

**Delaware Department of Transportation
Division of Transportation Solutions
Design Guidance Memorandum**

Memorandum Number 1-15

1. Road Design Manual
2. Bridge Design Manual
3. Utilities Design Manual
4. Real Estate Manual
5. Standard Specifications
6. Standard Construction Details
7. Subdivision Manual

Title: Personnel Grate for Pipe Inlet Effective date: 11/22/04

Sections to Implement:

<input checked="" type="checkbox"/> Project Development	<input checked="" type="checkbox"/> Planning	<input type="checkbox"/> DTC
<input checked="" type="checkbox"/> Bridge	<input checked="" type="checkbox"/> Quality	<input type="checkbox"/> Other _____
<input checked="" type="checkbox"/> Team Support	<input checked="" type="checkbox"/> Maintenance & Operations	
<input type="checkbox"/> Utilities		

I. Purpose

To improve safety by preventing people and debris from entering stormwater pipes 12 inches and larger with open inlets (i.e. without a grate or catch basin) for which full daylight is not visible when looking through the pipe to the other end.

II. Design Guidance

Since safety grates become blocked by debris, thus potentially decreasing drainage flow and increasing maintenance needs, designers shall evaluate alternative designs to avoid open inlets to stormwater pipes. One alternative to consider is creating a separation of pipe runs by realigning pipes in a long pipe run into relatively short, straight runs, with daylight visible from the openings. When a hazardous condition can not be avoided, the designer shall first consider the use of standard drainage inlets and grates.

A personnel grate for pipe inlet shall be considered as the last resort in treating inlets for storm drain systems. Grates shall be secured to prevent entry by the public but allow access to the storm drain pipe for maintenance and repair.

Any pipe 12 inches or larger with an open inlet (no existing grate) shall require a personnel grate if full daylight is not visible through the pipe. No grate shall be installed at the discharge end of stormwater pipes.

Please contact the Quality Section for construction details, specifications and pay item information.

III. Justification

Personnel grates installed on the inlets of open pipes will help prevent the accidental drowning of any child or animal that would otherwise be pulled into the pipe during a storm.

The Stormwater Hazard Review Team was formed by the governor in 1999 after the tragic drowning of two girls that were sucked into a 48 inch stormwater pipe on September 16, 1999. The December 23, 1999, report from the team identified open ends of stormwater pipes as hazardous conditions that should be addressed. Another incident occurred on July 12, 2004, when a boy fortunately survived.

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12/6/04
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