

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. Prefabricated 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.

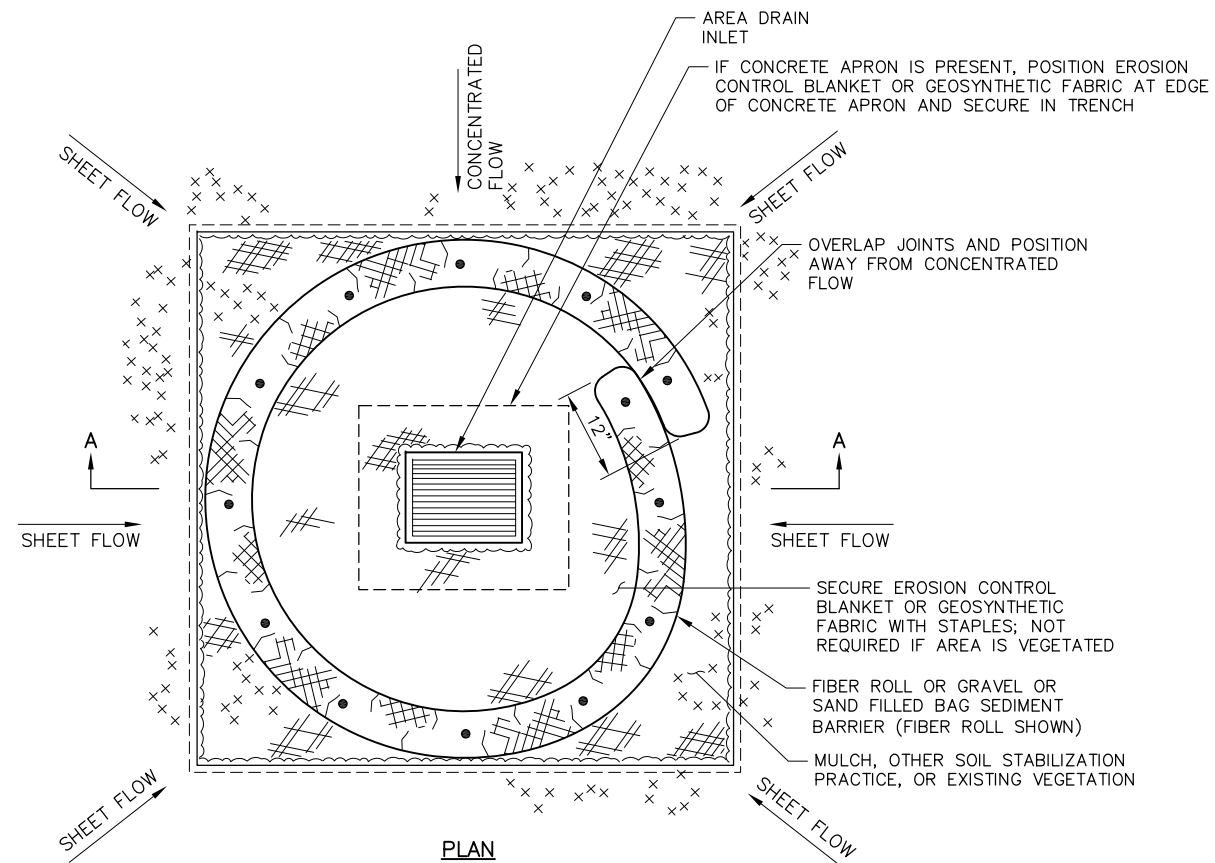
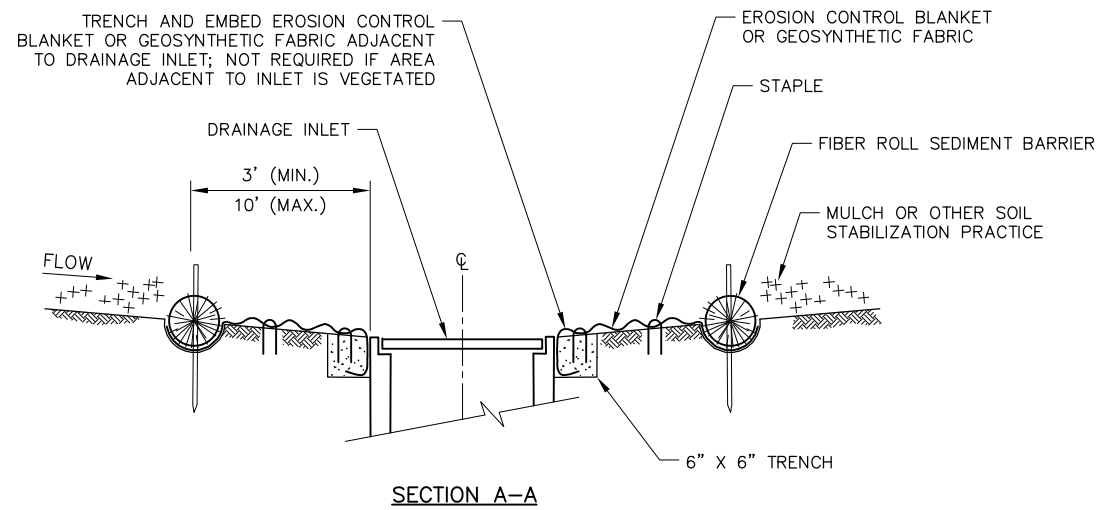
SPECIFICATIONS

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 STAPLES: 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 3/4 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.

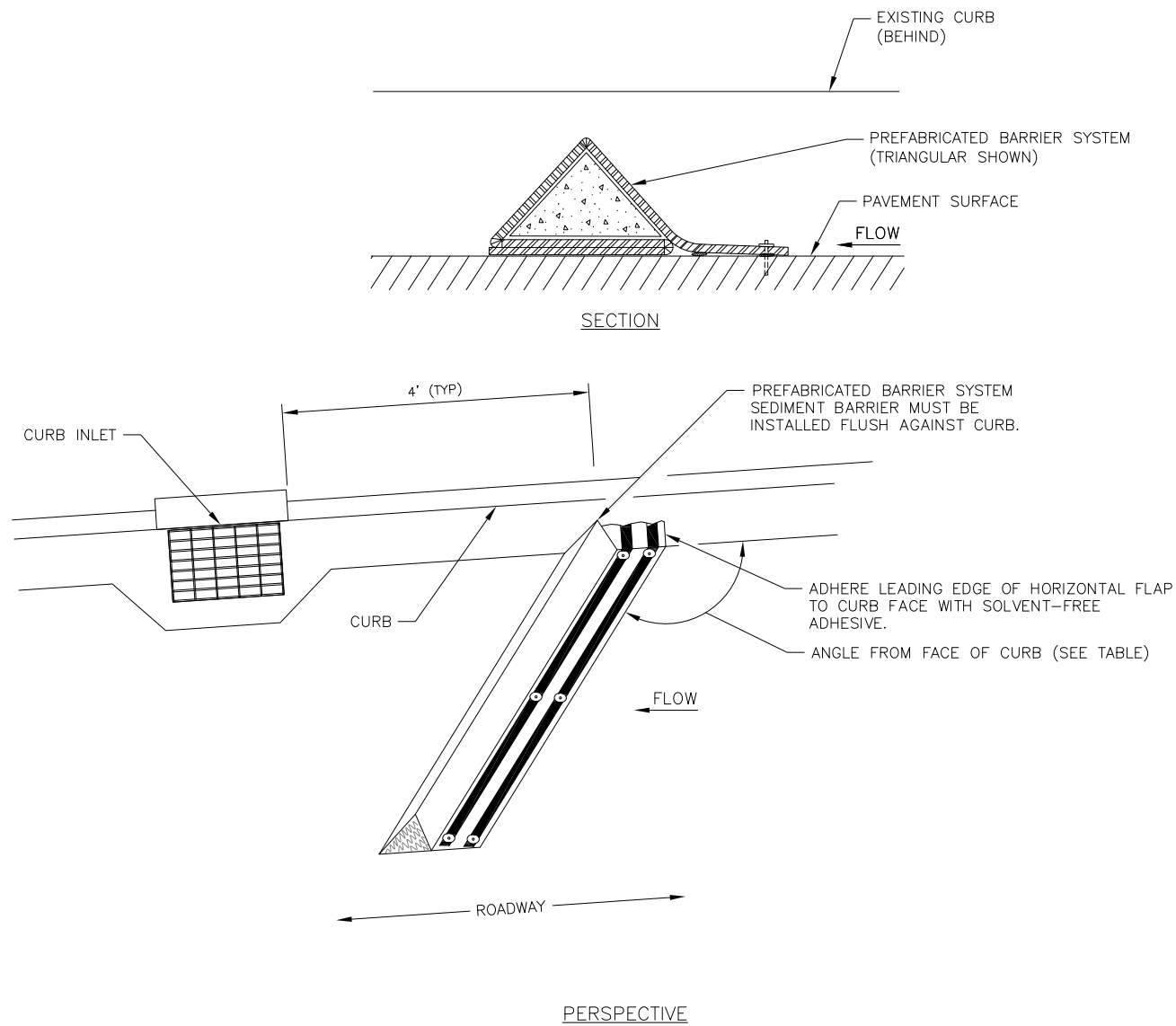
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State of Alaska DOT&PF
**STORM DRAIN INLET
SEDIMENT PROTECTION
(NOTES & AREA INLET FIBER ROLL
OR GRAVEL/SAND BAG BERM**

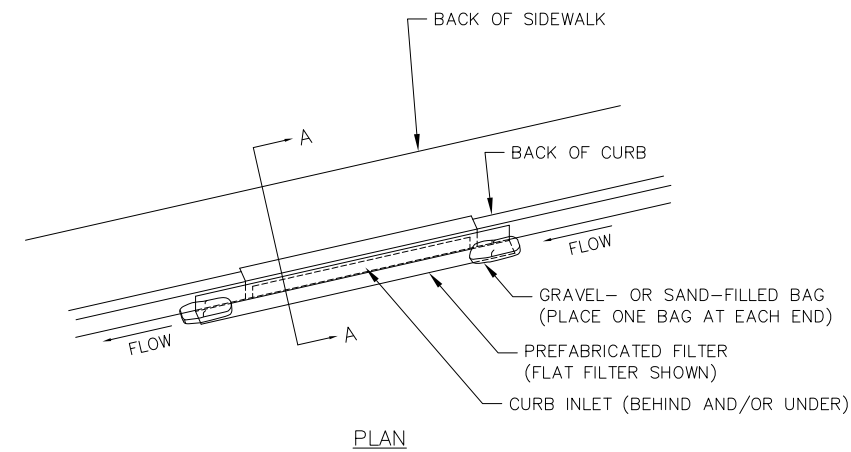
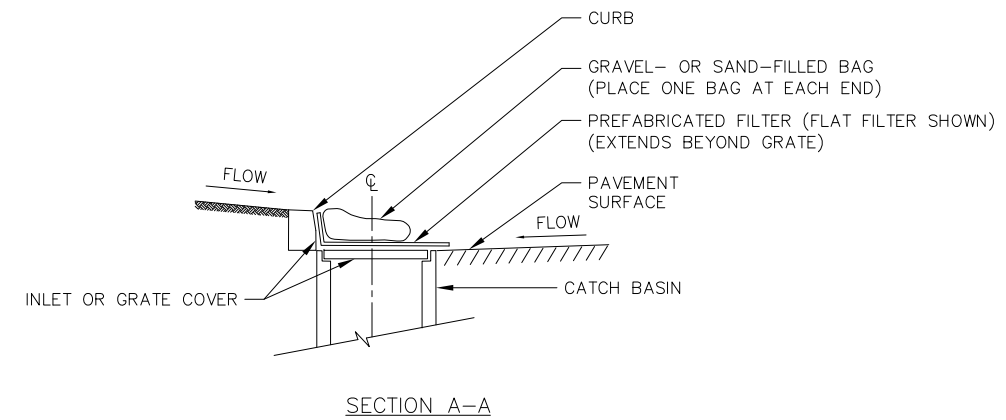
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**PREFABRICATED BARRIER SYSTEM
FOR CURB INLETS**
NOT TO SCALE



**CURB FACE INLET FILTER SYSTEM
FOR CURB INLETS**
NOT TO SCALE

**CURB INLET PREFABRICATED BARRIER NOTES:
MATERIALS**

1. PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

INSTALLATION

1. PREFABRICATED BARRIERS: INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.
2. PREFABRICATED BARRIER SYSTEM - SEE DRAWING BMP-13.00 PREFABRICATED BARRIER SYSTEM

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.

SLOPE OF ROADWAY (PERCENT)	0 TO 2.9	3 TO 5+
ANGLE FROM FACE OF CURB	70°	45°
SUGGESTED BARRIER LENGTH	4'	
SUGGESTED DISTANCE FROM INLET	4'	

**CURB FACE INLET FILTER SYSTEM NOTES:
MATERIALS**

PREFABRICATED FILTER: LINEAR, FLAT OR TUBE SHAPED CURB INLET FILTER

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 $\frac{3}{4}$ 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: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

INSTALLATION

1. INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

INSPECTION, MAINTENANCE, AND REMOVAL

1. SEE NOTES ON BMP-23.00 STORM DRAIN INLET SEDIMENT POTENTIAL BARRIERS, SHEET 1 - NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.

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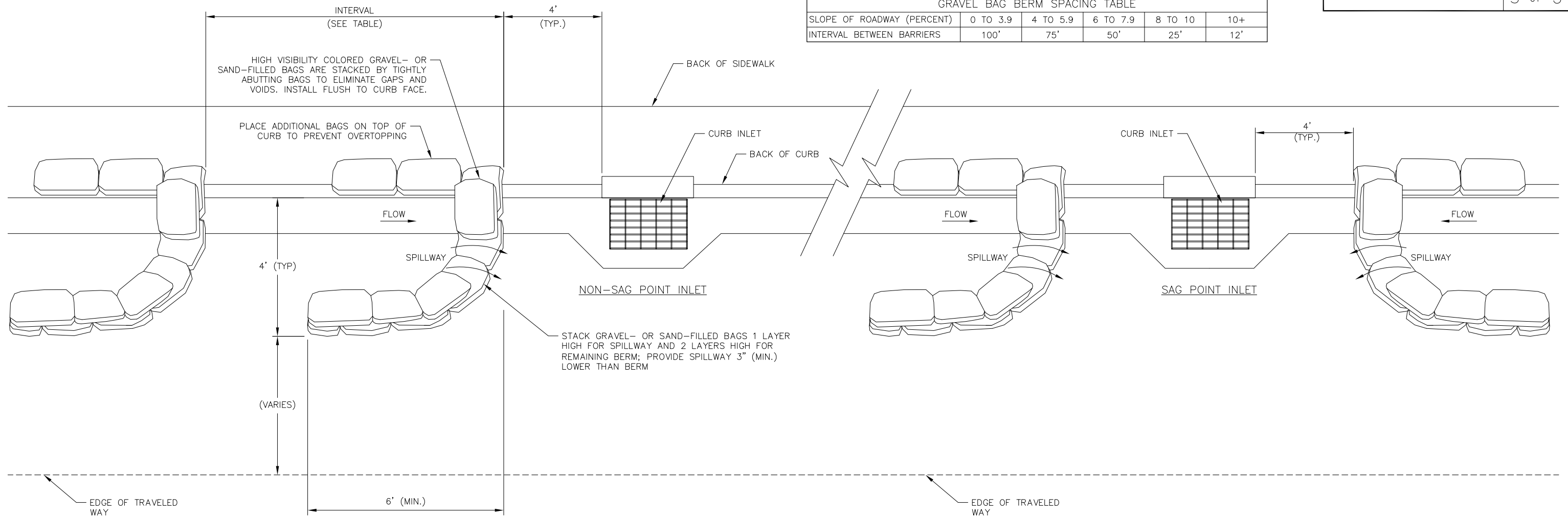
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**STORM DRAIN INLET
SEDIMENT PROTECTION
(CURB INLET PREFABRICATED BARRIER
SYSTEM & CURB FACE INLET FILTER)**

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SLOPE OF ROADWAY (PERCENT)	0 TO 3.9	4 TO 5.9	6 TO 7.9	8 TO 10	10+
INTERVAL BETWEEN BARRIERS	100'	75'	50'	25'	12'



PERSPECTIVE

GRAVEL OR SANDBAG BERMS FOR CURB INLETS
NOT TO SCALE

CURB INLET GRAVEL OR SANDBAG BERM NOTES:
MATERIALS

PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

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 3/4 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.

INSTALLATION

1. DELINEATE SAND BAGS WITH TRAFFIC CONTROL DEVICES WHERE NECESSARY
2. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

INSPECTION, MAINTENANCE, AND REMOVAL

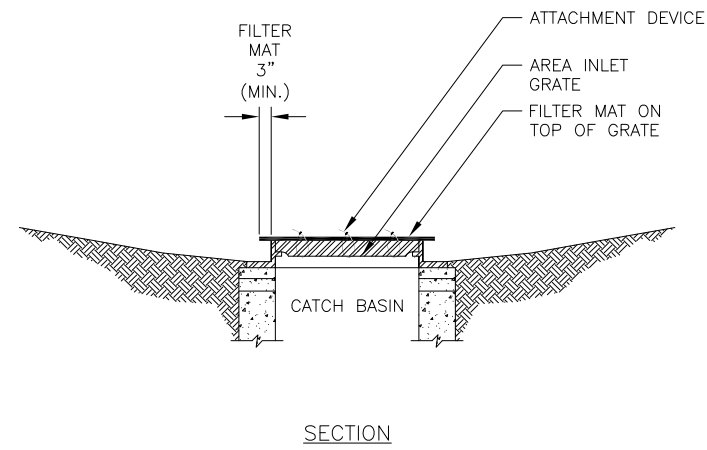
1. SEE STORM DRAIN INLET SEDIMENT PROTECTION GENERAL NOTES ON BMP-25.00 [STORM DRAIN INLET SEDIMENT PROTECTION (NOTES & AREA INLET FIBER ROLL OR GRAVEL/SAND BAG BERM)] NOTES FOR INSPECTION, MAINTENANCE, AND REMOVAL.

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Date	Description	By

State of Alaska DOT&PF
**STORM DRAIN INLET
SEDIMENT PROTECTION
(CURB INLET GRAVEL
OR SANDBAG BERMS)**

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FILTER MAT FOR AREA INLETS
NOT TO SCALE

AREA INLET FILTER MAT NOTES:

MATERIALS

MAT: FABRICATED FROM COIR OR EQUIVALENT MATERIAL FOR INLET PROTECTION

ATTACHMENT DEVICES: WIRE OR PLASTIC TIES

PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

INSTALLATION

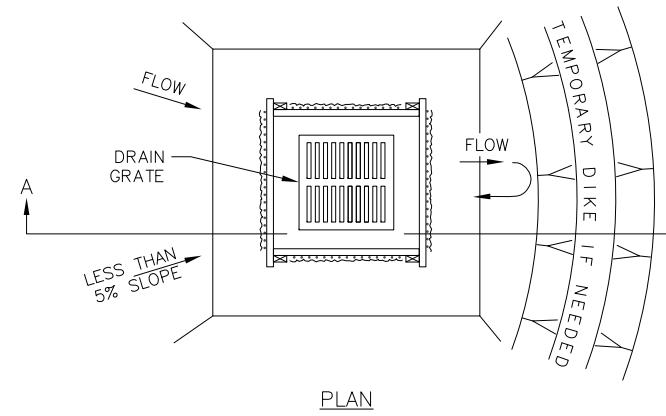
1. POSITION THE MAT OVER THE INLET GRATE AND ENSURE THAT IT EXTENDS BEYOND THE EDGE OF THE GRATE BY 3-INCHES MINIMUM ON ALL SIDES.
2. INSTALL AND ATTACH THE MAT TO THE GRATE AS SPECIFIED BY THE MANUFACTURER.
3. IF OTHER PREFABRICATED UNITS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.

MAINTENANCE

1. SWEEP TOP AND SIDES OF THE MAT TO REMOVE SEDIMENT AND DEBRIS.
2. REMOVE AND REPLACE MAT IF IT BECOMES CLOGGED.

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.



FILTER FABRIC FOR AREA INLETS
NOT TO SCALE

AREA INLET FILTER FABRIC NOTES:

MATERIALS

PREFABRICATED UNITS: UPON APPROVAL BY THE ENGINEER, USE IN PLACE OF THE DESIGN SHOWN ON THIS DRAWING.

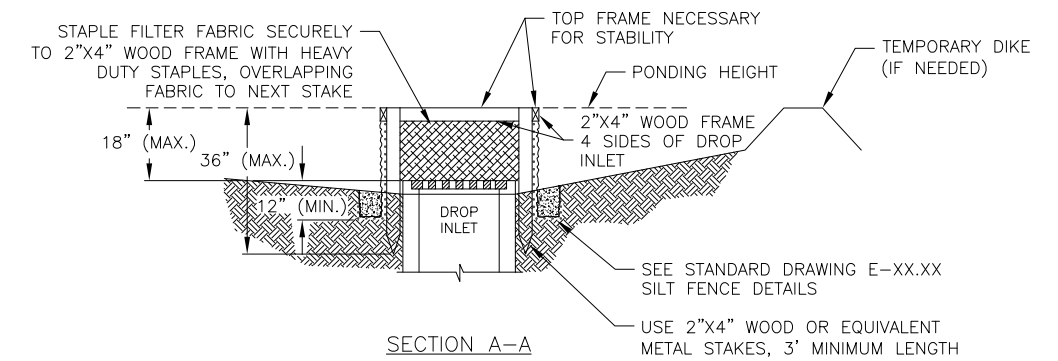
FILTER FABRIC: (SILT FENCE) SHALL COMPLY WITH SECTION 729-2.04 SILT FENCE.

INSTALLATION

1. IF PREFABRICATED BARRIERS ARE USED, INSTALL AS SPECIFIED BY THE VENDOR OR MANUFACTURER.
2. PLACE A STAKE AT EACH CORNER OF THE INLET OR IN A CIRCULAR PATTERN AROUND THE INLET NO MORE THAN 3 FEET APART. DRIVE STAKES INTO THE GROUND A MINIMUM OF 12 INCHES.
3. ENSURE STABILITY BY BRACING AT THE TOP.
4. INSTALL FILTER FABRIC (SILT FENCE) AS SHOWN ON DRAWING BMP-20.00 SILT FENCE.

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.



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Date	Description	By

State of Alaska DOT&PF
**STORM DRAIN INLET
SEDIMENT PROTECTION
(AREA INLET FILTER MAT
& FILTER FABRIC)**

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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.

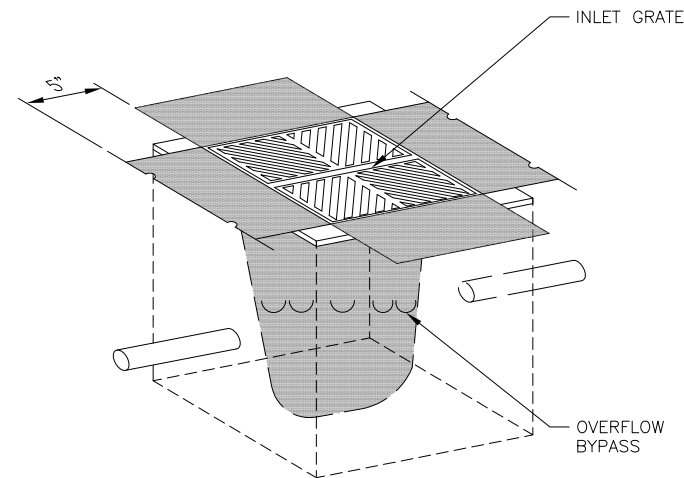
INSTALLATION

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.

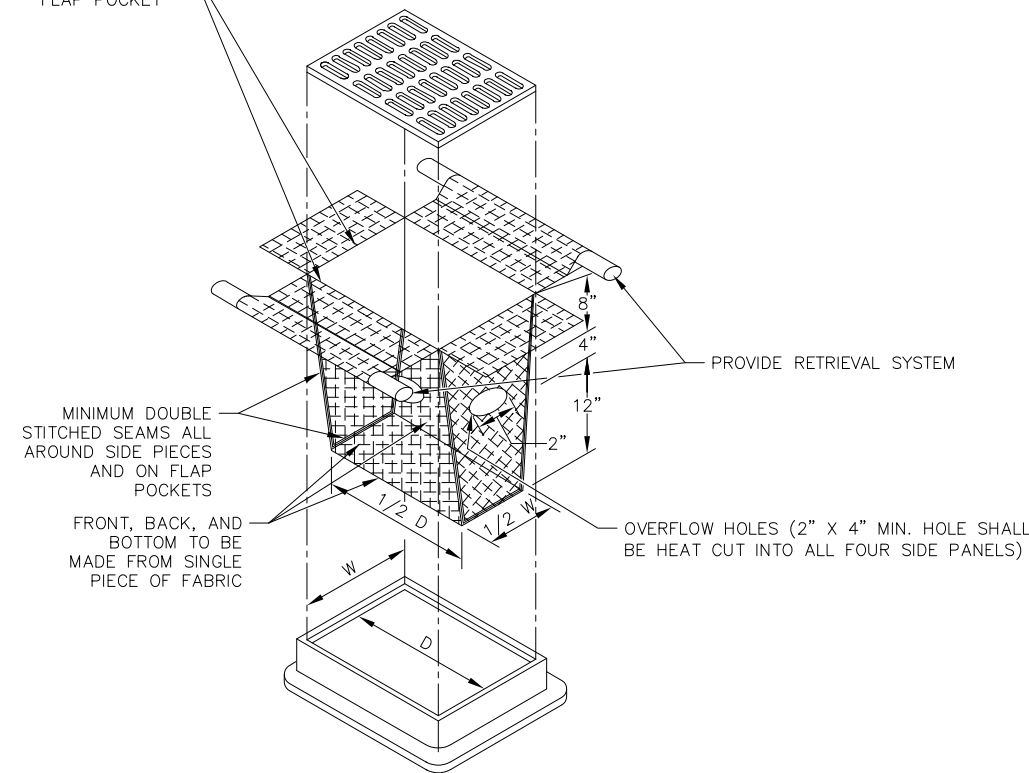
INLET SPECIFICATIONS AS PER THE PLAN DIMENSION LENGTH AND WIDTH TO MATCH FLAP POCKET



PERSPECTIVE

SEDIMENT CONTROL INLET HAT
FOR AREA DRAINS OR CURB INLETS

NOT TO SCALE



PERSPECTIVE

FILTER BAG INSERT
FOR AREA DRAINS OR CURB INLETS

NOT TO SCALE

REVISIONS		
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State of Alaska DOT&PF
**STORM DRAIN INLET
 SEDIMENT PROTECTION
 (AREA OR CURB INLET
 FILTER INSERT)**

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