

May 8, 2002

**INSTRUCTIONAL BULLETIN NO. 2002-1**

**SUBJECT:** Trench Drain Applications

**EFFECTIVE DATE:** May 3, 2002

**SUPERSEDES:** None

**RE:** Special Provision “ Trench Drain – 4” or 8” Interior Dimension”

Trench drains should be considered when surface flows are suspected to interfere with traffic operations. Water draining from an adjacent property through a drive toward the roadway can be intercepted by a trench drain installed across the driveway and deposited into the parallel ditch or into a drainage box. In this case, the Trench Drain - 8” Interior Dimension (Driveway Application) may be used.

In curb and gutter sections, the typical section provides for water to get to the gutter. However, when rehabilitating and widening a section of roadway that was previously a ditch section but is now a curb and gutter section, grades, vertical curves and superelevation rotation can create obstacles in getting water to the desired catch basins and storm sewers. Typically, the minimum desired gutter grade is 0.5%; however, 0.3% may be used with adequate cross-slope. Under close scrutiny, 0.2% has been used on short distances and occasionally assisted by increasing the cross-slope. The length of curve can create relatively flat locations on a crest and in a sag vertical curve. Where feasible, catch basin spacing may be reduced to facilitate drainage.

When additional pipe and catch basins are not feasible or the area is not conducive to a catch basin, such as in a driveway, then trench drains may be installed in the gutters to enhance the drainage of the roadway. Trench drains in gutters will reduce potential ponding in the gutter area caused by inherent near flat grades occurring in areas being superelevated and in vertical curves. Typically, the flow line of a trench drain is fixed at 0.6%, but will vary according to the grade of the gutter. Trench drains can be placed in an opposing direction to the gutter grade, as long as the gutter grade does not exceed 0.2% in the opposite direction. For example, this would yield a trench drain flow line grade of 0.4% in a gutter with an opposing grade of 0.2%. This composite grade of the trench drain flow line should not be less than 0.4%.

The guidelines for trench drain use in gutters are:

1. When grades in the gutter are  $\leq 0.1\%$ . Actual elevations on profile must be checked to determine percent grade in vertical curves.
2. Drainage box within 96 LF to outlet the trench drain.

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3. Trench drain must be designed in 16 foot increments. Maximum length of trench drain in one run is 96 LF.
4. Place location and quantity information on “General Construction Note” Sheet as shown on the attached sheet.

Quantities for trench drain and curb and gutter will not overlap. When trench drain is extended through a driveway in the gutter, measurement of the trench drain will be made only where the curb and gutter normally is measured. This is typically in drives where the curb drops to the gutter elevation and does not turn away from the roadway on a radius to follow the edge of the driveway. In cases of a driveway where the curb follows a radius away from the roadway, and the trench drain extends into or through the driveway, then the trench drain that is not in the curb and gutter will be measured and paid for as Trench Drain (Driveway). The width of the trench drain including the standard concrete width for the drain will be deducted from the area measurement for concrete driveway.

The pay item for trench drains are:

7192091 Trench Drain - 4" Interior Dimension with 1.5' curb & gutter	LF
7192092 Trench Drain - 4" Interior Dimension with 2.0' curb & gutter	LF
7192093 Trench Drain - 4" Interior Dimension with 2.5' curb & gutter	LF
719209A Trench Drain - 4" Interior Dimension (Driveway Application)	LF
719209E Trench Drain - 8" Interior Dimension (Driveway Application)	LF

Approved: Original Signed by E. S. Eargle

E. S. Eargle  
Road Design Engineer

ESE:afg

Attachments

cc:

Director of CRM Operations Walsh  
Program Dev. Engr. Lester – Western Region  
Program Dev. Engr. Kneece  
CRM East  
CRM West  
CRM Manager Barwick  
Contract Documents Facilitator Frick

bc:

Road Design

