Stormwater Specialist Arlington County Department of Environmental Services 2100 Clarendon Blvd., Suite 705 Arlington, VA 22201

RE: Stormwater Management System Certification (SWM



Dear Stormwater Specialist:

Our firm was contracted by **and the end of the second seco**

Permeable Pavement Driveway

1.	Cut at Garage	38" Required, 38" Provided	Photo on Page 14
2.	Cut at Driveway Apron	17.125" Required, 18" Provided	Photo on Page 13
3.	Min. Depth #57 Stone	12" Required, 12" Provided	Photo on Page 18
4.	Depth of #8 Stone	2" Required, 2" Provided	Photo on Page 19
5.	Depth of Paver	3.125" Required, 3.125" Provided	Photo on Page 21
	-	-	

Planter Box #1

- 1. Overall Length
- 2. Overall Width
- 3. Overall Depth
- 4. Depth of #57 Stone
- 5. Depth of Pea Gravel
- 6. Depth of Soil Media
- 7. Depth of Mulch
- 8. Ponding Depth
- 9. Freeboard
- 10. Inflow(s)
- 11. Plantings
- 12. Waterproofing

- 15.50' Required, 15.67' Provided 2.30' Required, 2.42' Provided
- 46" Required and 46.0" Provided
- 9" Required and 9.0" Provided
- 3" Required and 3.0" Provided
- 18" Required and 18.0" Provided
- 2" Required and 2.0" Provided
- 12" Required and 12.0" Provided
- 2" Required and 2.0" Provided
- 1 Required and 1 Provided
- T Required and T Plovided
- 5 Required and 5 Provided
- Liquid Membrane Applied
- Photo on Page 35 Photo on Page 34 Photo on Page 25 Photo on Page 28 Photo on Page 29 Photo on Page 31 Photo on Page 32 Photo on Page 36 Photo on Page 37 Photo on Page 34 Photo on Page 35 Photo on Page 23

Dry Well

1. Overall Length	48" Required, 52" Provided	Photo on Page 39
2. Overall Width	48" Required, 52" Provided	Photo on Page 39
3. Depth of #57 Stone	3.0' Required, 3.0' Provided	Photo on Page 41

We inspected the construction and verified the installation of the facilities and they are in conformance with the approved plans. The site work has been completed, ground stabilized, and the facilities are currently available to accept site runoff as drainage systems are brough on-line. The installation documentation and receipts have been provided by the contractor. These are privately owned and owner maintained SWMFs with a Stormwater Maintenance and Monitoring Agreement between the homeowner and Arlington County.

If you have any questions or require any additional information, please do not hesitate to contact us. Thank you.

Respectfully Submitted:





Construction Inspection Checklist: Permeable Pavement

			ARLINGTON
Address/	Building Permit #:		VIEGINIA
LDA Permit #:			
Contractor:	Telephone:		
Certifying Professional*:	Telephone:		ið Verstandingsson
Date Started: 3/10/2020	Final Inspection Date:	06/09/2020	
Certifying professional must be a licensed Profess	ional Engineer (PE), Landscape Architect	(LA), or Land Survey	or (LS).

The following checklist provides a basic outline of the anticipated items for the construction inspection of permeable pavement. This checklist does not necessarily differentiate between the types of pavement materials and the different construction requirements. Inspectors should review the plans carefully, and adjust these items and the timing of inspection verification as needed to ensure the intent of the design is met. The standard for design of this practice is based on <u>Virginia Stormwater BMP Clearinghouse</u> and <u>Arlington County Stormwater Guidance Manual</u>.

All items should be crossed off when completed. Items labeled "Certification of..." must be crossed off, dated and initialed by the certifying inspector.

PRE-CONSTRUCTION MEETING		
g	Walk through site with builder/contractor/subcontractor to review the SWPPP (erosion and sediment control plan, the stormwater management plan, and the Pollution Prevention plan)	3/10/20
	Determine when permeable pavement is built in project construction sequence; before or after building construction and determine measures for protection and surface cleaning.	3/10/20
۵v	Identify the tentative schedule for construction, verify the certification of the installer (ICPI for permeable interlocking pavers or NRMCA for pervious concrete) and requirements and schedule for interim inspections.	3/10/20
•	Storage locations for aggregate material have been identified (hard surface or on geotextile).	3/10/20
9	Pre-construction meeting with the contractor designated to install the permeable pavement, County DES inspector, and person completing this checklist has been conducted.	3/10/20

SEDIMENT MANAGEMENT		DATE
	Access routes for delivery and construction vehicles identified.	3/10/20
	Vehicle tire/track washing station location/maintenance (if specified in the erosion and sediment control plan/SWPPP).	3/10/20
	Contributing drainage areas are stabilized and are not eroding.	3/10/20

EXCAVATION	DATE
Excavated area marked with paint and/or stakes.	04/27/20
Excavation size and location conforms to plan.	04/27/20
Runoff is diverted around the excavation area to a stabilized conveyance.	04/27/20

	If excavation is used as a sediment trap: verify that the bottom elevation of the proposed stone reservoir is lower than the bottom elevation of the existing trap.	N/A
Ø	Subgrade surface is free of rocks and roots, and large voids. Any voids should be refilled with the base aggregate to create a level surface for the placement of aggregates and underdrain (if required).	04/27/20
	For Level 2 permeable pavement, ensure the bottom of the excavation is scarified prior to placement of stone.	N/A
V	No groundwater seepage or standing water is present. Any standing water is dewatered to an acceptable dewatering device.	04/27/20
	The excavation has achieved the proper elevations and grade (0% slope) as noted on the approved plans.	04/27/20
g	Certification of Excavation Inspection: Inspector certifies the successful completion of the excavation steps listed above. Photos required include excavated subgrade prior to covering with fabric and stone, and include measurement from subgrade to reference point (i.e., top of edge restraint, top of apron, top of garage entrance, top of flow barriers and flow barrier excavation cuts, etc.).	06/9/20

FILT	ER LAYER, UNDERDRAIN, STONE RESERVOIR, AND BEDDING LAYER PLACEMENT	DATE
	All aggregates, including, as required, the filter layer (choker stone & sand or geotextile), the reservoir layer, and bedding layer conform to specifications as certified by quarry.	04/29/20
	Underdrain size and perforations meet the specifications (if applicable).	N/A
	Placement of filter layer and initial layer of reservoir layer aggregates (approximately 2 inches) spread (not dumped) to avoid aggregate segregation.	05/02/20
Q.	Placement of underdrain, observation wells, and underdrain fittings in accordance with the approved plans.	05/02/20
	Concrete curbs or plastic/metal edge restraints are installed.	05/02/20
	Sides of excavation covered with geotextile, prior to placing stone reservoir aggregate; no tears or holes, or excessive wrinkles are present.	05/02/20
	Flow barriers are properly installed (if applicable).	N/A
	Stone reservoir layer and bedding layer is properly installed.	05/02/20
	Certification of Filter Layer, Underdrain, Stone Reservoir and Bedding Layer Inspection: Inspector certifies the successful completion of the filter layer, underdrain, stone reservoir and bedding layer placement steps listed above. Photos and material delivery tickets for these items are attached. Photos required include: • Non-woven geotextile fabric installed on bottom and sides of excavated subgrade; • Perforated observation well prior to installation of stone; • Perforated underdrain (if applicable) and connection to storm sewer or dry well; • Depth of #2 or #3 stone installed (if applicable); • Edge restraints; • Depth of #57 stone installed; • Depth of #8 stone installed.	06/09/20
	Photos required of flow barrier (if applicable): o 12" height of berm; o 12" height of cut for flow barrier; o Impermeable liner; o Distance between flow barriers.	

	Material delivery tickets required include: o Choker stone & sand or geotextile installed at subbase; o Geotextile installed along sides; o Impermeable liner on gravel flow berms (if applicable); o #2 or #3 stone (if applicable), #57 stone, #8 stone.	
PER	MEABLE PAVERS OR PERVIOUS CONCRETE INSTALLATION	DATE
Ľ	Permeable paver surface is installed.	05/02/20
	If pavers are used, the joints are full of #8 or #9 stone.	05/02/20
	Certification of Pavement Installation: Contractor and/or manufacturer certifies that permeable pavement has been placed in accordance with manufacturers specifications (ICPI Tech Spec #18 for interlocking concrete pavers or ACI#522.1-13 for pervious concrete).	
9	 Photos required include: Overall of completed installation; Observation well with proper cap installed. Material delivery tickets required for the pavers or concrete installed. 	06/09/20
_		
	The permeable pavement is protected until the remainder of the site is stabilized.	05/02/20

OMMENTS (CLARIFICATION, DEVIATIONS, ETC.)	DATE

All items checked above have been inspected by me (or by an individual under my responsible charge) and have been completed to my satisfaction and meet the approved plans (or deviations are noted here).

Signature:	Date:	6/9/20	¢
Certifying Professional's License Number (or Seal):			
Installer / Contractor's Certification (Required)			

Permeable Interlocking Pavers: Attach copy of ICPI Certification

Pervious Concrete: NRMCA Certification* Number:

*NRMCA Certification must be either Installer or Craftsman certification.



The Interlocking Concrete Pavement Institute acknowledges that



is recognized as a

Certified Concrete Paver Installer

Certification is Valid Through

The ICPI Concrete Paver Installer Course provides education on the construction of interlocking concrete pavements. This document conveys that the above-named participant has passed the Concrete Paver Installer Course and has met the minimum installation experience required by ICPI for this certification.

ICPI Education Committee Chair

(Elen Withatte

ICPI Executive Director



Construction Inspection Checklist: Urban Bioretention – Planter Box

Address/ Location:	Building Permit #:	
LDA Permit #:	SWM#:	
Contractor:	Telephone:	
Professional*:	Telephone:	
Date Started: 03/10/2020	Final Inspection Date:	06/09/2020
Certifying professional must be a licensed Professional Feat	inger (PE) andecane Architect	(1 A) or (and Summur (1 S)

The following checklist provides a basic outline of the anticipated items for the construction inspection of urban bioretention facilities. This checklist does not necessarily distinguish between all the design variations. Inspectors should review the plans carefully, and adjust these items and the timing of inspection verification as needed to ensure the intent of the design is met. The standard for design of this practice is based on <u>Virginia</u> <u>Stormwater BMP Clearinghouse</u> and <u>Arlington County Stormwater Guidance Manual</u>.

All items should be crossed off when completed. Items labeled "Certification of..." must be crossed off, dated and initialed by the certifying inspector.

PRE	-CONSTRUCTION MEETING	DATE
٢	Pre-construction meeting with the contractor designated to install the planter boxes, County DES inspector, and person completing this checklist has been conducted.	3/10/20
•	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.	3/10/20
EXC	AVATION AND BOX CONSTRUCTION	DATE
ľ	Area is marked and the size and location conforms to plan.	3/27/20
U	Excavation has achieved proper grades and the required geometry and elevations.	3/27/20
	Box is constructed using the material specified and to the required dimensions as shown on the approved plans. Constructed interior dimensions: <u>PB1: 3.04'x8.08' PB2:</u> 2.75'x10.04'	3/27/20
	Waterproofing is installed on sides and bottom of interior of the box as specified.	3/27/20
	Certification of Excavation and Box Construction Inspection: Inspector certifies the successful completion of the steps listed above and any necessary photos are attached.	6/9/20
Ψ γ	Photo required of: entire interior (sides and bottom) of planter box waterproofed. Material ticket required of waterproofing membrane if plastic membrane is used (no receipt required for liquid membrane).	0/9/20
FILT	ER LAYER, UNDERDRAIN, AND STONE RESERVOIR PLACEMENT	DATE
Ľ	All aggregates conform to specifications as certified by quarry.	03/30/2
_	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.	03/30/20
9	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.	03/30/20
Ľ	Placement of remaining lift of stone reservoir layer as needed to achieve the required reservoir depth.	03/30/20

	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.	
4	 Perforated underdrain pipe with a solid vertical overflow pipe; 	6/9/20
-	o Depth of #57 stone;	0, 5, 20
	 Depth of choker stone (pea gravel or #8). 	
	Material delivery tickets required:	
	 #57 stone and choker stone (pea gravel or #8) 	

BIO	RETENTION SOIL MEDIA PLACEMENT	DATE
ď	Soil media is certified by supplier or contractor as meeting the project specifications and comes from an approved soil media vendor.	03/30/20
ď	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. Elevation has been verified after settlement (2 to 4 days after initial placement).	03/30/20
	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.	
9	Photo required includes a measurement of the soil media installed.	6/9/20
	Material delivery ticket required from an approved soil media vendor.	

PRE	TREATMENT AND PLANT INSTALLATION	DATE
Q.	Placement of energy dissipaters and pretreatment practices (splash block/rocks, gutter guards, etc.) are installed in accordance with the approved plans.	04/06/20
ø	Overflow has atrium grate installed.	04/06/20
Q	Downspouts are installed in accordance with the approved plans providing the correct drainage area.	04/06/20
Ø	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.	04/06/20
ď	A 2-3 inch layer of shredded hardwood mulch has been installed.	04/06/20
	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:	
C	 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. 	6/9/20
	Material delivery tickets required for this step include: Approved plants listing number and species; Shredded hardwood mulch. 	S.

DRY	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).	03/30/20
	Underdrain is directly tied into the public storm sewer system and the connection has been witnessed by DES inspector (if applicable).	N/A

	Certification of Dry Well or Connection to Storm Sewer: Inspector certifies the successful completion of the dry well or connection to the storm sewer. Photos and material delivery tickets for these items are attached.	
Ø	 Photos 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. 	6/9/20
	Material Tickets required: o Geotextile used; o #57 stone.	

COMMENTS (CLARIFICATION, DEVIATIONS, ETC.)	DATE
8	

All items checked above have been inspected by me (or by an individual under my responsible charge) and have been completed to my satisfaction and meet the approved plans (or deviations are noted here).

Signature:	Date:	6/9	20
Certifying Professional's License Number (or Seal):			/

Permeable Pavement Driveway Installation Photos





















Planter Box #1 Installation Photos

















PLANTER #














Dry Well Installation Photos











Material Tickets / Receipts

Four One Stop Stone Since 1937	www.SislersStone.c	2046 com	Invoice No. Invoice Date Transaction # P/O # Salesperson Terms Ship Via			E P/S
Bill To	Account # Pa# 1	Ship T	0			#
Item#	Description 12.5' FILTER FABRIC (4 OZ) - 360'/ROLL - SRW NW4 COARSE CONCRETE SAND BULK	Qty	B/O	U/M	Unit Price	Total

NOTE: Purchaser is solely responsible for order quantities. Any recommendations from Sislers should be vetted by the installer in the field prior to order execution. NOTE: Non-Stock Orders May Take 8-16 Weeks Unless Otherwise Noted







Aggregate shipped under this certification has been tested and conforms to the requirements of VDOT



INVOICE P/S

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PHONE:	(540)	898-7434
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