



**Key Bank  
Green Parking  
Lot Retrofit**

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Cuyahoga County, Ohio

**Key Map**

**KEY BANK  
GREEN PARKING LOT RETROFIT**  
Cleveland, Ohio

**Project Location Map**



12.1.2015

NEROSD GIG Grant Application 2016





**PARKS GROUP**  
Akron, Ohio

Date: 12/18/2015

Project Title: **Collinwood Art District Key Bank Parking Lot Retrofit**

Project No. Resurfacing only

Description:  
Conceptual Class 5  
design qty. estimate

Prepared by:

Approved By:

K. Holmok

**PHASE DESCRIPTION: CONCEPTUAL PLANS (CLASS 5)**

Item #	NO.	UNIT	UNIT	SUBTOTAL	
	UNITS	MEAS.	COSTS	COST	
253	Asphalt Pavement Overlay & Repair	1,595	SY	\$22.50	\$35,887.50
SPEC	Concrete Curb Stop	15	EA	\$90.00	\$1,350.00
SPEC	ADA Signage & Striping	1	LS	\$300.00	\$300.00
SPEC	Striping	1	LS	\$800.00	\$800.00
SPEC	Temporary Bollards (for adjoining lot)	7	EA	\$150.00	\$1,050.00
SPEC	Fenced Dumpster Enclosure	1	LS	\$4,500.00	\$4,500.00
	Construction management	1	LS	\$2,500.00	\$2,500.00
	Contingency (5%)				\$2,195.00
	Permits (\$15/\$1,000)	1	LS	\$728.74	\$729.00
<b>PROJECT COSTS SUBTOTAL</b>					<b>\$49,311.50</b>

The above Opinion of Probable Project Costs is based on available information and the Landscape Architect's experience and qualifications. This opinion represents the Landscape Architect's best judgment based on experience with the construction of similar projects. The Landscape Architect has no control over the cost of labor, materials, equipment or services furnished by others or over competitive bidding or market conditions and, therefore, does not guarantee that this project cost estimate will approximate the actual project costs.

**ASSUMPTIONS**

Cost estimates and ranges are developed to the Association for the Advancement of Cost Consulting International (ACE) Class 5 estimate level construction cost estimate.

- a. Construction cost estimates utilize ODOT 2014 prices, and local public bid prices for similar work. Unit costs include direct, indirect costs, contractor overhead and profit.
- b. Excavation and Haul: It is assumed that soil is clean fill. Phase I/II screening would have to occur on any non-roadway property prior to purchase/project.
- c. Assumed Soil Conditions: Unknown
- d. No bedrock conflicts
- e. No existing utility conflicts, repairs or upgrades are known.
- f. Maintenance costs are not included
- g. The cost estimate does not include fire and all risk insurance.
- h. The listed 5% construction cost contingency was based upon these assumptions and risks.

- i. Asphalt Pavement Overlay & Repair - grind existing asphalt to allow for an average 2" overlay of new asphalt pavement. Apply tack coat and install scratch intermediate course of 448 asphalt then install 2" 404 asphalt surface course material.

LANDSCAPE ARCHITECT:

SEAL

*Katherine Gluntz Holmok*

Signature  
Katherine Gluntz Holmok, ASLA



12/18/2015

Date



**PARKS GROUP**  
Akron, Ohio

Date: 12/18/2015  
 Project Title: **Collinwood Art District Key Bank Parking Lot Retrofit**  
 Project No. **Green Infrastructure Retrofit**  
 Description:  
 Conceptual Class 5  
 design qty. estimate

Prepared by:  
K. Holmok

Approved By:

PHASE DESCRIPTION: CONCEPTUAL PLANS (CLASS 5)		NO.	UNIT	UNIT	SUBTOTAL
Item #		UNITS	MEAS.	COSTS	COST
SPEC	Demo	1	LS	\$5,000.00	\$5,000.00
SPEC	SWPPP	1	LS	\$800.00	\$800.00
203	Excavation and Haul	117	CY	\$20.00	\$2,340.00
253	Asphalt Pavement Overlay & Repair	1,526	SY	\$22.50	\$34,335.00
604	Catch Basin Reconstructed to Grade	1	EA	\$750.00	\$750.00
SPEC	New Catch Basin	1	EA	\$2,500.00	\$2,500.00
604	Catch Basin Adjust to Grade	1	EA	\$800.00	\$800.00
SPEC	Concrete Sidewalk Repair	1	LS	\$800.00	\$800.00
SPEC	Solid Catch Basin Grate	2	EA	\$200.00	\$400.00
SPEC	Type 6 Curbing with Inlets	33	LF	\$27.00	\$891.00
SPEC	Downspout Disconnect (Closing Sewer Connections)	1	LS	\$400.00	\$400.00
SPEC	Downspout 12" PVC & Connections	50	LF	\$100.00	\$5,000.00
SPEC	Gutter 8" Aluminum Brown & Connections	43	LF	\$100.00	\$4,300.00
SPEC	ADA Signage & Striping	1	LS	\$300.00	\$300.00
SPEC	Striping	1	LS	\$800.00	\$800.00
SPEC	High velocity bioretention (focal point) -with underground storage	1	LS	\$18,500.00	\$18,500.00
SPEC	Topsoil (planted areas outside focal point)	11	CY	\$50.00	\$550.00
SPEC	Decorative Stone Mulch (outside focal point)	8	CY	\$60.00	\$480.00
605	4" PVC Underdrain with Overflow	68	LF	\$19.00	\$1,292.00
SPEC	4" Solid PVC Underdrain	4	LF	\$30.00	\$120.00
SPEC	Trees	3	EA	\$300.00	\$900.00
SPEC	Shrubs	10	EA	\$40.00	\$400.00
SPEC	Perennials	70	EA	\$16.00	\$1,120.00
SPEC	Art Installation at Gutters	1	LS	\$5,000.00	\$5,000.00
SPEC	Interpretive Sign	1	EA	\$800.00	\$800.00
	Modification of existing Engineering Design of GI, Specifications & Bidding Documents, Construction Administration	1	LS	\$4,200.00	\$4,200.00
	Geotech	1	LS	\$3,000.00	\$3,000.00
	Contingency (20%)				\$17,716.00
	Permits (\$15/\$1,000)	1	LS	\$1,702.41	\$1,703.00
<b>PROJECT COSTS SUBTOTAL</b>					<b>\$115,197.00</b>

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**ASSUMPTIONS**

- Cost estimates and ranges are developed to the Association for the Advancement of Cost Consulting International (AACE) Class 5 estimate level construction cost estimate.
- a. Construction cost estimates utilize ODOT 2014 prices, and local public bid prices for similar work. Unit costs include direct, indirect costs, contractor overhead and profit.
- b. Excavation and Haul: It is assumed that soil is clean fill. Phase I/II screening would have to occur on any non-roadway property prior to purchase/project.
- c. Assumed Soil Conditions: Unknown
- d. No bedrock conflicts
- e. No existing utility conflicts, repairs or upgrades are known.
- f. Maintenance costs are not included
- g. The cost estimate does not include fire and all risk insurance.
- h. The listed 20% construction cost contingency was based upon these assumptions and risks.
- k. Asphalt Pvement Overlay & Repair - grind existing asphalt to allow for an average 2" overlay of new asphalt pavement. Apply tack coat and install scratch intermediate course of 448 asphalt then install 2" 404 asphalt surface course material.

LANDSCAPE ARCHITECT:

SEAL

*Katherine Gluntz Holmok*

Signature  
Katherine Gluntz Holmok, ASLA



12/18/2015

Date



## GANGSTER GLAM!

Built in 1927, the Key bank building was part of the golden age of Cleveland. The bank vault still resides inside the brick building and will be transformed with the reuse of the property as a restaurant. Whether used as a seating area, bar or DJ booth, the vault will be a main focal point of the redevelopment. Bank vaults were often used as speakeasies during prohibition. Temperance members would often dispose of illegal alcohol in large public spectacles to educate the public on the negative health effects of the substance. This public art piece will also educate visitors in a public way. Downspouts will be routed to barrels which allow stormwater to flow onto the gravel and planted high velocity bioretention, that will be artfully shaped to represent Lake Erie and the Detroit River.

Downspouts will be routed to barrels which allow stormwater to flow onto the gravel and planted high velocity bioretention, that will be artfully shaped to represent Lake Erie and the Detroit River.



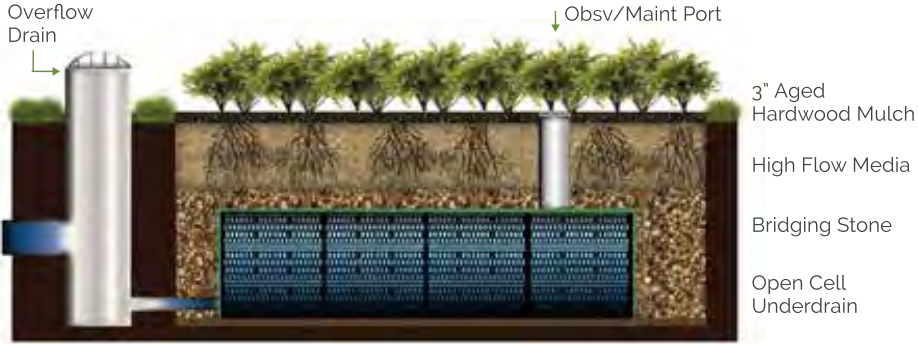
# KEY BANK PARKING LOT GREEN INFRASTRUCTURE

## HIGH VELOCITY BIORETENTION SYSTEM

December 21, 2015

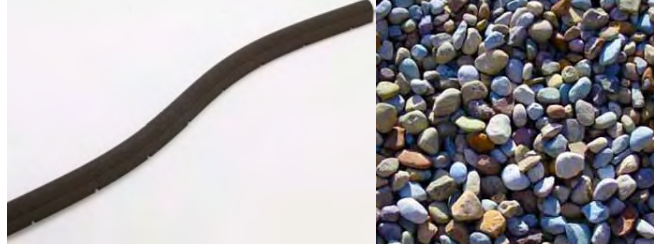
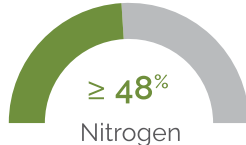
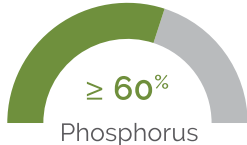






## Expanded Detention

Pollutant Removal Efficiency



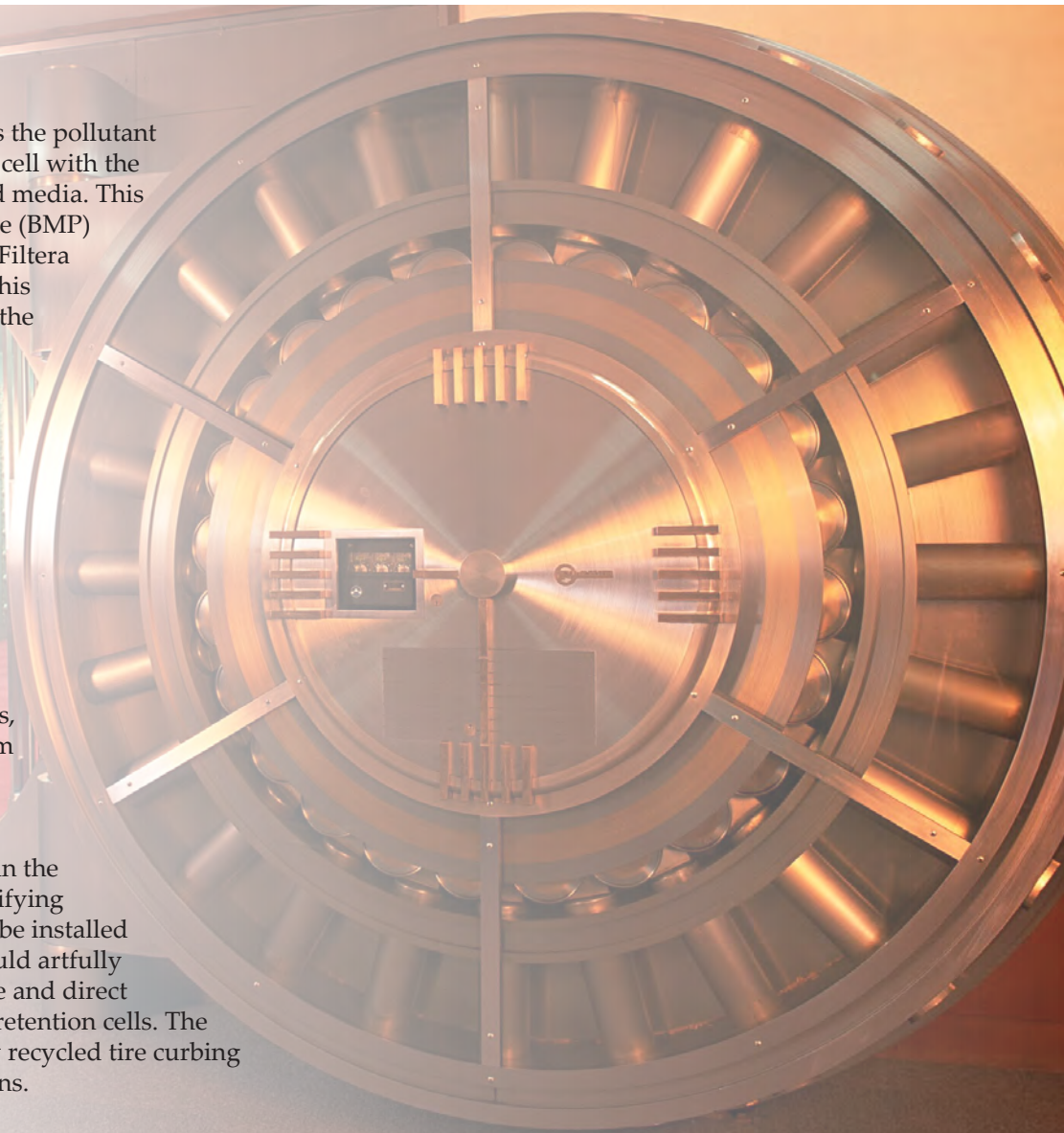
## CLEAN WATER!

A high velocity bioretention cell combines the pollutant removal qualities of a classic bioretention cell with the reliability of the high flow rate engineered media. This non-proprietary best management practice (BMP) is the same media as the TARP approved Filtera System - only without the concrete box! This enables a flexibility of design to integrate the new BMP into more complex, non linear projects.

At the heart of the BMP is a high performance engineered soil blend that utilizes physical, chemical and biological mechanisms of soils, plants and microbes to remove pollutants found in stormwater.

Below this hard working soil is the open cell underdrain and storage system. These R-Tanks, which look like milk crates, have an 85% void ratio enabling maximum underground storage and infiltration potential.

Above ground, sedges would be planted in the bioretention areas in an artful way - identifying the land around Lake Erie. Gravel would be installed in non-bioretention areas. This gravel would artfully illustrate Lake Erie, and would slow, store and direct stormwater towards the high velocity bioretention cells. The different materials would be separated by recycled tire curbing commonly used in playground installations.



# KEY BANK PARKING LOT GREEN INFRASTRUCTURE

December 21, 2015



HIGH VELOCITY BIORETENTION SYSTEM



 **LOCATION MAP  
NOTES**

# Northeast Shores Development Corp. Collinwood Arts District Key Green Parking Lot

**15619 WATERLOO ROAD  
CLEVELAND  
CUYAHOGA COUNTY, OHIO**

**100% REVIEW SET - January 16, 2013**

**Prepared for:  
Northeast Shores  
317 East 156th Street,  
Cleveland, Ohio 44110**

**PROJECT DESCRIPTION:**

THE INTENT OF THE PROJECT IS TO MODIFY AN EXISTING PARKING LOT WITH APPROXIMATELY 141 CUBIC YARDS OF ASPHALT PAVEMENT REPAIR ALONG WITH 137 SQUARE YARDS OF BIORETENTION, 43 LINEAR FEET OF NEW GUTTER, 50 LINEAR FEET OF DOWNSPOUT DIVERSION FROM EXISTING BUILDING, 15 SQUARE YARDS OF CONCRETE SIDEWALK REPAIR, AND LANDSCAPING.

**PREPARED BY:**

LANDSCAPE ARCHITECT  
URS CORPORATION  
KATHERINE GLUNTZ HOLMOK, ASLA #1045 OHIO  
1375 EUCLID AVENUE SUITE 600  
CLEVELAND, OH 44115-1808  
P 216.622.2400 F 216.622.2428  
E KATHERINE.HOLMOK@URS.COM



**DRAWING LIST**

- 0001 SHEET INDEX
- 0002 GENERAL NOTES
- 0003 GENERAL NOTES
- 0004 EXISTING CONDITIONS AND DEMOLITION PLAN
  
- 0005 LAYOUT PLAN
  
- 0006 DETAILS
- 0007 DETAILS
- 0008 DETAILS
- 0009 DETAILS
  
- 0010 STORMWATER POLLUTION PREVENTION PLAN NOTES
- 0011 STORMWATER POLLUTION PREVENTION PLAN NOTES
- 0012 STORMWATER POLLUTION PREVENTION PLAN
- 0013 LANDSCAPE PLAN
- 0014 LANDSCAPE DETAILS

UNDERGROUND UTILITIES  
2 WORKING DAYS  
BEFORE YOU DIG  
Call...800-362-2764 (Toll Free)  
OHIO UTILITIES PROTECTION SERVICE  
NON-MEMBERS  
MUST BE CALLED DIRECTLY



## GENERAL

### PROJECT OBJECTIVE

THE INTENT OF THE PROJECT IS TO MODIFY AN EXISTING PARKING LOT WITH APPROXIMATELY 141 CUBIC YARDS OF ASPHALT PAVEMENT REPAIR ALONG WITH 137 SQUARE YARDS OF BIORETENTION, 43 LINEAR FEET OF NEW GUTTER, 50 LINEAR FEET OF DOWNSPOUT DIVERSION FROM EXISTING BUILDING, 15 SQUARE YARDS OF CONCRETE SIDEWALK REPAIR, AND LANDSCAPING.

### ODOT SPECIFICATIONS

THE STANDARD CONSTRUCTION AND MATERIAL SPECIFICATIONS 2012 (CMS) OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT PROJECT, EXCEPT AS NOTED IN THIS SET OF DRAWINGS, WITHIN THE CONTRACT AND SPECIFICATION BOOK.

### REGULATIONS

ALL WORK MUST COMPLY WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS IN ALL RESPECTS, INCLUDING COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

DO NOT INTERFERE WITH THE OPERATION OF ANY FIRE HYDRANT, FIRE CALL BOX, OR POLICE CALL BOX.

### BASIS FOR DESIGN

IN THE PREPARATION OF THE WORKING DRAWINGS AND SPECIFICATIONS, NORTHEAST SHORES DEVELOPMENT CORP. HAS RELIED UPON THE SITE MAPPING PROVIDED BY BOCK AND CLARK SURVEYORS. IF THERE ARE ANY QUESTIONS REGARDING THE SURVEY, PLEASE CALL BOCK AND CLARK AT 1-800-SURVEYS.

### CONSTRUCTION COMMENCEMENT

THE CONTRACTOR SHALL NOT COMMENCE ANY FORM OF CONSTRUCTION WITHOUT CONTACTING THE OWNER AND THE OFFICE OF THE DIRECTOR OF ENGINEERING FROM THE CITY OF CLEVELAND TO CONFIRM ALL REQUIRED INSPECTION.

### SUBMITTALS/SPECIFICATIONS/CUT SHEETS

MANUFACTURERS SUBMITTALS/SPECIFICATIONS/CUT SHEETS FOR ALL CONSTRUCTION MATERIALS SHALL BE PROVIDED PRIOR TO THE START OF CONSTRUCTION.

### CONTRACTOR COORDINATION & PHASING

THE PERFORMANCE OF THIS CONTRACT WILL REQUIRE THE CONTRACTOR TO COORDINATE ALL ACTIVITY WITH THE NORTHEAST SHORES DEVELOPMENT CORP., CITY OF CLEVELAND, AND OTHER REGULATING AGENCIES, INCLUDING DEMOLITION AND CONCRETE WORK. NORTHEAST SHORES WILL BE PROCURING ALL PERMITS FOR THE PROJECT. CONTRACTOR TO COORDINATE ALL INSPECTIONS WITH NORTHEAST SHORES. CONTRACTOR TO REGISTER WITH THE CITY OF CLEVELAND FOR THE DURATION OF THE PROJECT. CONTRACTOR TO COORDINATE ALL WORK WITH THE WATERLOO ROAD STREET SCAPE PROJECT.

### PERMITTING

THE OWNER SHALL SUBMIT A NOTICE OF INTENT (N.O.I.) APPLICATION TO THE OHIO ENVIRONMENTAL PROTECTION AGENCY (E.P.A.) AND OBTAIN AUTHORIZATION FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (N.P.D.E.S.) OR THE LATEST FEDERAL, STATE AND/OR LOCAL REGULATIONS.

### CONTRACTOR ACKNOWLEDGEMENT

BY SUBMITTING A BID, THE CONTRACTOR ACKNOWLEDGES THAT HE/SHE HAS SATISFIED HIMSELF/HERSELF AS TO THE NATURE AND LOCATION OF THE WORK, THE GENERAL AND LOCAL CONDITIONS, PARTICULARLY THOSE BEARING UPON THE HANDLING OF MATERIALS, AVAILABILITY OF LABOR AND NECESSARY UTILITIES, THE UNCERTAINTIES OF WEATHER, GROUNDWATER TABLE OR SIMILAR CONDITIONS AT THE SITE, THE CONFORMATION AND CONDITIONS OF THE SOILS AND GROUND SURFACE, THE CHARACTER OF EQUIPMENT AND FACILITIES NEEDED PRIOR TO AND DURING THE PROSECUTION OF THE WORK, AND ALL OTHER MATTER WHICH CAN IN ANY WAY AFFECT THE WORK OR COST THEREOF UNDER THIS CONTRACT. ANY FAILURE OF THE CONTRACTOR TO ACQUAINT HIMSELF/HERSELF WITH THE AVAILABLE INFORMATION CONCERNING THE CONDITIONS WILL NOT RELIEVE HIM/HER FROM RESPONSIBILITY FOR ESTIMATING PROPERLY THE DIFFICULTY AND COST OF SUCCESSFULLY PERFORMING THE WORK.

### ACCESS TO PROJECT

ALL CONSTRUCTION ACCESS TO THE PROJECT SHALL BE FROM WATERLOO RD. AS SHOWN ON THE PLANS, UNLESS OTHERWISE DIRECTED BY THE OWNER OR LANDSCAPE ARCHITECT. CONTRACTOR TO PROVIDE ROAD, DRIVEWAY AND EMERGENCY VEHICLE ACCESS TO RESIDENTS AT ALL TIMES. AS SHOWN ON THE PLANS, CONTRACTOR TO PROVIDE TEMPORARY ACCESS AND BARRIERS AS SHOWN ON DRAWINGS AND AS PER CITY OF CLEVELAND CODE.

### CONSTRUCTION NOISE

ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, DO NOT OPERATE POWER-OPERATED CONSTRUCTION-TYPE DEVICES BETWEEN THE HOURS OF 7 PM AND 7 AM. IN ADDITION, DO NOT OPERATE AT ANY TIME ANY DEVICE IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARILY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT.

### WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE PEDESTRIAN CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

### PLANT TICKETS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PLANT TICKETS FOR ALL MATERIALS DELIVERED TO THE SITE. PLANT TICKETS MUST SHOW NET QUANTITY OF DELIVERED MATERIAL. MATERIAL DELIVERED OR PLACED WITHOUT PLANT TICKETS SHALL BE REMOVED AND PROPERLY DISPOSED AT THE EXPENSE OF THE CONTRACTOR.

### AFFIDAVIT

MANUFACTURERS OR SUPPLIERS AFFIDAVIT FOR ALL CONSTRUCTION MATERIALS SHALL BE PROVIDED PRIOR TO THE START OF CONSTRUCTION.

### UTILITIES

THE CONTRACTOR SHALL NOTIFY THE PROJECT LANDSCAPE ARCHITECT, THE OHIO UTILITIES PROTECTION SERVICE (OUPS), THE OHIO & GAS PROCEDURES UNDERGROUND PROTECTION SERVICE (OGPUPS), AND ALL NON REGISTERED UTILITY OWNERS AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN ALL AREAS

OUPS 1-800-362-2764 (CONTACT LIMITED BASIS PARTICIPANTS ONLY)  
OGPUPS 1-800-925-0988

ALL UTILITIES ON THE DRAWINGS ARE SHOWN AS PER DRAWINGS PROVIDED TO URS BY THE CITY OF CLEVELAND, OSBORNE ENGINEERING, BOCK AND CLARK AND NORTHEAST SHORES DEVELOPMENT CORP.. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONFIRMING LOCATION OF UTILITIES PRIOR TO CONSTRUCTION.

ALL UTILITIES AND APPURTENANCES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AND REINSTALLED IN ACCORDANCE WITH THE LATEST ODOT C.M.S. AND CITY OF CLEVELAND BUILDING CODES AT NO ADDITIONAL COST TO THE OWNER.

### DISTURBANCE TO EXISTING FEATURES

CONSTRUCTION MUST NOT DAMAGE TREES, OTHER DESIRABLE VEGETATION, AND PAVEMENT TO REMAIN IN THE PROJECT AREA .

CONTRACTOR TO MARK PROPOSED TREE PLANTING, RAINGARDEN AREAS, AND AVOID DISTURBANCE OR COMPACTION WITH CONSTRUCTION EQUIPMENT IN THESE AREAS. CONTRACTOR TO ALSO MARK OTHER CONSTRUCTION FEATURES AS NOTED IN PLANS.

ALL EXISTING APPURTENANCES (UTILITY POLES, VALVES, HYDRANTS, MANHOLES, ETC.) ARE TO BE MAINTAINED BY THE CONTRACTOR UNLESS OTHERWISE SHOWN ON THE PLANS.

### TREE REMOVAL & PRUNING

WHERE TREE REMOVAL OR PRUNING IS NECESSARY FOR CONSTRUCTION, NORTHEAST SHORES DEVELOPMENT CORP. SHALL BE NOTIFIED A MINIMUM OF FORTY EIGHT (48) HOURS PRIOR TO ANY TREE PRUNING OR REMOVAL. WHERE BRANCHES AND TRUNKS ARE DAMAGED, PROPER DRESSING SHALL BE APPLIED. IT SHALL BE PROPERLY DONE. ALL WORK SHALL BE IN ACCORDANCE WITH ODOT ITEM 661.14 AND/OR CITY OF CLEVELAND CODE.

### PROJECT KICKOFF MEETING

A PRECONSTRUCTION MEETING WITH THE CONTRACTOR AND REPRESENTATIVES FROM NORTHEAST SHORES DEVELOPMENT CORP. WILL OCCUR PRIOR TO ANY CONSTRUCTION ACTIVITY TO FAMILIARIZE CONTRACTOR WITH THE PLAN.

### BEGINNING CONSTRUCTION

THE CONTRACTOR WILL NOTIFY NORTHEAST SHORES DEVELOPMENT CORP. SEVENTY TWO (72) HOURS PRIOR TO BEGINNING ACTUAL CONSTRUCTION.

### CONSTRUCTION DEFECTS

ANY DEFECTS IN THE CONSTRUCTION, INCLUDING MATERIALS OR WORKMANSHIP, SHALL BE REPLACED OR CORRECTED BY REMOVAL AND REPLACEMENT OR OTHER OWNER APPROVED METHODS PRIOR TO ACCEPTANCE BY NORTHEAST SHORES DEVELOPMENT CORP. WITHOUT ANY EXTRA COST TO NORTHEAST SHORES DEVELOPMENT CORP..

### CONSTRUCTION DOCUMENTS

THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONSTRUCTION DRAWINGS, SPECIFICATIONS, AND PREVAILING WAGE RATES PREPARED BY NORTHEAST SHORES DEVELOPMENT CORP. ON SITE AND SHALL RECORD ON THESE DRAWINGS THE EXACT LOCATION OF ALL SERVICE CONNECTIONS ONSITE INSTALLED AS PART OF PROJECT.

### EACH WORK DAY

NO TRENCH SHALL BE LEFT OPEN OVERNIGHT, EXCEPT FOR A LENGTH NOT EXCEEDING 2 FEET, WHICH SHALL BE COVERED OVERNIGHT BY A TARP AND BLOCKED BY TEMPORARY CONSTRUCTION FENCING, AT ALL SIDES OF THE TRENCH. IN CASE WORK MUST BE SUSPENDED BECAUSE OF INCLEMENT WEATHER OR OTHER REASONS, THE UNCOMPLETED TRENCH SHALL BE TEMPORARILY BACKFILLED AT THE DIRECTION OF THE LANDSCAPE ARCHITECT WITHOUT ANY EXTRA COST TO THE OWNER.

### TRAFFIC CONTROL

ANY TRAFFIC CONTROL REQUESTED OR REQUIRED BY THE CONTRACTOR WILL BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE OWNER.

### CLEAN-UP

AT THE CONCLUSION OF CONSTRUCTION, THE CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND MATERIALS RESULTING FROM CONSTRUCTION AND SHALL RESTORE ALL SURFACES, STRUCTURES, LANDSCAPE, AND PROPERTY TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE OWNER.

THE CONTRACTOR SHALL CLEAN THE PROJECT AREA AT THE END OF EACH DAY FOR THE DURATION OF THE PROJECT. ALL ADJOINING ROADWAYS SHALL BE FREE OF DIRT, MUD AND DEBRIS.

### PROPOSED CHANGES

ALL CONTRACTOR PROPOSED CHANGES TO APPROVED DRAWINGS AND/OR SPECIFICATIONS MUST BE PREAPPROVED BY THE OWNER/ENGINEER PRIOR TO CONSTRUCTION.

### PAVING MATERIAL

ALL PAVING MATERIAL MUST BE PROVIDED BY ODOT CERTIFIED SUPPLIER. WRITTEN PROOF SHALL BE REQUIRED UPON DELIVERY OF MATERIALS. THE CERTIFIED MIX DESIGN MUST BE SUBMITTED TO, AND APPROVED BY, THE OWNER PRIOR TO SCHEDULING A PRE-CONSTRUCTION MEETING.

### WORK SCHEDULE CHANGE

IF ANY CHANGE IN THE WORK SCHEDULE BECOMES NECESSARY, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE INSPECTOR TO AVOID UNNECESSARY INSPECTION COSTS. IF NO NOTIFICATION IS MADE WITH REGARD TO CANCELLATION OF WORK, THE CONTRACTOR WILL BE CHARGED FOR THE INSPECTION TIME INCURRED.

### CONSTRUCTION ACTIVITIES

THE CONTRACTOR SHALL CONFINE HIS ACTIVITIES TO THE PROJECT SITE UNDER DEVELOPMENT, THE EXISTING RIGHT-OF-WAYS CONSTRUCTION AND PERMANENT EASEMENTS AND SHALL NOT TRESPASS UPON OTHER PROPERTY WITHOUT THE WRITTEN CONSENT OF THE OWNER/CONSTRUCTION MANAGER.

### UTILITIES AND STRUCTURES SHOWN ON THE PLANS

THE LOCATION OF EXISTING UTILITIES AND STRUCTURES ARE SHOWN ON THE PLANS FROM DATA AVAILABLE AT THE TIME OF SURVEY AND ARE NOT NECESSARILY COMPLETE. DETERMINATION OF THE SAME SHALL BE RESPONSIBILITY OF THE CONTRACTOR. DURING CONSTRUCTION THE CONTRACTOR SHALL USE DUE DILIGENCE IN PROTECTING FROM DAMAGE ALL EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR RESTORATION OF SAME IN ACCORDANCE WITH THE DIRECTIONS OF THE ENGINEER AND OF ANY RESULTING CONTINGENT DAMAGE.

### SAFETY OF CONSTRUCTION

COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT (LATEST) IS REQUIRED OF ALL CONTRACTORS ON THIS PROJECT

### CONFLICT

WHERE CONFLICT ARISES BETWEEN ALL SPECIFICATIONS (BOOK OR PLAN BASED) INCLUDING CITY REQUIREMENTS, THE MORE CONSERVATIVE SPECIFICATION SHALL PREVAIL.

### FINAL CLEANUP

THE CONTRACTOR SHALL CLEAN-UP ALL DEBRIS AND MATERIALS RESULTING FROM CONSTRUCTION AND SHALL RESTORE ALL SURFACES, STRUCTURES, DITCHES AND PROPERTY TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE OWNER AND ALL APPLICABLE GOVERNMENTAL AND SITE REGULATORY AGENCIES.

## SITE

### ITEM 203 – EXCAVATION AND HAUL

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIALS TO PERFORM EXCAVATION AND FINISH GRADING AS SHOWN ON PLAN AND IN CONFORMANCE WITH ODOT CMS 203 AND DRAWINGS. BIOSWALE AND INFILTRATION BASIN EXCAVATION WILL NOT BE COMPACTED AND SUBBASE WILL BE SCARIFIED.

CONTRACTOR SHALL USE EXCAVATED MATERIALS IN THE WORK AREA WHEN MATERIALS CONFORM TO SPECIFICATIONS. IF NOT THAN RECYCLE OR DISPOSE OF MATERIAL ACCORDING TO ODOT 105.16 AND 105.17, CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE PROJECT AREA IN A FREE DRAINING CONDITION AT ALL TIMES. AFTER EXCAVATION AND PART OF THIS ITEM, THE CONTRACTOR SHALL MEET FINISHED GRADES AND COMPACTION IN ACCORDANCE WITH THE PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 203, EXCAVATION AND HAUL, CY. OVERALL CONTRACT IS LUMP SUM.*

## PAVEMENT

### ITEM SPECIAL, CONCRETE CURB INLETS

CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS TO CONSTRUCT CURBING WITH CONCRETE CURB INLETS AS PER PLAN, DETAILS, AND IN CONFORMANCE WITH ODOT ITEM 609. ITEM INCLUDES CONCRETE, FORMING AND AGGREGATE BASE. THIS ITEM ALSO INCLUDES ANY REPAIR TO THE EXISTING CURB THAT WILL REMAIN, AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, CONCRETE CURB INLETS, EACH. OVERALL CONTRACT IS LUMP SUM.*

### ITEM 253 – ASPHALT REPAIR

CONTRACTOR IS TO FURNISH ALL EQUIPMENT, LABOR, AND MATERIAL NECESSARY TO REPAIR ASPHALT AS NEEDED AND AS DIRECTED BY ENGINEER AND IN CONFORMANCE WITH ODOT ITEM 253. THIS INCLUDES REGRADING SUBGRADE, IMPORTATION OF ODOT ITEM 304 AS NECESSARY TO ACHIEVE GRADE, TACK COAT, PRIME COAT & SEALER AS NEEDED, AND SUBGRADE COMPACTION.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 253, ASPHALT REPAIR, SY. OVERALL CONTRACT IS LUMP SUM.*

### ITEM SPECIAL – TYPE 6 CURB

CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS TO CONSTRUCT CONCRETE TYPE 6 CURB AS PER PLAN, DETAILS, AND IN CONFORMANCE WITH ODOT ITEM 609. ITEM INCLUDES CONCRETE, FORMING AND AGGREGATE BASE, AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, TYPE 6 CURB, LF. OVERALL CONTRACT IS LUMP SUM.*

### ITEM 255 – CONCRETE SIDEWALK REPAIR

CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS TO PERFORM CONCRETE SIDEWALK REPAIR AS PER PLAN, DETAILS, AND IN CONFORMANCE WITH ODOT ITEM 255. ITEM INCLUDES FULL DEPTH CONCRETE REMOVAL AND REPLACEMENT, FORMING AND ADDITIONAL AGGREGATE BASE AS NEEDED, AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 255, CONCRETE SIDEWALK REPAIR, SY. OVERALL CONTRACT IS LUMP SUM.*

ISSUED FOR BIDDING		DATE	BY
ADDENDUM REVISIONS			
ADDENDUM NO	ADDENDUM DATE	BY	

ISSUED FOR CONSTRUCTION		DATE	BY
CONSTRUCTION REVISIONS			
NO.	DESCRIPTION	DATE	BY

RECORD DRAWINGS		DATE	BY

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JOB NO	13816154
SCALE	

GRAPHIC SCALE

## GENERAL NOTES

COLLINWOOD ARTS  
DISTRICT  
KEY  
GREEN PARKING LOT

# 0002

**DRAINAGE**

CONSTRUCTION STANDARDS FOR STORM SEWERS

ALL SEWER CONSTRUCTION SHALL CONFORM TO ODOT ITEM 603, CITY OF CLEVELAND, NEORS, AND WITH THE SPECIFIC PROVISIONS INCLUDED HEREIN. ALL DRAINAGE PIPES TO BE PVC AS PER THE PLANS.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE OWNER, REPRESENTATIVES OF THE OWNER AND THE CONTRACTOR SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE CONTRACTOR.

ALL NEW CONDUITS AND INLETS CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE OF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE OWNER.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNERS REPRESENTATIVE.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE OVERALL CONTRACT PRICE.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE OWNERS REPRESENTATIVE SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE OWNER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE.

ITEM 605 – 4" UNDERDRAINS

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL 4" UNDERDRAINS AS PER PLAN, DETAILS, AND IN CONFORMANCE WITH ODOT ITEM 605. ITEM INCLUDES GRAVEL AND FORMING..

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 605, 4" UNDERDRAINS, LF. OVERALL CONTRACT IS LUMP SUM.*

ITEM 202 – CATCH BASIN ABANDON

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO ABANDON EXISTING CATCH BASIN AS PER PLAN, DETAILS, AND IN CONFORMANCE WITH ODOT ITEM 202.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 202, CATCH BASIN ABANDON, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM 604 – CATCH BASIN ADJUSTED TO GRADE

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO ADJUST EXISTING CATCH BASINS TO PROPOSED GRADES AS PER PLAN, DETAILS, AND IN CONFORMANCE WITH ODOT ITEM 604.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 604, CATCH BASIN ADJUSTED TO GRADE, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM 604 – CATCH BASIN & SANITARY MANHOLE MODIFICATION AND ADJUST TO GRADE

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO ADJUST OR MODIFY EXISTING CATCH BASINS AND/OR SANITARY MANHOLES TO PROPOSED GRADES AS PER PLAN, DETAILS, AND IN CONFORMANCE WITH ODOT ITEM 604.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 604, CATCH BASIN & SANITARY MANHOLE MODIFICATION AND ADJUST TO GRADE, EA. OVERALL CONTRACT IS LUMP SUM.*

**LANDSCAPING**

ITEM SPECIAL – HARDWOOD MULCH

CONTRACTOR IS TO FURNISH ALL EQUIPMENT, MATERIAL, AND LABOR TO FURNISH AND PLACE HARDWOOD MULCH IN CONFORMANCE WITH ODOT CMS 661 AND AS SHOWN ON PLANS. MULCH SHALL BE FINE, DOUBLE SHREDDED ORGANIC HARDWOOD, FREE OF WEED SEEDS, ROOTS, OR ANY OTHER SUBSTANCE NOT CONSISTING OF EITHER HOLE OR BRANCH WOOD AND BARK. THE MULCH SHALL BE UNIFORMLY APPLIED IN 3 INCH DEPTH IN AREAS SHOWN ON PLANS. DO NOT FERTILIZE.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, HARDWOOD MULCH, CY. OVERALL CONTRACT IS LUMP SUM.*

ITEM SPECIAL – BIORETENTION AREA

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL BIORETENTION AREAS AS SHOWN IN PLAN.

ITEM INCLUDES MATERIAL AND INSTALLATION OF: BIOSWALE SOIL, WEED BARRIER MAT, FILTER FABRIC, UNDERDRAINS AND CONNECTORS, CONNECTION TO CATCH BASINS, OVERFLOW PIPES, MODIFICATION TO CATCH BASIN GRADE, DECORATIVE STONE MULCH, AND WASHED #57 STONE.

BIOSWALE SOIL SHALL HAVE THE FOLLOWING ATTRIBUTES (UNLESS EXISTING SOIL IS APPROVED FOR REUSE BY LANDSCAPE ARCHITECT):

- \* TEXTURE CLASS: SANDY LOAM OR LOAMY SAND. HAVING NO LESS THAN 72% SAND AND NO GREATER THAN 10% CLAY CONSIDERING ONLY THE MINERAL FRACTION OF THE SOIL.
- \* CONTRACTOR SHALL SUBMIT BIOSWALE SOIL SAMPLE OR PRODUCT SHEET FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

WEED BARRIER MAT SHALL BE BLACK, NON WOVEN, GEOTEXTILE FABRIC WHICH IS UV STABILIZED, PERMEABLE TO AIR AND WATER, AND A MINIMUM WEIGHT OF 2 OZ/SQ YD. WEED MAT SHALL PROVIDE WEED CONTROL AND BE GUARANTEED BY MANUFACTURER TO LAST FOR 15 YEARS IN EXPOSED CONDITIONS. WEED MAT SHALL BE STAPLED TO SOIL AS PER MANUFACTURER'S DIRECTIONS, WITH MULCH PLACED ON TOP OF WEED MAT.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, BIORETENTION AREA, SF. OVERALL CONTRACT IS LUMP SUM.*

ITEM 651 – DECIDUOUS TREE, AS PER PLAN

CONTRACTOR IS TO FURNISH ALL EQUIPMENT, MATERIAL, AND LABOR TO FURNISH AND PLACE DECIDUOUS TREES LISTED IN CONFORMANCE WITH ODOT CMS 651 AND AS PER PLAN. THIS INCLUDES SOIL BACKFILL AND TREE STABILIZATION.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 651, DECIDUOUS TREE, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM 651 – SHRUBS

CONTRACTOR IS TO FURNISH ALL EQUIPMENT, MATERIAL, AND LABOR TO FURNISH AND PLACE SHRUBS LISTED IN CONFORMANCE WITH ODOT CMS 651 AND AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 651, SHRUBS, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM 651 – PERENNIALS

CONTRACTOR IS TO FURNISH ALL EQUIPMENT, MATERIAL, AND LABOR TO FURNISH AND PLACE PERENNIALS LISTED IN CONFORMANCE WITH ODOT CMS 651 AND AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 651, PERENNIALS, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM 651 – BULBS

CONTRACTOR IS TO FURNISH ALL EQUIPMENT, MATERIAL, AND LABOR TO FURNISH AND PLACE BULBS LISTED IN CONFORMANCE WITH ODOT CMS 651 AND AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 651, BULBS, EA. OVERALL CONTRACT IS LUMP SUM.*

**MISCELLANEOUS**

ITEM 642 – PARKING LOT MARKING

CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS NEEDED TO STRIPE PARKING STALLS INCLUDING HANDICAP STRIPING, HANDICAP SYMBOLS AND NO PARKING AREAS, AS PER PLAN AND IN CONFORMANCE WITH ODOT ITEM 640, TYPE 1.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM 642, PARKING LOT MARKING, LUMP SUM. OVERALL CONTRACT IS LUMP SUM.*

ITEM SPECIAL – ADA SIGN

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL ADA SIGNS AND POSTS AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, ADA SIGN, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM SPECIAL – CONCRETE CURB STOP

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL CONCRETE CURB STOPS AS PER PLAN.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, ADA SIGN, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM SPECIAL – FENCE ENCLOSURE & GATE

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL FENCE ENCLOSURE & GATE AS PER PLAN AND DETAILS. ITEM INCLUDES, FENCE BOARDS, AND GATE APPURTENANCES.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, FENCE ENCLOSURE & GATE, LS. OVERALL CONTRACT IS LUMP SUM.*

ITEM SPECIAL – BOLLARD SLEEVE

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL BOLLARD SLEEVES AS PER PLAN AND DETAILS. ITEM INCLUDES, BOLLARD SLEEVE, AND APPURTENANCES.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, BOLLARD SLEEVE, EA. OVERALL CONTRACT IS LUMP SUM.*

ITEM SPECIAL – BUILDING DOWNSPOUT AND GUTTER

CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO INSTALL NEW BUILDING DOWNSPOUT AND GUTTER AS PER PLAN AND DETAILS. ITEM INCLUDES, EXISTING GUTTER AND DOWNSPOUT REMOVAL, NEW GUTTER AND DOWNSPOUT AND ATTACHMENT APPURTENANCES.

UNIT PRICE FOR ADDITIONS AND DELETIONS WILL BE BASED UPON THE ABOVE WORK DETAIL AND DRAWINGS FOR

*ITEM SPECIAL, BUILDING DOWNSPOUT AND GUTTER, LF. OVERALL CONTRACT IS LUMP SUM.*



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ADDENDUM REVISIONS

ADDENDUM NO	ADDENDUM DATE	BY

ISSUED FOR CONSTRUCTION \_\_\_\_\_ DATE \_\_\_\_\_ BY \_\_\_\_\_

CONSTRUCTION REVISIONS

NO.	DESCRIPTION	DATE	BY

RECORD DRAWINGS \_\_\_\_\_ DATE \_\_\_\_\_ BY \_\_\_\_\_

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JOB NO 13816154

SCALE

GRAPHIC SCALE

**GENERAL NOTES**

COLLINWOOD ARTS  
DISTRICT  
KEY  
GREEN PARKING LOT

**0003**





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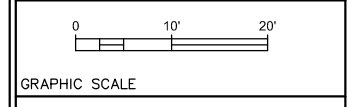
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CONSTRUCTION REVISIONS			
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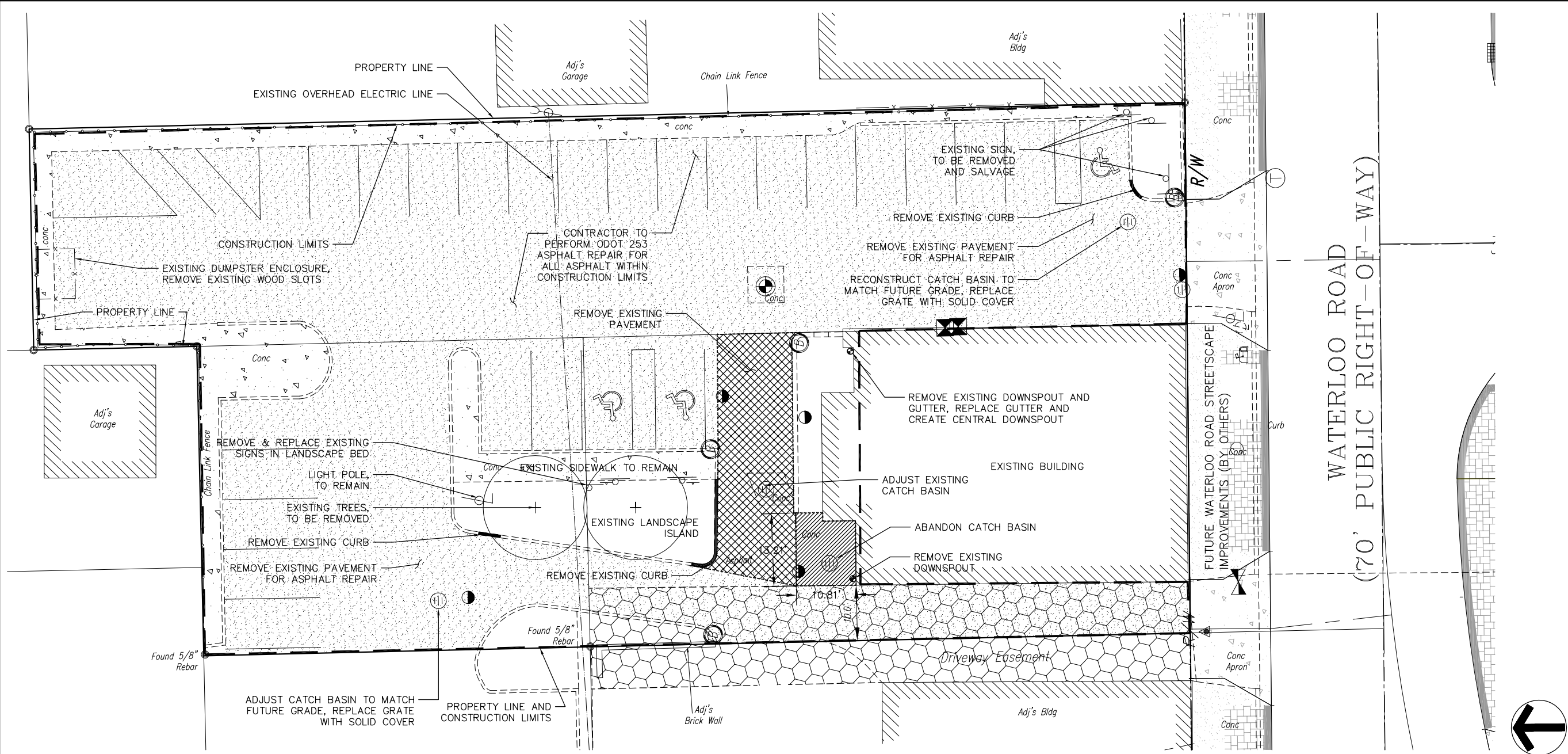
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 JOB NO 13816154  
 SCALE 1" = 10'



**EXISTING CONDITIONS AND DEMOLITION PLAN**

COLLINWOOD ARTS DISTRICT  
 KEY  
 GREEN PARKING LOT

**0004**



1 EXISTING CONDITIONS AND DEMOLITION PLAN  
 1" = 10'-0"

**GENERAL NOTES:**

THIS WORK CONSISTS OF THE MAINTENANCE OF TRAFFIC AND THE PROTECTION OF THE TRAVELING PUBLIC APPROACHING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF CONSTRUCTION.

- A) FURNISH, ERECT, PLACE AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES AND MAINTAIN TRAFFIC DURING THE HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES IN ACCORDANCE WITH THE METHODS INDICATED ON THESE DRAWINGS AND:
  - 1) THE SPECIAL PROVISIONS OF THE CONTRACT
  - 2) ODOT CMS 2012 SPECIFICATIONS
  - 3) CITY OF CLEVELAND
  - 4) U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2003 EDITION AND ALL SUPPLEMENTS APPLICABLE TO THE WORK DATED TO THE DATE OF ADVERTISEMENT.

B) UNLESS OTHERWISE NOTED AND EXCEPT FOR REGULATORY SIGNS, (SERIES R), ALL SIGNS HAVE A NON-REFLECTORIZED BLACK LEGEND AND RETRO-REFLECTIVE ORANGE BACKGROUND.

C) MOUNTING OF ALL SIGNS AND BARRICADES SHALL BE IN ACCORDANCE WITH ODOT CMS 2010 AND AS PER CITY OF CLEVELAND CODES.

D) REMOVE ALL EXISTING SIGNS AS REQUIRED TO ACCOMMODATE CONSTRUCTION OPERATIONS. REINSTALL THESE SIGNS AT THE COMPLETION OF THE PROJECT AND/OR AS DIRECTED BY THE LANDSCAPE ARCHITECT.

E) THIS TRAFFIC CONTROL PLAN DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR TRAFFIC CONTROL AS PER ODOT CMS 2010 AND CITY OF CLEVELAND CODES.

F) NOTIFY NORTHEAST SHORES DEVELOPMENT CORP. TEN (10) DAYS IN ADVANCE OF DRIVEWAY RESTRICTIONS SO NORTHEAST SHORES DEVELOPMENT CORP. STAFF CAN NOTIFY PROPERTY OWNERS AFFECTED BY WORK. COORDINATE LOCATION OF ANY TRAFFIC CONTROL DEVICES LOCATED WITHIN THEIR DRIVEWAYS WITH NORTHEAST SHORES DEVELOPMENT CORP.

G) PROVIDE SUFFICIENT NUMBER OF PROPERLY ATTIRED FLAGGERS (VEST, HARD HAT, ETC) TO ADEQUATELY CONTROL TRAFFIC FLOW THROUGH

THE WORK ZONE AS REQUIRED BY THE CITY OF CLEVELAND, WHICH INCLUDES ANY INTERSECTING STREETS IN THE WORK ZONE AND AS DIRECTED.

H) LIMIT ANY LANE CLOSURE TO THE LENGTH NECESSARY TO SAFELY PERFORM THE REQUIRED WORK. AT NO TIME SHALL COMPLETE STREET CLOSURE BE INSTITUTED.

I) AT THE END OF EACH WORKDAY AND WHENEVER PRACTICAL DURING THE WORKDAY, EQUIPMENT, VEHICLES AND MATERIALS SHALL BE STORED A MINIMUM OF 10 FEET FROM THE EDGE OF THE NEAREST OPEN TRAVEL LANE OR THEY SHALL BE ADEQUATELY STORED WITHIN THE CONSTRUCTION LIMITS. IF EQUIPMENT, VEHICLES AND MATERIALS CANNOT BE STORED AS DESCRIBED ABOVE, OR IF THESE ITEMS ARE PLACED FOR USE ON OR NEAR THE ROADWAY WITHIN THE WORK ZONE, BARRICADED, DRUMS OR OTHER PROTECTIVE DEVICES SHALL BE PLACED AROUND THE EQUIPMENT, VEHICLES AND STORAGE SITE TO WARN AND PROTECT THE TRAVELING PUBLIC.

J) DO NOT ALLOW EMPLOYEES TO PARK THEIR PERSONAL VEHICLES ON ANY TRAVEL LANE, SHOULDER, OR SEEDED AREA ALONG THE

**ROADWAY.**

K) IMMEDIATELY UPON COMPLETION OF THE WORK, REMOVE THE MAINTENANCE OF TRAFFIC DEVICES.

L) ALL WORKERS SHALL WEAR THE YELLOW/GREEN ANS 11 VESTS.

M) NOTIFY THE CITY OF CLEVELAND ENGINEERING DEPARTMENT AND OWNER TEN (10) DAYS IN ADVANCE OF ANY SIGNAGE INTENDED TO BE PLACED.

N) MAINTAIN A MINIMUM OF TWO 10-FOOT TRAVEL LANES ON ALL STREETS AT ALL TIMES, EXCEPT THAT TWO 8-FOOT LANES MAY BE MAINTAINED IF ONGOING CONSTRUCTION OPERATIONS REQUIRE IT. A SINGLE 11-FOOT LANE MAY BE MAINTAINED USING FLAGGERS IN ACCORDANCE WITH ODOT CMS 2012 AND CITY OF CLEVELAND CODE.

O) NOTIFY CITY OF CLEVELAND PRIOR TO CONSTRUCTION. CITY OF CLEVELAND TO PROVIDE CONSTRUCTION/PERMIT APPROVAL OF ALL WORK.

P) CONTRACTOR SHALL NOT DISTURB OPERATION AND ACCESS TO EXISTING BILLBOARD.

**DEMOLITION NOTES:**

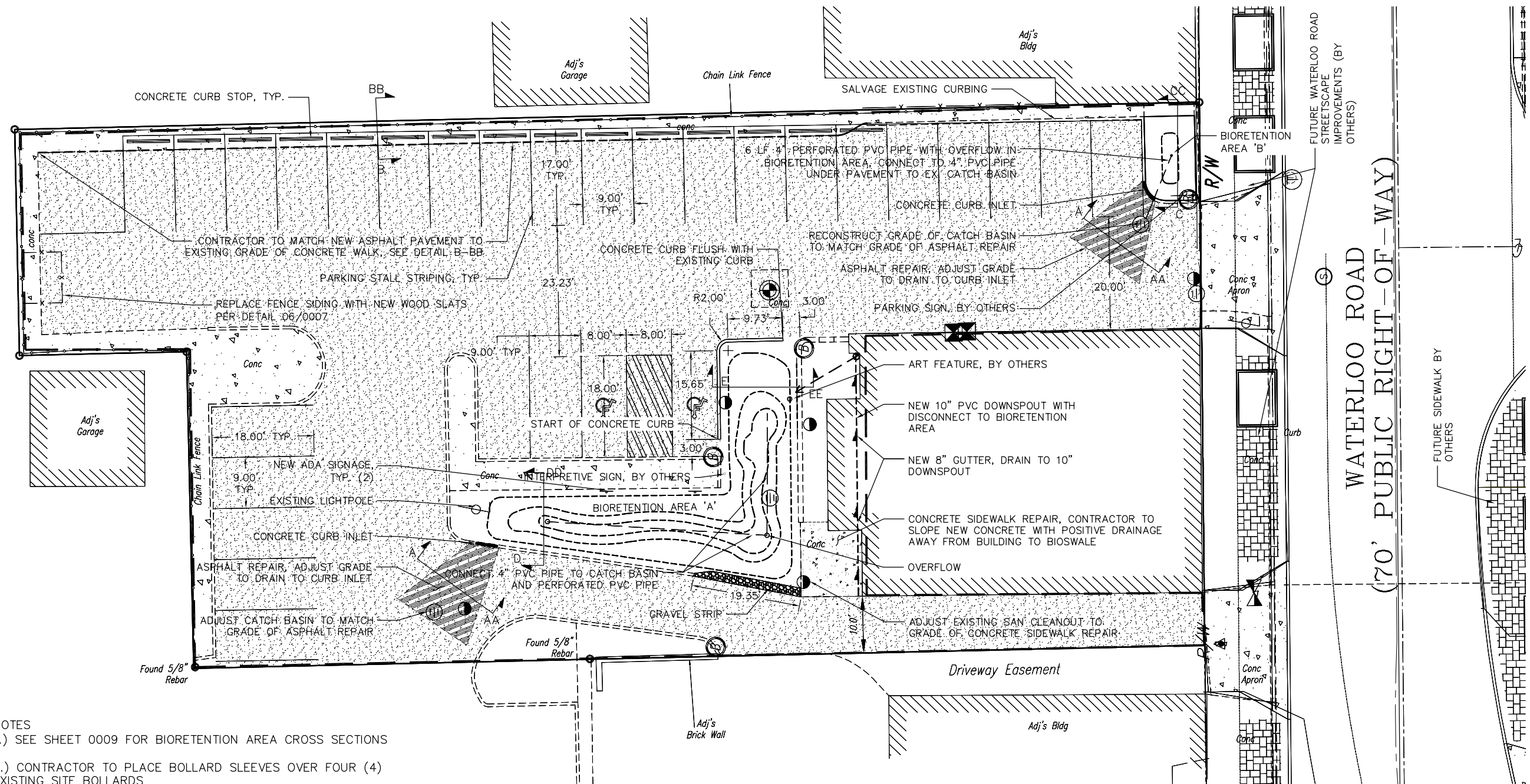
1. EXISTING CURBS ARE TO REMAIN ASIDE FROM WHERE CURB REMOVAL IS NOTED

2. CONTRACTOR TO REMOVE AND REPAIR ALL ASPHALT SURFACE WITHIN THE CONSTRUCTION LIMITS

3. REFER TO SHEET 0005 FOR SPECIFIED PAVEMENT AREAS TO BE REGRADED FOR DESIRED DRAINAGE

**LEGEND**

- FOUND IRON PIN
- ⊙ BOLLARD
- ⊙ LIGHT POLE
- ⊙ UTILITY POLE
- ⊙ SIGN POST
- ⊙ DOWNSPOUT
- ⊙ CATCH BASIN
- ⊙ STORM MANHOLE
- ⊙ SANITARY CLEANOUT
- ⊙ ELECTRIC METER
- ⊙ GAS VALVE
- PROPERTY LINE
- FENCE
- CONSTRUCTION LIMITS
- ⊙ EXISTING DRIVEWAY EASEMENT
- ⊙ EXISTING CONCRETE PAVEMENT
- ⊙ EXISTING ASPHALT PAVEMENT REPAIR
- ⊙ REMOVE EXISTING PAVEMENT
- ⊙ REMOVE EXISTING CONCRETE PAVEMENT



WATERLOO ROAD  
(70' PUBLIC RIGHT-OF-WAY)

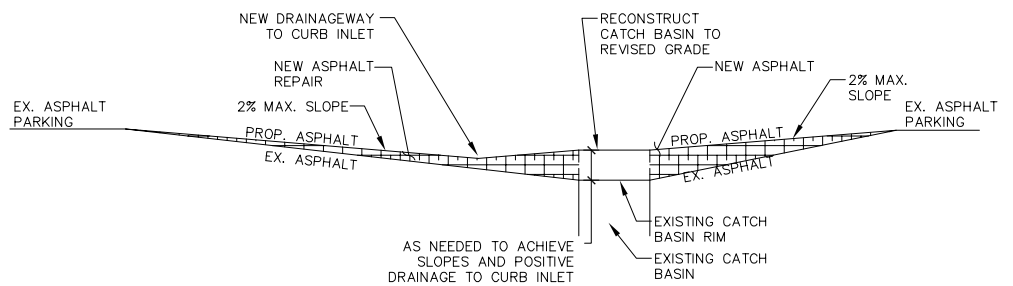
- NOTES
- SEE SHEET 0009 FOR BIORETENTION AREA CROSS SECTIONS
  - CONTRACTOR TO PLACE BOLLARD SLEEVES OVER FOUR (4) EXISTING SITE BOLLARDS

2 ADA PARKING STALLS  
27 PARKING STALLS  
29 TOTAL PARKING STALLS

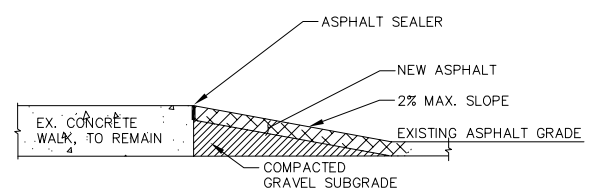
EXISTING CONDITIONS IMPERVIOUS SURFACE  
2918 SF BUILDING  
14352 SF PARKING SURFACE/WALKWAYS

PROPOSED CONDITIONS IMPERVIOUS SURFACE  
13727 SF PARKING SURFACE

17270 SF TOTAL EXISTING IMPERVIOUS SURFACE  
16645 SF TOTAL PROPOSED IMPERVIOUS SURFACE



1 ASPHALT REPAIR SECTION A-AA NTS



2 ASPHALT REPAIR SECTION B-BB NTS

LEGEND

- FOUND IRON PIN
- ⊕ BOLLARD
- ⊙ LIGHT POLE
- ⊙ UTILITY POLE
- ⊙ SIGN POST
- ⊙ DOWNSPOUT
- ⊕ CATCH BASIN
- ⊕ STORM MANHOLE
- ⊕ SANITARY CLEANOUT
- ⊕ ELECTRIC METER
- ⊕ GAS VALVE
- PROPERTY LINE
- FENCE
- CONSTRUCTION LIMITS

ISSUED FOR BIDDING

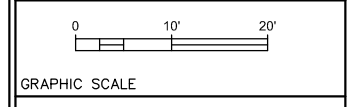
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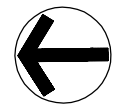
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JOB NO 13816154  
SCALE 1" = 10'



LAYOUT PLAN

COLLINWOOD ARTS  
DISTRICT  
KEY  
GREEN PARKING LOT

0005

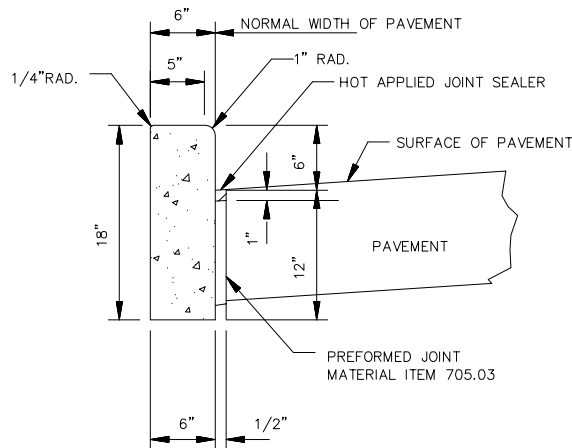




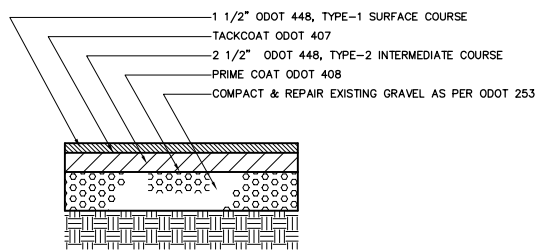
NOTES:

1. 1" EXPANSION JOINTS SHALL EXTEND UP TO THE TOP OF THE CURB AND SHALL BE CONSTRUCTED IN THE CURB AND GUTTER SECTION IN SUCH A MANNER THAT THE JOINT SEAL WILL EXTEND THE FULL WIDTH OF THE GUTTER AND INTO THE CURB FACE A SUFFICIENT DISTANCE TO SEAL THE JOINT TO AN ELEVATION OF AT LEAST 2" ABOVE THE FLOW LINE OF THE GUTTER. DOWEL BARS SHALL BE USED IN THE SURFACE OF THE PAVEMENT. TRANSVERSE EXPANSION JOINT MATERIAL SHALL MEET THE REQUIREMENTS OF ITEM 705.03.

2. EXPANSION JOINT MATERIAL AND JOINT SEALER ARE NOT REQUIRED FOR THE PORTION OF THE CURB THAT IS ADJACENT TO A FLEXIBLE PAVEMENT TYPE. BOTH MATERIALS ARE REQUIRED, AS DETAILED, FOR THE FULL HEIGHT OF RIGID PAVEMENT AND CONCRETE BASES.

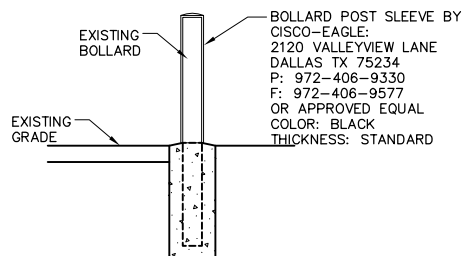


1 TYPE 6 CONC. CURB  
NTS



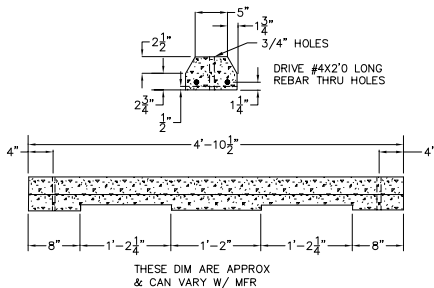
NOTE: ADD #304 MATERIAL AS NECESSARY TO ACHIEVE PROPOSED FREE FLOWING DRAINAGE AS SHOWN ON PLANS

4 ASPHALT REPAIR PAVEMENT SECTION  
NTS

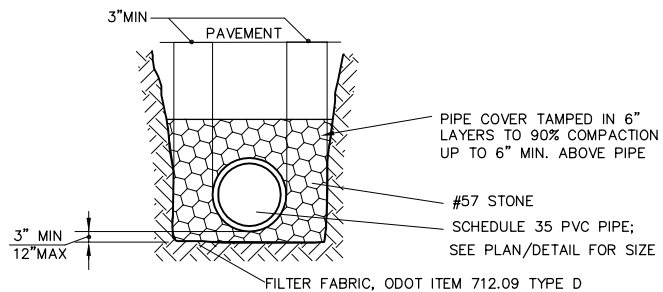


NOTES: BOLLARD SLEEVES ARE TO FIT TIGHTLY TO EXISTING BOLLARD DIAMETER. CONTRACTOR TO INSTALL AS PER MANUFACTURERS INSTALLATION SPECIFICATIONS

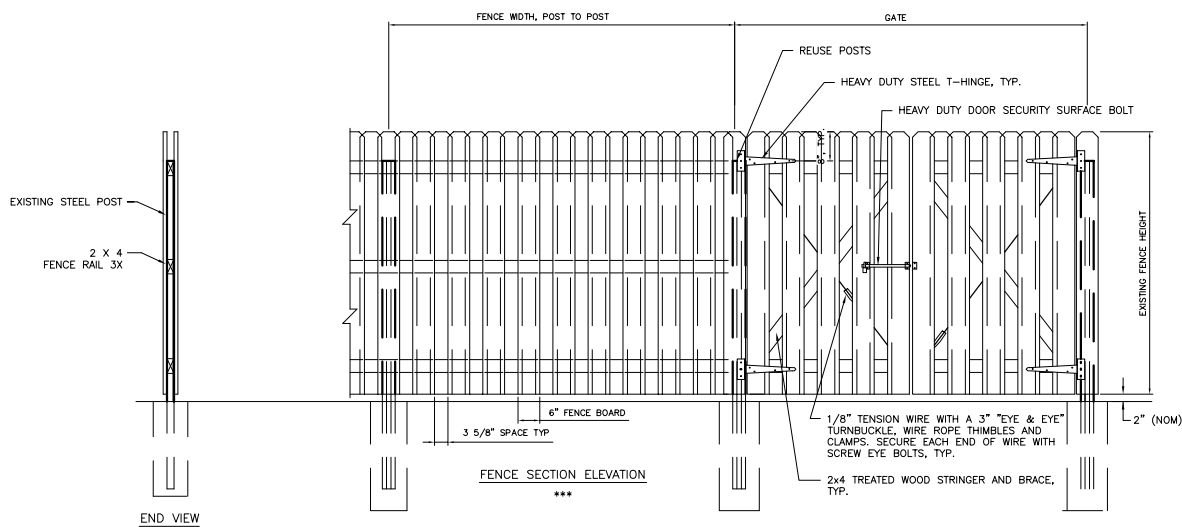
5 BOLLARD SLEEVE  
NTS



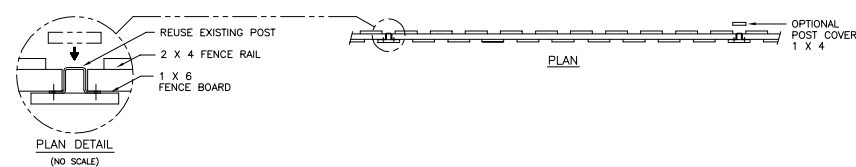
2 CONCRETE CURB STOP  
NTS



3 UNDERDRAINAGE PIPE DETAIL  
NTS



NOTES:  
1. WOOD SHALL BE PRESSURE TREATED PINE.  
2. FACING BOARDS SHALL BE 5/4" IN THICKNESS MIN.  
3. DIMENSIONS SHOWN ARE NOMINAL FOR WOOD.  
4. CONTRACTOR TO REUSE EXISTING POSTS.



6 BOARD ON BOARD FENCE & GATE DETAIL  
NTS



ISSUED FOR BIDDING DATE BY

ADDENDUM REVISIONS

ADDENDUM NO. ADDENDUM DATE BY

ADDENDUM NO. ADDENDUM DATE BY

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JOB NO 13816154

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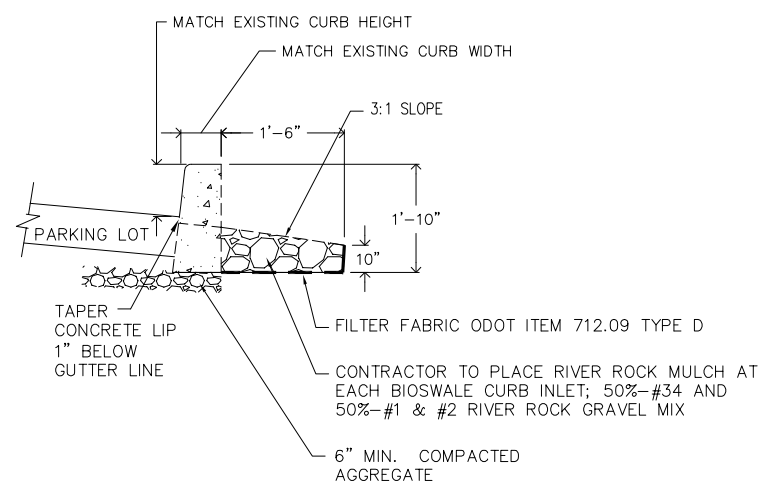
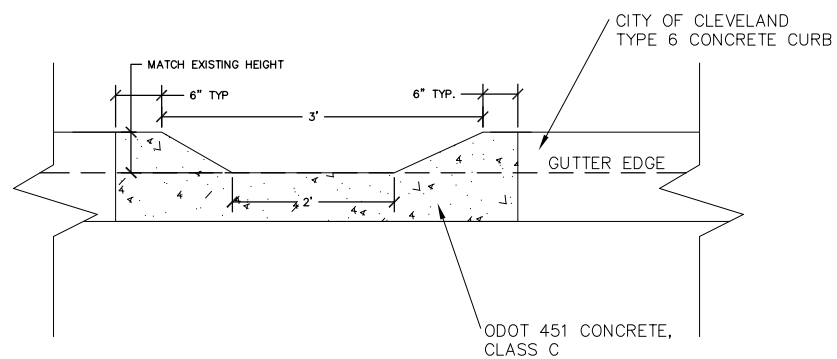
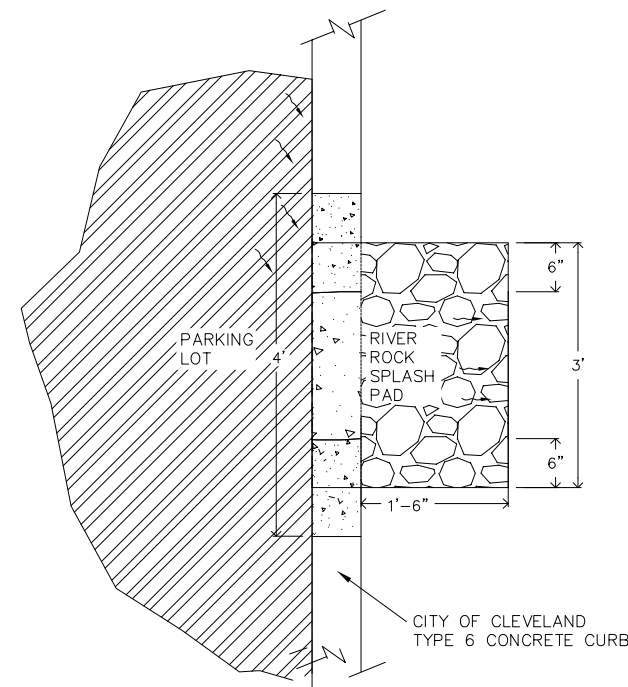
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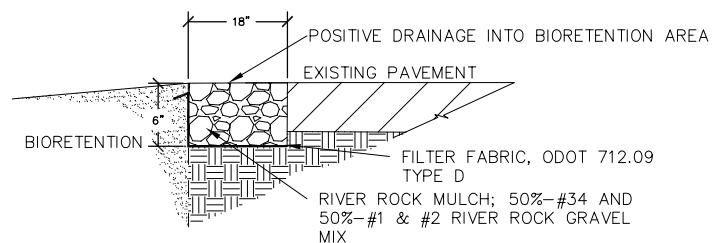
DETAILS

COLLINWOOD ARTS  
DISTRICT  
KEY  
GREEN PARKING LOT

0006



1 CONCRETE CURB INLET  
NTS



2 GRAVEL STRIP  
NTS

ISSUED FOR BIDDING DATE BY

ADDENDUM REVISIONS

ADDENDUM NO.	ADDENDUM DATE	BY

ISSUED FOR CONSTRUCTION DATE BY

CONSTRUCTION REVISIONS

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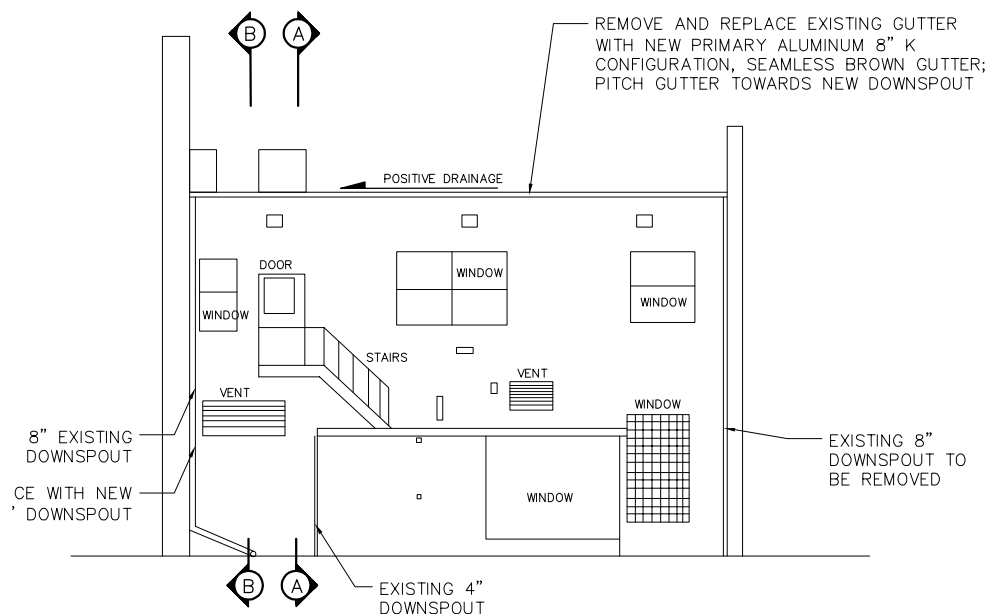
GRAPHIC SCALE

## DETAILS

COLLINWOOD ARTS  
DISTRICT  
KEY  
GREEN PARKING LOT

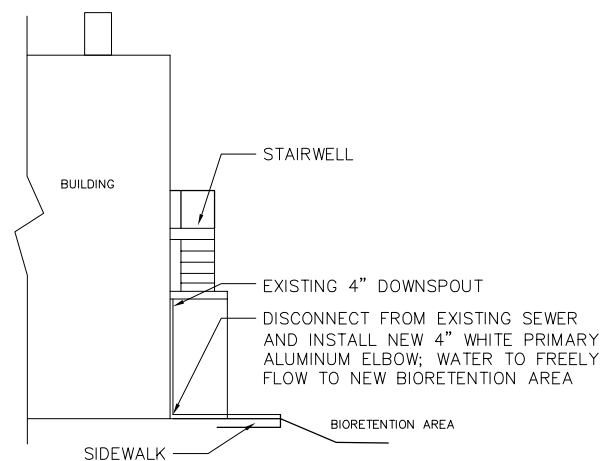
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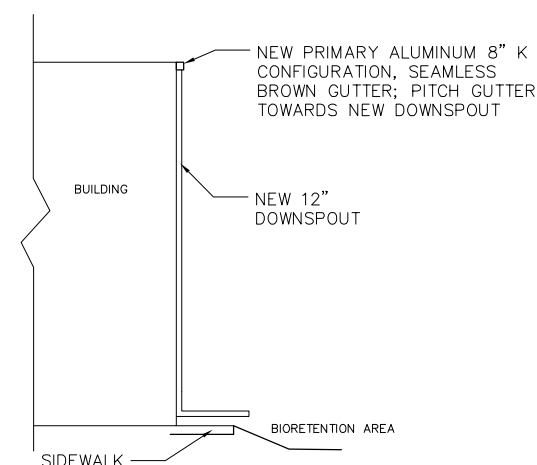
NOTE:  
CAP EXISTING DOWNSPOUT CONNECTION TO SEWER SYSTEM WITH ABS SCREW CAP.

4 BACK OF BUILDING ELEVATION  
NTS

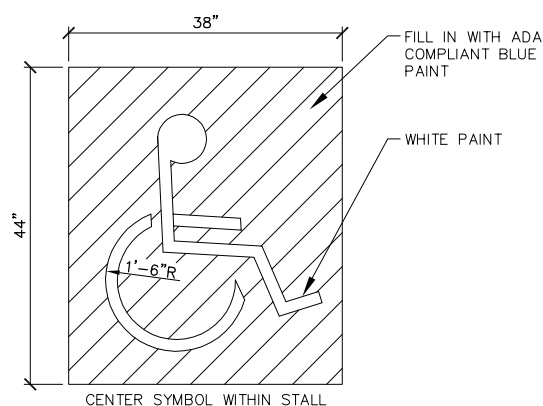


NOTE:  
CONTRACTOR TO PROVIDE SHOP DRAWINGS OF GUTTER AND DOWNSPOUT CONFIGURATION AND MATERIALS LISTING TO OWNER PRIOR TO INSTALLATION.

5 ELEVATION SECTION A-A  
NTS

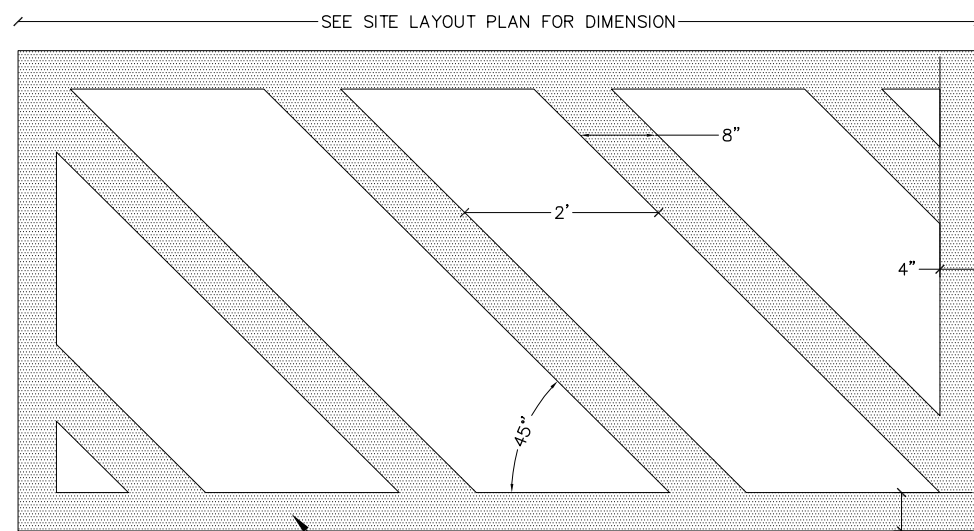


6 ELEVATION SECTION B-B  
NTS



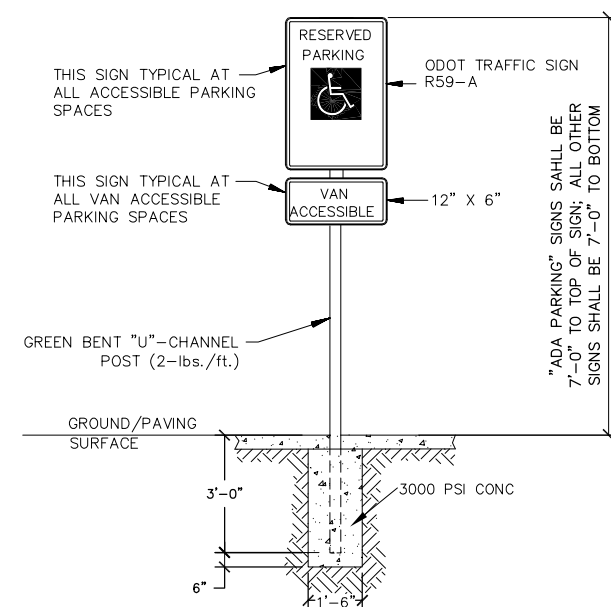
- NOTES:
1. SYMBOL TO MEET CURRENT ADA GUIDELINES.
  2. PAINT AT ENTRANCE OF EACH ADA PARKING SPACE AS SHOWN ON THE PLAN SHEET 0005.
  3. INSTALL AS PER ODOT ITEM 641

1 ADA PARKING DETAIL  
NTS



NOTES:  
ODOT TYPE 642.04 TRAFFIC PAINT, COLOR SHALL BE ADA COMPLIANT BLUE  
INSTALL AS PER ODOT ITEM 641

2 NO PARKING AREA DETAIL  
NTS



3 ADA SIGN DETAIL  
NTS

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ADDENDUM REVISIONS

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CONSTRUCTION REVISIONS

NO.	DESCRIPTION	DATE	BY

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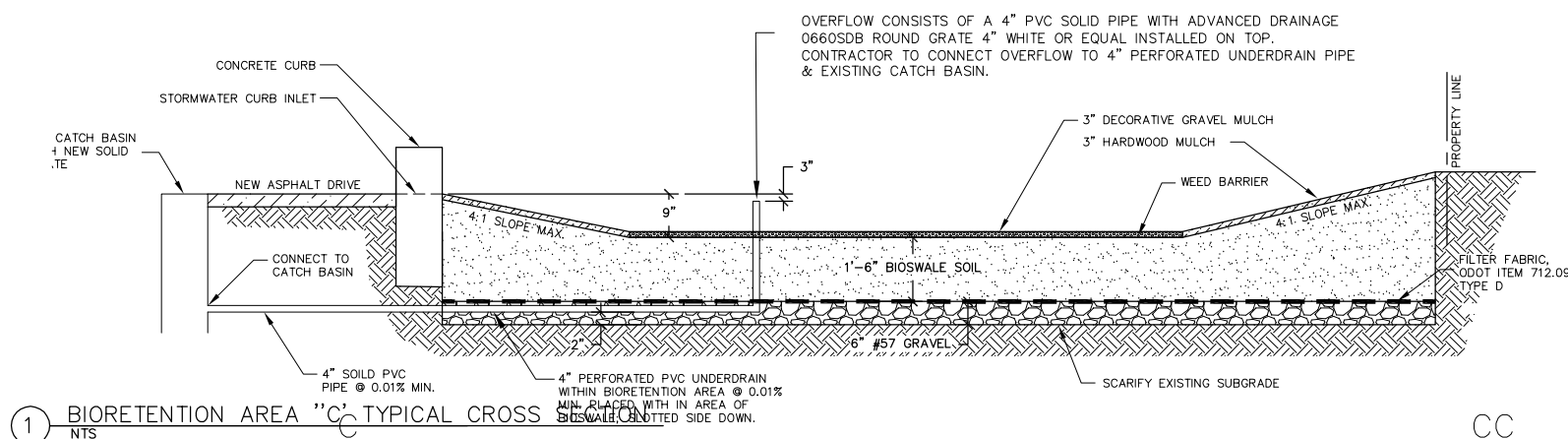
SCALE

GRAPHIC SCALE

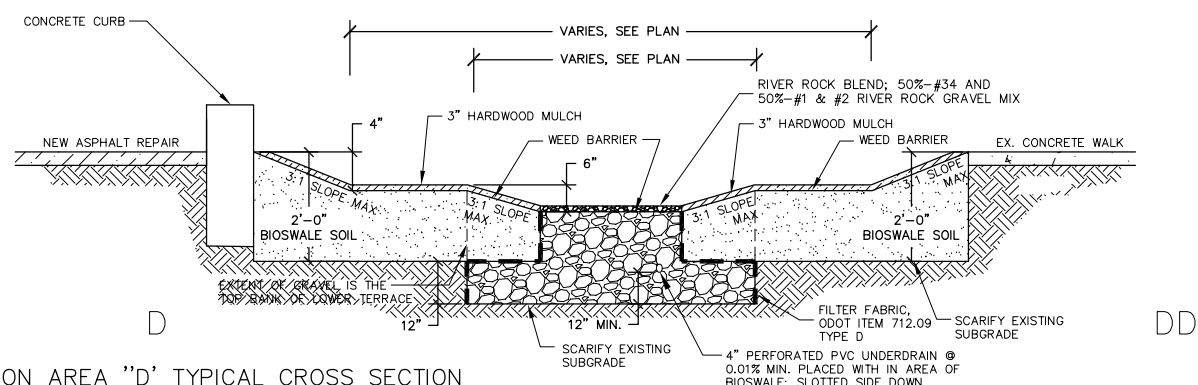
## DETAILS

COLLINWOOD ARTS  
DISTRICT  
KEY  
GREEN PARKING LOT

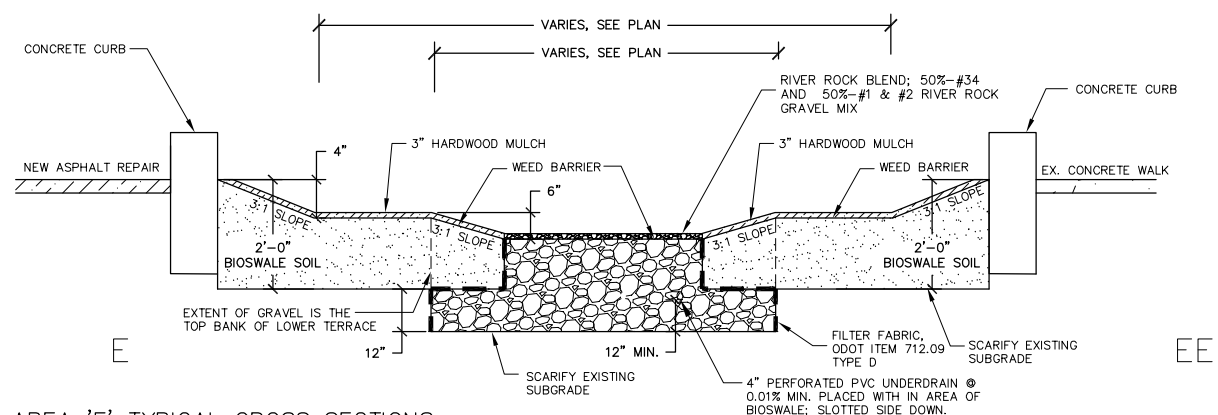
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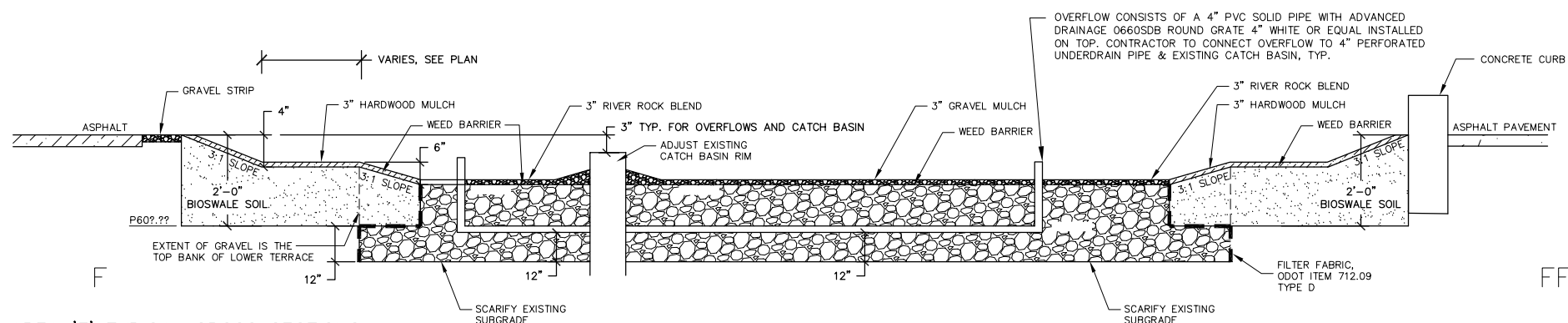
1 BIORETENTION AREA 'C' TYPICAL CROSS SECTION CC



2 BIORETENTION AREA 'D' TYPICAL CROSS SECTION DD



3 BIORETENTION AREA 'E' TYPICAL CROSS SECTIONS EE



4 BIORETENTION AREA 'F' TYPICAL CROSS SECTIONS FF

ISSUED FOR BIDDING

ADDENDUM REVISIONS

ADDENDUM NO	ADDENDUM DATE	BY

ISSUED FOR CONSTRUCTION

CONSTRUCTION REVISIONS

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RECORD DRAWINGS

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SCALE

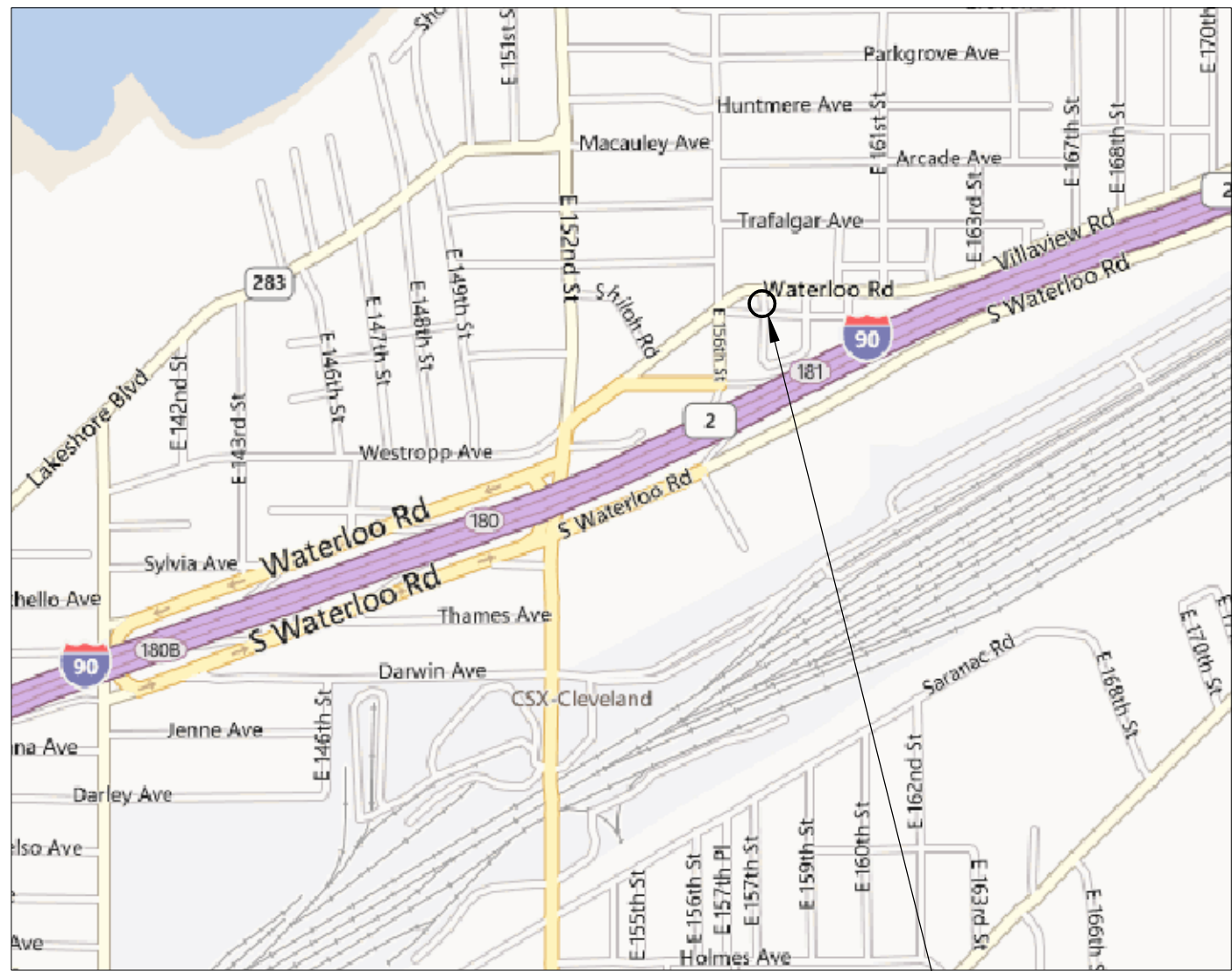
GRAPHIC SCALE

DETAILS

COLLINWOOD ARTS DISTRICT KEY GREEN PARKING LOT

0009





**VICINITY MAP**  
SCALE 1" = NTS



**PROJECT LOCATION**

**PROJECT NAME AND LOCATION:**

COLLINWOOD ARTS DISTRICT, KEY PARKING LOT  
15619 WATERLOO ROAD  
CLEVELAND, OHIO 44110

**OWNER NAME AND ADDRESS:**

NORTHEAST SHORES  
DEVELOPMENT CORPORATION  
317 EAST 156th STREET,  
CLEVELAND, OHIO 44110

**PROFESSIONAL LANDSCAPE ARCHITECT**

URS CORPORATION  
KATHERINE HOLMOK, ASLA  
1375 EUCLID AVENUE, SUITE 600  
CLEVELAND, OH 44115-1808  
216-622-2400

**SITE DESCRIPTION:**

THIS PROJECT SHALL CONSIST OF SITE IMPROVEMENT DEMOLITION AND CONSTRUCTION. SOIL DISTURBING ACTIVITIES TO INCLUDE ALL NECESSARY CLEARING AND GRUBBING, INSTALLATION OF CONCRETE SIDEWALK, CONCRETE CURBING, RAIN BARREL INSTALLATION, BIOSWALE EXCAVATION AND OVERFLOW DRAINAGE AND PREPARATION OF LANDSCAPE AREAS. EROSION CONTROL FOR THE SITE INCLUDES INLET PROTECTION AND CONCRETE WASH OUT AREA.

A. THE SITE IS APPROXIMATELY 0.4222 ± ACRES OF WHICH 0.3548 ± ACRES WILL BE DISTURBED BY CONSTRUCTION ACTIVITIES.

B. SEE SHEET 0012 FOR THE IMPLEMENTATION OF EROSION, SEDIMENT AND STORM WATER MANAGEMENT PRACTICES.

C. NO IMMEDIATE RECEIVING STREAMS ARE WITHIN 200' OF THIS SITE. THE AREA IS WITHIN THE NEORSD's COMBINED SEWER AREA.

SOIL TYPE IS UeA Urban lands-Elnora complex, nearly flat

**GENERAL NOTES FOR SWPPP:**

- ALL CONSTRUCTION ACTIVITIES MUST COMPLY WITH CLEVELAND WATER POLLUTION CONTROL CITY OF CLEVELAND ENGINEERING DEPARTMENT AND NEORSD REGULATIONS. SEE GENERAL NOTES FOR PAY ITEMS.
- ALL STORM INLETS/CATCH BASINS/MAN HOLES THAT ARE MADE OPERATIONAL DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER WILL NOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
- ALL EROSION AND SEDIMENT CONTROLS ON SITE MUST BE INSPECTED AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF PRECIPITATION WITHIN ANY 24 HOUR PERIOD. A RECORD SHALL BE KEPT AND MAINTAINED OF THESE INSPECTIONS FOR 2 YEARS FOLLOWING SUBMITTAL OF THE NOTICE OF TERMINATION (NOT) TO OHIO EPA.
- MINIMIZE TRACKING OF SEDIMENTS BY VEHICLES BY UTILIZING THE CONSTRUCTION ENTRANCE AS THE ONLY ENTRANCE FOR VEHICLES. MAINTAIN THIS ENTRANCE WITH STONE AS NEEDED TO PREVENT DIRT AND MUD FROM TRACKING ONTO THE ROADWAY. REGULAR SWEEPING OF THE ROADWAY MAY BE NECESSARY TO ENSURE ROADWAY DOES NOT BUILD UP WITH SEDIMENTS.
- OTHER EROSION AND SEDIMENT CONTROL ITEMS MAY BE NECESSARY DUE TO ENVIRONMENTAL CONDITIONS AND MAY BE REQUIRED AT THE DISCRETION OF THE ENGINEER.
- NO SOLID OR LIQUID WASTE SHALL BE DISCHARGED INTO STORM WATER RUNOFF. (THIS INCLUDES WASHING OUT OF CEMENT TRUCKS.) DESIGNATED WASH PIT AREAS ARE TO BE DETERMINED IN FIELD BY ENGINEER AND ARE PRESET FOR THIS PURPOSE AWAY FROM AREAS OF STORM WATER RUNOFF.
- SITE STABILIZATION EITHER PERMANENT OR TEMPORARY MUST FOLLOW THE REQUIREMENTS AS APPLICABLE ON THE CHARTS ON SWPPP PLAN SHEETS.

**EROSION AND SEDIMENT CONTROLS:**

**STABILIZATION PRACTICES**

STORMWATER MANAGEMENT – THE AREAS WHICH ARE NOT DEVELOPED WILL BE GRADED AT LESS THAN 4:1 AND HAVE PERMANENT SEEDING OR PLANTINGS.

**WASTE DISPOSAL:**

SOLID, SANITARY AND TOXIC WASTE MUST BE DISPOSED OF IN A PROPER MANNER IN ACCORDANCE WITH LOCAL, AND FEDERAL REGULATIONS. IT IS PROHIBITED TO BURN, BURY OR POUR OUT ONTO THE GROUND OR INTO THE STORM SEWERS ANY SOLVENTS, PAINTS, STAINS, GASOLINE, DIESEL FUEL, USED MOTOR OIL, HYDRAULIC FLUID, ANTIFREEZE, CEMENT CURING COMPOUNDS AND OTHER SUCH TOXIC OR HAZARDOUS WASTES. WASH OUT OF CEMENT TRUCKS SHOULD OCCUR IN A DIKED, DESIGNATED AREA WHERE THE WASHINGS CAN COLLECT AND BE DISPOSED OF PROPERLY WHEN THEY HARDEN (SEE CONCRETE WASHOUT AREA ON PLAN AND DETAIL ON SHEET 0012). FUEL STORAGE TANKS MUST BE SELF CONTAINED SPILL PROOF TANKS.

**SOLID WASTE MATERIALS:**

ALL SOLID WASTE MATERIALS IS BE COLLECTED AND STORED IN A SECURE METAL DUMPSTER WITH LID OR REMOVED FROM SITE EACH DAY BY CONTRACTOR. DUMPSTER IS TO BE RENTED FROM A LICENSED SOLID WASTE MANAGEMENT COMPANY. THE DUMPSTER SHALL MEET ALL LOCAL, STATE, AND FEDERAL REGULATIONS PERTAINING TO SOLID WASTE MANAGEMENT. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN THE DUMPSTER OR TRANSPORTED FROM SITE BY LICENSED WASTE MANAGEMENT COMPANY IN A LEGAL MANNER. THE DUMPSTER IS BE EMPTIED A MINIMUM OF TWICE PER WEEK OR AS NECESSARY, AND THE TRASH IS BE HAULED TO A PERMITTED LANDFILL. NO CONSTRUCTION WASTE MATERIALS ARE BE BURIED ONSITE. ALL PERSONNEL NEED BE INSTRUCTED ON PROPER PROCEDURE FOR WASTE DISPOSAL. NOTICES STATING PROPER PRACTICES SHALL BE POSTED IN THE FIELD OFFICE TRAILER. THE INDIVIDUAL MANAGING THE SITE CONSTRUCTION OPERATIONS WILL BE RESPONSIBLE FOR OVERSEEING THAT PROPER PROCEDURES ARE FOLLOWED.

**HAZARDOUS WASTE:**

ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN A MANNER AS SPECIFIED BY THE MANUFACTURER AND BY LOCAL, STATE, AND FEDERAL REGULATIONS. SITE CONSTRUCTION PERSONNEL ARE BE INSTRUCTED IN THESE PROCEDURES. THE INDIVIDUAL IN CHARGE OF MANAGING SITE CONSTRUCTION OPERATIONS SHALL BE RESPONSIBLE FOR OVERSEEING THAT ALL REQUIRED HAZARDOUS WASTE HANDLING PROCEDURES ARE FOLLOWED.

**SANITARY WASTE:**

ALL SANITARY WASTE IS BE COLLECTED FROM ALL PORTABLE UNITS (IF UNITS ARE INSTALLED ON SITE) A MINIMUM OF THREE TIMES PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR, OR AS REQUIRED BY THE LOCAL DEPARTMENT OF HEALTH.

**TRENCH AND GROUNDWATER DEWATERING:**

ALL SEDIMENT LADEN PUMPED WATER MUST PASS THROUGH A SEDIMENT BASIN, FILTER BAG, OR SUMP PIT PRIOR TO DISCHARGE. THERE IS NO EXPECTED PUMPING OF GROUNDWATER FOR THIS PROJECT.

**OFFSITE VEHICLE / SEDIMENT TRACKING:**

A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. ALL PAVED STREETS ADJACENT TO THE SITE ARE BE SWEEP DAILY TO REMOVE ANY EXCESS MATERIAL TRACKED FROM THE SITE. A TIRE WASH IS TO BE INSTALLED AT NO ADDITIONAL COST TO THE PROJECT IF DEEMED NECESSARY BY LOCAL OFFICIALS. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE NEED TO BE COVERED WITH A TARPAULIN.

AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN 21 DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN 7 DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, THAT AREA WILL BE STABILIZED WITH PERMANENT SEED AND MULCH. AFTER THE ENTIRE SITE IS STABILIZED, THE ACCUMULATED SEDIMENT WILL BE REMOVED FROM THE BASIN.

**SOIL PROTECTION CHART**

STABILIZATION TYPE	J	F	M	A	M	J	J	A	S	O	N	D
PERMANENT SEEDING	●	●	●	●	●	●	●	●	●	●	●	●
DORMANT SEEDING	●	●	●	●	●	●	●	●	●	●	●	●
TEMPORARY SEEDING			●	●	●	●	●	●	●	●	●	●
SODDING			●	●	●	●	●	●	●	●	●	●
MULCHING	●	●	●	●	●	●	●	●	●	●	●	●

\* – IRRIGATION NEEDED

\*\* – IRRIGATION NEEDED FOR 2-3 WEEKS AFTER SOD IS APPLIED

**CONTROLS**

**EROSION AND SEDIMENT CONTROLS:**

**STABILIZATION PRACTICES**

TEMPORARY STABILIZATION – STOCKPILED TOPSOIL AND DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY IS TO CEASE FOR MORE THAN 21 DAYS SHALL BE STABILIZED WITH TEMPORARY SEED AND/OR MULCHING NO LATER THAN 7 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY IN THAT AREA. THE TEMPORARY SEEDING SHALL BE APPLIED PER THE TEMPORARY SEEDING SPECIFICATIONS AS SHOWN ON THE FOLLOWING STORMWATER POLLUTION PREVENTION PLANS. AREAS OF THE SITE TO BE PAVED WILL BE TEMPORARILY STABILIZED BY APPLYING GEOTEXTILE AND STONE SUBBASE UNTIL PAVEMENT IS APPLIED.

PERMANENT STABILIZATION – DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE BEEN PERMANENTLY CEASED SHALL BE STABILIZED WITH PERMANENT SEEDING NO LATER THAN 7 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY. THE PERMANENT SEED MIX SHALL CONFORM WITH THE PERMANENT SEEDING SPECIFICATIONS, AS SHOWN ON THE SWPPP PLAN SHEETS.

**EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:**

THE CONTRACTOR SHALL BE RESPONSIBLE TO PERFORM AND MAINTAIN A PERMANENT RECORD OF MAINTENANCE AND INSPECTIONS WHICH MUST BE KEPT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL PROVIDE A COPY OF THE INSPECTION REPORTS WHEN REQUESTED BY THE OWNER OR ENGINEER DURING CONSTRUCTION AND SHALL PROVIDE ALL OF THE INSPECTION REPORTS TO THE OWNER AT THE COMPLETION OF THEIR WORK. INSPECTIONS MUST BE MADE A MINIMUM OF ONCE EVERY 7 DAYS AND IMMEDIATELY AFTER STORM EVENTS GREATER THAN 0.5 INCHES OF RAIN IN A 24 HOUR PERIOD. PROVIDED FOR THE RECORD SHALL BE A WRITTEN LOG WHICH SHALL CONTAIN THE FOLLOWING:

- NAME OF THE INSPECTOR
- DATE OF INSPECTION
- WEATHER CONDITIONS
- MAJOR OBSERVATIONS
- INSPECTION OF SILT FENCING TO DETERMINE SEDIMENT DEPTH (BUILT UP SEDIMENT SHALL BE REMOVED FROM SILT FENCE WHEN IT HAS REACHED ONE–THIRD THE HEIGHT OF THE FENCE), TEARS, NOTING IF FABRIC SECURELY ATTACHED TO THE POSTS, AND POSTS ARE FIRMLY IN THE GROUND.
- TEMPORARY/PERMANENT SEEDING AND PLANTING ARE TO BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
- CORRECTIVE MEASURES TO BE PERFORMED
- DATE THE CORRECTIVE MEASURES WERE PERFORMED

**NON-STORMWATER DISCHARGES:**

IT IS EXPECTED THAT THE FOLLOWING NON-STORM DISCHARGES ARE LIKELY TO OCCUR DURING CONSTRUCTION:

- PAVEMENT WASH WATERS (WHERE NO SPILLS OR LEAKS OF TOXIC OR HAZARDOUS MATERIALS HAVE OCCURRED).
- UNCONTAMINATED GROUNDWATER (FROM DEWATERING EXCAVATION).

**INVENTORY FOR POLLUTION PREVENTION PLAN**

THE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION:

- |                             |  |
|-----------------------------|--|
| 1. CONCRETE                 | 7. ASPHALT                               |
| 2. FERTILIZERS              | 8. MASONRY BLOCK                         |
| 3. DETERGENTS               | 9. TAR                                   |
| 4. PETROLEUM BASED PRODUCTS | 10. OTHER POTENTIAL MATERIALS NOT LISTED |
| 5. PAINTS AND VARNISHES     |  |
| 6. CLEANING SOLVENTS        |  |

**SPILL PREVENTION**

**MATERIAL MANAGEMENT PRACTICES:** THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORMWATER RUNOFF.

**GOOD HOUSEKEEPING:**

THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ONSITE DURING THE CONSTRUCTION PROJECT. AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB. ALL MATERIALS STORED ONSITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN APPROPRIATE CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER SECURE ENCLOSURE. PRODUCTS SHALL ALSO BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL. SUBSTANCES ARE NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER. WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER. MANUFACTURERS' RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.

**HAZARDOUS PRODUCTS:**

THE FOLLOWING PRACTICES ARE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS. ALL PRODUCTS ARE TO BE KEPT IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE. ORIGINAL LABELS AND MATERIAL SAFETY DATA MUST BE RETAINED AS THEY CONTAIN IMPORTANT PRODUCT INFORMATION. IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURERS' OR LOCAL, STATE, AND FEDERAL RECOMMENDED PROCEDURES FOR PROPER DISPOSAL SHALL BE FOLLOWED.

**PRODUCT SPECIFIC PRACTICES**

THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED WHILE ONSITE:

PETROLEUM PRODUCTS – ALL ONSITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. PETROLEUM PRODUCTS MUST BE STORED IN APPROVED SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT SUBSTANCES USED ONSITE ARE TO BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

FERTILIZERS – FERTILIZERS USED SHALL BE APPLIED IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. STORAGE OF ALL MATERIAL SHALL BE IN A COVERED SHED. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER MUST BE TRANSFERRED TO A SEALABLE CONTAINER, MADE OF A SUITABLE MATERIAL TO PREVENT SPILLS.

PAINTS – ALL CONTAINERS SHALL BE TIGHTLY SEALED AND PROPERLY STORED WHEN NOT IN USE. EXCESS PAINT IS NOT BE DISCHARGED TO THE STORM SEWER SYSTEM, BUT PROPERLY DISPOSED OF ACCORDING TO MANUFACTURERS' INSTRUCTIONS OR STATE, LOCAL, OR FEDERAL REGULATIONS.

CONCRETE TRUCKS – CONCRETE TRUCKS WILL BE PERMITTED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE.

**SPILL CONTROL PRACTICES:**

IN ADDITION TO THE GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN PREVIOUS SECTIONS OF THIS PLAN, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP.

- THE MANUFACTURERS' RECOMMENDED METHODS FOR SPILL CLEANUP MUST BE POSTED AT ALL TIMES AND SITE PERSONNEL SHALL BE AWARE OF THE PROCEDURES AND LOCATION OF INFORMATION AND CLEANUP SUPPLIES.
- THE MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ONSITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, INDUSTRIAL SPILL ABSORPTION MATERIAL, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.
- ALL SPILLS ARE TO BE CLEANED UP IMMEDIATELY AFTER DISCOVERY. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING AND EQUIPMENT TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
- TOXIC OR HAZARDOUS MATERIAL SPILLS OR EXPOSURES MUST BE REPORTED TO THE APPROPRIATE AUTHORITIES IMMEDIATELY, REGARDLESS OF SIZE. THE SPILL PREVENTION PLAN SHALL BE UPDATED TO INCLUDE PROCEDURES FOR PREVENTING ANY REOCCURRENCE ALONG WITH PROVEN SUCCESSFUL CLEAN-UP PROCEDURES.
- THE NAMES OF ALL PERSONNEL GIVEN THE RESPONSIBILITY OF HAZARDOUS MATERIAL CLEANUPS SHALL BE POSTED IN THE MATERIAL STORAGE AREA AND IN THE CONSTRUCTION OFFICE.

**NOTES ABOUT FINAL STABILIZATION**

A SITE IS CONSIDERED STABILIZED WHEN ALL OF THE FOLLOWING CRITERIA ARE MET:

- A PERENNIAL, VEGETATED COVER (OR OTHER PERMANENT STABILIZATION PRACTICE) HAS GROWN TO A 75% DENSITY THROUGHOUT THE ENTIRE DISTURBED AREA.
- ALL TEMPORARY EROSION AND SEDIMENT CONTROLS HAVE BEEN REMOVED AND DISPOSED OF PROPERLY.
- ALL TRAPPED SEDIMENT HAS BEEN PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION OR RE-SUSPENSION.
- ALL CONSTRUCTION ACTIVITIES HAVE CEASED.

SEEDING AND MULCHING OF ALL DISTURBED AREAS WHETHER PERMANENT OR TEMPORARY MUST FOLLOW THE FOLLOWING SCHEDULE AS APPLICABLE:

TABLE 1: PERMANENT SEEDING

Area requiring permanent stabilization	Time frame to apply erosion controls
Any area that will lie dormant for one year or more.	Within 7 days of the most recent disturbance.
Any area within 50 feet of a stream and at final grade.	Within 2 days of reaching final grade.
Any area at final grade.	Within 7 days of reaching final grade within that area.

TABLE 2: TEMPORARY SEEDING

Area requiring permanent stabilization	Time frame to apply erosion controls
Any disturbed area within 50 feet of a stream and not at final grade.	Within 2 days of the most recent disturbance, if that area will remain idle for more than 21 days.
For all construction activities, any disturbed area, including stockpiles, that will be dormant for more than 21 days but less than one year, and not within 50 feet of a stream.	Within 7 days of the most recent disturbance within the area.
Disturbed areas that will be idle over the winter.	Prior to November 1.

NOTE: WHERE VEGETATIVE STABILIZATION TECHNIQUES MAY CAUSE STRUCTURAL INSTABILITY OR ARE OTHERWISE UNOBTAINABLE, ALTERNATIVE STABILIZATION TECHNIQUES MUST BE EMPLOYED. THESE TECHNIQUES MAY INCLUDE MULCHING, EROSION MATTING, OR PLACEMENT OF STONE.

**PERMANENT SEEDING**

**DESCRIPTION**

PERMANENT SEEDING INCLUDES THE SEEDBED PREPARATION, SEEDING, AND THE ESTABLISHMENT OF PERENNIAL VEGETATION USED TO PERMANENTLY STABILIZE SOIL, PREVENT SEDIMENT POLLUTION, REDUCE RUNOFF BY PROMOTING INFILTRATION, AND PROVIDE STORMWATER QUALITY BENEFITS OFFERED BY DENSE VEGETATION.

PERMANENT SEED MIX SHALL CONFORM TO AEP SPECIFICATIONS. COPIES OF THE SEED MIX SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL.

**SPECIFICATIONS FOR PERMANENT SEEDING**

**SITE PREPARATION**

- A SUBSOILER, PLOW OR OTHER IMPLEMENT SHALL BE USED TO REDUCE SOIL COMPACTION AND ALLOW MAXIMUM INFILTRATION. (MAXIMIZING INFILTRATION WILL HELP CONTROL BOTH RUNOFF RATE AND WATER QUALITY.) SUBSOILING SHOULD BE DONE WHEN THE SOIL MOISTURE IS LOW ENOUGH TO ALLOW THE SOIL TO CRACK OR FRACTURE. SUBSOILING SHALL NOT BE DONE ON SLIP-PRONE AREAS WHERE SOIL PREPARATION SHOULD BE LIMITED TO WHAT IS NECESSARY FOR ESTABLISHING VEGETATION.
- THE SITE SHALL BE GRADED AS NEEDED TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION AND SEEDING.
- RESOIL SHALL BE APPLIED WHERE NEEDED TO ESTABLISH VEGETATION.



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**STORMWATER POLLUTION PREVENTION PLAN NOTES**

COLLINWOOD ARTS DISTRICT KEY GREEN PARKING LOT

**0010**



**SEEDBED PREPARATION**

- LIME--AGRICULTURAL GROUND LIMESTONE SHALL BE APPLIED TO ACID SOIL AS RECOMMENDED BY A SOIL TEST. IN LIEU OF A SOIL TEST, LIME SHALL BE APPLIED AT THE RATE OF 100 LB. PER 1,000 SQUARE FEET OR 2 TONS PER ACRE.
- FERTILIZER--FERTILIZER SHALL BE APPLIED AS RECOMMENDED BY A SOIL TEST. IN LIEU OF A SOIL TEST, FERTILIZER SHALL BE APPLIED AT A RATE OF 12 LB. PER 1,000 SQUARE FEET OR 500 LB. PER ACRE OF 10-10-10 OR 12-12-12 ANALYSIS.
- THE LIME AND FERTILIZER SHALL BE WORKED INTO THE SOIL WITH A DISK HARROW, SPRING-TOOTH HARROW, OR OTHER SUITABLE FIELD IMPLEMENT TO A DEPTH OF 3 INCHES. ON SLOPING LAND, THE SOIL SHALL BE WORKED ON THE CONTOUR.

**SEEDING DATES AND SOIL CONDITIONS**

SEEDING SHOULD BE DONE MARCH 1 TO MAY 31 OR AUGUST 1 TO SEPTEMBER 30. THESE SEEDING DATES ARE IDEAL BUT, WITH THE USE OF ADDITIONAL MULCH AND IRRIGATION, SEEDINGS MAY BE MADE ANY TIME THROUGHOUT THE GROWING SEASON. TILLAGE/SEEDBED PREPARATION SHOULD BE DONE WHEN THE SOIL IS DRY ENOUGH TO CRUMBLE AND NOT FORM RIBBONS WHEN COMPRESSED BY HAND. FOR WINTER SEEDING, SEE THE FOLLOWING SECTION ON DORMANT SEEDING.

**DORMANT SEEDINGS**

- SEEDINGS SHALL NOT BE PLANTED FROM OCTOBER 1 THROUGH NOVEMBER 20 DURING THIS PERIOD. THE SEEDS ARE LIKELY TO GERMINATE BUT PROBABLY WILL NOT BE ABLE TO SURVIVE THE WINTER.
- THE FOLLOWING METHODS MAY BE USED FOR "DORMANT SEEDING":
  - FROM OCTOBER 1 THROUGH NOVEMBER 20, PREPARE THE SEEDBED, ADD THE REQUIRED AMOUNTS OF LIME AND FERTILIZER, THEN MULCH AND ANCHOR. AFTER NOVEMBER 20, AND BEFORE MARCH 15, BROADCAST THE SELECTED SEED MIXTURE. INCREASE THE SEEDING RATES BY 50% FOR THIS TYPE OF SEEDING.
  - FROM NOVEMBER 20 THROUGH MARCH 15, WHEN SOIL CONDITIONS PERMIT, PREPARE THE SEEDBED, LIME AND FERTILIZER, APPLY THE SELECTED SEED MIXTURE, MULCH AND ANCHOR. INCREASE THE SEEDING RATES BY 50% FOR THIS TYPE OF SEEDING.
  - APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDRO-SEEDED (SLURRY MAY INCLUDE SEED AND FERTILIZER) ON A FIRM, MOIST SEEDBED.
  - WHERE FEASIBLE, EXCEPT WHEN A CULTIPACKER TYPE SEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A CULTIPACKER ROLLER OR LIGHT DRAG. ON SLOPING LAND, SEEDING OPERATIONS SHOULD BE ON THE CONTOUR WHERE FEASIBLE.

**MULCHING**

- MULCH MATERIAL SHALL BE APPLIED IMMEDIATELY AFTER SEEDING. SEEDINGS MADE DURING OPTIMUM SEEDING DATES AND WITH FAVORABLE SOIL CONDITIONS AND ON VERY FLAT AREAS MAY NOT NEED MULCH TO ACHIEVE ADEQUATE STABILIZATION. DORMANT SEEDING SHALL BE MULCHED.
- MATERIALS:
  - STRAW--IF STRAW IS USED, IT SHALL BE UNROTTED SMALL-GRAIN STRAW APPLIED AT THE RATE OF 2 TONS PER ACRE OR 90 LB. PER 1,000 SQUARE FEET (TWO TO THREE BALES). THE MULCH SHALL BE SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THE SOIL SURFACE IS COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND SPREAD TWO 45 LB. BALES OF STRAW IN EACH SECTION.
  - HYDROSEEDERS--IF WOOD-CELLULOSE FIBER IS USED, IT SHALL BE USED AT 2,000 LB. PER ACRE OR 46 LB. PER 1,000 SQUARE FEET.
  - OTHER--OTHER ACCEPTABLE MULCHES INCLUDE MULCH MATTINGS APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS OR WOOD CHIPS APPLIED AT 6 TONS PER ACRE.
- STRAW MULCH ANCHORING METHODS
  - STRAW MULCH SHALL BE ANCHORED IMMEDIATELY TO MINIMIZE LOSS BY WIND OR WATER.
  - MECHANICAL--A DISK, CRIMPER, OR SIMILAR TYPE TOOL SHALL BE SET STRAIGHT TO PUNCH OR ANCHOR THE MULCH MATERIAL INTO THE SOIL. STRAW MECHANICALLY ANCHORED SHALL NOT BE FINELY CHOPPED BUT, GENERALLY, BE LEFT LONGER THAN 6 INCHES.
  - MULCH NETTINGS--NETTINGS SHALL BE USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. NETTING MAY BE NECESSARY TO HOLD MULCH IN PLACE IN AREAS OF CONCENTRATED RUNOFF AND ON CRITICAL SLOPES.
  - ASPHALT EMULSION--ASPHALT SHALL BE APPLIED AS RECOMMENDED BY THE MANUFACTURER OR AT THE RATE OF 160 GALLONS PER ACRE.
  - SYNTHETIC BINDERS--SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRI-TAC), DCA-70, PETROSET, TERRA TACK OR EQUAL MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER.
  - WOOD-CELLULOSE FIBER--WOOD-CELLULOSE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 LB. PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER, AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LB. PER 100 GALLONS OF WOOD CELLULOSE FIBER.

**WATERING**

- PERMANENT SEEDING SHALL INCLUDE WATERING TO ESTABLISH VEGETATION DURING DRY OR HOT WEATHER OR ON ADVERSE SITE CONDITIONS AS NEEDED FOR ADEQUATE MOISTURE FOR SEED GERMINATION AND PLANT GROWTH.
- EXCESSIVE WATERING RATES SHALL BE AVOIDED AND WATERING MONITORED TO PREVENT EROSION AND DAMAGE FROM RUNOFF.

**SPECIFICATIONS FOR MAINTENANCE OF PERMANENT SEEDING**

- PERMANENT SEEDING SHALL NOT BE CONSIDERED ESTABLISHED FOR AT LEAST 1 FULL YEAR FROM THE TIME OF PLANTING. SEEDING AREAS SHALL BE INSPECTED FOR FAILURE AND VEGETATION REESTABLISHED AS NEEDED. DEPENDING ON SITE CONDITIONS, IT MAY BE NECESSARY TO IRRIGATE, FERTILIZE, OVERSEED, OR REESTABLISH PLANTINGS IN ORDER TO PROVIDE PERMANENT VEGETATION FOR ADEQUATE EROSION CONTROL.
- MAINTENANCE FERTILIZATION RATES SHALL BE ESTABLISHED BY SOIL TEST RECOMMENDATIONS OR BY USING THE RATES SHOWN IN THE FOLLOWING TABLE.

**DESCRIPTION**

TEMPORARY SEEDING PROVIDES EROSION CONTROL ON AREAS IN BETWEEN CONSTRUCTION OPERATIONS. GRASSES WHICH ARE QUICK GROWING ARE SEEDING AND USUALLY MULCHED TO PROVIDE PROMPT, TEMPORARY SOIL STABILIZATION. IT EFFECTIVELY MINIMIZES THE AREA OF A CONSTRUCTION SITE PRONE TO EROSION AND SHOULD BE USED EVERYWHERE THE SEQUENCE OF CONSTRUCTION OPERATIONS ALLOWS VEGETATION TO BE ESTABLISHED.

Temporary Seeding Species Selection	
Seeding Dates	Species
March 1 to August 15	Oats Tall Fescue Annual Ryegrass
	Perennial Ryegrass Tall Fescue Annual Ryegrass
	Rye Tall Fescue Annual Ryegrass
August 16 to November 1	Wheat Tall Fescue Annual Ryegrass
	Perennial Ryegrass Tall Fescue Annual Ryegrass
	Use mulch only, sodding practices or dormant seeding.
November 1 to Spring Seeding	Use mulch only, sodding practices or dormant seeding.

Note: Other approved seed species may be substituted.

**SPECIFICATIONS FOR TEMPORARY SEEDING**

- STRUCTURAL EROSION AND SEDIMENT--CONTROL PRACTICES SUCH AS DIVERSIONS AND SEDIMENT TRAPS SHALL BE INSTALLED AND STABILIZED WITH TEMPORARY SEEDING PRIOR TO GRADING THE REST OF THE CONSTRUCTION SITE.
- TEMPORARY SEED SHALL BE APPLIED BETWEEN CONSTRUCTION OPERATIONS ON SOIL THAT WILL NOT BE GRADED OR REWORKED FOR 21 DAYS OR MORE. THESE IDLE AREAS SHOULD BE SEEDING AS SOON AS POSSIBLE AFTER GRADING OR SHALL BE SEEDING WITHIN 7 DAYS. SEVERAL APPLICATIONS OF TEMPORARY SEEDING ARE NECESSARY ON TYPICAL CONSTRUCTION PROJECTS.
- THE SEEDBED SHOULD BE PULVERIZED AND LOOSE TO ENSURE THE SUCCESS OF ESTABLISHING VEGETATION. HOWEVER, TEMPORARY SEEDING SHALL NOT BE POSTPONED IF IDEAL SEEDBED PREPARATION IS NOT POSSIBLE.
- SOIL AMENDMENTS--APPLICATIONS OF TEMPORARY VEGETATION SHALL ESTABLISH ADEQUATE STANDS OF VEGETATION WHICH MAY REQUIRE THE USE OF SOIL AMENDMENTS. SOIL TESTS SHOULD BE TAKEN ON THE SITE TO PREDICT THE NEED FOR LIME AND FERTILIZER.
- SEEDING METHOD--SEED SHALL BE APPLIED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. WHEN FEASIBLE, SEED THAT HAS BEEN BROADCAST SHALL BE COVERED BY RAKING OR DRAGGING AND THEN LIGHTLY TAMPED INTO PLACE USING A ROLLER OR CULTIPACKER. IF HYDROSEEDING IS USED, THE SEED AND FERTILIZER WILL BE MIXED ON SITE, AND THE SEEDING SHALL BE DONE IMMEDIATELY AND WITHOUT INTERRUPTION.

**MULCHING TEMPORARY SEEDING**

- APPLICATIONS OF TEMPORARY SEEDING SHALL INCLUDE MULCH WHICH SHALL BE APPLIED DURING OR IMMEDIATELY AFTER SEEDING. SEEDINGS MADE DURING OPTIMUM SEEDING DATES AND WITH FAVORABLE SOIL CONDITIONS AND ON VERY FLAT AREAS MAY NOT NEED MULCH TO ACHIEVE ADEQUATE STABILIZATION.
- MATERIALS:
  - STRAW--IF STRAW IS USED, IT SHALL BE UNROTTED SMALL-GRAIN STRAW APPLIED AT THE RATE OF 2 TONS PER ACRE OR 90 LB. PER 1,000 SQUARE FEET (TWO TO THREE BALES). THE MULCH SHALL BE SPREAD UNIFORMLY BY HAND OR MECHANICALLY SO THE SOIL SURFACE IS COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FOOT SECTIONS AND SPREAD TWO 45 LB. BALES OF STRAW IN EACH SECTION.
  - HYDROSEEDERS--IF WOOD-CELLULOSE FIBER IS USED, IT SHALL BE USED AT 2,000 LB. PER ACRE OR 46 LB. PER 1,000 SQUARE FEET.
  - OTHER--OTHER ACCEPTABLE MULCHES INCLUDE MULCH MATTINGS APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS OR WOOD CHIPS APPLIED AT 6 TONS PER ACRE.
- STRAW MULCH SHALL BE ANCHORED IMMEDIATELY TO MINIMIZE LOSS BY WIND OR WATER.

**ANCHORING METHODS:**

- MECHANICAL--A DISK, CRIMPER, OR SIMILAR TYPE TOOL SHALL BE SET STRAIGHT TO PUNCH OR ANCHOR THE MULCH MATERIAL INTO THE SOIL. STRAW MECHANICALLY ANCHORED SHALL NOT BE FINELY CHOPPED BUT, GENERALLY, BE LEFT LONGER THAN 6 INCHES.
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- WOOD-CELLULOSE FIBER--WOOD-CELLULOSE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 LB. PER ACRE. THE WOOD-CELLULOSE FIBER SHALL BE MIXED WITH WATER, AND THE MIXTURE SHALL CONTAIN A MAXIMUM OF 50 LB. PER 100 GALLONS.

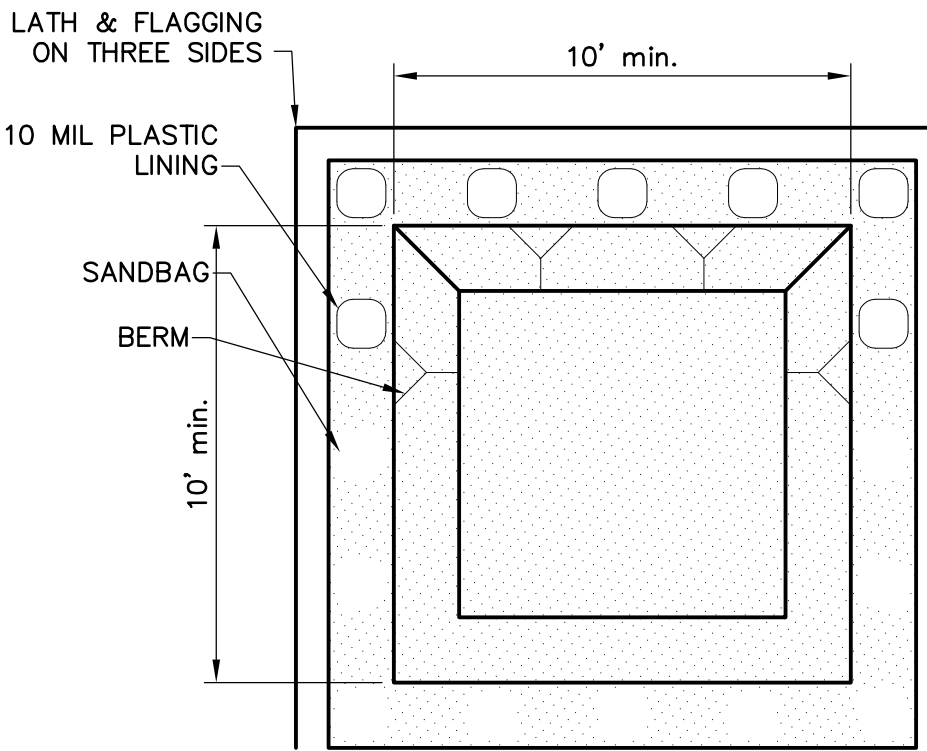
**CONCRETE WASHOUT AREA**

**DESCRIPTION**

A CONCRETE WASH OUT AREA IS A STABILIZED LINED COLLECTION AREA WHERE TRUCKS, PANS AND TOOLS CAN BE WASHED OFF AFTER WORKING WITH CONCRETE.

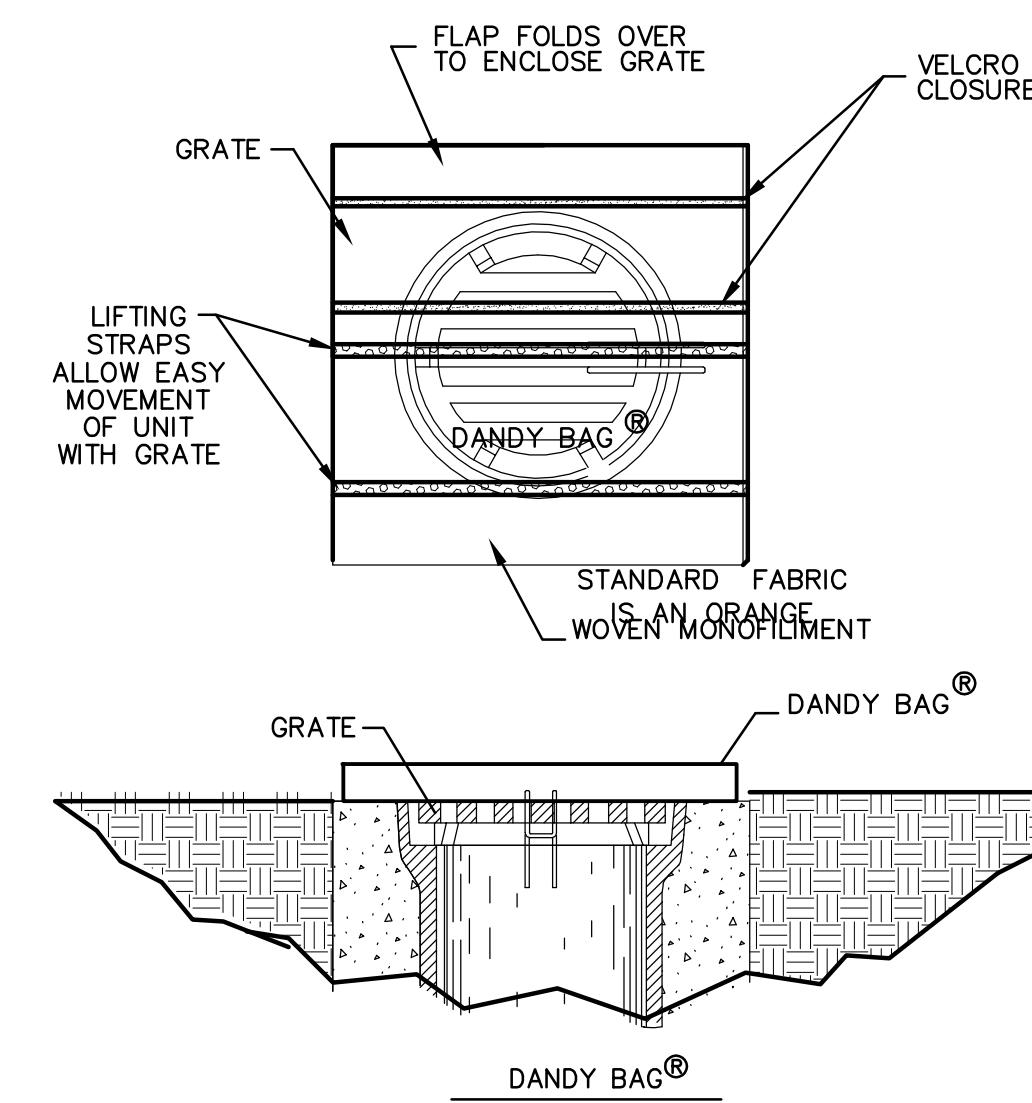
**SPECIFICATIONS FOR CONCRETE WASHOUT AREA**

- FINAL LOCATION AND SIZE TO BE DETERMINED IN THE FIELD.
- A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FEET OF THE TEMPORARY CONCRETE WASHOUT FACILITY. THE SIGN SHALL BE A MIN. OF 24"x24" WITH 4" MIN. LETTER HEIGHT MOUNTED 72" MIN. ABOVE GRADE.
- THE CONCRETE SHALL BE REPAIRED OR REPLACED AS NECESSARY TO MAINTAIN IT'S FUNCTIONALITY.



**INLET PROTECTION**

**SPECIFICATIONS FOR DANDY BAG®**



**INSTALLATION AND MAINTENANCE GUIDELINES**

LOCATION: TO BE USED ON ALL INLETS OR CATCH BASINS WITHIN KLUSNER AVENUE ROW FROM LYLE AVENUE TO WEST PARKVIEW AVENUE INCLUDING THE CATCH BASINS ALONG PARKVIEW AVENUE AT THE INTERSECTION WITH KLUSNER AVENUE.

INSTALLATION: THE EMPTY DANDY BAG® SHOULD BE PLACED OVER THE GRATE AS THE GRATE STANDS ON END. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN POUCH, ON THE BOTTOM (BELOW-GRADE SIDE) OF THE UNIT. ATTACH ABSORBENT PILLOW TO TETHER LOOP. TUCK THE ENCLOSURE FLAP INSIDE TO COMPLETELY ENCLOSE THE GRATE. HOLDING THE LIFTING DEVICES (DO NOT RELY ON LIFTING DEVICES TO SUPPORT THE ENTIRE WEIGHT OF THE GRATE), PLACE THE GRATE INTO ITS FRAME.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM SURFACE AND VICINITY OF UNIT AFTER EACH STORM EVENT. REMOVE SEDIMENT THAT HAS ACCUMULATED WITHIN THE CONTAINMENT AREA OF THE DANDY BAG AS NEEDED. IF USING OPTIONAL OIL ABSORBENTS; REMOVE AND REPLACE ABSORBENT PILLOW WHEN NEAR SATURATION.

**SCHEDULE OF CONSTRUCTION ACTIVITY AS (IT RELATES TO SOIL PROTECTION)**

THE FOLLOWING IS A GENERAL CONSTRUCTION SCHEDULE AS ESTIMATED BY THE ENGINEER AND BY NO MEANS DICTATES THE CONTRACTOR'S MEANS AND METHODS FOR CONSTRUCTION.

- INSTALL PERIMETER CONTROLS, TDA
- WALK THROUGH WITH CITY TDA
- SITE CLEARING AND GRUBBING START: TDA
- INSTALL EROSION CONTROL BARRIERS WITHIN 7 DAYS TDA
- OF THE START OF CLEARING AND GRUBBING
- MASS SITE GRADING TDA
- TEMPORARY AND PERMANENT SEEDING TDA
- COMPLETION OF SITE CONSTRUCTION TDA
- SITE STABILIZED TDA
- EROSION PROTECTION REMOVED FROM SITE TDA
- SITE OCCUPANCY TDA

**TIMING OF CONTROLS / MEASURES**

AS INDICATED IN THE SCHEDULE OF CONSTRUCTION ACTIVITIES, STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, AND INLET PROTECTION WILL BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY OTHER PORTIONS OF THE SITE. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN 21 DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN 7 DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, THAT AREA WILL BE STABILIZED WITH PERMANENT SEED AND MULCH.



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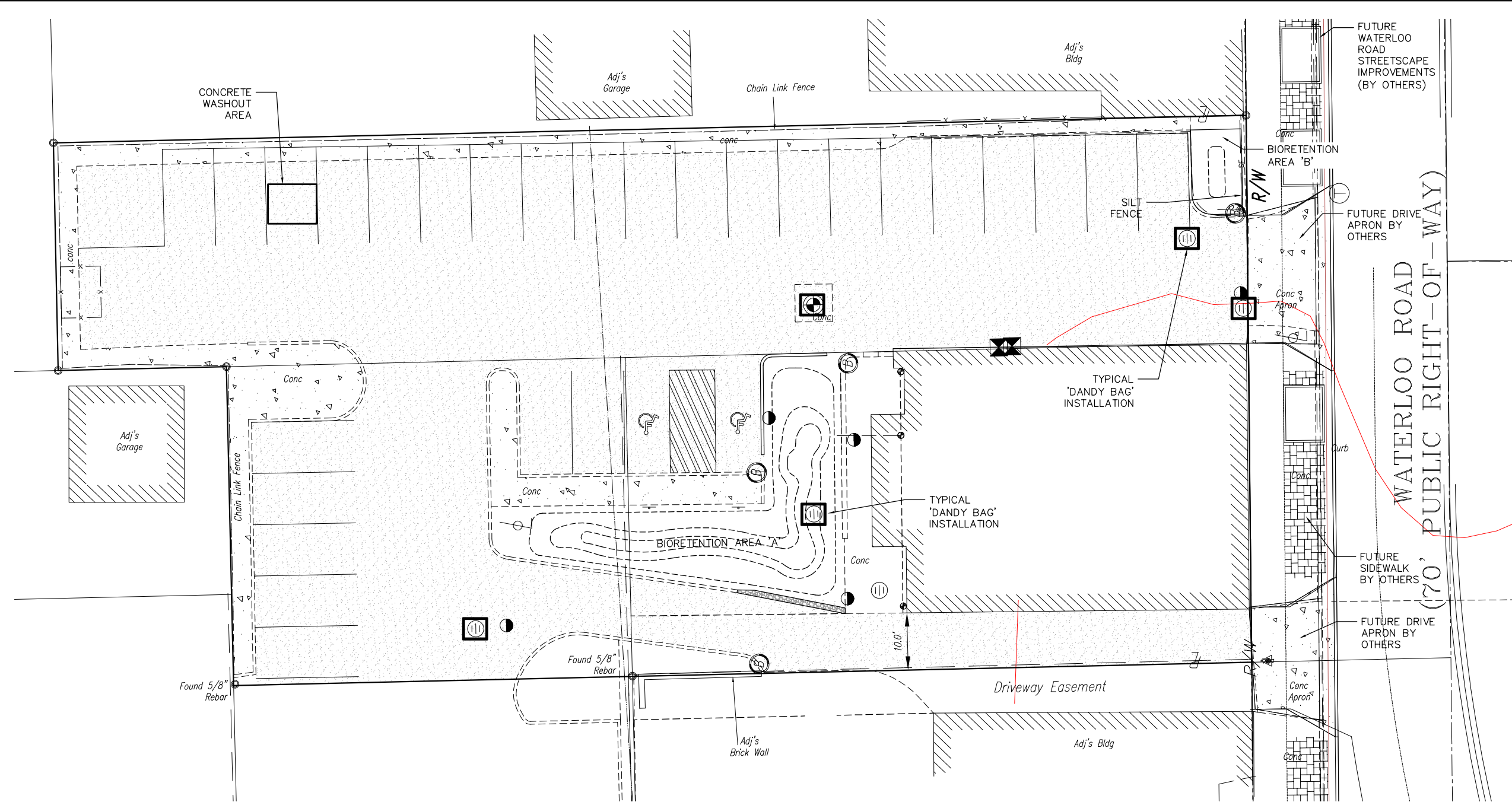
SCALE

GRAPHIC SCALE

**STORMWATER POLLUTION PREVENTION PLAN NOTES**

COLLINWOOD ARTS DISTRICT KEY GREEN PARKING LOT

**0011**



**LEGEND**

- FOUND IRON PIN
- ⊕ BOLLARD
- ⊙ LIGHT POLE
- ⊙ UTILITY POLE
- ⊙ SIGN POST
- ⊙ DOWNSPOUT
- ⊕ CATCH BASIN
- ⊕ STORM MANHOLE
- ⊙ SANITARY CLEANOUT
- ⊕ ELECTRIC METER
- ⊕ GAS VALVE
- PROPERTY LINE
- FENCE
- SF — SF — SILT FENCE



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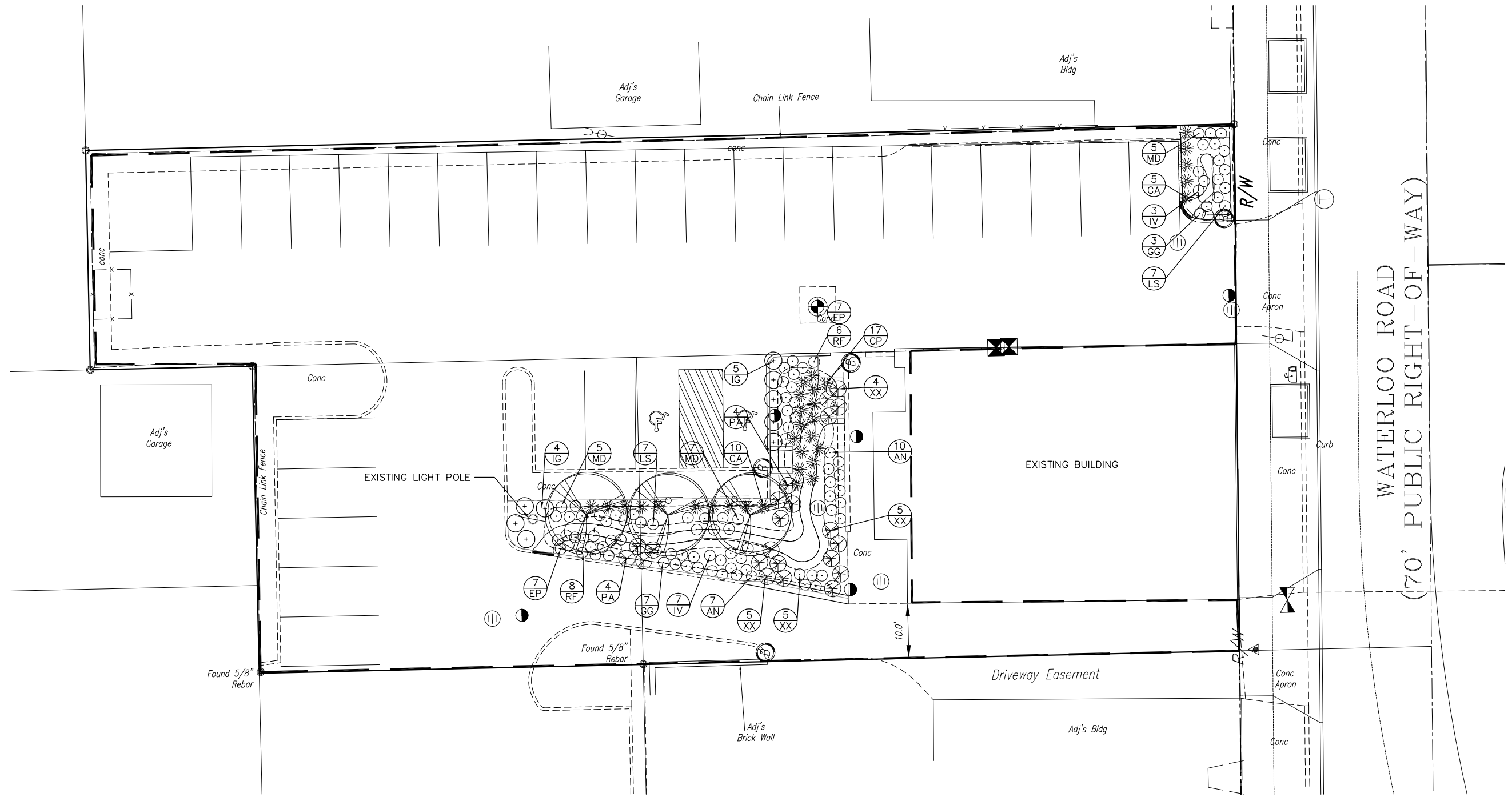
GRAPHIC SCALE

**STORMWATER POLLUTION PREVENTION PLAN**

COLLINWOOD ARTS DISTRICT  
 KEY  
 GREEN PARKING LOT

**0012**





PLANT LIST

QTY	SYM	SCIENTIFIC NAME	COMMON NAME	SIZE/ROOT	COND
3	AF	ACER FREEMANII X 'AUTUMN BLAZE'	AUTUMN BLAZE FREEMAN MAPLE	2" CAL.	B&B
10	CAR	CLETHRA ALNIFOLIA 'RUBY SPICE'	RUBY SPICE SUMMERSWEET	NO. 5	CONT.
14	EP	ECHINACEA PURPUREA	PURPLE CONE FLOWER	NO. 1	CONT.
14	RF	RUDBECKIA FULGIDA 'GOLDSTRUM'	GOLDSTRUM BLACK EYED SUSAN	NO. 1	CONT.
5	CA	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	NO. 2	CONT.
17	MD	MONARDA DIDYMA	BEE-BALM	NO. 2	CONT.
10	LS	GALLIARDIA X GRANDIFLORA	INDIAN BLANKET	NO. 2	CONT.
10	IV	IRIS VERSICOLOR	BLUE FLAG IRIS	NO. 1	CONT.
14	IL	LIATRIS SPICATA	LOUISIANA IRIS HYBRID	NO. 2	CONT.
17	AN	ASTER NOVAE-ANGLIAE 'PURPLE DOME'	DOUBLE GOLD DAYLILLY	NO. 1	CONT.
17	CP	CAREX PENNSYLVANICA	SUN SEDGE		
8	PA	PEROVSKIA ATRIPLICIFOLIA	RUSSIAN SAGE	NO. 2	CONT.

HARDWOOD MULCH  
 RIVER ROCK MULCH:  
 50% - #34 RIVER ROCK GRAVEL  
 50% - #1 & #2 RIVER ROCK GRAVEL

LEGEND

- FOUND IRON PIN
- BOLLARD
- LIGHT POLE
- UTILITY POLE
- SIGN POST
- DOWNSPOUT
- CATCH BASIN
- STORM MANHOLE
- SANITARY CLEANOUT
- ELECTRIC METER
- GAS VALVE
- PROPERTY LINE
- FENCE
- CONSTRUCTION LIMITS



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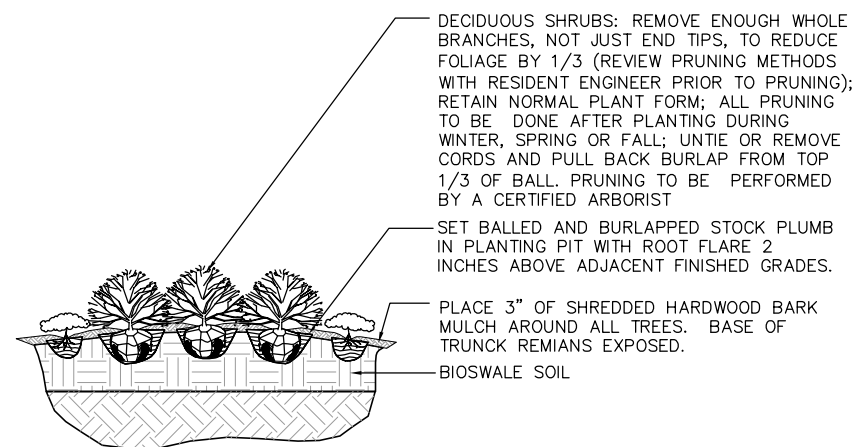
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 SCALE 1" = 10'

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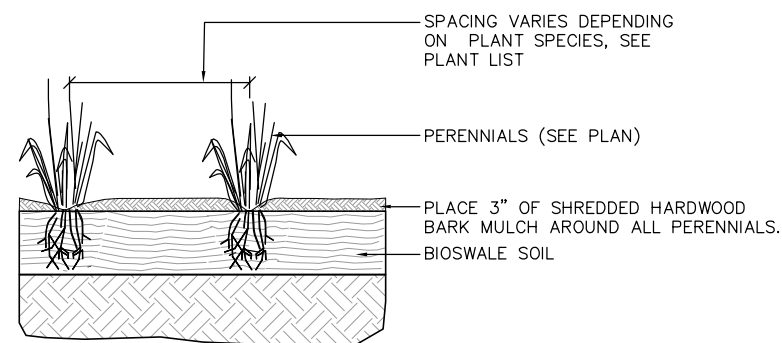
LANDSCAPE PLAN

COLLINWOOD ARTS  
 DISTRICT  
 KEY  
 GREEN PARKING LOT

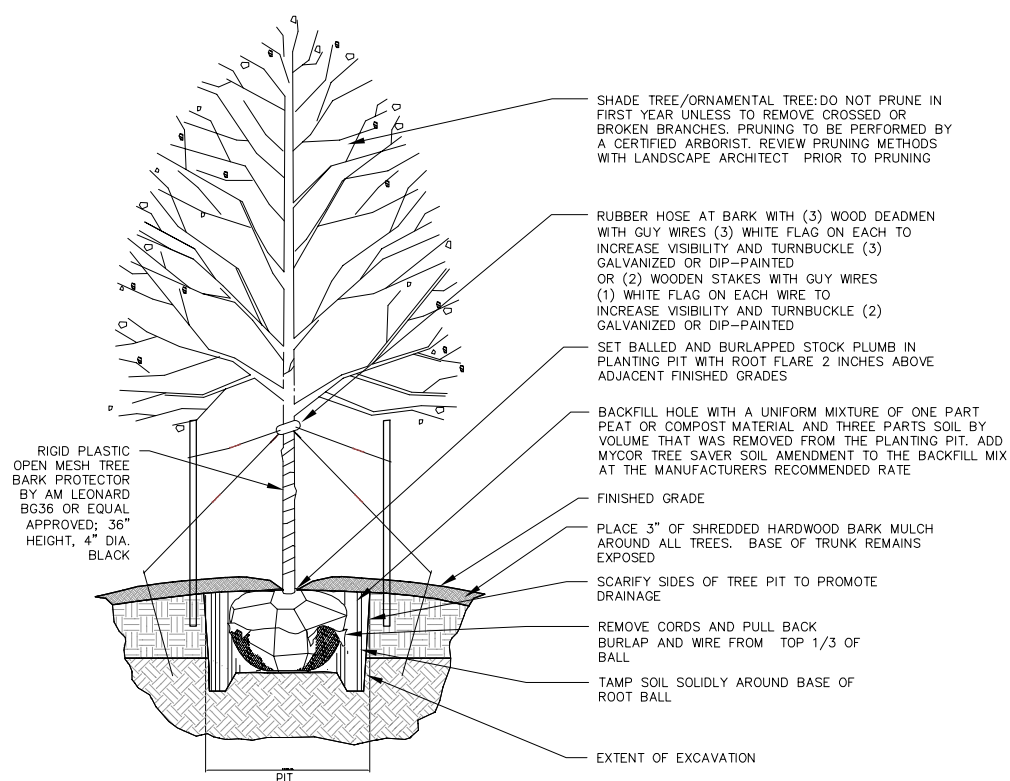
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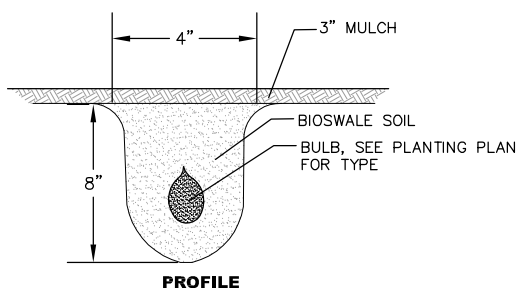
1 DECIDUOUS SHRUBS, TYP.  
NTS



2 PERENNIALS, TYP.  
NTS



3 DECIDUOUS TREE, TYP.  
NTS



4 BULBS, TYP.  
NTS

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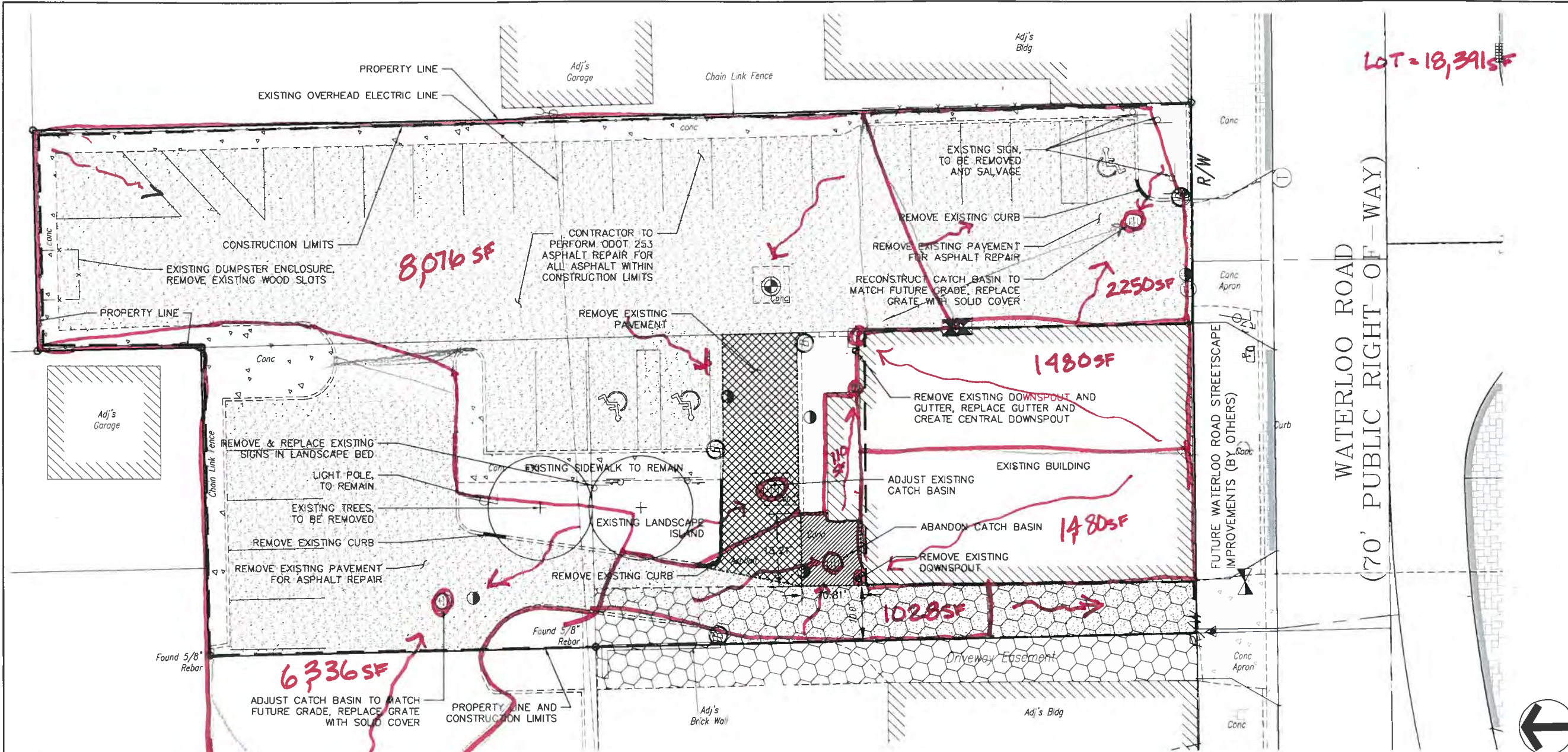
## LANDSCAPE DETAILS

COLLINWOOD ARTS  
DISTRICT  
KEY  
GREEN PARKING LOT

# 0014



LOT = 18,391 SF



WATERLOO ROAD  
(70' PUBLIC RIGHT-OF-WAY)

1 EXISTING CONDITIONS AND DEMOLITION PLAN  
1" = 10'-0"

**GENERAL NOTES:**

- THIS WORK CONSISTS OF THE MAINTENANCE OF TRAFFIC AND THE PROTECTION OF THE TRAVELING PUBLIC APPROACHING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF CONSTRUCTION.
- A) FURNISH, ERECT, PLACE AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES AND MAINTAIN TRAFFIC DURING THE HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES IN ACCORDANCE WITH THE METHODS INDICATED ON THESE DRAWINGS AND:
- 1) THE SPECIAL PROVISIONS OF THE CONTRACT
  - 2) ODOT CMS 2012 SPECIFICATIONS
  - 3) CITY OF CLEVELAND
  - 4) U.S. DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2003 EDITION AND ALL SUPPLEMENTS APPLICABLE TO THE WORK DATED TO THE DATE OF ADVERTISEMENT
- B) UNLESS OTHERWISE NOTED AND EXCEPT FOR REGULATORY SIGNS, (SERIES R), ALL SIGNS HAVE A NON-REFLECTORIZED BLACK LEGEND AND RETRO-REFLECTIVE ORANGE BACKGROUND.

- C) MOUNTING OF ALL SIGNS AND BARRICADES SHALL BE IN ACCORDANCE WITH ODOT CMS 2010 AND AS PER CITY OF CLEVELAND CODES.
- D) REMOVE ALL EXISTING SIGNS AS REQUIRED TO ACCOMMODATE CONSTRUCTION OPERATIONS. REINSTALL THESE SIGNS AT THE COMPLETION OF THE PROJECT AND/OR AS DIRECTED BY THE LANDSCAPE ARCHITECT.
- E) THIS TRAFFIC CONTROL PLAN DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR TRAFFIC CONTROL AS PER ODOT CMS 2010 AND CITY OF CLEVELAND CODES.
- F) NOTIFY NORTHEAST SHORES DEVELOPMENT CORP. TEN (10) DAYS IN ADVANCE OF DRIVEWAY RESTRICTIONS SO NORTHEAST SHORES DEVELOPMENT CORP. STAFF CAN NOTIFY PROPERTY OWNERS AFFECTED BY WORK. COORDINATE LOCATION OF ANY TRAFFIC CONTROL DEVICES LOCATED WITHIN THEIR DRIVEWAYS WITH NORTHEAST SHORES DEVELOPMENT CORP.
- G) PROVIDE SUFFICIENT NUMBER OF PROPERLY ATTIRED FLAGGERS (VEST, HARD HAT, ETC) TO ADEQUATELY CONTROL TRAFFIC FLOW THROUGH

- THE WORK ZONE AS REQUIRED BY THE CITY OF CLEVELAND, WHICH INCLUDES ANY INTERSECTING STREETS IN THE WORK ZONE AND AS DIRECTED.
- H) LIMIT ANY LANE CLOSURE TO THE LENGTH NECESSARY TO SAFELY PERFORM THE REQUIRED WORK. AT NO TIME SHALL COMPLETE STREET CLOSURE BE INSTITUTED.
- I) AT THE END OF EACH WORKDAY AND WHENEVER PRACTICAL DURING THE WORKDAY, EQUIPMENT, VEHICLES AND MATERIALS SHALL BE STORED A MINIMUM OF 10 FEET FROM THE EDGE OF THE NEAREST OPEN TRAVEL LANE OR THEY SHALL BE ADEQUATELY STORED WITHIN THE CONSTRUCTION LIMITS. IF EQUIPMENT, VEHICLES AND MATERIALS CANNOT BE STORED AS DESCRIBED ABOVE, OR IF THESE ITEMS ARE PLACED FOR USE ON OR NEAR THE ROADWAY WITHIN THE WORK ZONE, BARRICADED, DRUMS OR OTHER PROTECTIVE DEVICES SHALL BE PLACED AROUND THE EQUIPMENT, VEHICLES AND STORAGE SITE TO WARN AND PROTECT THE TRAVELING PUBLIC.
- J) DO NOT ALLOW EMPLOYEES TO PARK THEIR PERSONAL VEHICLES ON ANY TRAVEL LANE, SHOULDER, OR SEEDED AREA ALONG THE

- ROADWAY.
- K) IMMEDIATELY UPON COMPLETION OF THE WORK, REMOVE THE MAINTENANCE OF TRAFFIC DEVICES.
- L) ALL WORKERS SHALL WEAR THE YELLOW/GREEN ANS 11 VESTS.
- M) NOTIFY THE CITY OF CLEVELAND ENGINEERING DEPARTMENT AND OWNER TEN (10) DAYS IN ADVANCE OF ANY SIGNAGE INTENDED TO BE PLACED.
- N) MAINTAIN A MINIMUM OF TWO 10-FOOT TRAVEL LANES ON ALL STREETS AT ALL TIMES, EXCEPT THAT TWO 8-FOOT LANES MAY BE MAINTAINED IF ONGOING CONSTRUCTION OPERATIONS REQUIRE IT. A SINGLE 11-FOOT LANE MAY BE MAINTAINED USING FLAGGERS IN ACCORDANCE WITH ODOT CMS 2012 AND CITY OF CLEVELAND CODE.
- O) NOTIFY CITY OF CLEVELAND PRIOR TO CONSTRUCTION. CITY OF CLEVELAND TO PROVIDE CONSTRUCTION/PERMIT APPROVAL OF ALL WORK.
- P) CONTRACTOR SHALL NOT DISTURB OPERATION AND ACCESS TO EXISTING BILLBOARD.

**DEMOLITION NOTES:**

1. EXISTING CURBS ARE TO REMAIN ASIDE FROM WHERE CURB REMOVAL IS NOTED
2. CONTRACTOR TO REMOVE AND REPAIR ALL ASPHALT SURFACE WITHIN THE CONSTRUCTION LIMITS
3. REFER TO SHEET 0005 FOR SPECIFIED PAVEMENT AREAS TO BE REGRADED FOR DESIRED DRAINAGE

← □ = DRAINAGE AREAS & FLOW

**LEGEND**

- FOUND IRON PIN
- ⊙ BOLLARD
- ⊙ LIGHT POLE
- ⊙ UTILITY POLE
- ⊙ SIGN POST
- ⊙ DOWNSPOUT
- ⊙ CATCH BASIN
- ⊙ STORM MANHOLE
- ⊙ SANITARY CLEANOUT
- ⊙ ELECTRIC METER
- ⊙ GAS VALVE
- PROPERTY LINE
- - - FENCE
- - - CONSTRUCTION LIMITS
- ▨ EXISTING DRIVEWAY EASEMENT
- ▨ EXISTING CONCRETE PAVEMENT
- ▨ EXISTING ASPHALT PAVEMENT REPAIR
- ▨ REMOVE EXISTING PAVEMENT
- ▨ REMOVE EXISTING CONCRETE PAVEMENT

ISSUED FOR BIDDING

ADDENDUM NO	ADDENDUM DATE	BY

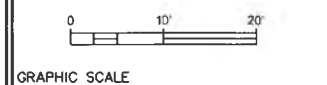
ISSUED FOR CONSTRUCTION

NO.	DESCRIPTION	DATE	BY

RECORD DRAWINGS

NO.	DESCRIPTION	DATE	BY

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DRAWN BY: JLC CHECKED BY: KGH  
JOB NO 13816154  
SCALE 1" = 10'



**EXISTING CONDITIONS AND DEMOLITION PLAN**

COLLINWOOD ARTS DISTRICT  
KEY  
GREEN PARKING LOT

**0004**



**BIORETENTION (RAINGARDEN) CALCULATIONS USING OHIO EPA APPROVED METHODS (FROM CONSTRUCTION PERMIT OHC000004)**

Enter data in shaded cells only, other cells will be automatically calculated **ODNR CALCULTAOR**

Date: 12/18/2015

Project Name: Collinwood Art District Key Bank Green Parking Lot Retrofit

Project No.:

Type Of Project: Redevelopment

Location of Device: **FRONT AREA (2,250SF)**

<b>WQv Rainfall (P)</b>
(in)
0.75

Upstream Drainage Area (A) 2250.00 sq.ft. 0.05 acres  
 Proposed Impervious Area 2150.00 sq.ft. 0.05 acres  
 Proposed Pervious Area 100.00  
 Percent Impervious: 96%

<b>1) Identify Coefficient</b>			
A) if proposed impervious area is not known, use Ohio EPA weighted runoff Coefficient Calculation			
Ohio EPA Weighted Runoff Coefficient Calculation From Construction Permit (OHC000004)(Expires 4/20/2018):			
Land use	Project Drainage Area (acres)*	% Total Drainage Area	C Value Per Land Use Area
Industrial & Commercial	2150.00	0.96	0.80
High Density Residential (>8 dwellings/ac)	0	0.00	0.00
Medium Density Residential (4-8 dwellings/ac)	0	0.00	0.00
Low Density Residential (<4 dwellings/ac)	0	0.00	0.00
Open space and Recreational Areas	100.00	0.04	0.20
<b>Total Acres:</b>	<b>2250</b>	<b>Weighted C:</b>	<b>0.77</b>
B) if proposed impervious area is known, use calculated coefficient			
Planned Site Impervious where C=0.858i <sup>3</sup> -0.78i <sup>2</sup> +0.774i+0.04 0.81600			
i = percent impervious			
0.81600 select C Value			

<b>Table 1 - OEPA Runoff Coefficients Based upon Type of Land Use</b>	
Industrial & Commercial	0.8
High Density Residential (>8 dwellings/ac)	0.5
Medium Density Residential (4-8 dwellings/ac)	0.4
Low Density Residential (<4 dwellings/ac)	0.3
Open space and Recreational Areas	0.2

\* This Total Area must match the Upstream Drainage Area

<b>2) Required Filter Bed Size of the Bioretention (Equation from: ONDR, 2014. "Rainwater and Land Development"):</b>			
Y/N			
no	If impervious surface <25% WQv/1 Ft Max (sq.ft.)	114.7502407	
yes	If impervious surface >= 25% 5% of Imp Area (sq.ft)	107.5	Required Filter Bed Size 115 sq.ft. minimum Filter Bed 100 sf available

<b>3) Redevelopment Project?</b>			
Yes	x	If yes, then 20% of WQv	*** But, project is grant funded, so use 100% WQv
No		If no, then 100% of WQv	

<b>4) Required WQv (Equation from: ONDR, 2014. "Rainwater and Land Development"):</b>	
WQv=C <sup>3</sup> *A <sup>12</sup>	114.750 cu.ft.
where:	
WQv = water quality volume (cu.ft.f)	
C= Weighted C or planned site imp	
Selected C	0.82

<b>5) Proposed Bioretention Design:</b>	
Proposed Device Area Size (sq.ft.)	115 sq.ft.
Device Storage Depth (Above Ground)(feet)	1 ft
Hardwood Mulch (inches)	3 in
Soil depth (feet) 2 to 4 feet	2 ft
Concrete Sand depth (feet) - 3 inches	0.25 ft
Pea Gravel depth (feet) - 3 inches	0.25 ft
Stone depth #57 washed (feet) - 10 to 12 inches	0.8333333 ft
Designed Storage Volume (above filter bed)	115 cu.ft.
Designed Storage Volume (within bioretention area profile) = volume of soil (0.15), concrete sand/pea gravel (0.25) & stone (0.3)	77.625 cu.ft.

<b>6) Check Designed Bioretention meets drain time of WQv:</b>			
Designed Storage Volume (cf) (bioretention )	193	cu.ft.	
	1.68	ratio of deisgned storage volume to necessary WQv	
k = coefficient of permeability of bioretention (ft/day)(note: settled soil media (0.5in/hr) 1 ft/day)	1	ft/day	
kpp= coefficient of bioretention (ft/day)	1	ft/day	1 ft/day
ts = design bioretention filter bed drain time (days) (note: 1 day (24 hrs) is required by OEPA)	1	days	
Designed Volume Infiltrated within 24 -hours (not including existing subsurface)	2760	cuft/day for all areas designed	
	YES	does design draw down in 24 hours or less?	
ke = coefficient of permeability of existing subsoil media (ft/day)	8	ft/day	Unknown (using WSS)



# FOCALPOINT SYSTEM SUMMARY SHEET

For further assistance please contact Warren Cohn, CPESC, CPSWQ at 888.856.4505 or wcohn@acfenv.com.

**Contact:** Katherine Holmok  
**Company:** Environmental Design Group  
**Phone:** 330-375-1390  
**Email:** kholmok@envdesigngroup.com

**Project Name:** front area (2,250sf)  
**Location:** Cleveland, Ohio

**Step 1 - Rainfall Methodology**

1.1 - Enter SCS Storm Type	Type II	
1.2 - Enter methodology for Water Quality Volume	Manual	
3.1 - Water Quality Volume (WQv)	115	ft <sup>3</sup>
3.2 - Design Event	115	ft <sup>3</sup>

**Step 4 - FocalPoint Configuration**

4.1 - FocalPoint Factor of Safety	1.5	
4.2 - FocalPoint bed area	20	ft <sup>2</sup>
4.3 - Storage volume above FocalPoint provided	25	ft <sup>3</sup>
4.4 - Desired treatment time	24	hours
4.5 - Water Quality Volume treated prior to bypass?	Yes	
4.6 - FocalPoint drains within desired time?	Yes	
4.7 - Routing for bypass flow (flow in excess of storage volume)	To R-Tank	

**Step 6 - R-Tank Configuration**

6.1 - Total Volume Routed to R-Tank	115	ft <sup>3</sup>
6.2 - Design R-Tank volume	90	ft <sup>3</sup>
6.3 - Design R-Tank configuration	Mini + Single	
6.5 - Will R-Tank infiltrate?	Yes	
6.6 - Measured Infiltration Rate	2.00	inches / hour
6.7 - Infiltration Factor of Safety	1.00	
6.8 - Desired treatment time	24	hours

**Step 7 (Optional) - Outfall Pipe**

7.1 - Outfall pipe size	4	inches
7.2 - Number of pipes	1	
7.3 - Set overflow of outlet pipe at ceiling?	Yes	
7.4 - Outfall pipe elevation above bottom	0	

**Step 8 - Evaluation of Results**

8.2 - Does R-Tank provide enough storage?	Yes	
8.3 - Volume infiltrated	115	ft <sup>3</sup>
8.4 - Water Quality Volume infiltrated?	Yes	
8.6 - R-Tank drain within desired time?	Yes	
8.7 - Volume below outlet pipe	0	ft <sup>3</sup>

**BIORETENTION (RAINGARDEN) CALCULATIONS USING OHIO EPA APPROVED METHODS (FROM CONSTRUCTION PERMIT OHC000004)**

Enter data in shaded cells only, other cells will be automatically calculated **ODNR CALCULTAOR**

Date: 12/18/2015

Project Name: Collinwood Art District Key Bank Green Parking Lot Retrofit

Project No.:

Type Of Project: Redevelopment

Location of Device: **OTHER AREAS**

<b>WQv Rainfall (P)</b>
(in)
0.75

Upstream Drainage Area (A)	18510.00	sq.ft.	0.42	acres
Proposed Impervious Area	17308.00	sq.ft.	0.40	acres
Proposed Pervious Area	1202.00			
<b>Percent Impervious:</b>		<b>94%</b>		

**1) Identify Coefficient**

A) if proposed impervious area is not known, use Ohio EPA weighted runoff Coefficient Calculation

**Ohio EPA Weighted Runoff Coefficient Calculation From Construction Permit (OHC000004)(Expires 4/20/2018):**

Land use	Project Drainage Area (acres)*	% Total Drainage Area	C Value Per Land Use Area
Industrial & Commercial	17308.00	0.94	0.80
High Density Residential (>8 dwellings/ac)	0	0.00	0.00
Medium Density Residential (4-8 dwellings/ac)	0	0.00	0.00
Low Density Residential (<4 dwellings/ac)	0	0.00	0.00
Open space and Recreational Areas	1202.00	0.06	0.20
<b>Total Acres:</b>	<b>18510</b>	<b>Weighted C:</b>	<b>0.76</b>

**Table 1 - OEPA Runoff Coefficients Based upon Type of Land Use**

Industrial & Commercial	0.8
High Density Residential (>8 dwellings/ac)	0.5
Medium Density Residential (4-8 dwellings/ac)	0.4
Low Density Residential (<4 dwellings/ac)	0.3
Open space and Recreational Areas	0.2

\* This Total Area must match the Upstream Drainage Area

B) if proposed impervious area is known, use calculated coefficient

Planned Site Impervious where  $C=0.858i^3-0.78i^2+0.774i+0.04$  **0.78322**

I = percent impervious

**0.78322** select C Value

**2) Required Filter Bed Size of the Bioretention (Equation from: ONDR, 2014. "Rainwater and Land Development"):**

Y/N

no	If impervious surface <25% WQv/1 Ft Max (sq.ft.)	906.0891414
yes	If impervious surface >= 25% 5% of Imp Area (sq.ft)	865.4

Required Filter Bed Size **906** sq.ft. minimum Filter Bed **1,000 sf available**

**3) Redevelopment Project?**

Yes	<input checked="" type="checkbox"/>	If yes, then 20% of WQv	*** But, project is grant funded, so use 100% WQv
No	<input type="checkbox"/>	If no, then 100% of WQv	

**4) Required WQv (Equation from: ONDR, 2014. "Rainwater and Land Development"):**

$WQv=C^*P^*A/12$  906.089 cu.ft.

where:

WQv = water quality volume (cu.ft.f)

C= Weighted C or planned site imp Selected C 0.78

**5) Proposed Bioretention Design:**

Proposed Device Area Size (sq.ft.)	906	sq.ft.
Device Storage Depth (Above Ground)(feet)	1	ft
Hardwood Mulch (inches)	3	in
Soil depth (feet) 2 to 4 feet	2	ft
Concrete Sand depth (feet) - 3 inches	0.25	ft
Pea Gravel depth (feet) - 3 inches	0.25	ft
Stone depth #57 washed (feet) - 10 to 12 inches	0.8333333	ft
Designed Storage Volume (above filter bed)	906	cu.ft.
Designed Storage Volume (within bioretention area profile) = volume of soil (0.15), concrete sand/pea gravel (0.25) & stone (0.3)	611.55	cu.ft.

**6) Check Designed Bioretention meets drain time of WQv:**

Designed Storage Volume (cf) (bioretention )	1,518	cu.ft.
	<b>1.67</b>	ratio of deisgned storage volume to necessary WQv
k = coefficient of permeability of bioretention (ft/day)(note: settled soil media (0.5in/hr) 1 ft/day)	1	ft/day
kpp= coefficient of bioretention (ft/day)	1	ft/day 1 ft/day
ts = design bioretention filter bed drain time (days) (note: 1 day (24 hrs) is required by OEPA)	1	days
Designed Volume Infiltrated within 24 -hours (not including existing subsurface)	21744	cuft/day for all areas designed
ke = coefficient of permeability of existing subsoil media (ft/day)	<b>YES</b>	does design draw down in 24 hours or less?
	8	ft/day Unknown (using WSS)





# FOCALPOINT SYSTEM SUMMARY SHEET

For further assistance please contact Warren Cohn, CPESC, CPSWQ at 888.856.4505 or wcohn@acfenv.com.

**Contact:** Katherine Holmok  
**Company:** Environmental Design Group  
**Phone:** 330-375-1390  
**Email:** kholmok@envdesigngroup.com

**Project Name:** remaining area ( 18,510 sf)  
**Location:** Cleveland, Ohio

**Step 1 - Rainfall Methodology**

1.1 - Enter SCS Storm Type	Type II	
1.2 - Enter methodology for Water Quality Volume	Manual	
3.1 - Water Quality Volume (WQv)	907	ft <sup>3</sup>
3.2 - Design Event	907	ft <sup>3</sup>

**Step 4 - FocalPoint Configuration**

4.1 - FocalPoint Factor of Safety	1.5	
4.2 - FocalPoint bed area	80	ft <sup>2</sup>
4.3 - Storage volume above FocalPoint provided	150	ft <sup>3</sup>
4.4 - Desired treatment time	24	hours
4.5 - Water Quality Volume treated prior to bypass?	Yes	
4.6 - FocalPoint drains within desired time?	Yes	
4.7 - Routing for bypass flow (flow in excess of storage volume)	To R-Tank	

**Step 6 - R-Tank Configuration**

6.1 - Total Volume Routed to R-Tank	907	ft <sup>3</sup>
6.2 - Design R-Tank volume	700	ft <sup>3</sup>
6.3 - Design R-Tank configuration	Mini + Single	
6.5 - Will R-Tank infiltrate?	Yes	
6.6 - Measured Infiltration Rate	2.00	inches / hour
6.7 - Infiltration Factor of Safety	1.00	
6.8 - Desired treatment time	24	hours

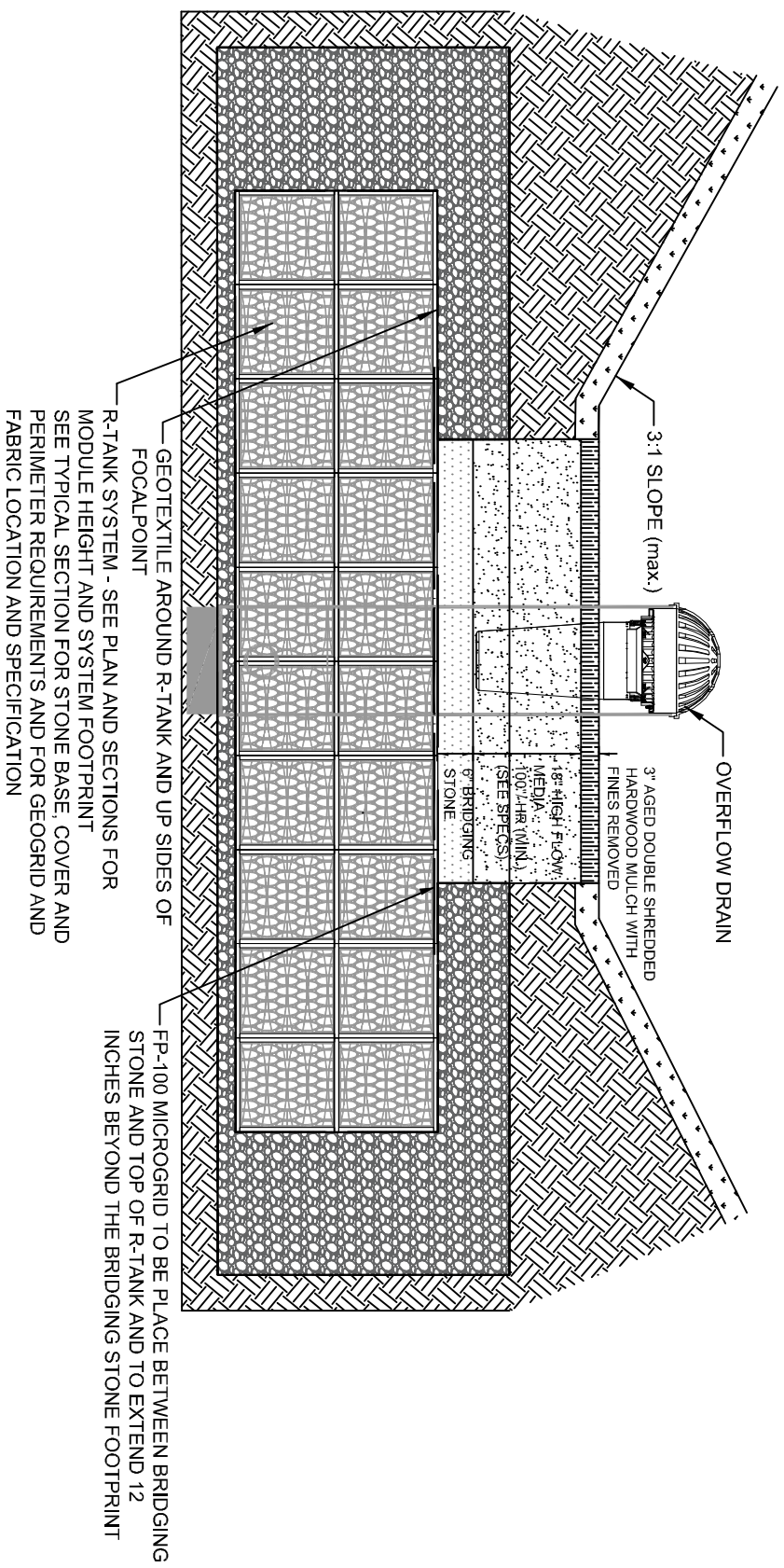
**Step 7 (Optional) - Outfall Pipe**

7.1 - Outfall pipe size	4	inches
7.2 - Number of pipes	1	
7.3 - Set overflow of outlet pipe at ceiling?	Yes	
7.4 - Outfall pipe elevation above bottom	0	

**Step 8 - Evaluation of Results**

8.2 - Does R-Tank provide enough storage?	Yes	
8.3 - Volume infiltrated	907	ft <sup>3</sup>
8.4 - Water Quality Volume infiltrated?	Yes	
8.6 - R-Tank drain within desired time?	Yes	
8.7 - Volume below outlet pipe	0	ft <sup>3</sup>

FOCALPOINT WITH EXPANDED R-TANK KEY DIMENSIONAL DATA	
FOCALPOINT LENGTH	
FOCALPOINT WIDTH	
OVERFLOW RIM ELEV	
TOP OF MULCH ELEV	
TOP OF MEDIA ELEV	
TOP OF BRIDGING STONE ELEV	
TOP OF R-TANK ELEV	
BOTTOM OF R-TANK ELEV	
STONE BASE ELEV	
R-TANK FOOTPRINT	____' X ____'



GEOTEXTILE AROUND R-TANK AND UP SIDES OF FOCALPOINT

R-TANK SYSTEM - SEE PLAN AND SECTIONS FOR MODULE HEIGHT AND SYSTEM FOOTPRINT  
SEE TYPICAL SECTION FOR STONE BASE, COVER AND PERIMETER REQUIREMENTS AND FOR GEOGRID AND FABRIC LOCATION AND SPECIFICATION

FP-100 MICROGRID TO BE PLACE BETWEEN BRIDGING STONE AND TOP OF R-TANK AND TO EXTEND 12 INCHES BEYOND THE BRIDGING STONE FOOTPRINT

**FOCALPOINT HP WITH EXPANDED R-TANK**

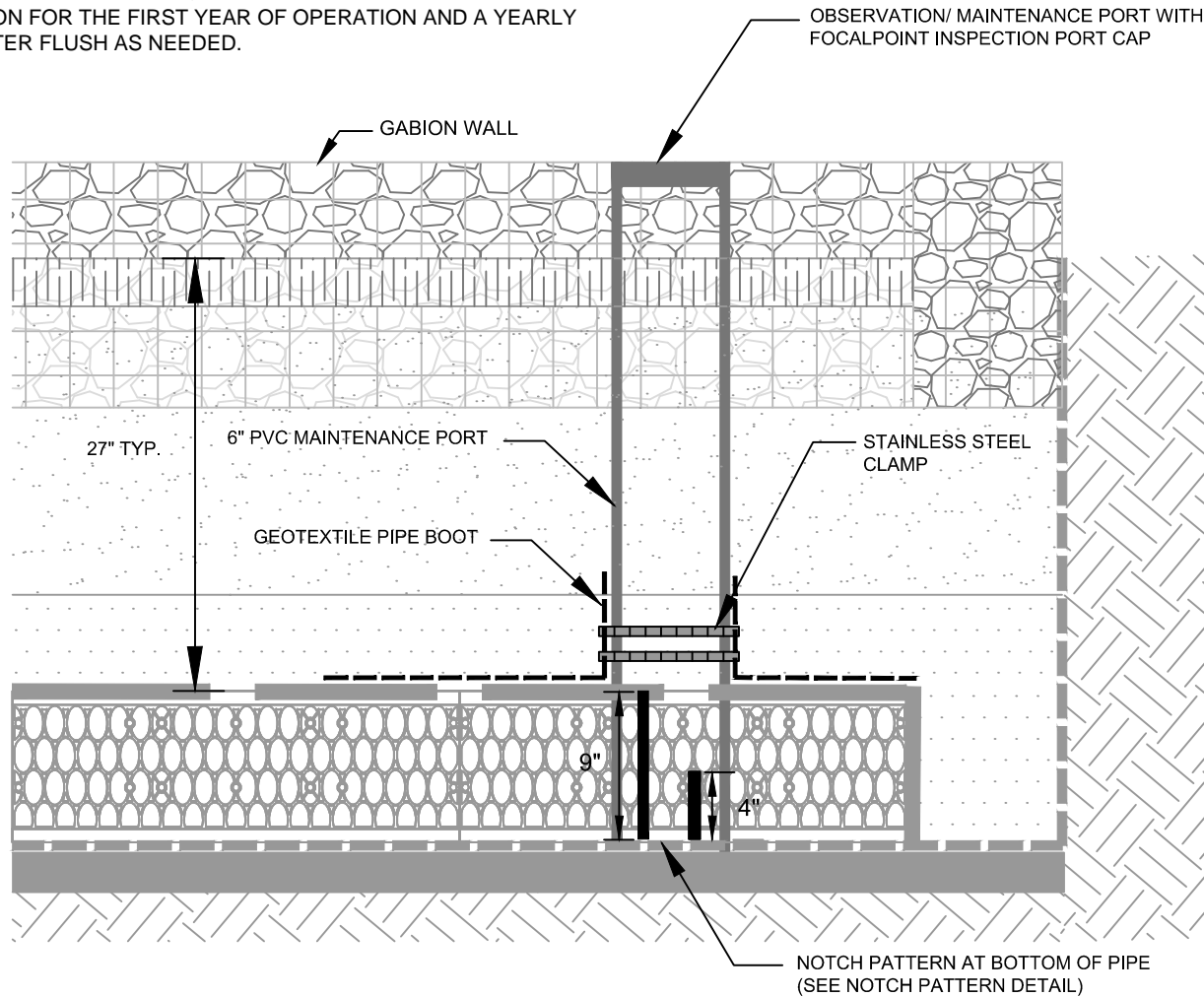


TO FIND A VALUE ADDED RESELLER IN YOUR AREA VISIT [WWW.CONVERGENTWATER.COM/STORMWATER-PRODUCTS](http://WWW.CONVERGENTWATER.COM/STORMWATER-PRODUCTS) OR CONTACT CONVERGENT WATER TECHNOLOGIES AT 1.800.771.5428

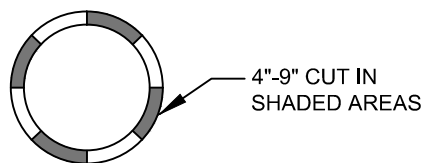
REVISED  
MARCH 2015

## OBSERVATION/ MAINTENANCE PORT

PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER FLUSH AS NEEDED.



### PIPE NOTCH PATTERN DETAIL



FOCALPOINT HPMB5 OBSERVATION/ MAINTENANCE PORT

FocalPoint  
BIOFILTRATION SYSTEMS

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800.448.3636

ACF  
ENVIRONMENTAL  
Customer Focused, Environmentally Committed



# National Stormwater Calculator Report

## Site Description

Key bank

Parameter	Current Scenario	Baseline Scenario
Site Area (acres)	0.47	0.47
Hydrologic Soil Group	B	B
Hydraulic Conductivity (in/hr)	2	2
Surface Slope (%)	2	2
Precip. Data Source	KIRTLAND-HOLDEN 2	KIRTLAND-HOLDEN 2
Evap. Data Source	KIRTLAND-HOLDEN 2	KIRTLAND-HOLDEN 2
Climate Change Scenario	None	None
% Forest	0	0
% Meadow	0	0
% Lawn	6	6
% Desert	0	0
% Impervious	94	94
Years Analyzed	13	13
Ignore Consecutive Wet Days	False	False
Wet Day Threshold (inches)	0.10	0.10

LID Control	Current Scenario	Baseline Scenario
Disconnection	0	0
Rain Harvesting	0	0
Rain Gardens	100 / 5	0
Green Roofs	0	0
Street Planters	0	0
Infiltration Basins	0	0
Porous Pavement	0	0

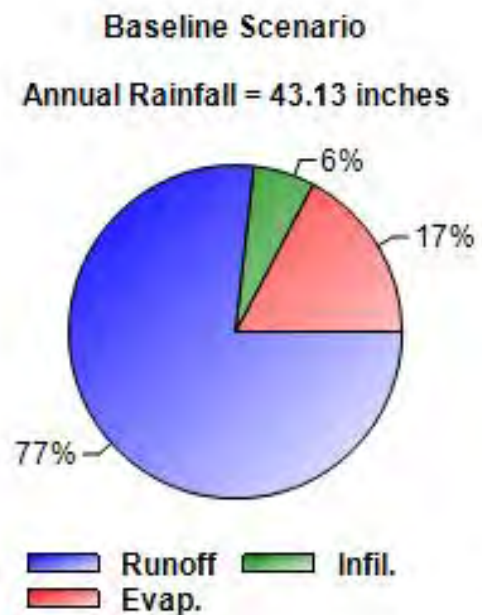
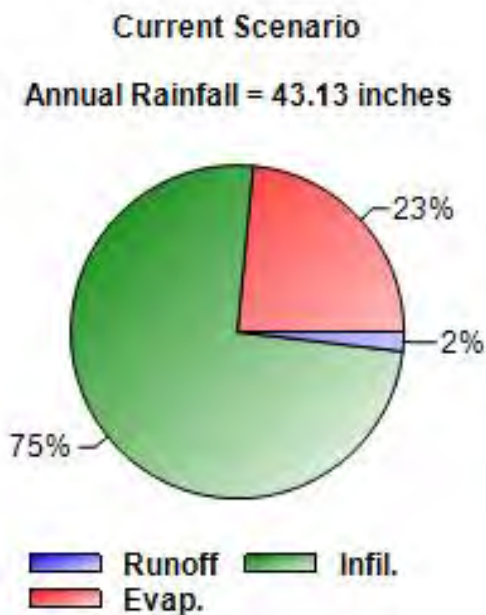
% of impervious area treated / % of treated area used for LID

# National Stormwater Calculator Report

## Summary Results

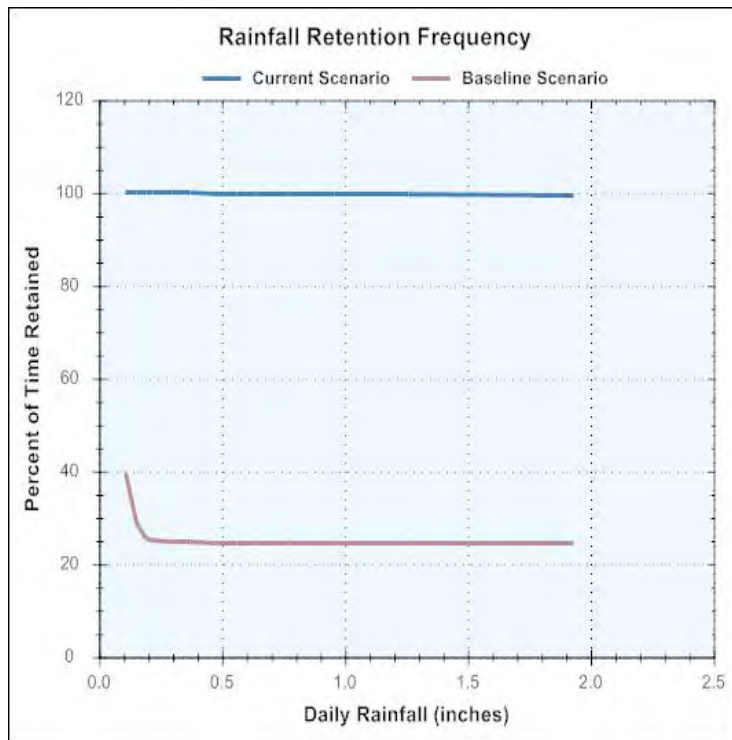
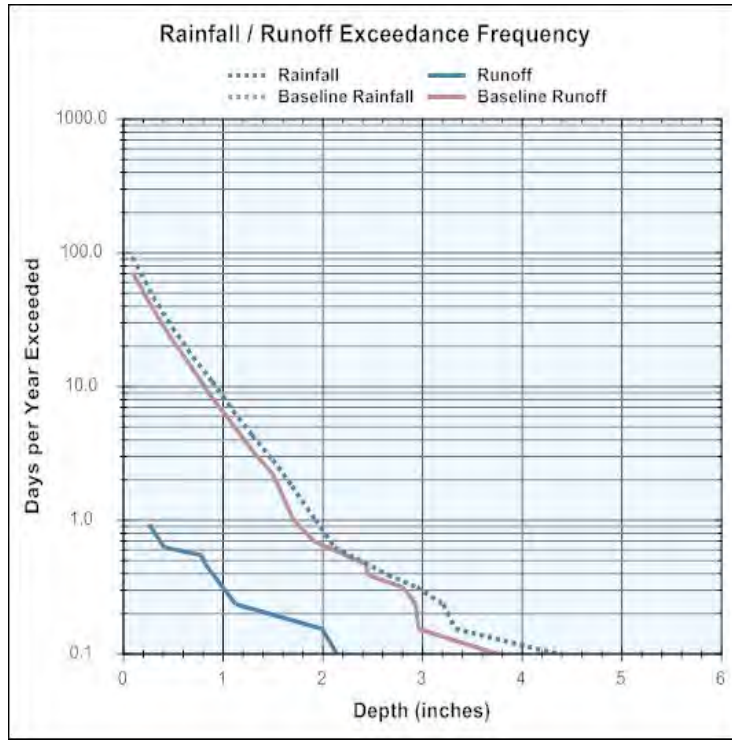
Key bank

Statistic	Current Scenario	Baseline Scenario
Average Annual Rainfall (inches)	43.13	43.13
Average Annual Runoff (inches)	0.78	33.24
Days per Year With Rainfall	93.02	93.02
Days per Year with Runoff	0.92	70.19
Percent of Wet Days Retained	99.01	24.55
Smallest Rainfall w/ Runoff (inches)	0.72	0.10
Largest Rainfall w/o Runoff (inches)	2.13	0.21
Max. Rainfall Retained (inches)	2.96	0.75



# National Stormwater Calculator Report

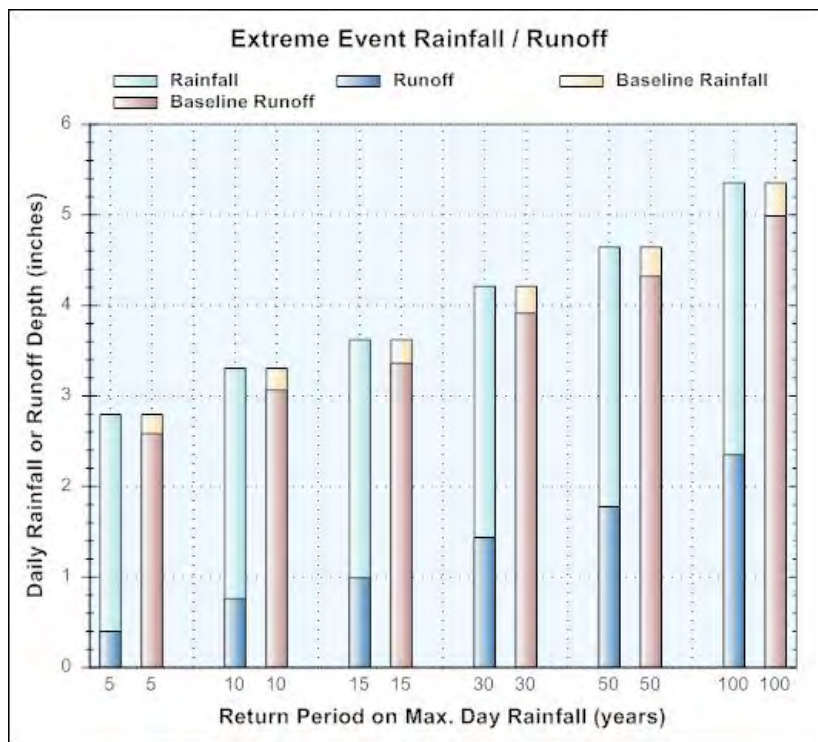
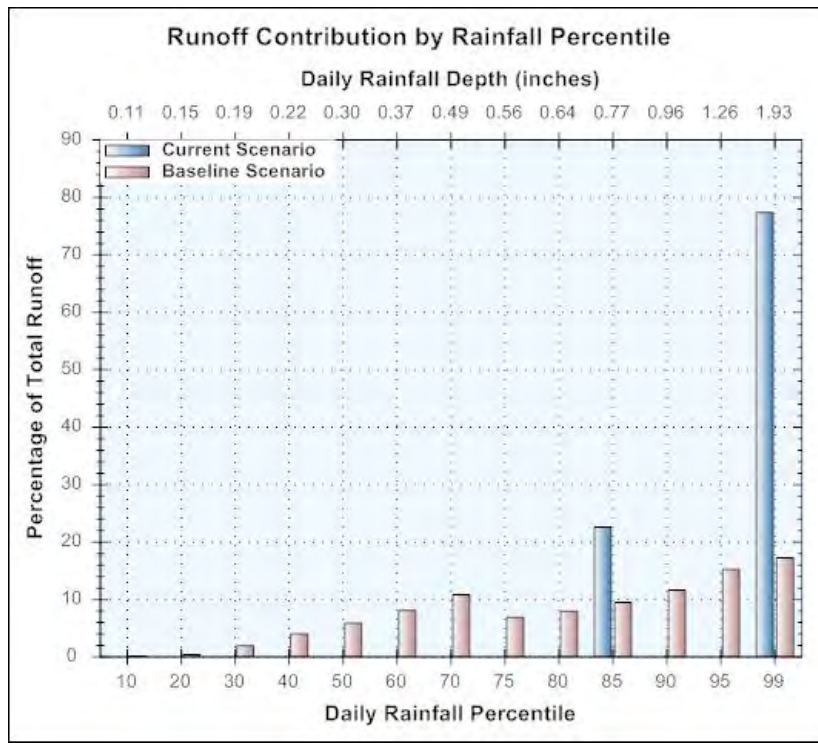
## Key bank





# National Stormwater Calculator Report

Key bank



<b>PHOTO LOG</b>	Collinwood Art District Key Bank Green Parking Lot Retrofit	Project No.
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<b>Grant Name:</b> Northeast Ohio Regional Sewer District 2016 GIG	<b>Site Location: PPN #</b> 15619 Waterloo Road, Cleveland, Ohio 44110
--	---

<b>Photo No.</b> 1	<b>Date:</b> 4/2/2015
-----------------------	--------------------------

Existing lot is paved with a small landscape island. The proposed design will not only capture the pavement, but also disconnect the existing downspouts into the BMP.



<b>PHOTO LOG</b>	Collinwood Art District Key Bank Green Parking Lot Retrofit	Project No.
<b>Grant Name:</b> Northeast Ohio Regional Sewer District 2016 GIG	<b>Site Location: PPN #</b> 15619 Waterloo Road, Cleveland, Ohio 44110	

<b>Photo No.</b> 2	<b>Date:</b> 12/3/2015
-----------------------	---------------------------

This front grassy island will be modified to include a small focal point high volume bioretention cell. This front BMP will be a more important example for this inventive BMP as the conditions are very similar to a roadside bioretention area. The interpretive panel will be directly fronting the sidewalk to engage the public.





# PHOTO LOG

Collinwood Art District Key Bank Green Parking Lot Retrofit

Project No.

**Grant Name:**

Northeast Ohio Regional Sewer District  
2016 GIG

**Site Location: PPN #**

15619 Waterloo Road, Cleveland, Ohio 44110

**Photo No.**

3

**Date:**

12/3/2015

The front catch basin and asphalt will be modified to convey stormwater to the front planted area.



**Photo No.**

4

**Date:**

12/3/2015

The back catch basin and asphalt will be modified to convey stormwater to the back planted area. The back planted area will be modified to include the focal point bioretention cells.





<b>PHOTO LOG</b>	Collinwood Art District Key Bank Green Parking Lot Retrofit	Project No.
<b>Grant Name:</b> Northeast Ohio Regional Sewer District 2016 GIG	<b>Site Location: PPN #</b> 15619 Waterloo Road, Cleveland, Ohio 44110	

<b>Photo No.</b> 5	<b>Date:</b> 12/3/2015
-----------------------	---------------------------

The old bank drive through lane will be removed and replaced with a focal point bioretention cell. The back walk will need to be repaired in order to direct stormwater to the new BMP.



<b>Photo No.</b> 6	<b>Date:</b> 12/3/2015
-----------------------	---------------------------

The old bank drive through lane will be removed and replaced with a focal point bioretention cell.



<b>PHOTO LOG</b>	Collinwood Art District Key Bank Green Parking Lot Retrofit	Project No.
<b>Grant Name:</b> Northeast Ohio Regional Sewer District 2016 GIG	<b>Site Location: PPN #</b> 15619 Waterloo Road, Cleveland, Ohio 44110	

<b>Photo No.</b> 6	<b>Date:</b> 12/3/2015
-----------------------	---------------------------

The center landscaped island would be modified to include a focal point bioretention area. Existing concrete would remain and be retrofitted to direct stormwater to this new BMP.





# Next Generation Bioretention

High Performance Modular  
Biofiltration Systems

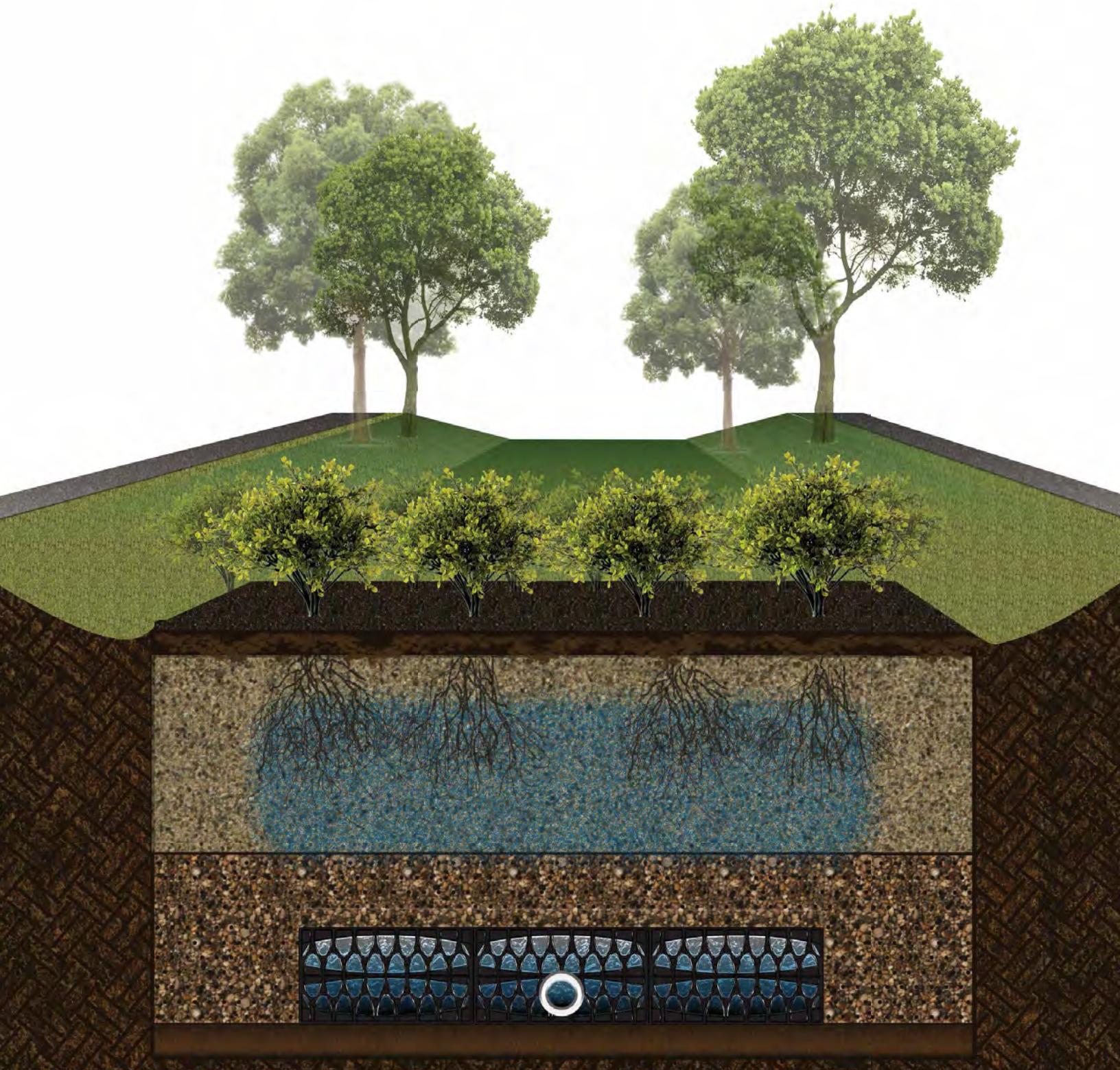


**FocalPoint**  
BIOFILTRATION SYSTEMS





FocalPoint High Performance Modular Biofiltration Systems (HPMBS) are scalable biofiltration systems which combine the efficiency of high flow rate engineered soils with the durability and modularity of a highly pervious expandable underdrain/storage/infiltration system. The modular FocalPoint HPMBS is a complete, integrated system with a demanding specification that insures functionality, performance and maintainability. With rigorous quality assurance standards and post-construction in-situ performance verification, FocalPoint HPMBS provides guaranteed performance.





# Uniquely Specified, Site Built

## System Components

### High Flow Media

At the heart of every FocalPoint HPMBS is its high performance engineered soil blend. Developed by LID pioneer, Larry Coffman, advanced high flow rate biofiltration media utilizes physical, chemical and biological mechanisms of the soil, plant and microbe complex to remove pollutants found in stormwater runoff. Infiltration rates at 100" per hour or more overcome many of the challenges inherent in traditional slow flow rate media and creates design flexibilities that drive lower costs and greater application opportunities.

### Separation Layer

An open mesh material is combined with bridging stone to separate the media from the underdrain system. This unique combination of materials eliminates the use of geotextiles, which can limit the life expectancy of traditional bioretention systems.

### Open Cell Underdrain

A high infiltration rate underdrain system with 95% open surface area accepts water from the high flow media significantly faster than traditional pipe underdrains. Once water enters the underdrain, the modular system can be designed to exfiltrate water into the subgrade or connect to an outlet pipe. The underdrain can be expanded to accommodate detention requirements.

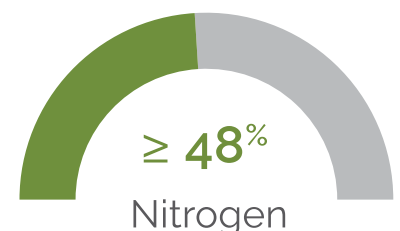
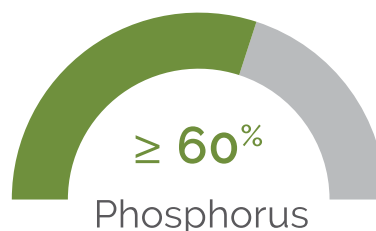
### Mulch

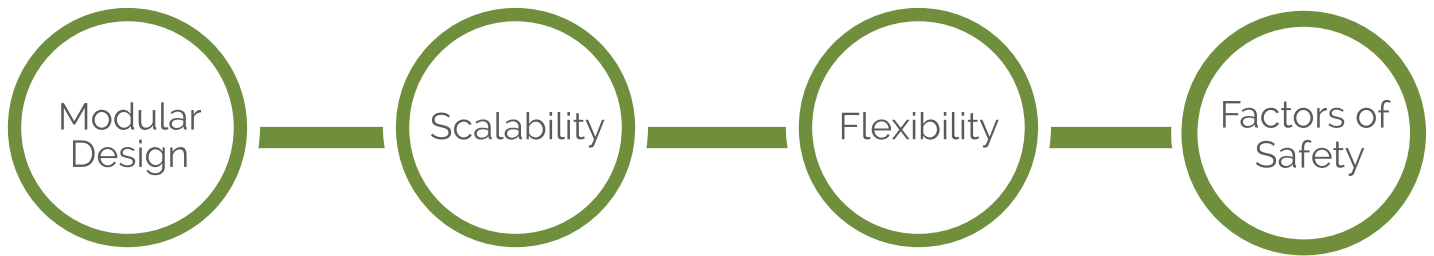
Shredded, hardwood mulch acts as a pre-treatment mechanism, capturing silt, sediment and certain other pollutants, and preventing trash from entering the system. Removal and replacement of mulch is typically necessary at 6-12 month intervals and is the most significant maintenance activity required with the FocalPoint HPMBS.

### Plants

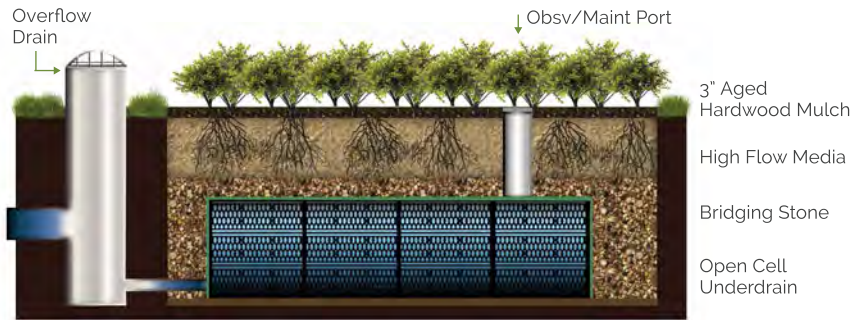
Native plants are preferred, but a broad palette of plants which thrive in FocalPoint HPMBS systems exist. They typically are characterized by rhizomatous root systems and tolerate both drought and inundation.

## Pollutant Removal Efficiency



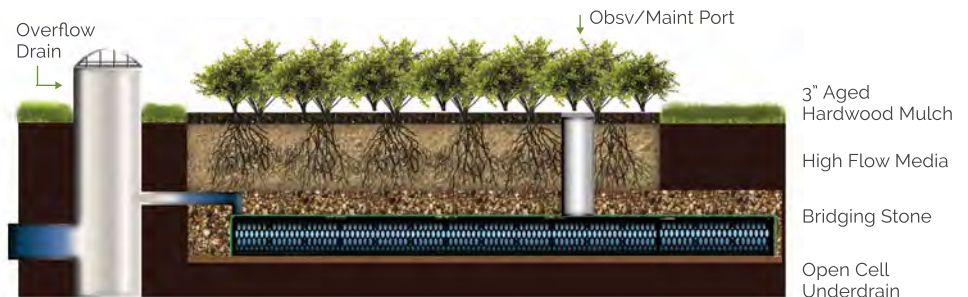


The FocalPoint's modular underdrain, unlike a traditional perforated pipe, not only supports the flow rate of the media, but can be expanded beyond the footprint of the media bed to provide unlimited underground detention, infiltration and/or storage for water reuse/infiltration.



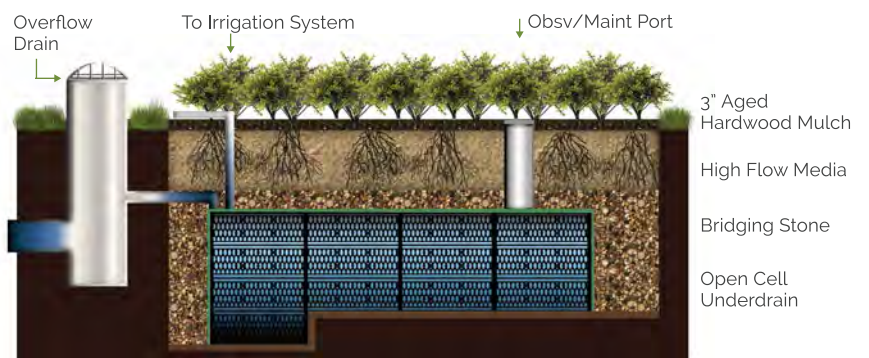
Expanded Detention

FocalPoint HPMBS gives designers maximum flexibility in meeting both water quality and volume requirements



Expanded Infiltration

The system can be used in combination with traditional LID BMPs such as grassy swales and vegetated depressions. It enables implementation of green streets using urban sidewalk planters; which because of the small footprint can support designs with large trees. These systems are also used for downspout planters, replacing underground treatment systems and are an easy retrofit for failed traditional bioretention systems. FocalPoint provides unlimited application opportunities for new construction and redevelopment.



Rainwater Harvesting

## 'Cap & Seal' Protection

### During Ongoing Construction Activity

Protecting the FocalPoint HPMBs during construction is of the utmost importance. The 'Cap & Seal' protection ensures a viable system regardless of the construction sequencing by sealing off the media bed until the contributing drainage area is stabilized. Solving this problem removes one of the most problematic issues in bioretention. Due to its small scale, FocalPoint HPMBs can be capped and sealed, allowing installation to take place early in the project construction cycle when other site utilities are installed.



Convergent Water Technologies **guarantees post-construction performance** and we make sure your client gets it.



## Performance Guaranteed

### Post-Installation Verification

The first year's maintenance is included in all FocalPoint HPMBs installations to ensure that the system is given the best opportunity to succeed, and low cost annual maintenance contracts are available.

The potential failure for most LID/GI BMP's is highest within the first year and success or failure is often dependent on whether the system is being properly inspected and maintained. Convergent's commitment to system success doesn't stop when the installation is complete.

## Maintenance In Mind

### Simple & Cost Effective

This hydraulic conductivity test procedure measures the entire media profile under saturated conditions to produce a reliable and accurate result.

To ensure the highest level of effectiveness, Convergent specifies that the FocalPoint HPMBs be tested within 90 days of activation and we recommend the system be tested annually thereafter to provide ongoing quality assurance.

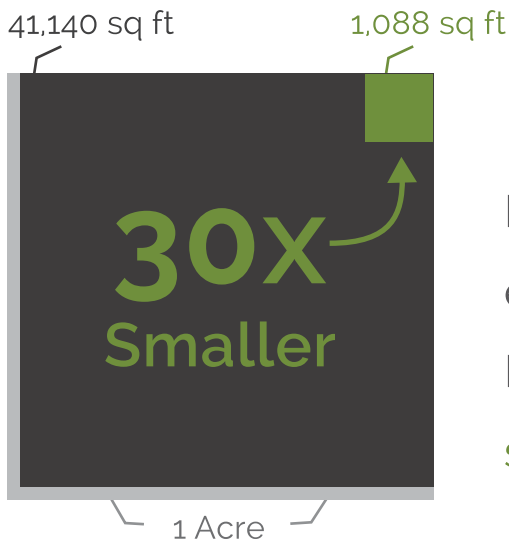
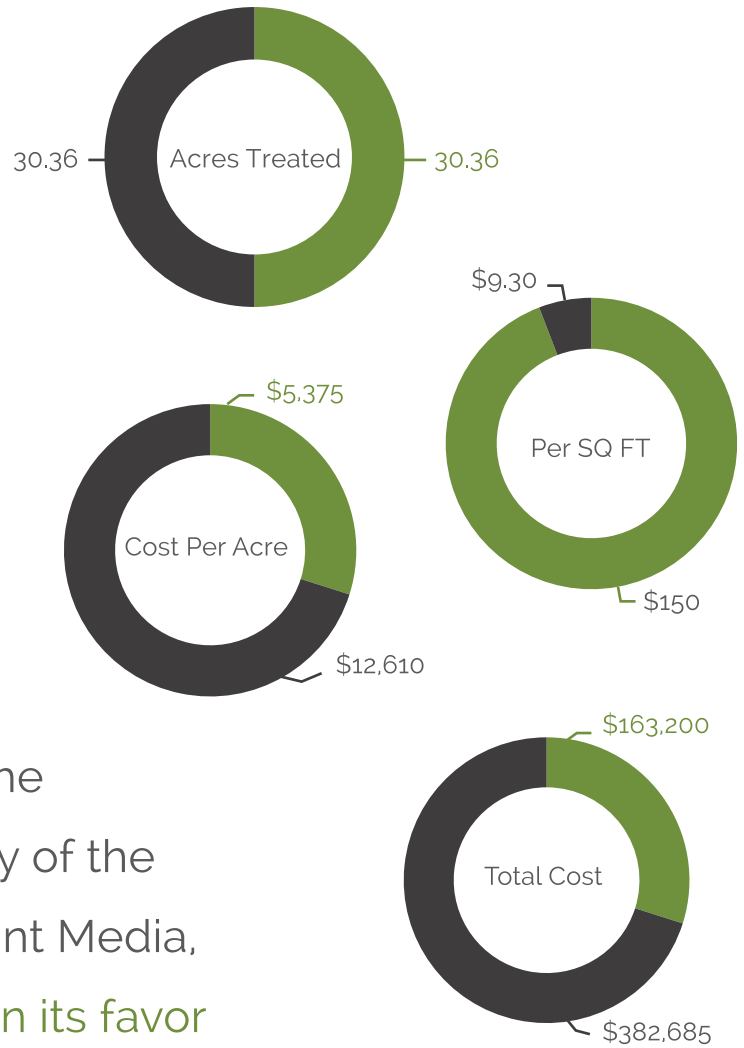


# The Economic Case

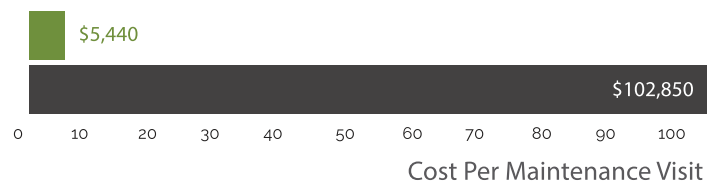
## FocalPoint HPMBS vs Traditional Bioretention Soils

- FocalPoint HPMBS
- Traditional Bioretention

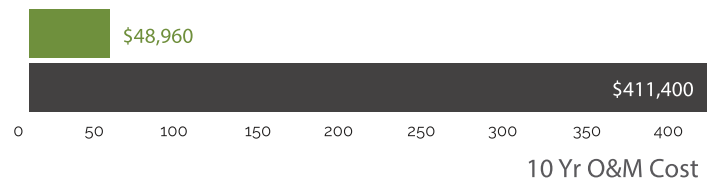
The typical economic case for the FocalPoint HPMBS is demonstrated on both the upfront and life cycle cost of a recent project. Both the FocalPoint HPMBS and Traditional Bioretention system were budgeted by a contractor specializing in the installation of Low Impact Development Systems. Although the price per square foot of FocalPoint is many times higher than traditional bioretention, the efficiency of the FocalPoint High Performance Media makes the system more than 30 times smaller, per acre treated, resulting in a 50% cost savings.



Due to the efficiency of the FocalPoint Media, scale is in its favor



Due to the size, maintenance is a fraction of the cost.





## GreenRoads Silver Certified

Bagby Street, Houston, TX

Midtown Redevelopment

The design team's goal for Bagby Street was to provide large street trees within the right of way while also removing pollutants such as heavy metals, floatables, sediment and oil and grease from the roadway stormwater runoff before it outfalls to nearby Buffalo Bayou. With the FocalPoint HPMBs high flow-rate engineered media, the designers didn't need to fill the entire planter box with a bioretention media and underdrain system. This allowed placing the HPMBs away from the tree roots and allowed the design team to meet their objective of having both street trees and biofiltration. The result was an award winning project.



## Multi-Family Development

Queenston Manor Apartment

At Queenston Manor Apartments, all of the drainage areas are also common areas and courtyards so it was imperative that the system drain within 24 hours of a rain event. The FocalPoint HPMBs was placed at the lowest elevation in the four landscaped swale systems on the site to provide a reliable drainage, detention and water quality solution. The design team was able to decrease the surface storage volume requirements enough to reclaim the land needed to build two additional apartment buildings. For the developers, the 48 additional apartment units was the difference between success and a canceled project.



## Parking Lot Retrofit

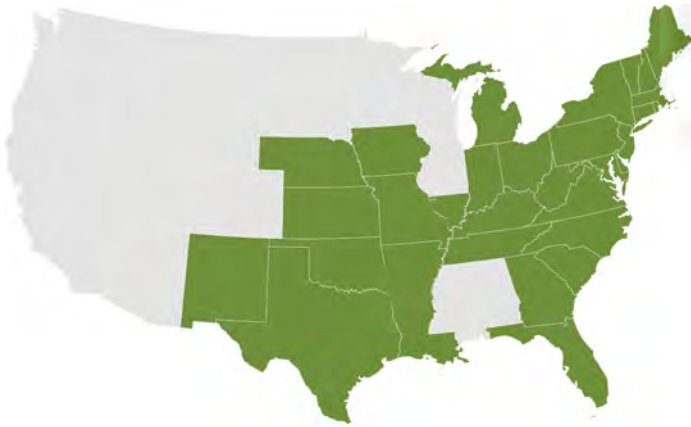
Sugar Land Conference Center

A complete parking lot retrofit incorporates a combination of bioswales, FocalPoint HPMBs, and an expanded underdrain Rainwater Harvesting System. This Low Impact Development and Green Infrastructure retrofit has increased aesthetic appeal, increased time of concentration and decreased peak flows. The reuse system reduces annual potable water use by over 50% and the FocalPoint HPMBs removes more than 80% of the TSS from the discharge along with hydrocarbons, phosphorus, nitrogen and other pollutants before delivering it to the harvesting system.



# VAR Connection

## Changing Stormwater Systems Distribution



The Convergent Value-Added Reseller (VAR) network consists of regional organizations that focus on cost-effective answers to all manner of stormwater problems, utilizing innovative systems that deliver value that's greater than the sum of their parts.

Convergent provides its VARs with the latest technologies, guidance and innovations, and like Convergent, these VARs are firms whose value-added approach has required them to take a non-traditional path in the stormwater industry; it's a path that leads to the experience, diverse relationships and solutions orientation that is so rare and critically needed in the stormwater industry.

Convergent's VARs are locally rooted and deeply connected in the communities they serve. They know the local regulations and act as agents of beneficial change. On average, Convergent VAR firms have been in business for 21 years; old enough to know their markets well and experienced enough to recognize and respond quickly to the LID/Green Infrastructure paradigm that is remaking our industry.

Capitalizing on the power of collaborative effort VAR network firms are able to respond rapidly to changing regulations, access 'lessons learned' by network peers and respond to the opportunity to be a driving force for innovation in the stormwater marketplace.

The firms which make up this network serve in exclusive territories, and incorporate both sales and service elements (directly or indirectly) in their operations. Every VAR will provide installation, oversight, verification and maintenance for Convergent Systems. Like Low Impact Development itself, the Convergent VAR network is cumulatively powerful and can deliver more cost-effective solutions than traditional distribution.



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