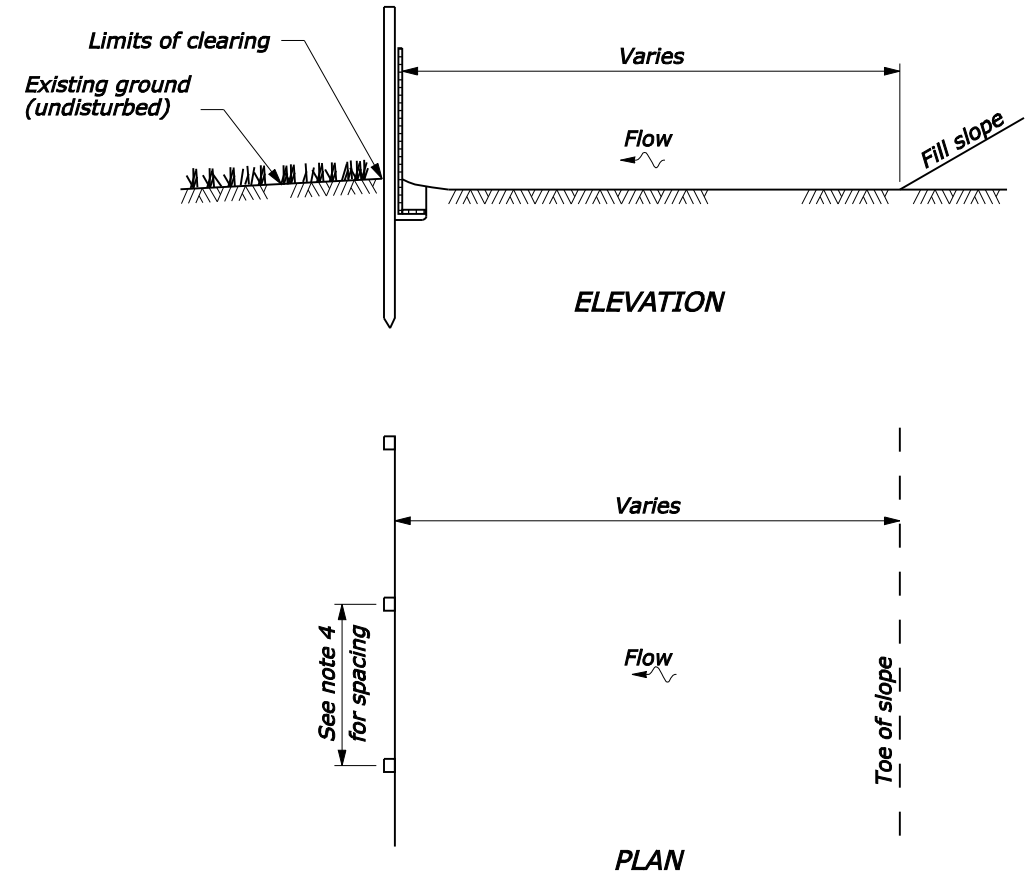
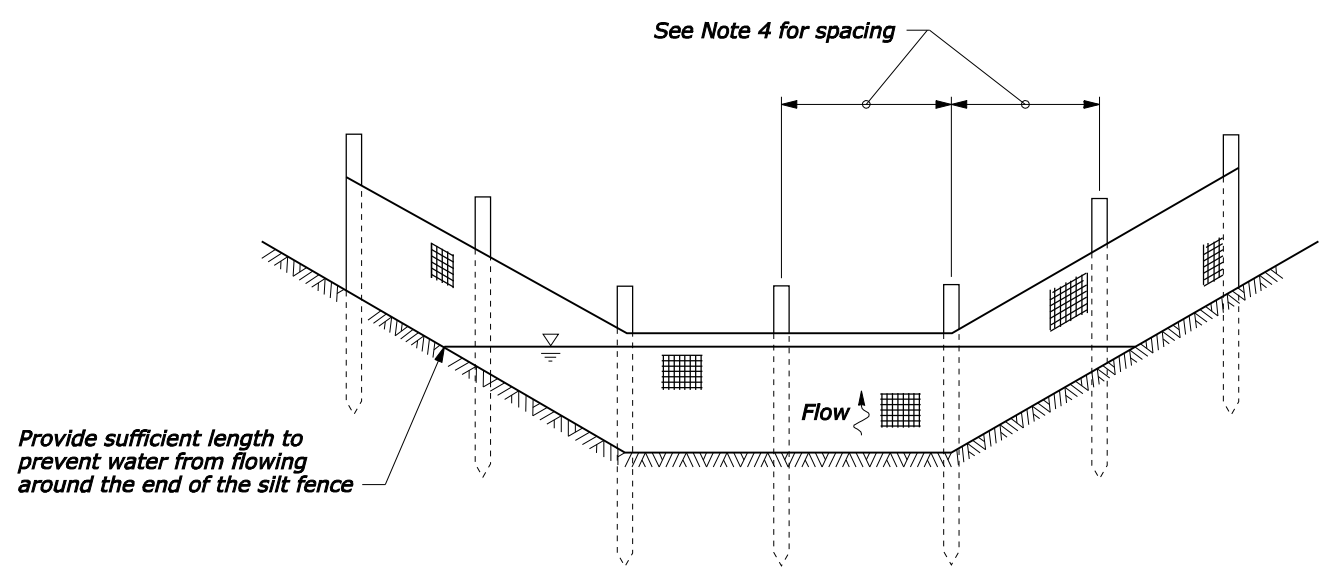


POST AND GEOTEXTILE INSTALLATION DETAIL



SILT FENCE INSTALLATION AT TOE OF FILL

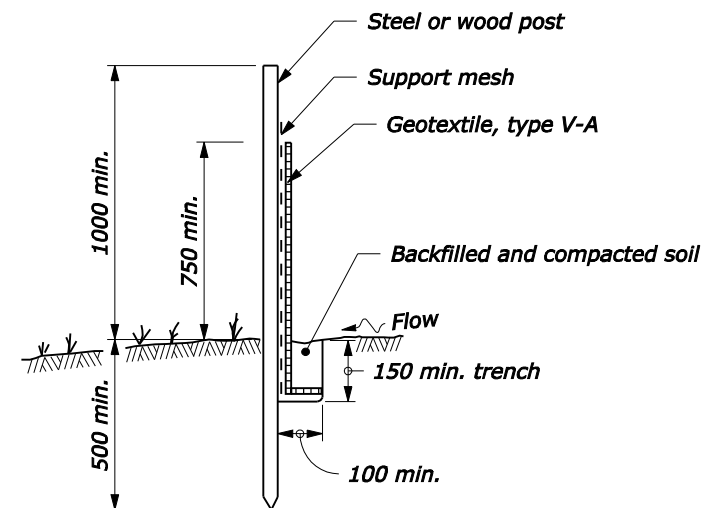


SILT FENCE INSTALLATION IN A DRAINAGE DITCH
See Note 1

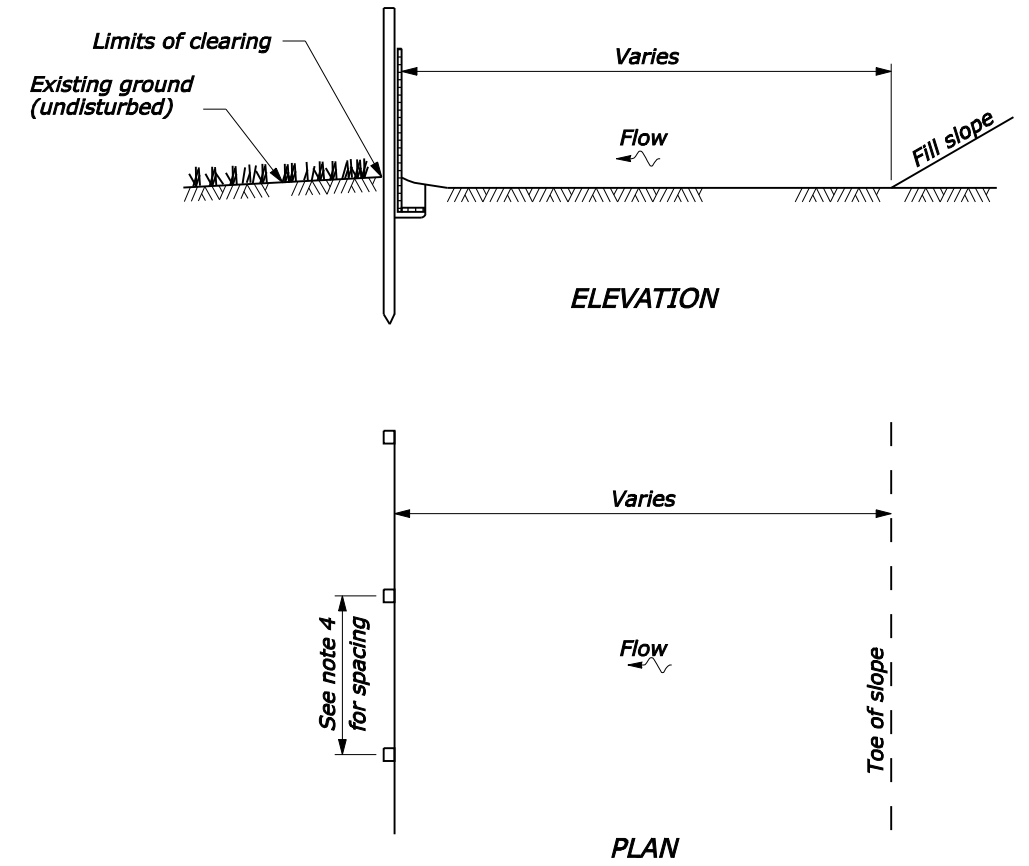
- NOTE:**
1. Use drainage ditch installation for low flow conditions only when specified on Erosion Control Plan.
 2. Alternate preassembled silt fence options (geotextile, type V-B) will be allowed as long as specified dimensions are satisfied. Follow manufacturer's recommendations for installation procedures. All types must ensure silt fence remains attached to, and does not slide down, supporting posts.
 3. Install silt fence along ground contours. Curve ends of silt fence upgrade to prevent water from running around the ends.
 4. 10 ft. (max.) spacing with fence support.
6 ft. (max.) spacing without fence support.

NO SCALE

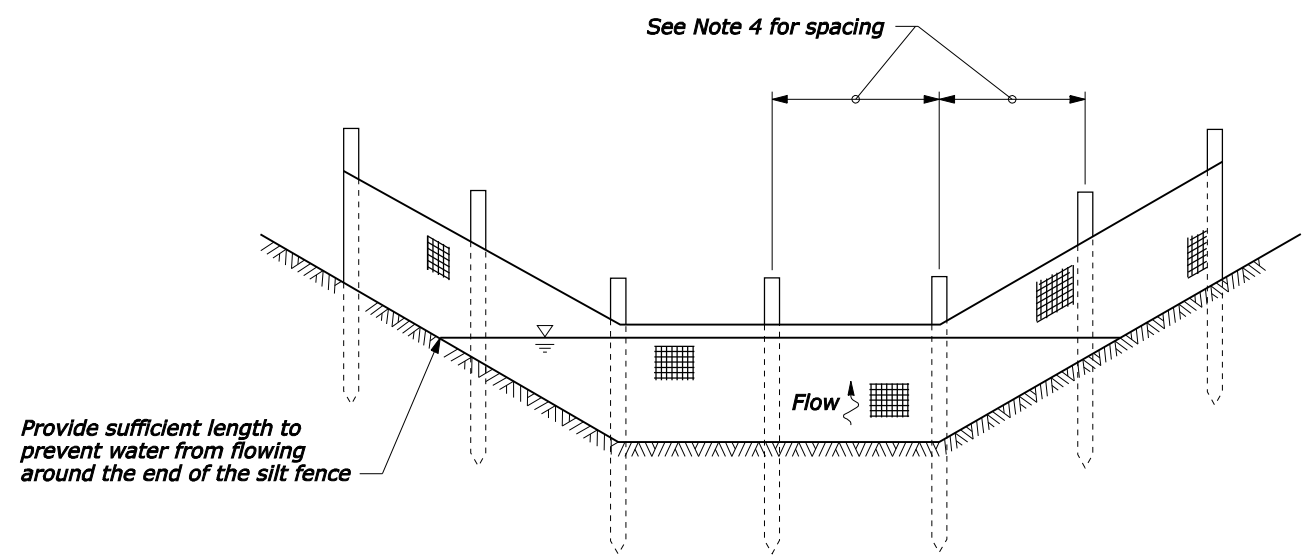
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
SILT FENCE	
STANDARD APPROVED FOR USE 6/2005 REVISED: 6/2007	STANDARD 157-1



POST AND GEOTEXTILE INSTALLATION DETAIL



SILT FENCE INSTALLATION AT TOE OF FILL



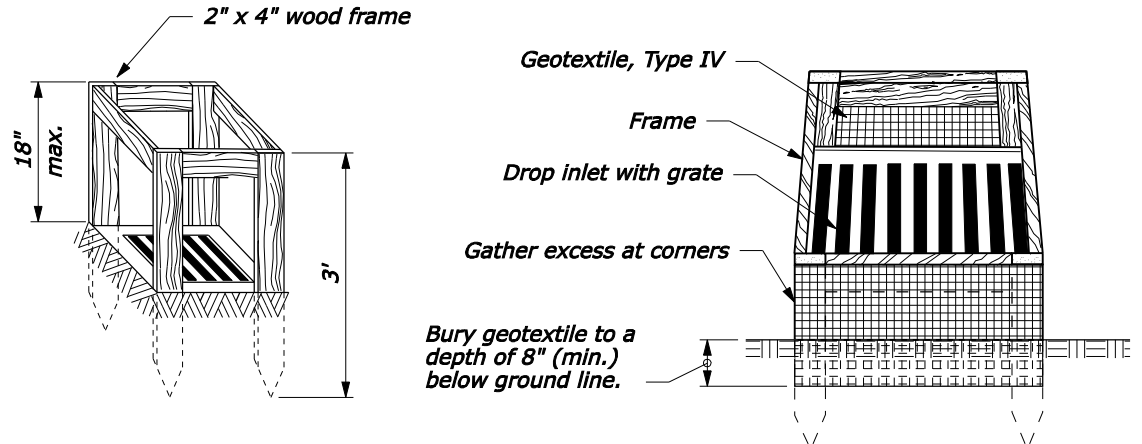
SILT FENCE INSTALLATION IN A DRAINAGE DITCH
See Note 1

NOTE:

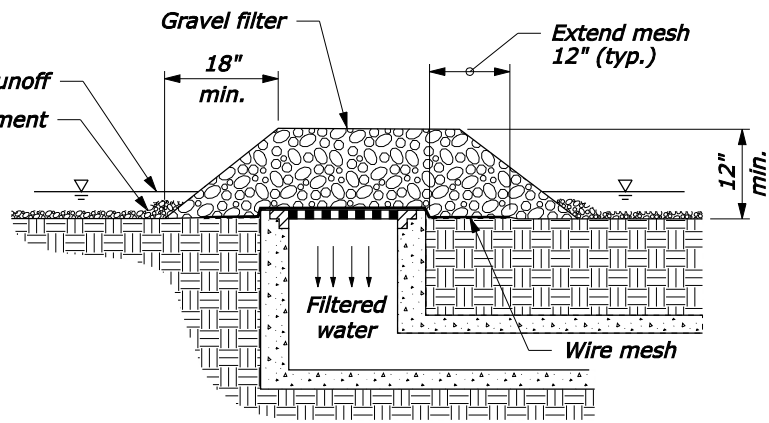
1. Use drainage ditch installation for low flow conditions only when specified on Erosion Control Plan.
2. Alternate preassembled silt fence options (geotextile, type V-B) will be allowed as long as specified dimensions are satisfied. Follow manufacturer's recommendations for installation procedures. All types must ensure silt fence remains attached to, and does not slide down, supporting posts.
3. Install silt fence along ground contours. Curve ends of silt fence upgrade to prevent water from running around the ends.
4. 3.0 m (max.) spacing with fence support.
1.8 m (max.) spacing without fence support.
5. Dimensions without units are millimeters.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
SILT FENCE	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/1997 6/2005 6/2007	M157-1

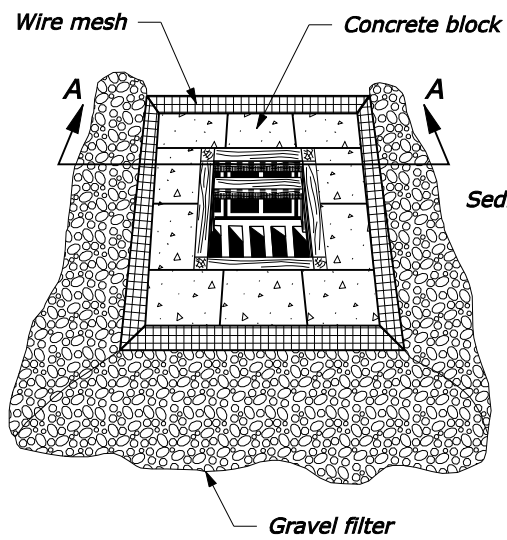


SILT FENCE DROP INLET PROTECTION (TYPE A)

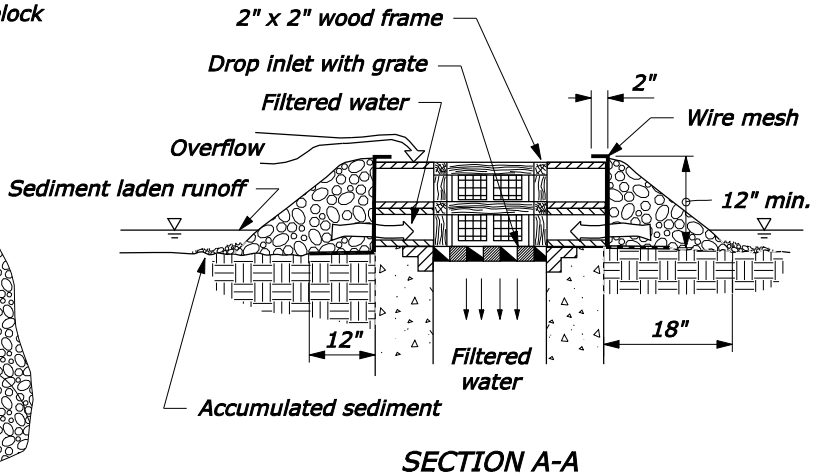


GRAVEL AND WIRE MESH DROP INLET PROTECTION (TYPE B)

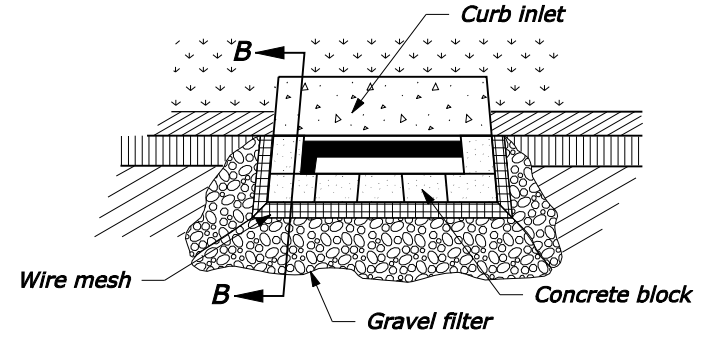
- NOTE:**
1. For gravel filters use 2" - 3" diameter coarse aggregate.
 2. Use wire mesh with 1/2" x 1/2" openings.
 3. Use Type A inlet protection in sump locations only.
 4. Use Type B inlet protection only in sump locations where heavy concentrated flows are not expected. Do not use where ponding around the structure might cause inconvenience or damage.



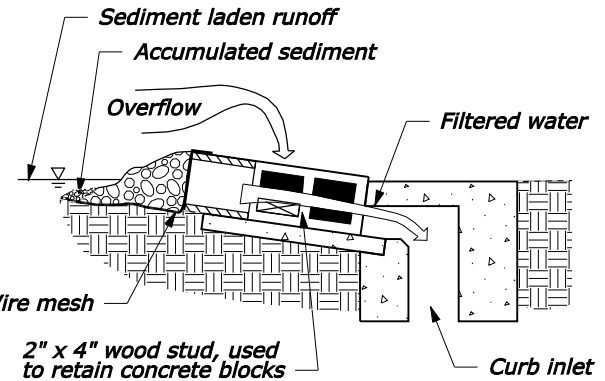
BLOCK AND GRAVEL DROP INLET PROTECTION (TYPE C)



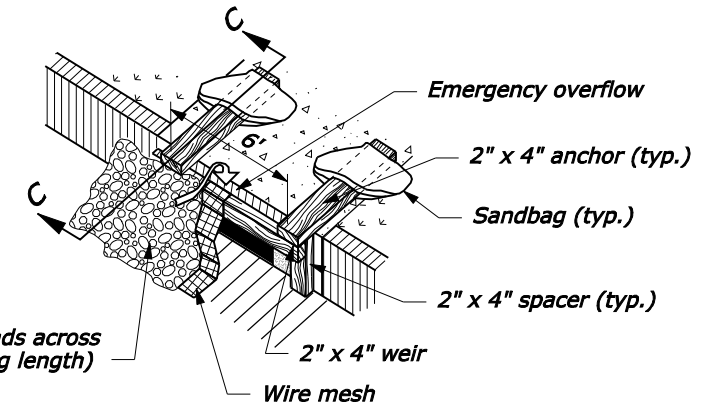
SECTION A-A



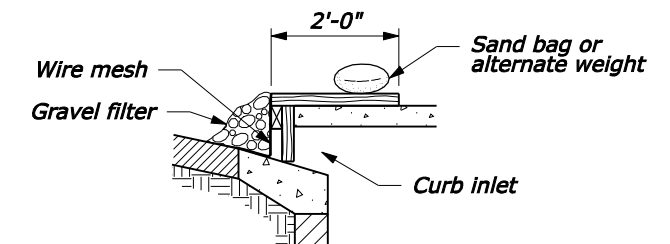
SECTION B-B



CURB INLET PROTECTION, BLOCK AND GRAVEL (TYPE D)



CURB INLET PROTECTION, WOODEN WEIR (TYPE E)

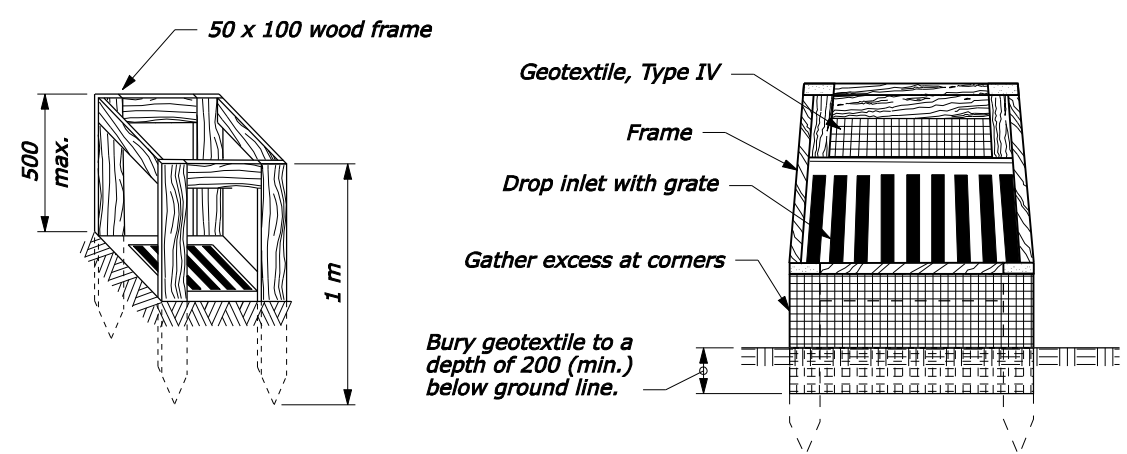


SECTION C-C

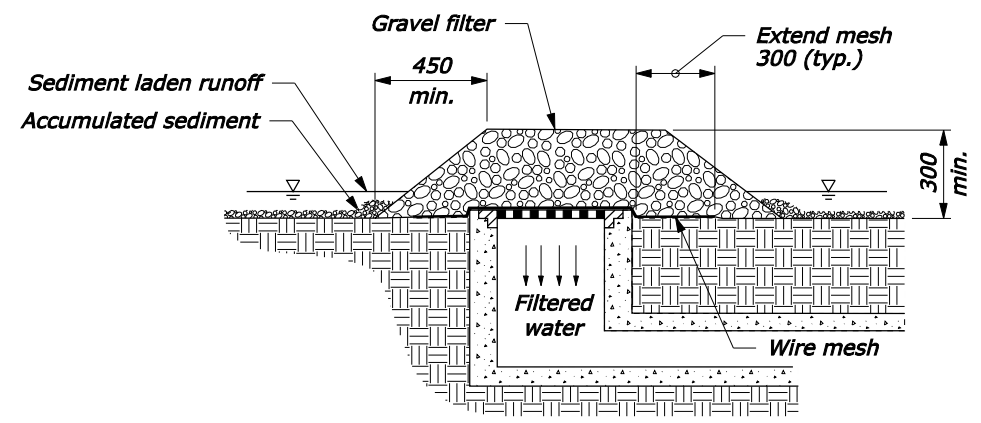
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
TEMPORARY INLET PROTECTION	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED:	157-2

NO SCALE

06-Oct-2005 08:25 AM F:\StdDraw\std15702.dgn [US Customary]

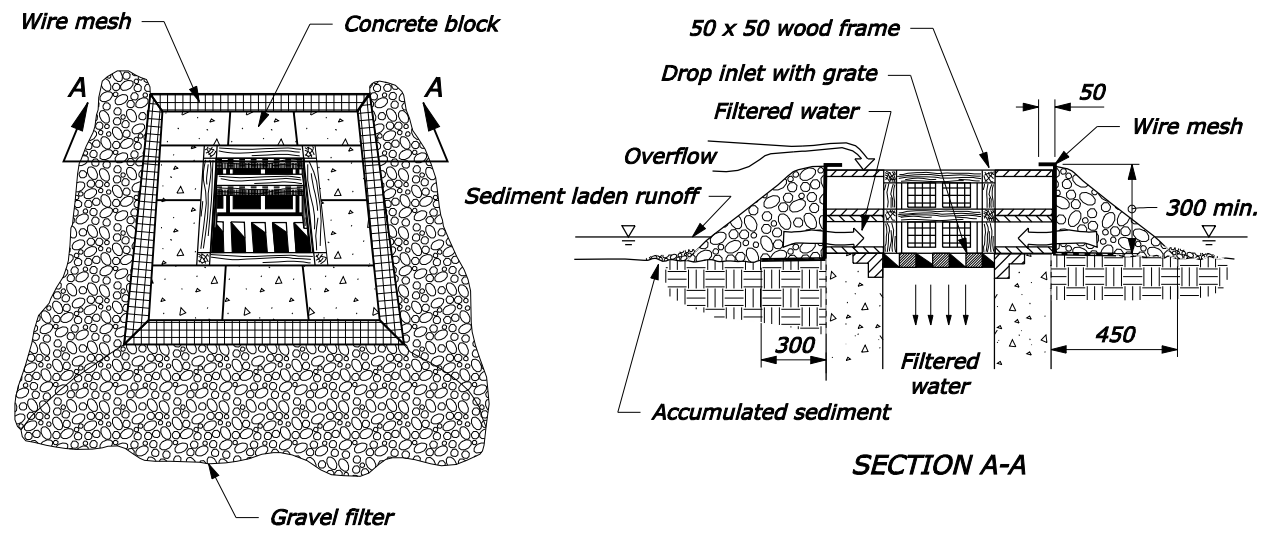


SILT FENCE DROP INLET PROTECTION (TYPE A)

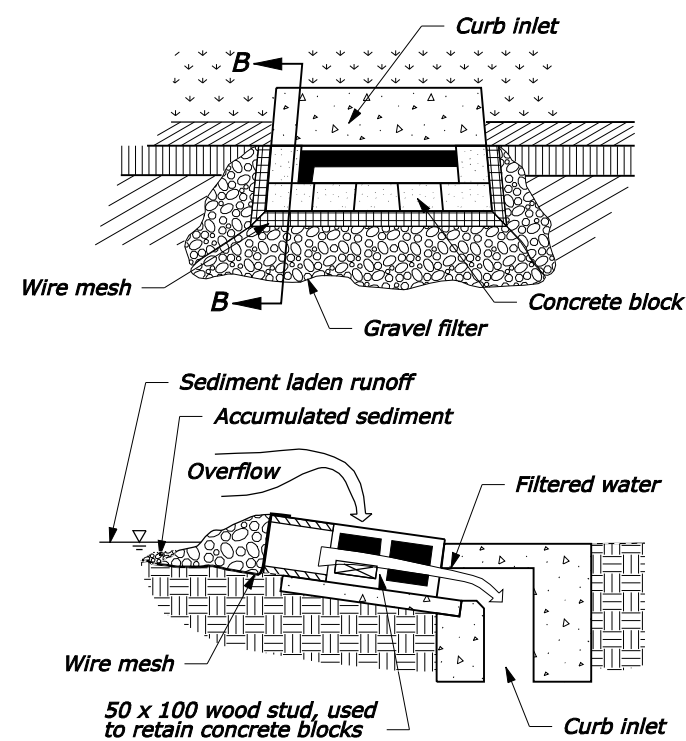


GRAVEL AND WIRE MESH DROP INLET PROTECTION (TYPE B)

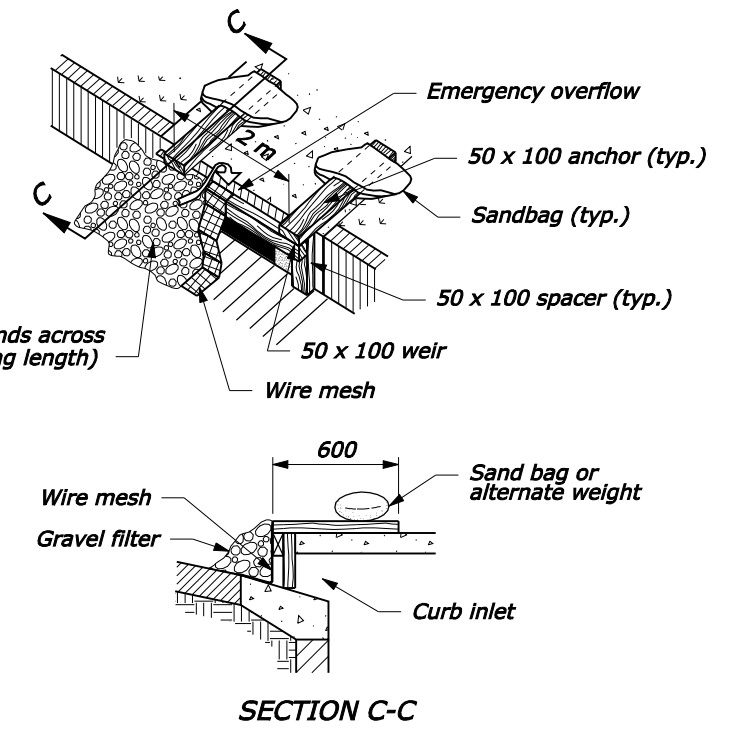
- NOTE:**
1. For gravel filters use 50 - 75 mm diameter coarse aggregate.
 2. Use wire mesh with 12 x 12 mm openings.
 3. Use Type A inlet protection in sump locations only.
 4. Use Type B inlet protection only in sump locations where heavy concentrated flows are not expected. Do not use where ponding around the structure might cause inconvenience or damage.
 5. Dimensions without units are millimeters.



BLOCK AND GRAVEL DROP INLET PROTECTION (TYPE C)



CURB INLET PROTECTION, BLOCK AND GRAVEL (TYPE D)



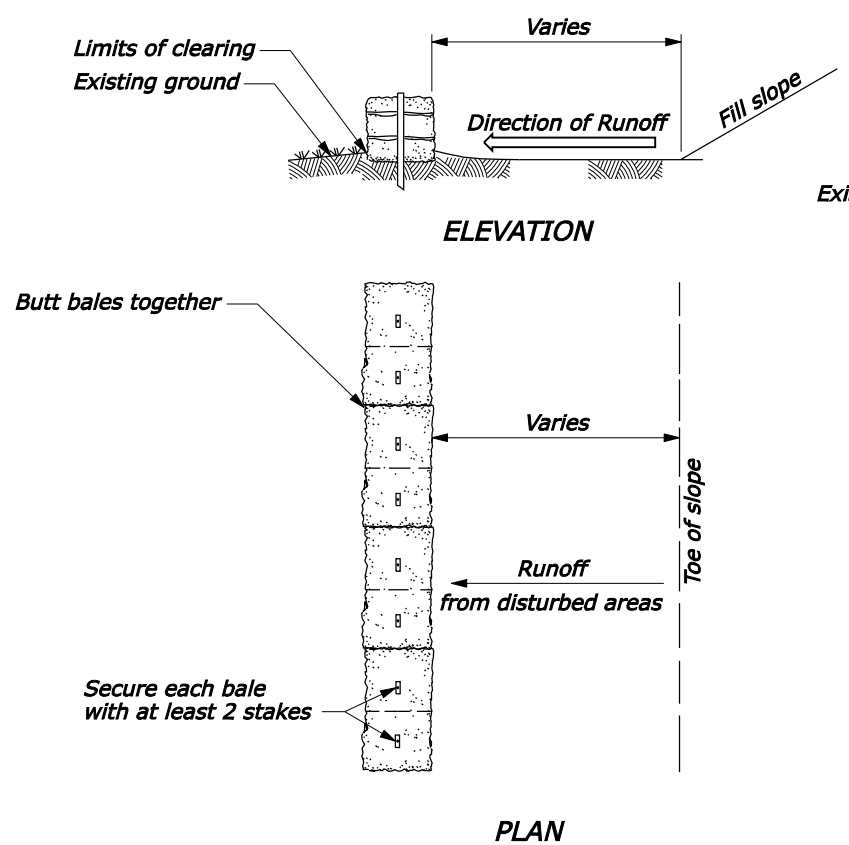
CURB INLET PROTECTION, WOODEN WEIR (TYPE E)

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
TEMPORARY INLET PROTECTION	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/2005	M157-2

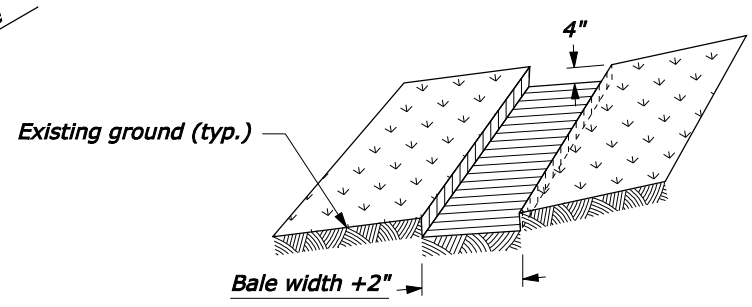
NO SCALE

06-Oct-2005 08:24 AM F:\StandDraw\st15702.dgn [Metric]

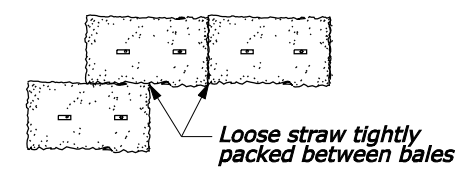
NOTE:
 1. Use straw bales in drainage ditches only for low flow conditions and when specified on the Erosion Control Plans.



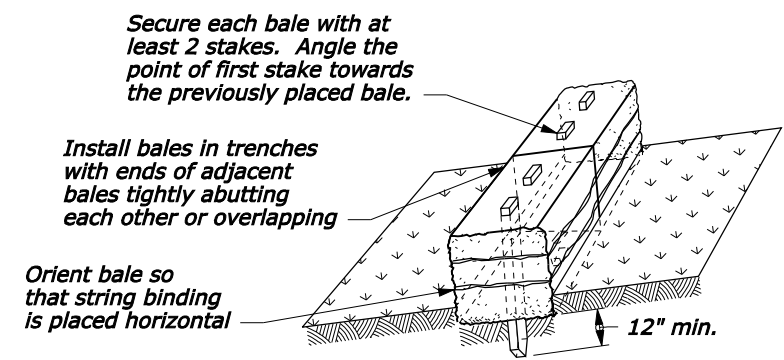
INSTALLATION OF A STRAW BALE BARRIER AT TOE OF FILL



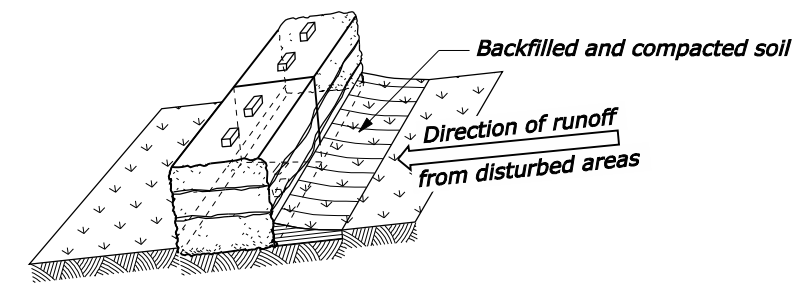
Step 1: Excavate trench



Step 3: Tightly pack straw between bales (plan view of bales)

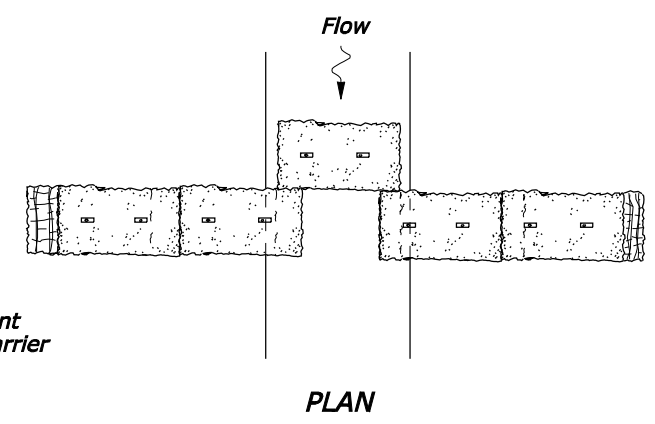
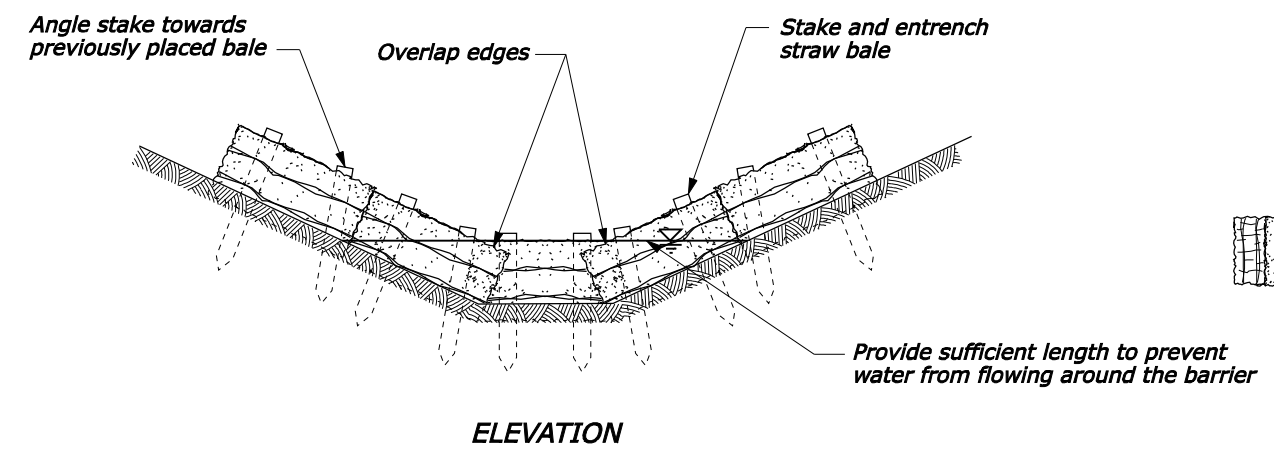


Step 2: Install bales



Step 4: Backfill soil against bales

PROPERLY STAKED AND ENTRENCHED STRAW BALES



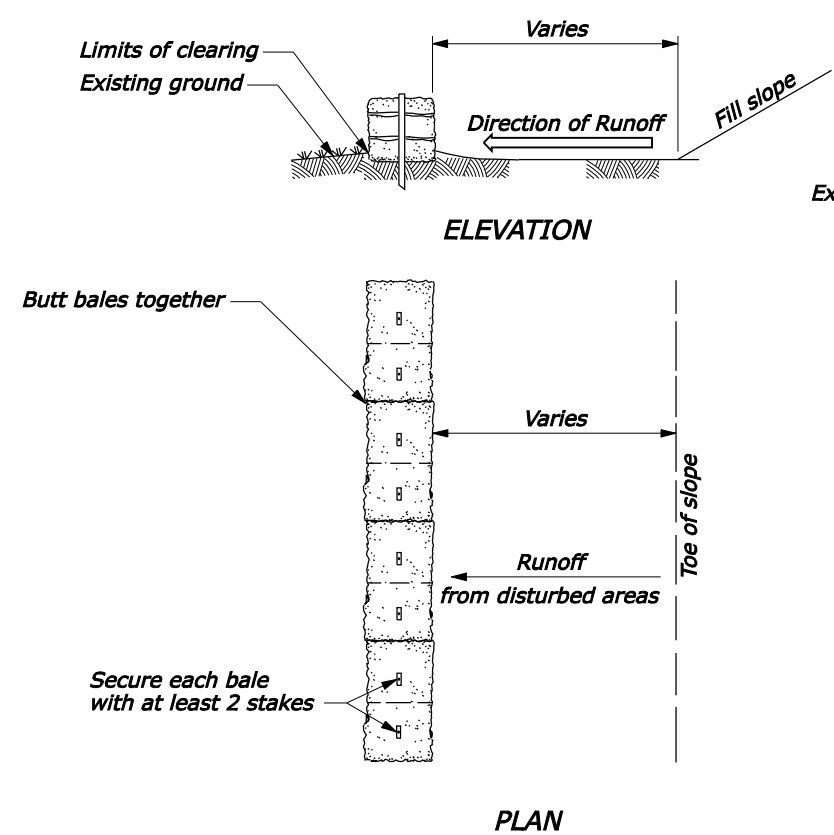
INSTALLATION OF A STRAW BALE BARRIER IN DITCH
 See Note 1

NO SCALE

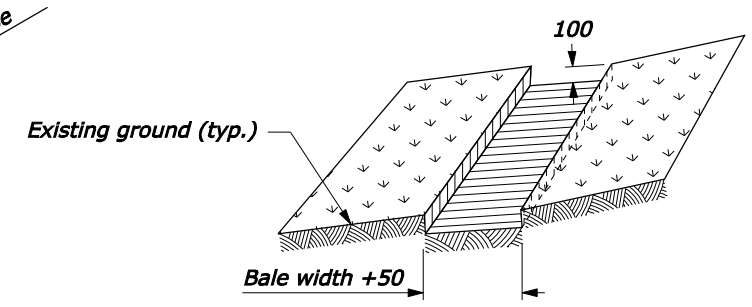
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
STRAW BALES	
STANDARD APPROVED FOR USE 6/2005 REVISED: 6/2007	STANDARD 157-3

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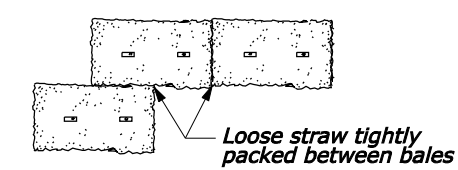
- NOTE:**
1. Use straw bales in drainage ditches only for low flow conditions and when specified on the Erosion Control Plans.
 2. Dimensions without units are millimeters.



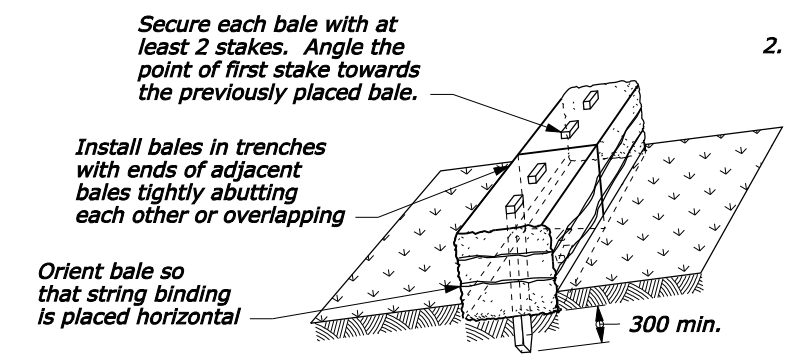
INSTALLATION OF A STRAW BALE BARRIER AT TOE OF FILL



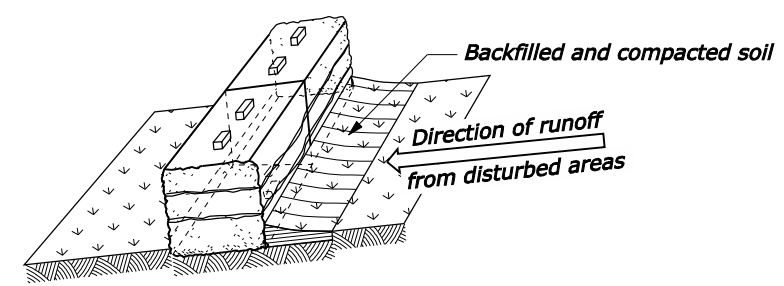
Step 1: Excavate trench



Step 3: Tightly pack straw between bales (plan view of bales)

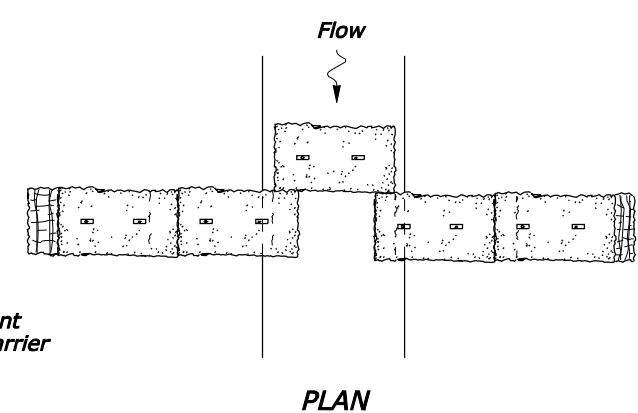
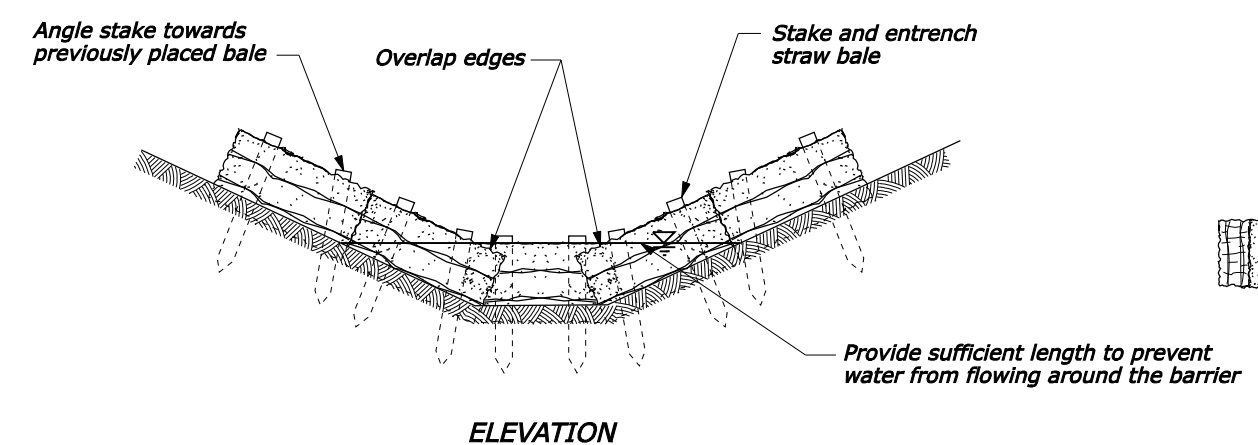


Step 2: Install bales



Step 4: Backfill soil against bales

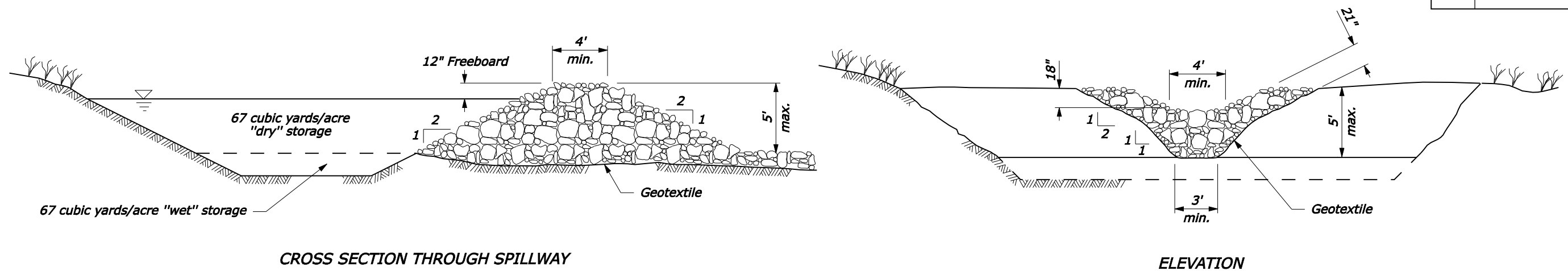
PROPERLY STAKED AND ENTRENCHED STRAW BALES



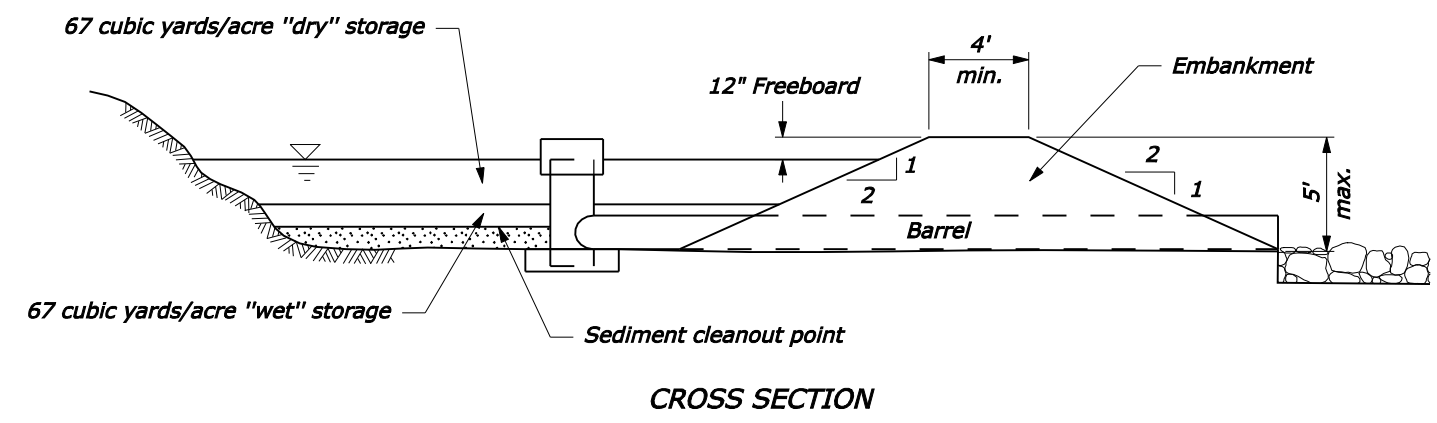
INSTALLATION OF A STRAW BALE BARRIER IN DITCH
See Note 1

NO SCALE

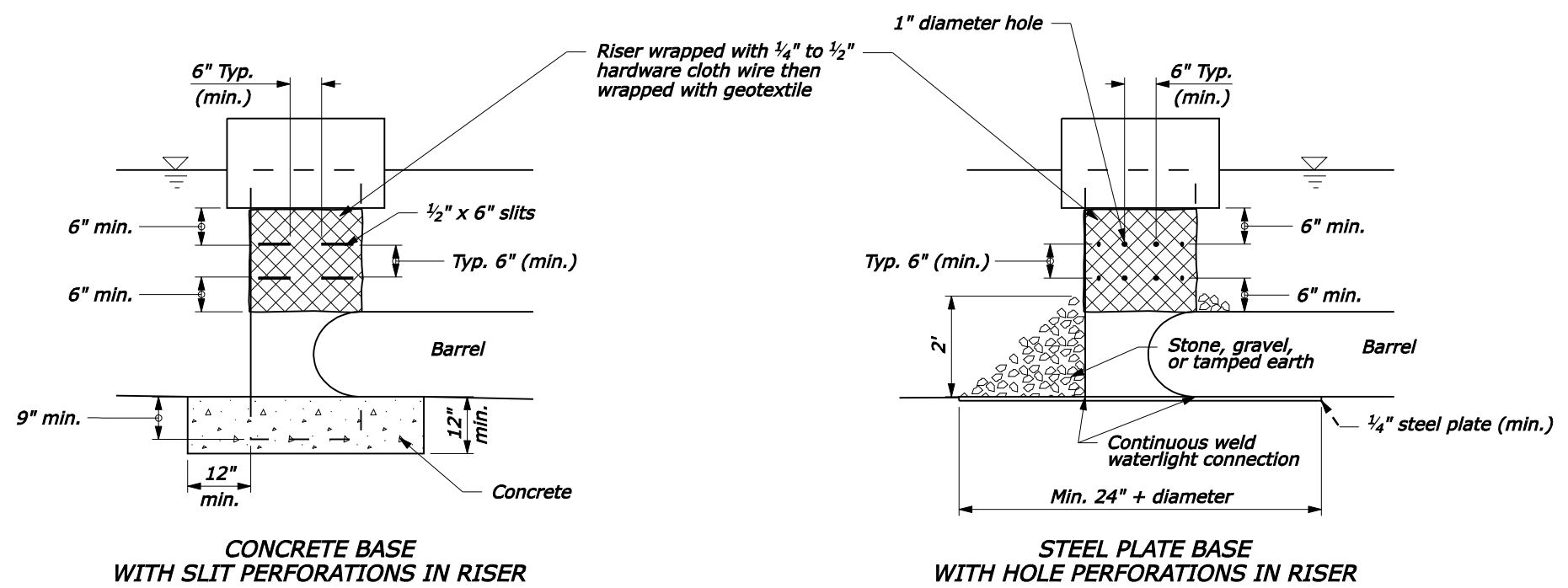
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
STRAW BALES	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/2005 6/2007	M157-3



SEDIMENT TRAP (TYPE A) RIPRAP OUTLET



SEDIMENT TRAP (TYPE B) PIPE OUTLET



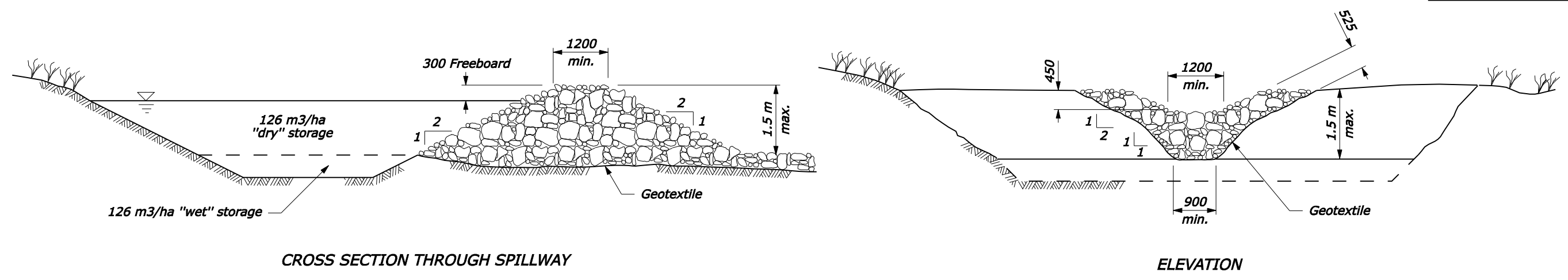
NOTE:

1. Clear, grub, and remove all vegetative matter including root mat before constructing Sediment Trap.
2. Remove vegetative matter, other organic material, and large stones from embankment fill material.
3. Compact embankment in 8-inch layers using construction equipment for compaction of each layer.
4. Seed the soil embankment and all cut slopes with temporary or permanent vegetation within 7 days of construction.
5. Remove sediment from Sediment Trap when accumulated sediment reaches half the design water storage of the trap.
6. Inspect Sediment Trap regularly for damage and accumulated sediment and especially after each storm event. Make repairs as required.
7. Remove the Sediment Trap and stabilize the location by grading and seeding when the upslope drainage area has been stabilized against erosion.
8. Do not use sediment traps for drainage areas over 5 acres.

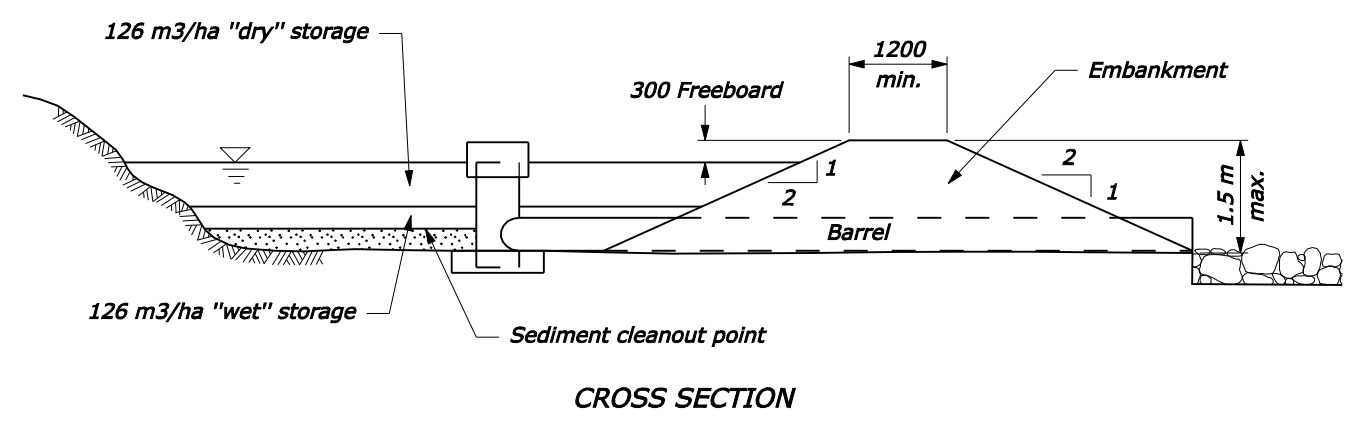
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
SEDIMENT TRAP	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED:	157-4

NO SCALE

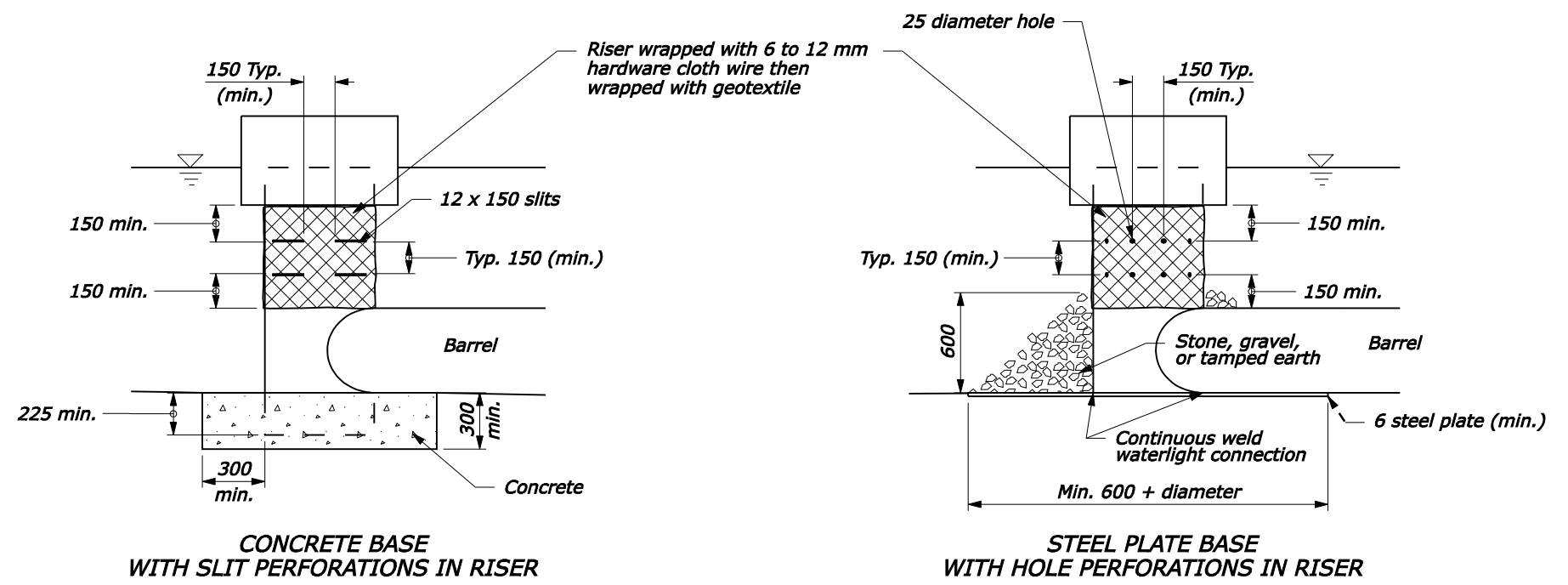
06-Oct-2005 08:29 AM F:\StdDraw\std15704.dgn [US Customary]



SEDIMENT TRAP (TYPE A) RIPRAP OUTLET



SEDIMENT TRAP (TYPE B) PIPE OUTLET



NOTE:

1. Clear, grub, and remove all vegetative matter including root mat before constructing Sediment Trap.
2. Remove vegetative matter, other organic material, and large stones from embankment fill material.
3. Compact embankment in 200 mm layers using construction equipment for compaction of each layer.
4. Seed the soil embankment and all cut slopes with temporary or permanent vegetation within 7 days of construction.
5. Remove sediment from Sediment Trap when accumulated sediment reaches half the design water storage of the trap.
6. Inspect Sediment Trap regularly for damage and accumulated sediment and especially after each storm event. Make repairs as required.
7. Remove the Sediment Trap and stabilize the location by grading and seeding when the upslope drainage area has been stabilized against erosion.
8. Do not use sediment traps for drainage areas over 2 hectares.
9. Dimensions without units are millimeters.

U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 FEDERAL LANDS HIGHWAY
 METRIC STANDARD

SEDIMENT TRAP

STANDARD APPROVED FOR USE 6/2005
 REVISIONS: _____

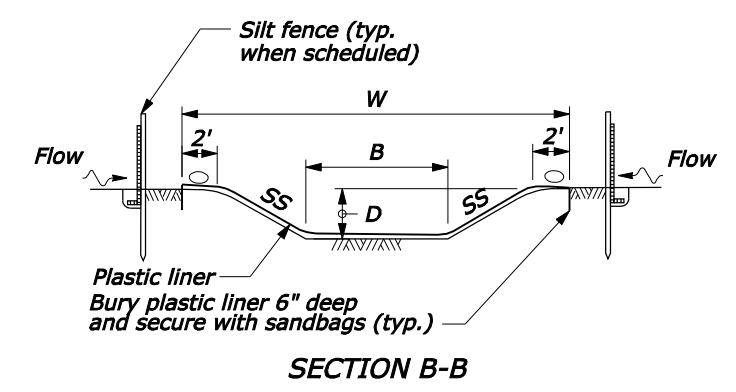
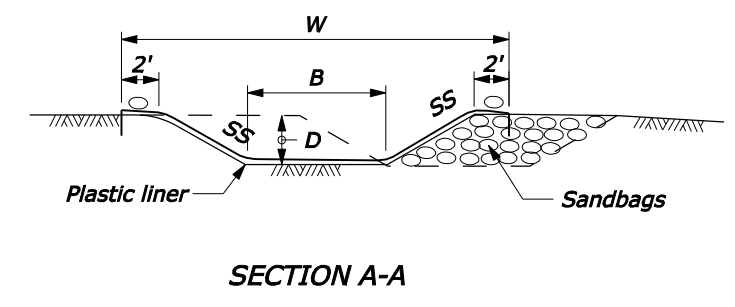
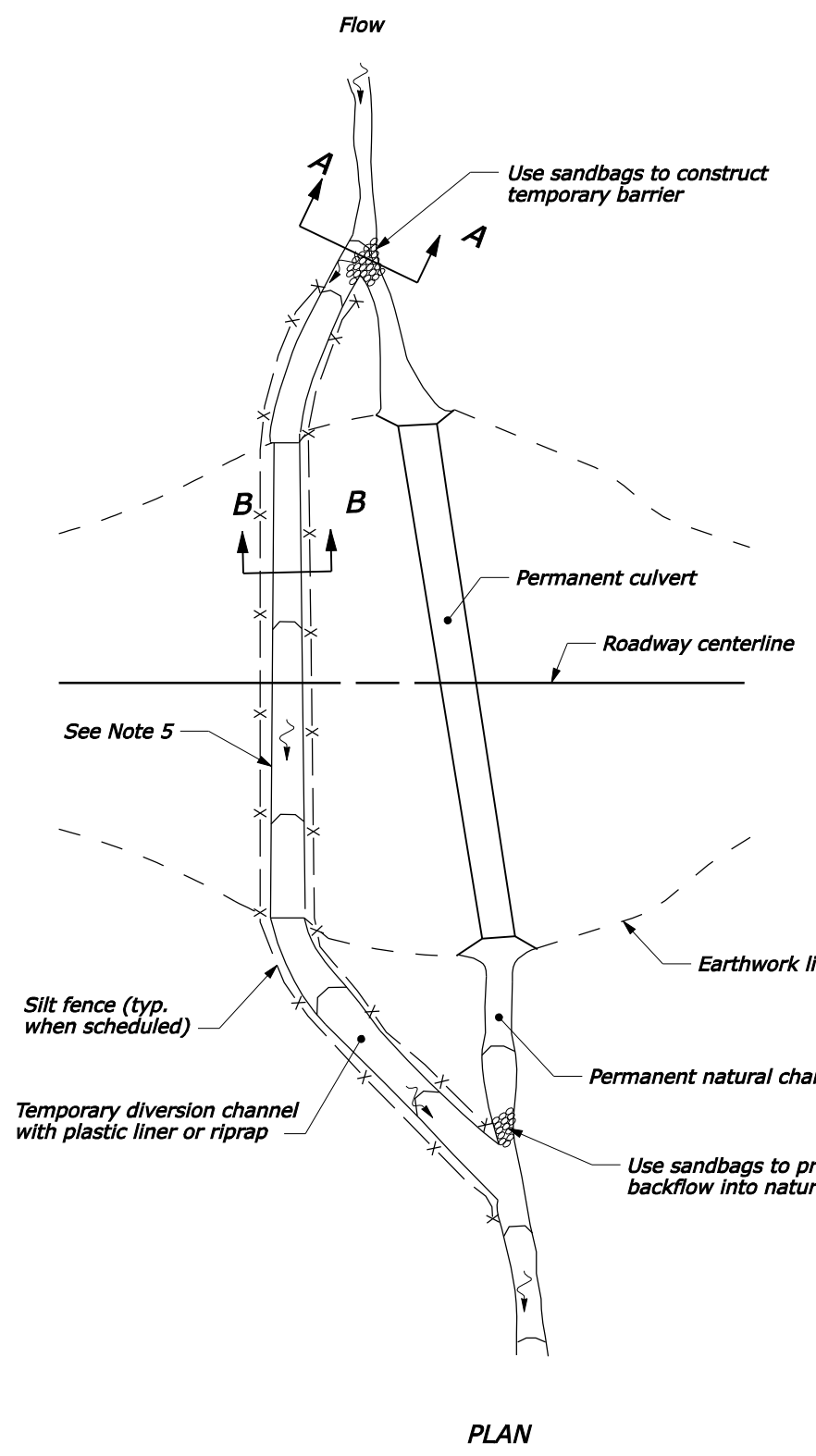
STANDARD
M157-4

NO SCALE

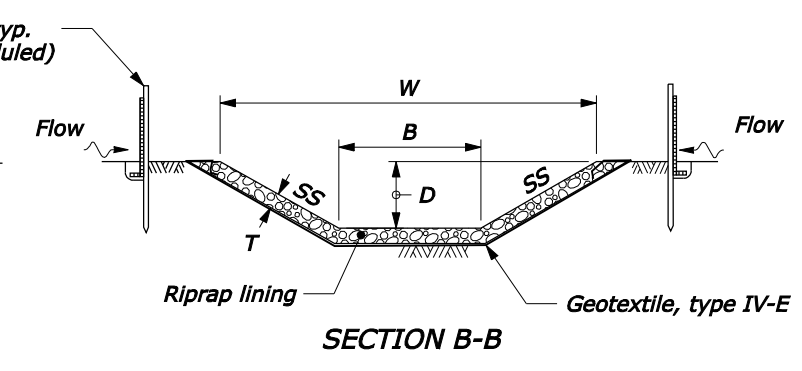
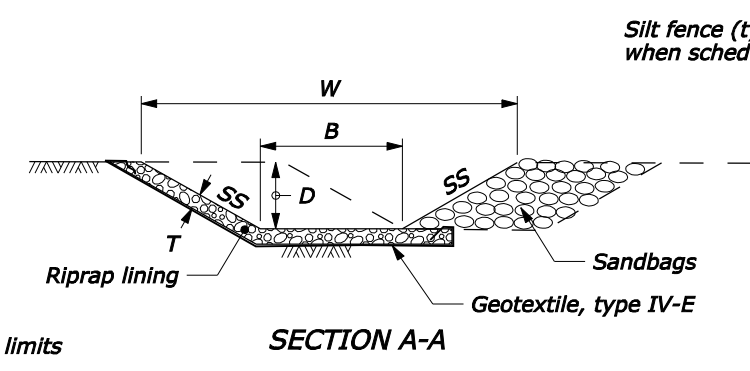
06-Oct-2005 08:28 AM F:\StandDraw\st15704.dgn [Metric]

NOTE:

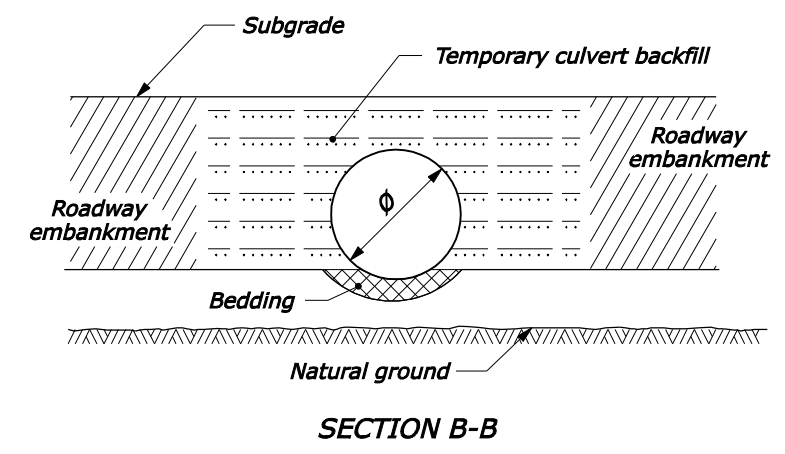
1. See Erosion Control Section for temporary culvert diameter, riprap class, channel dimensions and quantities.
2. Use plastic liner or riprap along the entire length and width of the temporary diversion channel.
3. Construct channel at a minimum grade of 0.5 percent.
4. Do not construct with longitudinal joints if using a plastic liner. Bury the upstream edge of the liner a minimum of 6" deep and secure with riprap or sandbags.
5. When specified replace the portion of the diversion channel through the roadway embankment with temporary culvert. Compact temporary culvert backfill using one of the methods listed in Subsection 204.11(a).



PLASTIC LINED DIVERSION CHANNEL



RIPRAP LINED DIVERSION CHANNEL



TEMPORARY CULVERT

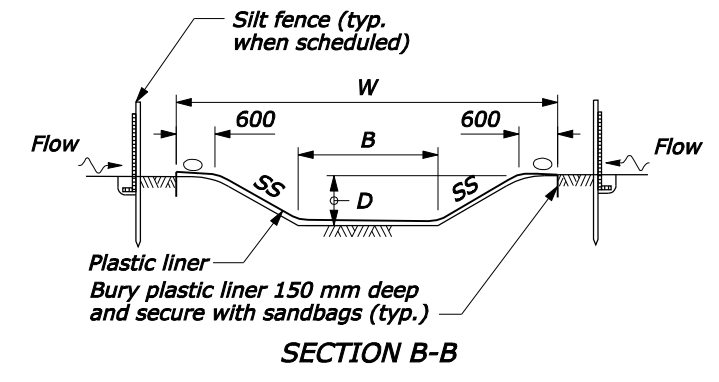
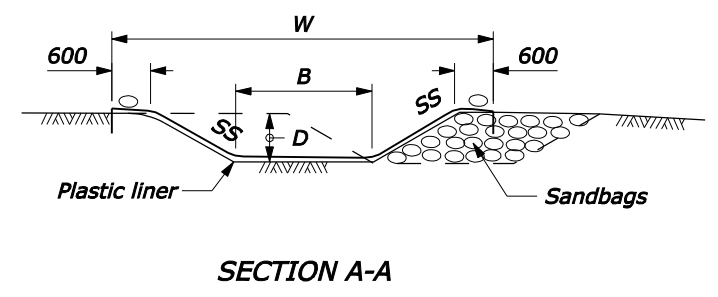
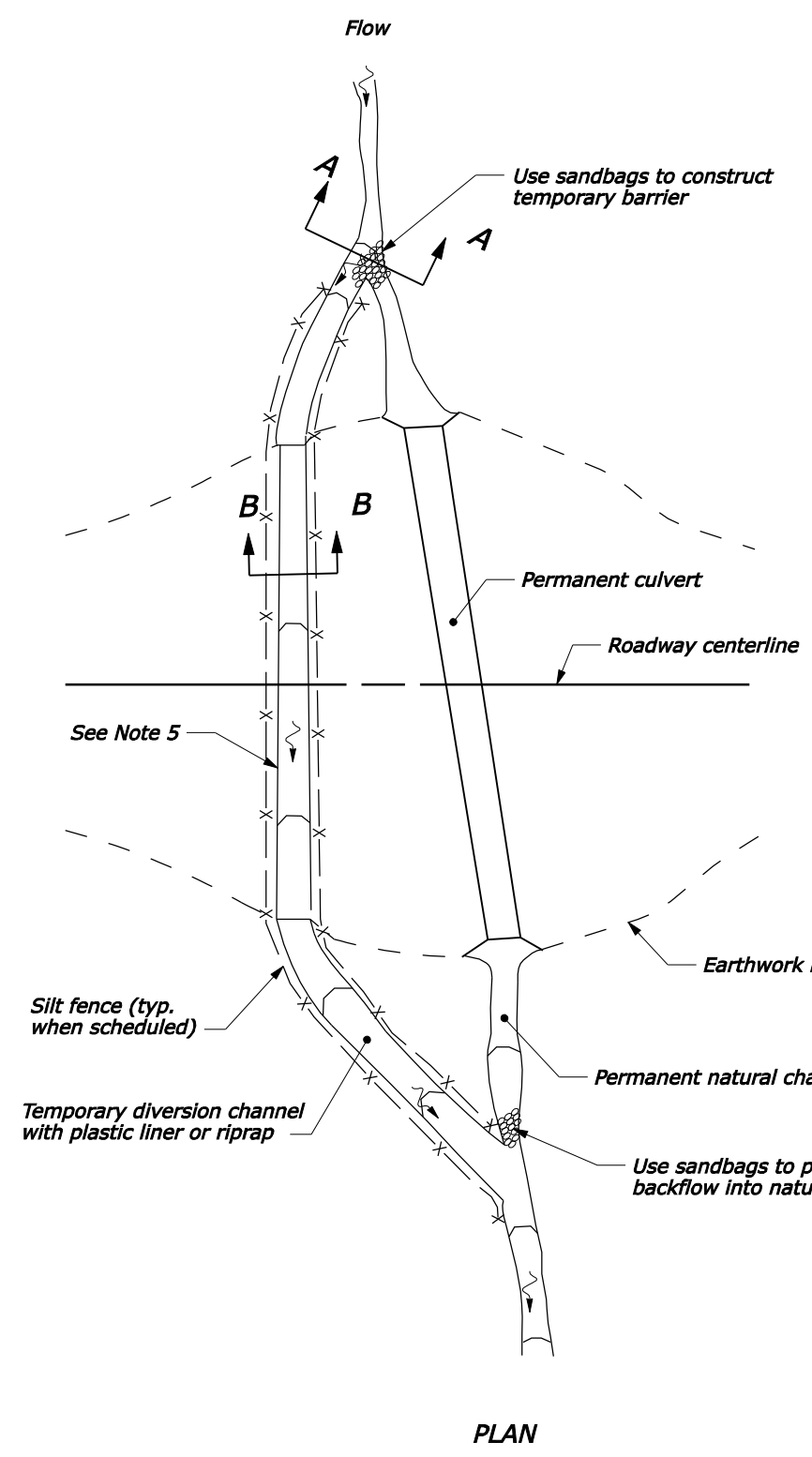
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
TEMPORARY DIVERSION CHANNELS	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED: 6/2007	157-5

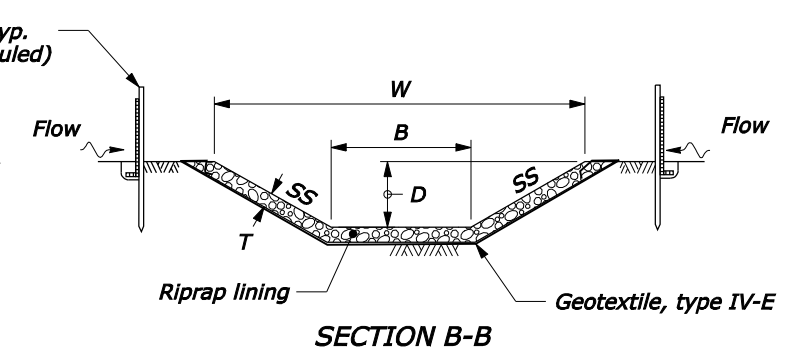
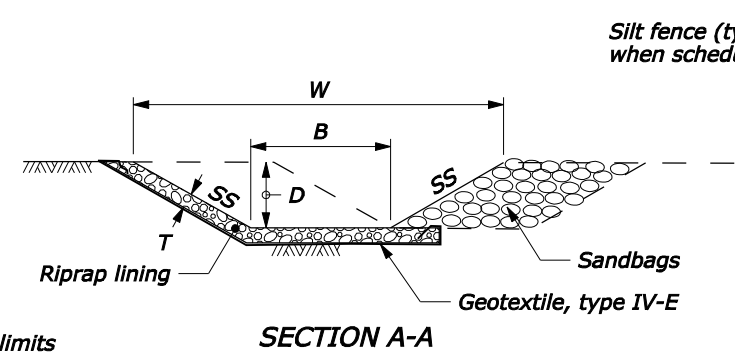
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NOTE:

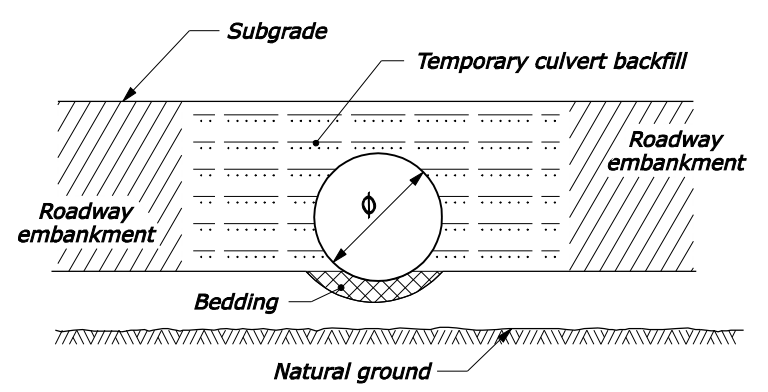
1. See Erosion Control Section for temporary culvert diameter, riprap class, channel dimensions and quantities.
2. Use plastic liner or riprap along the entire length and width of the temporary diversion channel.
3. Construct channel at a minimum grade of 0.5 percent.
4. Do not construct with longitudinal joints if using a plastic liner. Bury the upstream edge of the liner a minimum of 150 mm deep and secure with riprap or sandbags.
5. When specified replace the portion of the diversion channel through the roadway embankment with temporary culvert. Compact temporary culvert backfill using one of the methods listed in Subsection 204.11(a).
6. Dimensions without units are millimeters.



PLASTIC LINED DIVERSION CHANNEL



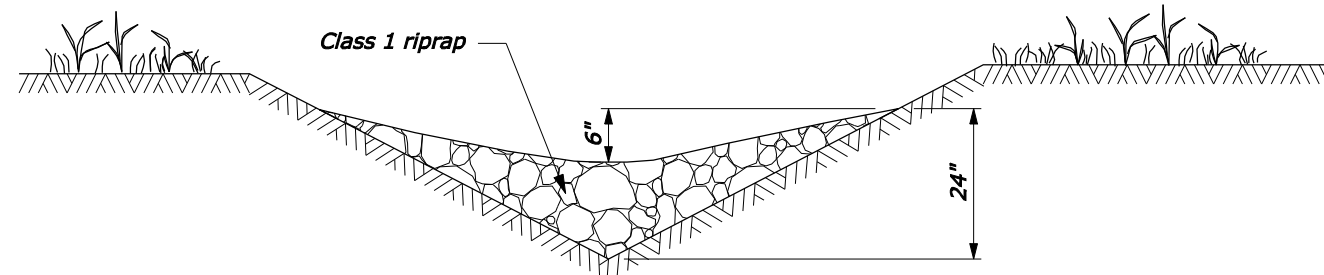
RIPRAP LINED DIVERSION CHANNEL



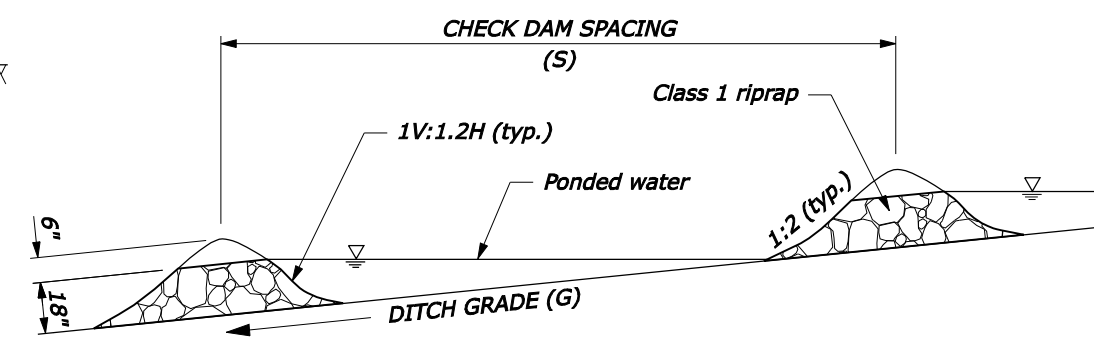
TEMPORARY CULVERT

NO SCALE

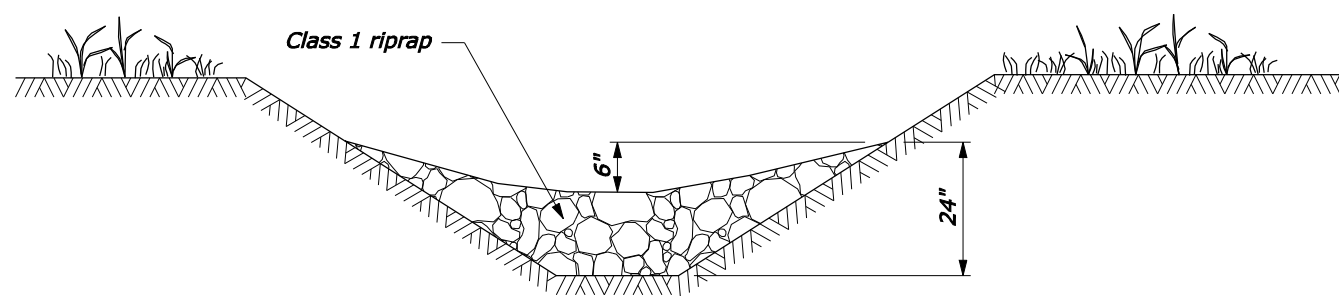
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
TEMPORARY DIVERSION CHANNELS	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/1997 12/1998 6/2005 6/2007	M157-5



CROSS SECTION
V DITCH



PROFILE VIEW
DITCH



CROSS SECTION
TRAPEZOIDAL DITCH

DITCH GRADE * (G)	CHECK DAM SPACING S (ft)
2%	75
3%	50
4%	40
5%	30
6%	25

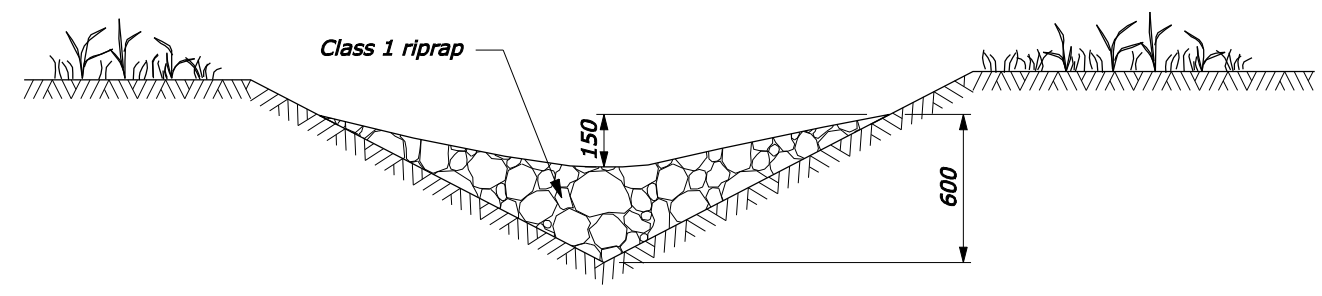
* Do not use Check Dams below 2% or above 6% ditch grades

NO SCALE

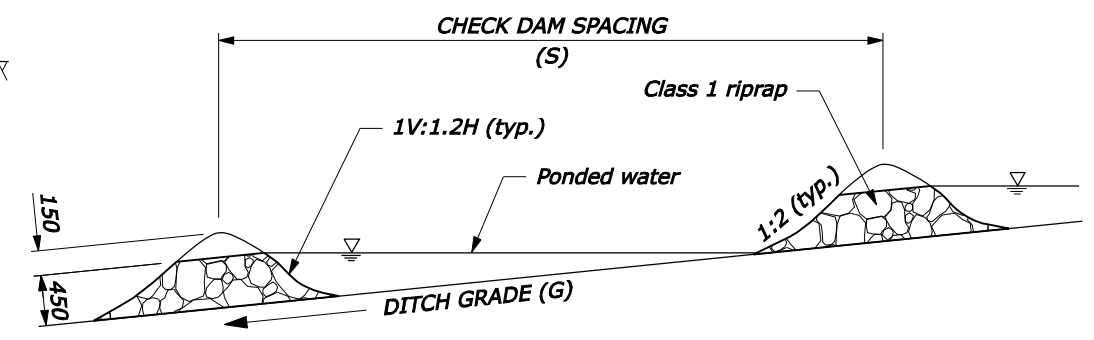
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
CHECK DAM	
STANDARD APPROVED FOR USE 6/2005 REVISED: 6/2007	STANDARD 157-6

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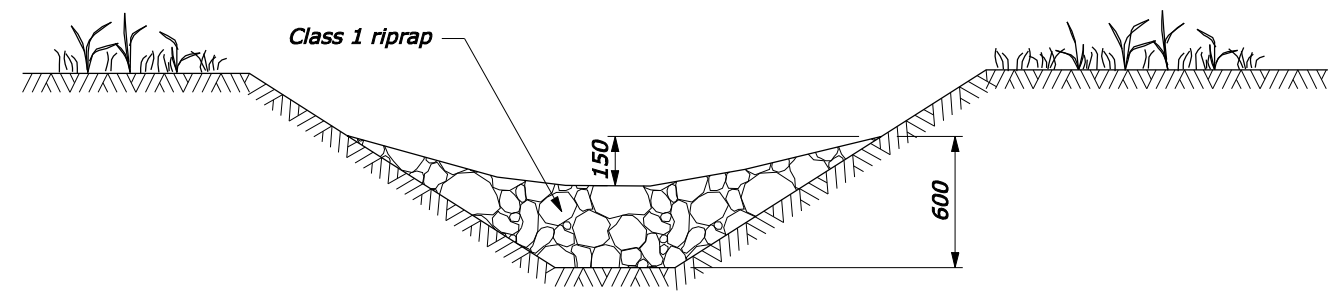
NOTE:
 1. Dimensions without units are millimeters.



CROSS SECTION
V DITCH



PROFILE VIEW
DITCH



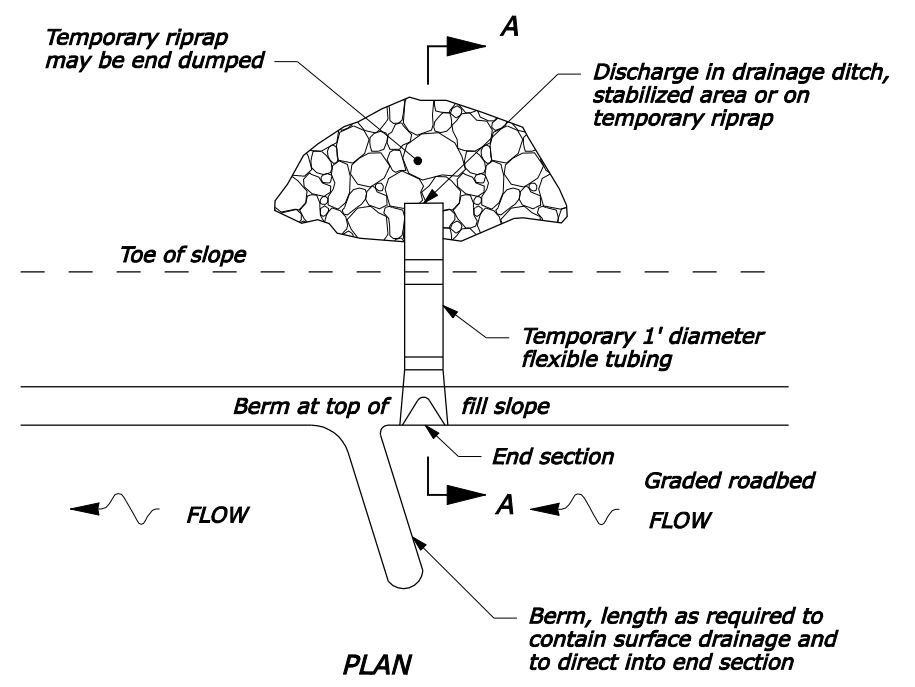
CROSS SECTION
TRAPEZOIDAL DITCH

DITCH GRADE * (G)	CHECK DAM SPACING S (m)
2%	23
3%	15
4%	12
5%	9
6%	7.5

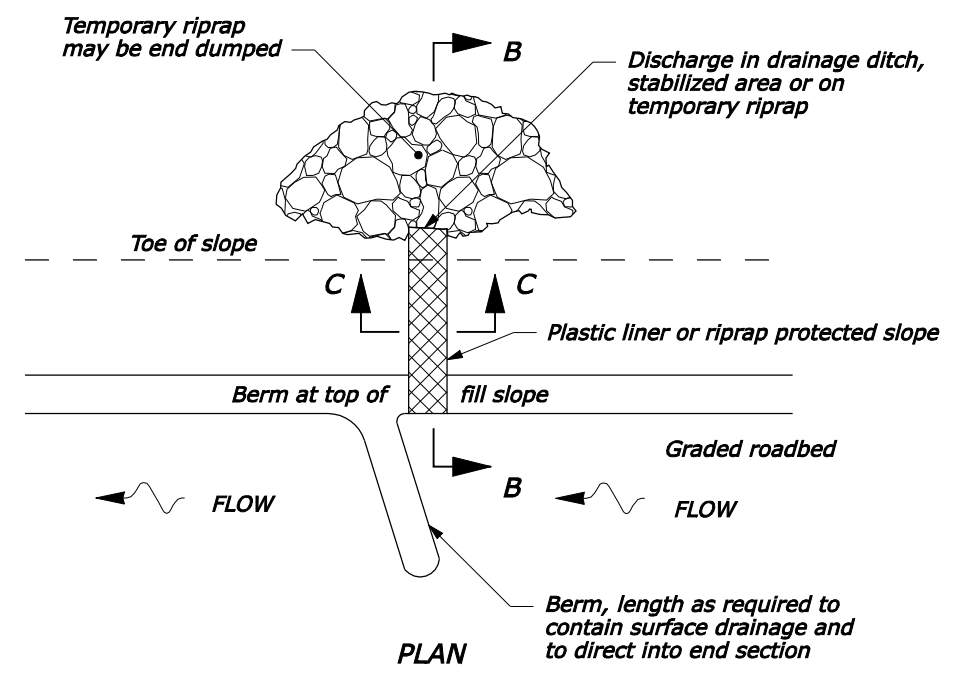
* Do not use Check Dams below 2% or above 6% ditch grades

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
CHECK DAM	
STANDARD APPROVED FOR USE 3/1996 REVISED: 6/2005 6/2007	STANDARD M157-6



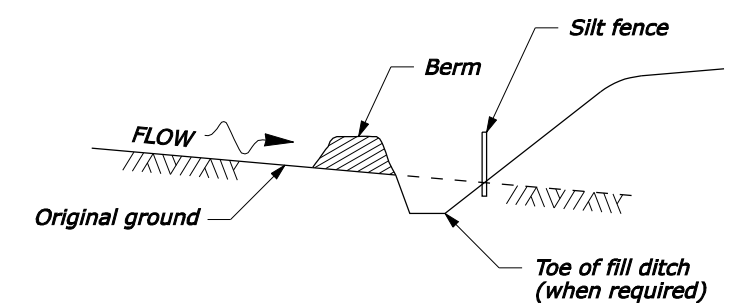
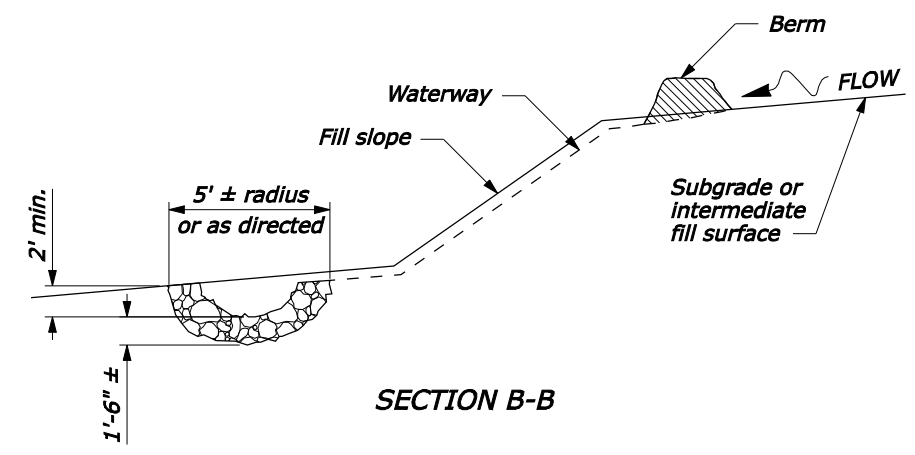
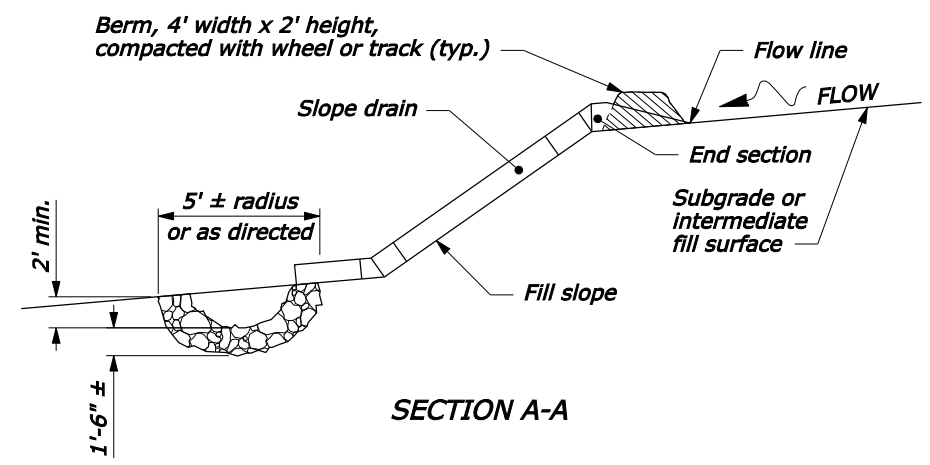
SLOPE DRAINS



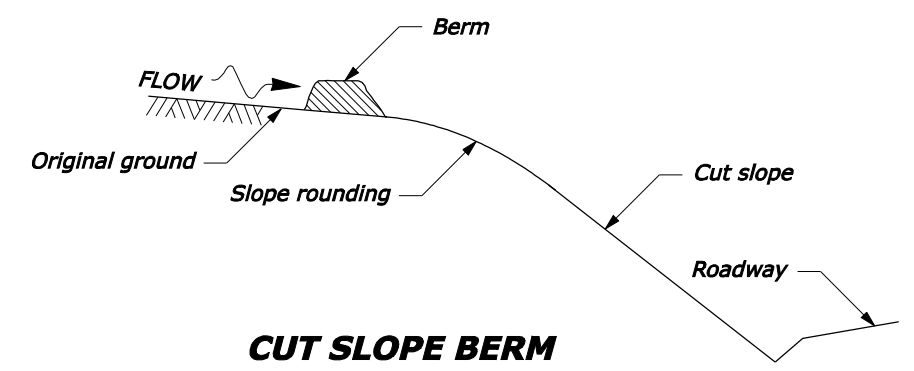
PLASTIC LINED WATERWAY

NOTE:

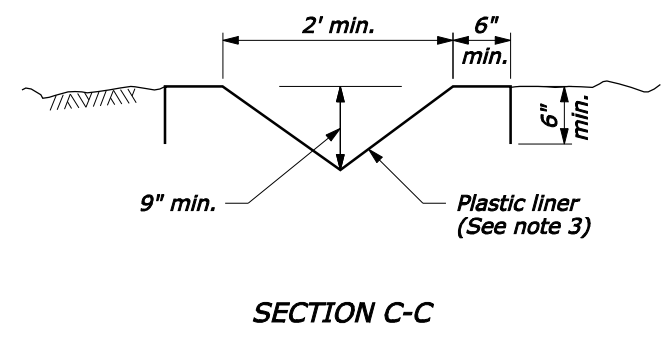
1. Use temporary slope drains (berms, drains, and riprap) as the embankment is constructed. Use spacings as shown on the Erosion Control Plans or as designated by the CO. Place all slope drains at the end of each work shift. Use slope drains until the slopes are permanently stabilized.
2. Construct temporary berms at the top of all erodible cut slopes as shown on the Erosion Control Plans or as designated by the CO. Use check dams to reduce the runoff velocity when existing grades are steep.
3. Do not use transverse or longitudinal joints in plastic liner. Plastic liner is not required for rock embankments.
4. Use toe-of-fill slope berms to divert offsite runoff away from disturbed areas.
5. Seed and mulch all cut slope berms and toe-of-fill berms immediately after berm construction.
6. Use Class 2 temporary riprap.



TOE-OF-FILL SLOPE BERM



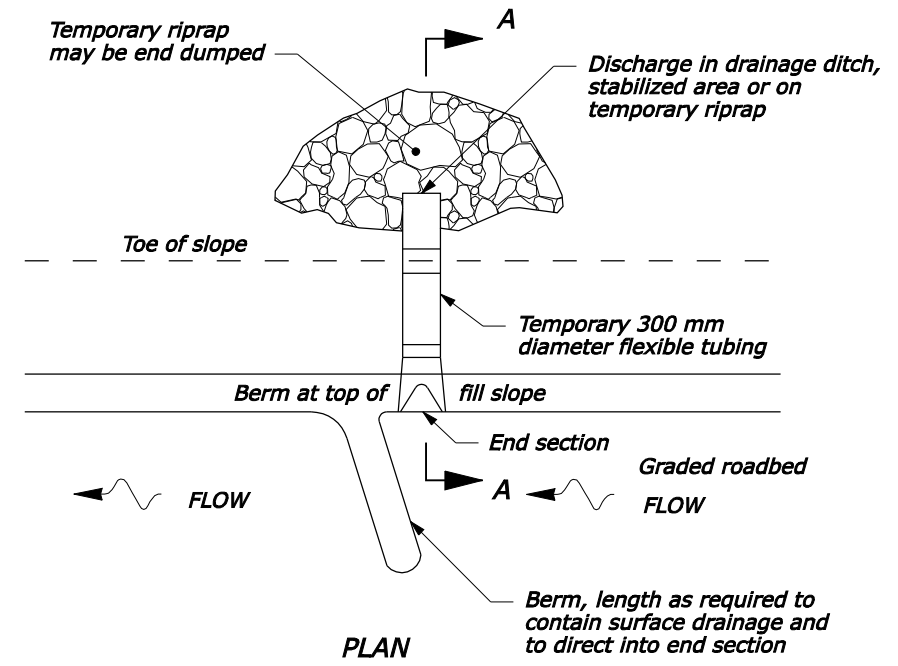
CUT SLOPE BERM



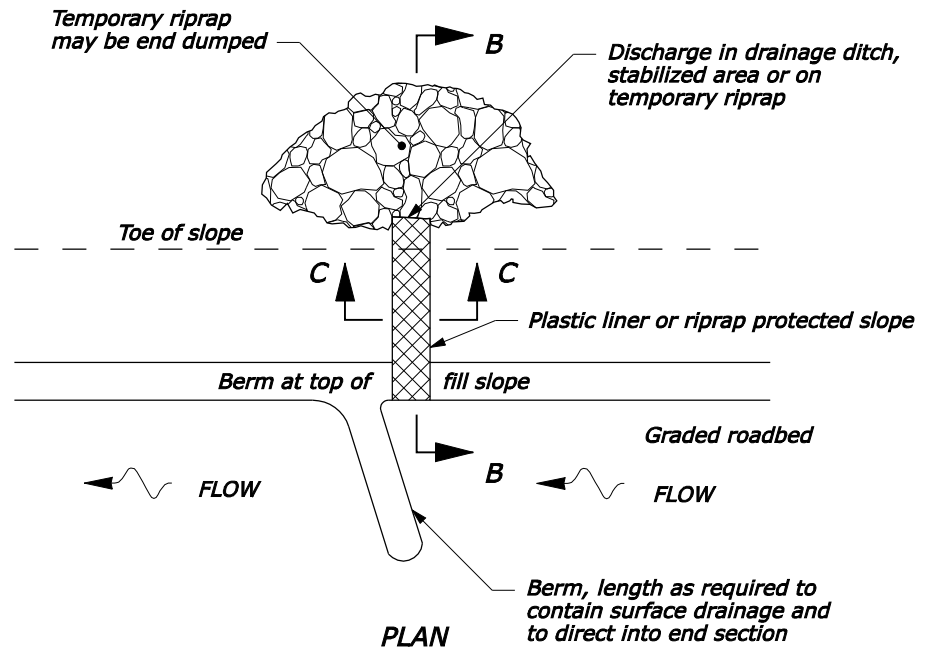
NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
TEMPORARY EROSION CONTROL BERMS, SLOPE DRAINS, AND LINED WATERWAYS	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED:	157-7

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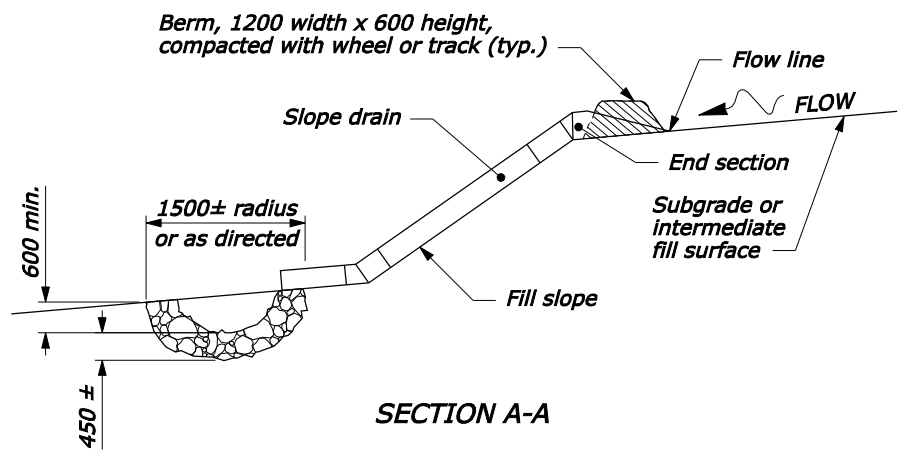
SLOPE DRAINS



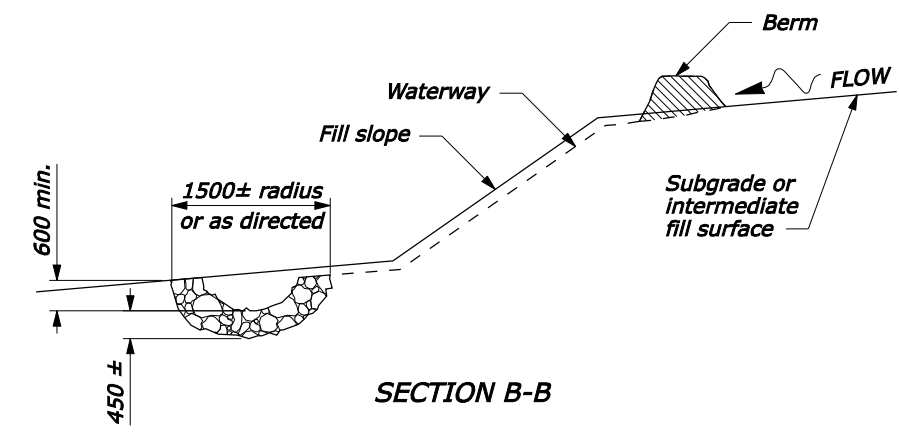
PLASTIC LINED WATERWAY

NOTE:

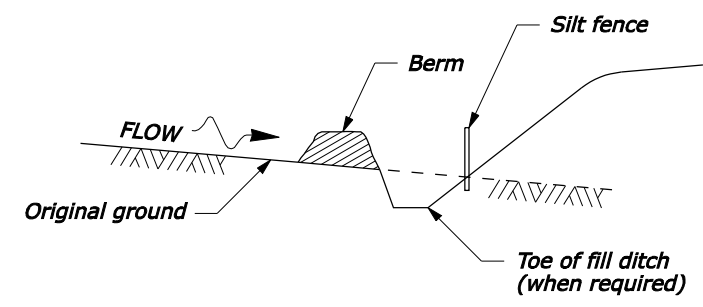
1. Use temporary slope drains (berms, drains, and riprap) as the embankment is constructed. Use spacings as shown on the Erosion Control Plans or as designated by the CO. Place all slope drains at the end of each work shift. Use slope drains until the slopes are permanently stabilized.
2. Construct temporary berms at the top of all erodible cut slopes as shown on the Erosion Control Plans or as designated by the CO. Use check dams to reduce the runoff velocity when existing grades are steep.
3. Do not use transverse or longitudinal joints in plastic liner. Plastic liner is not required for rock embankments.
4. Use toe-of-fill slope berms to divert offsite runoff away from disturbed areas.
5. Seed and mulch all cut slope berms and toe-of-fill berms immediately after berm construction.
6. Use Class 2 temporary riprap.
7. Dimensions without units are millimeters.



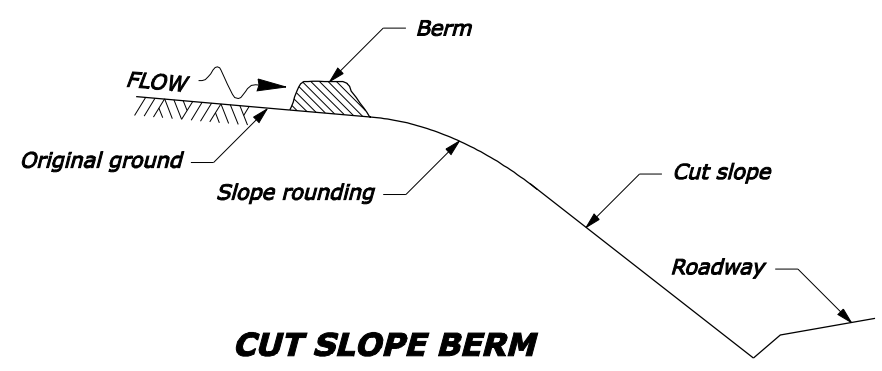
SECTION A-A



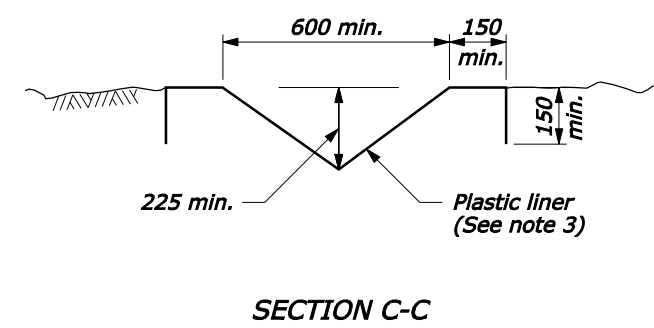
SECTION B-B



TOE-OF-FILL SLOPE BERM



CUT SLOPE BERM



SECTION C-C

U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 FEDERAL LANDS HIGHWAY

METRIC STANDARD

**TEMPORARY EROSION CONTROL
 BERMS, SLOPE DRAINS,
 AND LINED WATERWAYS**

STANDARD APPROVED FOR USE 3/1996
 REVISED: 6/2005

STANDARD
M157-7

NO SCALE

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