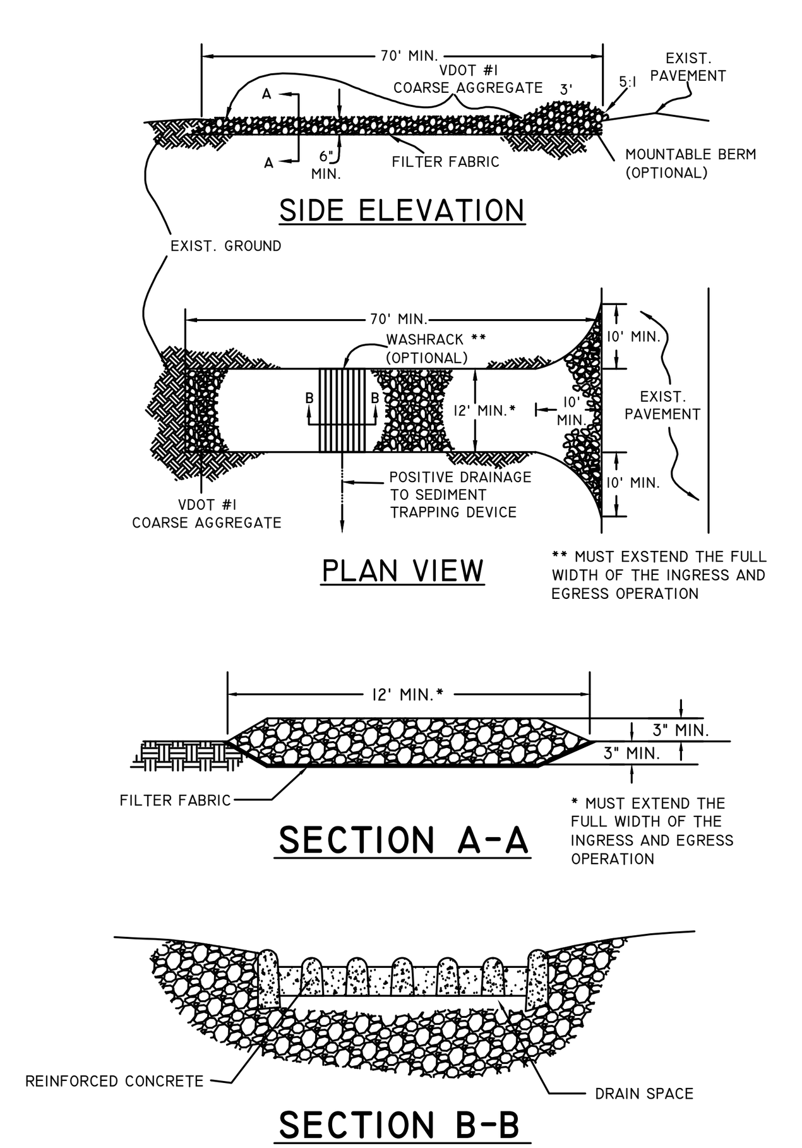
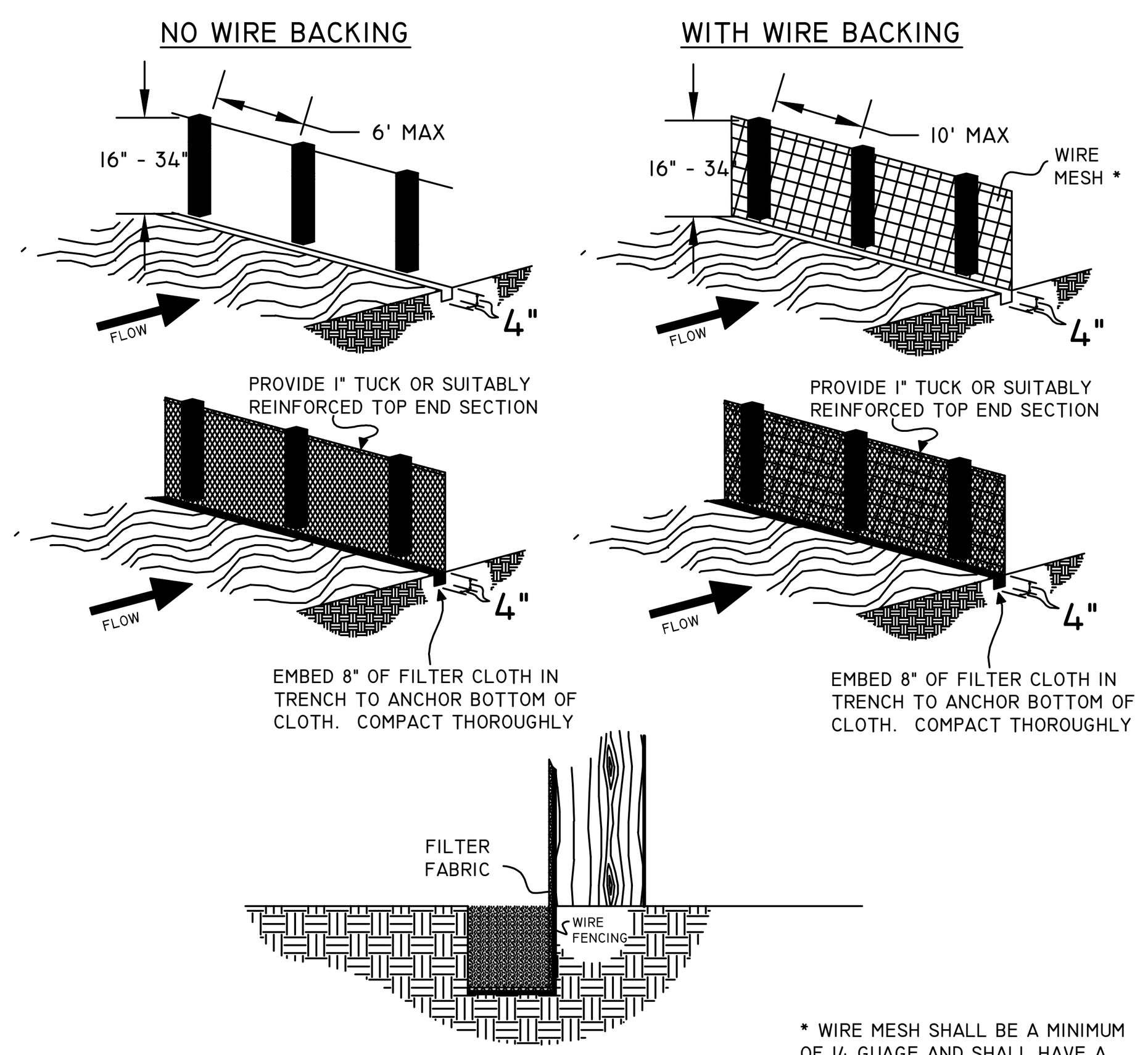
STONE CONSTRUCTION ENTRANCE
STD. & SPEC. 3.02 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)

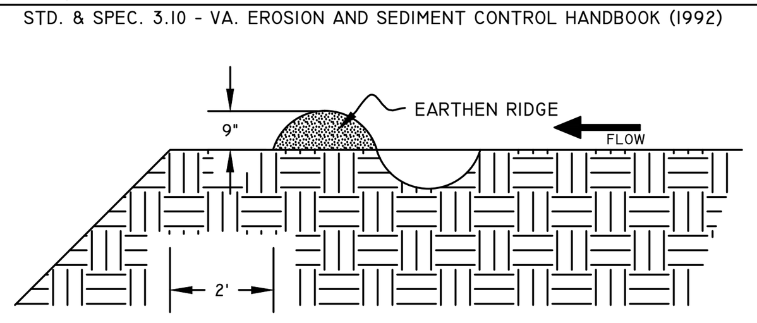


SILT FENCE
STD. & SPEC. 3.05 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)



* WIRE MESH SHALL BE A MINIMUM OF 14 GUAGE AND SHALL HAVE A MAXIMUM MESH SPACING OF 6".

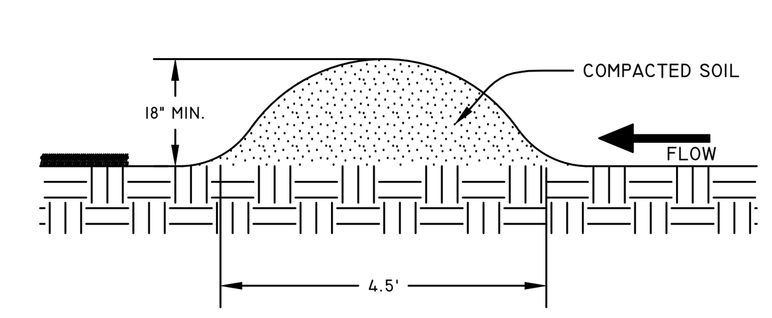
TEMPORARY FILL DIVERSION
STD. & SPEC. 3.10 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)



THE DIVERSION SHALL BE AT LEAST 2' INSIDE OF THE TOP EDGE OF FILL

THE SUPPORTING RIDGE SHALL BE CONSTRUCTED WITH A UNIFORM HEIGHT ALONG ITS ENTIRE LENGTH TO PREVENT BREACHING.

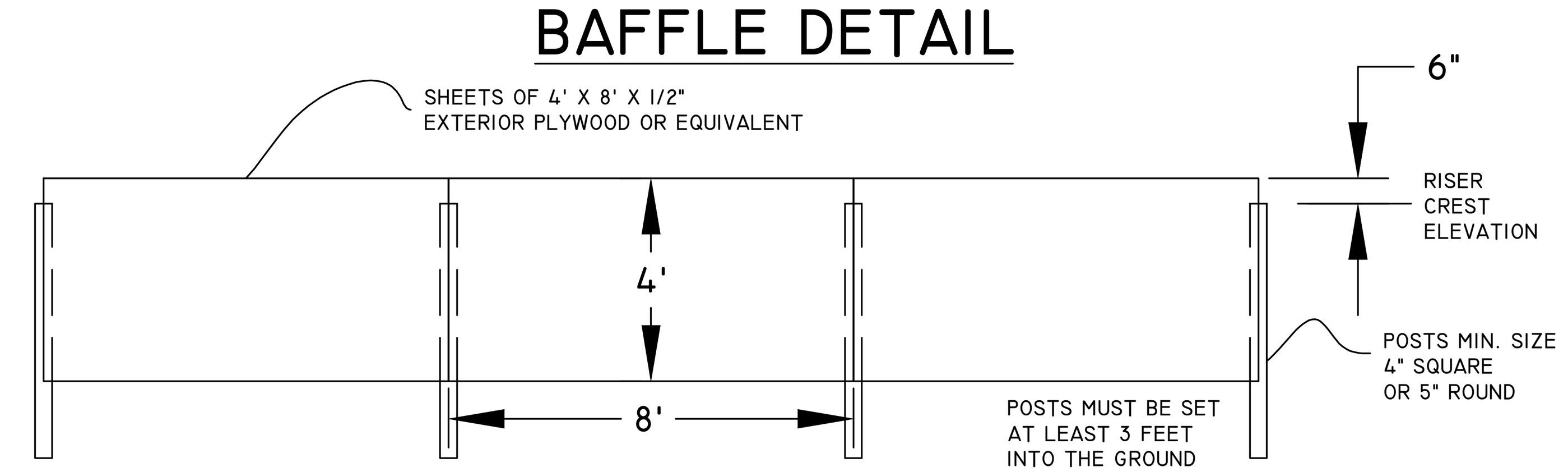
TEMPORARY DIVERSION DIKE
STD. & SPEC. 3.09 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)



SIDE SLOPES MUST BE 1.5:1 OR FLATTER

TEMPORARY OR PERMANENT SEEDING AND MULCH MUST BE APPLIED IMMEDIATELY UPON CONSTRUCTION

BAFFLE DETAIL



CHANNEL PROTECTION COMPLIANCE SUMMARY TABLE

Discharge Point	Conditions within Limits of Analysis	Applicable Channel Protection Criteria: Criteria A (most restrictive point within Limits of Analysis)				Criteria B	Criteria C							
		Q_2	Q_{cap}	V_2	$V_{allowable}$	Project consistent with design of restored system	$Q_{developed}$	$RV_{developed}$	IF	$Q_{pre\text{-}developed}$	$RV_{pre\text{-}developed}$	$Q_{developed} \times RV_{developed}$	≤	IF × $Q_{pre\text{-}developed} \times RV_{pre\text{-}developed}$
	☐ Manmade ☐ Restored ☐ Natural					☐ YES							≤	
	☐ Manmade ☐ Restored ☐ Natural					☐ YES							≤	
	☐ Manmade ☐ Restored ☐ Natural					☐ YES							≤	
	☐ Manmade ☐ Restored ☐ Natural					☐ YES							≤	
	☐ Manmade ☐ Restored ☐ Natural					☐ YES							≤	
	☐ Manmade ☐ Restored ☐ Natural					☐ YES							≤	
	☐ Manmade ☐ Restored ☐ Natural					☐ YES							≤	

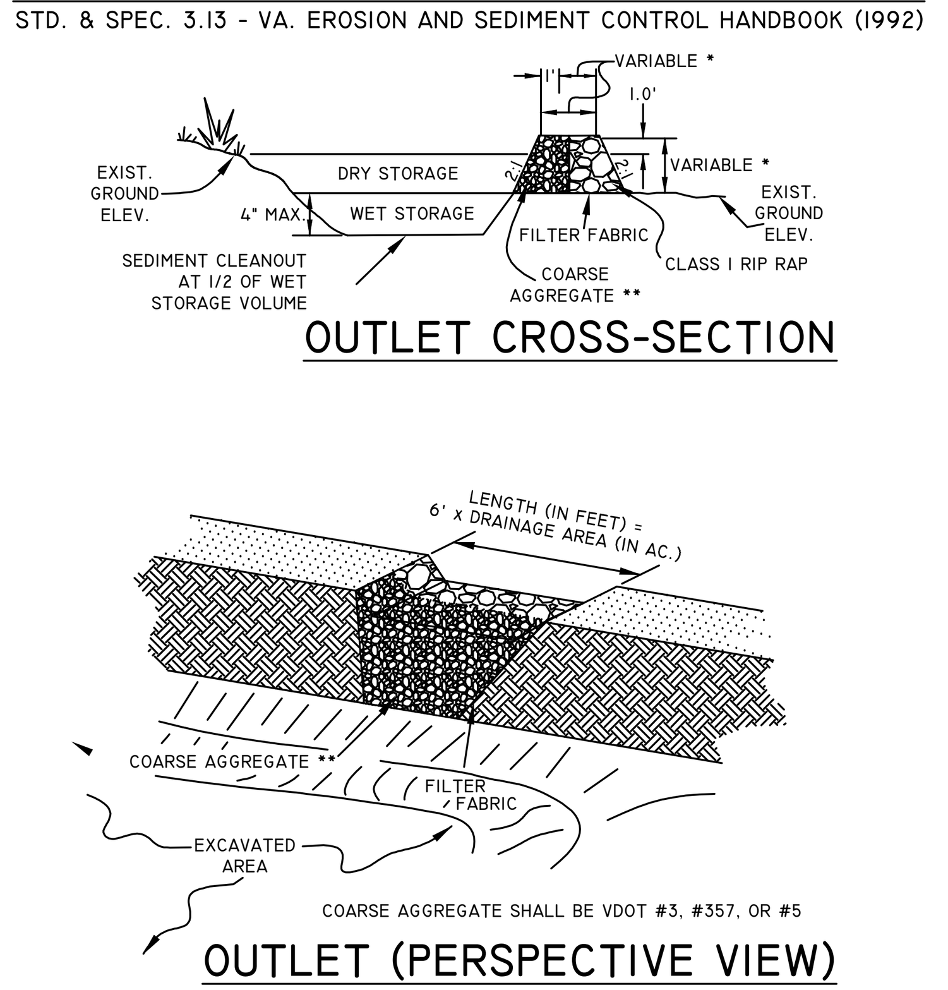
Channel Protection Criteria
- A. The stormwater conveyance system conveys the post-development peak flow rate from the two-year 24-hour storm event without causing erosion of the system (V_2 must be shown to be non-erosive to the limits of analysis)
- B. The development project, in combination with other stormwater runoff, is consistent with the design parameters of the restored stormwater conveyance and the restored stormwater conveyance system is functioning as designed
- C. The discharge from the development satisfies the Energy Balance requirement

$$(Q_{developed} \times RV_{developed}) \leq IF \times (Q_{pre\text{-}developed} \times RV_{pre\text{-}developed})$$

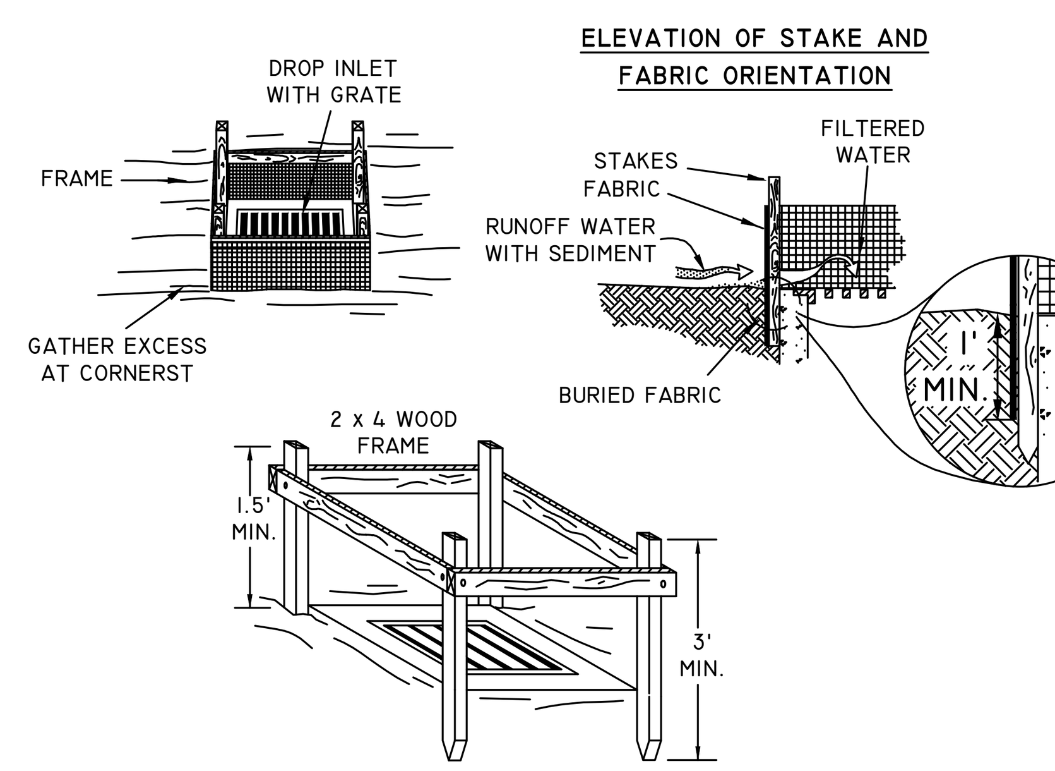
where:

$Q_{developed}$ = the peak flow rate of runoff from the developed site
$RV_{developed}$ = the volume of runoff from the site based on developed conditions
IF = an improvement factor (0.8 for sites > 1 acre, 0.9 for sites ≤ 1 acre)
$Q_{pre\text{-}developed}$ = the peak flow rate of runoff from the pre-developed site
$RV_{pre\text{-}developed}$ = the volume of runoff from the site based on pre-developed conditions

TEMPORARY SEDIMENT TRAP
STD. & SPEC. 3.13 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)



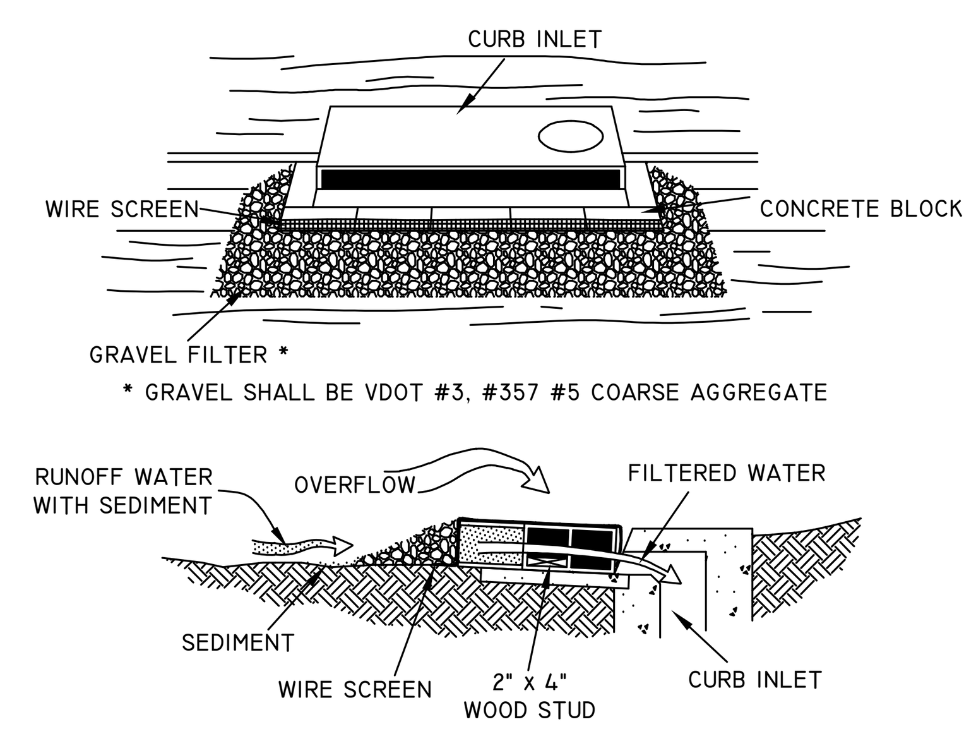
SILT FENCE DROP INLET PROTECTION
STD. & SPEC. 3.07 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)



SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5%) WHERE INLET SHEET OR OVERLAND FLOWS (NOT EXCEEDING 1 CFS ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS, SUCH AS IN STREET OR HIGHWAY MEDIANS.

BLOCK AND GRAVEL CURB INLET SEDIMENT FILTER
STD. & SPEC. 3.07 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)



SPECIFIC APPLICATION

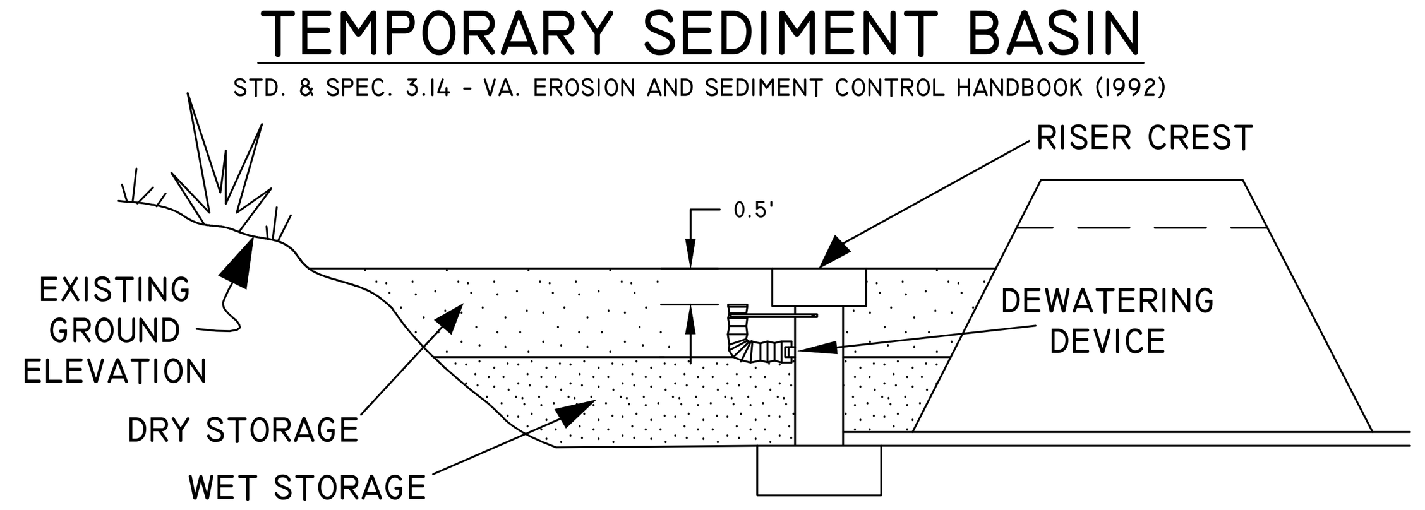
THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

FLOOD PROTECTION COMPLIANCE SUMMARY TABLE

Discharge Point	Conditions within Limits of Analysis	*APPLICABLE FLOOD PROTECTION CRITERIA*: *Criteria A* (most restrictive point within Limits of Analysis)		*Criteria B*		
		$Q_{10\text{-}post}$	$Q_{capacity}$	$Q_{10\text{-}post}$ (Required for Criteria B.1 and B.2)	$Q_{capacity}$ (Required for Criteria B.1)	$Q_{10\ pre\text{-}developed}$ (Required for Criteria B.2)
	☐ No Localized Flooding ☐ Existing Localized Flooding					
	☐ No Localized Flooding ☐ Existing Localized Flooding					
	☐ No Localized Flooding ☐ Existing Localized Flooding					
	☐ No Localized Flooding ☐ Existing Localized Flooding					
	☐ No Localized Flooding ☐ Existing Localized Flooding					
	☐ No Localized Flooding ☐ Existing Localized Flooding					
	☐ No Localized Flooding ☐ Existing Localized Flooding					

Flood Protection Criteria
- A. Where localized flooding does not currently exist, the 10-year 24-hour storm event must be confined to the most restrictive stormwater conveyance system within the limits of analysis.
- B. Where localized flooding exists within the limits of analysis, the 10-year 24-hour storm event must:
  1. be confined within the most restrictive stormwater conveyance system within the limits of analysis (detention or downstream improvements may be provided to meet this criterion), or
  2. be released at a rate that is less than the pre-development peak flow rate from the 10-year 24-storm event.

TEMPORARY SEDIMENT BASIN
STD. & SPEC. 3.14 - VA. EROSION AND SEDIMENT CONTROL HANDBOOK (1992)



SWM FACILITY INFORMATION

SWM FACILITY ID*	DESIGN STANDARD / TYPE / LEVEL	LATITUDE	LONGITUDE	DRAINAGE AREA	IMPERVIOUS COVER	MANAGED TURF	FOREST/ OPEN SPACE	PHOS. REMOVAL	NITROGEN REMOVAL	VOLUME REDUCTION

*AS IDENTIFIED ON PLANS

SEDIMENT TRAPS

Trap #	Drainage Area (Acres)	Wet Storage: Volume Required (Cu. Yd.)	Wet Storage: Volume Provided (Cu. Yd.)	Wet Storage: Elevation	Dry Storage: Volume Required (Cu. Yd.)	Dry Storage: Volume Provided (Cu. Yd.)	Dry Storage: Elevation	Outlet Length (Feet)	Bottom Elevation	Top of Berm Elevation	Top of Berm Width	Dimensions (L x W)

50/10 DETENTION SUMMARY

	Q (CFS)	AREA (ACRES)	C	I	C ADJ. FACTOR
Q_{10} PRE-DEVELOPMENT (A)					
Q_{50} POST-DEVELOPMENT (ON-SITE BYPASS) (B)					
Q_{50} POST-DEVELOPMENT (OFF-SITE THROUGH PROJECT) (C)					
Q_{50} ALLOWABLE (A - B + C)					
Q_{50} FROM BASIN/PIPE (ROUTED)					

SEDIMENT BASINS

Basin #	Drainage Area (Acres)	Wet Storage: Volume Required (Cu. Yd.)	Wet Storage: Volume Provided (Cu. Yd.)	Dry Storage: Volume Required (Cu. Yd.)	Dry Storage: Volume Provided (Cu. Yd.)	Bottom Elevation	Riser Crest Elevation	Riser Diameter	Dewatering Device Elevation	Dewatering Device Diameter	25- Yr. Storm Elevation	Emergency Spillway Elevation	Anti-Vortex Device Diameter	Top of Dam Elevation	Top of Dam Width	Baffle: Flowlength to Width Ratio	Baffle: Baffle Length	Baffle: Top of Baffle	Barrel: Pipe Length	Barrel: Pipe Diameter	Barrel: Invert In	Barrel: Invert Out

MS-19 OUTFALL ADEQUACY FOR SEDIMENT BASINS/TRAPS*

In accordance with Minimum Standard 19 of the Virginia Erosion and Sediment Control Regulations, all sediment basins and traps must discharge directly into an adequate outfall. Adequacy of off-site receiving channels or pipes must be verified by addressing one of the following Adequacy Situations:

A. The drainage area from the project at the discharge point is less than or equal to one percent of the total drainage area at the discharge point and the 10-year storm is contained within the channel banks (Project Drainage Area and Total Drainage area are required),

OR

B. Natural channels must be analyzed to demonstrate that (1) the 10-year storm will not overtop the channel banks and (2) the 2-year storm will not cause erosion of the channel bed and banks ($Q_{Capacity}$, Q_{10}, $V_{Allowable}$, and V_2 are required), except $Q_{Capacity}$ and Q_{10} are not applicable if the channel is in the 100-year floodplain, RPA,SPA.

OR

C. Man-made channels must be analyzed to demonstrate that (1) the 10-year storm will not overtop the channel banks and (2) the 2-year storm will not cause erosion of the channel bed or banks ($Q_{Capacity}$, Q_{10}, $V_{Allowable}$, and V_2 are required),

OR

D. Pipes and storm sewer systems must be analyzed to demonstrate that the 10-year storm will be contained wtihin the system ($Q_{Capacity}$, Q_{10}, and Hydraulic Grade Line calculations are required),

OR

E. Runoff is discharged through an energy dissipator at the limits of the 100-year floodplain, RPA buffer, or SPA buffer.

Discharge Point	Adequacy Situation	Project Drainage Area	Total Drainage Area	$Q_{Capacity}$	Q_{10}	$V_{Allowable}$	V_2	Cross-section, Profile, **and** Calculations Shown on Sheet (s)

Discharge Point = Unique identifier for the discharge point
Project Drainage Area = the drainage area of the project that drains to the discharge point in acres
$Q_{Capacity}$ = the carrying capacity of the channel or pipe in CFS
$V_{Allowable}$ = the maximum velocity (in FPS) that the channel lining can withstand without eroding

Adequacy Situation - either A, B, C, D, or E as described above
Total Drainage Area - the total drainage area to the discharge point in acres
Q_{10} = the peak discharge at the discharge point for the 10-year storms in CFS
V_2 = the velocity at the discharge point for the 2-year storm in FPS

Generally, scaled channel cross-sections must be provided every fifty (50) feet and at the most constricted locations of all outfall channels for a **minimum** of 150 feet of profile.

✱ THIS ALSO APPLIES TO ALL OUTFALLS ON PROJECTS THAT ARE CONSIDERED PREVIOUSLY PERMITTED OR GRANDFATHERED.

EROSION AND SEDIMENT CONTROL - STANDARD DETAILS/CALCS.

COUNTY OF HENRICO
DEPARTMENT OF PUBLIC WORKS

REVISED
APRIL 5,2023