

**ADOPTION OF AMENDMENTS TO THE  
PUBLIC FACILITIES MANUAL  
OF THE COUNTY OF FAIRFAX, VIRGINIA**

At a regular meeting of the Board of Supervisors of Fairfax County, Virginia, held in the Board Auditorium of the Government Center at Fairfax, Virginia, on Tuesday, March 19, 2013, the Board, after having first given notice of its intention so to do in the manner prescribed by law, adopted amendments to the Public Facilities Manual of the County of Fairfax, Virginia, said amendments so adopted being in the words and figures following, to-wit:

**BE IT ORDAINED BY THE BOARD OF SUPERVISORS OF FAIRFAX  
COUNTY, VIRGINIA:**

Amend the Public Facilities Manual, as follows:

**Amend § 2-0502 (Inspections), where insertions are underlined and deletions are shown as strikeouts, to read as follows:**

2-0502.1B Prior to requesting a pre-construction conference, the developer ~~director~~ shall:

2-0502.1B(1) Have the project plans approved by the Director.

2-0502.1B(2) Obtain all necessary permits.

**Insert § 4-0700 (Testing for Infiltration Facilities) to read as follows:**

**4-0700 Testing for Infiltration Facilities**

**4-0701 Purpose and Scope**

4-0701.1 The purpose of infiltration testing is to determine the character, physical properties and Seasonal High Water Table (SHWT) of natural soil deposits proposed to be used for infiltration of stormwater. Infiltration facilities include facilities such as percolation trenches (PFM 6-1303), pervious pavement with full or partial exfiltration (PFM 6-1304) and bioretention basins or rain gardens (PFM 6-1307). For a general discussion of the design of the infiltration facilities see Virginia DCR Stormwater Design Specification No. 8, Infiltration Practices.

4-0701.2 The scope of the investigation must be planned with knowledge of the intended project size, facility size, land utilization and general subsurface characteristics. The complete evaluation must include a Geotechnical Investigation in the field, laboratory testing of select soil samples retrieved in the field to confirm soil and strata classifications and a final report.

#### **4-0702 Geotechnical Investigation**

4-0702.1 Geotechnical investigation to be performed by borings or a combination of borings and test pit per § 4-0702.5.

4-0702.2 Determination of the SHWT should be performed during the months of November through May. SHWT determination by direct observation of the ground water level should not be performed during the months of June through October unless the value of the Palmer Drought Severity Index (PDSI) is equal to or greater than 2.0 (i.e., wet). If the value of the PDSI is less than 2.0 (i.e., near normal or drier), the determination of SHWT by direct observation and testing conducted during the months of June through October may be used for preliminary design only. Final design shall then be based on a confirmatory investigation performed during the months of November through May (or anytime of the year when the PDSI is greater than 2.0). Weekly values of the PDSI are available online from the National Weather Service Climate Prediction Center. Fairfax County is located in Virginia Climate Division #4.

4-0702.3 The SHWT may be determined using soil morphology throughout the year by a certified/licensed professional registered in Virginia with training and experience in soil morphology (certified/licensed professional soil scientist, licensed onsite soil evaluator, certified professional wetland delineator, or certified professional geologist). Professional engineers registered in Virginia with experience in the field of geotechnical engineering may also be certified to determine the SHWT provided that they have successfully completed the Soil Morphology Training Class offered by the Northern Virginia Soil and Water Conservation District (NVSWCD) and are on its list of certified professionals.

4-0702.4 Evaluation of the SHWT utilizing soil morphology shall be based on low-chroma colors, mottles and redoximorphic features of the soil. Unlike other types of field tests which may be performed by an individual under the responsible charge of the registered professional, this evaluation must be performed by the registered professional personally. If the registered professional performing the evaluation determines that a follow-up confirmatory field measurement of the SHWT is required, or if required by the County, the follow-up evaluation shall be performed when the Palmer Drought Severity Index (PDSI) is equal or greater than 2.0, or anytime during the months of November through May.

4-0702.5 Each proposed facility requires a minimum of three borings, or a test pit and two borings, located within the footprint of the proposed infiltration facility.

4-0702.5A The first or initial boring, which could also be a test pit, should be located approximately in the center of the footprint of the proposed facility. The first boring or test pit is performed to document the soil profile, horizons, groundwater table, depth of bedrock (defined in § 4-0702.5B) and the general suitability of the site for infiltration.

4-0702.5B Bedrock is defined as materials exhibiting a minimum SPT N-value of 60. In the Triassic (Culpeper) Basin and Piedmont Upland physiographic provinces, the aforementioned minimum SPT N-value will correlate approximately to weathered rock (i.e., in such areas, the separation is measured to a weathered rock surface, especially where underlain by shale, siltstone, sandstone and/or schist).

4-0702.5C The soil description must include all soil horizons.

4-0702.5D Soil textures should be identified according to the Unified Soil Classification System (USCS) per ASTM D-2488 (Description and Identification of Soils Visual-Manual Procedure) and the USDA Textural Classification.

4-0702.5E Dynamic Cone Penetrometer (DCP) [ASTM Special Technical Publication #399] test or Standard Penetration Test (SPT) [ASTM D1586-99] results should be provided for the initial boring or test pit.

4-0702.5F The boring or test pit depth shall extend no less than 48 inches below the invert of the proposed facility.

4-0702.5G The boring shall be continuously sampled from 24 inches above the anticipated or proposed facility invert to the termination depth of the boring to better evaluate the subsurface conditions.

4-0702.5H Groundwater elevations are to be recorded at the time of the boring and at least 24 hours following its completion.

4-0702.5I The shallowest measurement may be used as the SHWT if the conditions of § 4-0702.2 are met.

4-0702.6 The second and third borings, with minimum diameters defined in § 4-0703.3B and drilled at an offset distance of not less than 5 feet from the initial boring or test pit, are used for the infiltration tests.

4-0702.7 Additional profile borings/test pits shall be provided for every 100 linear feet or every 10,000 square feet of the proposed infiltration facility. Additional borings/test pits may also be performed at the discretion of the certified/licensed professional to adequately characterize infiltration characteristics.

4-0702.8 Additional infiltration tests shall be required for every 50 linear feet or every 2,000 square feet of the proposed facility. Additional infiltration tests may also be performed at the discretion of the certified/licensed professional to adequately characterize infiltration characteristics.

4-0702.9 The field infiltration rate is based on the average of all field tests located within the facility.

### **4-0703 Infiltration Testing**

4-0703.1 Actual infiltration rates shall be determined via on-site test(s) conducted within 24 inches of the anticipated or proposed facility invert.

4-0703.2 Specific requirements are as follows:

4-0703.2A Drill two borings adjacent to the initial test pit or boring, each at an offset of greater than 5 feet, and to a depth of within 24 inches of the anticipated or proposed invert of the facility. The diameter of the boring shall snugly fit the diameter of the casing (see § 4-0703.3B). Remove any loose material from each boring.

4-0703.2B Install a solid casing 3 to 5 inches in diameter to the bottom of the boring. Remove any smeared soil surfaces and loose material from the casing. A 2-inch layer of coarse sand or fine gravel may be placed at the bottom of the boring to prevent scouring and sedimentation.

4-0703.2C Fill the standpipe with water to a height of at least 24 inches above the bottom of the casing, and allow pre-soaking for 24 hours.

4-0703.2D After 24 hours, refill the standpipe to a height of 24 inches above the bottom of the casing and record the water level drop in inches after one hour. Repeat the procedure three times by filling the standpipe to a height of 24 inches and measuring the drop in water level after one hour. A total of four observations shall be completed. The infiltration rate of each test boring is the average of the change in water level readings in inches per hour, or the last reading, whichever is the most representative of the subsurface conditions based on the opinion of the certified/licensed professional conducting the tests. Should the infiltration rates in the two borings prove inconsistent, additional borings and infiltration tests must be performed or the lowest infiltration rate obtained shall be used as the field infiltration rate.

4-0703.2E The field infiltration rate for a proposed facility is the average of all field infiltration rates conducted within that facility, per § 4-0702.9. A field infiltration rate of at least 0.5 inches per hour at the design depth of the proposed facility must be obtained for the infiltration to be considered feasible. The design infiltration rate for the facility is one-half of the field infiltration rate. If field infiltration rates of 8 or more inches per hour are recorded, the design professional shall be contacted to confirm that the facility is in a suitable location with respect to environmental concerns.

4-0703.2F Soil boring locations shall be accurately documented on the plans.

4-0703.2G Infiltration testing shall be performed by a qualified professional or his/her authorized representatives. The professional shall either be a Virginia licensed professional engineer with experience in geotechnical engineering and soil evaluation, a Virginia certified/licensed professional soil scientist, or a Virginia certified professional geologist.

4-0703.2H A change in design at the permitting plan review stage may necessitate additional testing. The final design invert of the proposed facility must be within 24 inches of the elevation at which the infiltration test(s) used for design were conducted.

4-0703.2I Septic percolation tests are not acceptable as an alternative to infiltration tests.

#### **4-0704 Laboratory Testing**

4-0704.1 Grain-size sieve analyses and hydrometer tests must be performed to determine the USDA textural and USCS classifications at the proposed or anticipated invert of the facility.

4-0704.2 The tests should also be done on representative samples from all soil layers encountered to a depth of 4 feet below the final invert of the facility.

#### **4-0705 Report Presentation and Submission**

4-0705.1 The report shall include the proposed infiltration facility plan, the boring locations, all boring logs and laboratory test data.

4-0705.1A USDA textural classification and USCS soil description shall be provided in the report as well as on the boring logs.

4-0705.1B A table shall be included in the report showing the dates, times and hourly readings of the water level for each infiltration test along with the averaged field infiltration rates for each test within the proposed facility.

4-0705.1C The report shall discuss the feasibility of the proposed facility and the impact of the proposed facility on adjoining properties. The report shall provide recommendations for construction as well as the design infiltration rate for the proposed facility.

4-0705.2 The report can be included as part of the formal geotechnical report submitted for a site, subdivision or infill grading plan.

4-0705.2A The report may also be submitted as part of the site, subdivision or infill grading plan, provided it is included on the first submission.

4-0705.2B The report may also be submitted separately as a geotechnical report or as an addendum to a geotechnical report if a separate report was previously submitted.

#### **4-0706 Pre-construction Meeting**

4-0706.1 A pre-construction meeting shall be held with representatives of the owner/developer, the contractor, the third-party inspection firm and the Site Development and Inspection Division. The PFM and site-specific requirements and the third-party inspection certification shall be reviewed and discussed.

**Amend § 6-1303.3 (Percolation Trenches), where insertions are underlined and deletions are shown as strikeouts, to read as follows:**

6-1303.3 (56-96-PFM) Percolation trenches may be useful only in areas where the soil is pervious and where the water table is lower than the design depth of the trench. ~~A soils analysis prepared by a professional authorized by the State to provide such information must be submitted with design plans.~~ The design of the facility shall be in accordance with the soil testing, reporting and meeting procedures of § 4-0700 *et seq.* The use of percolation trenches is undesirable in soil slippage areas.

**Amend § 6-1304.4I (Pervious Pavement), where insertions are underlined and deletions are shown as strikeouts, to read as follows:**

6-1304.4I For facilities utilizing infiltration, ~~a soils analysis shall be prepared and infiltration tests conducted by a licensed professional engineer with experience in geotechnical engineering and soil evaluation, a certified professional soil scientist, or a certified professional geologist. Recommended guidelines for performing the field tests and soils analysis are available from the Department of Public Works and Environmental Services. A minimum field measured infiltration rate of 0.52 inches per hour shall be required for infiltration. The design infiltration rate shall be half of the field measured rate.~~ the design of the facility shall be in accordance with the soil testing, reporting and meeting procedures of § 4-0700 *et seq.* Soils with a CBR (minimum 96 hours soaked) less than 5 or that are highly expansive are not suitable for infiltration. Such soils would require compaction or other measures to be used as a pavement subgrade that would compromise their ability to infiltrate water. Pervious pavements on these soils shall be designed for no infiltration with unrestricted underdrains.

**Amend § 6-1307.4O (Bioretention Filters and Basins), where insertions are underlined and deletions are shown as strikeouts, to read as follows:**

6-1307.4O For facilities utilizing infiltration, ~~a soils analysis shall be prepared and infiltration tests conducted by a licensed professional engineer with experience in geotechnical engineering and soil evaluation, a certified professional soil scientist, or a certified professional geologist.~~

Recommended guidelines for performing the field tests and soils analysis are available from the DPWES. A minimum field measured infiltration rate of 0.52 inches per hour shall be required for infiltration. The design infiltration rate shall be half of the field measured rate. the design of the facility shall be in accordance with the soil testing, reporting and meeting procedures of § 4-0700 et seq.

Amend § 7-1004 (Standards and Criteria) by revising Table 7.11, where insertions are underlined and deletions are shown as strikeouts, to read as follows:

<b>Table 7.11 Lighting Levels For Proposed Curb &amp; Gutter Streets: Alternate Security Fixtures (RF-3) (High Pressure Sodium Vapor) (110-12-PFM, 99-07-PFM, 80-03-PFM)</b>						
Area Class	Roadway Class	ADT	Lamp Size Lumens	Maximum Spacing ft.	Mounting Height ft.	Notes
<b>Residential</b>	Local	<u>0-400</u>	5,000	160	14	1,2
		<del>251-400</del>	<del>5,000</del>	<del>160</del>	<del>14</del>	<del>1,2</del>
		401- <del>1000</del> <u>2000</u>	8,000	160	14	1,2
		<del>1001-2000</del>	<del>8,000</del>	<del>160</del>	<del>14</del>	<del>1,2</del>
NOTES: <sup>1/</sup> Measured from face of pole to face of curb. <sup>2/</sup> Poles to be placed on one side of the roadway.						

This amendment shall become effective on March 20, 2013, at 12:01 a.m.

GIVEN under my hand this 19<sup>th</sup> day of March, 2013.

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**CATHERINE A. CHIANESE**  
 Clerk to the Board of Supervisors