

## BMP 25.00 – 29.00. Storm Drain Inlet Sediment Protection – Curb and Area Inlets

These instructions cover BMP 25.00, 26.00, 27.00, 28.00 and 29.00.

### DESIGN CONSIDERATIONS

#### *Objectives*

Storm Drain Inlet Sediment Protection is used prior to permanent stabilization of the disturbed area to prevent sediment from entering downgradient storm drainage systems.

#### *Description*

Storm Drain Inlet Sediment Protection is a device or mechanism, either internal or external, for preventing sediment from entering a storm drain; generally by trapping sediment within or immediately adjacent to a storm drain inlet. Types of temporary protection devices applicable for different conditions are listed in the table. Pre-fabricated devices are available for internal and external applications.

#### *Other Names*

Storm Drain Inlet Protection, Filter Bag Insert, “Witch’s Hat,” Silt Sack

#### *Applicability*

Storm Drain Inlet Sediment Protection – Curb and Area Inlets are applicable when storm drain inlets must remain operational before permanent stabilization of the disturbed area and when there is potential for sediment to be transported into the storm drain system.

#### *Selection Considerations*

Internal devices generally consist of nonwoven, semi-porous material that traps larger sediment, but allows silt and clay-size particles to pass. They are most appropriate in situations where roadway flooding is a concern or where construction traffic will damage an external device.

External devices trap sediment by creating a ponding area surrounding or adjacent to the inlet, reducing velocities and allowing sediment to settle. This process allows external devices to be more efficient at trapping greater volumes of smaller sized sediment.

Curb inlets are distinguished from area inlets by their roadway edge location and proximity to traffic. Both are grated inlets, but whereas curb inlets are in-line with concrete curbing or curb and gutter features, area inlets are located in open areas and are generally surrounded by unpaved surfaces. These are also known as field inlets when they are permanent features, or they may be inlets in unpaved areas that will have paving around them as construction progresses.

Storm Drain Inlet Sediment Protection types applicable to curb inlets and area inlets are summarized in the following table:

**Storm Drain Inlet Sediment Protection Types and Applicability Table**

Storm Drain Inlet Sediment Protection Type	Applicability	
	Curb Inlet	Area Drain Inlet
External Sediment Protection		
Prefabricated Barrier System	Yes *	Yes
Gravel or Sand Bag Berm	Yes *	Yes
Fiber Roll	No	Yes
Filter Fabric (Silt Fence)	No	Yes
Inlet Grate Covers		
Filter Mat	No	Yes
Curb Face Mesh Filter	Yes	No
Internal Sediment Protection		
Filter Bag Insert	Yes	Yes
Sediment Control Inlet Hat	Yes	Yes
* If neither the sediment protection structure nor ponding will intrude into travel way		

- Fiber rolls and prefabricated barrier systems are not appropriate for locations where they cannot be properly anchored to the surface.
- Filter fabric (silt fence) as a sediment protection device is applicable to area inlets and for flows

less than 0.5 cubic feet per second (cfs) on flat grades (5 percent or less).

- Inlet grate filter mats are only applicable where heavy concentrated flows are not expected and are not applicable where ponding around the structure might cause excessive damage to adjacent structures and unprotected areas.
- Curb face inlet mesh filters for curb inlets prevent sediment from entering the inlet but they also require that runoff is bypassed. This sediment protection device should not be used at a sag inlet (an inlet at the lowest point on a vertical curve or in a depression); and, if used, conveyance to another point of discharge must be provided.

Any of these sediment protection devices may cause flooding affecting streets and the construction area. Where flooding would cause a hazard, consider where overflow will go in extreme events and provide emergency overflows with additional treatment.

#### *Design*

*Drainage Area:* Not to exceed 1 acre.

*Slope Gradient:* Not to exceed 5 percent.

Site and construct Storm Drain Inlet Sediment Protection in a manner that will facilitate cleanout and disposal of trapped sediment.

Design and construct the Storm Drain Inlet Sediment Protection in a manner that will allow flow to pass and to minimize ponding after the runoff has ceased.

#### *Relationship to Other Erosion and Sediment Control Measures*

Erosion and sediment control measures in the contributing areas must be in place to minimize the amount of sediment that must be treated at inlets. Storm Drain Inlet Sediment Protection is installed as a secondary measure to remove residual sediment that was not removed by other measures such as check dams, grassed swales, and sediment traps.

#### *Common Failures or Misuses*

- Sediment accumulation, by which filtering capacity is reduced, resulting in ponding of water.

- Improper installation, resulting in sediment bypassing filter and entering the inlet.
- Tearing, undermining, or collapsing of filter fabric, resulting in sediment entering the inlet.

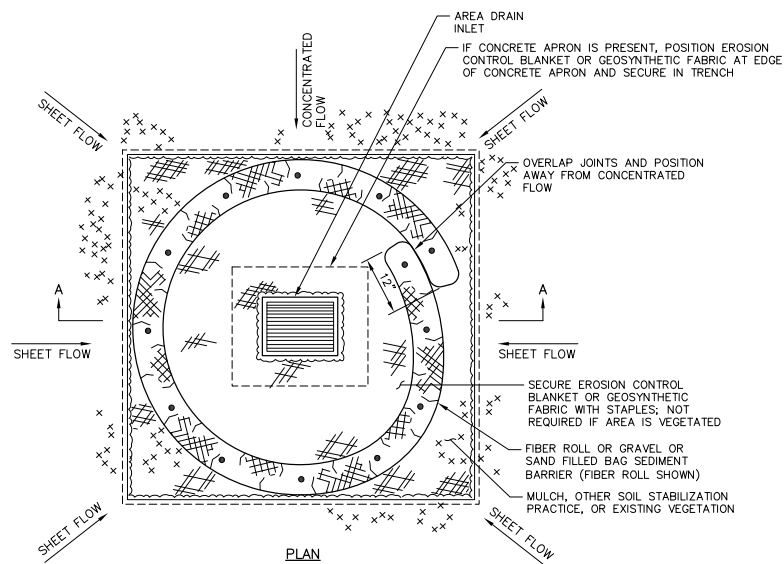
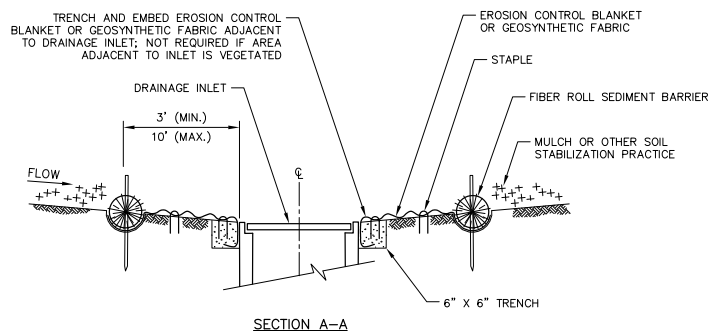
#### **SPECIFICATIONS**

##### Standard Specifications

- 683 – Storm Drain Inlet Sediment Protection
- 633 – Silt Fence
- 729-2.04 Geosynthetics

##### Drawings

- BMP-25.00 Storm Drain Inlet Sediment Protection (Sheets 1 of 5)
- BMP-26.00 Storm Drain Inlet Sediment Protection
- BMP-27.00 Storm Drain Inlet Sediment Protection
- BMP-28.00 Storm Drain Inlet Sediment Protection
- BMP-29.00 Storm Drain Inlet Sediment Protection
- BMP-13.00 Prefabricated Barrier System
- BMP-10.00 Fiber Rolls for Erosion and Sediment Control



FIBER ROLL OR GRAVEL OR SAND BAG BERM  
FOR AREA INLETS  
NOT TO SCALE

# FIBER ROLL OR GRAVEL OR SAND BAG BERM NOTES:

**MATERIALS**  
FIBER ROLL AND STAKES: SEE DRAWING BMP-10.00 FIBER ROLL FOR EROSION AND SEDIMENT CONTROL.

GRAVEL— OR SAND—FILLED BAG: TIGHTLY WOVEN BURLAP OR WOVEN GEOTEXTILE BAG MATERIAL THAT IS SUFFICIENTLY DURABLE TO REMAIN INTACT FOR THE TIME INTENDED. FILL BAGS ¾ FULL OF GRAVEL OR SAND WITH A GRADATION SUCH THAT NO FINE SEDIMENT PASSES THROUGH THE BAG. IF THE SANDBAGS ARE NEEDED FOR MORE THAN ONE SUMMER SEASON, PROVIDE BAG MATERIAL THAT HAS ULTRAVIOLET STABILITY OF AT LEAST 70% IN CONFORMANCE WITH ASTM D4355 REQUIREMENTS. SECURELY CLOSE THE SAND BAGS.

PREFABRICATED UNITS: MAY BE USED IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING UPON APPROVAL BY THE ENGINEER.

## INSTALLATION

1. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

2. FIBER ROLL – SEE DRAWING BMP-10.00 [FIBER ROLL]

## INSPECTION, MAINTENANCE, AND REMOVAL

1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES, THIS SHEET.

## STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES: INSTALLATION

1. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

## INSPECTION

1. CHECK FOR SEDIMENT DEPTH. CLEANING IS REQUIRED WHEN SEDIMENT HAS ACCUMULATED TO ONE-THIRD THE DESIGN DEPTH (OR LESS WHEN SPECIFIED BY THE MANUFACTURER OF PREFABRICATED BARRIERS).

2. CHECK FOR UNDERMINING OR BYPASSING, SUCH AS EVIDENCE THAT SEDIMENT IS ENTERING THE INLET OR THAT RUN-OFF IS BYPASSING THE BARRIER AND ENTERING THE INLET UNTREATED.

## MAINTENANCE

1. IF PREFABRICATED BARRIERS ARE USED, MAINTAIN THEM AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

2. CORRECT UNDERMINING OR BYPASSING FAILURES.

3. REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES ONE-THIRD OF THE AVAILABLE STORAGE OF THE SEDIMENT PROTECTION DEVICE OR LESS WHEN SPECIFIED BY THE MANUFACTURER.

4. REMOVE AND DISPOSE OF ANY ROCK OR DEBRIS THAT HAS ACCUMULATED BEHIND THE SEDIMENT BARRIER TO PREVENT FURTHER CLOGGING.

5. REPLACE FRAYED OR TORN FABRIC OR MATERIALS AND REPAIR ANY STRUCTURAL DAMAGE AS SOON AS PRACTICABLE.

## REMOVAL

1. LEAVE INLET SEDIMENT PROTECTION DEVICES IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA IS PERMANENTLY STABILIZED.

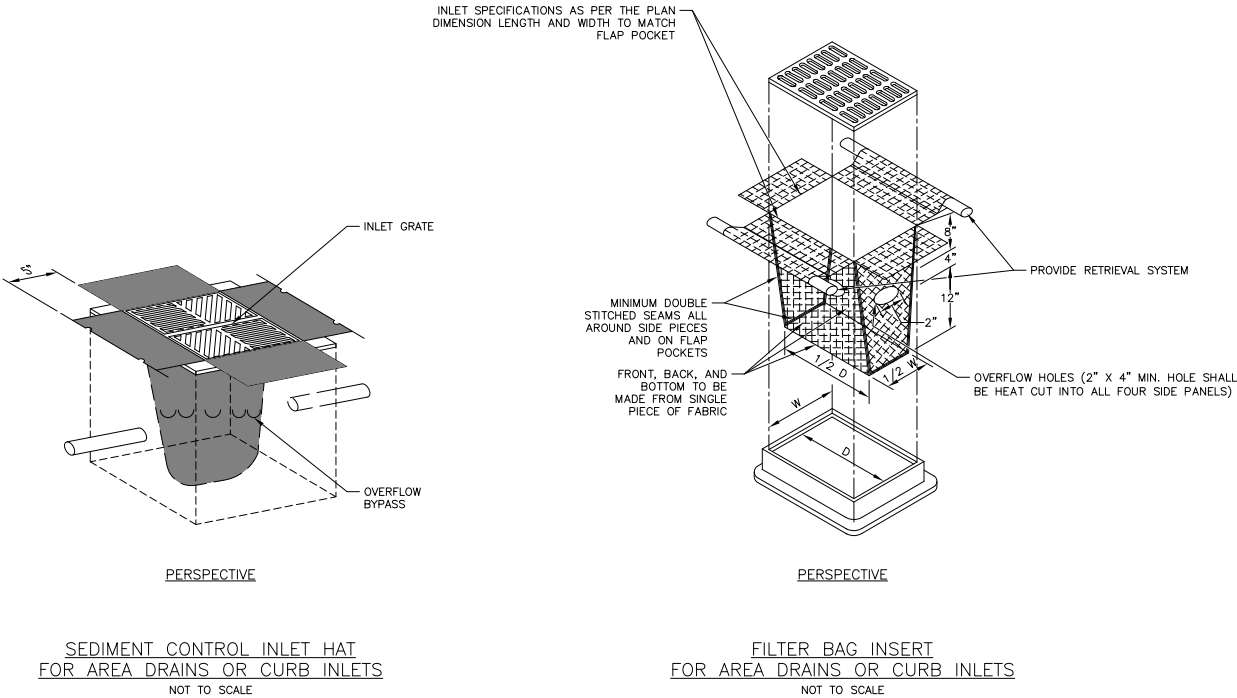
2. REMOVE AND DISPOSE OF TRAPPED OR REMAINING SEDIMENT.

3. STABILIZE DISTURBED SOIL AREAS RESULTING FROM REMOVAL OF BARRIERS OR SEDIMENT.

REVISIONS		
Date	Description	By

State of Alaska DOT&PF  
STORM DRAIN INLET  
SEDIMENT PROTECTION  
(NOTES & AREA INLET FIBER ROLL  
OR GRAVEL/SAND BAG BERM

APPROVED  
Date 12/2015 X/XX/XX



AREA DRAINS OR CURB INLET NOTES:  
MATERIALS  
PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.  
SEDIMENT CONTROL INLET HATS: SHALL BE A POLYETHYLENE HAT-LIKE STRUCTURE COVERING THE INLET WITH SMALL WEEP HOLES ON THE SIDE PROVIDING A FILTERING FUNCTION FOR THE STORMWATER RUNOFF, AND A LARGE OPENING ABOVE THE WEEP HOLES FOR EMERGENCY OVERFLOW.  
FILTER BAG INSERTS: SHALL CONSIST OF A REPLACEABLE FILTER BAG REINFORCED WITH AN OUTER POLYESTER MESH FABRIC.  
1. THE FILTER BAG SHALL BE SUSPENDED FROM A GALVANIZED STEEL RING, REBAR OR STEEL RODS, OR FRAME THAT FITS WITHIN A GRATE UTILIZING A STAINLESS STEEL BAND AND LOCKING CLAMP.  
2. CONSTRUCT THE FILTER BAG THAT IS SUSPENDED FROM A FRAME OF A POLYPROPYLENE FILTER GEOTEXTILE FABRIC, THAT MEETS THE FOLLOWING MINIMUM REQUIREMENTS:

	ASTM METHOD	VALUE	UNITS
UNIT WEIGHT	--	4	OUNCE/SQ YD
FLOW RATE	--	145	GALLONS/MINUTE/SQ FT
PERMITTIVITY	D4491	0.5	PER SECOND
GRAB TENSILE STRENGTH	D4632	200	POUNDS
PUNCTURE STRENGTH	D6241	80	POUNDS
TEAR STRENGTH	D4533	50	POUNDS
DEBRIS CAPACITY	--	2	CUBIC FT

3. DOUBLE STITCH ALL EDGES AND SEAMS.  
4. THE FILTER BAG INSERT SHALL HAVE OVAL, EDGE-HEAT-SEALED OVERFLOW HOLES, MINIMUM 2 INCHES X 4 INCHES, CUT INTO ALL FOUR PANEL SIDES.  
5. PROVIDE BUILT-IN OVERFLOW BYPASS.  
6. THE INLET STRUCTURE'S GRATE OVERFLOW CAPACITY IS AT A MINIMUM EQUAL TO THE DESIGN FLOW CAPACITY.  
7. PROVIDE A RETRIEVAL SYSTEM, SUCH AS FLAPS, HANDLES, OR CORDS, TO ALLOW REMOVAL OF THE BELOW-INLET GRATE BARRIER WITHOUT SPILLING THE COLLECTED MATERIAL.

INSTALLATION  
1. IF PREFABRICATED SEDIMENT PROTECTION DEVICES ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.  
INSPECTION, MAINTENANCE, AND REMOVAL  
1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES ON BMP-25.00 [STORM DRAIN INLET SEDIMENT PROTECTION (NOTES & AREA INLET FIBER ROLL OR GRAVEL/SAND BAG BERM)] NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.

REVISIONS		
Date	Description	By
State of Alaska DOT&PF		
STORM DRAIN INLET		
SEDIMENT PROTECTION		
(AREA OR CURB INLET		
FILTER INSERT)		
APPROVED		
Date	12/2015	X/XX/XX