Stafford County Department of Utilities
Water and Sewer Design and Construction Standards
March 2006

Addendum 2 June 16, 2014

The purpose of the addendum is to add VDOT standards applicable to water and sewer sanitary sewer pipes and appurtenances installed under pavements in VDOT Rights-of-Way.

Page G-2 Section 1.1.2 Project Plan Review and Permitting

Add the following paragraph after the first paragraph:

Detailed review will be performed by VDOT and Stafford County

Page G-6 Inspection

Add the following title to the second paragraph:

1.1.8.1 Inspections in General

Add the following paragraph:

1.1.8.2 Testing for Construction Under Pavements in VDOT Rights-of-Way

Stafford County will be responsible for testing the backfill of waterlines, sanitary sewers, and appurtenances to be located under pavements as follows:

A. Test Methods
The following test methods will be used:

1. VTM-1: Laboratory Determination of Theoretical Maximum Density Optimum Moisture Content of Soils, Granular Subbase and Base Materials.
2. VTM-10: Determining Percent of Moisture and Density of Soils and Asphalt (Nuclear Method).
3. VTM-12: Use of One-Point Proctor Density
4. AASHTO-T191: Standard Method of Test for Density of Soil In-Place by the Sand Cone Method.

B. Testing Frequency
Testing Frequency will be in accordance with VDOT Materials Division Manual of Instruction Section 309, Project Sampling Testing and Inspection Section 309.01 Density Control:

1. Section (5) Backfill for pipes. The test pattern for pipes requires the test pattern to begin at 6" above and will continue for each compacted 6" lift until the fill reaches design pavement subgrade or existing ground surface, whichever is lower. The lifts will continue until the top of the ground with select material that conforms to Sec 303 of the VDOT Materials Manual. The test frequency will be no greater than every 300 feet for fill material above the pipe. If there is less than 200 feet of pipe in a single segment or placed on a single day, then one density test for every two lifts shall be performed.

2. Section (9) Backfill for Manholes: Manholes shall have a minimum of one test (around the perimeter of the structure) every fourth 6" compacted layer until the top five feet of the structure. The test pattern after the first 4" compacted layer above the bedding will continue in 6" inches compacted lifts to the top on the structure. In the top five feet one test of every other lift around the perimeter of the structure is required.

C. Qualifications of Technicians
Field technicians must complete the VDOT Soils and Aggregate Compaction School and obtain and maintain a valid VDOT Soils and Aggregate Certification. In addition, if there is concrete work associated with water or sanitary sewer construction, the field technician must complete the VDOT Concrete Field School and obtain and maintain a valid VDOT Concrete Materials Certification.

D. Reporting Forms
Reporting forms shall conform to forms listed in VDOT Materials Division Manual of Instruction Section 317, Summary of Minimum Acceptable Sampling Requirement:

a. TL-55 Report of Nuclear Test Section
b. TL-125 (Sand-Cone Method)
c. TL-125A (One Point Proctor Method)

E. Report Submissions
Stafford County must submit the above reports, sealed by a professional engineer licensed in the Commonwealth of Virginia, to VDOT on a biweekly basis.

The county will submit one copy of all reports to:
Area Land Use Engineer (North)
VDOT Fredericksburg District
86 Deacon Road
Fredericksburg, VA 22405

Page G-15 Add Section 1.3.6 <u>Water and Sanitary Sewer Lines Under Pavements in VDOT Rights-of-Way</u>

With the permission of VDOT and the Director, water and sanitary sewer lines and appurtenances may be placed under pavements in VDOT rights-of-way. Permission to place water and sewer under pavement will be limited to residential projects with a maximum lot size of 10,000 square feet and with front setback limitations of 30 feet or less in the following zoning districts: A-2, R-1, R-2, R-3, R-4, PD-1, PD-2, P-TND, and UD; and only during initial construction. The design of the water or sanitary sewer utilities shall be in conformance with VDOT's Road and Bridge Standards and Stafford County's Water and Sewer Design and Construction Standards. Water and Sanitary Sewer utilities will be allowed per VDOT Road Design Manual App B1 and evaluated by VDOT on a case-by-case basis. In case of a conflict, the more stringent requirement shall govern. Utilities shall be located outside the right-of-way in easements whenever it is practical to do so.

Where permission to construct water and sanitary sewer lines under pavements is granted, sewer services and waterline services to all lots shall be installed as part of the initial construction so as to eliminate the need for future excavation in paved areas to

install services. All water and sewer services shall, at a minimum, extend to the Right-of-Way line.

Page G-17 Section 1.4.4 Pipe Installation

Add to the end of the section:

The installation of water and sewer utilities located under pavements in VDOT Rights-of-Way, shall be in accordance to chapter three (Geotechnical Engineer) of the VDOT Materials Division Manual of Instruction http://www.virginiadot.org/business/resources/bu-mat-MOI-3.pdf (Reference Specs. 520, 401 & 309, 308, 302-305, 232, 208, 207, 205, VDOT Road and Bridge Specifications) and Stafford County Department of Utilities Water and Sewer Design and Construction Standards", which specification is most stringent or which standard is most pertinent to the method of construction in respect to VDOT field inspector or VDOT construction engineer.

Page G-18 Section 1.4.5 Backfilling

Add after the first paragraph:

Section 1.4.5 1 Backfilling in General

Add the following:

Section 1.4.5 2 Backfilling Under Pavements in VDOT Rights-of-Way

Trenches shall be constructed in accordance with Stafford County details 1.5.2-1 and 1.5.2-3 as appropriate or VDOT requirements if more stringent. Materials shall conform to the following:

1. Controlled Fill
   a) Materials placed with roadbed Fill soils shall consist of suitable imported or on-site soils approved by VDOT for use in the roadway prism.
   b) Materials placed in a trench excavated in the roadway prism: Fill soils shall consist of suitable imported or on-site soils as determined by the County Engineer and approved and accepted by VDOT. Suitable materials for fill shall consist of any approved material imported or excavated from the cut areas, shall contain no rocks or gravels greater than two inches (2") in size, and shall contain at least 40 percent of material smaller than one-fourth inch (1/4") in size. No material of a perishable, spongy, or otherwise improper nature shall be used in filling. Materials classified as SM or SC in accordance with ASTM D2487 shall be used.

2. Select Backfill
   a) Imported materials placed under pavement: VDOT 21A
   b) All other areas in VDOT Right-of-Way: Materials classified as SM, SC, or better in accordance with ASTM D2487, free of rock or gravel larger than two inches (2") in any dimension, debris, waste, frozen materials, organic material, and other deleterious matter. The plasticity index shall be less than 15 and the liquid limit shall be less than 40.

3. Bedding
   a) Watermains: VDOT 21A only where required to adjust final grades.
   b) Sanitary sewers: VDOT No. 57 stone

4. Unsuitable Material
   Any material that contains more than 5% be weight organic matter, or that has unstable bearing capacity, excessive moisture content, roots, mulch, debris, waste, or frozen materials.

Page W-3 Section 2.1.2 Location

Add the following paragraph at the end of the section:

Water lines that are allowed under the pavement of undivided roadways, shall be located in the center of travel lane unless, as determined by VDOT, there are compelling design or safety issues that would demand consideration of an alternate location. The waterline positioning will provide ten (10) feet separation from the sewer lines as required by the Virginia Department of Health (VDH).

Page S-2 Item 3.1.1 Location

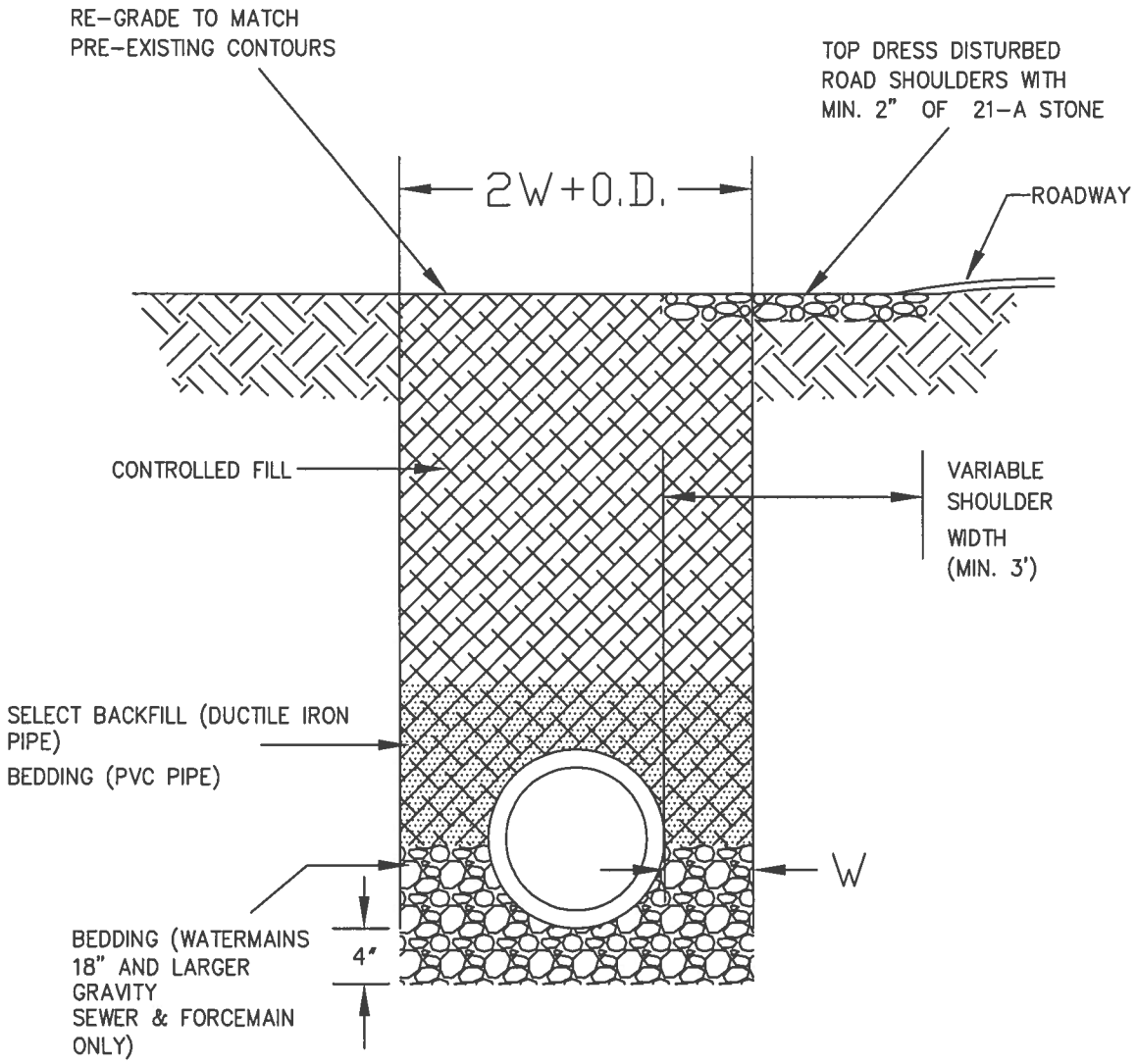
Add the following paragraph at the end of the section:

Where sanitary sewers are allowed under pavements and manholes are also located in paved areas, sewer manholes will be placed at the center line of a travel lane to avoid damage to vehicles due to manhole depression.

Approved By: Anthony Romanello
County Administrator

6.17.14

Effective: June 20, 2014



NOTES:

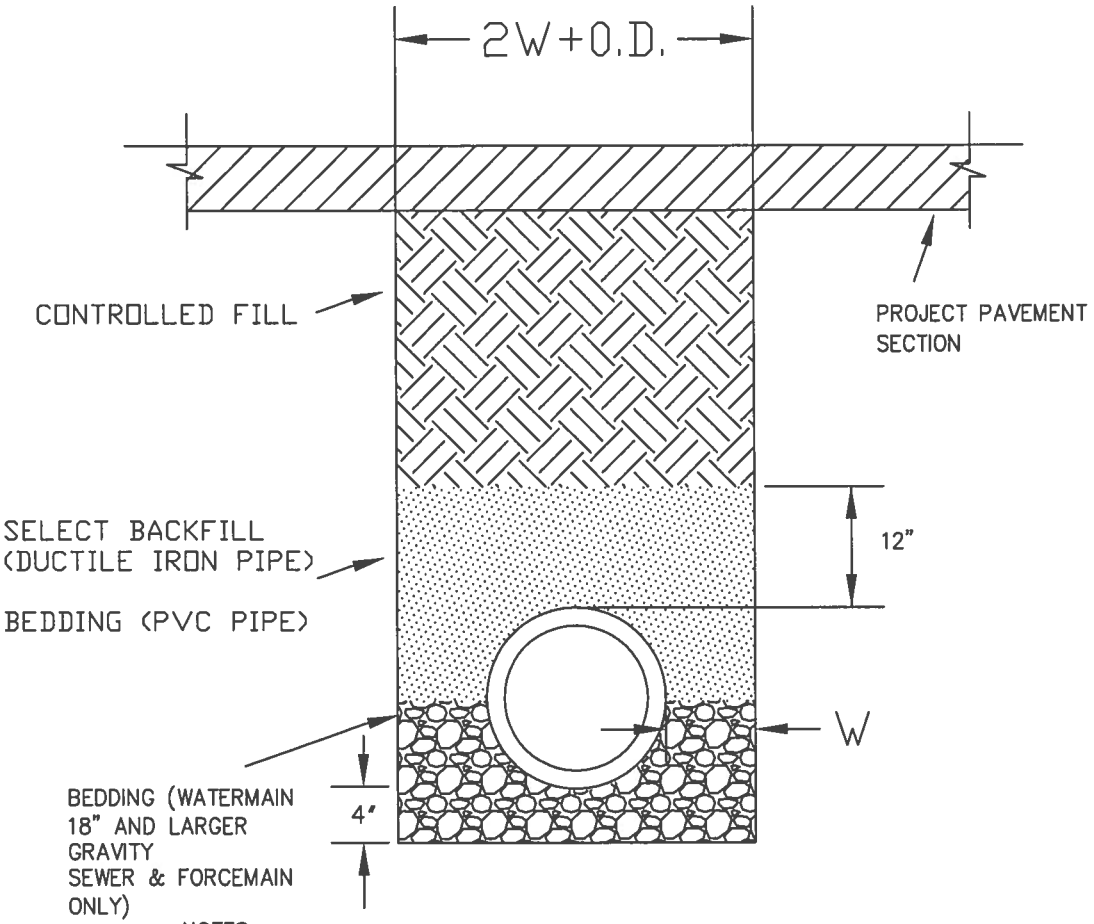
1. SELECT BACKFILL COMPACTED TO 95% VTM-1 MAXIMUM DRY DENSITY TO EXTEND TO GRADE.
2. DIMENSION "W" SHALL BE A MINIMUM OF 6 INCHES AND A MAXIMUM OF 12 INCHES.
3. BEDDING TO EXTEND 12" OVER CROWN OF PVC PIPE.
4. BEDDING SHALL BE PLACED FOR A MINIMUM OF 4" BELOW BOTTOM OF PIPE TO THE SPRINGLINE OF THE PIPE.
5. ANY OVEREXCAVATION TO BE BACKFILLED WITH BEDDING MATERIAL.

MARCH 2012

1.5.2-1

STAFFORD COUNTY
DEPARTMENT OF UTILITIES

TRENCH FOR
SHOULDER OF ROAD



NOTES:

1. CONTROLLED FILL TO BE PLACED IN 6" LAYERS COMPACTED TO 95% VTM-1 MAXIMUM DRY DENSITY ABOVE STRUCTURAL BACKFILL OR BEDDING.
2. STRUCTURAL BACKFILL TO EXTEND 12 INCHES OVER CROWN OF DUCTILE IRON PIPE. BEDDING TO EXTEND 12" OVER CROWN OF PVC PIPE.
3. DIMENSION 'W' SHALL BE A MINIMUM OF 6 INCHES AND MAXIMUM OF 12 INCHES.
4. BEDDING SHALL BE PLACED FOR A MINIMUM OF 4" BELOW BOTTOM OF PIPE TO THE SPRINGLINE OF THE PIPE.
5. ANY OVEREXCAVATION TO BE BACKFILLED WITH BEDDING MATERIAL.

MARCH 2012	1.5.2-3
STAFFORD COUNTY DEPARTMENT OF UTILITIES	TRENCH BENEATH PROPOSED NEW PAVEMENT