

## INLET PROTECTION - GRAVEL & WIRE MESH

(no.)  
CODE 861



(Source: MN Protecting Water Quality in Urban Areas)

### DEFINITION

A temporary sediment control barrier formed around a storm drain inlet by the use of gravel and wire mesh.

### PURPOSE

The purpose of this practice is to help prevent sediment from entering storm drains until the contributing watershed is stabilized.

### CONDITIONS WHERE PRACTICE APPLIES

A gravel and wire mesh type of inlet protection applies where new or existing storm sewers receive sediment-laden runoff.

This method of inlet protection applies to both drop inlets and curb inlets where heavy flows are expected and ponding in front of the structure is not likely to cause inconvenience or damage to adjacent structures and unprotected areas.

This practice can be used in combination with other temporary inlet protection devices such as practice standards INLET PROTECTION – BLOCK & GRAVEL 850, INLET PROTECTION - EXCAVATED DRAIN 855, INLET PROTECTION - FABRIC DROP 860 or INLET PROTECTION – STRAW BALE BARRIER 863.

### CRITERIA

The drainage area to each gravel and wire inlet protection shall be one acre or less.

Hardware cloth or comparable wire mesh with 1/2 inch openings shall be placed over the inlet structure extending a minimum of 12 inches beyond each side of the inlet opening. If more than one strip of mesh is necessary, the strips shall be overlapped a minimum of 6 inches.

Gravel shall be placed over the wire mesh to a minimum depth of 12 inches. The gravel shall extend beyond the inlet opening a minimum of 18 inches on all

sides. The gravel shall meet the requirements for coarse aggregate with IDOT gradation of CA-1 or CA-3.

Filter fabric may be added under the coarse aggregate to enhance sediment removal. The fabric shall meet the requirements as shown in material specification 592 GEOTEXTILE Table 1 or 2, Class 1 with an AOS of at least 30 for non-woven and 50 for woven. As a result of the significant increase in filter efficiency provided by the fabric, a larger range of stone sizes (IDOT CA-1, CA-2 or CA-3) may be utilized with such a configuration. The choice to use filter fabric must also consider the larger ponding area that will result.

## **CONSIDERATIONS**

In developing areas, installation of streets and storm sewer networks usually occur before the construction of homes, businesses or other developments. During this, and subsequent phases of construction, unprotected soil is susceptible to erosion. Storm sewers that are operational before their drainage areas are stabilized often carry large amounts of sediment to lakes, detention ponds, streams, or other natural or constructed drainageways. As a result, the water quality of the receiving body of water is detrimentally affected. In cases of extreme sediment loading, the storm sewer may clog completely or lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets.

Storm drain inlet protection consists of several types of inlet filters and traps. Each type differs in application dependant upon site conditions and type

of inlet. Not all designs are appropriate in all cases. The user must carefully select a design suitable for the needs and site conditions. Field experience has shown that inlet protection that causes excessive ponding in an area of high construction activity may become so inconvenient that it is removed or bypassed, thus transmitting sediment-laden flows unchecked. In such situations, a structure with an adequate overflow mechanism must be utilized.

Stone is utilized as the chief ponding/filtering agent in many types of inlet protection. The various types of "coarse aggregates" are able to filter out sediment mainly through slowing down flows directed to the inlet by creating an increased flow path for the stormwater (through void space in the respective stone). The stone filtering medium does not slow stormwater flow rate as well as filter cloth and therefore cannot provide the same degree of filter efficiency when smaller silt and clay particles are introduced into stormwater flows. In all designs that utilize stone with a wire-mesh support as a filtering mechanism, the stone can be completely wrapped with the wire mesh to improve stability and provide easier cleaning.

In most instances, inlet protection utilizing stone should not be the sole control measure. At the time that storm sewer inlet and associated appurtenances become operational, areas adjacent to the structures are most likely at final grade or will not be altered for extended periods. This is the time when practice standard TEMPORARY SEEDING 965 and other appropriate controls should be implemented to reduce soil erosion.

The best way to prevent sediment from entering the storm sewer system is to stabilize disturbed areas of the site as quickly as possible, preventing erosion and stopping sediment at its source.

Runoff from areas larger than one acre should be routed through a properly designed practice such as IMPOUNDMENT STRUCTURE-ROUTED 842, or TEMPORARY SEDIMENT TRAP 960.

## **PLANS AND SPECIFICATIONS**

Plans and specifications for installing gravel and wire mesh inlet protection shall be in keeping with this standard and shall describe the requirements for applying the practice. At a minimum include the following items:

1. Inlet location
2. Stone gradation
3. Wire screen hole size
4. Filter fabric specifications if used

All plans shall include the installation, inspection, and maintenance schedules with the responsible party identified.

Standard drawing GRAVEL & WIRE MESH INLET PROTECTION PLAN IL-561 may be used as the plan sheet.

## **OPERATION AND MAINTENANCE**

The structure shall be inspected after every runoff producing rain and repairs made as needed. When a geotextile filter fabric is used, inspection must be made more frequently as the fabric tends to "plug" quickly.

If the gravel filter becomes clogged with sediment so that it no longer adequately performs its function, the gravel must be

pulled away from the inlet, cleaned and replaced.

Sediment shall be removed and the barrier restored to its original dimensions when the sediment has accumulated to one-half the barrier height. Removed sediment shall be deposited in a suitable area in such a manner that it will not erode.

When the contributing drainage area has been adequately stabilized, remove all materials and any unstable soil, and either salvage or dispose of it properly. Bring the disturbed area to proper grade, then smooth and compact it. Appropriately stabilize all bare areas around the inlet.

## **REFERENCES**

Illinois Department of Transportation, 1997. Standard Specifications for Road and Bridge Construction. IL

Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1992. Virginia Erosion and Sediment Control Handbook, 3<sup>rd</sup> ed., VA

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