

Langston Hughes Elementary School
Green Infrastructure Information Sheet

Location: 160 Rhode Island Avenue East Orange, NJ 07018	Site Use: School
	Watershed Name: Elizabeth River
	Targeted Pollutants: total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS) in surface runoff
Green Infrastructure Description: Bioretention system (rain garden) Rainwater harvesting (cistern)	Estimated Stormwater Captured and/or Treated Per Year: Bioretention system (rain garden): 5,200 gal. Rainwater harvesting (cistern): 4,195 gal.
Implementation Date: 10/24/2018 Green Infrastructure System: one (1) 210-square-foot rain garden Drainage Area: ~735 sq. ft.(rooftop) Implementation Date: 6/27/2019 Green Infrastructure System: one (1) 265-gallon cistern Drainage Area: ~400 sq. ft. (rooftop)	
Funding Sources: Passaic Valley Sewerage Commission	
Partners/Stakeholders: Passaic Valley Sewerage Commission, Rutgers Cooperative Extension Water Resources Program, and Langston Hughes Elementary School	
Appendix A: Site Photographs – Previous Conditions Appendix B: Langston Hughes Elementary School Design Plans Appendix C: Site Photographs – Completed Project	

Langston Hughes Elementary School
Green Infrastructure Information Sheet

Appendix A

Site Photographs – Previous Conditions

Site Photograph December 22, 2015



Site Photograph December 15, 2017



Langston Hughes Elementary School
Green Infrastructure Information Sheet

Appendix B

Langston Hughes Elementary School Design Plans

LANGSTON HUGHES ELEMENTARY SCHOOL

GREEN INFRASTRUCTURE IMPLEMENTATION PROJECT 160 RHODE ISLAND AVE, EAST ORANGE ESSEX COUNTY, NEW JERSEY

PROJECT DESCRIPTION:

A RAIN GARDEN WILL BE CONSTRUCTED AROUND AN EXISTING CATCH BASIN TO CAPTURE AND INFILTRATE STORMWATER FROM THE ROOF BY REDIRECTING EXISTING DOWNSPOUTS INTO IT. A CISTERN WILL BE INSTALLED ALONG THE BUILDING TO CAPTURE RUNOFF FROM ADDITIONAL DOWNSPOUTS AND OVERFLOW TOWARD THE RAIN GARDEN.

LOCATION MAP:



LEGEND:

-----	EXISTING DRAINAGE AREA
————	EDGE OF PAVEMENT
←-----	EXISTING CENTERLINE
----->	EXISTING FENCE
~~~~~	EXISTING TREELINE
○	EXISTING TREE
▨	EXISTING BUILDING
⊕	EXISTING UTILITY POLE
▩	EXISTING CATCH BASIN
⌒	EXISTING CONTOURS
+ 100.00 CODE	EXISTING SPOT ELEVATIONS
<small>SPOT ELEVATION CODES: GS - GROUND SHOT BL - BUILDING CORNER MH - MANHOLE CB - CATCH BASIN SW - SIDEWALK DS - DOWNSPOUT TC - TOP OF CURB F - FENCE W - WATER VALVE</small>	
- - - - -	LIMIT OF WORK
▨	PROPOSED GREEN INFRASTRUCTURE
○	PROPOSED SHRUB/TREE

### LIST OF DRAWINGS:

SHEET NAME	TITLE
COVER	COVER SHEET
P-1	EXISTING CONDITIONS AND DEMOLITION PLAN
P-2	PROPOSED SITE PLAN
P-3	PLANTING PLAN
DT-1	RAIN GARDEN AND PLANTING PLAN DETAILS
DT-2	CISTERN DETAILS

### GENERAL NOTES:

1. SURVEY CONDUCTED BY RUTGERS COOPERATIVE EXTENSION WATER RESOURCES PROGRAM.
2. ANY OVERHEAD AND UNDERGROUND UTILITIES SHOWN ARE FROM FIELD OBSERVATIONS AND ARE NOT A COMPLETE REPRESENTATION. A UTILITY MARKOUT NEEDS TO BE CONDUCTED PRIOR TO MOBILIZATION. NJ ONE CALL: 811 OR 800-272-1000

CHRISTOPHER C. OBROPTA, Ph.D., P.E.  
PROFESSIONAL ENGINEER - NJ LICENSE # 37532  
*Christopher C. Obropta*  
DATE 02/07/18  
DRAWN GAO  
CHECKED MAL  
APPROVED CCO

REVISIONS	DESCRIPTION
No.   DATE	

LANGSTON HUGHES ELEMENTARY SCHOOL  
GREEN INFRASTRUCTURE IMPLEMENTATION PROJECT  
160 RHODE ISLAND AVE, EAST ORANGE  
ESSEX COUNTY, NJ  
COVER SHEET



SHEET NAME  
COVER



- PLAN NOTES:**
1. CONTRACTOR SHALL SCHEDULE MEETING WITH ENGINEER AND PROPERTY OWNER PRIOR TO MOBILIZATION.
  2. CONTRACTOR SHALL VERIFY ALL INFORMATION INCLUDING ELEVATIONS AND UTILITIES PRIOR TO MOBILIZATION.
  3. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED APPROVALS FROM AUTHORITIES WITH JURISDICTION OVER PROPOSED WORK.
  4. CONTRACTOR SHALL COORDINATE AND CONFIRM PROJECT SCHEDULE AND WORKING HOURS WITH ENGINEER AND PROPERTY OWNER AND PROCEED IN ACCORDANCE WITH LOCAL REQUIREMENTS.
  5. CONTRACTOR SHALL COORDINATE UTILITY MARK OUT PRIOR TO MOBILIZATION. NJ ONE CALL: 811 OR 800-272-1000
  6. CONTRACTOR SHALL CONDUCT PERMEABILITY TESTING TO VERIFY ADEQUATE INFILTRATION RATES IF NOT PREVIOUSLY PERFORMED.
  7. CONTRACTOR SHALL DEMO AND REMOVE ALL EXISTING ASPHALT PAVING AS SHOWN ON PLAN.
  8. CONTRACTOR SHALL HAUL REMOVED DEBRIS OFF SITE UNLESS OTHERWISE NOTED BY PROPERTY OWNER.

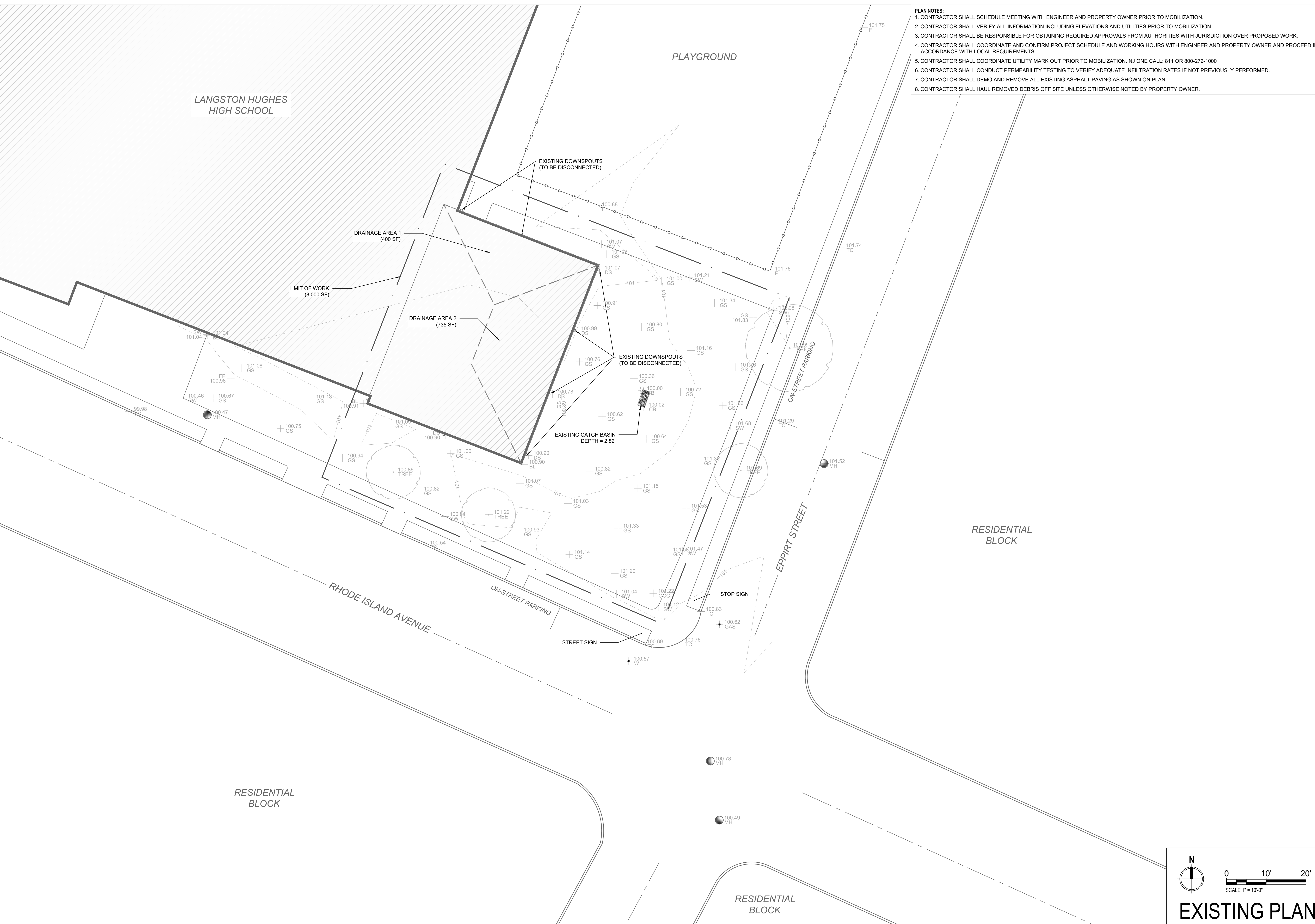
CHRISTOPHER C. OBROPTA, Ph.D., P.E.  
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**LANGSTON HUGHES ELEMENTARY SCHOOL  
 GREEN INFRASTRUCTURE IMPLEMENTATION PROJECT**  
 160 RHODE ISLAND AVE, EAST ORANGE  
 ESSEX COUNTY, NJ  
**EXISTING CONDITIONS AND DEMOLITION PLAN**



SHEET NAME  
**P-1**



**EXISTING PLAN**

Scale: 1" = 10'-0"

0 10' 20'

N



**PLAN NOTES:**

1. CONTRACTOR SHALL SCHEDULE MEETING WITH ENGINEER AND PROPERTY OWNER PRIOR TO MOBILIZATION AND CONSTRUCTION.
2. CONTRACTOR SHALL VERIFY ALL INFORMATION INCLUDING ELEVATIONS AND UTILITIES PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL VERIFY ALL PROPOSED MATERIALS WITH PROPERTY OWNER AND ENGINEER PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL STAKE OUT LOCATIONS OF PROPOSED RAIN GARDENS, STONE CHANNELS, AND TRENCH DRAIN AND OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLATION.
5. CONTRACTOR SHALL INSTALL CONVENTIONAL ASPHALT AS SHOWN ON PLAN. THE ASPHALT AND CONCRETE MIXING PLANT, HAULING AND PLACING EQUIPMENT, AND INSTALLATION SHALL BE IN CONFORMANCE WITH NAPA IS 131 AND THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2007 OR LATEST VERSION.
6. CONTRACTOR SHALL GRADE SITE AS SHOWN ON PLAN. CUT SOIL SHALL BE REUSED ON SITE FOR FILL LOCATIONS.
7. CONTRACTOR SHALL HAUL EXCESS SOIL OFF SITE UNLESS OTHERWISE NOTED BY PROPERTY OWNER.
8. ALL FINISHED ELEVATIONS SHALL MATCH ADJOINING PAVEMENT ENSURING SMOOTH TRANSITIONS AND NO TRIPPING HAZARDS
9. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ALL AREAS DISTURBED DURING CONSTRUCTION TO ORIGINAL CONDITIONS.

**NOTE 1:** STONE SHALL BE COMPRISED OF 3"-5" DIAMETER CLEAN, WASHED RIVER STONE. ALL AREAS OF EROSION PROTECTION STONE SHALL BE UNDERLAIN WITH GEOTEXTILE FABRIC (GEOTEX 801 BY PROPEX OR APPROVED EQUIVALENT).

**NOTE 2:** UNDERDRAIN MAY BE OMITTED BY ENGINEER'S DISCRETION IF THE TESTED INFILTRATION RATE EXCEEDS 1 IN/HR PER NJDEP BMP MANUAL.

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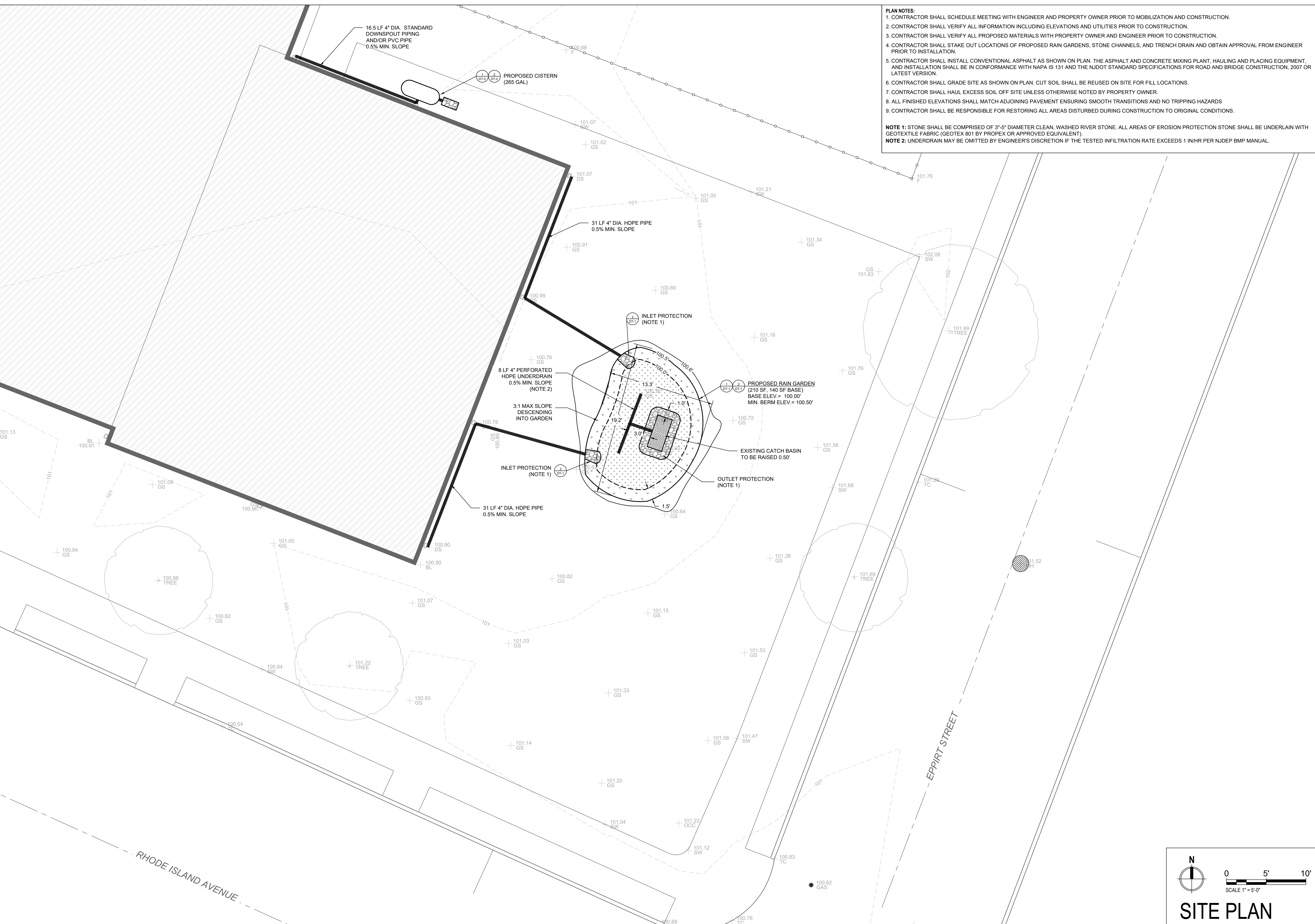
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 160 RHODE ISLAND AVE, EAST ORANGE  
 ESSEX COUNTY, NJ



SHEET NAME  
 P-2

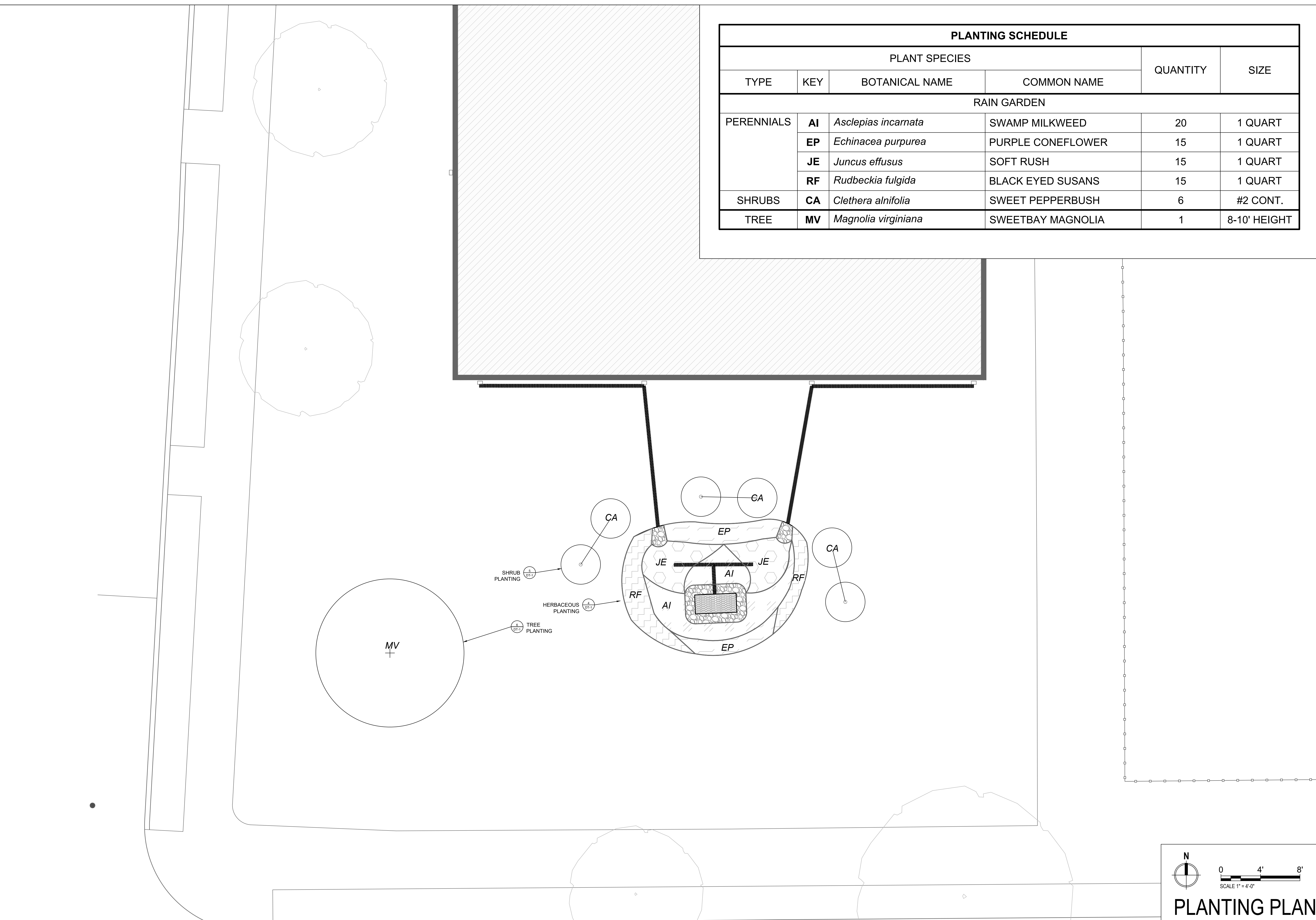
**PROPOSED SITE PLAN**



SCALE 1" = 5'-0"

**SITE PLAN**



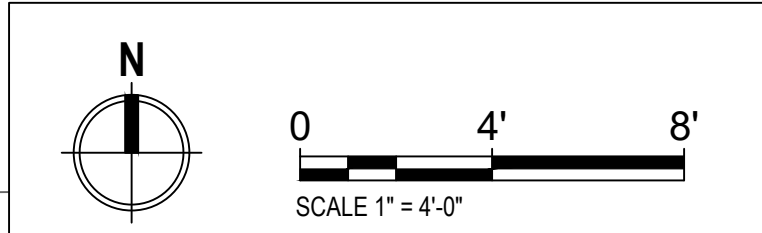


PLANTING SCHEDULE					
PLANT SPECIES				QUANTITY	SIZE
TYPE	KEY	BOTANICAL NAME	COMMON NAME		
RAIN GARDEN					
PERENNIALS	AI	<i>Asclepias incarnata</i>	SWAMP MILKWEED	20	1 QUART
	EP	<i>Echinacea purpurea</i>	PURPLE CONEFLOWER	15	1 QUART
	JE	<i>Juncus effusus</i>	SOFT RUSH	15	1 QUART
	RF	<i>Rudbeckia fulgida</i>	BLACK EYED SUSANS	15	1 QUART
SHRUBS	CA	<i>Clethra alnifolia</i>	SWEET PEPPERBUSH	6	#2 CONT.
TREE	MV	<i>Magnolia virginiana</i>	SWEETBAY MAGNOLIA	1	8-10' HEIGHT

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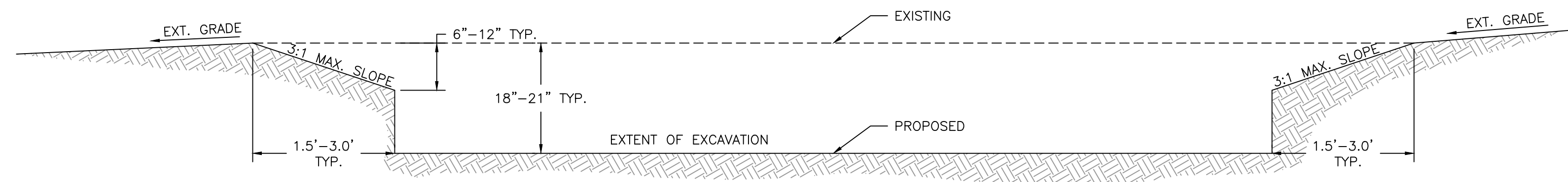
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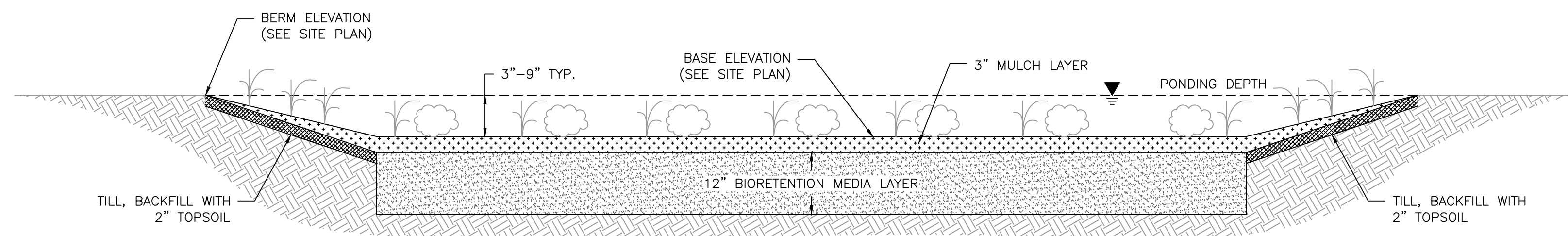
PLANTING PLAN

SHEET NAME  
 P-3

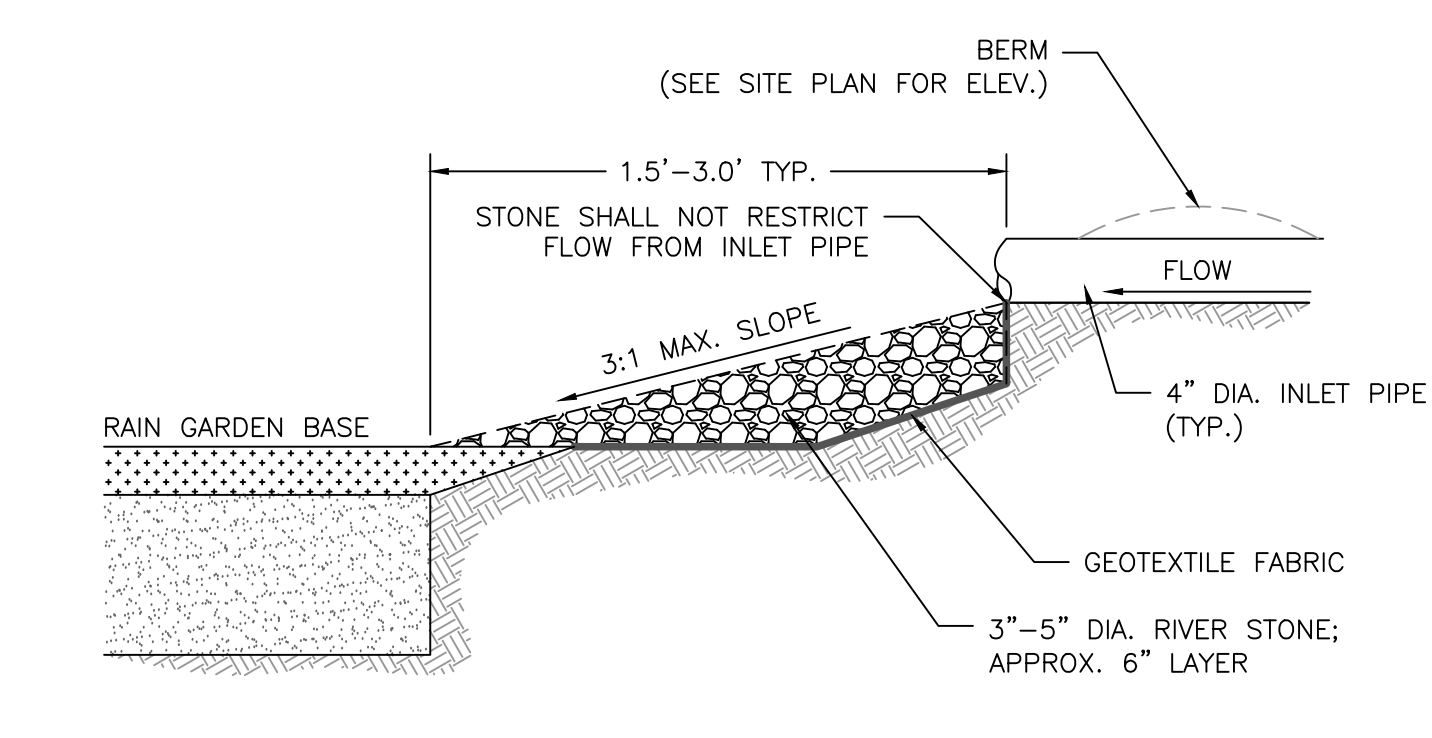




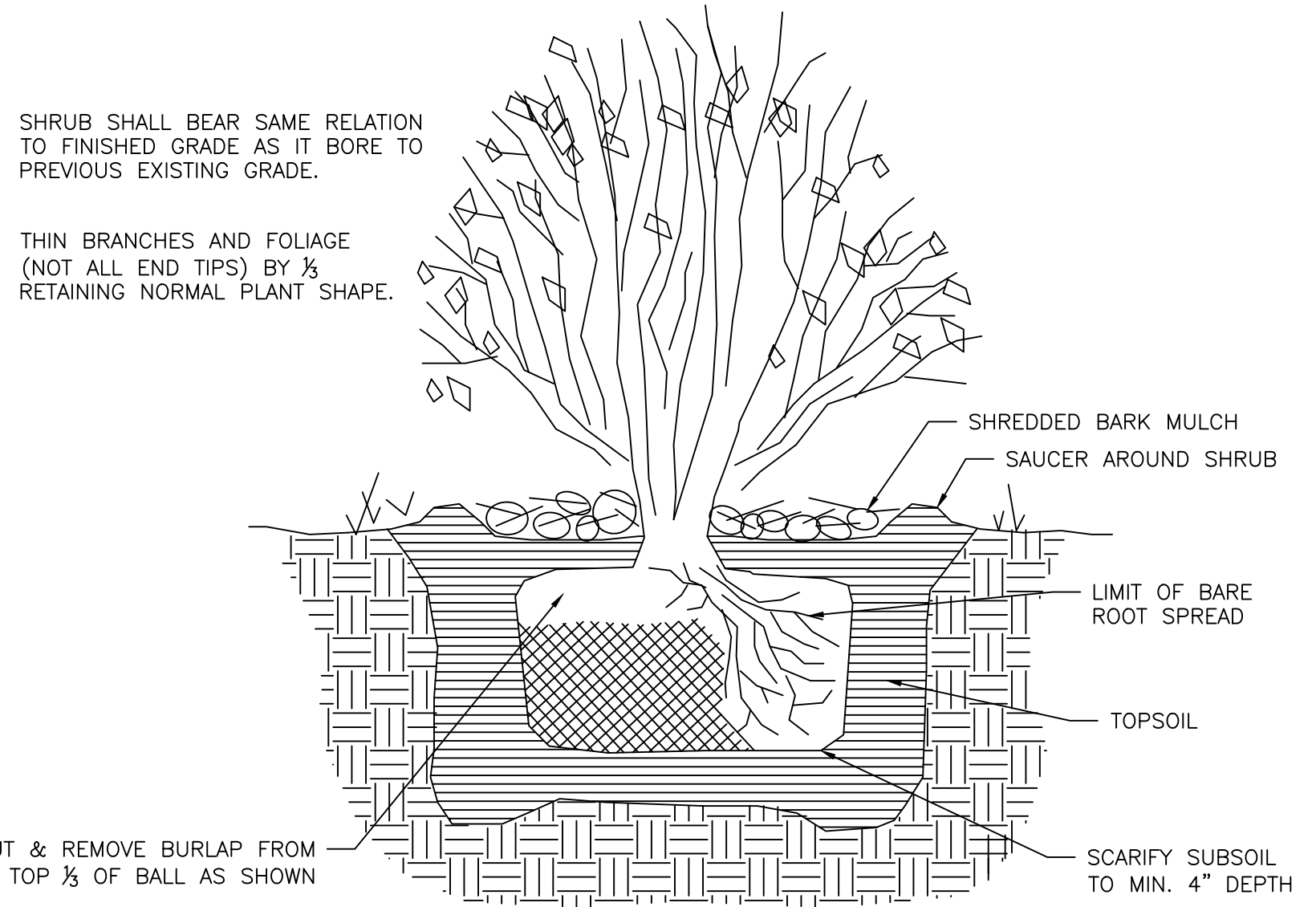
1 RAIN GARDEN EXCAVATION SECTION  
DT-1 N.T.S.



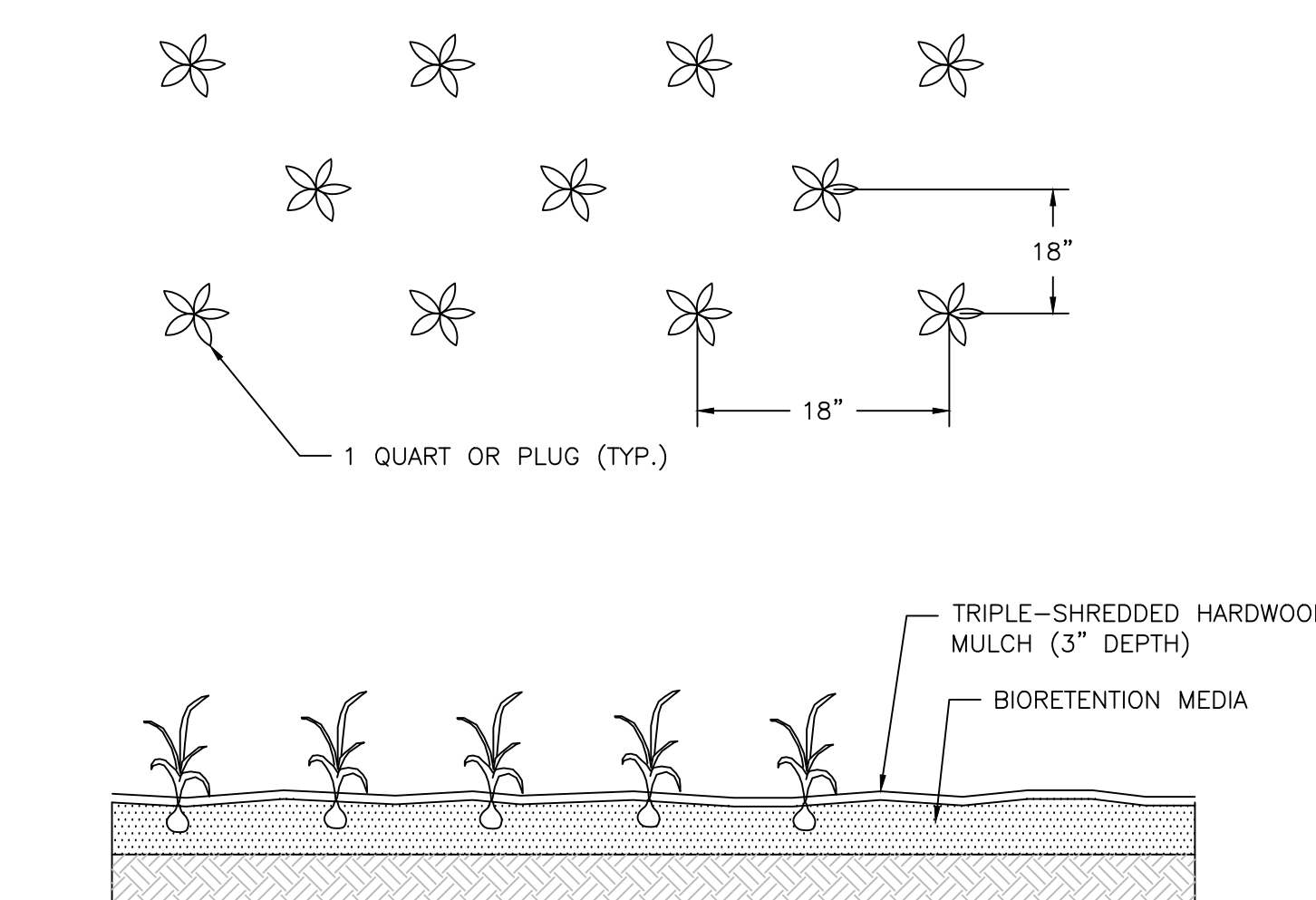
2 RAIN GARDEN CROSS-SECTION  
DT-1 N.T.S.



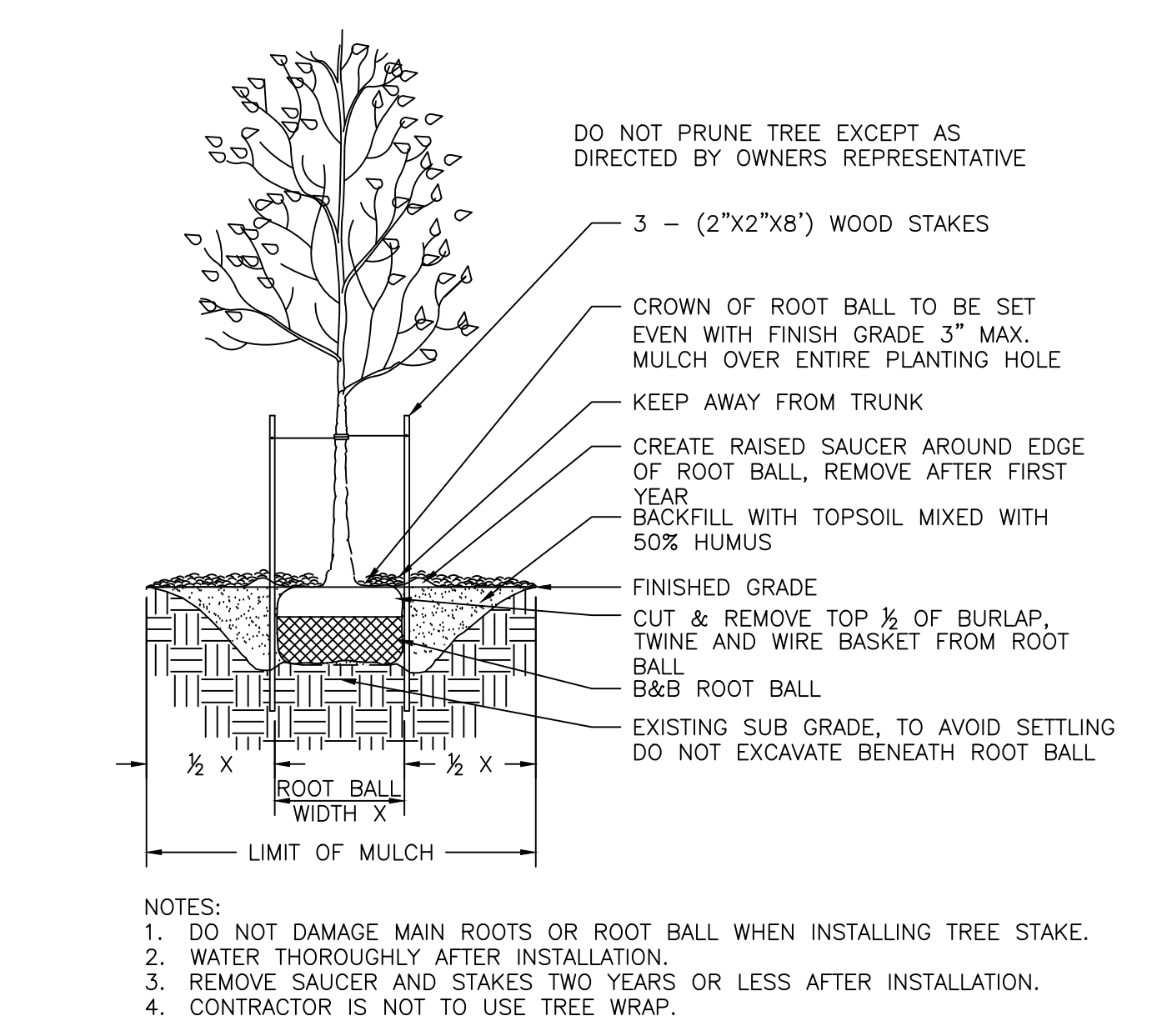
3 INLET PROTECTION CROSS-SECTION  
DT-1 N.T.S.



5 SHRUB PLANTING DETAIL  
DT-1 N.T.S.



4 HERBACEOUS PLUG PLANTING DETAIL  
DT-1 N.T.S.



6 INLET PROTECTION CROSS-SECTION  
DT-1 N.T.S.

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL INFORMATION PRIOR TO EXCAVATION INCLUDING ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY FIELD CONDITIONS DIFFER MATERIALLY FROM THOSE REPRESENTED ON THESE DRAWINGS AND THE SPECIFICATIONS OR IF, IN THE CONTRACTOR'S OPINION, SAID CONDITIONS CONFLICT WITH THE DESIGNS SHOWN HEREON.
3. THE ENGINEER SHALL INSPECT ALL PLANTING BED AREAS BEFORE MULCHING TO INSURE THAT ADEQUATE DRAINAGE EXISTS. IF ANY AREAS TO BE MULCHED SHOW EVIDENCE OF POOR DRAINAGE, THE CONTRACTOR SHALL TAKE CORRECTIVE ACTION.
4. THE CONTRACTOR SHALL AVOID DISTURBING ALL EXISTING TREES. ANY DISTURBANCE TO TREES OR TREE ROOTS MUST BE COORDINATED WITH THE PROPERTY OWNER.
5. DIMENSIONS AND SHAPE WILL VARY. REFER TO SITE PLAN.
6. RIVER STONE PROTECTION DIMENSIONS ARE TYPICAL AND MAY VARY PER SITE. CONSULT THE ENGINEER AND SITE PLAN FOR DIMENSIONS ON A PER SITE BASIS.
7. RIVER STONE PROTECTION SHALL SLOPE TO RAIN GARDEN BASE.
8. REFER TO SITE PLAN TO DETERMINE OUTLET TYPE (ROCK-LINED OVERFLOW OR DRAINTech RISER).
9. REFER TO SITE PLAN FOR ALL ELEVATIONS AND INVERTS.
10. THE CONTRACTOR SHALL EXCAVATE 12" LOWER THAN THE BASE ELEVATION SHOWN ON THE SITE PLANS. THE SLOPES OF THE RAIN GARDEN SHALL BE AT A 3:1 MAXIMUM.
11. THE SUBGRADE OF THE RAIN GARDEN SHALL BE LEVEL TO ENSURE PROPER DRAINAGE. CONTRACTOR SHALL OBTAIN ENGINEER APPROVAL PRIOR TO BACKFILLING WITH 12" OF BIORETENTION MEDIA.
12. THE CONTRACTOR SHALL INSTALL OVERFLOW IF SPECIFIED IN SITE PLANS PRIOR TO BACKFILLING WITH BIORETENTION MEDIA.
13. THE BIORETENTION LAYER SHALL BE LEVEL TO ENSURE PROPER DRAINAGE. CONTRACTOR SHALL OBTAIN ENGINEER APPROVAL PRIOR TO SPREADING MULCH AND PLANTING.
14. INLET AND OUTLET PROTECTION SHALL BE UNDERLAIN WITH GEOTEXTILE FABRIC.
15. INLETS AND OUTLETS SHALL NOT INHIBIT THE FLOW OF WATER FROM THE STREET. THE RIVER STONE SHALL BE PLACED BELOW THE BOTTOM OF THE PIPE.
16. THE CONTRACTOR SHALL TILL THE BERM SECTION AND BACKFILL WITH TOPSOIL.
17. ALL DISTURBED AREAS EXCLUSIVE OF RAIN GARDEN AND SLOPED BERM SHALL BE RESTORED TO ORIGINAL CONDITIONS BY CONTRACTOR.
18. THE CONTRACTOR SHALL HAVE A PRE-CONSTRUCTION MEETING WITH THE PROJECT ENGINEER PRIOR TO ANY WORK ON SITE.
19. CONTRACTOR SHALL PERFORM REQUIRED TESTING TO DETERMINE SOIL PERMEABILITY AND SEASONAL HIGH WATER TABLE ELEVATION AT THE SITE TO VERIFY INFILTRATION CAPABILITIES. TESTING SHALL BE DONE PRIOR TO EXCAVATION AND INSTALLATION OF THE PROPOSED PROJECTS. PROJECT ENGINEER SHALL BE PRESENT DURING TESTING AND SHALL BE INFORMED OF THE RESULTS.

SPECIFICATIONS:

1. MAX COVER OVER TOP OF PIPE IS 4 FT. CONTACT ADS IF OTHERWISE GREATER.
2. THE APPROVAL OF MATERIALS AND MIXING OF SAND, COMPOST, AND SOIL SHALL BE DONE UNDER THE SUPERVISION OF THE PROJECT ENGINEER/LANDSCAPE ARCHITECT. BIORETENTION MEDIA SHALL CONSIST OF 70% SAND AND 30% COMPOST MIXTURE.
3. SAND SHALL AT THE MINIMUM CONFORM TO THE SIEVE ANALYSIS FOR CONCRETE AGGREGATE SAND (ASTM C-33). USGA TEE/GREEN SIEVE GRADATION MIX IS PREFERABLE WHERE AVAILABLE.
4. UNDERLYING SOILS SHALL BE TILLED/SCARIFIED PRIOR TO SPREADING/MIXING OF BIORETENTION MEDIA.
5. ALL BIORETENTION MEDIA SHALL BE PLACED FROM THE SIDES OF THE FACILITIES, AND IN NO EVENT SHALL ANY TRACKED OR WHEELED EQUIPMENT BE PERMITTED TO CROSS THE RAIN GARDEN.
6. RAIN GARDEN SHALL BE CONSTRUCTED TO DIMENSIONS INDICATED ON THE SITE PLAN.
7. 3-5 INCH DELAWARE RIVER STONE SHALL BE USED FOR STONE CHANNEL AND INLET/OUTLET PROTECTION.
8. NON-DYED, TRIPLE-SHREDED HARDWOOD MULCH SHALL BE USED.
9. PLANTING OF RAIN GARDEN AND SLOPED BERM SHALL BE COMPLETED AS INDICATED ON THE SITE PLAN.
10. THE CONTRACTOR SHALL PERFORM ALL WORK IN CONFORMANCE WITH THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2007 OR LATEST VERSION.

OPEN LAWN AND TURF AREAS

1. SEED ALL REMAINING PARK AREAS WITH TURF TYPE FALL FESCUE AND PERENNIAL RYEGRASS BLEND (LOFTS - SUMMER STRESS MIX II OR APPROVED EQUIVALENT). INSTALL AT A RATE OF 350 LBS. PER ACRE PER MANUFACTURERS SPECIFICATIONS.

TOPSOILING, SEEDING AND MULCHING NOTES

1. ANY UNDISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 10 DAYS MUST BE SEEDED AND MULCHED IMMEDIATELY. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE REQUIRED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR SHALL BE SEEDED AND MULCHED WITH A QUICK GROWING TEMPORARY SEEDING MIXTURE AND MULCH. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE SEEDED AND MULCHED WITH A PERMANENT SEED MIXTURE AND MULCH.
2. DIVERSIONS, CHANNELS, SEDIMENTATION BASINS, SEDIMENT TRAPS, AND STOCKPILES MUST BE SEEDED AND MULCHED IMMEDIATELY.
3. GRADED AREAS SHALL BE TEMPORARILY SEEDED AND MULCHED IMMEDIATELY FOLLOWING EARTH MOVING PROCEDURES. TEMPORARY SEED SHALL BE ANNUAL RYE GRASS APPLIED AT A RATE OF 3 LBS. PER 1000 SQ. FT.
4. AFTER SEEDING, HAY OR STRAW MULCH MUST BE APPLIED AT A RATE OF AT LEAST 3.0 TONS PER ACRE. MULCH SHALL BE ANCHORED BY EITHER CRIMPING WITH A COULTER IMPLEMENT, OR BY STAPLING BIODEGRADABLE NETTING TO THE SURFACE.
5. SITE PREPARATION TO UPLAND AREAS: APPLY 1 TON OF AGRICULTURAL-GRADE LIMESTONE PER ACRE PLUS 10-20-10 FERTILIZER AT THE RATE OF 500 LB. PER ACRE. WORK IN WHERE POSSIBLE. SEEDING OF DISTURBED UPLAND AREAS (BEYOND LIMITS OF RIPARIAN ENHANCEMENT AREA) TO BE DONE USING MIX OF FINE FESCUE AT 35 LBS/ACRE (PURE LIVE SEED) PLUS PERENNIAL RYEGRASS AT 15 LBS/ACRE (PURE LIVE SEED).
6. TOPSOIL SHALL BE A CLEAN FRIABLE LOAM WITH SUFFICIENT ORGANIC CONTENT (2.75%) TO PROMOTE PLANT VIGOR. AMENDMENTS SHALL BE ADDED AS NEEDED TO IMPROVE DEFICIENT SOILS. TOPSOIL SHALL BE RETURNED AT A LOOSE DEPTH OF FIVE INCHES TO ALLOW FOR SETTLEMENT.
7. ESTABLISH PERMANENT SEEDING AS SOON AS POSSIBLE AFTER FINAL GRADING IS COMPLETE. UNLESS OTHERWISE INDICATED, PERMANENT SEEDING SHALL BE SEED MIXTURE SPECIFIED IN TABLE.
8. SEE TABLES FOR SEED SPECIES MIXTURE AND APPLICATION RATES
9. SEED MIXES ARE AVAILABLE AT ERNST CONSERVATION SEEDS IN MEADVILLE, PA. WEBSITE: WWW.ERNSTSEED.COM OR PHONE: 1-800-873-3321.
10. NATIVE SHRUBS AND HERBACEOUS PLUGS ARE AVAILABLE AT PINELANDS NURSERY AND SUPPLY, COLUMBUS NJ. WEBSITE: WWW.PINELANDSNURSERY.COM OR PHONE 1-800-667-2729

GENERAL LANDSCAPING NOTES

1. ALL PLANT MATERIALS SHALL CONFIRM TO THE AMERICAN ASSOCIATION OF NURSERYMEN'S AMERICAN STANDARD FOR NURSERY STOCK (LATEST EDITION)
2. INSPECTION OF PLANTING BEDS - THE LANDSCAPE ARCHITECT SHALL INSPECT ALL PLANTING AREAS BEFORE ANY TOPSOILING OR PLANTING IS BEGUN TO INSURE THAT ADEQUATE DRAINAGE EXISTS. IF ANY AREAS TO BE LANDSCAPED SHOW EVIDENCE OF POOR DRAINAGE, THE LANDSCAPE ARCHITECT SHALL NOTIFY THE OWNER IMMEDIATELY FOR CORRECTIVE ACTION
3. THE LANDSCAPE ARCHITECT SHALL APPROVE ALL PLANT MATERIAL AND STAKED PLANT LOCATIONS PRIOR TO INSTALLATION. ALL HERBACEOUS PLUG PLANTINGS SHALL BE A MINIMUM 3 INCH DEPTH. PLUGS SHALL BE PLANTED 1 FOOT O.C. AS INDICATED ON PLAN.
4. ALL TREES, SHRUBS, AND GROUND COVER SHALL BE PLACED IN CONTINUOUS MULCHED BEDS 4" IN DEPTH. MULCH SHALL BE TRIPLE SHREDED HARDWOOD.
5. ALL TREES, SHRUBS, AND GROUND COVER SHALL BE AS SPECIFIED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS AND COMMENTS NOTED ON THE DRAWINGS.
6. TOPSOIL SHALL BE PROVIDED BY THE LANDSCAPE CONTRACTOR FOR PLANTING ACCORDING TO THE PLANS AND DETAILS
7. PREPARED TOPSOIL FOR BACKFILLING AROUND TREE BALLS SHALL BE A MIXTURE OF VOLUME OF THE FOLLOWING MATERIALS IN QUANTITIES SPECIFIED: 1/3 COMPOST, 2/3 TOPSOIL
8. ALL HERBACEOUS PLUG PLANTINGS SHALL BE MINIMUM 3 INCH DEPTH. PLUGS SHALL BE PLANTED 1 FOOT O.C. AS INDICATED ON PLAN.

PLANTING SCHEDULE					
PLANT SPECIES				QUANTITY	SIZE
TYPE	KEY	BOTANICAL NAME	COMMON NAME		
RAIN GARDEN					
PERENNIALS	AI	<i>Asclepias incarnata</i>	SWAMP MILKWEED	20	1 QUART
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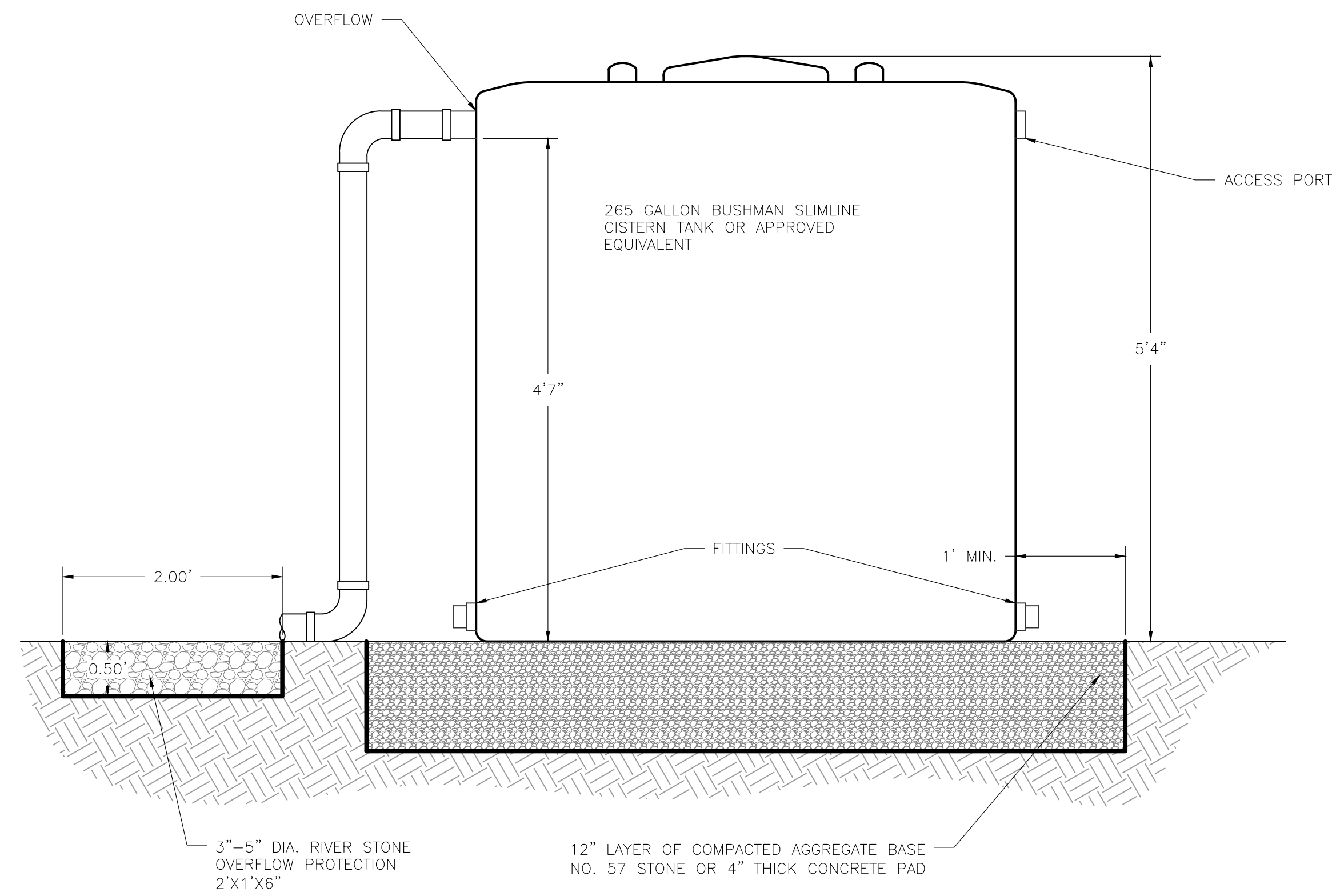
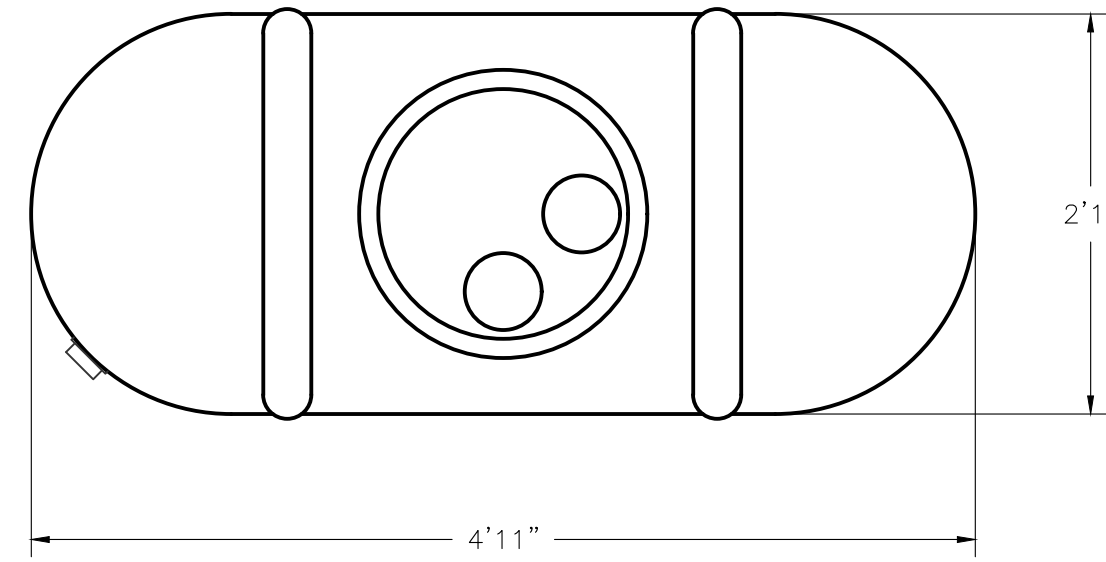
LANGSTON HUGHES ELEMENTARY SCHOOL  
GREEN INFRASTRUCTURE IMPLEMENTATION PROJECT  
160 RHODE ISLAND AVE, EAST ORANGE  
ESSEX COUNTY, NJ

RAIN GARDEN DETAILS

RUTGERS  
New Jersey Agricultural Experiment Station

SHEET NAME  
DT-1



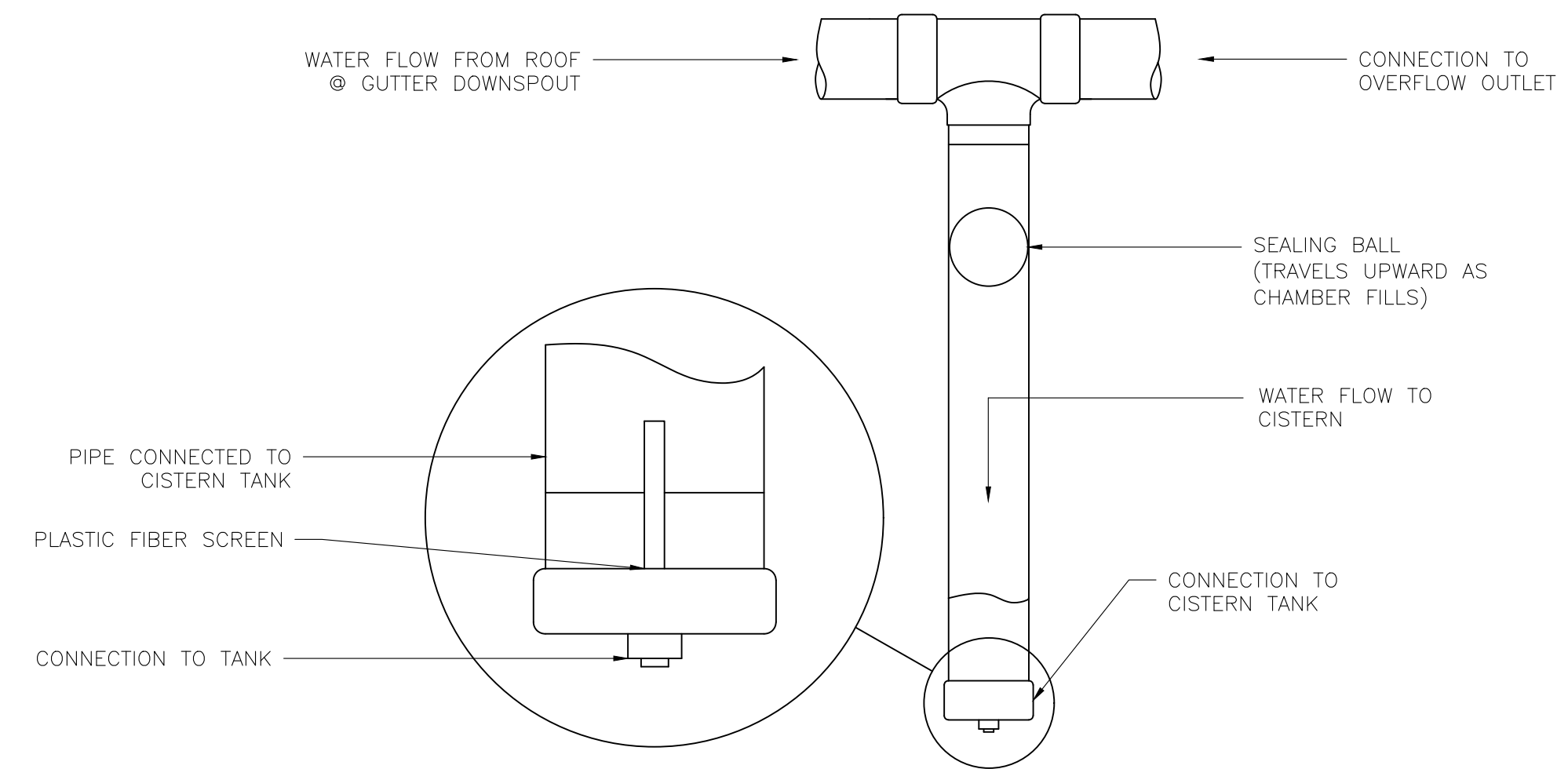


**CONSTRUCTION NOTES:**

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3. THE CONTRACTOR SHALL HAVE A PRE-CONSTRUCTION MEETING WITH THE ENGINEER PRIOR TO ANY WORK ON SITE.
4. THE CONTRACTOR SHALL AVOID DISTURBING EXISTING AREA. ANY DISTURBANCE TO SIDEWALKS OR LANDSCAPED VEGETATION AND TREES MUST BE COORDINATED WITH THE PROPERTY OWNER.
5. THE CONTRACTOR SHALL AVOID DISTURBING EXISTING AREA. ANY DISTURBANCE TO SIDEWALKS OR LANDSCAPED VEGETATION AND TREES MUST BE COORDINATED WITH THE PROPERTY OWNER.
6. THE CONTRACTOR SHALL USE PVC PIPING FOR CONNECTION FROM ROOF TO CISTERN.
7. ALL PIPES USED FOR CONNECTION FROM ROOFTOP TO CISTERN SHALL BE CLEAR OF ANY CLOGS OR OBSTRUCTIONS. ALL PIPES SHALL BE FITTED AND SECURED WITH ADHESIVE IN CONFORMANCE WITH LOCAL PLUMBING CODES.
8. THE CONTRACTOR SHALL PROVIDE A CRUSHED AGGREGATE BASE OR CONCRETE SLAB WITH 4,500 PSI STRENGTH TO SUPPORT THE CISTERN AS INDICATED ON THE PLAN.
9. THE OVERFLOW FROM THE CISTERN SHALL CONNECT TO THE NEAREST STORM SEWER CATCH BASIN INLET.
10. THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATIONS AT THE SITE UNTIL CONSULTING WITH THE ENGINEER.
11. THE CONTRACTOR IS REQUIRED TO SUBMIT SHOP DRAWINGS OF ALL MATERIALS AND CONSTRUCTION METHODS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PURCHASE AND INSTALLATION.
12. ALL SYSTEMS SHALL BE TESTED BY THE ENGINEER FOR LEAKS AND WATER TIGHT FITTINGS PRIOR TO ACCEPTANCE AND PAYMENT.
13. THE CONTRACTOR SHALL USE SIMPSON TIE IN CONNECTORS FOR THE SHADE STRUCTURE.
14. THE CONTRACTOR SHALL USE PRESSURE TREATED LUMBER.
15. THE CONTRACTOR SHALL INSTALL CONCRETE FOOTINGS WITH A MINIMUM 3 FOOT DEPTH.
16. THE CONTRACTOR SHALL NOT MAKE ANY MODIFICATIONS AT THE SITE UNTIL CONSULTING WITH THE ENGINEER.
17. THE CONTRACTOR IS REQUIRED TO SUBMIT SHOP DRAWINGS OF ALL MATERIALS AND CONSTRUCTION METHODS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PURCHASE AND INSTALLATION OF GUTTER.

**SPECIFICATIONS:**

1. CRUSHED AGGREGATE BASE SHALL BE COMPRISED OF NO. 57 STONE. ALTERNATIVE CONCRETE PAD SHALL BE CONCRETE WITH 4,500 PSI STRENGTH.
2. ALL DISTURBED AREAS EXCLUSIVE OF THE CISTERN SHALL BE RESTORED TO ORIGINAL CONDITIONS BY THE CONTRACTOR.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF DOWNSPOUT CONNECTIONS TO CISTERN FOR ENGINEERS APPROVAL PRIOR TO INSTALLATION.
4. DIVERTER FILTER BOX SHALL BE FRAINHARVESTING@FIRST FLUSH DOWNSPOUT DIVERTER (PRODUCT CODE: WDS9X) OR EQUIVALENT.
5. OVERFLOW SHALL DISCHARGE TO LAWN AREA UNLESS SPECIFIED OTHERWISE. STONE PROTECTION COMPRISED OF 3"-5" DIA. CLEAN RIVER STONE SHALL BE INSTALLED AS SHOWN IN DETAIL.



1 CISTERN TANK (TYP.)  
DT-2 N.T.S.

2 DOWNSPOUT DIVERTER DETAIL  
DT-2 N.T.S.

CHRISTOPHER C. OBROPTA, Ph.D., P.E.  
PROFESSIONAL ENGINEER - NJ LICENSE # 97532  
DATE 02/07/18  
APPROVED CCO  
CHECKED MAL  
DRAWN GAO

REVISIONS	No.	DATE	DESCRIPTION

LANGSTON HUGHES ELEMENTARY SCHOOL  
GREEN INFRASTRUCTURE IMPLEMENTATION PROJECT  
160 RHODE ISLAND AVE, EAST ORANGE  
ESSEX COUNTY, NJ  
CISTERN DETAILS





Langston Hughes Elementary School  
Green Infrastructure Information Sheet

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**Appendix C**

Site Photographs – Completed Projects



# Installation Completed October 24, 2018





# Site Photograph Fall 2019



*photo courtesy of Passaic Valley Sewerage Commission*



# Site Photograph June 27, 2019



*photo courtesy of Passaic Valley Sewerage Commission,*



# Site Photograph June 27, 2019



*photo courtesy of Passaic Valley Sewerage Commission*