

4.3-e DRAIN INLET

Alternate Names: Catch Basin, Curb Inlet, Drop Inlet



A drop inlet collects stormwater from a parking lot.

DESCRIPTION

Drain inlets collect water from roads and parking lots and convey it to an underground storm drain system. Drain inlets incorporated into a curb and gutter systems are called curb inlets.

Drain inlets have minimal water quality benefit alone; however, in a developed watershed they are often a necessary component of a drainage system that as a whole has a water quality benefit. There are design elements that can be incorporated into a drain inlet to achieve some water quality benefit.

APPLICABILITY

Drain inlets are suitable along paved roads, parking lots, paved swales, or rock-lined ditches where permanent storm drain system are currently installed or planned to be.

Advantages

- Prevents discharge of degraded runoff water from roadside ditches and adjacent slopes.
- Reduces discharge velocity from culverts/curbs by dissipating energy.

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

- The structure can be designed to trap coarse sediment, grease, and debris before discharging to other facilities (Refer to Section 4.4-i Sediment trap and Section 4.4-d, Drop Inlet Insert for more information).

Disadvantages

- Accumulates sediment and debris and thus requires frequent maintenance.
- Unless frequently maintained, captured sediment may become re-suspended during subsequent flows.



This roadway requires sweeping and/or upstream sediment sources need stabilization in order to remove and prevent sediment and debris from entering into the drain inlet and discharging downstream.

DESIGN CONSIDERATIONS

- The following guidelines are water quality design considerations for drain inlets. Refer to applicable drainage design manuals within the responsible jurisdiction for requirements associated with structural integrity, drainage design, public safety, and other factors.
- Drain inlets should be designed by a licensed professional civil engineer.
- Design inlet spacing to prevent water from overtopping the curb and gutter or drainage ditch. Size the inlets based on the size of the drainage area, the amount of sediment expected from the discharging waters, the size and frequency of runoff events, and the amount of maintenance expected, recognizing that an undersized system will require more frequent maintenance.
- Determine if a drain inlet will be pre-cast or cast-in-place, choosing among concrete, prefabricated metal, or prefabricated concrete pipe materials. The diameter of circular drain inlets should be twice that of the culvert or storm

drain. The length of a rectangular drain inlet should be twice that of the culvert or storm drain and the width equal to the pipe diameter.

- Include water treatment when drain inlets will receive pollutant- or sediment-laden runoff, choosing among a variety of drain inlet inserts that are available to treat and filter pollutants. Determine the level of needed treatment from the type and amount of pollutants in the drainage area. Refer to Section 4.4-d for more details regarding Drop Inlet Inserts.
- Weep holes may be incorporated to infiltrate a small amount of water. Check with jurisdiction requirements prior to designing them into the system.

INSTALLATION CONSIDERATIONS

- Install a removable grate for maintenance access.
- Refer to the manufacturers specifications for installation guidelines.

INSPECTION AND MAINTENANCE

- Inspect at least semiannually, in the spring after snowmelt and in the fall as well as during storms. Inspect for sediment and debris build up in the drain inlet as well as on the grate.
- Vacuum drain inlets to remove accumulate sediment and debris.
- Sweep streets regularly.
- Do not store snow directly over a drain inlet.

EFFECTIVENESS CONSIDERATIONS

Drain Inlets are effective if they are designed and installed properly and well maintained. Effectiveness is lost once the structure is filled with sediment and debris, so a regular street sweeping program is critical.

