

Chapter 4 - BEST MANAGEMENT PRACTICE STANDARDS

SLOPE DRAIN

(Temporary Practice)

Definition

A flexible tubing or conduit extending from the top to the bottom of a cut or fill slope.

Purpose

To temporarily conduct concentrated stormwater runoff safely down the face of a cut or fill slope without causing erosion problems on or below the slope.

Conditions Where Practice Applies

On cut or fill slopes before permanent stormwater drainage structures are installed or before permanent vegetation is established.

Planning Considerations

There is often a significant lag between the time a cut or fill slope is completed and the time a permanent drainage system can be installed. During this period the slope is usually not stabilized and is particularly vulnerable to erosion. This situation also occurs on slope construction which is temporarily delayed before final grade is reached. Temporary slope drains can provide valuable protection of exposed slopes until permanent drainage structures can be installed.

When used in conjunction with diversion dikes, temporary slope drains can be used to convey stormwater from the entire drainage area above a slope to the base of the slope without erosion. It is very important that these temporary structures be installed properly since their failure will often result in severe gully erosion. The entrance section must be securely entrenched, all connections must be watertight, and the conduit must be staked securely.

Design Criteria

1. Drainage Area

The maximum allowable drainage area per drain is 5 acres.

2. Flexible Conduit

- A. The slope drain shall consist of heavy duty flexible material designed for this purpose. The diameter of the slope drain shall be equal over its entire length. Reinforced hold-down grommets shall be spaced at 10-foot intervals.

B. Slope drains shall be sized according to the following table:

SIZE OF SLOPE DRAIN

Maximum Drainage Area (acres)	Pipe Diameter, D (in.)
0.5	12
0.75	15
1.5	18
2.5	21
3.5	24
5.0	30

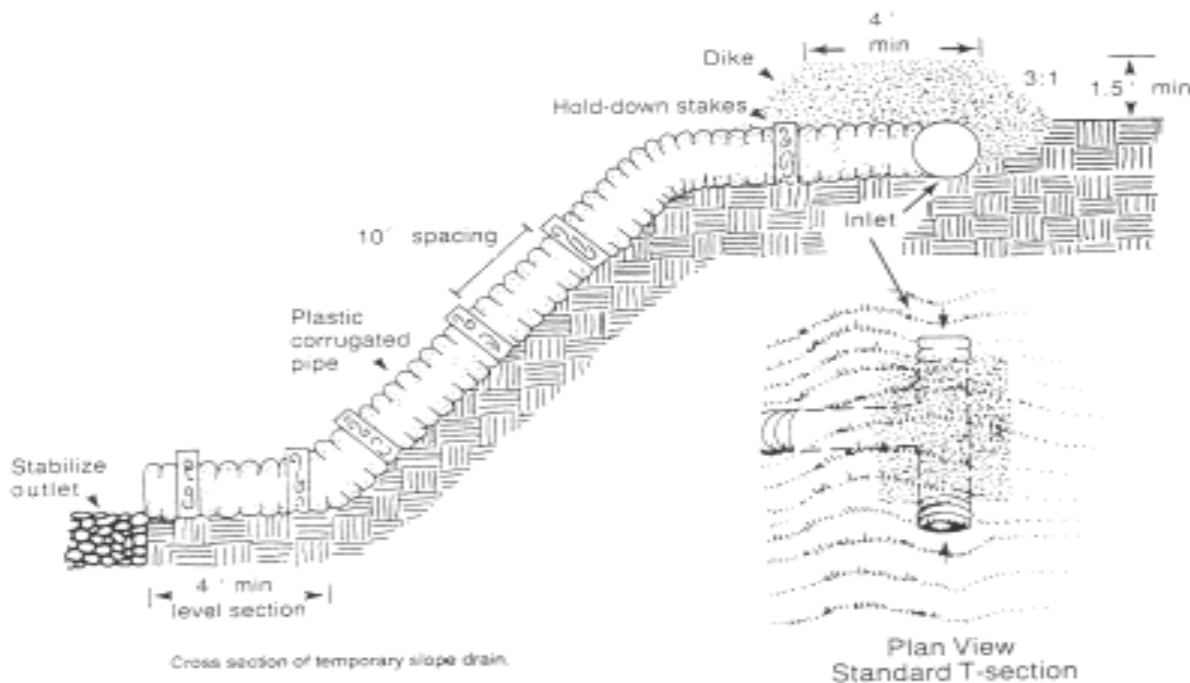
3. Entrance Sections

The entrance to the slope drain shall consist of a flared end section or a standard T-section fitting. Watertight fittings shall be provided.

4. Dike Design

An earthen dike shall be used to direct stormwater runoff into the temporary slope drain.

The height of the dike at the centerline of the inlet shall be equal to the diameter of the pipe (D) plus 6 inches. Where the dike height is greater than 18 inches at the inlet, it shall be sloped at the rate of 3:1 or flatter, to connect with the remainder of the dike. The remainder of the dike shall be a height of 18" above natural ground.



5. Outlet Protection

The outlet of the slope drain shall be protected from erosion according to the practice entitled ROCK OUTLET PROTECTION.

Construction Specifications

1. The measure shall be placed on undisturbed soil or well-compacted fill.
2. The entrance section shall slope toward the slope drain at the minimum rate of 1/2-inch per foot.
3. The soil around and under the entrance section shall be hand-tamped in 4-inch lifts to the top of the dike to prevent piping failure around the inlet.
4. The slope drain shall be securely staked to the slope at the grommets provided.
5. The slope drain sections shall be securely fastened together and have watertight fittings.

Maintenance

The slope drain structure shall be inspected weekly and after every storm and repairs made if necessary. The contractor should avoid the placement of any material on and prevent construction traffic across the slope drain.