

SECTION 02330
EMBANKMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Place excavated materials in embankments.
- B. Shape and maintain embankments.
- C. Fill holes, pits, and other depressions left by removing unsuitable materials.

1.2 RELATED SECTIONS

- A. Section 02056: Common Fill
- B. Section 02231: Site Clearing and Grubbing.
- C. Section 02324: Compaction.
- D. Section 02912: Topsoil.

1.3 SUBMITTALS

- A. Written approval to disturb areas outside the slope-stake limits. Submit request to the Engineer.

PART 2 PRODUCTS Not used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Finish clearing and grubbing, and topsoil stripping before starting embankment. Refer to Sections 02231 and 02912.
- B. Provide and maintain satisfactory access to roads, streets, and adjacent property during all phases of construction according to the traffic control plan.

3.2 STANDARD PROCEDURES

- A. Contractor-furnished borrow may be used and excavation wasted provided there is no additional cost to the Department. Provide borrow that is equal to or better quality than the wasted excavation. Refer to Section 02056.
- B. Maintain drainage
 - 1. Grade and maintain the roadway to ensure adequate drainage.
 - 2. Maintain pipe culverts and drainage ditches, or provide temporary facilities when interrupting irrigation systems, sewer, underdrainage, etc.

3.3 EXECUTION

- A. For compaction process, follow Section 02324.
- B. Scarify and compact the top 8.0 inches of the ground to at least 90 percent of maximum laboratory density when the embankment height is 6.0 feet or less and the underlying ground consists of loose material.
- C. Remove and waste unsuitable material.
- D. Break and scarify all underlying road surfaces in pieces not exceeding 3.0 ft² in area.
- E. Place an initial layer to act as a working platform over soft, wet ground when approved by the Engineer without meeting density specifications. Conform to density specifications when placing embankment above the working platform.
- F. Complete preparation of area. The Engineer inspects and accepts the foundation before the embankment is placed.
- G. Uniformly spread embankment materials in layers not exceeding 1.0 ft (noncompacted depth) and compact to at least 96 percent maximum laboratory density before placing the next layer. Reduce the uncompacted lift thickness if tests show unsatisfactory density.
- H. Finish subgrade surface within 0.1 ft \pm of line and grade.
- I. Do not use rock or pavement materials over 3.0 ft in the largest dimension. Distribute so space exists for placing and compacting embankment material between large rocks or pavement materials.

- J. Do not place large rock within 1.0 ft below subgrade surface. Do not allow rocks to protrude above the subgrade surface.
- K. Construct embankments placed against a hillside or an existing embankment as specified in Standard Drawing DD 5A and DD 5B.
- L. Route construction equipment uniformly over the layers to assist compaction.
- M. Do not use compacting equipment that causes shear failure in the embankment.
- N. Requirements for freezing or snowy conditions:
 - 1. Do not place embankment on frozen or snow-covered areas.
 - 2. Do not deliver or use frozen material in embankments.
 - 3. The Contractor may remove snow and frozen material from embankments, foundations, and borrow areas, and furnish unfrozen, embankment material that can be compacted to the specified density. Remove, waste, and replace frozen embankment material at no additional cost to the Department.
 - 4. Provide the Engineer time to measure wasted material.
- O. Excess material, including rock, may be placed on fill slopes outside the clear zone provided it does not create an unsightly appearance. Meet density specifications for materials placed on fill slopes.

END OF SECTION