

## 4.4-e TRASH RACK

Alternate Names: Trash Grate, Safety Grate

### DESCRIPTION

A trash rack is a grate-like structure attached to culvert inlets and outlets and riser outlets. Trash racks prevent trash and other large objects from entering and clogging the culvert or subsequent downstream areas. Trash and debris that are blocked by the trash rack will accumulate in the surrounding area, which allows for easy collection at a centralized collection point.



*This trash rack will prevent trash from entering the stand pipe in the basin.*

### APPLICABILITY

Applicable in areas where clogging of inlets with trash and debris and public safety are concerns.

#### Advantages

- Prevents trash, debris, and other large objects from entering culverts.
- Increases public safety by preventing humans and animals from entering culverts.
- Can reduce the long-term maintenance requirements of culverts and downstream BMPs.

#### Disadvantages

- Trash racks routinely become blocked with sediment and debris, requiring regular maintenance to ensure adequate conveyance and hydraulic capacity of the conduit during storm events. If the trash rack is not routinely maintained, the hydraulic capacity may be reduced by the debris and trash clogging the culvert.

### BMP DESIGN APPROACH

Pollutant Source Control

Hydrologic Source Control

Stormwater Treatment

### SCALE OF APPLICATION

All SFR and MFR < 1 acre

MFR 1-5 Acre and CICU < 5 acres

MFR and CICU > 5 acres and all WQIPs

### TYPE OF APPLICATION

Temporary

Permanent

## DESIGN CONSIDERATIONS

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The following guidelines are water quality design considerations. Refer to applicable drainage design manuals within the responsible jurisdiction for requirements associated with structural integrity, drainage design, public safety, and other factors.

- Determine the location and size of the trash rack based on head loss through the rack, structural convenience, maintenance requirement, safety, and culvert size.
- All trash rack components should have a rust resistant, corrosion protective finish.
- A completely plugged trash rack shall be able to withstand the full hydraulic load of the system.
- Trash racks should be removable or hinged to open for maintenance purposes. Equip them with a locking mechanism to prevent unauthorized access.
- Should be resistant to damage from errant traffic and animal disturbances.
- Space trash rack bars to have a maximum clear opening of 6 inches. In addition, ensure that the entire rack has a minimum clear opening area (normal to the rack) at the design flow depth of four times the culvert opening area.

## INSTALLATION CONSIDERATIONS

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- Trash racks should be constructed of a durable material such as a smooth steel pipe, plastic, or aluminum with a minimum 1.25 inches outside diameter.
- Construct trash rack ends and bracing with steel angle sections or other durable products.
- Install trash racks together with the culverts.
- Construct trash racks without cross-braces (if possible), to minimize debris clogging and reducing hydraulic capacity.

## INSPECTION AND MAINTENANCE

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- Inspect trash racks according to a set schedule. After installation, inspect every month to determine the typical maintenance interval. Once this interval is determined, inspect at this frequently. Also inspect trash racks and the conduit during and after major storm events.
- Clean debris from the trash racks and surrounding area to ensure that water can freely enter the storm system.