SEDIMENT CONTROL BARRIERS AS SHOWN ON THE SITE PLANS OR AS MAY BE REQUIRED TO PREVENT SEDIMENT FLOW TO STORM DRAINS OR SURFACE WATERS. A ROW OF COIR ROLLS SHALL ALSO BE INSTALLED AROUND ANY SOIL STOCKPILE AREAS. CLEANOUT OF ACCUMATED SEDIMENT BEHIND PERIMETER SEDIMENT CONTROL BARRIER IS NECESSARY IF ONE-HALF THE ORIGINAL HEIGHT OF THE BARRIER BECOMES FILLED WITH SEDIMENT. REPLACE BARRIER IMMEDIATELY IF BARRIER DECOMPOSED OR BECOMES INEFFECTIVE.
- TEMPORARY VEGETATIVE COVER SHALL BE APPLIED TO ANY DISTURBED AREAS (INCLUDING SOIL STOCKPILE AREAS) THAT HAVE NOT YET REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS. TEMPORARY SEEDING MAY BE APPLED ANYTIME BETWEEN MARCH 1 THROUGH JUNE 15 AND

THIS TEMPORARY VEGETATIVE COVER SHALL CONSIST OF 60% OF ANNUAL OR PERENNIAL RYEGRASS AND 40% OF MILLET OR SUDANGRASS OR 100% OF WINTER RYE. ANNUAL OR PERENNIAL RYEGRASS SHALL BE PLANTED AT A RATE OF 1.5 POUNDS PER 1,000 SQUARE FEET, WINTER RYE SHALL BE PLANTED AT A RATE OF 2.5 POUNDS PER 1,000 SQUARE FEET, AND MILLET OR SUDANGRASS SHALL BE PLANTED AT A RATE OF 1.0 POUND PER 1,000 SQUARE FEET.

LIMESTONE AND FERTILIZER SHALL BE APPLIED ACCORDING TO SOIL TEST RECOMMENDATIONS OFFERED BY THE UNIVERSITY OF MASSACHUSETTS SOIL TESTING LABORATORY. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES. OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 300 POUNDS PER ACRE OR 7.5 POUNDS PER 1,000 SQUARE FEET OF 10-10-10 OR EQUIVALENT. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AS FOLLOWS: (1) 3 TONS PER ACRE (OR 135 POUNDS PER 1,000 SQUARE FEET) FOR CLAY, CLAY LOAM AND HIGH ORGANIC SOIL, (2) 2 TONS PER ACRE (OR 90 POUNDS PER 1,000 SQUARE FEET) FOR SANDY LOAM, LOAM. OR SILT LOAM. AND (3) 1 TON PER ACRE (OR 45 POUNDS PER 1,000 SQUARE FEET) LOAMY SAND OR SAND. TEMPORARY VEGETATIVE COVER SHALL BE INSTALLED AS OUTLINED IN THE RHODE ISLAND SOIL EROSION AND SEDIMENT

9. PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO ALL DISTURBED AREAS THAT HAVE REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS PERMANENTLY CEASED. THE RECOMMENDED PERMANENT SEEDING DATES ARE APRIL 1 TO JUNE 15 AND AUGUST 15 TO SEPTEMBER 30. PERMANENT VEGETATIVE COVER NOT OTHERWISE SPECIFIED ON THE DRAWINGS SHALL RECEIVE THE FOLLOWING SEED MIXTURE (ALSO KNOWN AS URI NUMBER 2 SEED):

40% OF RED FESCUE APPLICATION RATE: 0.90LBS/1,000SF 40% OF KENTUCKY BLUEGRASS APPLICATION RATE: 0.90LBS/1.000SF

20% OF PERENNIAL RYEGRASS APPLICATION RATE: 0.45LBS/1,000SF

LIMESTONE AND FERTILIZER SHALL BE APPLIED ACCORDING TO SOIL TEST RECOMMENDATIONS OFFERED BY THE UNIVERSITY OF MASSACHUSETTS SOIL TESTING LABORATORY. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11.5 POUNDS PER 1,000 SQUARE FEET OF 10-20-20 OR EQUIVALENT. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AS FOLLOWS: 4 TONS PER ACRE (OR 180 POUNDS PER 1,000 SQUARE FEET) FOR CLAY, CLAY LOAM AND HIGH ORGANIC SOIL; 3 TONS PER ACRE (OR 135 POUNDS PER 1,000 SQUARE FEET) FOR SANDY LOAM, LOAM, OR SILT LOAM; AND 2 TONS PER ACRE (OR 90 POUNDS PER 1,000 SQUARE FEET) LOAMY SAND OR SAND.

10. IF PERMANENT OR TEMPORARY SEEDING CANNOT BE COMPLETED IMMEDIATELY OR WITHIN THE RECOMMENDED SEEDING DATES, USE THE TEMPORARY MULCHING MEASURE TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

11. ANY EXISTING OR PROPOSED STORMWATER DRAINAGE STRUCTURES THAT MAY BE SUBJECT TO SEDIMENTATION SHALL BE PROTECTED WITH SILT SACKS. OR OTHER APPROVED MEASURES THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.

12. ALL EXCESS EXCAVATED MATERIALS, EXCESS FILL, EXCESS CONSTRUCTION MATERIALS, AND DEBRIS SHALL BE REMOVED FROM THE SITE AND SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS.

13. WASTE DISPOSAL: MATERIALS WHICH COULD BE A POTENTIAL SOURCE OF STORMWATER POLLUTION SUCH AS GASOLINE DIESEL FUEL, HYDRAULIC OIL, ETC., SHALL BE STORED AT THE END OF EACH DAY IN A STORAGE TRAILER OR COVERED LOCATION AND TAKEN OFF-SITE AND PROPERLY DISPOSED OF. ALL TYPES OF WASTE GENERATED AT THIS SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND/OR REGULATIONS.

14. CONTROL OF ALLOWABLE NON-STORMWATER DISCHARGES: IF ALLOWABLE NON-STORM WATER DISCHARGES ARE OCCURRING AT THE SITE, SUCH DISCHARGES SHALL BE VISUALLY OBSERVED AND RECORDED AS OUTLINED BELOW AND IN ACCORDANCE WITH PART II OF THE RIPDES GENERAL PERMIT. THE LIST OF EXPECTED SOURCES OF ALLOWABLE NON-STORM WATER DISCHARGES FOR THIS PROJECT ARE AS FOLLOWS: (1) DISCHARGE FROM VEHICLE WASHDOWN WHERE NO DETERGENTS ARE USED. (2) EXTERNAL BUILDING WASHDOWN WHERE NO DETERGENTS ARE USED. (3) THE USE OF WATER TO CONTROL DUST. (4) FIRE HYDRANT FLUSHINGS, (5) LAWN WATERING, (6) POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHINGS, (8) IRRIGATION DRAINAGE, (9) PAVEMENT WASHWATERS WHERE SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE NOT OCCURRED (UNLESS ALL SPILLED MATERIALS HAVE BEEN REMOVED) AND WHERE NO DETERGENTS ARE USED. AND (10) FOUNDATION OR FOOTING DRAINS WHERE FLOWS ARE NOT CONTAMINATED WITH PROCESS SUCH AS SOLVENTS OR CONTAMINATED BY CONTACT WITH SOILS WHERE SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAS OCCURRED.

15. GOOD HOUSEKEEPING: THE PROJECT SITE SHALL PROVIDE FOR THE MINIMIZATION OF EXPOSURE OF CONSTRUCTION DEBRIS (INCLUDING, BUT NOT LIMITED TO, INSULATION, WIRING, PAINTS AND PAINT CANS, SOLVENTS, WALL BOARD, ETC.) TO PRECIPITATION BY MEANS OF DISPOSAL AND/OR PROPER SHELTER OR COVER. CONSTRUCTION WASTE MUST BE PROPERLY DISPOSED OF IN ORDER TO AVOID EXPOSURÉ TO PRECIPITATION AT THE END OF EACH WORKING DAY.

STORMWATER MAINTENANCE PROGRAM

- 1. REPAIRS OR REPLACEMENT OF DRAINAGE STRUCTURES SHALL 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
- THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM ONCE CONSTRUCTION IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE UNTIL CONSTRUCTION IS COMPLETE.
- 3. THE CONTRACTOR MUST COMPLY WITH THE REQUIREMENTS OF THE LONG TERM OPERATIONS AND MAINTENANCE PLAN FOR THE STILLHOUSE COVE STORMWATER BMP PROJECT PROJECT WHILE HE/SHE IS RESPONSIBLE FOR THE SITE. A COPY OF THIS LONG TERM OPERATIONS AND MAINTENANCE PLAN SHALL BE KEPT ON SITE AT ALL TIMES. THIS LONG TERM OPERATIONS AND MAINTENANCE PLAN IS MADE A PART HEREOF AS, IF ATTACHED HERETO.

CONSTRUCTION SEQUENCE

CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT ARE EXPECTED TO COMMENCE IN THE SPRING OF 2016. THE GENERAL SEQUENCE FOR EACH PHASE OF CONSTRUCTION IS AS FOLLOWS:

- INSTALL SEDIMENT CONTROL BARRIERS, AS SHOWN ON THE CONSTRUCTION PLANS. EROSION CONTROL MEASURES WILL BE MAINTAINED OR REPLACED AS REQUIRED THROUGHOUT CONSTRUCTION PERIOD. ANY TEMPORARY SOIL STOCKPILE AREAS DURING CONSTRUCTION WILL ALSO BE ENCOMPASSED BY HAYBALES OR COIR ROLLS.
- 2. CLEAR THE SITE AND REMOVE DEMOLISHED MATERIALS.
- 3. CONDUCT ROUGH GRADING AND STOCKPILE EXCESS SOILS FOR REMOVAL OR REUSE AS SPECIFIED.
- 4. INSTALL STORM DRAINS, BIORETENTION BASIN MATERIALS, AND ASSOCIATED SITE IMPROVEMENTS.
- 5. COMPACT SUBGRADE WHERE APPROPRIATE AND INSTALL GRAVEL BORROW IN ALL AREAS TO BE OVERLAIN WITH CONCRETE SIDEWALK.
- INSTALL PROPOSED CURBING.
- 7. CONDUCT FINAL GRADING OF LANDSCAPED AREAS AND CONSTRUCT SIDEWALKS.
- 8. PERMANENTLY SEED ALL NON-PAVED AREAS AND INSTALL LANDSCAPING AS SPECIFIED.
- 9. REMOVE TEMPORARY EROSION CONTROLS MEASURES ONCE PERMANENT VEGETATION COVER HAS BEEN ESTABLISHED AND THE SITE IS STABILIZED, INSPECTED, AND APPROVED BY THE CITY OF CRANSTON.

SPILL PREVENTION AND RESPONSE PROCEDURE

- ANY INADVERTENT OR DELIBERATE DISCHARGE OF WASTE OIL OR ANY OTHER POLLUTANT TO THE STORMWATER DISPOSAL SYSTEM REQUIRES IMMEDIATE NOTIFICATION TO THE RIDEM OIL POLLUTION CONTROL PROGRAM AT (401) 277-2284, AS PER THE OIL POLLUTION CONTROL REGULATIONS. DURING NON-WORKING HOURS, NOTIFICATION OF SPILLS CAN BE MADE TO THE RIDEM DIVISION OF ENFORCEMENT AT (401) 222-3070 (THE 24-HOUR EMERGENCY RESPONSE PHONE NUMBER).
- ANY INCIDENT OF GROUNDWATER CONTAMINATION RESULTING FROM THE IMPROPER DISCHARGE OF POLLUTANTS TO THE STORMWATER DISPOSAL SYSTEM SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER AS WELL AS ANY OTHER PARTIES THAT THE RIDEM DETERMINES TO BE RESPONSIBLE FOR THE CONTAMINATION. PURSUANT TO STATE LAWS AND REGULATIONS. THE RIDEM MAY REQUIRE THE PROPERTY OWNER AND OTHER RESPONSIBLE PARTIES TO REMEDIATE ANY INCIDENTS THAT MAY ADVERSELY IMPACT GROUNDWATER QUALITY.
- UPON TRANSFER OF THE PROPERTY, THE NEW OWNER SHALL BE INFORMED AS TO THE LEGAL RESPONSIBILITIES ASSOCIATED WITH DISPOSAL SYSTEM, AS INDICATED ABOVE.
- THE OWNER WILL CREATE A MAINTENANCE LOG, SHOWING THE DATE, TIME, NAME OF INSPECTIOR, INSPECTION COMMENTS, AND ANY ACTIONS TAKEN BASED ON THE ABOVE REFERENCE SCHEDULE.
- 5. THE PROPERTY OWNER SHALL BE RESPONSIBLE TO REMEDIATE INCIDENTS THAT ADVERSELY IMPACT GROUNDWATER

ELEV **EXIST EXISTING** MAXIMUM MINIMUM NOT TO SCALE

DATE

<u>ABBREVIATIONS</u>

APPROX APPROXIMATE PCC PRE CAST CONCRETE CURB BITUMINOUS PAVEMENT PROP PROPOSED BOTTOM OF WALL REM REMOVE CONCRETE CURB R&D REMOVE AND DISPOSE CAPE CODE BERM REMOVE AND RESET ELEVATION R&S REMOVE AND STACK TOS TOP OF SLOPE GRANITE CURB TW TOP OF WALL TYP TYPICAL HYD HYDRANT VGC VERTICAL GRANITE CURB

CB CATCH BASIN CORRUGATED DCB DOUBLE CATCH BASIN F&G FRAME AND GRATE F&C FRAME AND COVER HDPE HIGH DENSITY POLYETHYLENE PIPE

DESCRIPTION

INV INVERT ELEVATION CMP CORRUGATED METAL PIPE | PVC POLYVINYL CHLORIDE PIPE POLYETHYLENE PIPE RCP REINFORCED CONCRETE PIPE DUCTILE IRON PIPE RD ROOF DRAIN SMH SEWER MANHOLE TSV TAPPING SLEEVE VALVE AND BOX

UP UTILITY POLE

DESIGNER REVIEWER

SEAL

SCALE: DATLIM HORZ. VERT.

HORZ.: NOT TO SCALE VERT.: NOT TO SCALE

GRAPHIC SCALE



FUSS&O'NEILL

317 IRON HORSE WAY, SUITE 204 PROVIDENCE, RI 02908 401.861.3070 www.fando.com

CITY OF CRANSTON

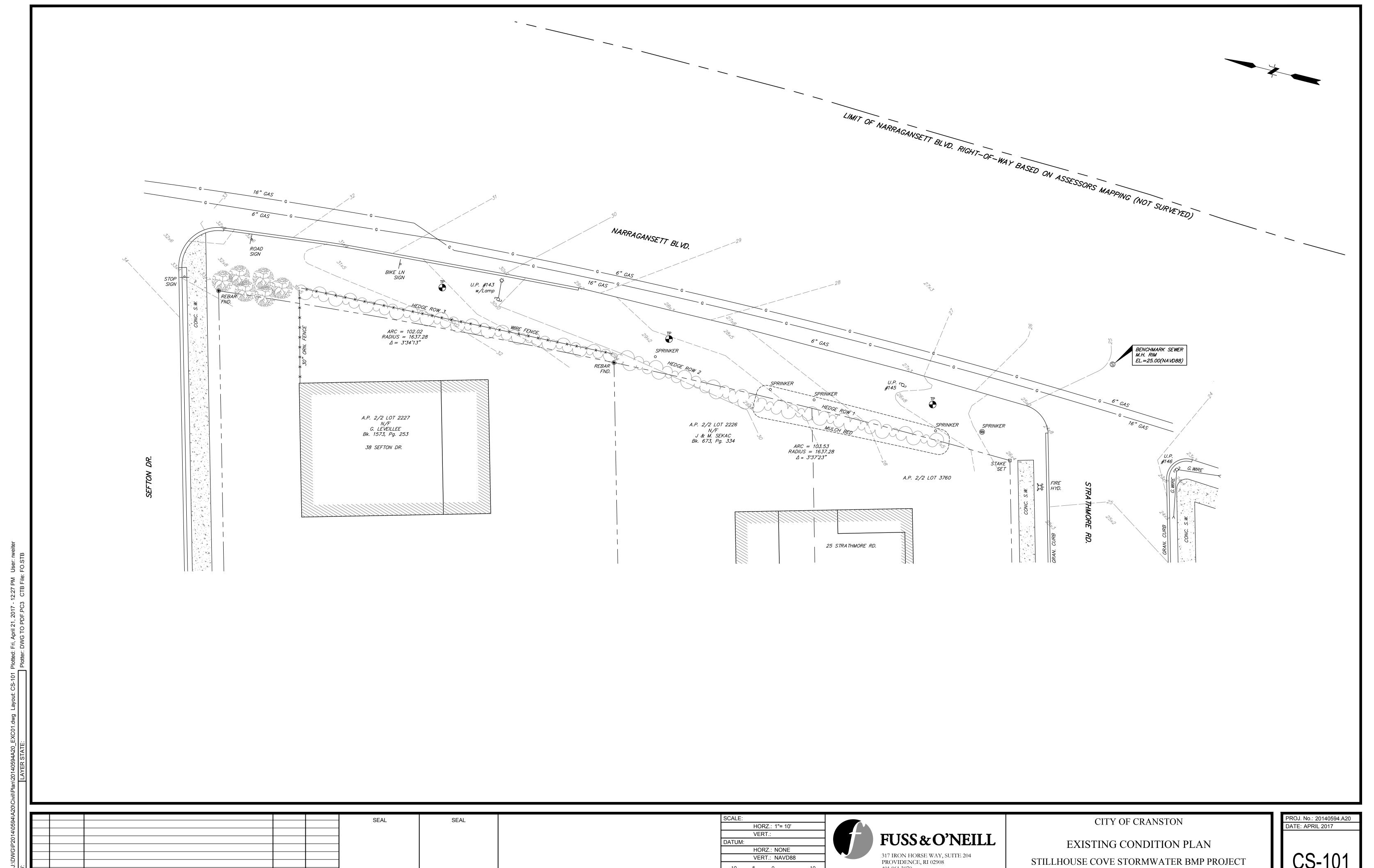
GENERAL NOTES & LEGEND

DATE: APRIL 2017

RHODE ISLAND CRANSTON

STILLHOUSE COVE STORMWATER BMP PROJECT

PROJ. No.: 20140594.A20



DESCRIPTION

DESIGNER REVIEWER

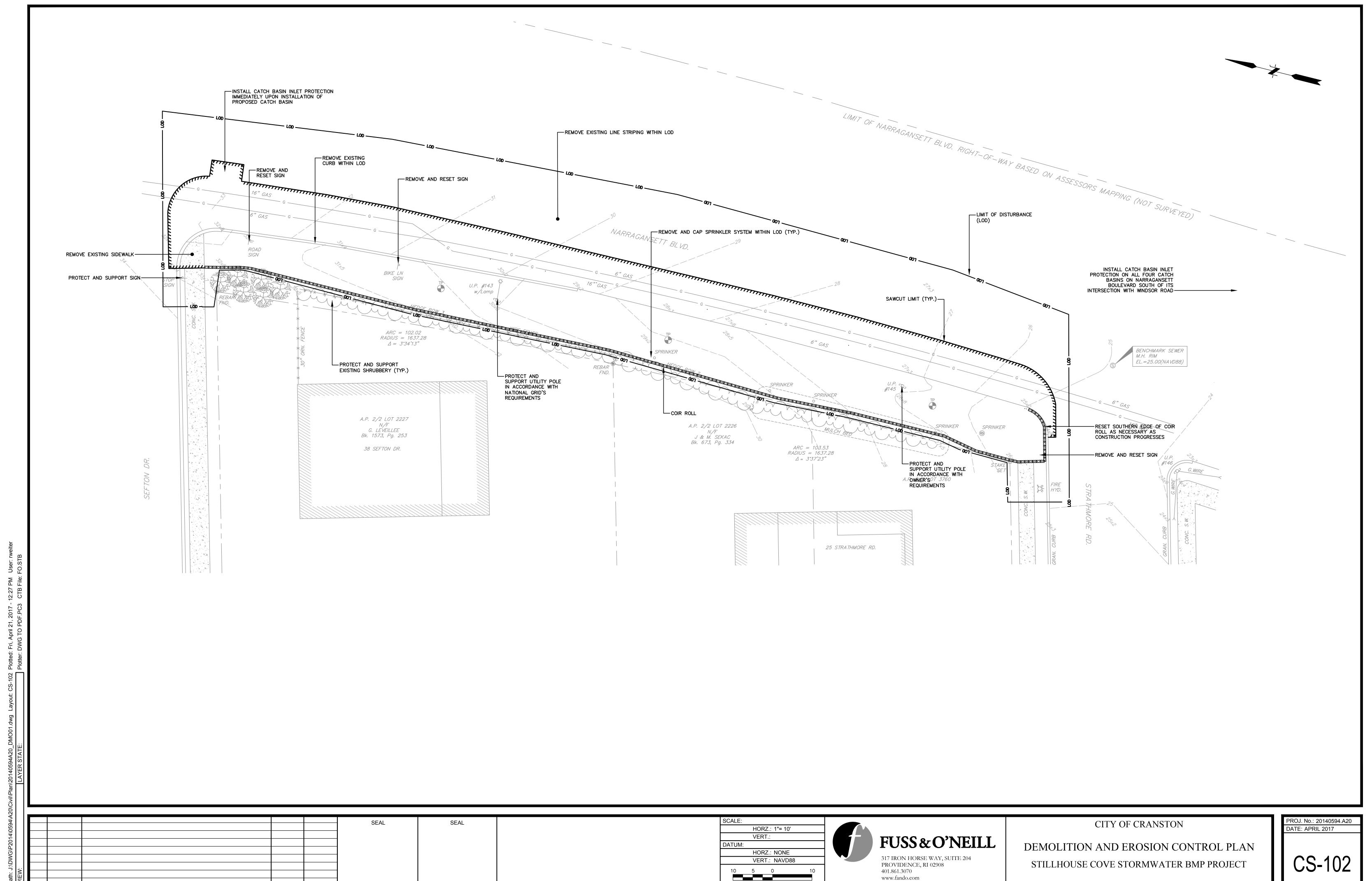
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GRAPHIC SCALE



CRANSTON

RHODE ISLAND



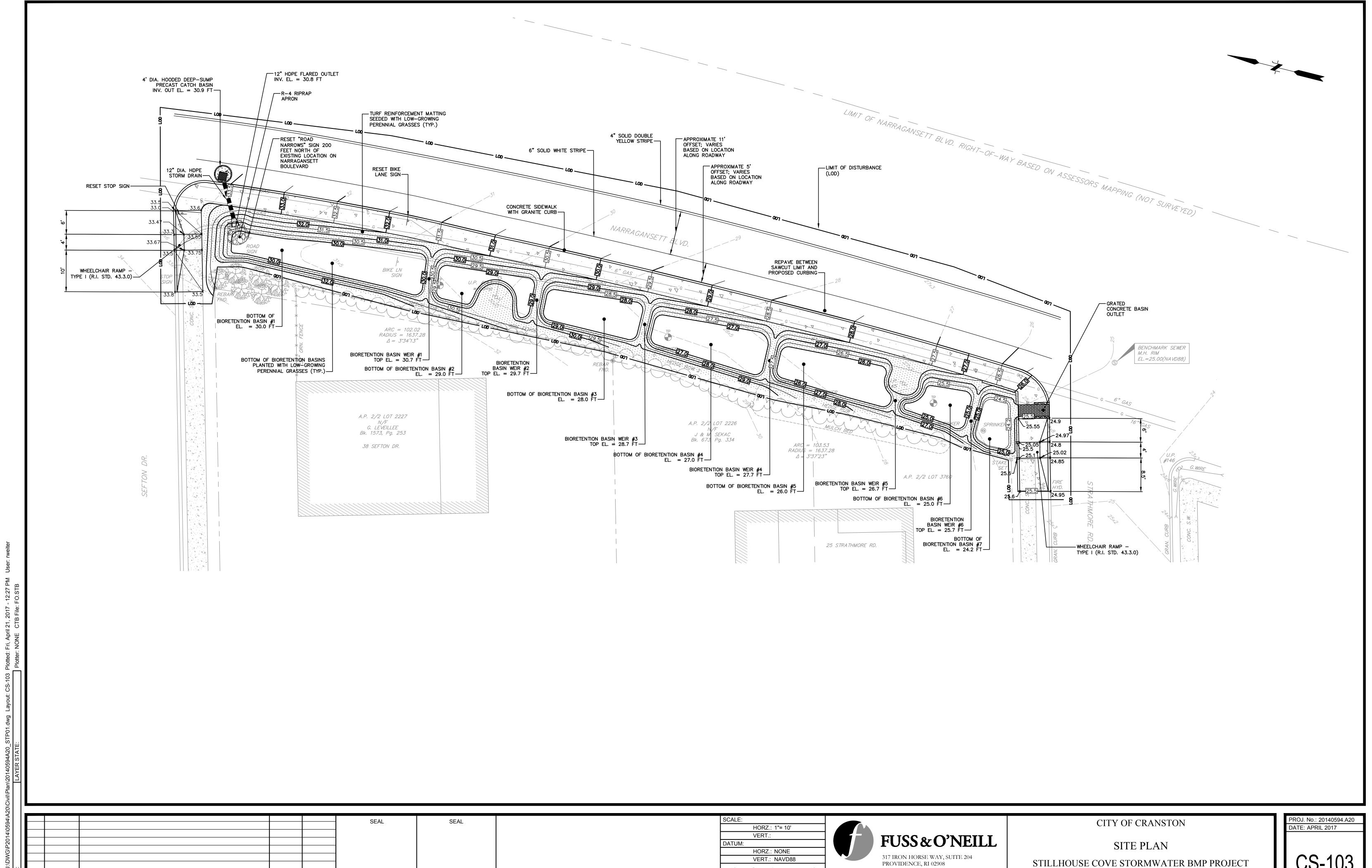
GRAPHIC SCALE

DATE

DESCRIPTION

DESIGNER REVIEWER

RHODE ISLAND CRANSTON



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DESIGNER REVIEWER

STILLHOUSE COVE STORMWATER BMP PROJECT

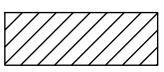
401.861.3070 www.fando.com

GRAPHIC SCALE

RHODE ISLAND CRANSTON

CS-103

	LEGEND					
ID	NUMBER	DESCRIPTION	ID	NUMBER	DESCRIPTION	
A	W20-1	ROAD WORK AHEAD	E	R9-11R	SIDEWALK CLOSED AHEAD CROSS HERE	
B	R4-11	MAY USE	F	R9-11L	SIDEWALK CLOSED AHEAD CROSS HERE	
		FULL LANE	G	R9-9	\$IDEWALK &LOSED	
c	W1-4L		H	G20-2	END ROAD WORK	
D	W1-4R		J	R8-3	NO PARKING	

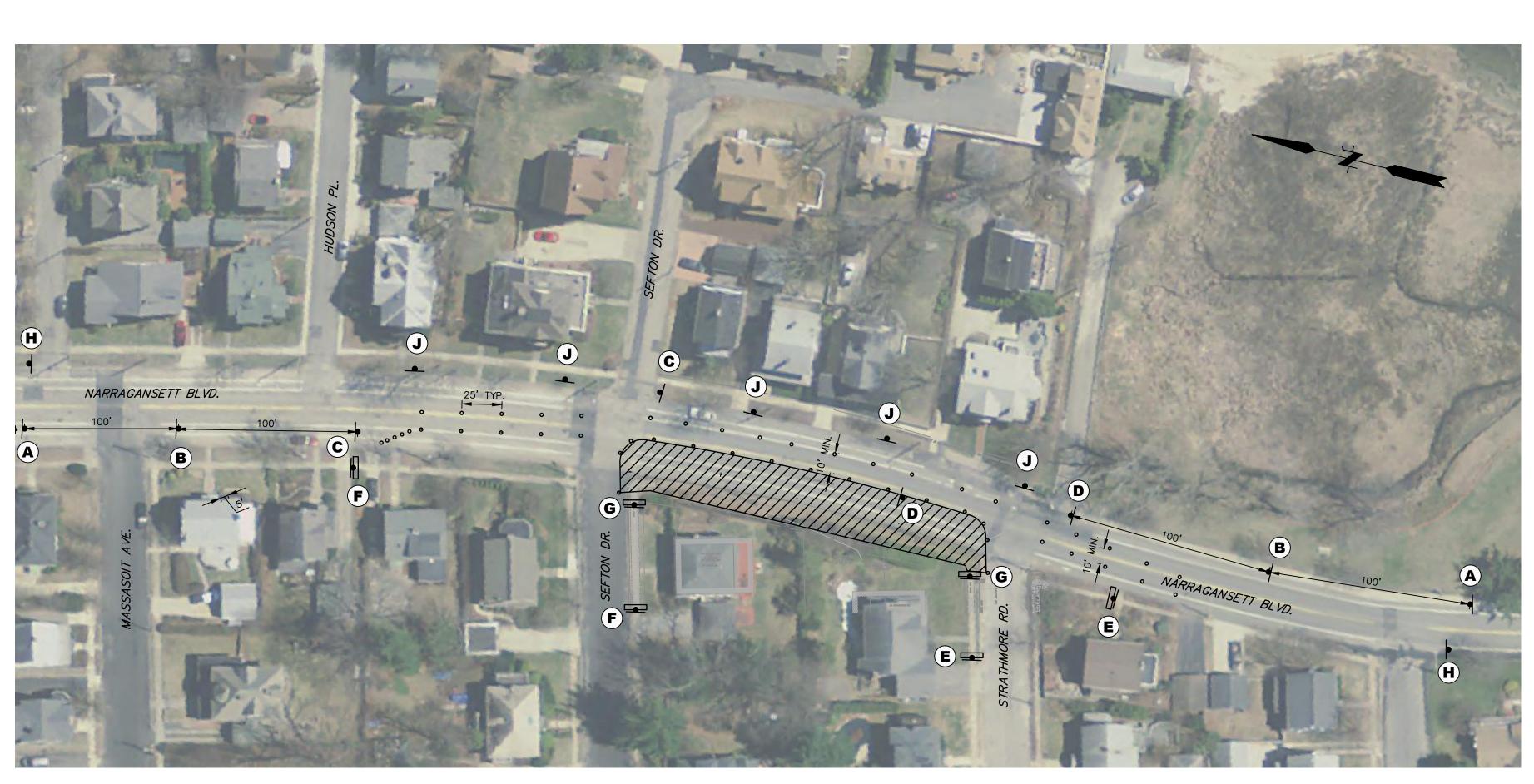


WORK AREA

SIGN

TRAFFIC BARREL

TYPE III BARRICADE



ADVANCE NOTICE TRAFFIC MANAGEMENT DETAIL (TO BE INSTALLED AT START OF CONSTRUCTION)

SCALE: 1"=50"

DESCRIPTION DATE DESIGNER REVIEWER

HORZ.: 1"= 10' VERT.: HORZ.: NONE VERT.: NAVD88 GRAPHIC SCALE



TRAFFIC MANAGEMENT PLAN STILLHOUSE COVE STORMWATER BMP PROJECT

CITY OF CRANSTON

TRAFFIC MANAGEMENT NOTES:

RHODE ISLAND STANDARD DETAILS AS INDICATED.

PRIOR TO THE START OF ANY WORK.

REQUIRED FOR CONTROL OF TRAFFIC.

FEATURES."

SIMILAR OPERATIONS.

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS IN ADDITION TO THE RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2010 EDITION) INCLUDING ALL REVISIONS AND

3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE

4. TEMPORARY CONSTRUCTION SIGNING, BARRICADES AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT

5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, AND REFLECTORIZED PLASTIC DRUMS WITH LIGHTING DEVICES MOUNTED ON THEM, MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY

6. CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 72 HOURS IN ADVANCE OF THE START OF

7. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.

8. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.

9. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

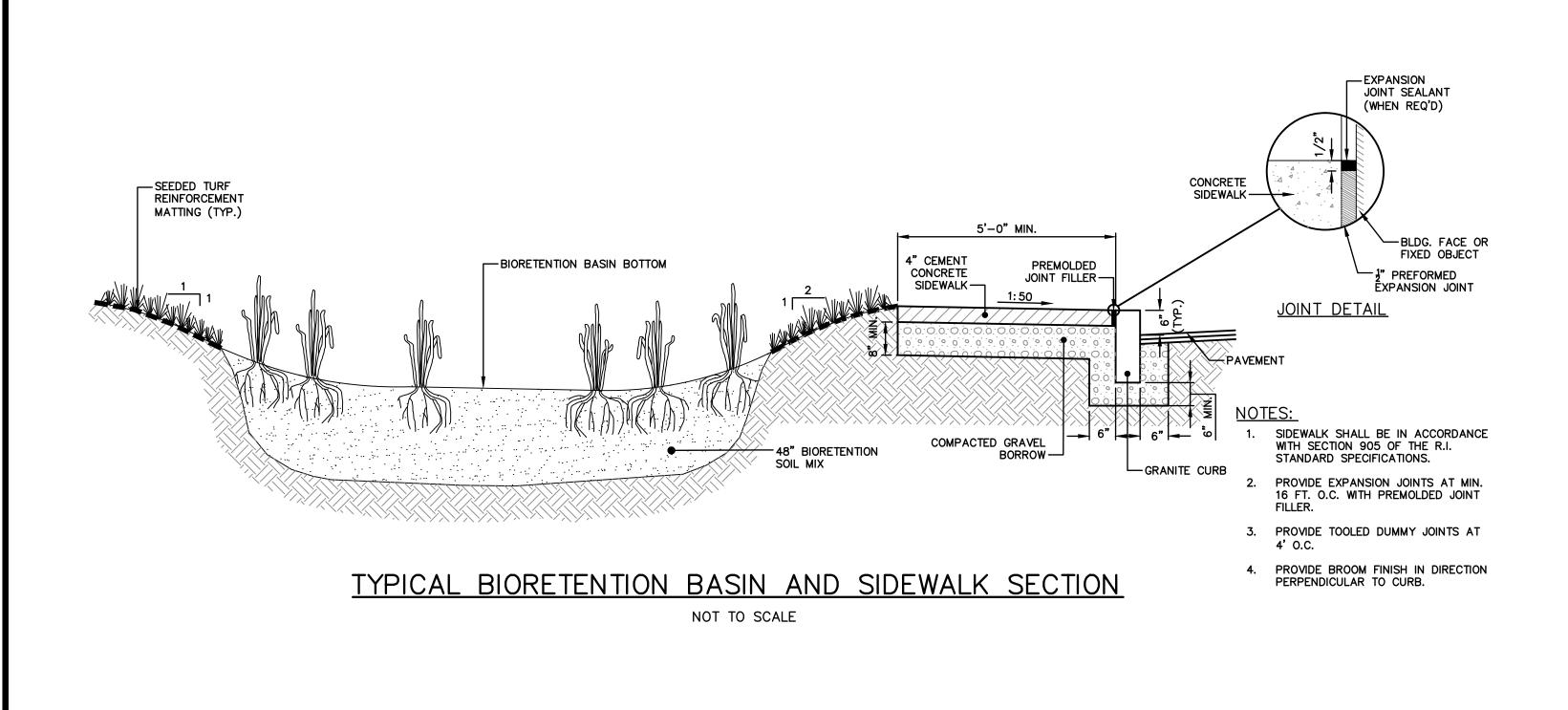
ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND

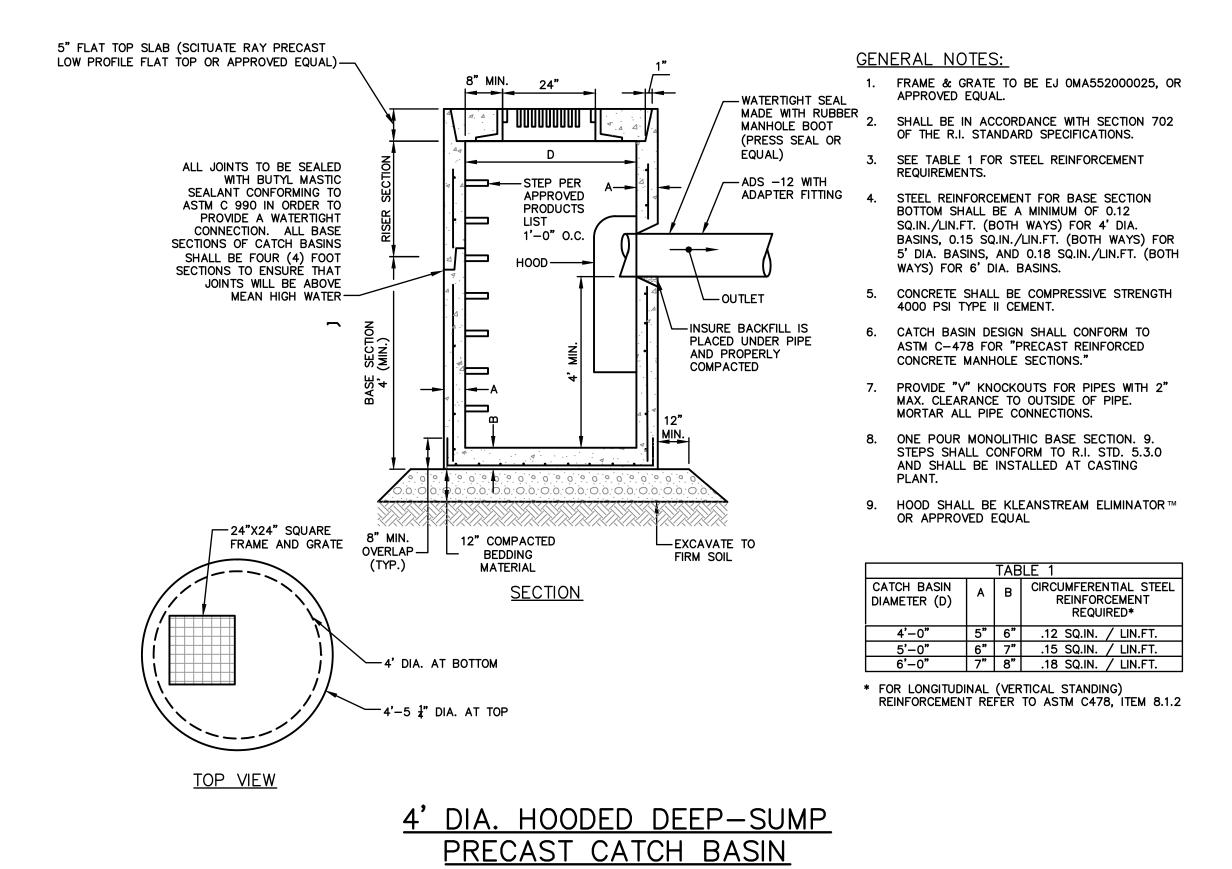
2. ALL SIGN LEGENDS, BORDERS AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.

CS-105

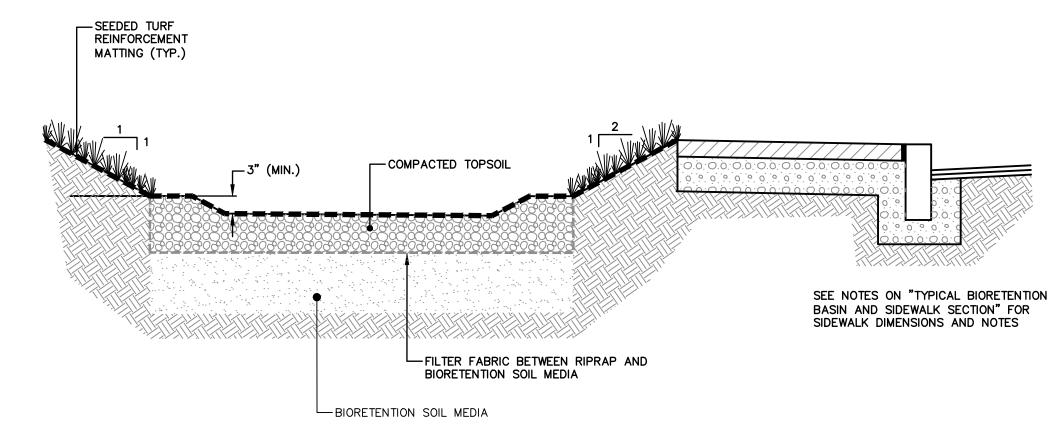
PROJ. No.: 20140594.A20 DATE: APRIL 2017

CRANSTON

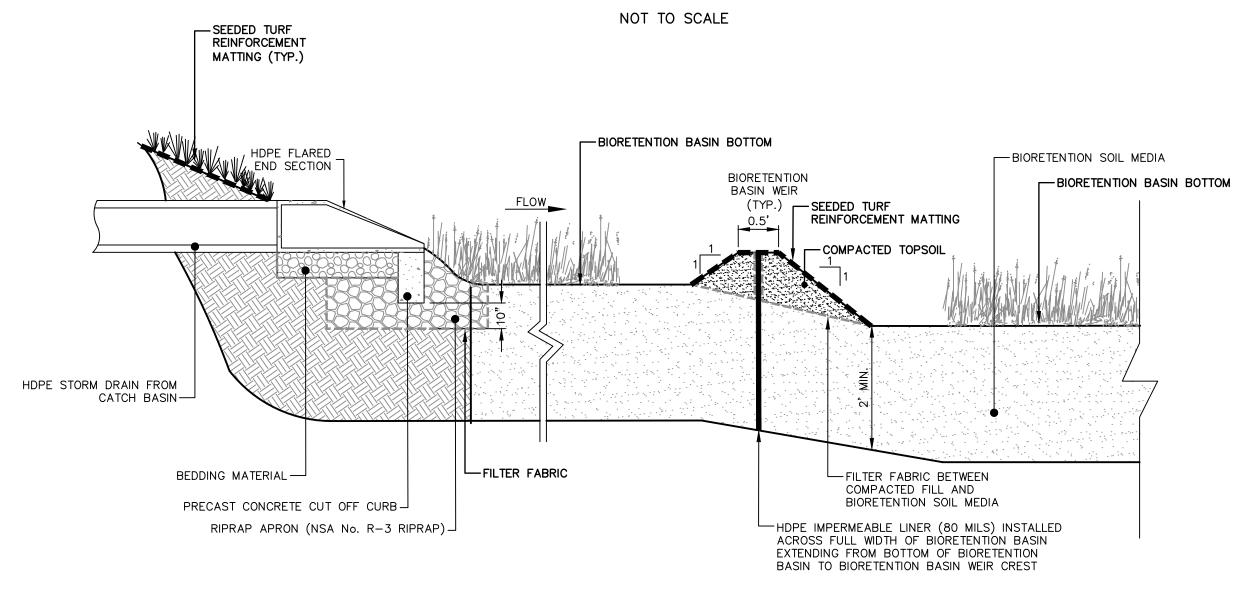




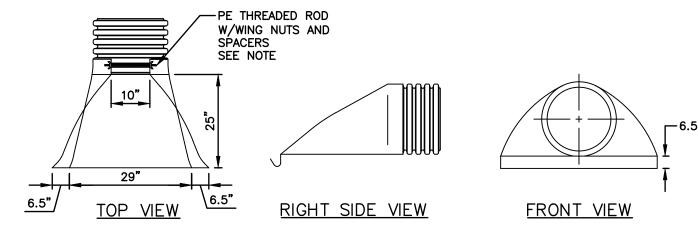
NOT TO SCALE



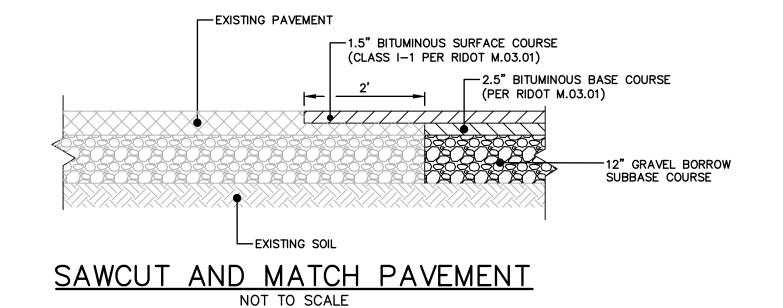
TYPICAL BIORETENTION BASIN WEIR AND SIDEWALK SECTION



BIORETENTION BASIN INLET PROFILE AND TYPICAL BIORETENTION BASIN WEIR PROFILE NOT TO SCALE



SHALL BE MANUFACTURED WITH POLYETHYLENE RESINS AS DESCRIBED AND DEFINED IN ASTM D3350. WHEN PROVIDED, THE METAL THREADED FASTENING ROD SHALL BE STAINLESS STEEL



HDPE	FLARED	END	SECTION
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E:		
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CONSTRUCTION DETAILS STILLHOUSE COVE STORMWATER BMP PROJECT

CITY OF CRANSTON

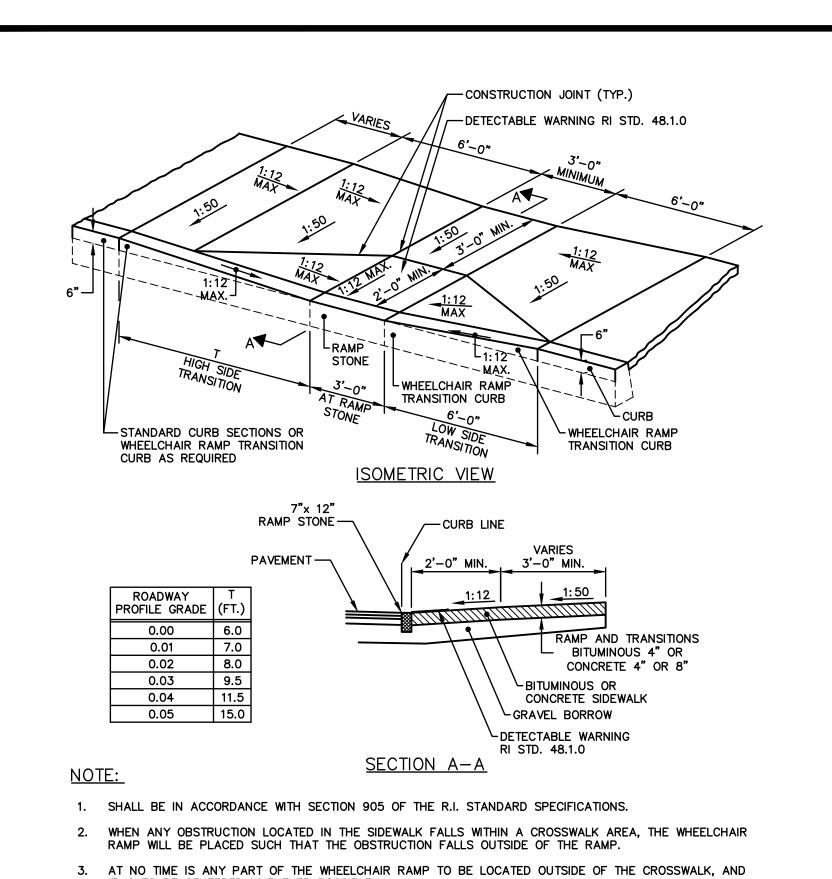
CD-501

PROJ. No.: 20140594.A20

DATE: APRIL 2017

SEAL SEAL VERT.: NOT TO SCALE DATUM: HORZ. VERT.: GRAPHIC SCALE DATE DESCRIPTION DESIGNER REVIEWER

CRANSTON RHODE ISLAND



IT IS TO BE CENTERED WHENEVER POSSIBLE.

(18'-0").

4. DRAINAGE FACILITIES ARE TO BE LOCATED UP-GRADE OF ALL WHEELCHAIR RAMPS.

11. THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.

14. ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER COST OF CURB.

6. IN NO INSTANCE SHALL THE SIDEWALK CROSS SLOPE EXCEED 1:50 EXCEPT WITHIN THE RAMP AREA.

8. THE WHEELCHAIR RAMP SLOPE AND SIDE SLOPES (TRANSITIONS), MUST NOT EXCEED 1:12. HOWEVER, THESE

9. WHERE THE ROAD PROFILE EXCEEDS 5% THE HIGH SIDE TRANSITION LENGTH (T) SHALL BE EIGHTEEN FEET

10. IN NO CASE, WHERE A STOP LINE IS WARRANTED, SHALL A RAMP BE PLACED BEHIND THE STOP LINE.

12. THE WHEELCHAIR RAMP SHALL BE CENTERED RADIALLY, OPPOSITE THE RADIUS POINT WHEN POSSIBLE.

15. DETECTABLE WARNINGS TO BE PAID FOR UNDER SECTION 942 OF THE RI STANDARD SPECIFICATIONS.

16. 8" CONCRETE DEPTH FOR RADIUS WHEELCHAIR RAMPS ONLY. USE 4" DEPTH FOR TANGENT (MID-BLOCK) LOCATIONS.

WHEELCHAIR RAMP-TYPE I

(R.I. STD. 43.3.0)

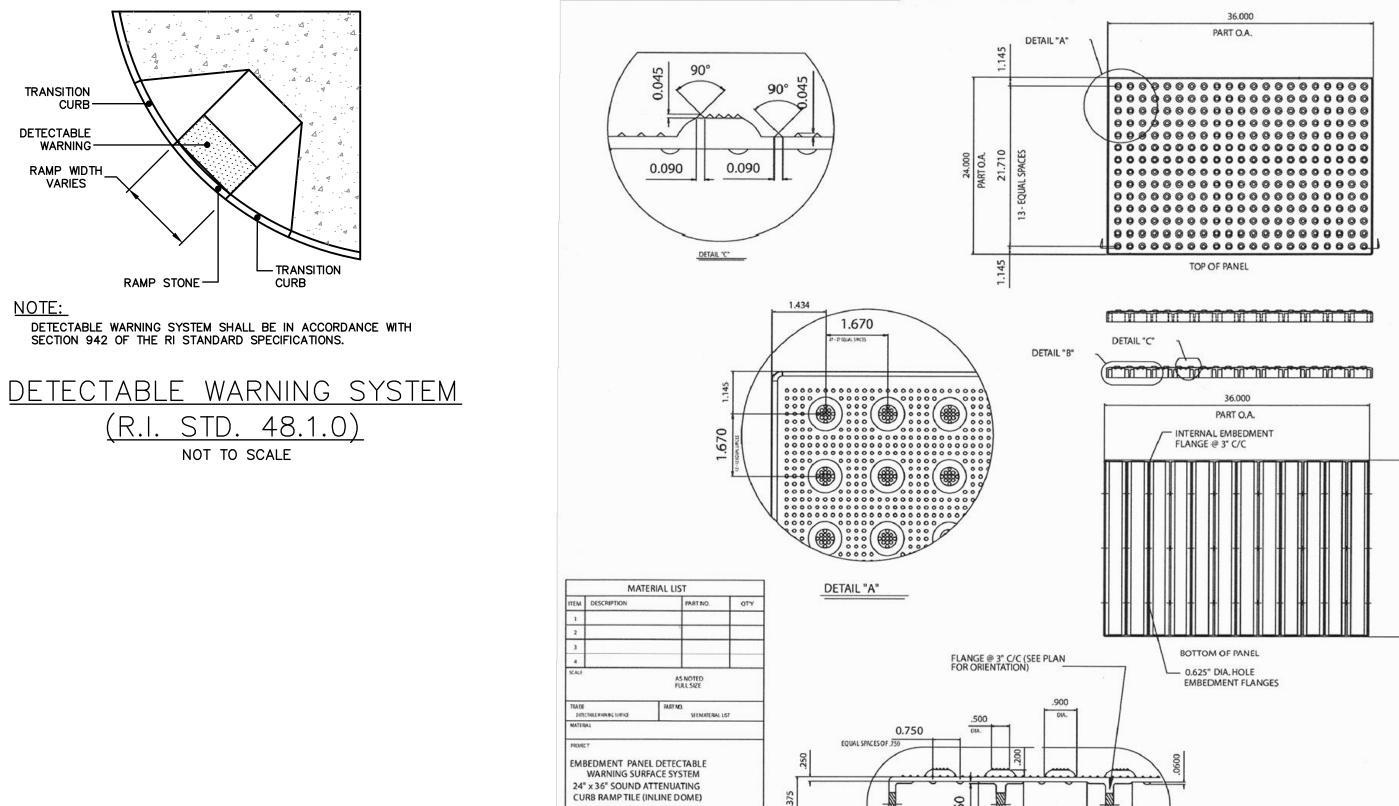
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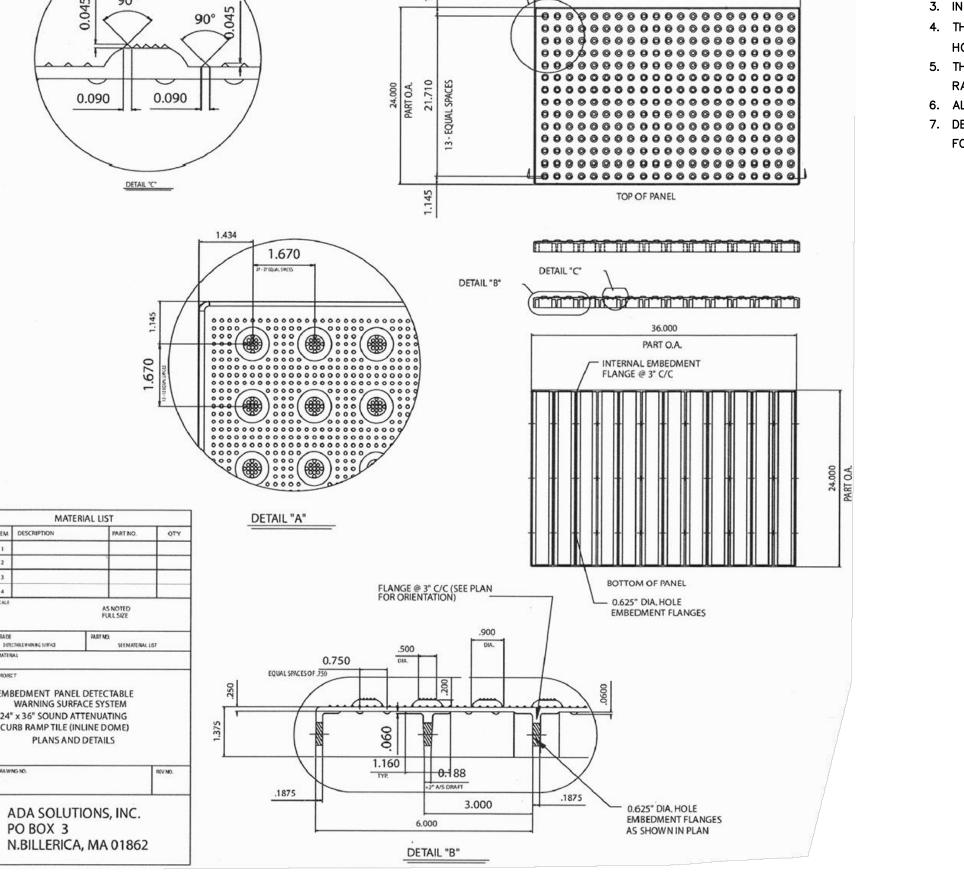
13. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0" (GREATER LENGTH PREFERRED).

7. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-0" SHALL BE MAINTAINED.

SLOPES MAY BE FLATTER THAN 1:12 WHEN WARRANTED BY SURROUNDING CONDITIONS.

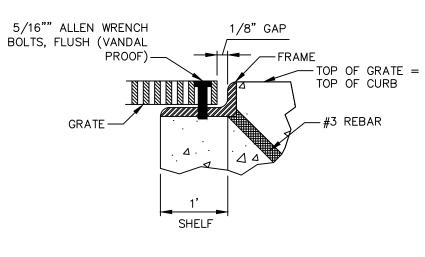
5. LOCATION OF WHEELCHAIR RAMPS IS AS SHOWN ON CONTRACT DRAWINGS.





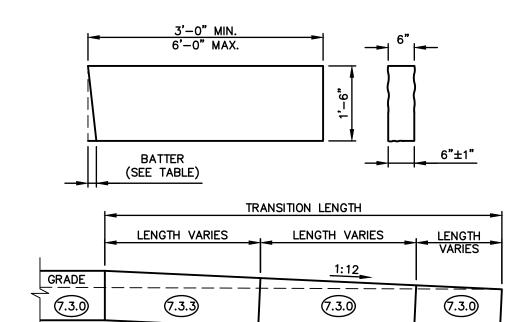


- 1. ALL GRADES AND SLOPES SHALL BE IN ACCORDANCE WITH RI STD. 43.3.0.
- 2. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE RI STANDARD SPECIFICATIONS.
- 3. IN NO INSTANCE SHALL THE SIDEWALK CROSS SLOPE EXCEED 1:50 EXCEPT WITHIN THE RAMP AREA.
- 4. THE WHEELCHAIR RAMP SLOPE AND THE SIDE SLOPES (TRANSITIONS) MUST NOT BE STEEPER THAN 1:12. HOWEVER, THESE SLOPES MAY BE FLATTER THAN 1:12 WHEN WARRANTED BY SURROUNDING CONDITIONS.
- 5. THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE TEXTURED CONCRETE CROSSWALK OR RAISED CROSSWALK.
- 6. ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER THE COST OF CURB.
- 7. DETECTABLE WARNING SYSTEMS TO BE INSTALLED IN ACCORDANCE WITH RI STANDARD 48.1.0, TO BE PAID FOR AS PART OF WHEELCHAIR RAMP.



GRATE SETTING

LIMIT OF SIDEWALK



TRANSITION

DETECTABLE

WARNING-

RAMP WIDTH

VARIES

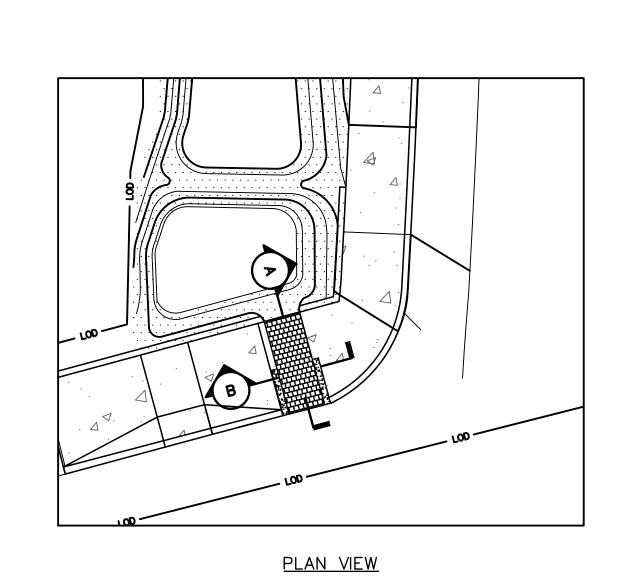
CURB-

- 1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
- 2. THE CONTRACTOR MAY CUT EXISTING CURB SECTIONS AS REQUIRED TO MEET THIS DETAIL AND THE R.I. STANDARD SPECIFICATIONS, WHERE OLD CURDING IS
- 3. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR CURB FILLER PIECES TO BE 3'-0" (GREATER LENGTHS
- 4. TOP SURFACE TO BE DRESSED BY SAW. REMAINDER TO BE QUARRY SPLIT.

GRANITE WHEELCHAIR RAMP TRANSITION CURB (R.I. STD. 7.3.3) NOT TO SCALE

TRANSITION | BATTER

LENGTH (FT.) (IN.)



DETECTABLE WARNING SYSTEM

LIMIT OF GRASSED STRIP 2% (MAX.)—— — FINISHED ROAD SURFACE EL. 25.0 —— — GRANITE TOP OF CONCRETE PAD -CURB BREAK LOAM AND SEED GRADE - CONCRETE LINED DISCHARGE CHANNEL WITH STEEL TO BIORETENTION CELL 12" COMPACTED BEDDING MATERAL SUBBASE COURSE -REINFORCEMENT (#4 BARS AT 12" O.C. — NOT SHOWN) --- GRATE ✓ BIORETENTION BASIN -CONCRETE LINED DISCHARGE CHANNEL WITH STEEL REINFORCEMENT (#4 BARS AT 12" O.C. - NOT SHOWN) 12" COMPACTED BEDDING MATERAL SECTION B

GRATED CONCRETE BASIN OUTLET NOT TO SCALE

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GRAPHIC SCALE



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CITY OF CRANSTON

CONSTRUCTION DETAILS STILLHOUSE COVE STORMWATER BMP PROJECT

RHODE ISLAND CRANSTON

CD-502

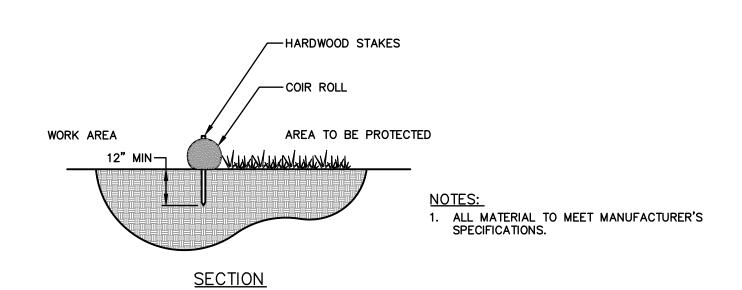
PROJ. No.: 20140594.A20

DATE: APRIL 2017

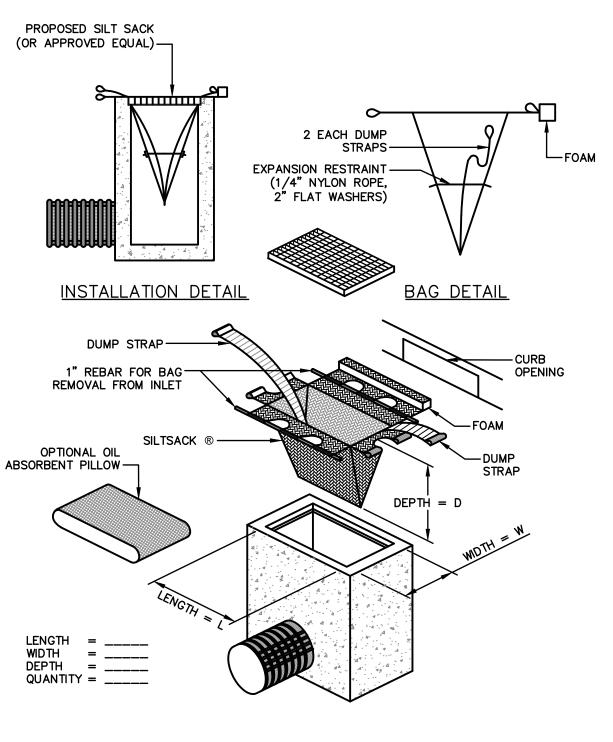




DATE



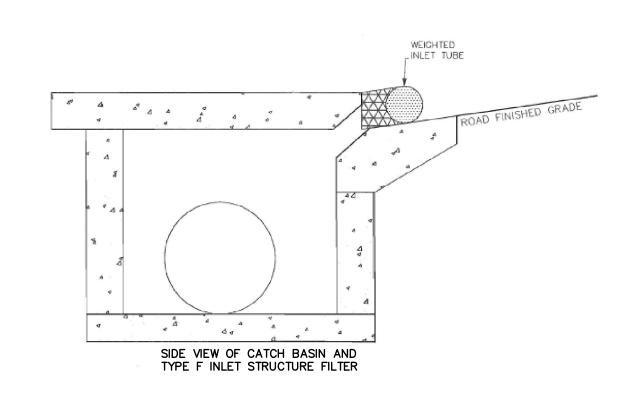
COIR ROLL NOT TO SCALE





DESIGNER REVIEWER

DESCRIPTION



NOTES:

SEAL

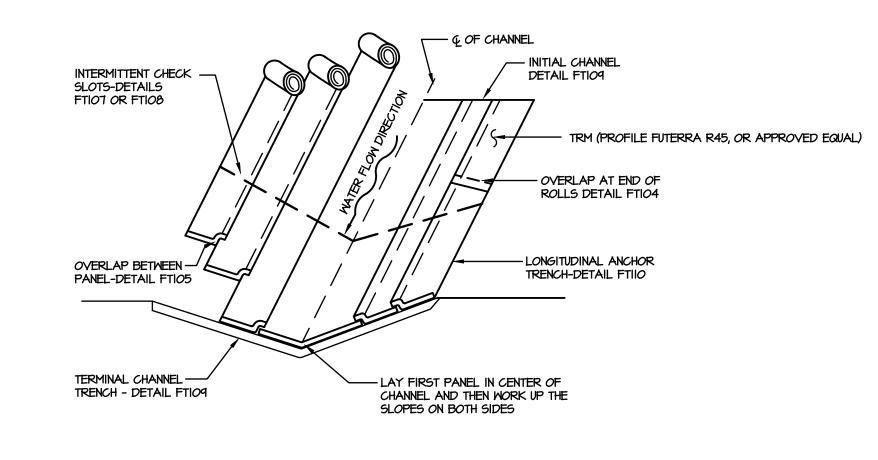
SEAL

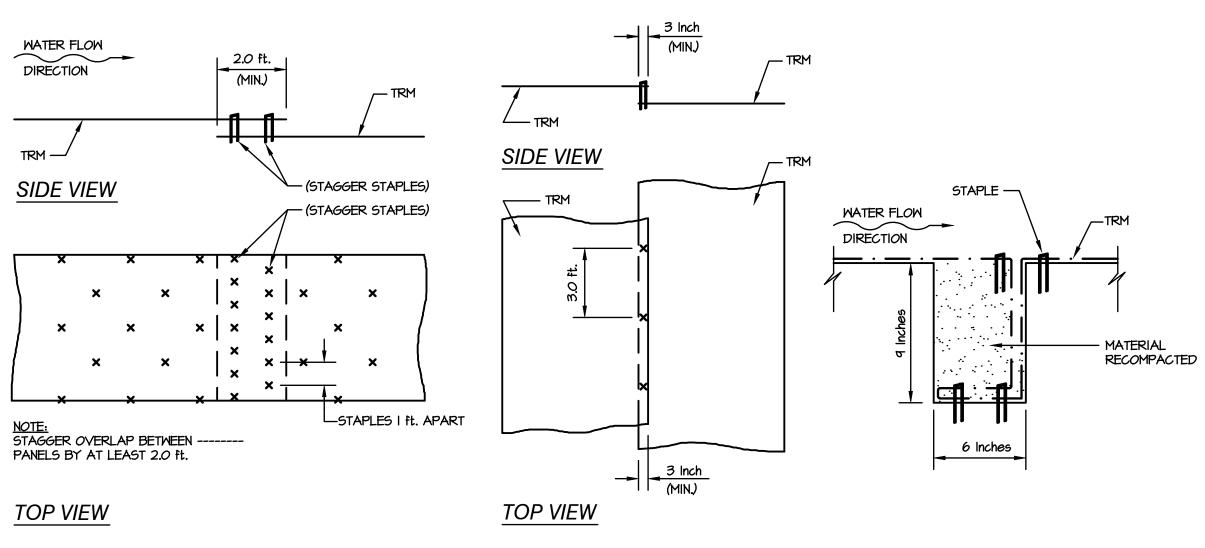
- INSTALL WEIGHTED INLET TUBES LYING FLAT ON THE GROUND WITH NO GAPS BETWEEN THE UNDERLYING SURFACE AND THE TUBE.
- DO NOT COMPLETELY BLOCK INLETS WITH INLET TUBES. INSTALL WEIGHTED INLET TUBES IN SUCH A MANNER THAT ALL OVERFLOW CAN ENTER THE INLET UNOBSTRUCTED. TO AVOID POSSIBLE FLOODING, 2 OR 3 CONCRETE CINDER BLOCKS MAY BE PLACED BETWEEN THE WEIGHTED INLET TUBE AND THE
- 3. FOR WEEP HOLE APPLICATIONS, BOTH WEIGHTED AND NON-WEIGHTED INLET TUBES ARE APPLICABLE.

4. ALL WEIGHTED TYPE F INLET STRUCTURE FILTERS ARE APPLICABLE AS TYPE E INLET STRUCTURE

- 5. REPLACE INLET TUBES DURING INSTALLATION AS DIRECTED BY THE ENGINEER INSPECTOR, OR MANUFACTURER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
- 6. ALL INLET FILTERS SHALL BE INSPECTED EVERY 7 CALENDAR DAYS.

WEIGHTED INLET TUBES NOT TO SCALE

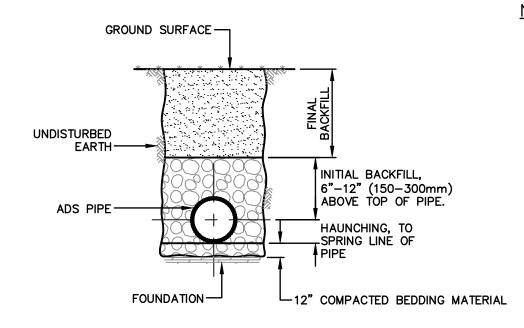




SEEDED TURF REINFORCEMENT MATTING

NOT TO SCALE

OVERLAPS BETWEEN PANELS



OVERLAPS AT END OF ROLL

1. <u>FOUNDATION</u>: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.

BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100MM) FOR 4"-24" (100-600MM) AND 42"-48" (1050-1200MM) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150MM) FOR 30"-36" (750-900MM) CPEP.

HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

4. UNLESS OTHERWISE SPECIFIED BY TEH ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS

60 (1500) 102 (2590)	NOMINAL Ø in (mm) 4 (100) 6 (150) 8 (200) 10 (250) 12 (300) 15 (375) 18 (450) 24 (600) 30 (750) 36 (900) 42 (1050) 48 (1200) 60 (1500)	MIN. RECOMMENDED TRENCH WIDTH, in (mm) 21 (530) 23 (580) 25 (630) 28 (710) 31 (790) 34 (860) 39 (990) 48 (1220) 66 (1680) 78 (1980) 83 (2110) 89 (2260) 102 (2590)
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TYPICAL HDPE STORM
DRAIN TRENCH
NOT TO SCALE

SCALE:		
HORZ.: NOT TO SCALE		
VERT.: NOT TO SCALE	ELICCA O'NIELLI	
DATUM:	FUSS&O'NEILL	
HORZ.:		
VERT.:	317 IRON HORSE WAY, SUITE 204	
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CITY OF CRANSTON

CONSTRUCTION DETAILS STILLHOUSE COVE STORMWATER BMP PROJECT

KEY IN

CRANSTON RHODE ISLAND

PROJ. No.: 20140594.A20

DATE: APRIL 2017