

**Proposed Amendment to Chapter 6 (Storm Drainage)
of
the Public Facilities Manual**

Amend Article 6-0400 (STORMWATER RUNOFF QUALITY CONTROL CRITERIA), Section 6-0402 (Stormwater Quality Control Practices), by revising Subsection 6-0402.7 to read as follows:

6-0402.7 Developers, in coordination with [DPWES](#), ~~may cooperate~~ are strongly encouraged to seek cooperation with other planned developments in their watershed area in order to construct combined facilities which could serve several developing sites. ~~This regional approach to stormwater management would result in facilities that are not only efficient in terms of stormwater quality control, but are also cost effective and land saving.~~

Amend Article 6-0400 (STORMWATER RUNOFF QUALITY CONTROL CRITERIA), Section 6-0402 (Stormwater Quality Control Practices), Subsection 6-0402.8, by revising Paragraph 6-0402.8B to read as follows:

B. A map showing drainage divides, land cover and hydrologic soil group for all subareas used in the water quality computations ~~of weighted average "C" factors, [BMP](#) storage, and phosphorus removal including off-site areas, open space, and uncontrolled areas.~~

Amend Article 6-0400 (STORMWATER RUNOFF QUALITY CONTROL CRITERIA), Section 6-0402 (Stormwater Quality Control Practices), Subsection 6-0402.8, by revising Paragraph 6-0402.8H to read as follows:

H. If an owner or operator intends to meet the requirements established in [Chapter 124](#) of the Code through the use of off-site compliance options, ~~then~~ a letter of availability from the off-site provider must be included.

Amend Article 6-0900 (CLOSED CONDUIT SYSTEM), Section 6-0902 (Storm Sewer Pipe), Subsection 6-0902.2 (Adjustments of Pipe Sizes as Determined by the Manning Formula), by revising Paragraphs 6-0902.2K and O to read as follows:

K. Plain concrete culvert pipe and non-reinforced concrete pipe must conform to the requirements of ASTM Designation C-14 Extra Strength; reinforced concrete pipe must conform to ASTM Designation C-76 Classes II, III, and IV; a minimum of Class III or equal is required under areas subject to vehicular traffic. Joints between pipe segments and connections to manholes and other pipe structures must meet VDOT requirements and must conform to the silt-tight specification of AASHTO R82-17. Joint systems must be on the VDOT Materials Division Approved List for pipe joints.

O. Polypropylene Pipe (PP)

1. Polypropylene Pipe must conform to the requirements of AASHTO M330 and must be double-wall pipe (Type S) or triple-wall pipe (Type D) for nominal diameters of 12 inches through 60 ~~30~~ inches ~~and must be triple-wall pipe (Type D) for nominal diameters of 36 inches through 60 inches.~~ The use of polypropylene pipe less than 12 inches or greater than 60 inches is not permitted. Suppliers of polypropylene pipe for stormwater applications must be on VDOT Materials, Division Approved List meeting the requirements of VDOT's PP Corrugated Pipe Products Quality Assurance Program.

Amend Article 6-0900 (CLOSED CONDUIT SYSTEM), Section 6-0903 (Pipe and Culvert Materials), by revising Table 6.8 (Pipe and Culvert Materials – Roughness Coefficients) to read as follows:

6-0903.1 Pipe and culvert materials acceptable for storm drain construction with the accompanying roughness coefficients are shown below:

Table 6.8 Pipe And Culvert Materials – Roughness Coefficients	
Material	Manning “n”
Plain Concrete Culvert Pipe (PCCP) ²	.013
Non-Reinforced Concrete Sewer Pipe (NRCSP) ²	.013
Reinforced Concrete Pipe (RCP)	.013
Vitrified Clay Pipe, Extra Strength (VCPX)	.013
Cast Iron Pipe (CIP)	.013
Corrugated Plain Metal Pipe (CMP) ¹	.024
25% Paved	.021
50% Paved	.018
100% Paved	.013
High-Density Polyethylene Pipe (HDPE)	.012
Polypropylene Pipe (PP)	.013
¹ Corrugated metal pipe is approved for use at residential driveway entrances, temporary installations, and privately maintained detention systems. Except for the above uses, this type of pipe may be used only when approved by the Director. In approving the use of CMP, the Director may apply certain conditions to provide for inspection and testing in accordance with AASHTO 's standards, including deflection testing.	
² Plain Concrete Culvert Pipe (PCCP) and Non-Reinforced Concrete Sewer Pipe (NRCSP) must conform to the VDOT Road and Bridge Specifications . Pipe sizes 12 in. through 24 in. are permitted, in accordance with § 6-0902.2 .	

Amend Article 6-0900 (CLOSED CONDUIT SYSTEM), Section 6-0904 (Hydraulic Grade Line), by revising Subsection 6-0902.4 (Pressure Flow) to read as follows:

- 6-0904.4 Pressure Flow. New Closed conduit systems should be designed to have no surcharge during the 10-year design storm. Storm sewer systems ~~may be designed for pressure flow~~ are subject to approval of the Director; ~~however, all proposed pressure flow systems should be coordinated with DPWES in the preliminary design stage.~~ The HGL for the design flows should be at least 1 foot below the established ground elevation and no more than 5 feet above the crown of the pipe. For curb opening inlets the gutter flow line is considered the established ground elevation.

Amend Article 6-0900 (CLOSED CONDUIT SYSTEM), Section 6-0905 (Closed Conduit Design Calculations), by revising Subsection 6-0905.4 (Pipe Design Calculations) and Paragraph 6-0905.4A to read as follows:

- 6-0905.4 Pipe design calculations:
- A. ~~For~~ for storm sewer systems, submit a storm sewer profile with hydraulic grade lines drawn on it.

Amend Section 6-1110 (Storm Sewer Construction Specifications), by revising Subsections 6-1110.3 and 6-1110.13 to read as follows:

6-1110 Storm Sewer Construction Specifications

- 6-1110.3 Drop inlets, manhole structures and curb inlets must have steps. The maximum dimension from finished grade to the first step in the inlet may not exceed 3 feet 3 inches. Steps must be aligned with structure access openings. In cases where the structure top is wider than the structure, openings must be aligned to allow access to the steps in the structure base.
- 6-1110.13 A handrail, guardrail, fence or other protective device is required when the height of an endwall is 2 feet or greater and the structure is located near residence or pedestrian walkways. The protective device must be shown on the plan. Guardrails will be so placed so as to perform the function for which it is intended and the height of the guardrail must extend 36 inches above the ~~surrounding area~~ high side of the endwall.

Amend Chapter 6 Plates by revising Plate 30-6 (24 Hour Design Storm Chart For Spillway Design Floor (SDF)) and Plate 61-6 (PP And HDPE Pipe Trench) as follows: