GENERAL NOTES:

1. FOR RIGHT-OF-WAY (ROW) GREEN INFRASTRUCTURE (GI) FACILITIES WITH DIMENSIONS THAT DEVIATE FROM THE GI STANDARDS AS SHOWN ON CONTRACT PLANS DUE TO FIELD CONDITIONS, REFER TO THE DIMENSION SCHEDULE AND SPECIFICATIONS.
2. THE BOTTOM OF THE GI FACILITY SHOULD BE NO LESS THAN 6" ABOVE OF THE SEASONAL HIGH WATER TABLE (SHWT) AND THE UNDERDRAIN SHOULD BE NO LESS THAN 12" ABOVE THE SHWT.
3. SEE RELATED GI SPECIFICATIONS.

POROUS CONCRETE:

1. MAXIMUM JOINT SPACE IS 1".
2. CONTRACTOR SHALL TRIM (VIA SAWCUT) POROUS CONCRETE PANELS TO NO MORE THAN 6" ON ANY END.
3. NO POROUS CONCRETE PANEL SHALL BE LESS THEN 4' IN LENGTH WITHOUT THE ENGINEER'S APPROVAL.
4. ADJUST THE LIMIT OF WORK TO AVOID END PANELS LESS THEN 4' IN LENGTH.
5. CONTRACTOR SHALL INSTALL #57 STONE IN LIFTS OF 12" (MAX) AND SHALL MAKE TWO PASSES OF A PLATE COMPACTOR (200 LBS MIN) OVER EACH LIFT PRIOR TO INSTALLATION OF #8 LEVELING COURSE.
6. AT THE DIRECTION OF THE ENGINEER, CONTRACTOR TO REPLACE ANY CURB OR DRIVEWAY APRON THAT IS DAMAGED DURING CONSTRUCTION.

STORMWATER BUMP-OUT:

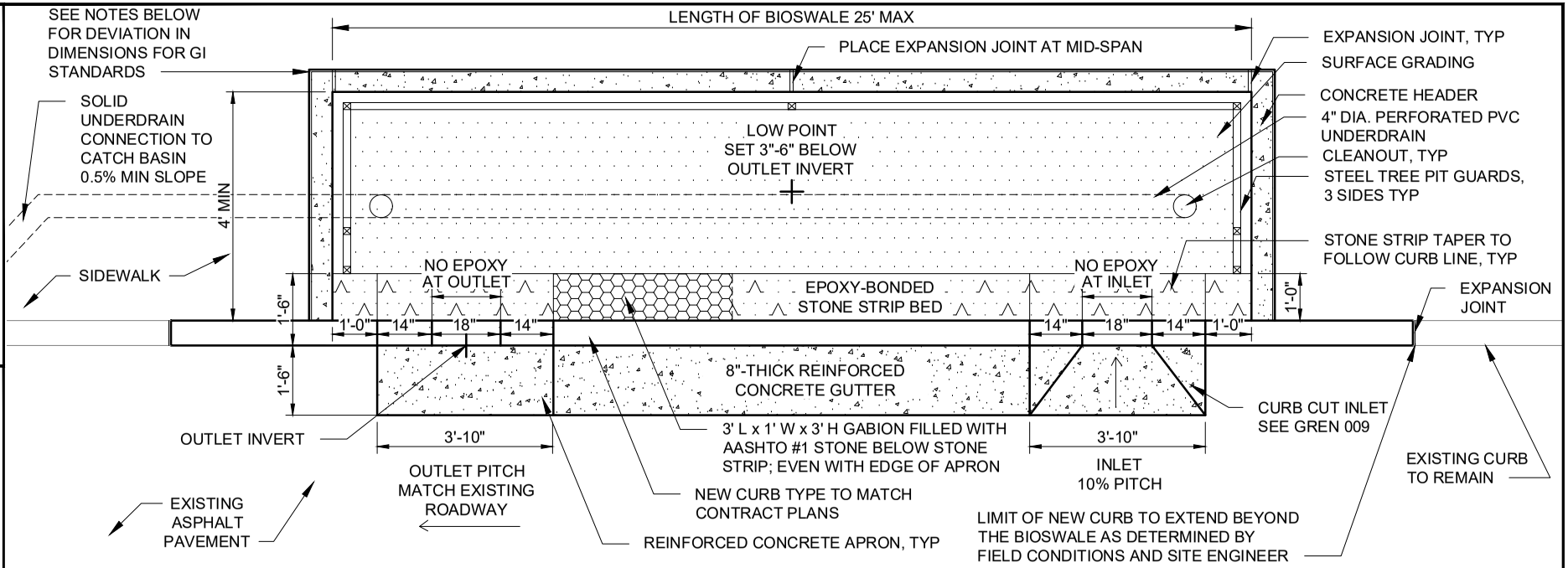
1. THE LOWEST PLANTING MEDIA SURFACE IN STORMWATER BUMP-OUTS SHOULD BE LEVEL ALONG THE ALIGNMENT OF THE STREET. A MILD SLOPE NO GREATER THAN 1 PERCENT IS ACCEPTABLE BUT A LEVEL SURFACE IS RECOMMENDED. IF SURROUNDING SLOPES ARE STEEP, IMPERMEABLE BARRIERS SUCH AS SURFACE CHECK DAMS CAN HELP MAINTAIN A LEVEL SURFACE, AS SHOWN ON CONTRACT DRAWINGS. NOTE THIS DOES NOT APPLY TO THE CROSS-GRADING, IF USED, FROM THE PERIMETER OF THE BUMP-OUT DOWN TO THE LOWEST PLANTING MEDIA SURFACE.
2. WITH THE EXCEPTION OF TREES, MAXIMUM VEGETATION HEIGHT AT MATURITY SHOULD BE NO GREATER THAN 36" ABOVE THE SURROUNDING SIDEWALK ELEVATION, UNLESS OTHERWISE APPROVED BY THE ENGINEER. PLANT SELECTION AND PLACEMENT SHOULD BE DONE TO PREVENT ENCROACHMENT OF PLANTS OUTSIDE OF THE LIMITS OF THE STORMWATER BUMP-OUT AND IN CONSIDERATION OF MAINTAINING ADEQUATE SIGHT LINES BASED ON THE PLACEMENT OF THE STORMWATER BUMP-OUT.
3. ALTHOUGH NOT SHOWN, EXTENDING THE VEGETATED AREA OF A BUMP-OUT INTO THE LIMITS OF THE SIDEWALK IS PERMITTED WHERE SHOWN ON THE CONTRACT DRAWINGS. HOWEVER, ANY REQUIREMENTS/GUIDELINES FOR OTHER STORMWATER CONTROLS LOCATED IN THE SIDEWALK APPLY.

VEGETATION/TREES:

1. THE CONTRACTOR SHALL OBTAIN THE NECESSARY TREE PLANTING PERMIT FROM THE CITY PRIOR TO THE START OF WORK. ALL NECESSARY TREE PLANTING SHALL BE SUPERVISED BY A CERTIFIED ARBORIST.
2. NO TREE SHALL BE REMOVED BY THE CONTRACTOR UNTIL SPECIFICALLY ORDERED IN WRITING TO DO SO BY THE ENGINEER AND WITH APPROVAL FROM THE CITY.
3. TREES SHALL BE STAKED. TREE STAKES ARE TO BE REMOVED BY THE CONTRACTOR NOT LESS THAN ONE YEAR AFTER PLANTING.
4. REPLACEMENT TREES SHALL BE PLANTED WITHIN THE PROJECT AREA AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH STANDARD HIGHWAY SPECIFICATIONS.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

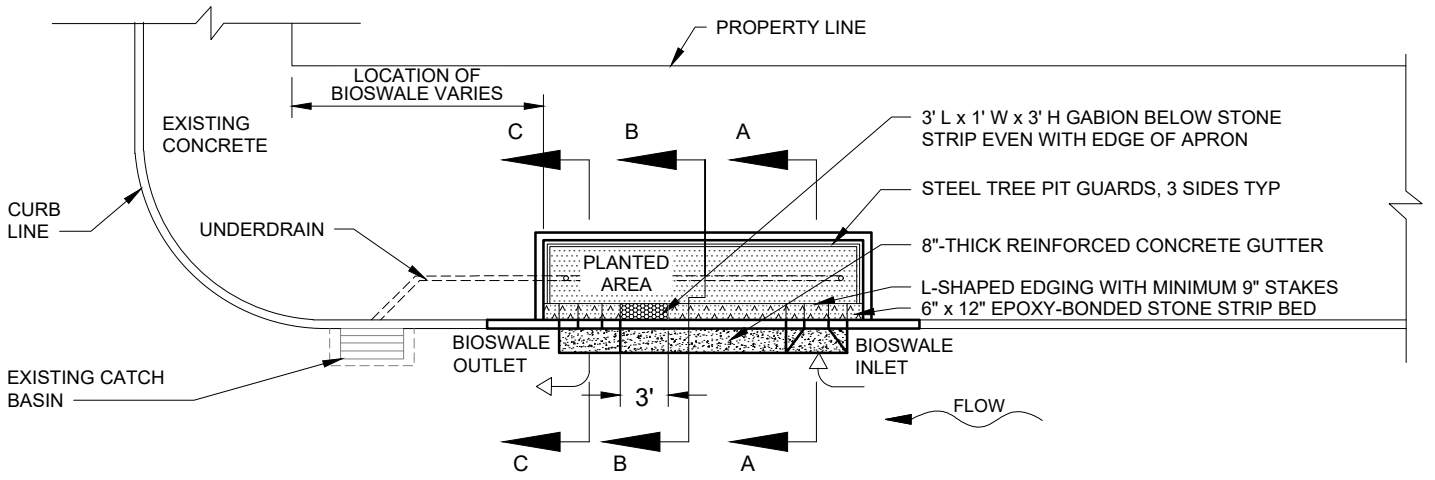
STANDARD BIOSWALE PLAN



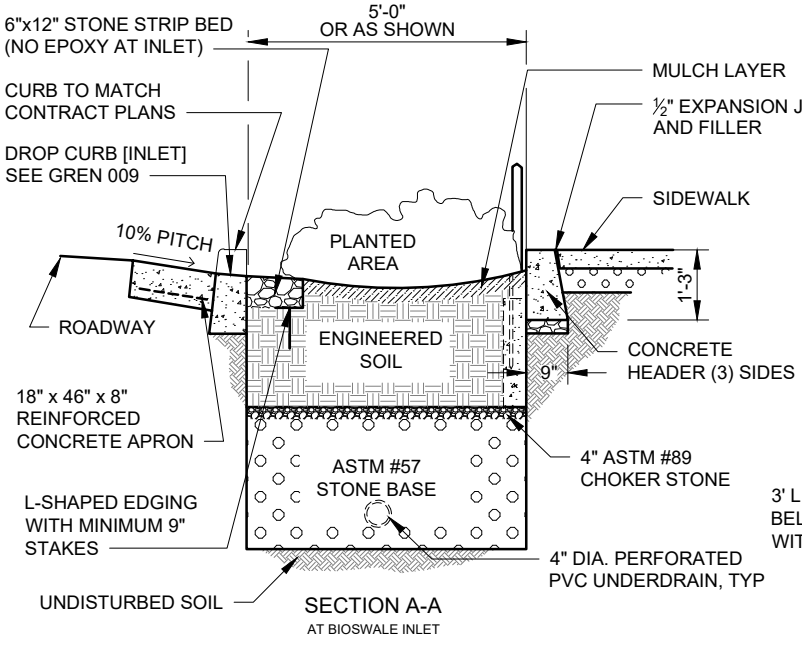
NOTES:

1. THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE ALL EXISTING FULL SIDEWALK FLAGS ADJACENT TO THE PERIMETER OF THE BIOSWALE IN ADDITION TO ANY PARTIAL FLAG AREAS LEFTOVER DUE TO CONSTRUCTION. THE CONTRACTOR SHALL REPLACE THE SIDEWALK IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF STANDARD HIGHWAY SPECIFICATIONS.
2. THE CONTRACTOR SHALL REMOVE AND RESTORE ONE-AND-A-HALF (1 ½') FOOT WIDTH OF THE WEARING COURSE AND ONE-AND-A-HALF (1 ½") FOOT WIDTH OF ROADWAY CONCRETE PAVEMENT BASE ALONG THE CURB LINE AND ADJACENT TO THE CONCRETE APRONS, WHERE REQUIRED. ALL WORK MUST BE COMPLETED IN FULL COMPLIANCE WITH THE APPLICABLE SECTIONS OF THE STANDARD HIGHWAY SPECIFICATIONS.
3. THE CONTRACTOR SHALL NOT BE PERMITTED TO STORE, STOCKPILE, OR LAY DOWN ANY CONSTRUCTION MATERIAL INCLUDING, BUT NOT LIMITED TO, LUMBER, FUEL, OIL CONTAINERS, PIPES, AND/OR PIPE FITTINGS, BARRICADES, HAND TOOLS, HOSES, RECEPTACLES, AND ASPHALT WITHIN ANY EXISTING TREE PIT OR BIOSWALE.
4. STONE STRIP BED TO BE BONDED WITH EPOXY TO KEEP STONES IN PLACE. STONES IN FRONT OF INLETS AND OUTLETS ARE TO BE LEFT LOOSE AND UNBONDED.
5. BIOSWALE OUTLET IS OPTIONAL BASED UPON SITE TOPOGRAPHY AND DRAINAGE. SEE PLANS.
6. A 6" CURB MAY BE USED IN PLACED OF STEEL TREE PIT GUARDS WHERE SPECIFIED ON THE PLANS.
7. CLEANOUTS SHALL BE A MAXIMUM OF 4" ABOVE FINISHED GRADE.
8. SEE GREEN INFRASTRUCTURE NOTES.

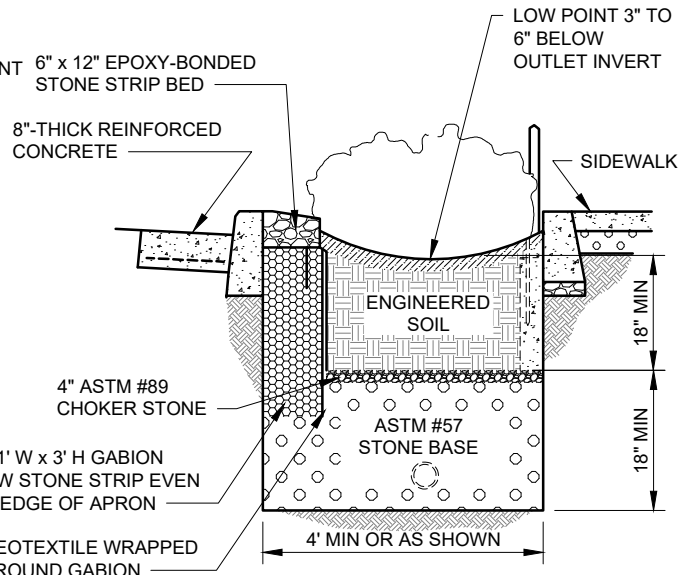
DETAIL NO.
GREN 002
REVISED:
2017/5/1



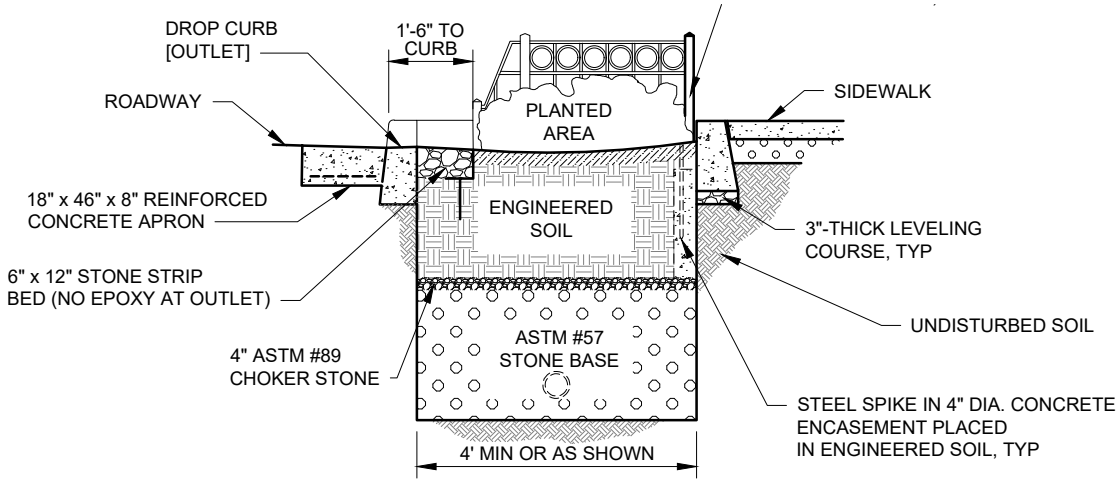
PLAN



SECTION A-A
AT BIOSWALE INLET



SECTION B-B
AT MIDSECTION [LOWEST POINT]



SECTION C-C
AT BIOSWALE OUTLET

NOTES:

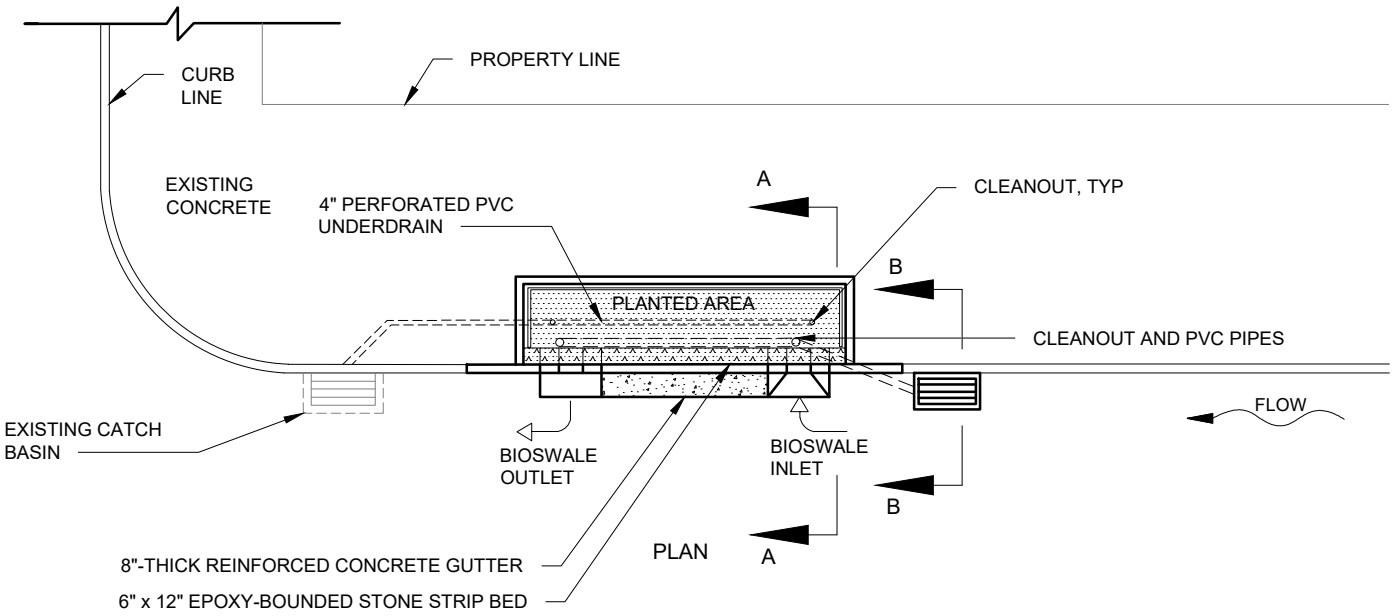
1. FOR AREAS WITH HIGH SEDIMENT LOADS, SEE DETAIL GREN 005.

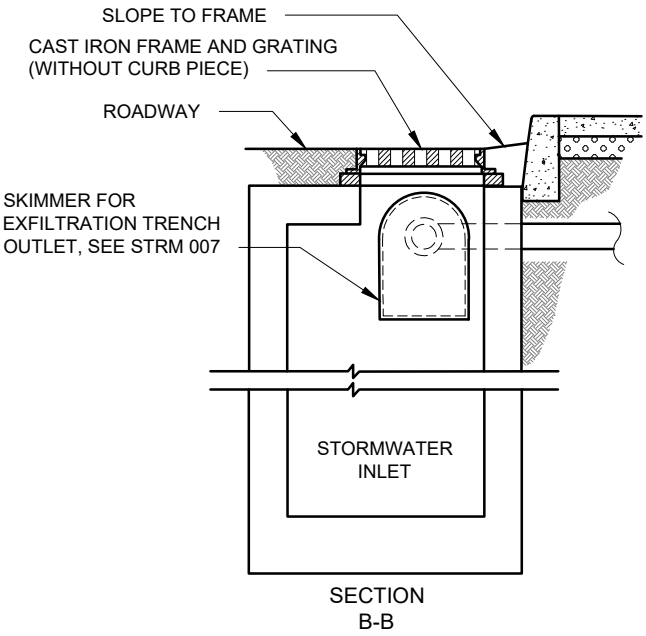
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

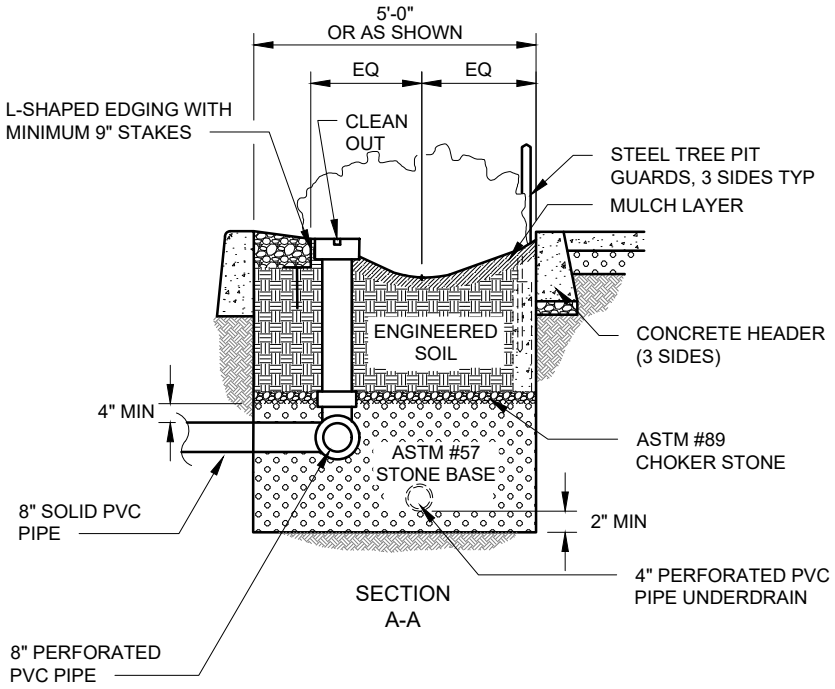
STANDARD BIOSWALE - SECTIONS

DETAIL NO.
GREN
003

REVISED:
2017/5/1



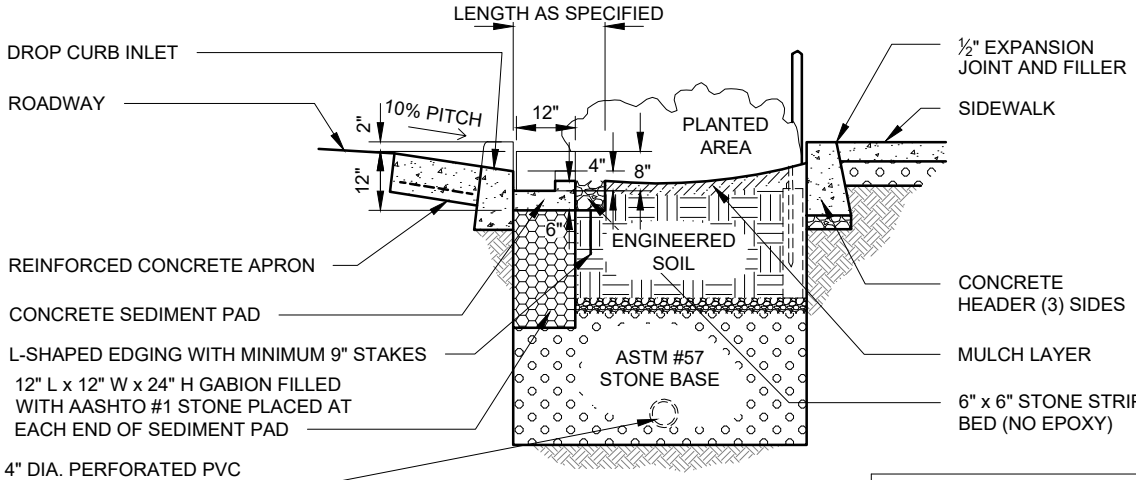




CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

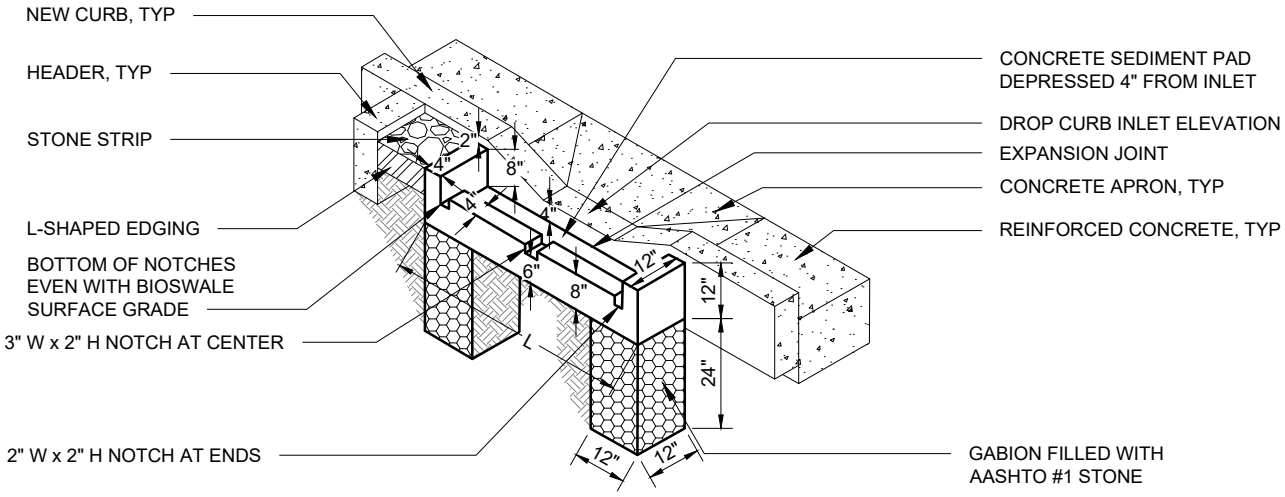
STANDARD BIOSWALE WITH CONNECTION TO STORMWATER INLET

DETAIL NO.
GREN 004
REVISED:
2017/5/1

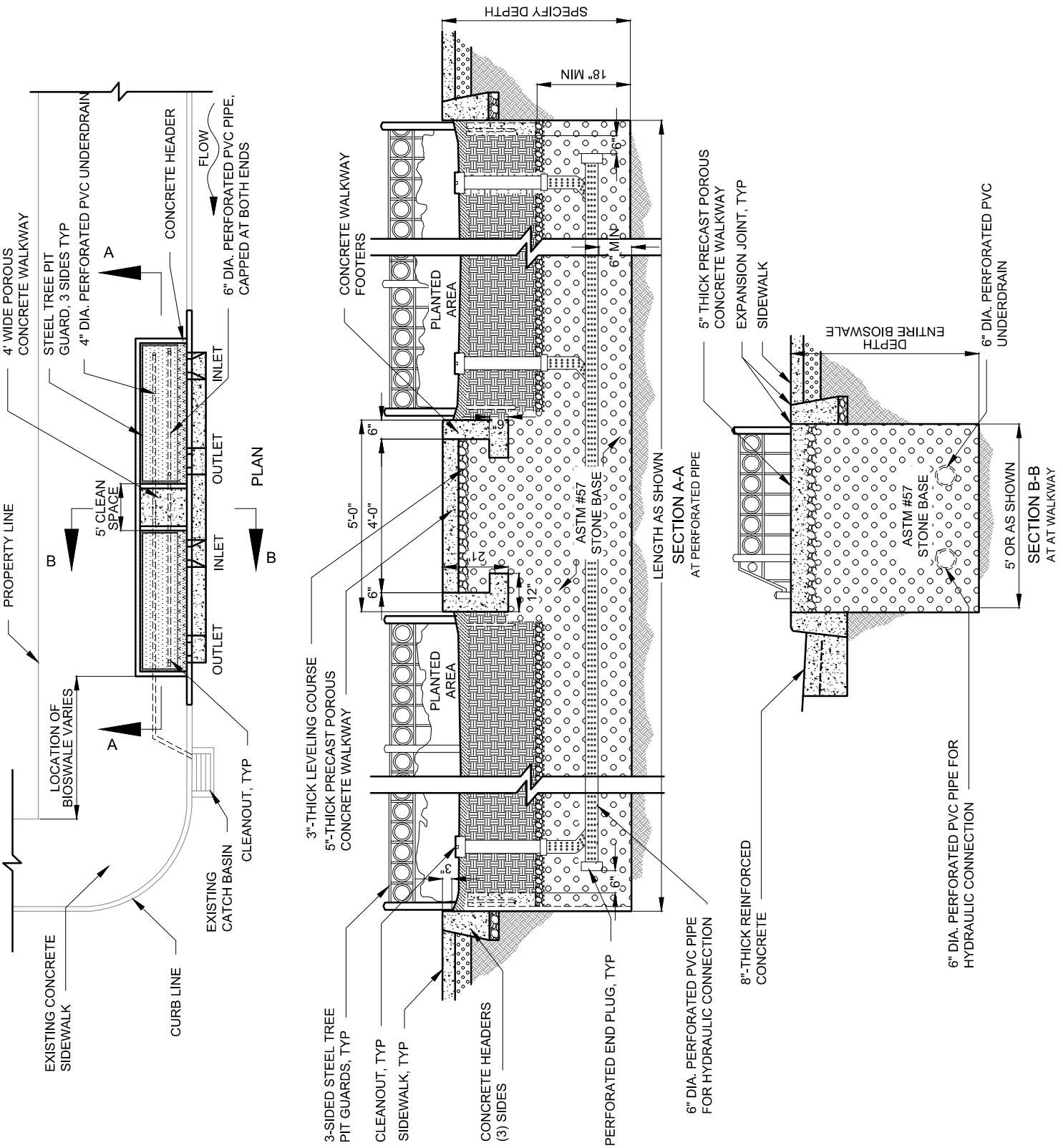


BIOSWALE SECTION AT BIOSWALE INLET

DIMENSION SCHEDULE	
BIOSWALE LENGTH	SEDIMENT PAD LENGTH (L)
≥ 17'	4'-6"
≤ 16'	3'-6"



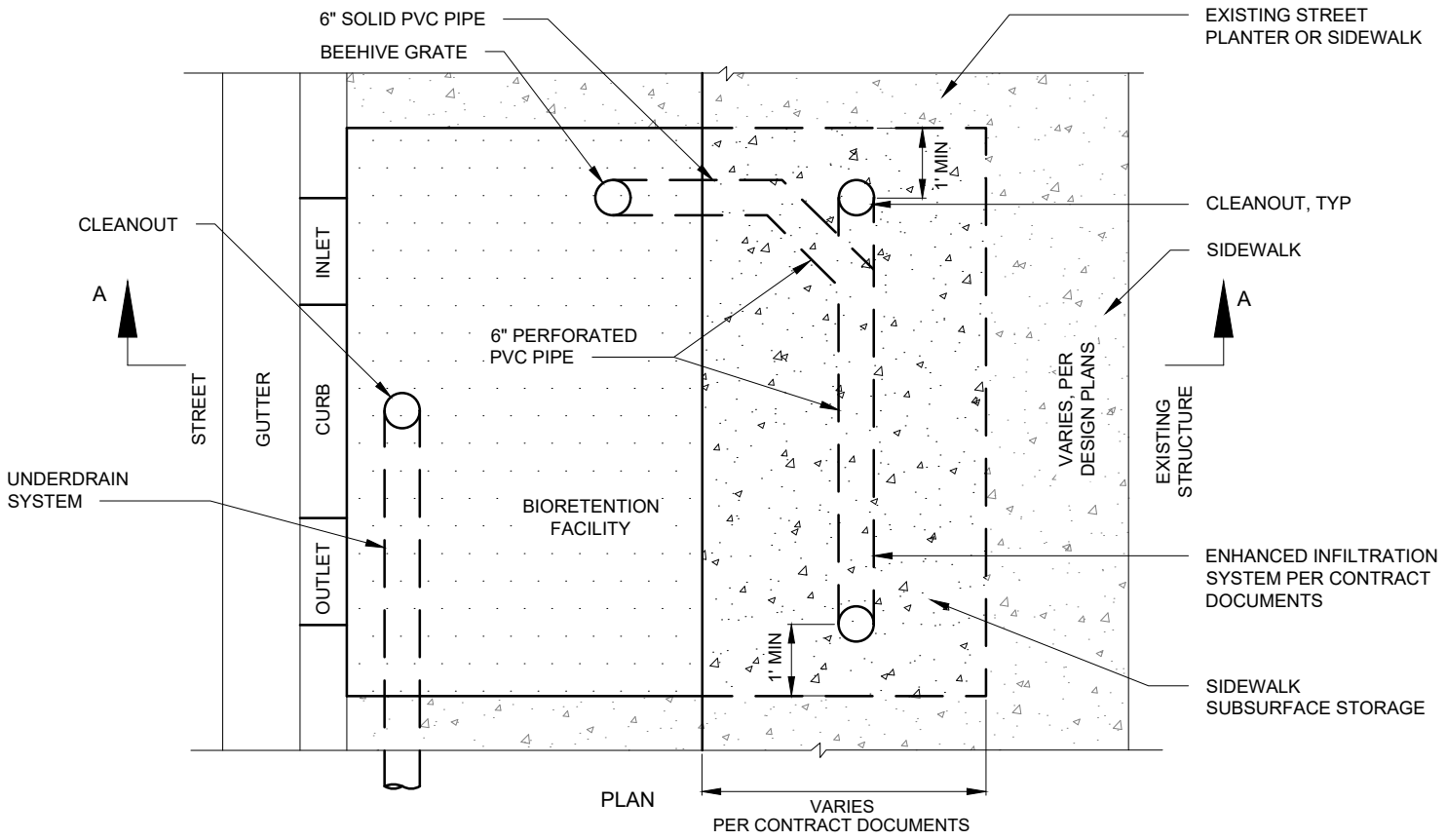
CONCRETE SEDIMENT PAD

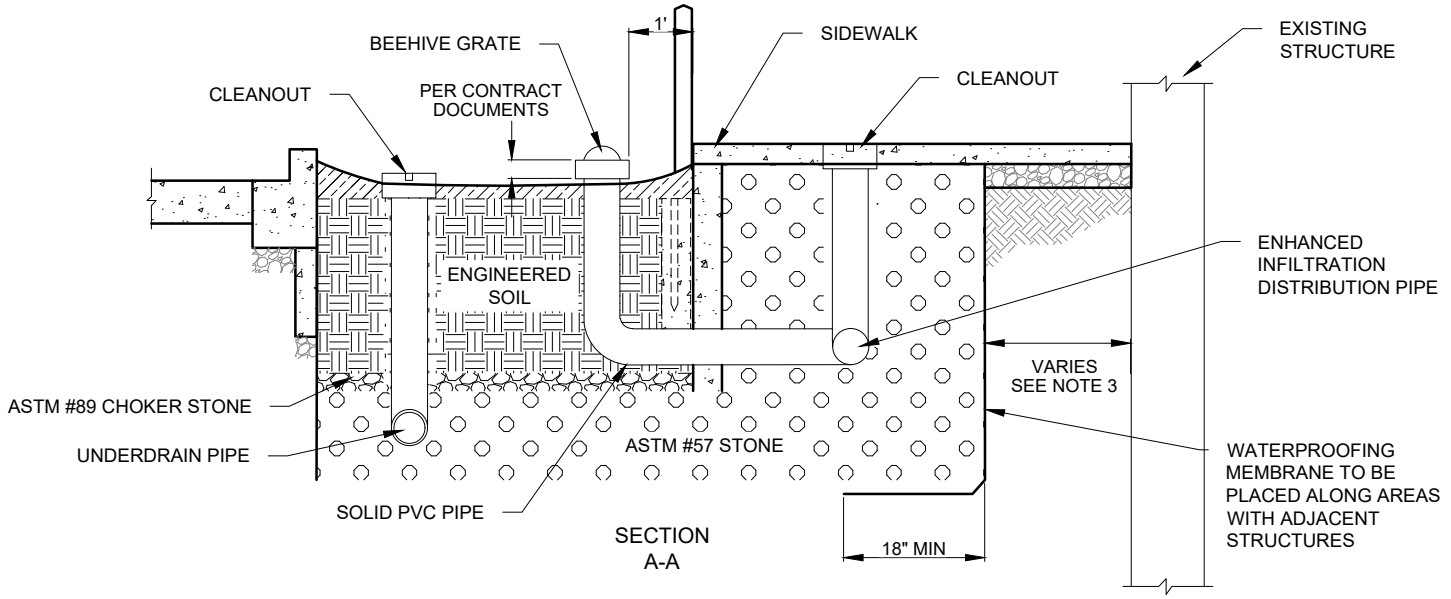


CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

STANDARD HYDRAULIC CONNECTION OF MULTIPLE BIOSWALES

DETAIL NO.
GREN 006
REVISED:
2017/5/1





NOTES:

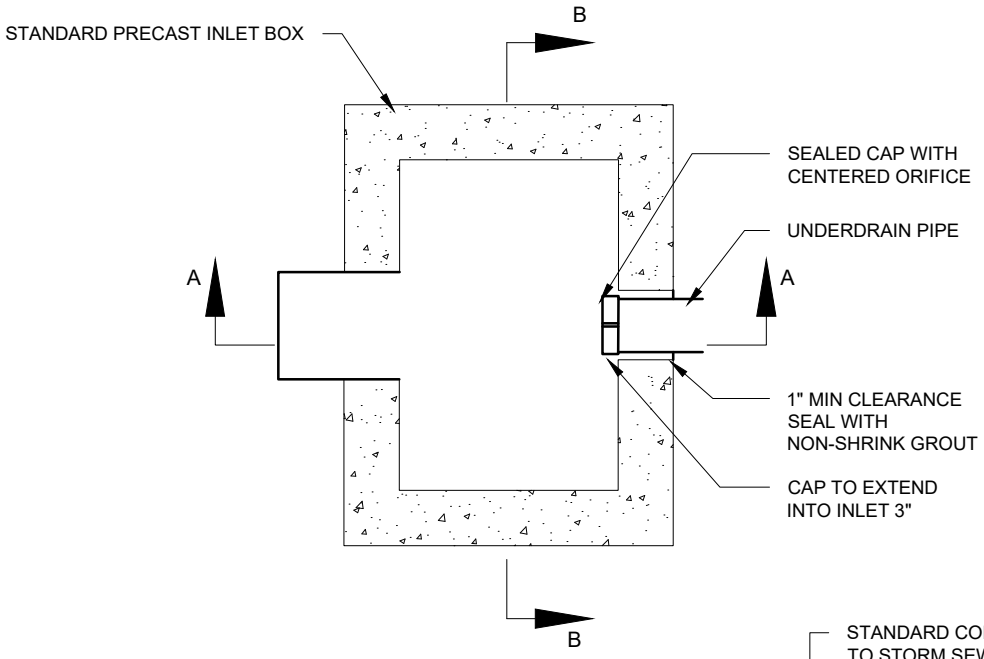
1. OPTIONAL VAULTED STORAGE TO REPLACE AGGREGATE STORAGE.
2. OVERFLOW RISER (SHOWN) OPTIONAL, AS INDICATED IN CONTRACT DOCUMENTS OTHERWISE SHALL BE CLEANOUT.
3. OFFSETS FROM STRUCTURES AS INDICATED IN CONTRACT DOCUMENTS TO BE VERIFIED BY ENGINEER.
4. USE OF SIDEWALK SUBSURFACE STORAGE AS INDICATED IN THE CONTRACT DOCUMENTS.
5. CONFIGURATION SHOWN IS ONE OPTION. ENHANCED INFILTRATION SYSTEM TO BE DESIGNED BY ENGINEER PER CONTRACT DOCUMENTS. ENHANCE INFILTRATION RISER MAY EXTEND DIRECTLY TO AGGREGATE STORAGE LAYER WITHIN BIOSWALE IF SIDEWALK SUBSURFACE STORAGE IS NOT USED, AS INDICATED ON THE CONTRACT DOCUMENTS.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

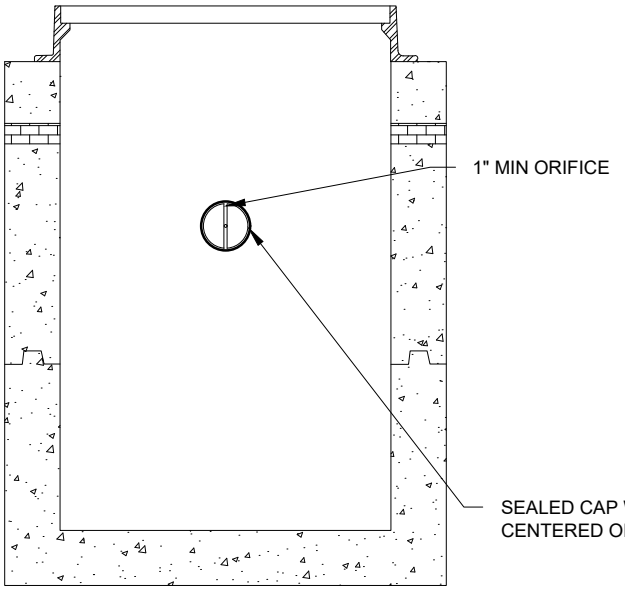
SIDEWALK SUBSURFACE STORAGE

DETAIL NO.
GREN
007

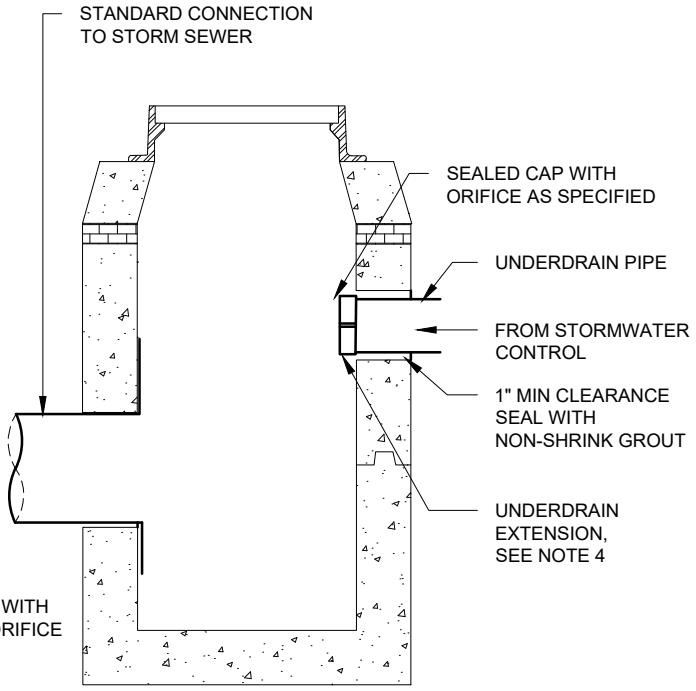
REVISED:
2017/5/1



PLAN



SECTION
B-B



SECTION
A-A

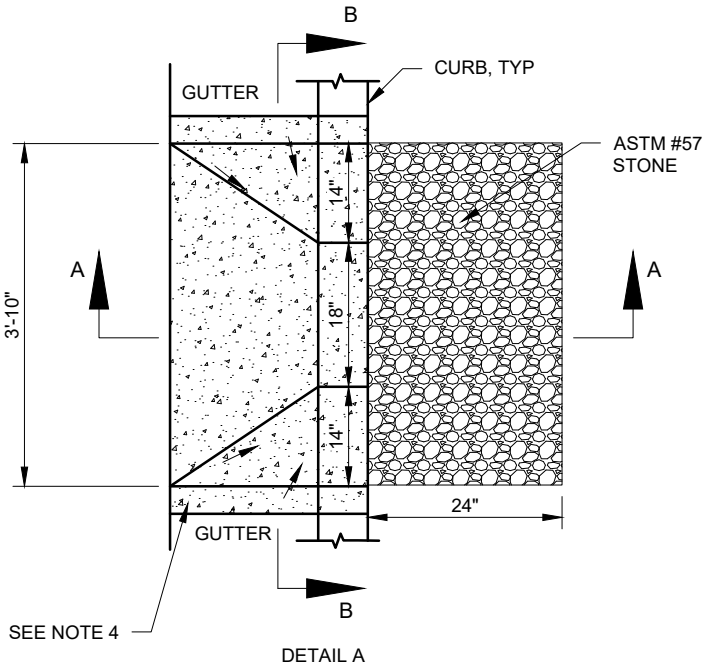
NOTES:

1. ALL CONCRETE COMPONENTS, INLET GRATE AND FRAME, INLET TRAP, AND CONNECTION TO SEWER SHALL BE STANDARD CONSTRUCTION.
2. HIGHWAY INLET DEPICTED; DESIGN IN GENERALLY APPLICABLE TO ALL STANDARD INLETS.
3. THIS INLET HAS A SEWER CONNECTION AND AN UNDERDRAIN ONLY FROM A STORMWATER CONTROL.
4. TOTAL EXTENSION OF UNDERDRAIN AND CAP ASSEMBLY INTO INLET TO BE 3" FROM INLET WALL TO END OF CAP.

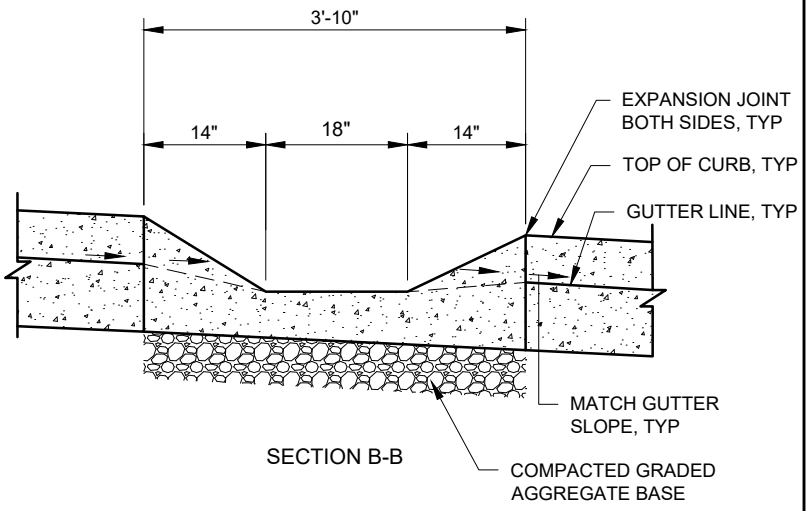
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

CATCH BASIN CONNECTION TO STORMWATER CONTROL UNDERDRAIN

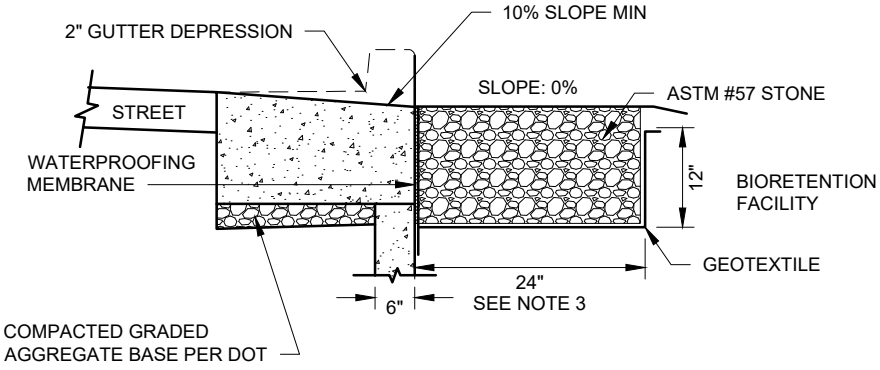
DETAIL NO.
GREN
008
REVISED:
2017/5/1



DETAIL A



SECTION B-B



SECTION A-A

NOTES:

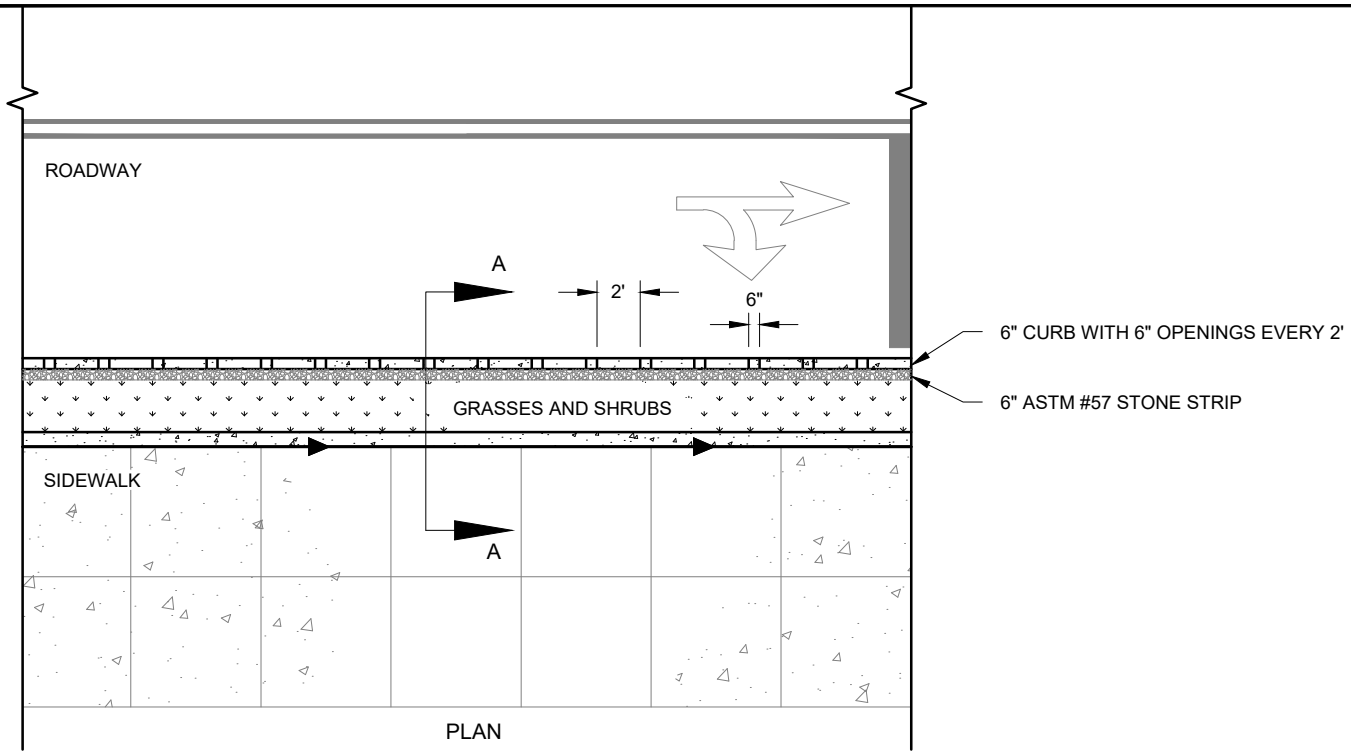
1. TYPE AND SIZE OF INLET AS SHOWN ON CONTRACT DOCUMENTS.
2. MATCH INLET CURB TYPE AND WIDTH TO ADJACENT NEW CURB.
3. STONE EXTENTS MAY BE DECREASED DEPENDING ON SPACE AVAILABLE IN SPECIFIC GI FACILITIES.
4. STONE SHALL BE PLACE ADJACENT TO EPOXY BONDED STONE.
5. DEPRESS GUTTER PER DOT STANDARDS.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

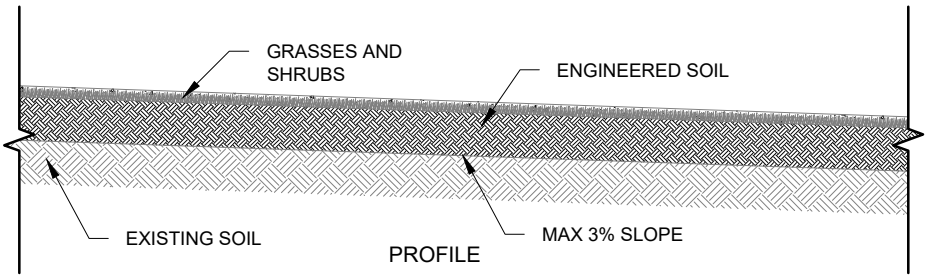
CURB CUT

DETAIL NO.
GREN
009

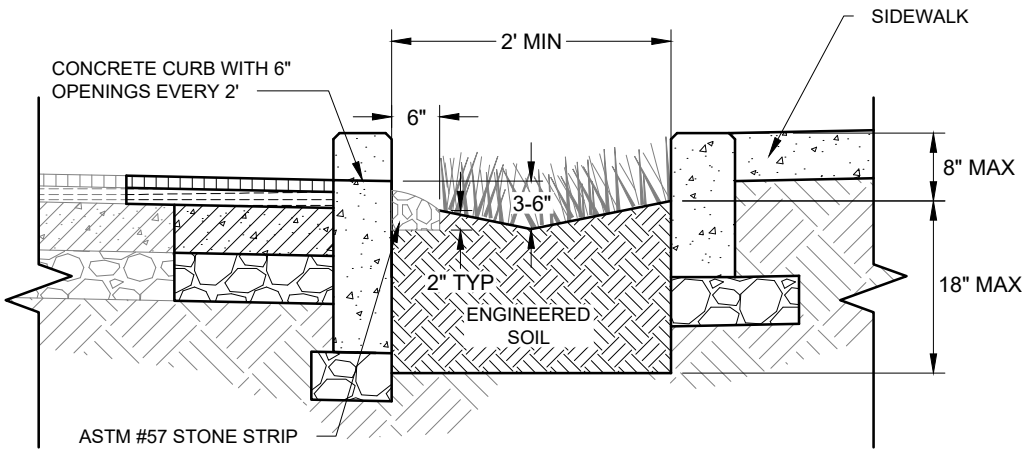
REVISED:
2017/5/1



PLAN



PROFILE



SECTION A-A

NOTES:

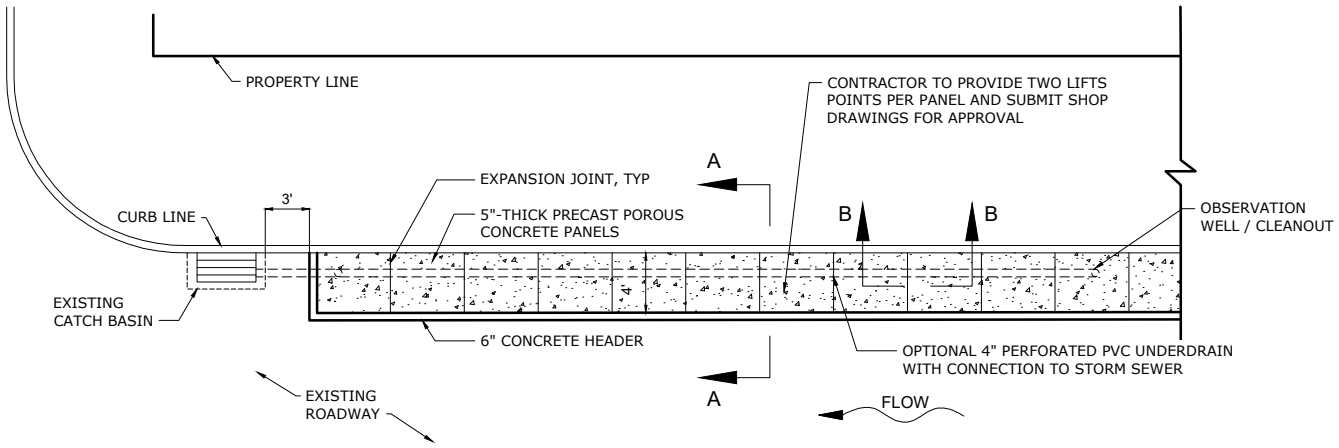
1. THIS DESIGN DETAIL SHOULD BE ADAPTED TO THE SPECIFIC ENGINEERED DESIGN AND ITS RESPECTIVE INSTALLATION.
2. A FLUSH CONCRETE CURB AND HS-20 RATED TRENCH DRAIN COVER OVER THE GREEN GUTTER MAY BE USED IN LIEU OF 6" CURB WITH OPENINGS WHERE SPECIFIED WITHIN PLANS.
3. SEE SPECIFICATIONS FOR ENGINEERED SOIL DETAILS.
4. SEE GREEN INFRASTRUCTURE NOTES.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

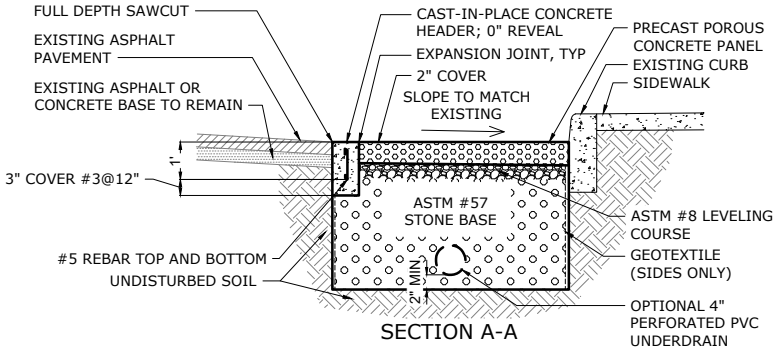
GREEN GUTTER

DETAIL NO.
GREN 010

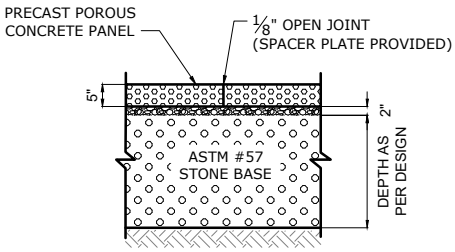
REVISED:
2017/5/1



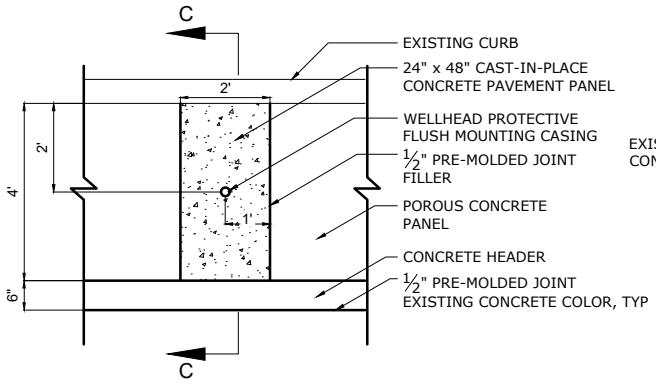
PLAN



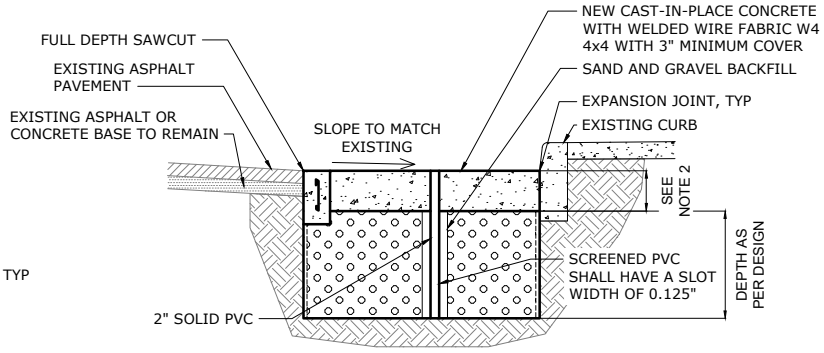
SECTION A-A



SECTION B-B



TYPICAL CAST-IN-PLACE CONCRETE AT OBSERVATION WELL PLAN



TYPICAL CAST-IN-PLACE CONCRETE AT OBSERVATION WELL SECTION C-C

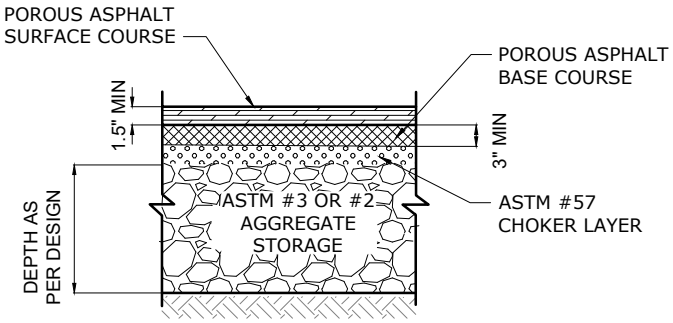
NOTES:

1. SEAL EDGES OF ANY SAWCUTS IN THE WEARING COURSE WITH LIQUID ASPHALT CEMENT.
2. CAST-IN-PLACE CONCRETE TO BE INSTALLED TO A DEPTH OF 9" IF THE EXISTING PAVEMENT BASE IS ASPHALT AND TO A DEPTH OF 12" IF THE EXISTING BASE IS CONCRETE.
3. SEE GREN 012 FOR ALTERNATIVE PAVEMENT TYPES.
4. SEE GREEN INFRASTRUCTURE NOTES.

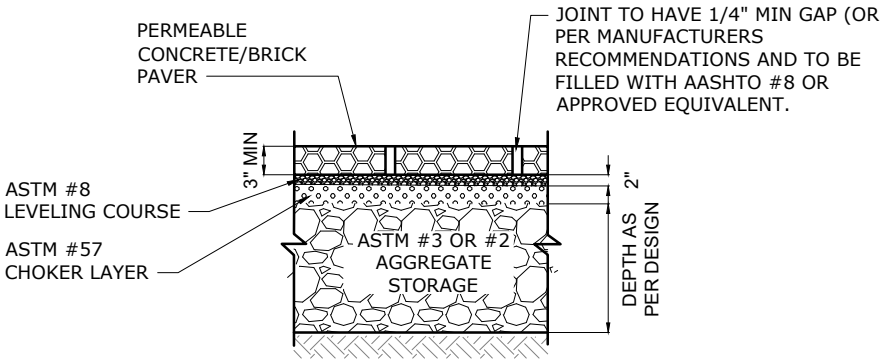
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PRECAST POROUS PAVEMENT

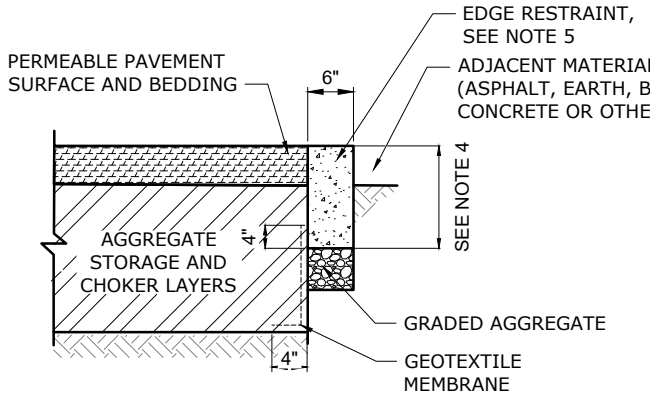
DETAIL NO.
GREN 011
REVISED:
2017/5/1



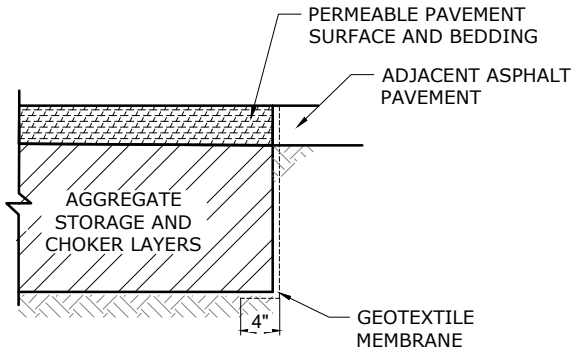
POROUS ASPHALT SECTION



PERMEABLE CONCRETE AND
PERMEABLE CLAY BRICK



CONCRETE EDGE RESTRAINT
(FOR USE IN AREAS WITHOUT
ADJACENT PAVEMENT)



EDGE RESTRAINT
(FOR USE IN PARKING LANES
OR ADJACENT TO ASPHALT)

NOTES:

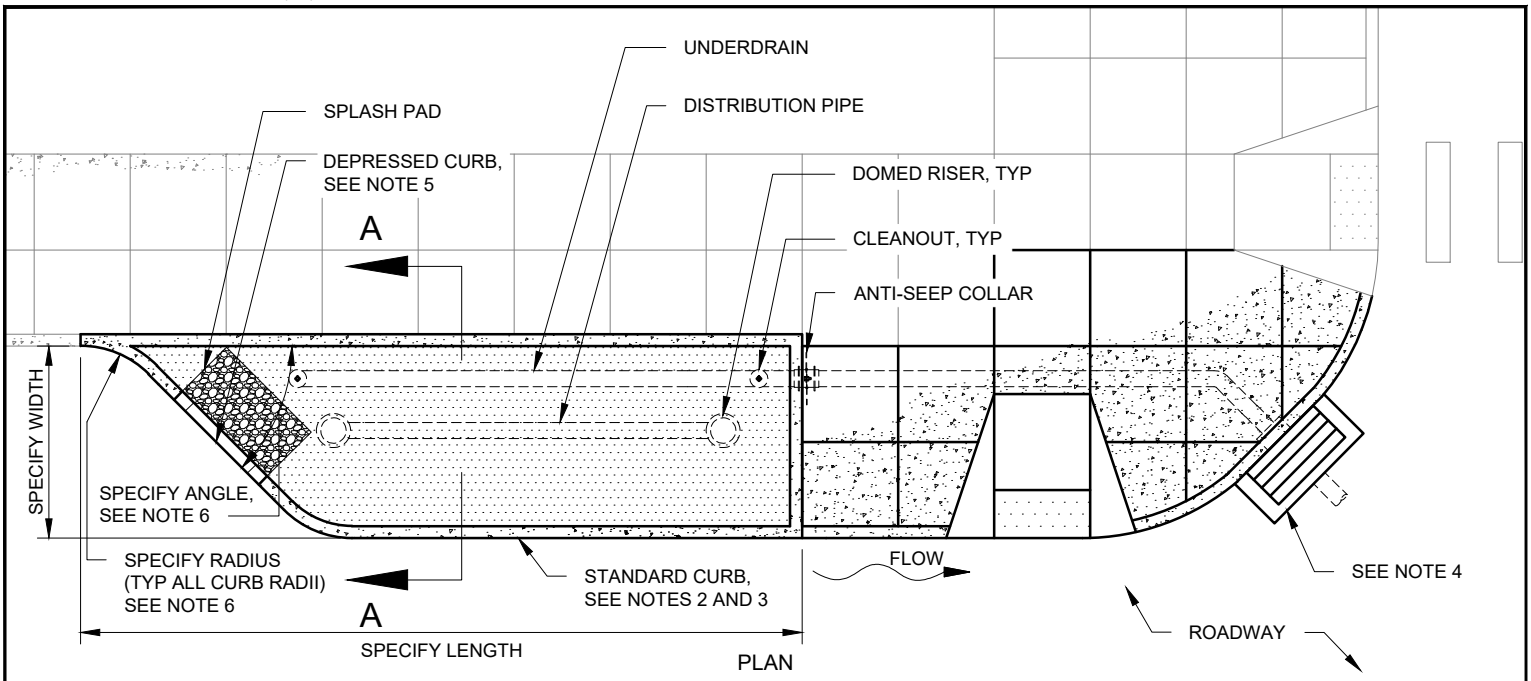
1. NO GEOTEXTILES SHALL BE USED IN PLACE OF THE CHOKER.
2. SEE SHEET GREN 011 FOR SECTION OF PAVEMENT WITH CLEANOUT.
3. TOP OF POROUS ASPHALT PAVEMENTS SHALL BE DESIGNED TO ACHIEVE POSITIVE DRAINAGE.
4. DEPTH OF EDGE RESTRAINT IS 6" FOR POROUS ASPHALT AND 10" FOR PERVIOUS CONCRETE AND PERMEABLE PAVERS.
5. MATERIALS: TYPE F, 3,500 PSI CONCRETE; OTHER TYPES OF EDGE RESTRAINTS REQUIRE APPROVAL AND BASED ON MANUFACTURER RECOMMENDATIONS.
6. SEE GREEN INFRASTRUCTURE NOTES.

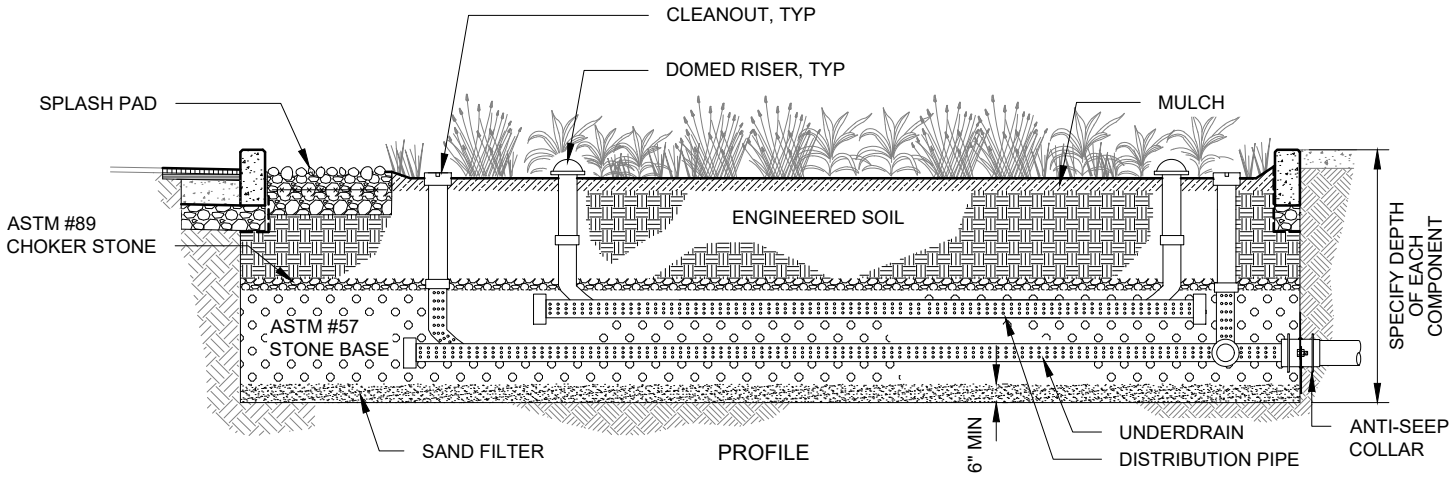
CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

PERMEABLE PAVERS AND POROUS ASPHALT PAVEMENT

DETAIL NO.
GREN
012

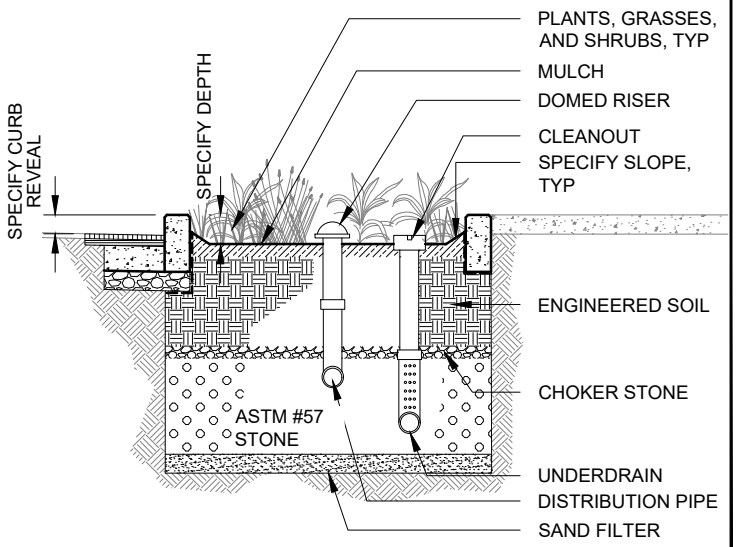
REVISED:
2017/5/1





NOTES:

1. THIS DESIGN DETAIL SHOULD BE ADAPTED TO THE SPECIFIC ENGINEERED DESIGN OF A RESPECTIVE INSTALLATION.
2. CURBS AROUND STORMWATER BUMP-OUTS ON CITY STREETS WILL FOLLOW THE SAME REQUIREMENTS AS NORMAL CURBS AND SHALL BE WITHIN A HEIGHT RANGE OF 4" TO 8". DESIGNER WILL SELECT A HEIGHT WITHIN THAT RANGE BASED ON APPLICABLE SITE CONDITIONS AND THE CURB HEIGHT SHALL BE CONSISTENT ALONG THE LENGTH OF THE BUMP-OUT.
3. CURB HEIGHT AROUND STORMWATER BUMP-OUTS SHALL BE MAXIMIZED AT CORNER BUMP-OUTS AS MUCH AS POSSIBLE AND BE A CONSISTENT HEIGHT BETWEEN ADA RAMPS.
4. WHEN INSTALLING CORNER STORMWATER BUMP-OUTS, GUTTER FLOW MUST BE MAINTAINED TO AN EXISTING DOWNSTREAM INLET OR A NEW INLET MUST BE INSTALLED ALONG THE NEW CURB LINE AS REQUIRED. LOCATION OF NEW INLET SHOWN CAN VARY AND MUST BE EVALUATED ON A CASE-BY-CASE BASIS.
5. OPENING SIZE AND PLACEMENT TO BE DETERMINED BY DESIGNER. OPENINGS ALONG OUTSIDE EDGE OF BUMP-OUT, IF USED, MUST INCLUDE A WHEEL GUARD.
6. DESIGNER SHOULD DETERMINE THE APPROPRIATE GEOMETRY FOR BUMP-OUTS BASED ON GOOD ENGINEERING PRACTICE AND JUDGMENT OF THE SITE. THIS INCLUDES THE ANGLE OF CURB THAT IS CROSS TO THE TRAVEL LANE AND ALL CURB RADII. A TYPICAL BUMP-OUT GEOMETRY THAT IS OFTEN USED INCLUDES A CURB AT A 45 DEGREE ANGLE TO THE TRAVEL LANE.
7. SEE GREEN INFRASTRUCTURE NOTES.



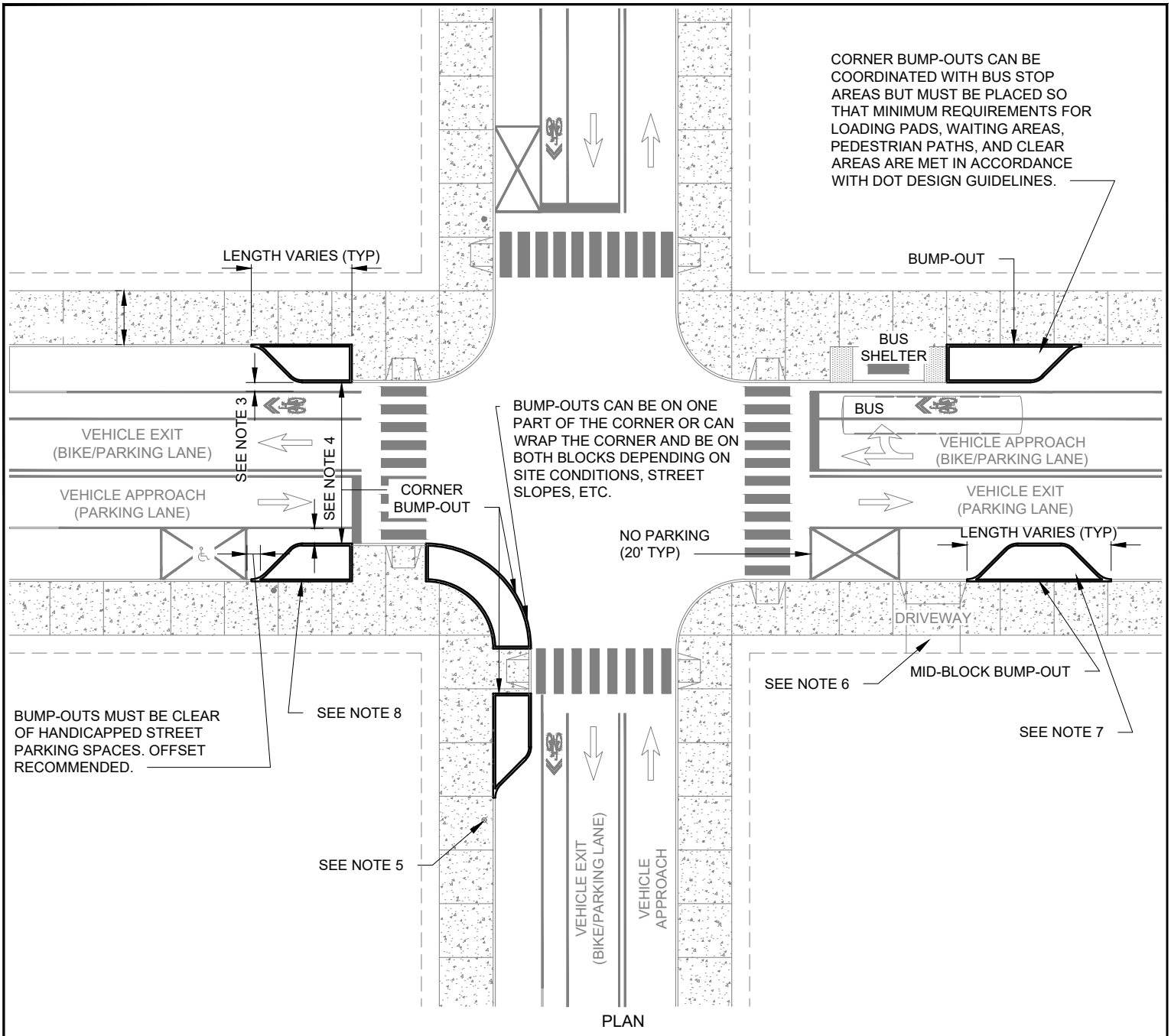
SECTION A-A

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

STORMWATER BUMP-OUT - CORNER

DETAIL NO.
GREN
013

REVISED:
2017/5/1



PLAN

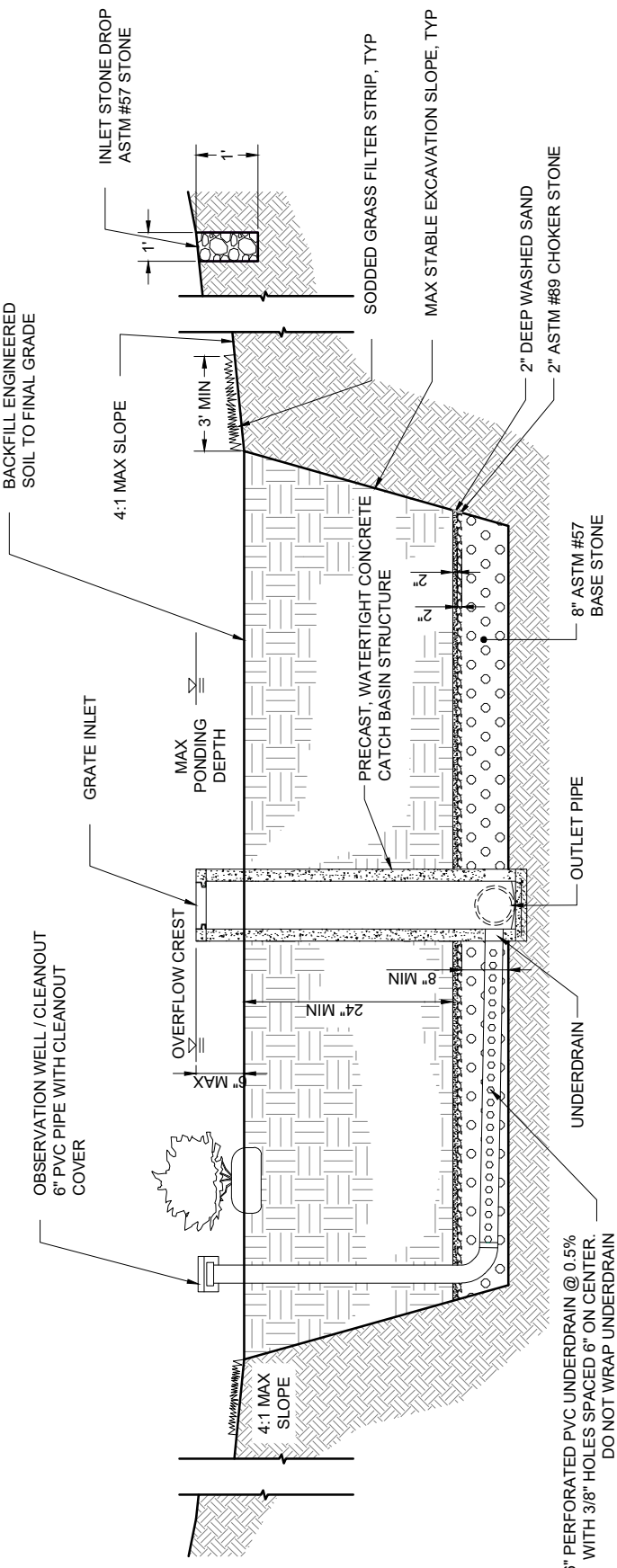
NOTES:

1. CORNER STORMWATER BUMP-OUTS SHOULD ONLY BE INSTALLED WHERE AT LEAST ONE OF THE TWO STREETS MEETING AT THE CORNER DRAIN TOWARDS THE CORNER.
2. BUMP-OUTS IN ROADWAYS WITH NO PARKING LANE CAN BE CONSIDERED ON A CASE-BY-CASE BASIS.
3. IN ALL CASES, BUMP-OUTS MUST MAINTAIN A MINIMUM OFFSET OF 1' FROM TRAVEL LANE. TRAVEL LANE INCLUDES BOTH VEHICLE AND BIKE LANES.
4. BUMP-OUTS MUST NEVER NARROW STREET TO LESS THAN 20′ IN ORDER TO NOT LIMIT FIRE VEHICLES' ACCESS DOWN THE STREET.
5. FIRE HYDRANTS MUST REMAIN WITHIN 18" OF THE CURB LINE UNLESS OTHERWISE APPROVED BY THE FIRE DEPARTMENT.
6. BUMP-OUTS ADJACENT TO DRIVEWAYS ARE PERMITTED TO MERGE DIRECTLY INTO DRIVEWAYS PROVIDED THEY ACCOMMODATE THE APPROPRIATE RADIUS AND OWNER APPROVAL IS OBTAINED. IF NOT DESIGNED TO MERGE INTO THE DRIVEWAY, BUMP-OUTS SHOULD MAINTAIN AN OFFSET OF 20' OR GREATER BETWEEN THE BUMP-OUT AND THE DRIVEWAY. PROPOSALS TO PLACE BUMP-OUTS WITHIN THE 20' OFFSET LENGTH CAN BE EVALUATED ON A CASE-BY-CASE BASIS.
7. MINIMUM RECOMMENDED LENGTH FOR MID-BLOCK BUMP-OUT IS APPROXIMATELY 20' TO COINCIDE WITH TYPICAL LENGTH OF ON-STREET PARKING SPACE. RECOMMENDED TO USE MINIMUM AND INCREMENTAL MID-BLOCK BUMP-OUT LENGTHS OF 20'.
8. FOR CORNER BUMP-OUTS, MAXIMUM BUMP-OUT LENGTH VARIES. HOWEVER, IT IS RECOMMENDED TO OVERLAP BUMP-OUT LENGTH AS CLOSELY AS POSSIBLE WITH ILLEGAL PARKING ZONE, WHICH IS TYPICALLY 20' MEASURED FROM THE STOP BAR BUT MAY BE LONGER SUCH AS AT A BUS STOP. BUMP-OUT LENGTH SHOULD CONSIDER ILLEGAL PARKING ZONE LENGTH AND PARKING DEMAND FOR THE AREA.
9. SEE GREEN INFRASTRUCTURE NOTES.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

STORMWATER BUMP-OUT PLACEMENT PLAN

DETAIL NO.
GREN 014
REVISED:
2017/5/1



NOTES:

1. HEAVY EQUIPMENT SHALL BE PROHIBITED WITHIN THE RAIN GARDEN FOLLOWING THE EXCAVATION OF THE FINAL 24" OF ENGINEERED SOIL MEDIA.
2. CLEANOUTS SHALL BE INSTALLED 8" ABOVE FINISHED GRADE.
3. INSTALL CLEANOUT TO EXTEND 8" ABOVE GRADE AT END OF ALL UNDERDRAIN LINES.
4. SEE GREEN INFRASTRUCTURE NOTES AND SPECIFICATIONS.

CITY OF FORT LAUDERDALE
PUBLIC WORKS DEPARTMENT
ENGINEERING DETAILS
100 North Andrews Avenue, Fort Lauderdale, Florida 33301

STANDARD RAIN GARDEN SECTION

DETAIL NO.
GREN
015

REVISED:
2017/5/1