



# DINWIDDIE COUNTY

PLANNING, ZONING, CODE COMPLIANCE AND ENVIRONMENTAL

## PERMEABLE PAVEMENT

### *Site Design Checklist*

Plan Name: \_\_\_\_\_ Date Submitted: \_\_\_\_\_

The following checklist only identifies the information and details that must be included in the SWM plan

**Mark the appropriate BMP that is being reviewed:**

**Micro-Scale Pavement (250 – 1,000 sq. ft.)**

**Small-Scale Pavement (1,000 – 2,500 sq. ft.)**

**Large-Scale Pavement (2,500 – 10,000 sq. ft.)**

**Level 1**

**Level 2**

**LEVEL 1 MINMUM DESIGN CRITERIA:**

The treatment volume must be calculated using the following formula: $Tv = (1)(Rv)(A)/12$ – the volume reduced by any upstream BMP.	
An underdrain system is required.	
At a minimum, drainage mats are incorporated	
The contributing drainage area (CDA) must be the Permeable Pavement area plus any up-gradient parking (as long as the ratio of external contributing area to Permeable Pavement does not exceed 2:1).	

**LEVEL 2 MINMUM DESIGN CRITERIA:**

he treatment volume must be calculated using the following formula: $Tv = (1.1)(Rv)(A)/12$ .	
The soil infiltration rate must be at least 0.5 in./hr.	
If an underdrain is used, a 12-inch stone sump must be provided below the underdrain invert; or the Tv must have at least a 48-hour drain time.	
The contributing drainage area (CDA) must equal the Permeable Pavement area.	

**PLAN REQUIREMENTS:**

<p>Provide a site map identifying pertinent information regarding the Permeable Pavement:</p> <ul style="list-style-type: none"><li>- The contributing drainage area (CDA) boundaries, acreage, and land cover;</li><li>- Topography of the site area;</li><li>- Provide a soil map for the site and the area of the Permeable Pavement;</li><li>- Provide soil boring locations (at least one boring must be taken to confirm the underlying soil properties at the depth where infiltration is designed to occur);</li><li>- The results of soil infiltration rate testing to confirm a subsoil infiltration rate of at least 0.5-inch/hour for Level 2 design are provided if applicable (minimum of one infiltration test per 1,000 s.f.);</li><li>- The depth to the seasonal high groundwater table and bedrock has been confirmed and is at least 2 feet below the bottom invert of the reservoir layer.</li></ul>	
<p>Provide a plan view showing:</p> <ul style="list-style-type: none"><li>- The layout and dimensions of the Permeable Pavement facility;</li><li>- Pre-treatment, if necessary;</li><li>- The locations of the observation wells for large-scale pavement applications;</li><li>- Overflow/outlet structure details.</li></ul>	
<p>Provide profiles, section views, and details that show the following:</p> <ul style="list-style-type: none"><li>- Subgrade preparation;</li><li>- Aggregate;</li><li>- Permeable pavement surface layer;</li><li>- Underdrain system, if applicable, if the practice is on fill soils or soils with an infiltration rate &gt;0.5 in./hr.;</li><li>- Observation wells, if applicable;</li><li>- Filter fabric;</li><li>- Minimum of 2 feet between the bottom of the permeable pavement and the seasonal high water table;</li><li>- Longitudinal slope.</li></ul>	

**MAINTENANCE:**

<p>Provide adequate access to the roof for delivery and stockpile of construction materials and to perform routine maintenance. The access will not be less than 16 sq. ft. in area with a minimum dimension of 24 inches.</p>	
<p>Inspections required by the Maintenance Agreement must be conducted by 1) a person who is licensed as a professional engineer, architect, landscape architect, or land surveyor pursuant to Sec. 54.1-400 et seq. of the Code of Virginia; 2) a person who works under the direction and oversight of a licensed professional engineer, architect, landscape architect, or land surveyor; or 3) a person who holds a Stormwater Inspector or Stormwater Combined Administrator certificate of competence from the State Water Control Board.</p>	

**COMPUTATIONS:**

Provide appropriate hydraulic design calculations, including:	
Required treatment volume; - The Micro-Scale Pavement (treats 250 – 1,000 sq. ft.) must be sized to infiltrate or detain some or all of the Tv. - The Small-Scale Pavement (treats 1,000 to 10,000 sq. ft.) must be sized to infiltrate or detain all of the Tv and as much of the CPv and design storm as possible. - The Large-Scale Pavement (treats > 10,000 sq. ft.) must be sized to infiltrate or detain all of the Tv and as much of the CPv and design storm as possible.	
Depth of the reservoir layer (dp);	
Maximum depth of the reservoir layer (dp-max);	
Outflow through the underdrain, if required (qu);	
Structural design, considering: total traffic load, in-situ soil strength, environmental elements, and bedding/reservoir design;	
Provide hydraulic routing calculations;	
Provide an outlet control analysis showing the pavement will drain within 48 hours following a storm (minimum of 24 hours);	
Provide all assumptions and coefficients.	

**ACCESS AND LOCATION:**

The building setbacks must be as follows: - At least 5 feet down-gradient and 25 feet up-gradient (micro-scale pavement); - At least 10 feet down-gradient and 50 feet up-gradient (small-scale pavement); - At least 25 feet down-gradient and 100 feet up-gradient. (large-scale pavement).	
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**CONSTRUCTION:**

<p>The sequence of construction must address the SWM facility installation and appropriate inspections, including: initial site preparation, excavation/grading, and installation of the embankment, principal outlet structure, and emergency spillway. We recommend the County staff be involved in these inspections.</p>	
<p>The sequence of construction must clearly state that a construction record drawing and certification that the stormwater management facility has been constructed in accordance with the approved plan must be submitted to the County and approved prior to Environmental Compliance Bond (ECB) release.</p>	

Engineer Signature: \_\_\_\_\_ Date: \_\_\_\_\_