

## 5.3 Temporary Diversion

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### Description

A temporary diversion is a dike and/or channel constructed to:

- Direct sediment-laden runoff to a settling pond.
- Route clean runoff away from disturbed areas.
- Divert runoff to reduce the effective length of the slope.
- Direct runoff away from steep cut or fill slopes.

### Conditions Where Practice Applies

This practice applies to construction areas where runoff must be redirected in order to prevent offsite sedimentation, erosion or flooding of work areas. Temporary diversions are particularly applicable to prevent flow from damaging erodible or unstable areas.

Temporary diversions are appropriate for drainage areas less than 10 acres.

### Planning Considerations

It is important that diversions are properly designed, constructed, and maintained since they concentrate water flow and may increase erosion potential. Particular care must be taken in planning diversion grades. Too much slope can result in erosion in the diversion channel or at the outlet. A change of slope from a steeper grade to a flatter may cause deposition to occur, reducing carrying capacity increasing chances of overtopping and failure.

It is usually less costly to excavate a channel and form a dike or dike on the downhill side with the spoil than to build diversions by other methods. Where space is limited, it may be necessary to build the dike by hauling in diking material. Use gravel to armor the diversion dike where vehicles must cross frequently.

Build and stabilize diversions and outlets or downstream sediment facilities before initiating other land-disturbing activities.

These structures generally have a life expectancy of 18 months or less, but can be prolonged with proper maintenance.

**Compare: Temporary Diversion vs. Silt Fence at the perimeter of disturbed areas**

Two approaches are commonly used to intercept and treat sediment-laden runoff at the perimeter of disturbed areas: silt fence or diversions that direct runoff to settling ponds. When determining which approach is more appropriate, consider the following:

**Table 5.3.1 Temporary Diversion versus Silt Fence comparison.**

<b>Temporary Diversion</b>	<b>Silt Fence</b>
Flows up to 10 acres of drainage area	Sheet flow from 1/4 acre per 100 feet of fence (see silt fence specification)
Constructed on positive grade to direct runoff	Must follow the contour of the land
Durable and usually low maintenance	High maintenance
Easily constructed with earth moving equipment	Labor Intensive
Requires additional Settling facilities	Treats Runoff for Sediment
Wider Disturbed area.	Requires little space and causes less disturbance around vegetation or structures

**Design Criteria**

These are provided in the specifications that follow.

**Operation and Maintenance**

Inspect temporary diversions once a week and after every storm event. Immediately remove sediment from the flow area and repair the diversion dike as needed.

Carefully check outlets and make necessary repairs immediately.

When the area protected is permanently stabilized, remove the dike and the channel to blend with the natural ground level and stabilize all disturbed areas with vegetation or other erosion control practice.

Mow grass as needed to maintain flow in channel.

**Common Problems – Suggested Solutions**

Sedimentation results in channel grade decreasing or reversing, leading to overtopping – realign or deepen the channel to maintain grade.

Low point in dike where diversion crosses a natural depression results in overtopping of the dike – build up the dike.

Erosion in channel before vegetation is established results in uneven channel grade, may lead to breach of dike---repair channel and install sod or synthetic liner.

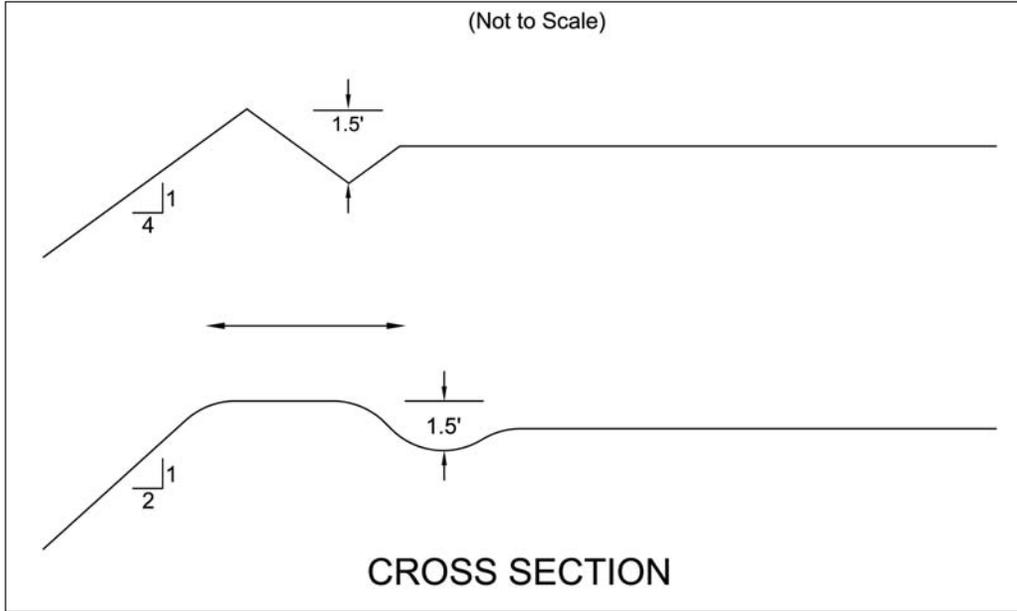
If seepage or poor drainage in channel results in poor vegetation establishment, it may be necessary to re-grade in order to create positive drainage or to install subsurface drains or stone channel bottom.

Vehicle crossings result in rutting and increased erosion – maintain the dike height, flatten the side slopes, protect the dike with gravel or hard surface at the crossing point.

Excessive velocity at the outlet results in erosion – install or repair ROCK OUTLET PROTECTION.

Excessive grade in channel results in gully erosion – repairs channel, and install an erosion resistant lining or realign to reduce the grade.

Specifications  
for  
**Temporary Diversion**



1. Drainage area should not exceed 10 acres. Larger areas require a more extensive design.
2. The channel cross section may be parabolic or trapezoidal. Disk the base of the dike before placing fill. Build the dike 10% higher than designed for settlement. The dike shall be compacted by traversing with tracked earth-moving equipment.
3. The minimum cross section of the levee or dike will be as follows: (Minimum design freeboard shall be 0.3 foot.) Where construction traffic will cross, the top width may be made wider and the side slopes flatter than specified above.
4. The grade may be variable depending upon the topography, but must have a positive drainage to the outlet and be stabilized to be non-erosive.

Table 5.3.2

Dike Top Width (ft.)	Height (ft.)	Side Slopes	Shape
0	1.5	4.1	Trapezoidal
4	1.5	2.1	Parabolic

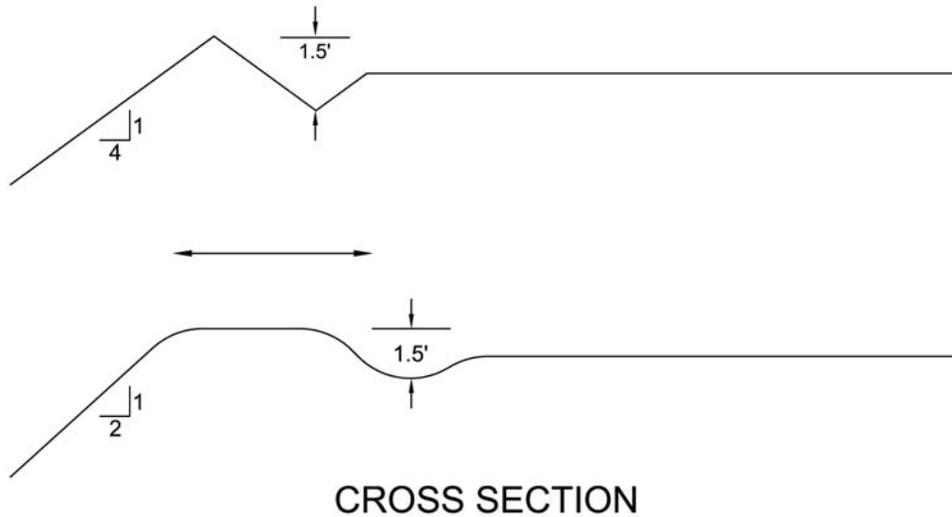
Table 5.3.3

Temporary Diversion Stabilization Treatment			
Diversion Slope	< 2 ac.	2 - 5 ac.	5 - 10 ac.
0 - 3%	Seed and Straw	Seed and Straw	Seed and Straw
3 - 5%	Seed and Straw	Seed and Straw	Matting
5 - 8%	Seed and Straw	Matting	Matting
8 - 20%	Seed and Straw	Matting	Engineered
Note: Diversions with steeper slopes or greater drainage areas are beyond the scope of this standard and must be designed for stability. Seed, straw and matting used shall meet the Specifications for Temporary Seeding, Mulching and Matting.			

5. Outlet runoff onto a stabilized area, into a properly designed waterway, grade stabilization structure, or sediment trapping facility.
6. Diversions shall be seeded and mulched in accordance with the requirements in practice standards TEMPORARY SEEDING (or PERMANENT SEEDING) and MULCHING as soon as they are constructed or other suitable stabilization in order to preserve dike height and reduce maintenance.

Specifications  
for  
**Temporary Diversion Above Steep Slopes**

(Not to Scale)



1. Drainage area should not exceed 5 acres. Larger areas require a more extensive design.
2. The channel cross section may be parabolic, v-shaped, or trapezoidal. Disk the base of the dike before placing fill. Build the dike 10% higher than designed for settlement. The dike shall be compacted by traversing with tracked earth-moving equipment.
3. The minimum cross section of the levee or dike will be as follows: (Minimum design freeboard shall be 0.3 foot.)
4. The grade may be variable depending upon the topography, but must have a positive drainage to the outlet and be stabilized to be non-erosive.

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5. Outlet runoff onto a stabilized area, settling pond, or into a drop structure.
6. Diversions shall be seeded and mulched in accordance with the requirements in practice standards TEMPORARY SEEDING (or PERMANENT SEEDING) and MULCHING as soon as they are constructed or other suitable stabilization in order to preserve dike height and reduce maintenance.