

	struction Inspection Checklist: Urban Bioretention – Planter Box (July 2019)	ICTON	Planter Box Mai
		NGION SINIA	Spot weed
	Permit #: SWM#:		Add reinfor
Cer	tractor: Telephone:ifying		vegetation
	essional*: Telephone:		Remove in Stabilize the
	e Started: Final Inspection Date: Sying professional must be a licensed Professional Engineer (PE), Landscape Architect (LA), or Land Surveyor (LS).		Stabilize tr Spring insi
			Suppleme
	following checklist provides a basic outline of the anticipated items for the construction inspection		Prune tree
	tention facilities. This checklist does not necessarily distinguish between all the design variation: ectors should review the plans carefully, and adjust these items and the timing of inspection veril		Examine f Inspect inf
	led to ensure the intent of the design is met. The standard for design of this practice is based or		Inspect inf Inspect for
torn	nwater BMP Clearinghouse and Arlington County Stormwater Guidance Manual.		Remove s
	ems should be crossed off when completed. Items labeled "Certification of" must be crossed and initialed by the certifying inspector.	sed off,	Replace the Inspected
	-CONSTRUCTION MEETING	DATE	of Virginia
	Conduct a pre-construction meeting with the contractor designated to install the planter box, the person		
	completing this checklist, and the County DES Stormwater Specialist inspector (schedule via stormwaterreview@arlingtonva.us).		
	Stormwater has been diverted around the area of the bioretention practice and perimeter erosion control measures to protect the facility during construction have been installed.		
	AVATION AND BOX CONSTRUCTION	DATE	Material
	Area is marked and the size and location conforms to plan.		Waterproofi
	Excavation has achieved proper grades and the required geometry and elevations.		
	Box is constructed using the material specified and to the required dimensions as shown on the approved plans. <i>Constructed interior dimensions:</i>		
	Waterproofing is installed on sides and bottom of interior of the box as specified.		
	Certification of Excavation and Box Construction Inspection: Inspector certifies the successful completion of the steps listed above and any necessary photos are attached.		Filter Medi
П	Photo required of: entire interior (sides and bottom) of planter box waterproofed.		Composition
Ц			
	Material ticket required of waterproofing membrane if plastic membrane is used (no receipt required for liquid membrane).		
FILT	ER LAYER, UNDERDRAIN, AND STONE RESERVOIR PLACEMENT	DATE	
	All aggregates conform to specifications as certified by quarry.		Filter Medi
	Underdrain size and perforations meet the specifications (holes should be spaced 6" apart, maximum of 3 rows of holes). Placement of underdrain, observation wells, and underdrain fittings are in accordance with the approved plans.		Testing
	Elevations of underdrain and outlet structure are in accordance with approved plans, or as adjusted to meet field conditions and denoted in Comments section below. Any planter boxes that are in series (drain from one to another), requires the submission of invert elevations.		Mulch Laye
	Urban Bioretention – Planter Box	July 2019	Choking Lay
			Stone Jacket
			Underdrai
	Placement of remaining lift of stone reservoir layer as needed to achieve the required reservoir depth.		and/or Stora
	Certification of Filter Layer and Underdrain Placement Inspection: Inspector certifies the successful completion of the filter layer and underdrain placement steps listed above. Photos and material delivery tickets for these items are attached.		Layer
	Photos required include:		
П	Perforated underdrain pipe with a solid vertical overflow pipe;		Underdrains
	 Depth of #57 stone; Depth of choker stone (pea gravel or #8). 		Overflows
	Material delivery tickets required: o #57 stone and choker stone (pea gravel or #8)		
BIOF	RETENTION SOIL MEDIA PLACEMENT	DATE	
	Soil media is certified by supplier or contractor as meeting the project specifications and comes from an approved soil media vendor.		
	No filter fabric is to be used between the stone layer and the soil layer. Soil media is placed in 12-inch lifts to the design top elevation of the bioretention area, and lifts have been lightly watered. Elevation		Plant Materi
	has been verified after settlement (2 to 4 days after initial placement). Certification of Soil Media Placement Inspection: Inspector certifies the successful completion of the soil media steps listed above. Photos and material delivery tickets for these items are attached.		
	Photo required includes a measurement of the soil media installed.		
	Material delivery ticket required from an <u>approved soil media vendor</u> .		VA DCR STORMWA
			AY DOL 2 LOUINAA
PRE	TREATMENT AND PLANT INSTALLATION Placement of energy dissipaters and pretreatment practices (splash block/rocks, gutter guards, etc.) are	DATE	

	Photo required includes a measurement of the soil media installed.	
	Material delivery ticket required from an approved soil media vendor.	
PRE	TREATMENT AND PLANT INSTALLATION	DATE
	Placement of energy dissipaters and pretreatment practices (splash block/rocks, gutter guards, etc.) are installed in accordance with the approved plans.	
	Overflow has atrium grate installed.	
	Downspouts are installed in accordance with the approved plans providing the correct drainage area.	
	The number and spacing of plants are installed in accordance with the approved plans. If there is no approved landscape plan for the planter boxes, the plants are to be chosen from VA DEQ Stormwater Design Specification No. 9: Table 9.6 Popular Native Plant Materials for Bioretention.	
	A 2-3 inch layer of shredded hardwood mulch has been installed.	
	Certification of Pretreatment and Plant Installation Inspection: Inspector certifies the successful completion of the pretreatment, energy dissipaters, plants, overflow grates and mulch as listed above. Photos and copies of material delivery tickets are attached.	
	Photos required for this step for each planter include: Overall photo showing the number of plants installed; Location of downspout/inflow pipe with the appropriate splash block/rocks; Distance from the top of mulch to the top of the overflow pipe; Distance from the top of mulch to the top of the planter box.	
	Material delivery tickets required for this step include:	

DR	Y WELL OR CONNECTION TO STORM SEWER	DATE
	Dry well is constructed to the correct dimensions and proper materials including the proper geotextile, stone, and overflow mechanism (pop-up emitter) per the plan (if applicable).	

Urban Bioretention – Planter Box | July 2019

tos required for dry well include: Excavated dry well with fabric installed on sides (no fabric on bottom); Dimensions of dry well (L x W x D); Perforated pipe installed inside of dry well; Solid pipe for any pipe located outside of dry well (above gravel to grade); Depth of #57 stone; Fabric installed on top of gravel; Completed dry well with turf cover and pop-up emitter installed. erial Tickets required: Geotextile used; #57 stone.	
Excavated dry well with fabric installed on sides (no fabric on bottom); Dimensions of dry well (L x W x D); Perforated pipe installed inside of dry well; Solid pipe for any pipe located outside of dry well (above gravel to grade); Depth of #57 stone; Fabric installed on top of gravel; Completed dry well with turf cover and pop-up emitter installed. erial Tickets required: Geotextile used;	
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AND THE PROPERTY OF THE PROPER	
tos required for dry well include:	
e items are attached.	
tification of Dry Well or Connection to Storm Sewer: Inspector certifies the successful	
n	derdrain is directly tied into the public storm sewer system and the connection has been witnessed DES inspector (if applicable). *tification of Dry Well or Connection to Storm Sewer: Inspector certifies the successful inpletion of the dry well or connection to the storm sewer. Photos and material delivery tickets for see items are attached.

COMMENTS (CLARIFICATION, DEVIATIONS, ETC.)	DATE

All items checked above have been inspected by me (or by an inchese been completed to my satisfaction and meet the approved p	, , , , , , , , , , , , , , , , , , , ,
Signature:	_ Date:
Certifying Professional's License Number (or Seal):	

See attached sealed final location survey with the installed stormwater management facilities appropriately labeled

Maintenance	Frequency
Spot weeding, erosion repair, trash removal, and mulch raking	Twice during growing season
 Add reinforcement planting to maintain the desired vegetation density 	As needed
 Remove invasive plants using recommended control methods Stabilize the contributing drainage area to prevent erosion 	
Spring inspection and cleanup	
 Supplement mulch to maintain a 2-3 inch layer 	Annually
Prune trees and shrubs	•
 Examine for the ponding depth and adjust accordingly 	
 Inspect inflows and overflow for erosion 	
 Inspect for structural deficiencies and repair 	
Remove sediment in pre-treatment cells and inflow points	Once every 2 to 3 year
Replace the mulch layer	Every 3 years
 Inspected and certified by a professional licensed in the State of Virginia 	Once every 5 years

Material	Specification	Notes
Waterproofing	Watertight shell or impermeable liner	Use a thirty mil (minimum) PVC Geomembrane liner or equivalent.
Filter Media Composition	Filter Media to contain: • 80%-90% sand with >75% being coarse to very coarse • 10%-20% soil fines • 3%-5% organic matter in the form of plant based compost meeting Clearinghouse Design Specification #4, Section 6.5	The volume of filter media based on 110% of the plan volume, to account for settling or compaction.
Filter Media Testing	Plant available P within Low+ (L+) to Medium (M) per DCR 2014 Nutrient Management Criteria (18- 40 mg/kg P for the Mehlich III procedure) and CEC >5	The media must be procured from approved filter media vendors.
Mulch Layer	Use aged, shredded hardwood bark mulch	Lay a 2 to 3 inch layer on the surface of the filter bed.
Choking Layer	3 inch layer of pea gravel or VDOT underdrain stone.	#8 stone which is laid over the
Stone Jacket for Underdrain and/or Storage Layer	1 inch stone should be double- washed and clean and free of all fines (e.g., VDOT #57 stone).	12 inches for the underdrain
Underdrains and Overflows	Use 4 inch rigid schedule 40 PVC pipe with 3/8-inch perforations at 6 inches on center, maximum of 3 rows of perforations; position each underdrain on a 1% or 2% slope.	Lay the perforated pipe under the length of the planter box, and install non-perforated pipe as needed to connect with the storm drain system. Install T's and Y's as needed, depending on the underdrain configuration. Extend overflow pipes to the surface with vented caps.
Plant Materials	1 quart-sized perennial installed per 1-2 sf and/or 1 3-gallon shrub installed per 7.5 sf over entire ponding area from DEQ Specification 9: Table 9.5	Choose either herbaceous and/or shrubs

TER DESIGN SPECIFICATION NO. 9

inundation, drought and salt tolerance for each species.

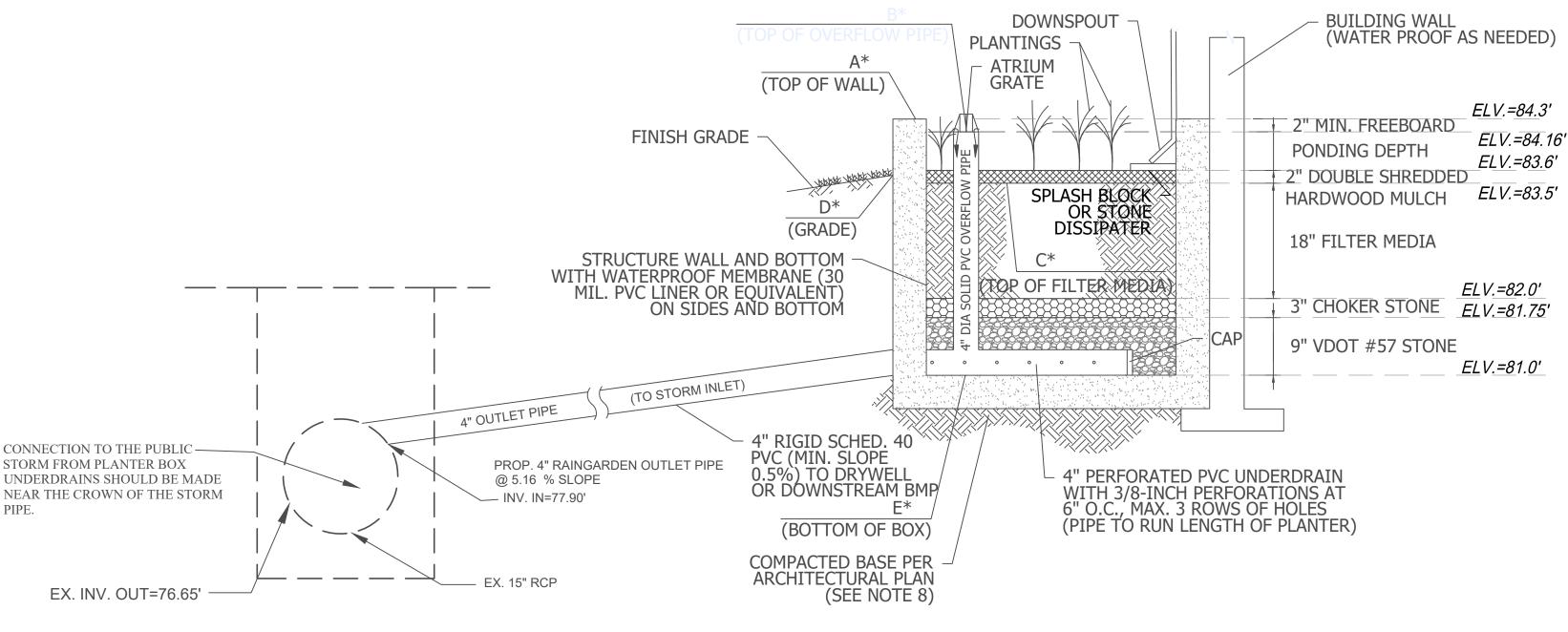
* most applicable to the coastal plain

Table 9.6. Popular Native Plant Materials for Bioretention

BIORETENTION

Perennials/Herbaceous	Shrubs	Trees
Virginia Wild Rye	Common Winterberry	∤ River Birch
(Elymus virginicus)	(llex verticillatta)	(Betula nigra)
Redtop Grass	Inkberry	Red Maple
(Agrostis alba)	(Ilex glabra)	(Acer rubrum)
Swamp Milkweed	Sweet Pepperbush	Pin\Oak
(Asclepias incarnata)	(Clethra ainifolia)	(Quercus palustris)
Switchgrass	Wax Myrtle	Willow Oak
(Panicum virgatum)	(Myrica cerifera)	(Querçus phellos)
Cardinal Flower	Virginia Sweetspire	Sweetgum
(Lobelia cardinalis)	(Itea virginica)	(Liquidambar styraciflua)
Common Three Square	Swamp Azeala	Black Willow
(Scirpus americanus)	(Azeala viscosum)	(Salix nig <mark>r</mark> a)
Sensitive Fern	Button Bush	Grey Birch
(Onoclea sensibilis)	(Cephalanthus occidentalis)	(Betula populifolia)
Blue Flag	Black Haw	Black Gum \
(Iris versicolor)	(Virburnum prunifolium))	(Nyassa sylvatica)
Woolgrass	Indigo Bush	Sycamore \ /
(Scirpus cyperninus)	(Amorpha fruticosa)	(Platanus occidentalis)
Indian Grass	Arrowwood	Green Ash V
(Sorghastrum nutans)	(Virburum dentatum)	(Fraxinus penn ≴y lvanica
Marsh Marigold		Sweetbay Magnolia*
(Caltha palustris)		(Magnolia virginia (a)
Joe Pye Weed		Atlantic White Cedar*
(Eupatorium purpureum)		(Charnaecyparis thyoides)
Turk's cap lily		Bald Cypress*
(Lilium superbum)		(Taxodium distichum)
Bee Balm		Grey Dogwood
(Mornarda didyma)		(Cornus racernosa)
Northern Sea Oats		Smooth Alder
(Chasmanthium latifolium)		(Alnus serrulata))
(0.1.4011.411.411.411.411.41)		Serviceberry
		(Amelanchier canadensis)
		Redbud
		(Cercis candensis)
		Box Elder
		(Acer negundo)
		Fringe Tree
		(Chionanthus virginicus)

URBAN BIORETENTION PLANTER BOX STANDARD DETAIL ARLINGTON COUNTY SWM DETAIL #7



TYPICAL PLANTER BOX

- 1. LENGTH (L) AND WIDTH (W) DIMENSIONS MUST BE A MINIMUM OF 2 FEET EACH.
- 2. NO STORAGE VOLUME CREDIT IS GIVEN FOR THE MULCH LAYER.
- 3. SEE VIRGINIA DEQ STORMWATER DESIGN SPECIFICATION NO. 9 FOR ADDITIONAL DESIGN AND CONSTRUCTION INFORMATION
- 4. THE PLANTER BOX MAY BE CONTAINED IN A PRECAST CONCRETE, CAST-IN-PLACE CONCRETE OR 6"X6" PRESSURE TREATED WOOD VAULT (WALLS AND BASE). OTHER MATERIALS MAY INCLUDE MOLDED POLYPROPYLENE CELLS AND PRECAST MODULAR BLOCK SYSTEMS (VIRGINIA DEQ DESIGN SPECIFICATION NO. 9, SECTION 9-A-1).
- 5. SINCE PLANTER BOXES ARE LOCATED NEAR THE BUILDING FOUNDATION, WATERPROOFING BY USING A
- WATERTIGHT CONCRETE SHELL OR AN IMPERMEABLE LINER IS REQUIRED TO PREVENT SEEPAGE. 6. AN ATRIUM GRATE OR EQUIVALENT MAY BE USED FOR THE OVERFLOW ON TOP OF THE PVC STANDPIPE
- CONTRACTOR TO ENSURE THAT THE PROPER DOWNSPOUTS DISCHARGE INTO THE PLANTER BOX. RIVER
- ROCK OR OTHER ENERGY DISSIPATION SHALL BE USED WHERE DOWNSPOUTS TIE INTO THE PLANTER BOX. 8. FOR PLANTER BOXES ATTACHED TO THE FOUNDATION AND/OR A RETAINING WALL, SEE ARCHITECTURAL
- PLANS FOR STRUCTURAL DETAILS/REQUIREMENTS.
- 9. ARLINGTON COUNTY DOES NOT REVIEW THE WATERPROOFING DESIGN AND THE OWNER/DEVELOPER AGREES HOLD ARLINGTON COUNTY HARMLESS IN THE EVENT OF FAILURE.

July 2014 (Revised April 2015). Sizing spreadsheet for SW planters for compliance with Arlington County Stormwater Managment Ordinance

Impervious Area to Facility	Pervious Area to Facility	Total Drainage Area	Total Drainage Area	Rainfall Depth (P)	Rv	Target storage (WQv)	Width	Length	Ponding depth	Filter depth	Gravel depth	Surface Area	Ponding Volume (1.00 void)	Soil Storage Volume (0.25 void)	Gravel Storage Volume (0.4 void)	Available Storage	% Water Quality Volume Captured
(SF)	(SF)	(SF)	(acre)	(in)		(CF)	(ft)	(ft)	(in)	(in)	(in)	(SF)	(CF)	(CF)	(CF)	(CF)	Must be ≥ 100% (Max. 200%)
1824		1824	0.0419	1.00	0.95	144.40	8.39	15.00	6	18	12	125.85	62.93	47.19	50.34	160.46	111.1%
	Impervious Area to Facility (SF)	Impervious Area to Facility (SF) Pervious Area to Facility (SF)	Impervious Pervious Total Area to Area to Drainage Facility Facility Area (SF) (SF) (SF)	Impervious Pervious Total Total Area to Area to Drainage Drainage Facility Area Area (SF) (SF) (SF) (acre)	Impervious Pervious Total Total Rainfall Area to Area to Drainage Drainage Depth Facility Area Area (P) (SF) (SF) (SF) (acre) (in)	Impervious Pervious Total Total Rainfall Area to Area to Drainage Drainage Depth Rv Facility Area Area (P) (SF) (SF) (acre) (in)	Impervious Pervious Total Total Rainfall Target Area to Area to Drainage Drainage Depth Rv storage Facility Area Area (P) (WQv) (SF) (SF) (acre) (in) (CF)	Impervious Area to Facility Pervious Area Total Drainage Area Drainage Area Depth (P) Rv Target storage (WQv) (SF) (SF) (SF) (acre) (in) (CF) (ft)	Impervious Area to Facility Pervious Area Total Drainage Area Depth (P) Rv Target storage (WQv) Width Length (SF) (SF) (SF) (acre) (in) (CF) (ft) (ft)	Impervious Area to Facility Pervious Area to Facility Total Drainage Area Rainfall Depth (P) Rv Target storage (WQv) Width Length Length depth (SF) (SF) (SF) (acre) (in) (CF) (ft) (ft) (in)	Impervious Area to Facility Pervious Area to Facility Total Drainage Area Rainfall Depth (P) Rv Target storage (WQv) Width Length depth Ponding depth Filter depth (SF) (SF) (SF) (acre) (in) (CF) (ft) (ft) (in) (in)	Area to Facility	Impervious Area to Facility	Impervious Area to Facility	Impervious Area to Facility	Impervious Area to Facility	Impervious Area to Facility

Elevation table for the Planterbox

A - top of	B - top of	C - top of	D finish	E - bottom	invert in
planter	overflow	filter	grade	of facility	to Storm
wall	pipe	media	graue	Orraciity	Inlet
84.33	84.16	83.50	83.80	81.00	77.90

PRE-TREATMENT NOTE:

GRAVEL DIAPHRAGM, AND ROOF GUTTER SCREENS WILL BE PROVIDED AS PRE-TREATMENT TECHNIQUES.

WATER PROOFING NOTE:

ARLINGTON COUNTY DOES NOT REVIEW THE WATER PROOFING DESIGN AND THE OWNER/DEVELOPER AGREES TO HOLD ARLINGTON COUNTY HARMLESS IN THE EVENT OF THE FAILURE.



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PLAN STATUS 12/09/2022 **1ST SUBMISSION** 2ND SUBMISSION 10/18/2023 3RD SUBMISSION

DESCRIPTION SCALE: 1"=10' PLAN DATE: 12/9/2022 CEPL22-00138 PLAN NO.: SWM PLAN NO.: SWM 23-0004

2MHC PROJECT NO.: 20220006 SHEET NAME PLANTER BOX DETAILS

MH

AND INSPECTION CHECKLIST

SHEET#

DESIGNED BY:

C009.3