

SPECIFICATIONS FOR PLACEMENT OF STRUCTURAL FILL ON SCVWD LEVEES

INTRODUCTION

This specification for structural fill is to be used where fill is placed on a levee in conjunction with projects that construct levees, raise levee heights or include cuts into levees for placement of outfalls or utilities.

FILL MATERIAL

Fill material for trench backfill of levees and for levee embankment may be either imported backfill material or suitable material from trench excavation blended with imported earthfill material. The fill material is to be free of debris, organic or deleterious material and not contain rocks or lumps over 4 inches in greatest dimension; no more than 15% of the rocks or lumps should be larger than 2 ½ ". The fill material shall contain at least 75% finer than the #4 U.S. Standard Sieve and 50% finer than the #200 Sieve. The liquid limit shall be less than 40 and the plasticity index shall be between 10 and 20. Levee fill material should be relatively impervious (permeability less than 10 to the minus 6cm/sec).

ADDITIONAL GUIDELINES

Surfaces exposed by stripping or excavation shall be scarified to a minimum depth of 6 inches and compacted to a relative compaction of not less than 95% based on (American Society of Testing Materials) ASTM D 1557 standard. The loose thickness of each layer of embankment material before compaction shall not exceed 8 inches, and each lift shall be compacted to at least 90% relative compaction based on ASTM D1557 standard. The field density and moisture content of compacted fill will be determined according to ASTM D 1556, D2922 and D3017 standard procedures. Any backfilled area not meeting the minimum test requirements shall be removed and recompacted until tests meet the minimum requirements. Jetting or ponding is not permitted

No thin, sliver fills will be accepted. Where compacted channel embankment is required or where replacement in over excavated areas must be accomplished, the new embankment must be placed in thin, maximum 8 inch thick horizontal layers with a minimum width of 6 feet. This specified width may be any combination of new fill plus cut into existing slope, except that a minimum cut of 2 feet into existing slope per layer of fill must be made. Slopes shall be trimmed to conform to existing section after placement of fill has been completed.

OUTFALL STANDARDS

INTRODUCTION

The details in this Design Guide are intended to provide clarification on slope protection standards for outfalls to be designed to meet SCVWD minimum engineering standards using softer slope protection methods wherever possible. This Design Guide also includes a plan view to show how the outfall would intersect with a natural channel so as to not impede surface flows or create a barrier to fish passage. The diagrams depicted are models and should be used unless stream conditions dictate otherwise. For placement of outfalls into streams with levees, floodwalls or structural linings, SCVWD will need to be consulted.

GENERAL GUIDELINES

1. Outfalls should not overhang the streambank or streambed as this can lead to excessive channel erosion.
2. Outfalls, bridge abutments and other structures should be placed within the first half of the straight section after the bend (page 3.24) in order to minimize erosion, prevent turbulence and prevent redirection of flow.
3. Outfalls should be aligned downstream in the direction of the flow, at an angle no greater than 30 degrees. **In natural streams where possible, a narrow channel should be created** for the outfall so that the discharge merges into the streams in order to minimize erosion, prevent turbulence and prevent redirection of flow.
4. Any outfall pipe should be cut off flush with the face of slope protection.
5. Outfalls with flap gates require dormers or similar designs to isolate the flap gate and keep them out of flow area. (See Detail #18/1 and 28/1).