

4.3-f FLOW SPLITTER

Alternate Names: Flow Regulator, Bypass System

DESCRIPTION

A flow splitter is an engineered structure used to divide flow into two or more directions. It consists of a small storage area having one inlet and two outlets set at different elevations to convey low flows and high flows to different places. The primary purpose for using a flow splitter for stormwater management is to break up flows from a given storm event for water quantity and water quality control.

APPLICABILITY

- Varies in size requirements depending on design storm capacity and type. The structure may be on the surface as part of a forebay or be subsurface as a complete man-hole unit.
- Flow splitters can be used as the normal outlet for infiltration basins and other infiltrating BMPs during winter in cold climates.

Advantages

- Splits runoff volume to different places to alleviate downstream flooding during a storm, or to prevent a BMP from exceeding its designed capacity.
- Reduces the cost of building a BMP by reducing the needed storage capacity. It can also enhance a BMP's longevity by reducing the volume of runoff treatment and the amount of erosion, slope, and vegetation damage.
- Separates the first flush volume from runoff later in the storm. The first flush contains most of the runoff pollutants, so it could be sent to more intensive treatment BMPs or be treated for a longer period of time without being diluted by later runoff, whose flow can be diverted downstream or to another facility.

Disadvantages

- Must be designed by a licensed professional civil engineer.
- Has the potential to cause flow reversal under certain circumstances, in which water will flow from a BMP facility back through the flow splitter.

DESIGN CONSIDERATIONS

- Set the bypass elevation equal to the design storage elevation in the BMP facility so that flow will only start to bypass the BMP once the inflow pipe has conveyed the design runoff volume.
- Size the inflow pipe in accordance with the design storm event.

INSTALLATION CONSIDERATIONS

- Discharge the outlet pipe to a stable protected area with outlet protection (refer to Section 4.3-d Outlet Protection).
- Because precise elevations are so important to the function of a flow splitter, accurate leveling techniques by a licensed surveyor should be used to set the splitter.

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

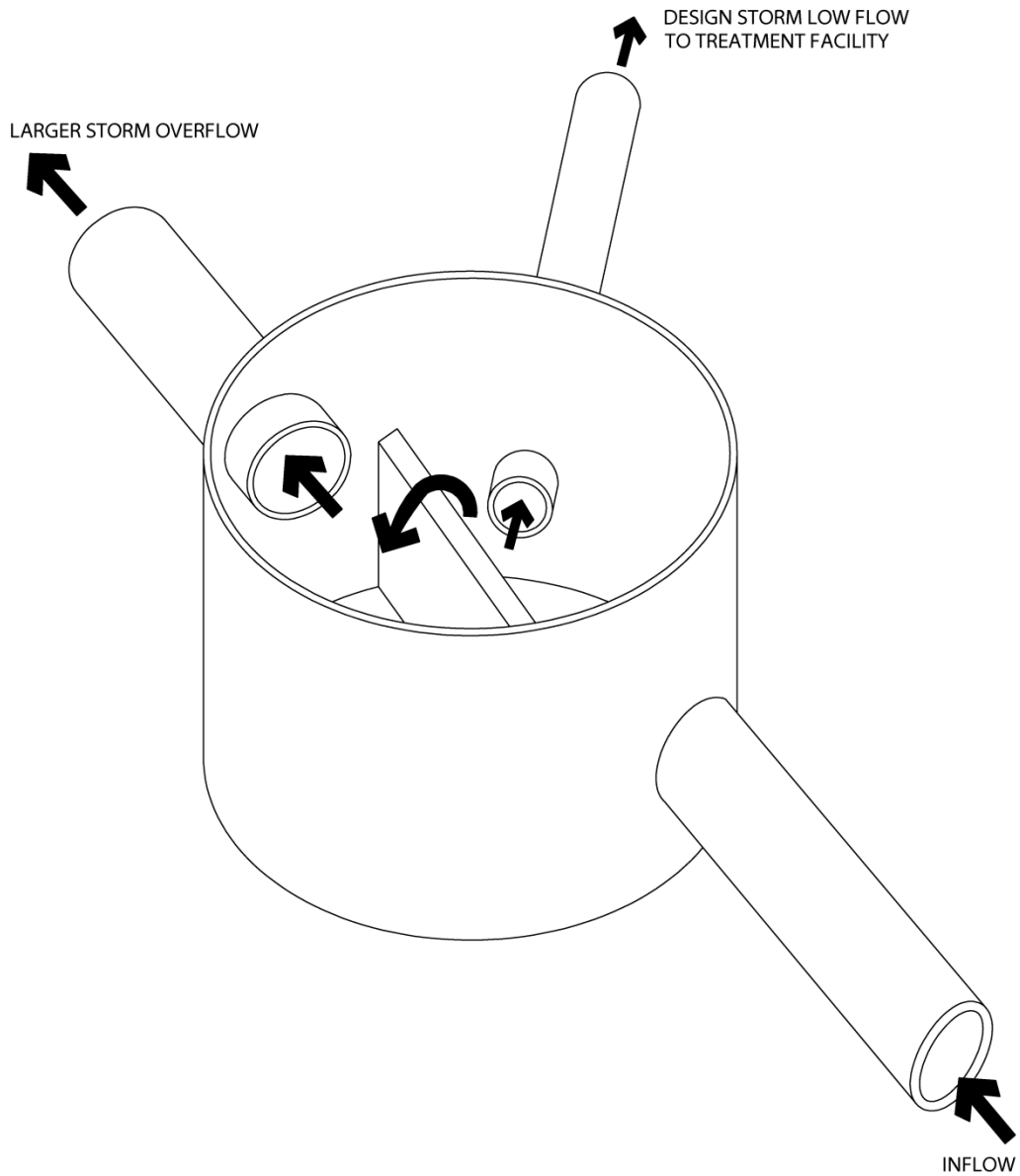
INSPECTION AND MAINTENANCE

- Inspect at least semiannually, in the spring after snowmelt and in the fall and after storm events. Inspect to make sure there is no sediment or debris blocking flow.
- Flow splitters are prone to blockage because it accepts flow from larger pipes and diverts to smaller pipes and requires routine removal of sediment and debris. A regular street sweeping program will decrease maintenance on a flow splitter.

EFFECTIVENESS CONSIDERATIONS

When designed and installed properly, flow splitters are effective at limiting stormwater flows and volumes so that the treatment BMP receives the appropriate design volume or flow.

Flow Splitter Figure



NOTES:

1. THE WEIR OR ORIFICE DIVERTS FLOWS INTO THE LOW FLOW CHANNEL AND ALLOWS LARGER STORMS TO BYPASS.
2. ALWAYS INCORPORATE SUMPS AND HOODS WITHIN THE FLOW SPLITTER TO PROTECT THE OUTLET PIPES.
3. INCORPORATE SCOUR PROTECTION TO THE OUTLETS OF THE LOW FLOW AND BYPASS CHANNELS.

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