

# Chapter 4

## Bridge Program Drawings

### Section 4.15 - Slope Paving and Slope Reinforcing

#### Introduction

Reinforced concrete slope paving or slope reinforcing is applied to the slopes under certain bridges to prevent erosion and to protect the soil around cap-type, spill-through, and sill-type abutments with either sweptback or elephant ear wingwalls. They also improve the overall appearance of the bridge and are often used on, but not limited to, railroad crossings, urban intersections, and rural intersections. In urban areas, slope paving, slope reinforcing or retaining walls shall be applied to the slope whenever one state highway or major public road crosses another state highway or major public road. Information on retaining walls can be found in Section 4.21-Earth Retaining Structures. The type of slope treatment used can come from the Engineer's, Geology, or FHWA recommendations, or at the discretion of the Squad Team Leader.

#### Slope Paving and Slope Reinforcing Types

**REINFORCED CONCRETE SLOPE PAVING** is a 4" thick slab of concrete reinforced with welded wire fabric, placed against and/or keyed into the slope it protects. The surface of the concrete is then scored in 4'-0" x 8'-0" sections to control cracking.

**SLOPE REINFORCING** is a permeable geotextile or welded wire reinforcement mat used to stabilize fill slopes. The geotextile, such as geogrid, is a uniaxial or biaxial polymer composed of polypropylene, polyester, or high density polyethylene. Uniaxial implies that tensile strength is provided in one direction only. Biaxial implies that the tensile strength is provided in two directions. The welded wire reinforcement mat is a wire mesh, shop fabricated of cold drawn steel, and welded into a finished mesh fabric. The geotextile and the welded wire reinforcement mats are generally placed in lifts and a sufficient embedment length beyond the critical failure surface must be provided.

**General Design  
and Detail  
Information  
Reinforced  
Concrete Slope  
Paving**

A **SLOPE RATIO** of 1:2 plus or minus, unless local conditions dictate otherwise, shall be used for the slopes.

½" **JOINT FILLER** shall be applied between the slope paving and concrete substructures, curbs, or sidewalks.

A **CUTOFF WALL** shall be constructed along the entire perimeter of the reinforced concrete slope paving, except where the slope paving is in contact with any bridge substructure components. The cutoff wall is used to prevent erosion from undermining the slope paving and to help stabilize the slope paving.

**ACUTE CORNERS** of the reinforced concrete slope paving for structures with a 30 degree skew or larger shall be squared off with a minimum dimension of 4'-0".

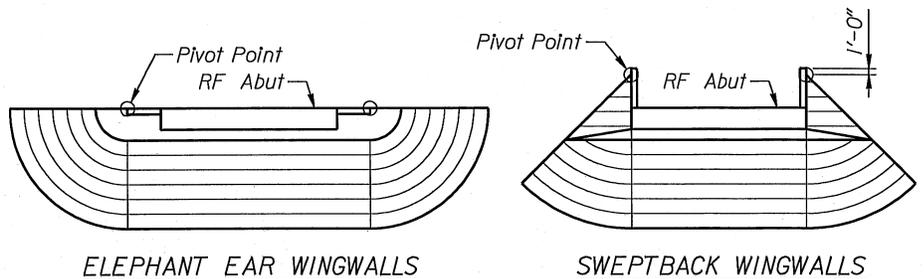
**General  
Design and  
Detail  
Information  
Slope Reinforcing**

A **SLOPE RATIO** as steep as 1:1 may be used. The number and spacing of lifts depends on Geology recommendations and the design criteria.

Edges and **ACUTE CORNERS** of geotextile or wire mesh and placement of geotextile or wire mesh around substructure components shall be constructed as recommended by the manufacturer.

**General  
Design and  
Detail  
Information**

The pivot point for **WRAP-AROUND** slope protection at abutments with elephant ear wingwalls is generally at the end of the wingwall at rear face abutment. The pivot point for wrap-around slope protection at abutments with sweptback wingwalls is generally 1'-0" along the wingwall from the end of the wingwall. Wrap-around slope protection is used to retain the slopes in large fill areas, thus stabilizing the side slopes and the slope in front of the abutment. The following diagrams show possible configurations.



**TWIN STRUCTURES** with 20'-0" or less between structures shall be detailed with continuous slope paving or slope reinforcing under and between both structures.

The **BERM** shall be level when the bottom of the abutment is level. When the bottom of the abutment is sloped, the berm shall also be sloped and elevations shall be called out at points on the plan.

## Cells

<b>Name</b>	<b>Description</b>
SloPav	Slope Paving Details

## Reinforced Concrete Slope Paving Checklist

### Plan

- Detail to Scale
- Centerline Survey w/Stationing and Bearing
- Centerline Feature Intersected
- Working Line/Construction Line Call-out
- Skew and Complement at RF Abutment
- Skew at Ends (if not 90 degrees)
- Radii
- Dimensions Along Toe of Slope
- Width Between Toes of Slope
- Berm Width
- North Arrow
- RF Abutment Call-outs
- Bent/Pier Component Call-out
- End of Wingwall Call-out
- Toe of Slope Call-out
- Cutoff Wall Call-out
- Line Styles/Patterning