



FREDERICK COUNTY GOVERNMENT

DIVISION OF UTILITIES & SOLID WASTE MANAGEMENT

Department of Engineering & Planning

Jan H. Gardner
County Executive

Kevin L. Demosky, Director

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EXPLANATION MEMORANDUM #15-01

**RE: Standard Detail 108.1, Fire Hydrant Setting and Grading
Standard Detail 108.2, Low Point Dewatering Fire Hydrant**

Question: Are fire hydrants to be installed with both joint restraint and concrete buttresses?

Background: Standard Detail 108.1, *Fire Hydrant Setting and Grading* and Detail 108.2, *Low Point Dewatering Fire Hydrant* depict the use of both concrete buttresses and joint restraint. Standard Details 108.1 and 108.2 contain a label that cross-references Standard Detail 102.1, *Buttresses for Use at Horizontal and Lower Vertical Bends*.

Standard Detail 102.1 provides the proper size of a concrete buttress given the type and size of either a horizontal or lower vertical bend along a water line. The four (4) notes are specific to this detail, in particular Note 4 states, "Mechanical joint restraint may be used in lieu of concrete buttresses." This note is specific to bends along the water main where the design Engineer may elect to design the water system using "restrained joints" in lieu of concrete buttresses. Note 4 within Standard Detail 102.1 does not supersede the information in Standard Detail 108.1 and 108.2 that shows where buttresses are required in addition to the section of pipe being mechanically restrained.

It is important to note that a fire hydrant is one of the few water system appurtenances that is above ground and is at risk of damage, particularly resulting from vehicular collisions. While it is true that fire hydrants are designed to shear off when struck to minimize potential damage to the base while leaving the base valve functional. However, there are times when the direction and the impact force is not sufficient to initiate the shear and may cause additional force to be applied and transmitted to the hydrant tee. Additionally, mechanical restraint over time is subject to corrosion and may not stand the test of time. Having a concrete thrust block provides additional long-term reliability as incremental corrosion inevitably occurs. Conversely, if unplanned excavation occurs in the vicinity of hydrant, particularly where either thrust block is located, joint restraint provides reasonable assurance that joints will not separate when under pressure. This approach provides a "belt and suspenders" approach, with the intent to minimize situations that could result in system outages for repair and improves safety for repair personnel.

Both concrete buttresses and joint restraints are to be used with the installation of fire hydrants at the locations shown in Standard Detail 108.1 and Detail 108.2.

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