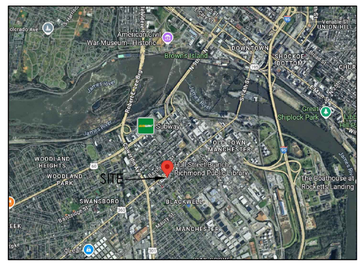
Greening Richmond Public Libraries

IMPROVING THE HEALTH OF THE JAMES RIVER BY REDUCING STORMWATER POLLUTION

Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224

CITY OF RICHMOND, VIRGINIA
6TH DISTRICT/MANCHESTER



VICINITY MAP

SCALE: 1"=2000'(±)

SHEET INDEX

PROJECT DATA

OWNER:
CITY OF RICHMOND PUBLIC WORKS
900 E. BROAD STREET
RICHMOND, VA 23219

DEVELOPER
JAMES RIVER ASSOCIATION
16 SOUTH 17TH STREET, SUITE 100
RICHMOND, VA 23219
CONTACT: JUSTIN DOYLE
PHONE: 804.788.8811
EMAIL: JDOYLE@THEJAMESRIVER.ORG

LANDSCAPE ARCHITECT
FOUR WINDS DESIGN, LC
705 LIBBIE AVENUE
RICHMOND, VA 23226
CONTACT: DREW HARRIGAN
PHONE: 804.920.5878
EMAIL: DREW@FOURWINDSDESIGN.COM

CIVIL ENGINEER
GRADIENT, PC
1406 LABURNUM PARK BOULEVARD
RICHMOND, VA 23227
CONTACT: CLAIRE SMITH SHIRLEY, PE, LEED AP
PHONE: 804.399.0500
EMAIL: CLAIRE@GRADIENTENVIRONMENT.COM

CITY STANDARD PROJECT NOTES:

PROPERTY ADDRESS:	1400 HULL STREET
ZONING:	B-5
MAP REFERENCE #:	S0000152012
MASTERPLAN LUD:	COMMUNITY MIXED USE
CITY COUNCIL DISTRICT:	6 (MANCHESTER DISTRICT)
PROJECT SUMMARY:	EXTERIOR LANDSCAPE IMPROVEMENTS
EXISTING USE:	LIBRARY
PROPOSED USE:	LIBRARY
ACREAGE:	0.302 ACRES
BUILDINGS:	1 EXISTING BUILDING
PARKING:	5 SPACES PROPOSED
HUC CODE:	020802060101 JL01 JAMES RIVER-ALMOND CREEK

E+S STATISTICS				
EROSION + SEDIMENT CONTROL MEASURES	**QUANTITY**			
CONSTRUCTION ENTRANCE	N/A (SEE NOTE)			
SILT FENCE	192L.F.			
INLET PROTECTION	1 EACH			
STORM DRAINAGE ITEMS	**QUANTITY**			
6" HDPE PERF. UNDERDRAIN PIPING	34 L.F.			
6" HDPE OVERFLOW PIPING	5 L.F.			
LOT STATISTICS	**SQUARE FEET**			
TOTAL LOT AREA	13,155 SF			
AMOUNT OF IMP. SURFACE AREA	12,371 SF			
AMOUNT OF PER. SURFACE AREA	3,441 SF			
AMOUNT OF LAND DISTURBANCE	6,417 SF=0.15 AC			
SEWER DESIGNATION				
MS4		YES	X	NO
COMBINED SEWER (CSS)	X	YES		NO
BAY DESIGNATION				
CHESAPEAKE BAY AREA		YES	X	NO
IF YES,		RMA		RPA

I Claire M. Smith, PE, LEED AP certify that the information above is correct.

Signed: _____ Date: September 16, 2025

Preparer's Seal/Stamp

NOTE: ALL QUANTITIES LISTED ARE FOR REVIEW PURPOSES ONLY. CONTRACTOR SHALL PERFORM THEIR OWN TAKE OFF FOR CONSTRUCTION PURPOSES

Stormwater Management Facility Data — Project: **Greening Hull Street Library** — Date: 9/16/2025

Stormwater Management Facility Type	Stormwater Management Description	Stormwater Management Facility Structure Number	Location		Acres Treated By Facility			Pollutant Removal, lbs			Runoff captured, acre-feet	HUC (6th order) Of Location Of Facility	Impaired Water Segment To Which Facility Discharges	Ownership Of Facility (Public/Private)
			Latitude	*Longitude*	*Impervious Acres*	*Pervious Acres*	*Total Acres*	*TP*	*TN*	*TSS*				
Urban BioRetention Basin	BioRetention Basin	Basin #1	37.5197	-77.4456	0.03	0.01	0.04	0.02	0.22	-	0.002	JL01	James River - Almond Creek	Public
Micro Infiltration	Artificial Turf	Basin #2	37.5195	-77.4454	0.03	0.01	0.04	0.02	0.29	-	0.002	JL01	James River - Almond Creek	Public
Micro Infiltration	Pervious Block Pavers	Basin #3	37.5194	-77.4455	0.03	0.02	0.05	0.02	0.22	-	0.002	JL01	James River - Almond Creek	Public

RELATED PERMITS

RESMP PERMIT
WORK-IN-STREET PERMIT

NOTE:
THIS SITE DOES NOT LIE WITHIN A CHESAPEAKE BAY RMA OR RPA. THIS SITE LIES WITHIN THE CITY'S COMBINED SEWER SERVICES AREA.

CITY APPROVALS

GRADIENT
1406 Laburnum Park Boulevard
Richmond, VA 23227
804.399.0500

COMMONWEALTH OF VIRGINIA
CLAIRE M. SMITH
Lic. No. 034157
09.16.2025
PROFESSIONAL ENGINEER

9-19-25
COMMONWEALTH OF VIRGINIA
ANDREW HARRIGAN
Lic. No. 0406001627
LANDSCAPE ARCHITECT

FOUR WINDS DESIGN, LC

Cover Sheet
Not for construction

For Bid

Revision Block

Date: 9-20-25
Sheet 0.0

Greening Richmond Public Libraries

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Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224

LEGEND

- BOLLARD
- E–BL–S
- GAS METER
- TELE. PED.
- TREE
- FIRE HYDRANT
- BUSH
- TRAFFIC LIGHT POLE
- ADA PARKING
- SEWER CLEAN OUT
- ELEC. BOX or SUBPANEL
- STORM MH
- UTILITY POLE
- IRRIGATION BACKFLOW PREVETER
- WATER TESTING STATION
- CITY TRASH CAN
- U.G. WATER
- U.G. GAS
- O.H. ELECTRIC
- CONCRETE
- Main sewer line
- Existing Trees & Shrubs To Be Preserved:
- Existing Trees To Be Removed:
- Pavement To Be Removed:

DATUM
HORZ.: NAD83
VERT.: NAVD88

NOTES

THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES ARE ONLY PARTIALLY SHOWN ON THIS PLAN, CONTACT MISS UTILITY.

CONTRACTOR TO ASSUME ALL RESPONSIBILITY FOR CONSTRUCTION METHODS EMPLOYED AND FIELD VERIFY ALL DIMENSIONS. ISSUES AND CONCERNS SHALL BE REPORTED TO FOUR WINDS.

Contractor to ensure positive drainage away from all buildings at all times during the demolition and building process.

No public thoroughfares including sidewalks shall be blocked during demolition or construction without properly displayed municipality permits. No holes shall be left open overnight without securing perimeter fencing or installing caution tape around the hole.

Contractor to obtain all building permits, soil studies, and structural details as required by the municipality.

Contractor to maintain laminated "Use other entrance from parking lot" at each side of the front entry plaza mounted on either the silt fence or a post. The project plans display board will be provided and installed by JRA but contractor shall take care not to disturb it during construction.

Irrigation system by Richmond Irrigation and managed by landscape architect. Follow conduit locations and salvage existing components where possible during demolition.

Contractor to document depths of basin excavation and exploratory excavation (stormwater infrastructure exposure) with photos in real time. Upload to Dropbox with link provided by landscape architect.

Finish grade of all planting beds shall be left 5" below masonry finish elevation of proposed and existing paving except where noted.

All trees to be mechanically removed, not ground

No materials or machines may be stored on site.

This drawing prints to scale on 24 x36" paper and should be printed in color. Do not use not-to-scale or black and white drawings for field work or construction.

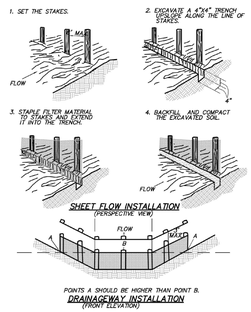
Upon bid award contractor's project manager, foremen, and/ or site supervisor shall attend a meeting on site for drawing review and project expectations.

Construction Access Notes:
Due to the urban nature and selective demolition of the site, all site access will be from adjacent roadways and alleys.

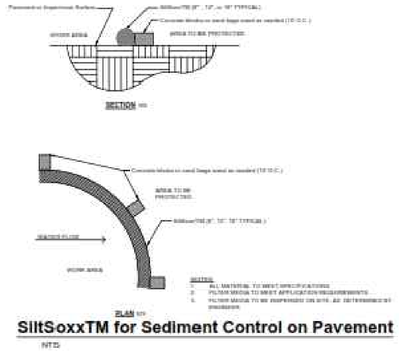
- Installation of a Construction Entrance is not feasible. Contractor shall minimize sediment runoff from site at all times during construction. Any sedimentation of adjacent sitewalks, curb & gutter and roadways will be cleaned immediately as required by the minimum standards.
- Contractor shall provide all required Work Area Protection signage and necessary road closures shall be coordinated with and permitted by DPW.

Erosion & Sediment Control

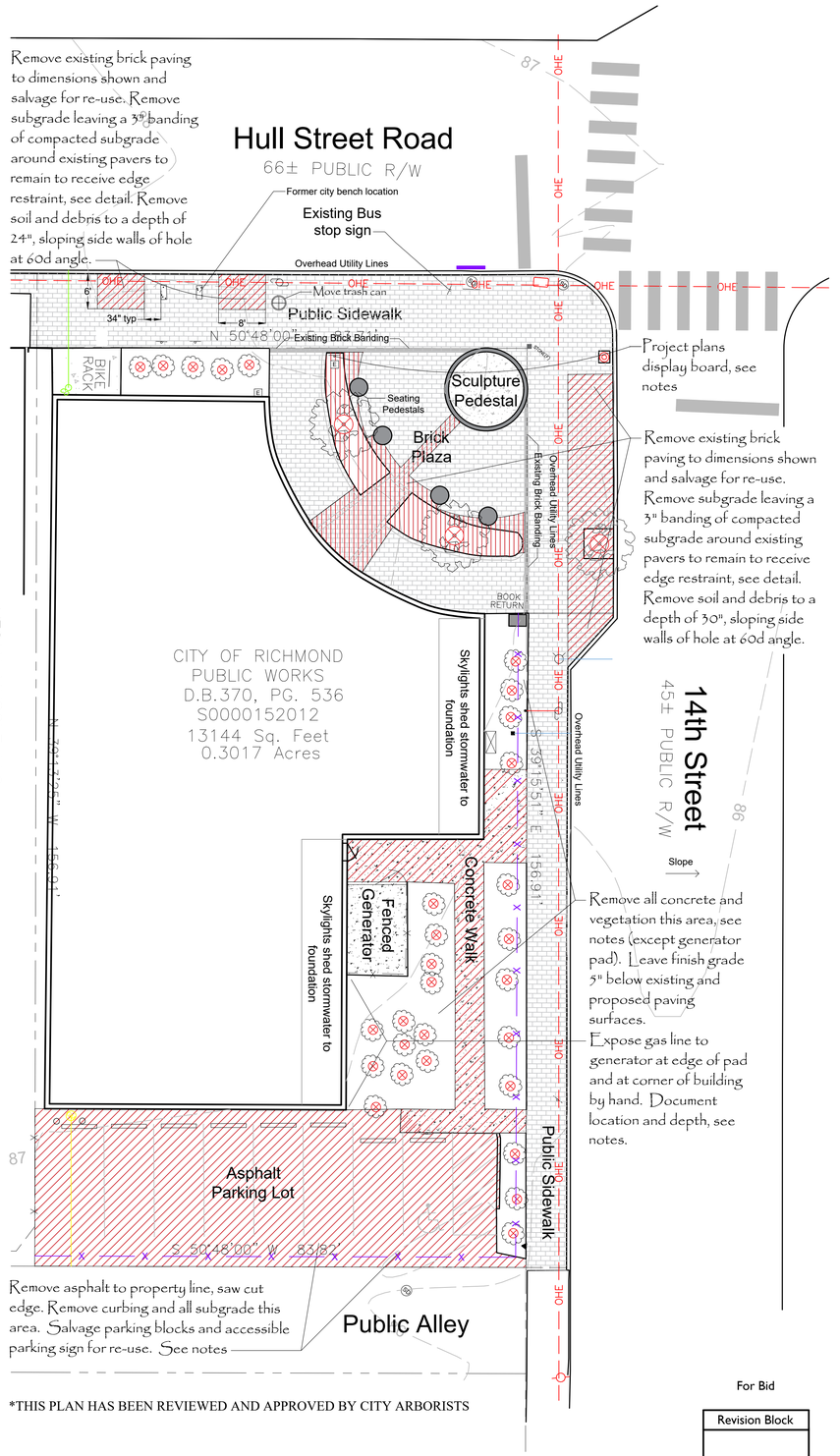
Silt Fence, see detail
8" Silt Soxx, (1) see detail



SILT FENCE
NO SCALE



SiltSoxxTM for Sediment Control on Pavement
NTS



*THIS PLAN HAS BEEN REVIEWED AND APPROVED BY CITY ARBORISTS

COMMONWEALTH OF VIRGINIA
9-19-25
ANDREW HARRIGAN
Lic. No. 0406001627
LANDSCAPE ARCHITECT

FOUR WINDS DESIGN, LC

Existing Conditions & Demolition
Not for construction

12 0 12 24 36
Scale: 1"= 12'

For Bid

Revision Block

Date: 9-20-25
Sheet 1 of 7

Greening Richmond Public Libraries

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Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224

LEGEND

- BOLLARD
- E–BL–S
- GAS METER
- TELE. PED.
- TREE
- FIRE HYDRANT
- BUSH
- TRAFFIC LIGHT POLE
- ADA PARKING
- SEWER CLEAN OUT
- ELEC. BOX
- STORM MH
- UTILITY POLE
- IRRIGATION BACKFLOW PREVETER
- WATER TESTING STATION
- ELECTRICAL JUNCTION BOX
- CITY TRASH CAN
- U.G. WATER
- U.G. GAS
- O.H. ELECTRIC
- CONCRETE

Main sewer line

Existing Trees & Shrubs To Be Preserved:

Erosion & Sediment Control

- Silt Fence, see detail
- 8" Silt Soxx, (2) see detail
- Limits of Disturbance

Proposed Elements, see details

- (4) Bee Zone Markers
- Pervious Pavers
- Concrete
- Artificial Turf
- Bioretention Basin

NOTES

THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES ARE ONLY PARTIALLY SHOWN ON THIS PLAN, CONTACT MISS UTILITY.

CONTRACTOR TO ASSUME ALL RESPONSIBILITY FOR CONSTRUCTION METHODS EMPLOYED AND FIELD VERIFY ALL DIMENSIONS. ISSUES AND CONCERNS SHALL BE REPORTED TO FOUR WINDS.

CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS AT ALL TIMES DURING THE DEMOLITION AND BUILDING PROCESS.

NO PUBLIC THOROUGHFARES INCLUDING SIDEWALKS SHALL BE BLOCKED DURING DEMOLITION OR CONSTRUCTION WITHOUT PROPERLY DISPLAYED MUNICIPALITY PERMITS. NO HOLES SHALL BE LEFT OPEN OVERNIGHT WITHOUT SECURING PERIMETER FENCING OR INSTALLING CAUTION TAPE AROUND THE HOLE.

CONTRACTOR TO OBTAIN ALL BUILDING PERMITS, SOIL STUDIES, AND STRUCTURAL DETAILS AS REQUIRED BY THE MUNICIPALITY.

IRRIGATION SYSTEM BY RICHMOND IRRIGATION AND MANAGED BY LANDSCAPE ARCHITECT. FOLLOW CONDUIT LOCATIONS AND SALVAGE EXISTING COMPONENTS WHERE POSSIBLE DURING DEMOLITION.

CONTRACTOR TO ALLOW ONE WEEK IN PROJECT SCHEDULE FOR ROUGH IN OF IRRIGATION SYSTEM. CONTRACTOR MAY BE ON SITE BUT MUST STAY OUT OF THE WAY (ALIGN WITH CONCRETE POUR/ MASONRY/ PAVERS, ORNAMENTAL GRAVEL, ARBOR SCHEDULE, ETC).

CONTRACTOR TO DOCUMENT DEPTHS OF BASIN EXCAVATION AND EXPLORATORY EXCAVATION (STORMWATER INFRASTRUCTURE EXPOSURE) WITH PHOTOS IN REAL TIME. UPLOAD TO DROPBOX WITH LINK PROVIDED BY LANDSCAPE ARCHITECT.

FINISH GRADE OF ALL PLANTING BEDS SHALL BE LEFT 5" BELOW MASONRY FINISH ELEVATION OF PROPOSED AND EXISTING PAVING EXCEPT WHERE NOTED.

ALL DEBRIS SHALL BE REMOVED FROM THE SOIL IN ALL PLANTING AREAS.

CONTRACTOR TO PERFORM SITE WALK THROUGH WITH LANDSCAPE ARCHITECT, REPRESENTATIVES FROM THE JAMES RIVER ASSOCIATION, AND RICHMOND PUBLIC LIBRARIES LEADERSHIP JUST BEFORE VOLUNTEER WORK DAYS FOR PUNCH LIST. CONTRACTOR TO PERFORM SECONDARY WALK THROUGH WITH LANDSCAPE ARCHITECT AT 12 MONTHS FROM COMPLETION TO IDENTIFY AREAS FOR RE-SEEDING AND ADDITION OF TOPSOIL IN AREAS OF SETTLEMENT ON THE MOUND. THIS SHALL BE BILLED AS TIME AND MATERIALS AT THE TIME OF WALK THROUGH AS A SEPARATE PROJECT.

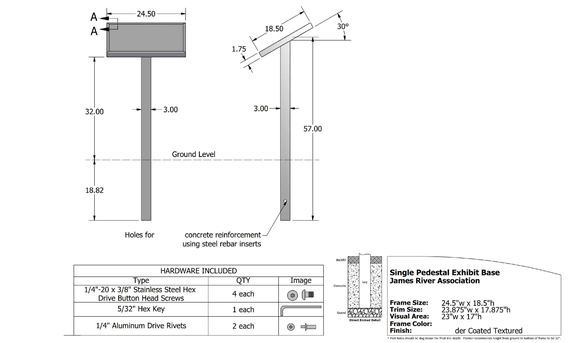
ADDITIONAL DIMENSIONS AND LAYOUT NOTATION PROVIDED WITH CONSTRUCTION DOCUMENTS.

CONTRACTOR TO SUBMIT SPEC SHEET FOR THE BIORETENTION MEDIA AND PROVIDE A MOCK-UP OF THE CONCRETE FINISHING FOR ALL CONCRETE FINISHING. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR RAILINGS AT ADA RAMP.

THE PARKING LOT BUMPER BLOCKS SHALL BE RE-INSTALLED AS THEY ARE CURRENTLY INSTALLED.

THIS DRAWING PRINTS TO SCALE ON 24 X36" PAPER AND SHOULD BE PRINTED IN COLOR. DO NOT USE NOT-TO-SCALE OR BLACK AND WHITE DRAWINGS FOR FIELD WORK OR CONSTRUCTION.

UPON BID AWARD CONTRACTOR'S PROJECT MANAGER, FOREMEN, AND/ OR SITE SUPERVISOR SHALL ATTEND A MEETING ON SITE FOR DRAWING REVIEW AND PROJECT EXPECTATIONS.



INTERPRETIVE SIGN

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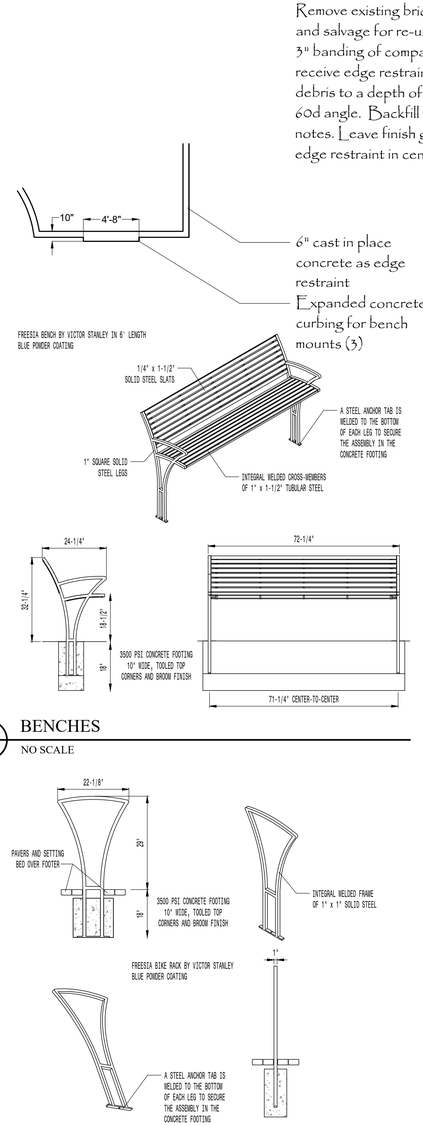
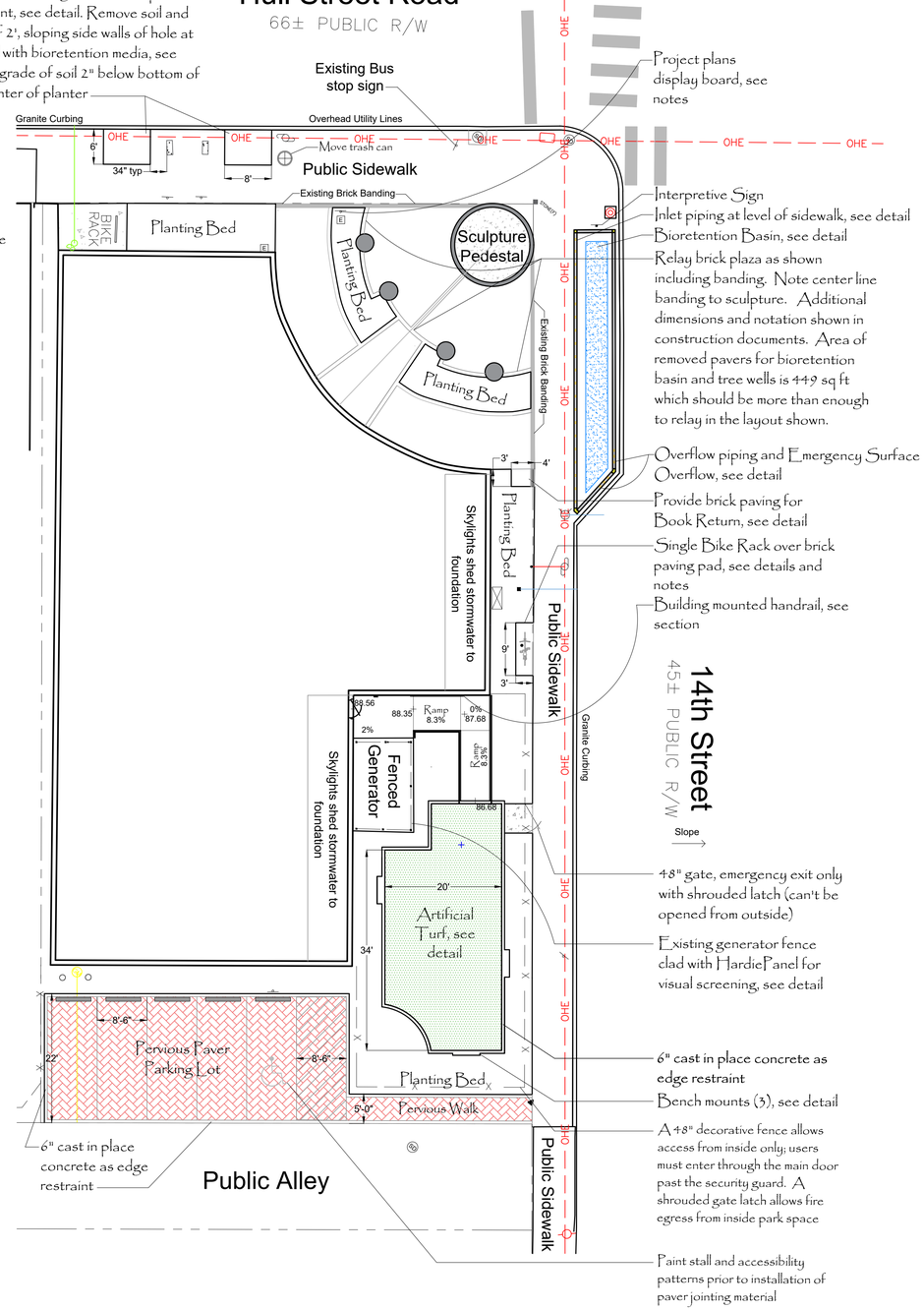


BENCHES

NO SCALE

BIKE RACK

NO SCALE



Altria · James River Association · RVA H2O · United States Environmental Protection Agency · DEQ Virginia Department of Environmental Quality · Richmond Public Library

COMMONWEALTH OF VIRGINIA
9-19-25
ANDREW HARRIGAN
Lic. No. 0406001627
LANDSCAPE ARCHITECT

FOUR WINDS DESIGN, LC

Layout Plan
Not for construction

12 0 12 24 36
Scale: 1"= 12'

For Bid

Revision Block

Date: 9-20-25

Sheet 2 of 7

Greening Richmond Public Libraries

IMPROVING THE HEALTH OF THE JAMES RIVER BY REDUCING STORMWATER POLLUTION

Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224

LEGEND

- AC UNIT
- BOLLARD
- E ELEC. BOX
- EM ELEC. METER
- GM GAS METER
- GV GAS VALVE
- LIGHT POLE
- SIGN
- T TELE. PED.
- WM WATER METER
- ET ELEC. TRANSFORMER
- ADA PARKING
- UTILITY POLE
- IRRIGATION VALVE BOX
- 1X1 DROP INLET
- SD STORM MH
- CLEAN OUT
- FO FIBER HANDHOLE
- TR TRAFFIC HANDHOLE
- TR TRAFFIC LIGHT POLE
- WV WATER VALVE

- U.G. WATER
- U.G. GAS
- O.H. TELEPHONE
- CONCRETE
- Downspout locations
- Downspout location, goes below ground
- 4" PVC irrigation conduit
- Main sewer line

Existing Trees & Shrubs To Be Preserved:

Erosion & Sediment Control

- Silt Fence, see detail
- 8" Silt Soxx, (2) see detail
- Limits of Disturbance

Proposed Elements, see details

- (4) Bee Zone Markers
- Pervious Pavers
- Concrete
- Artificial Turf
- Bioretention Basin

NOTES

THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES ARE ONLY PARTIALLY SHOWN ON THIS PLAN. CONTACT MISS UTILITY.

CONTRACTOR TO ASSUME ALL RESPONSIBILITY FOR CONSTRUCTION METHODS EMPLOYED AND FIELD VERIFY ALL DIMENSIONS. ISSUES AND CONCERNS SHALL BE REPORTED TO FOUR WINDS.

Contractor to ensure positive drainage away from all buildings at all times during the demolition and building process.

No public thoroughfares including sidewalks shall be blocked during demolition or construction without properly displayed municipality permits. No holes shall be left open overnight without securing perimeter fencing or installing caution tape around the hole.

Contractor to obtain all building permits, soil studies, and structural details as required by the municipality.

***All excavated soils including organics such as minimal mulch and removed turf shall be used to build the mound, see layout plan. Excavated gravel at 1" or smaller from the existing old roadbed may also be used but shall be placed at the bottom of the mound. See notes on layout plan for full construction method.**

Irrigation system by Richmond Irrigation and managed by landscape architect. Follow conduit locations and salvage existing components where possible during demolition.

Contractor to allow one week in project schedule for rough in of irrigation system. Contractor may be on site but must stay out of the way (align with concrete pour/ masonry/ pavers, ornamental gravel, arbor schedule, etc).

Contractor to document depths of basin excavation and exploratory excavation (stormwater infrastructure exposure) with photos in real time. Upload to Dropbox with link provided by landscape architect.

Comprehensive grading plan including critical spot elevations provided with construction documents.

This drawing prints to scale on 24 x36" paper and should be printed in color. Do not use not-to-scale or black and white drawings for field work or construction.

Upon bid award contractor's project manager, foremen, and/ or site supervisor shall attend a meeting on site for drawing review and project expectations.

STORMWATER MANAGEMENT NARRATIVE

The existing site contains the library building, associated parking, sidewalks, a public art plaza and landscaping. Drainage generally runs away from the building toward the adjacent roadways. The parking lot drains to the alley, and then out to 14th Street. All drainage from the site and surrounding sidewalks is collected into the City's combined sewer system at the adjacent inlet on Hull Street or at the inlet on 14th Street at its intersection with Decatur Street.

The main objective of and purpose for this project is to provide improved aesthetics through landscaping enhancements that will reduce runoff, improve stormwater quality and promote infiltration. This will be achieved through the installation of an Urban Bio Retention Basin, permeable pavers and an artificial turf grassed area within the site. For purposes of this project, the site and adjacent City sidewalks to the back of existing curb will be used to define the site area.

Stormwater Quality Analysis:
While water quality treatment is not required due to the location in the combined sewer services area, calculations are provided to illustrate the impact of the improvements made on the site. As indicated by the VRRM calculations, if this project were required to meet the water quality standards, the design exceeds the requirements of 9VAC25-875-590 for water quality treatment on a ReDevelopment project. The TP Load Reduction Required is 0.03 lb/yr of Phosphorous. The Target TP Load Reduction is Exceeded by 0.02 lb/yr; a total of 0.05 lb/yr of Phosphorous will be removed from the site after the improvements.

Stormwater Quantity Analysis:
Due to the location of this site in the Combined Sewer Services area, the stormwater quantity analysis is based on Minium Standard 19, which requires that the site be developed such that it will not cause the pre-development peak runoff rate from a ten-year storm to increase when runoff outfalls into a man-made channel, inclusive of sanitary sewer flow. In other words

(Q10pre+Qsan pre) ≥ (Q10post + Qsan post).

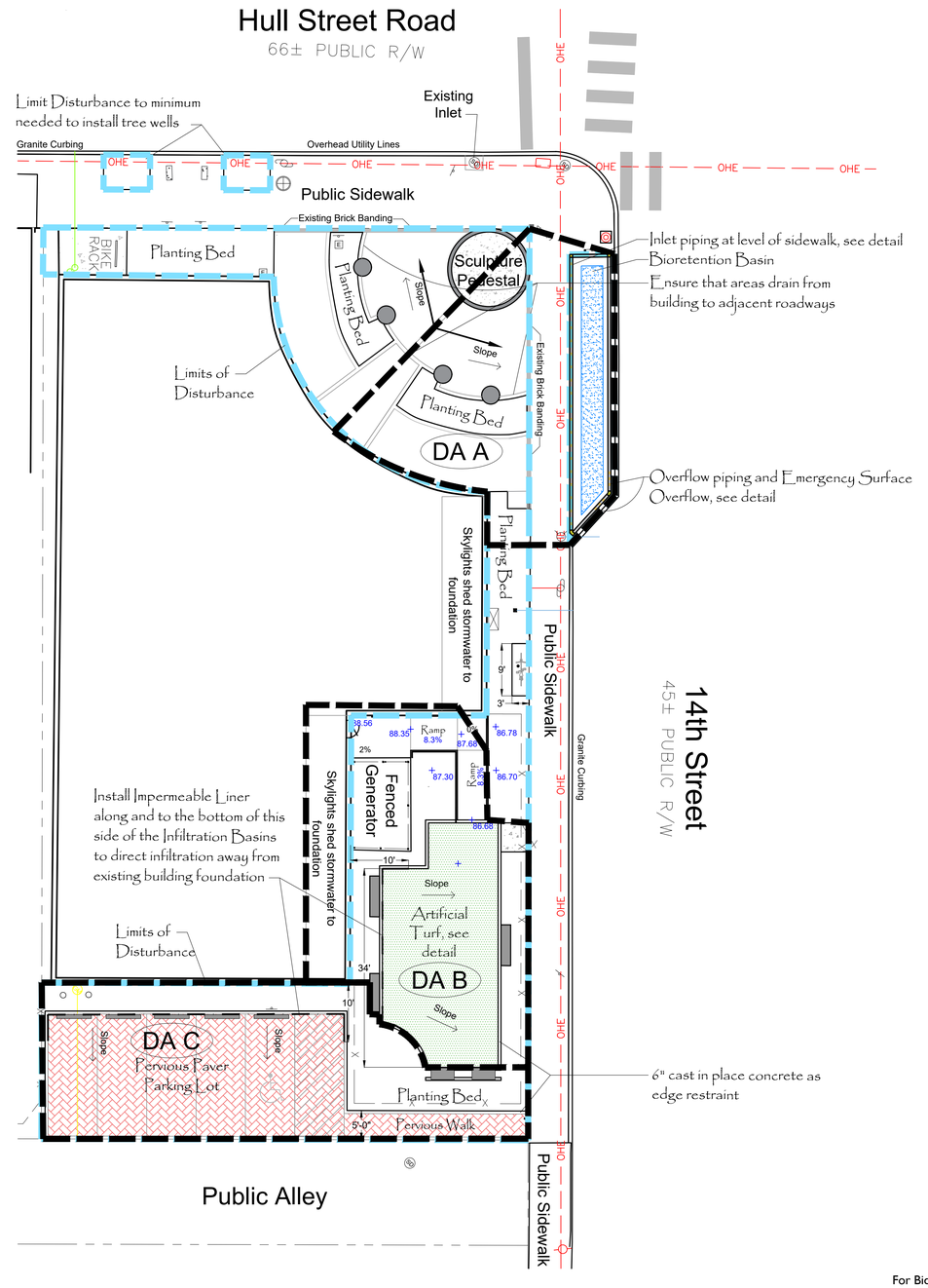
For this project, there is no change to the sanitary sewer discharge, so the requirement is:

Q10pre ≥Q10post

This is achieved through the reduction of impervious area on the site and replacement with larger planting beds, addition of tree wells, an Urban Bioretention Basin in the sidewalk, an Artificial Turf outdoor space and replacement of existing asphalt with Permeable Pavers in the parking lot.

The resultant calculations show that the design is in compliance with MS-19 requirements:

Q10pre = 2.17 cfs ≥ Q10post = 2.01 cfs



For Bid

Revision Block

9-19-25
ANDREW HARRIGAN
Lic. No. 0406001627
COMMONWEALTH OF VIRGINIA
LANDSCAPE ARCHITECT

FOUR WINDS DESIGN, LC

Grading Plan
Not for construction

12 0 12 24 36
Scale: 1"= 12'

Date: 9-20-25

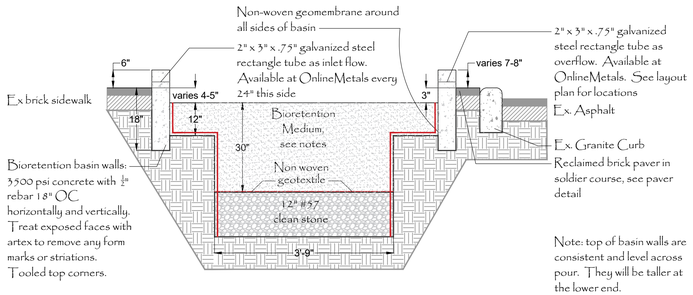
Sheet 3 of 7

Greening Richmond Public Libraries

IMPROVING THE HEALTH OF THE JAMES RIVER BY REDUCING STORMWATER POLLUTION

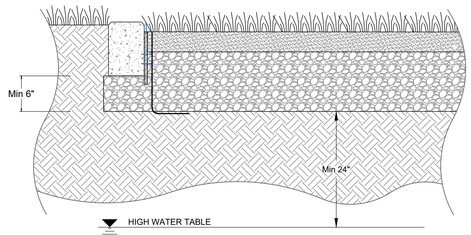
Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224



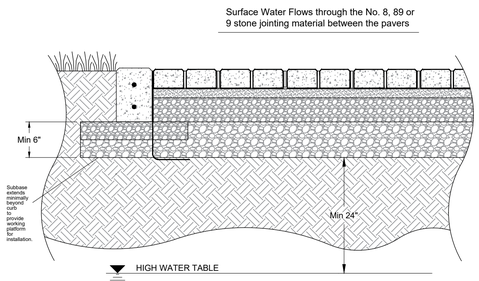
BASIN 1 - BIORETENTION

NO SCALE



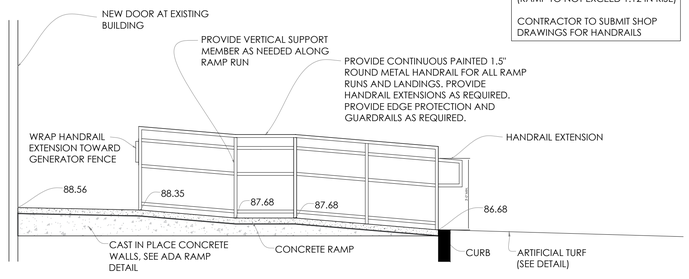
BASIN 2 - MICRO INFILTRATION - ARTIFICIAL TURF

NO SCALE



BASIN 3 - MICRO INFILTRATION - PERMEABLE PAVERS

NO SCALE

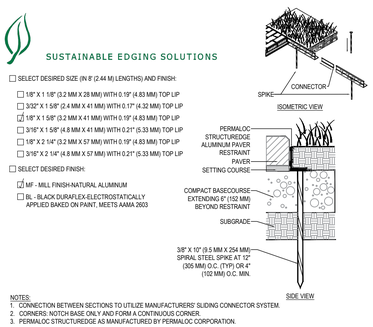


GENERAL NOTES:
VERIFY FINAL GRADES IN THE FIELD. COORDINATE RAMP RUNS WITH EXISTING BUILDING AND GRADES. (RAMP TO NOT EXCEED 1:12 IN RISE)

CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR HANDRAILS

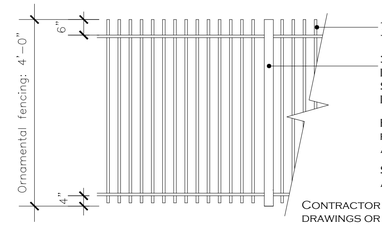
ADA RAMP SECTION

NO SCALE



STRUCTUREDGE ALUMINUM PAVER RESTRAINT

NO SCALE



DECORATIVE FENCE

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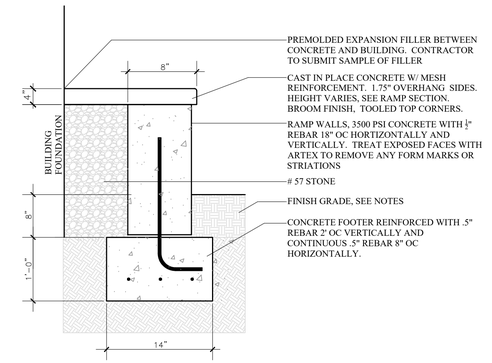

ADA RAMP WALLS

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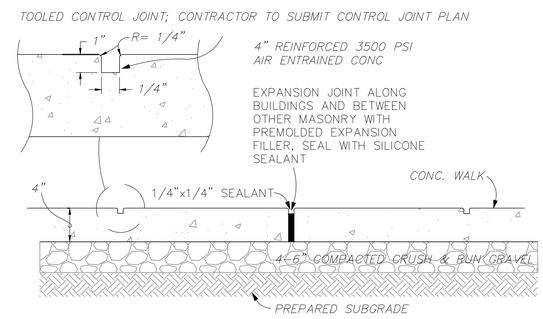
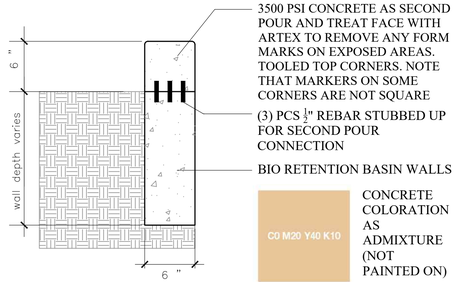


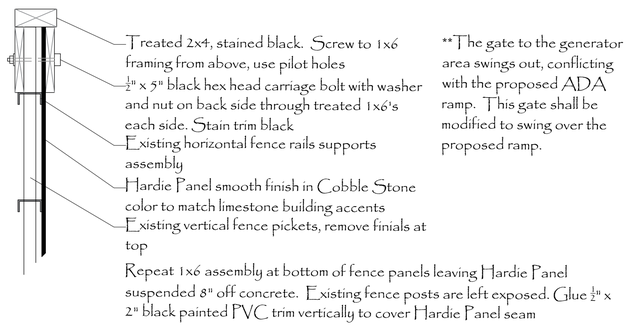
CONCRETE WALKS AND PATIO

NO SCALE



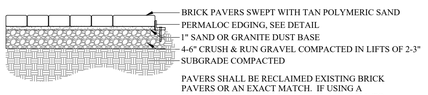
BEE ZONE BOUNDARY MARKERS

NO SCALE



GENERATOR FENCE CLADDING

NO SCALE



PAVERS, DRY LAID

NO SCALE

Altria · James River Association · RVA H2O · United States Environmental Protection Agency · DEQ Virginia Department of Environmental Quality · Richmond Public Library

Commonwealth of Virginia — 9-19-25 — Andrew Harrigan — Lic. No. 0406001627 — Landscape Architect

Four Winds Design, LC

For Bid

Revision Block

Details
Not for construction

12 0 12 24 36
Scale: 1"= 12'

Date: 9-20-25

Sheet 4 of 7

Greening Richmond Public Libraries

IMPROVING THE HEALTH OF THE JAMES RIVER BY REDUCING STORMWATER POLLUTION

Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224

Greening Richmond Public Libraries: DCR Bioretention Design Standards Compliance, Hull Street Branch

BMP	DCR Design Standard	Sizing	Ponding Depth	Media Depth	Gravel Sump Depth	Calculated Storage Depth	Infiltration Rate	Underdrain	Geometry	Pre-treatment	Conveyance	Planting	Setbacks
Basin 1 Urban BioRetention	Table 9.-A.2, Level One	CDA= 1097 sq ft impervious, 541 pervious 46 sq ft required,152 sq ft provided	3"	30"	12"	1.275	< .5"/ hr	6" perf PVC	one cell design SFP/L ratio 0.3 or greater	Energy Dissipater; 2'depth grass like plantings	on-line; sheet flow	>75% coverage in 2 yrs	2' from curb & paving no utilities this area
Basin 2 Micro Infiltration (Artificial Turf)	Table 8.2 Level One	CDA= 1491 sq ft impervious, 387 pervious 46 sq ft required,152 sq ft provided	-	5"	12"	0.504	< .5"/ hr	None	one cell design	Perimeter Planting bed	sheet flow	-	Impermeable liner within 10 ' of foundation
Basin 3 Micro Infiltration (Perm. Pavers)	Table 8.2 Level One	CDA= 1227 sq ft Pavers, 683 pervious 149 sq ft required,1227 sq ft provided	-	5"	12"	0.504	< .5"/ hr	None	one cell design	Perimeter Planting bed	surface/sheet flow	-	Impermeable liner within 10 ' of foundation

Runoff coefficients are .95 for impervious roof or pavement and .4 for planting bed, turf and perm. pavers

Basin 1	Basin 2	Basin 3
SA = (Tv (91.76)/ 2 ft) = 45.88 Tv impervious = (.95 x 1097 sq ft CDA)/ 12 = 86.69 Tv pervious = (.4 x 152 sq ft CDA)/ 12 = 5.07 Calc.Depth = 3" ponding @100%+2.5'@25%+1'@40%	SA = (Tv (130.94)/(0.4*1.0+.33*2) =148.11 Tv impervious = (.95 x 1491 sq ft CDA)/ 12 = 118.04 Tv pervious = (.4 x 387 sq ft CDA)/ 12 = 12.90 Calc Depth=5"sand@25%+1'@40%	SA = (Tv (63.67)/(0.4*1.0+.33*2) =60.07 Tv Pavers = (.40 x 1227 sq ft CDA)/ 12 = 40.90 Tv pervious = (.40 x 683 sq ft CDA)/ 12 = 22.77 Calc Depth=5"Pavers@25%+1'@40%

*soil type is not known for due to inaccessible soils below existing pavement, therefore the lowest infiltration rates have been used

DEQ Virginia Runoff Reduction Method Re-Development Compliance Spreadsheet - Version 4.1

CLEAR ALL (Ctrl+Shift+R)

data input cells | constant values | calculation cells | final results

Project Name: Greening RPL - Hull Street Library
Date: 9/16/2025
Linear Development Project? No

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area *(acres)* → 0.36

Maximum reduction required:	*10%*
The site's net increase in impervious cover (acres) is:	*0*
Post-Development TP Load Reduction for Site (lb/yr):	*0.03*

Check:
BMP Design Specifications List: 2024 Stds & Specs
Linear project? No
Land cover areas entered correctly? ✓
Total disturbed area entered? ✓

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed			0.04		0.04
Impervious Cover (acres)			0.32		0.32
					0.36

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed			0.08		0.08
Impervious Cover (acres)			0.28		0.28
Area Check	OK.	OK.	OK.	OK.	0.36

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	0.03

Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	4.26

Final Post-Development TN Load	4.09

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	**Listed**	**Adjusted[1]**
Forest Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
Weighted Loading Rate(forest)	0.00	0.00
% Forest	0%	0%
Mixed Open Cover (acres)	0.00	0.00
Weighted Rv(mixed)	0.00	0.00
Weighted Loading Rate(mixed)	0.00	0.00
% Mixed Open	0%	0%
Managed Turf Cover (acres)	0.04	0.04
Weighted Rv(turf)	0.22	0.22
Weighted Loading Rate(turf)	0.75	0.75
% Managed Turf	11%	11%
Impervious Cover (acres)	0.32	0.32
Rv(impervious)	0.95	0.95
Weighted Loading Rate(impervious)	0.86	0.86
% Impervious	89%	89%
Total Site Area (acres)	**0.36**	**0.36**
Site Rv	**0.87**	**0.87**
Treatment Volume and Nutrient Load		
Pre-ReDevelopment Treatment Volume (acre-ft)	0.0261	0.0261
Pre-ReDevelopment Treatment Volume (cubic feet)	1,135	1,135
Pre-ReDevelopment TP Load (lb/yr)	**0.30**	**0.30**
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	0.85	0.85
Baseline TP Load (lb/yr) (0.26 lbs/acre/yr applied to pre-redevelopment area excluding pervious land proposed for new impervious cover)		*0.09*

[1] *Adjusted Land Cover Summary:*
Pre ReDevelopment land cover minus pervious land cover (forest, mixed open or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit, 0.26 lbs/acre/year).

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary-Post (Final)	
Post ReDev. & New Impervious	
Forest Cover (acres)	0.00
Weighted Rv(forest)	0.00
Wgt. Ld. Rate(forest)	0.00
% Forest	0%
Mixed Open Cover (acres)	0.00
Weighted Rv(mixed)	0.00
Wgt. Ld. Rate(mixed)	0.00
% Mixed Open	0%
Managed Turf Cover (acres)	0.08
Weighted Rv (turf)	0.22
Wgt. Ld. Rate(turf)	0.75
% Managed Turf	22%
Impervious Cover (acres)	0.28
Rv(impervious)	0.95
Wgt. Ld. Rate(imperv.)	0.86
% Impervious	78%
Final Site Area (acres)	**0.36**
Final Post Dev Site Rv	**0.79**
Treatment Volume and Nutrient Load	
Final Post-Development Treatment Volume (acre-ft)	0.0236
Final Post-Development Treatment Volume (cubic feet)	1,029
Final Post-Development TP Load (lb/yr)	**0.30**
Final Post-Development TP Load per acre (lb/acre/yr)	0.83

Land Cover Summary-Post	
Post-ReDevelopment	
Forest Cover (acres)	0.00
Weighted Rv(forest)	0.00
Wgt. Ld. Rate(forest)	0.00
% Forest	0%
Mixed Open Cover (acres)	0.00
Weighted Rv(mixed)	0.00
Wgt. Ld. Rate(mixed)	0.00
% Mixed Open	0%
Managed Turf Cover (acres)	0.08
Weighted Rv (turf)	0.22
Wgt. Ld. Rate(turf)	0.75
% Managed Turf	22%
ReDev. Impervious Cover (acres)	0.28
Rv(impervious)	0.95
Wgt. Ld. Rate(imperv.)	0.86
% Impervious	78%
Total ReDev. Site Area (acres)	**0.36**
ReDev Site Rv	**0.79**
Treatment Volume and Nutrient Load	
Post-ReDevelopment Treatment Volume (acre-ft)	0.0236
Post-ReDevelopment Treatment Volume (cubic feet)	1,029
Post-ReDevelopment Load (TP) (lb/yr)*	**0.30**
Post-ReDevelopment TP Load per acre (lb/acre/yr)	0.83
Max. Reduction Required (Below Pre-ReDevelopment Load)	10%
TP Load Reduction Required for Redeveloped Area (lb/yr)	**0.03**

Land Cover Summary-Post	
Post-Development New Impervious	
New Impervious Cover (acres)	0.00
Rv(impervious)	--
Post-Development Treatment Volume (acre-ft)	--
Post-Development Treatment Volume (cubic feet)	--
Post-Development TP Load (lb/yr)	**--**
TP Load Reduction Required for New Impervious Area (lb/yr)	**0**

Altria | James River Association | RVA H2O | United States Environmental Protection Agency | DEQ Virginia Department of Environmental Quality | Richmond Public Library

9-19-25
ANDREW HARRIGAN
Lic. No. 0406001627
Commonwealth of Virginia
Landscape Architect

FOUR WINDS DESIGN, LC

For Bid

Revision Block

Details
Not for construction

12 0 12 24 36
Scale: 1"= 12'

Date: 9-20-25
Sheet 5 of 7

Greening Richmond Public Libraries

IMPROVING THE HEALTH OF THE JAMES RIVER BY REDUCING STORMWATER POLLUTION

Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224

LEGEND

- BOLLARD
- E–BL–S
- GAS METER
- TELE. PED.
- TREE
- FIRE HYDRANT
- BUSH
- TRAFFIC LIGHT POLE
- ADA PARKING
- SEWER CLEAN OUT
- ELEC. BOX
- STORM MH
- U.G. WATER
- U.G. GAS
- O.H. ELECTRIC
- UTILITY POLE
- IRRIGATION BACKFLOW PREVETER
- WATER TESTING STATION
- ELECTRICAL JUNCTION BOX
- CITY TRASH CAN

- Main sewer line

Existing Trees & Shrubs To Be Preserved:

NOTES

THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES ARE ONLY PARTIALLY SHOWN ON THIS PLAN. CONTACT MISS UTILITY.

CONTRACTOR TO ASSUME ALL RESPONSIBILITY FOR CONSTRUCTION METHODS EMPLOYED AND FIELD VERIFY ALL DIMENSIONS. ISSUES AND CONCERNS SHALL BE REPORTED TO FOUR WINDS.

CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS AT ALL TIMES DURING THE DEMOLITION AND BUILDING PROCESS.

NO PUBLIC THOROUGHFARES INCLUDING SIDEWALKS SHALL BE BLOCKED DURING DEMOLITION OR CONSTRUCTION WITHOUT PROPERLY DISPLAYED MUNICIPALITY PERMITS. NO HOLES SHALL BE LEFT OPEN OVERNIGHT WITHOUT SECURING PERIMETER FENCING OR INSTALLING CAUTION TAPE AROUND THE HOLE.

CONTRACTOR TO OBTAIN ALL BUILDING PERMITS, SOIL STUDIES, AND STRUCTURAL DETAILS AS REQUIRED BY THE MUNICIPALITY.

IRRIGATION SYSTEM BY RICHMOND IRRIGATION AND MANAGED BY LANDSCAPE ARCHITECT. FOLLOW CONDUIT LOCATIONS AND SALVAGE EXISTING COMPONENTS WHERE POSSIBLE DURING DEMOLITION.

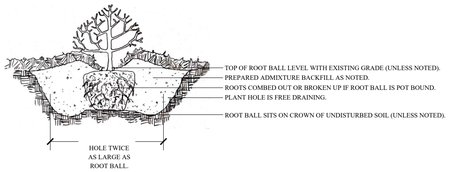
CONTRACTOR TO ALLOW ONE WEEK IN PROJECT SCHEDULE FOR ROUGH IN OF IRRIGATION SYSTEM. CONTRACTOR MAY BE ON SITE BUT MUST STAY OUT OF THE WAY (ALIGN WITH CONCRETE POUR/ MASONRY/ PAVERS, ORNAMENTAL GRAVEL, ARBOR SCHEDULE, ETC).

THIS DRAWING PRINTS TO SCALE ON 24 X36" PAPER AND SHOULD BE PRINTED IN COLOR. DO NOT USE NOT-TO-SCALE OR BLACK AND WHITE DRAWINGS FOR FIELD WORK OR CONSTRUCTION.

PLANTS, SOIL AMENDMENTS, AND MULCH WILL BE INSTALLED BY VOLUNTEERS.

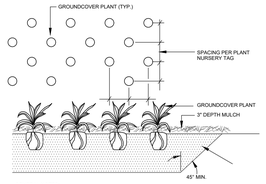
Hull Street Branch Plant Schedule

Code	Botanical Name	Common Name	Quantity	Size
AR	Acer rubrum	Red Maple	2	14-16'
CV	Chionanthus virginicus 'Spring Fleecing'	Fringetree	2	6-8'
CR	Cimifuga racemosa	Snakeroot	4	1 Gal
DI	Dryopteris intermedia	Fancy Fern	20	1 Gal
HA	Hydrangea arborescens	Smooth Hydrangea	8	5 Gal
IV	Ilex vomitoria 'Bordeaux'	Dwarf Yaupon Holly	13	7 Gal
IT1	Itea virginica 'Little Henry'	Sweetspire	14	3 Gal
IT2	Itea virginica 'Scentlandia'	Sweetspire	15	3 Gal
MV	Magnolia virginiana	Sweetbay Magnolia	5	8-10'
NS	Nyssa sylvatica	Tupelo	1	12-14'
PV1	Panicum virgatum 'Cape Breeze'	Switchgrass	60	1 Gal
PV2	Panicum virgatum 'Shenandoah'	Switchgrass	31	3 Gal
SS	Schizachyrium scoparium 'Standing Ovation'	Little Bluestem	175	1 Gal
VD	Viburnum dentatum	Arrowwood Viburnum	3	7 Gal



Shrub Planting

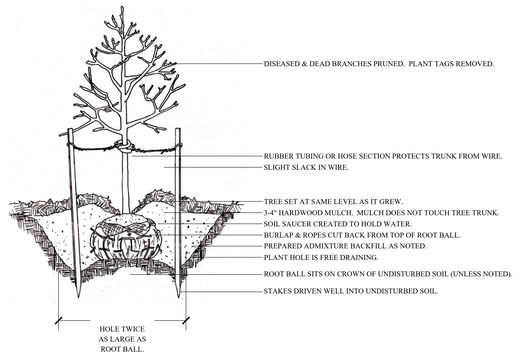
Scale: none



Perennial Planting

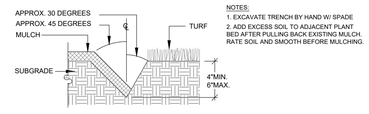
Scale: none

Water trees well 24 hours before transplant. Dig root balls as large as possible and leave above ground no longer than 4 hours.



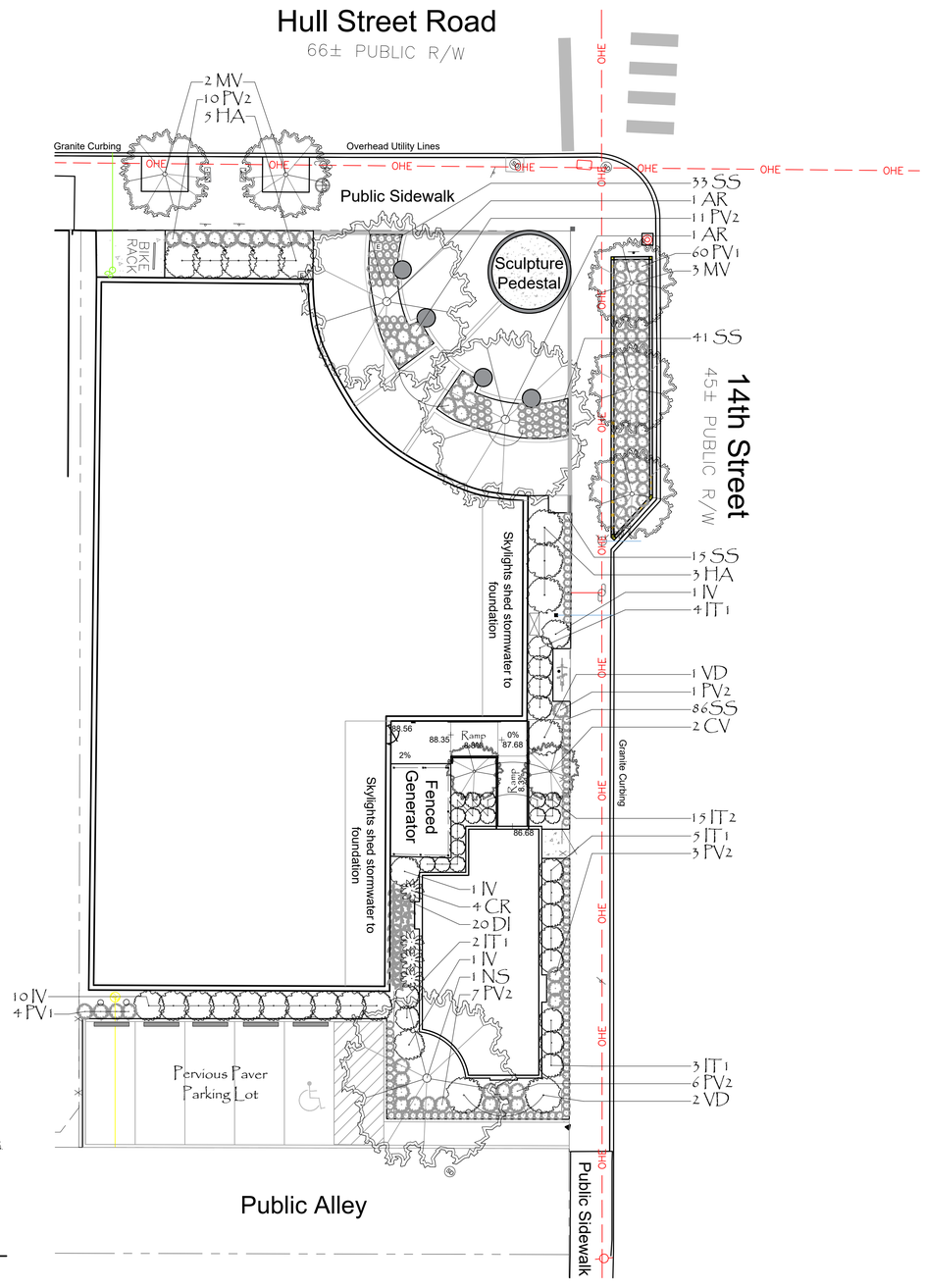
Tree Planting

Scale: none



Planting Bed Edge

Scale: none



Altria · James River Association · RVA H2O · United States Environmental Protection Agency · Virginia Department of Environmental Quality · Richmond Public Library

COMMONWEALTH OF VIRGINIA
9-19-25
ANDREW HARRIGAN
Lic. No. 0406001627
LANDSCAPE ARCHITECT

FOUR WINDS DESIGN, LC

Planting Plan for Volunteers
Not for construction

Scale: 1"= 12'

For Bid

Revision Block

Date: 9-20-25

Sheet 6 of 8

Greening Richmond Public Libraries

IMPROVING THE HEALTH OF THE JAMES RIVER BY REDUCING STORMWATER POLLUTION

Hull Street Branch Library

1400 Hull Street Road, Richmond, 23224

VESCH GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS 9VAC25-840.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING ACTIVITY, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-4: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-5: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-6: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-7: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-8: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-9: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES SHALL BE MADE IMMEDIATELY.

RICHMOND STANDARD E&S NOTES

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN, DORMANT (UNDISTURBED) FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
2. EXCESS EXCAVATION DISPOSED OF OFF THE SITE SHALL BE DISPOSED OF IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
3. EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED IN ACCORDANCE WITH VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP OF THE LAND DISTURBING ACTIVITY.
4. EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED SO THAT THE SEDIMENT CARRYING RUNOFF FROM THE SITE WILL NOT ENTER STORM DRAINAGE FACILITIES.
5. EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED UNTIL THE DISTURBED AREA IS STABILIZED.
6. PROPERTIES ADJOINING THE SITE SHALL BE KEPT CLEAN OF MUD OR SILT CARRIED FROM THE SITE BY VEHICULAR TRAFFIC OR RUNOFF.
7. THE DISPOSAL OF WASTE MATERIALS REMOVED FROM EROSION AND SEDIMENT CONTROL FACILITIES AND THE DISPOSAL OF THESE FACILITIES SHALL BE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
8. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
9. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

Greening Richmond Public Libraries
Hull Street Branch Library
Pre-Development Runoff Calculations

Drainage Summary
C Factor:

Description	Area (ac)	C-factor
Existing Impervious	0.328	0.90
Existing Permeable	0.036	0.35
Total :	0.364	0.85

Tc Calculations:

Tc = 5.00 Min (Minimum)

$I = \frac{B}{(Tc + D)^E}$

I_2 = 5.32 INHR
I_{10} = 7.07 INHR
I_{100} = 9.00 INHR

Existing Runoff Conditions:	C-factor	Area	Q_2	Q_{10}	Q_{100}
	0.85	0.36	1.64	2.17	3.46

Greening Richmond Public Libraries
Hull Street Branch Library
Post-Development Runoff Calculations

Drainage Summary
C Factor:

Description	Area (ac)	C-factor
Proposed Impervious	0.284	0.90
Proposed Permeable	0.079	0.35
Total :	0.364	0.78

Tc Calculations:

Tc = 5.00 Min

$I = \frac{B}{(Tc + D)^E}$

I_2 = 5.32 INHR
I_{10} = 7.07 INHR
I_{100} = 9.00 INHR

Existing Runoff Conditions:	C-factor	Area	Q_2	Q_{10}	Q_{100}

19 MINIMUM STANDARDS

A VESCP MUST BE CONSISTENT WITH THE FOLLOWING CRITERIA, TECHNIQUES AND METHODS:

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
5. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
   a. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.
   b. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
   a. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
   b. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
   c. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
   d. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
   e. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER.
   f. APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.
17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESCP AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS.

Site Results (Water Quality Compliance) VRRM 4.1, 2024

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MIXED OPEN (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MIXED OPEN AREA TREATED(ac)	0.00	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.01	0.01	0.02	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.00	0.01	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	0.03	0.03	0.03	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.03	0.03	0.03	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3): 1,029

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	47	45	47	0	0	138
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	0.03	0.03	0.04	0.00	0.00	0.11
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.02	0.02	0.02	0.00	0.00	0.05
TP LOAD REMAINING (lb/yr)	0.02	0.01	0.02	0.00	0.00	0.06
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.22	0.29	0.22	0.00	0.00	0.72

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	0.30
TP LOAD REDUCTION REQUIRED (lb/yr)	0.03
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.05
TP LOAD REMAINING (lb/yr):	0.25
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00 **

** TARGET TP REDUCTION EXCEEDED BY 0.02 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	4.09
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.72
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	3.37

Landscape Operations & Maintenance Manual

Overview & System Functions

The site improvements at the Richmond Public Libraries are designed to be ecologically responsible landscapes that infiltrate stormwater on site, provide habitat and educational value by planting native species, and serve as a model for future development. This commitment to ecosystem services is also reflected in the care and maintenance of the properties to ensure that plants survive, infiltration systems remain in good function, and resources needed for landscape care are minimized.

Each site will be equipped with an operations and maintenance manual that is specific to the plant species and site improvements found there; bound and laminated copies of this manual will be supplied to the third-party contractor responsible for RPL landscape maintenance while a copy of the manual will also reside at each branch in a designated location known to the branch manager. At the date of writing the site-specific manuals are not yet available as the projects have yet to be constructed. Branch managers and contractor will complete an Annual Inspection Checklist jointly at the start of each growing season. This completed checklist will be bound into the library branch copy of the O&M Manual for inspection by city parties as desired. See below for the Annual Inspection Checklist.

This manual is an abbreviated version that has been reviewed and adopted by Richmond City Council

Scope of Weekly Services

Lawn Mowing

At each visit the entirety of the lawn area shall be mowed with all clippings recycled back into the lawn. Care shall be taken not to blow lawn clippings into planting beds (mow from the perimeter into the interior blowing clippings toward the center). Lawn edges shall be string trimmed.

Weeding

At each visit a visual inspection of the planting beds shall be made with all debris and trash removed. Weeds outside of Bee Zones may be treated with herbicides at rates specified on the product used. Weeding within the Bee Zones must be done by hand with care taken not to damage plants. If in doubt as to whether a plant is a weed or not – particularly emerging perennials – consult with fellow workers or wait until the next visit.

Irrigation Inspection and Watering

At each visit the site shall be inspected for excessively wet areas that may indicate an irrigation leak or excessively dry areas that may indicate a non-functioning or improperly aimed head. Plant decline is another indicator of improper water amounts but do not assume that browned leaves indicate drought, it is also a sign of root rot due to excessive water. Workers shall report issues to the head of their company.

Bioretention areas will require hand watering once a week over the first summer IF IT DOES NOT RAIN. Check the rain gauge provided at each site (see site specific manuals for locations). On some sites, the bioretention basins are equipped with their own irrigation zone for use in the first year only and in emergency cases thereafter. If this is the case inspect the planting area for irrigation issues as one would any other planting bed.

Surface Cleaning/ Blowing

At each visit the site parking lots and sidewalks shall be cleaned of debris. All trash shall be separated from organic matter and disposed of. On some sites, a surface leaf composting area is provided. This is intended to reduce the amount of material that must leave the site and provide compost for future projects. See site specific manuals for pattern of site blow down to move leaves and organic matter to composting areas. Care shall be taken not to blow material into bioretention basins or onto pervious pavers.

Bioretention Basin Care

For the first six months following construction the site should be inspected at least twice after storm events in excess of a ½" inch of rainfall. Weekly inspections shall also include:

- Check for sediment buildup or a fine crust at curb cuts, inflow points, gravel diaphragms or pavement edges that prevents flow from getting into the bed and remove any sediment.
- Look for bare soil or sediment sources draining to the bioretention basin and stabilize them immediately. These may include bare or eroding lawn areas that should be spot reseeded. Scarify the soil, apply seed and erosion control elements such as straw or erosion control blanket as necessary. Contractor to collect and quantify materials and labor used in stabilization practices to be billed in the next billing cycle.
- Check the bioretention bed for evidence of mulch flotation, excessive ponding, dead plants or concentrated flows, and take appropriate remedial action. These actions may include replacing dead plants immediately or raking mulch back into place. If dead plants are encountered, remove the dead portion of the plant to the ground for appearance. Do not remove the root ball until the replacement plant is on site. Workers shall report the plant removal or (dead trees they cannot handle) to the head of their company. See below for plant replacement protocol.
- Check for clogged or slow-draining soil media, a crust formed on the top layer, inappropriate soil media, or other causes of insufficient filtering time, and restore proper filtration characteristics.
- If water remains on the surface for more than 48 hours after a storm, adjustments to the grading may be needed or underdrain repairs may be needed. Report ongoing issues to the head of the maintenance company. See scope of biannual services below.

Pervious Paver Care

For the first six months following construction the site should be inspected at least twice after storm events in excess of a ½" inch of rainfall. Weekly inspections shall also include:

- Remove all material and sediments from the paver surface.
- Check to make sure aggregate material from between the pavers has not blow up onto the surface. If it has, either remove it or sweep back into the joints with a broom.
- Inspect the condition of the observation well cap to make sure it has not been knocked off.
- Inspect the surface of the permeable pavement for evidence of sediment deposition, organic debris, staining or ponding that may indicate surface clogging. Look for areas of sediment intrusion such as mulch migrating onto the pavers. Remove material and dig a trench edge where the intrusion has occurred. Workers shall report ongoing issues to the head of their company.

Scope of Annual Services

Annual Inspection

Branch managers and contractor will complete an Annual Inspection Checklist jointly at the start of each growing season. This shall occur after all species have leafed out for the year. This completed checklist will be bound into the library branch copy of the O&M Manual for inspection by city parties as desired. Inspections shall include:

- Note any dead or severely damaged plants and replace with the same species and cultivar or with a species approved by the RPL Maintenance and Operations Facilities Manager. This includes denuded lawn areas that flow into bioxention basins. Expenditures of up $200 per site per biannual season may be made at the discretion of the contractor and billed to RPL with a PO or invoice from the plant supplier. Expenditures in excess of $200 per site per season must be approved by the RPL Maintenance and Operations Facilities Manager with a formal estimate. If specific plants have been replaced more than once and continue to die, consult a horticulturalist or landscape architect to identify the issue and provide new species selection. Confirm that 75% to 90% of vegetative cover is maintained in the bioretention basins and add reinforcement plantings to maintain the desired density if needed.
- Inspect the health of all trees on site, noting dead wood to be removed or signs of disease and damage. Note any issues on the annual inspection report. These issues shall be forwarded to the city arborists by the Branch Manager.
- Inspect the entirety of the site per the weekly scope of work.
- Inspect the mulch layer for a maximum of 3" of mulch that doesn't touch the trunks of any trees or shrubs nor be mounded up around perennials. Adjust accordingly. Note that annual re-mulching will occur once a year in the fall.
- Inspect the surface of the permeable pavement for evidence of sediment deposition, organic debris, staining or ponding that may indicate surface clogging. Look for areas of sediment intrusion such as mulch migrating onto the pavers.
- Inspect the structural integrity of the pavement surface, looking for signs of surface deterioration, such as slumping, cracking, spalling or broken pavers. Replace or repair affected areas, as necessary.
- Inspect the condition of the observation well and make sure it is still capped.
- Generally, inspect any contributing drainage area for any controllable sources of sediment or erosion.
- Inspect the surface of the permeable pavement for evidence of sediment deposition, organic debris, staining or ponding that may indicate surface clogging. Then, test sections by pouring water from a five gallon bucket to ensure they work. If any signs of clogging are noted, schedule paver cleaning or system overhaul. Cleaning shall be accomplished with a vacuum machine rated for pervious paver cleaning such as the Typhoon Surface and Joint Cleaner by Pavetech. If a qualified machine is not available the paving system has been built in such a way so that the pavers, 1" fine aggregate setting bed, and fine aggregate joint material can be replaced:
  - Remove all pavers and set aside.
  - Remove all 21A gravel joint and setting bed material. This is contained by mortared edge restraints and separated from lower gravel layers with filter fabric.
  - With fine aggregates removed test the system as noted above. If issues persist contact a civil engineer or landscape architect for further exploration.
  - Clean or replace filter fabric taking care not to allow sediment into lower layers.
  - Replace setting bed, clean and relay pavers, and sweep with joint material.

Maintenance Duties

Contractor Selection and Contracts

The Director of The Richmond Public Libraries and his staff at his discretion shall select the maintenance contractor to take care of all RPL properties. Contracts shall include the contractor's DPOR license number, a copy of professional insurance, and hourly labor rate and narrative describing standard mark-ups on materials, if applicable. The remainder of the contract should reiterate the above or reference this document.

Additional Maintenance

The City of Richmond shall provide ongoing site maintenance for the following:

- Tree removal or tree pruning not accessible from the ground.
- Snow removal and ice treatment. No salt may be used on in areas draining to Bee Zones.
- Maintenance of hardscapes and utilities.
- Dumpster service and maintenance / cleaning of dumpster enclosures and surrounding areas.
- Gutter/ roof cleaning as necessary in areas where downspouts drain to bioretention basins or pervious pavers

COMMONWEALTH OF VIRGINIA
9-19-25
ANDREW HARRIGAN
Lic. No. 0406001627
LANDSCAPE ARCHITECT

FOUR WINDS DESIGN, LC

For Bid

Revision Block

Notes
Not for construction

12 0 12 24 36
Scale: 1"= 12'

Date: 9-20-25
Sheet 7 of 7