SLOPE TREATMENT UNDER STRUCTURES

1. Policy

Bridge end slopes may be treated to:

- Protect slopes
- Provide aesthetics

Slopes need to be protected when high maintenance costs are anticipated. The district will determine where slopes are to be treated and the type to be used.

Caltrans maintenance, landscape architecture, materials, design and other interested units will furnish input to determine slope treatment needed at each site. Local agency input should be obtained as necessary for urban undercrossings.

All types of slope treatments require adequate drainage facilities for water from upper roadway. Inadequate drainage is a major source of slope erosion.

2. Guidelines for Slope Treatment

(a) *Full slope paving* has high initial costs and low maintenance costs. It may be justified where anticipated maintenance costs will be high due to erosion by pedestrians, wind, small amounts of water or other causes. High landscape maintenance costs caused by inadequate moisture, sunlight, etc., may also justify use of full slope paving. Elaborate slope paving designs should be avoided. Landscape architects will provide aesthetic input and locations for waterline cross-over conduits.

(b) *Landscaped slopes* have medium initial costs and maintenance costs vary with the site. Landscaped bridge end slopes may be justified when adjacent slopes are landscaped and when landscaping is compatible with adjacent development.

(c) *Bare slopes* have minimum initial costs and maintenance costs vary with the site. Bare bridge end slopes may be justified at rural sites and other areas where anticipated maintenance costs will be low.

(d) An analysis of the "life cycle" costs may be made using the method contained in the Structures Value Engineering Report, "Bridge End Slope Treatment" dated April, 1978.

(e) Adequate drainage facilities must be provided to prevent saturation of abutment foundation materials and damage to slope treatment.

Supersedes Memo to Designers 5-10 dated April 1980

(f) Additional protection may be required at stream crossings to provide for flow velocity.

3. **Procedure**

Based on consultation with appropriate units and consideration of economic and aesthetic factors, the District will determine, and set forth with the bridge site plan submittal, the type of slope treatment, indicating whether:

(a) The Office of Structure Design is to design the slope treatment with the bridge and include the cost in the Structures items; or

(b) The District will design the slope treatment and include the details with the road plans.

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