917 Stormwater Management Facilities

917.1 General

This chapter discusses the content and requirements for plan sheets relating to stormwater management facilities (SMFs), including the following systems:

(1) Retention and detention areas

(2) Mitigation areas

Mitigation areas are not usually a component of the highway drainage system. However, they may include drainage components.

Drainage components adjacent to the roadway may be shown on the Drainage Network Plan sheet(s) as long as they are clear and legible. Drainage components not adjacent to the roadway may require separate plan view sheets. In either case, profile views and cross sections may also be needed.

917.2 Stormwater Management Facility Detail Sheet

The retention or detention SMF, including the outlet structure, is usually the end point of the drainage system for a particular project. The retention or detention SMF detail sheet shows the SMF in plan view.

917.2.1 Required Information

Display and label the following information in the plan view:

(1) Baseline of construction stationing (typically increasing from left to right) with station and offset ties to the project centerline of construction. Include a north arrow and scale above and near the drainage plan view.

(2) Elements of the proposed roadway, including drainage pipes and structures.

(3) Location of SMF typical sectional views (i.e., A-A, B-B).

(4) Location of soil borings.

(5) SMF delineations:

  (a) Facility bottom and top (often referred to as top of bank) elevations. Provide station/offset callouts and radii along the inside top of bank delineation.

  (b) Changes in side slopes (e.g., 1:2 to 1:4).

(c) Maintenance berm limits.

(6) Maintenance access road, fence and gates, and R/W lines.

(7) SMF drainage structures and pipes with locations of outlet structure sectional views (e.g., C-C, D-D).

(8) Any other necessary data pertaining to the SMF.

917.3 Stormwater Management Facility Typical Section

The typical section represents the SMF profile and attributes. Include a minimum of two sectional views, taken in directions perpendicular to each other. The following is a list of the minimal appropriate information to be shown on the typical section:

- Limits of clearing and grubbing
- Side slopes
- Bottom and top elevations
- Details of maintenance berm
- Soil borings
- Fence locations
- R/W lines
- Water level information
- Vegetation requirements

The typical section does not need to be to scale but must be dimensionally proportionate. It should be shown on the SMF detail sheet, if room allows, or on a separate sheet when necessary.

917.4 Stormwater Management Facility Cross Sections

Prepare SMF cross sections in the same manner as described in ***FDM 925***. A horizontal scale of 1″ = 10′ is preferred. Use a vertical scale of 1" = 10'.

If material is to be excavated from the pond, plot the soil borings on the cross sections.

917.4.1 Required Information

Display and label the following information in the cross sectional views:

- The centerline or baseline of construction.
- The SMF bottom and top (often referred to as top of bank) with elevations, side slopes, and maintenance berm.
- Existing ground line, R/W lines, and fences.

- Proposed roadway template and underground utilities.
- Soil borings with associated groundwater elevations.
- Wetland and other surface water boundaries.
- Subsoil excavation limits, if appropriate. Refer to ***FDM 216***.

Dimension the maintenance berm and the horizontal distances between the SMF delineations.

917.5 Outlet Structure Details

Outlet structure information, elevations, and dimensions may be placed in a data table or be labeled directly on the outlet structure plan view. Information, elevation, and dimensions should clearly indicate the fabrication requirements of the modified inlet and skimmers.

917.5.1 Required Information

Provide a 3D isometric view of the SMF outlet structure that illustrates:

- Inlet with weir and drawdown.
- Structure number(s).
- Pipe number(s).
- Skimmer(s).
- Concrete apron.

Placement of the 3D isometric view may use any scale and angle that best displays the various components of the outlet structure.

917.6 Mitigation Areas

If construction details for mitigation areas are included in the plans, follow the requirements for SMF's.