

EARTHWORK

SECTION 204 EARTHWORK

204.1 DESCRIPTION:

The work under this section shall consist of performing all operations necessary to excavate all materials, regardless of character and sub-surface conditions from the construction site; to strip topsoil when specified; to excavate drainage and irrigation ditches, channels, basins, and water ways; to excavate all materials except for pipeline, roadway and structure excavation; to excavate borrow material for use as specified; to construct embankments, levees and other facilities; to backfill holes, pits and other depressions; to remove and replace unsuitable material; to excavate and grade, driveways and connections; to construct dikes and berms; to apply water for compaction; to compact; to roll and to remove and haul excess material as shown on the plans and to perform all earthwork necessary to bring the sites to the required grade and cross section as specified herein and as directed by the Public Works Director.

204.2 PRESERVATION OF PROPERTY:

Operations shall be conducted in such a manner that existing facilities, utilities, and other facilities, which are to remain in place, will not be damaged. The Contractor, at his expense, shall furnish and install sheet piling, cribbing, bulkheads, shores or whatever materials may be necessary to adequately support material carrying such facilities, or to support the facilities themselves and shall maintain such supports until they are no longer needed. Temporary pavements, facilities, utilities and installations shall also be protected until they are no longer required. When temporary supports and other protective means are no longer required, they shall be removed and disposed of by the Contractor.

EARTHWORK

SECTION 204 EARTHWORK

204.3 LINE AND GRADE:

Earthwork shall be constructed to line and grade stakes. Adequate staking shall be accurately located to allow the Contractor to perform the earthwork as per the plans. Maintenance of the survey points and stakes shall be the sole responsibility of the Contractor until completion of the work.

204.4 DUST CONTROL:

The Contractor shall apply sprinkled water and dust palliatives to those areas causing dust as a result of the construction operation and traffic. The frequency of water sprinkling shall be determined by the Public Works Director.

204.5 STRIPPING:

When stripping is indicated on the plans or specified in the special provisions, the Contractor shall strip the soil from the designated areas to the depths shown or specified or as directed by the Public Works Director.

The material obtained from stripping operations shall be disposed of away from the site unless otherwise specified, shown on the plans or authorized by the Public Works Director.

Soil loosened below the stripping depth specified or designated by the Public Works Director, shall be compacted. Soil removed below stripping depth shall be replaced with approved material and compacted up to the designated grade. All such filling and compacting shall be done by the Contractor at no additional cost to La Paz County.

EARTHWORK

SECTION 204 EARTHWORK

204.6 EXCAVATION:

All excavation shall be finished to a reasonably smooth and uniform surface and in reasonably close conformity to the lines, grades, dimensions and cross sections shown on the project plans or established by the Public Works Director.

Excavation in open cut for lined channels may be made so as to place concrete directly against the excavated surfaces providing the faces of the excavation are firm and unyielding; are such as will stand or can be made to stand without sloughing and are, at all points outside the concrete lines shown on the plans.

Excavation to provide a subgrade for lined channels, or subdrainage material, shall be to the lines indicated on the plans; and excavation made below subgrade shall be backfilled and compacted to a uniform density of not less than 90 percent or, if approved by the Public Works Director, with concrete or other materials being placed. However, no payment will be made for such over excavation or material used for backfill.

Where it becomes necessary to excavate beyond normal lines of excavation in order to remove boulders or other interfering objects, the voids remaining after the removal of such boulders or interfering objects shall be backfilled as specified below, or as otherwise approved by the Public Works Director.

(A) When the void is below the subgrade for reinforced concrete channel, it shall be filled with a suitable material as approved by the Public Works Director, and compacted to a uniform density of not less than 90 percent. With the approval of the Public Works Director, concrete of the same mix as used in the concrete channel, may be used.

EARTHWORK

SECTION 204 EARTHWORK

(B) When the void is in the side of the excavation, it shall be filled, with suitable material as approved by the Public Works Director, placed in the manner and to the same uniform density as the backfill in the vicinity of the void. With the approval of the Public Works Director, concrete of the same mix as used in the concrete channel may be used. If concrete is placed prior to lining, a lower grade concrete may be used only if approved by the Public Works Director.

It shall be understood that the removal of boulders or other interfering objects and the backfilling of voids caused by such removals shall be done by the Contractor at no additional cost to La Paz County. The cost of such work shall be included in the prices bid for the various items of work.

If during the progress of excavation, material is encountered, which, in the opinion of the Public Works Director, is unsuitable for subgrade for a concrete channel to be constructed on, the Public Works Director may direct the Contractor to excavate beyond the lines shown on the plans. However, the suitability of subgrade shall be determined by the Public Works Director on the basis of its ability to withstand the load the proposed channel and not upon the capacity to withstand the loads which may be placed upon it by the Contractor's equipment.

Materials used for work performed by the Contractor to stabilize the subgrade so it will withstand loads which may be placed upon it by his equipment, shall be accomplished by the Contractor at no additional cost to La Paz County.

All suitable material removed from excavation shall be used as far as practicable in the construction of embankments and other designated areas.

EARTHWORK

SECTION 204 EARTHWORK

No excavated material shall be wasted without the approval of the Public Works Director. Wasted material shall be disposed of by the Contractor in a manner approved by the Public Works Director.

When excavation is made in rock, the excavated area shall be over excavated to a minimum of one half foot below grade. The over excavated area shall be filled with embankment material and finished in accordance with the requirements of these specifications.

204.7 SLOPES:

Earth slopes shall be finished to within 3 inches of grade and to reasonably smooth surfaces and shall be free of all debris and loose material.

All shattered or loosened material shall be removed from rock cut slopes. Adjustment in slopes shall be made, as directed by the Public Works Director, to avoid injury to standing trees, marring weathered rock or to harmonize with existing landscape features.

The transition of such adjusted slopes shall be gradual. At the intersections of cuts and fills, slopes shall be adjusted and warped to flow into each other or into the natural ground surfaces without noticeable break.

Except in solid rock, the intersection of cut slopes with the ground surfaces shall be rounded as shown on the project plans. Rock that is disintegrated to such an extent that it will work and handle as earth, shall be considered as earth overlaying a rock cut and shall be rounded above the rock in the same manner as earth slopes.

EARTHWORK

SECTION 204 EARTHWORK

Where directed by the Public Works Director, the top six inches of topsoil, including duff, within the limits of the rounding, shall be removed and windrowed outside of the rounding limits. After completion of the rounding of the slope, the windrowed materials shall be uniformly spread over the rounded area.

204.8 SHORING:

Where necessary, all trenches and other excavations shall be properly sheeted and braced, to furnish acceptable working conditions. The bracing shall be so arranged as not place any stress on portions of the completed work until the general construction thereof has proceeded far enough to provide ample strength. Any damage to structures occurring through settlements, water or earth pressures, slides, caves, or other causes, due to failure or lack of sheeting or bracing, or improper bracing, or through negligence or fault of the Contractor in any other manner shall be repaired by the Contractor at the Contractor's expense.

204.9 BLASTING:

Over shooting or any method of blasting that might cause damage to the existing facilities or structures, or that might be dangerous or destructive to adjacent property or landscape will not be permitted. In any event, the Contractor shall provide and install suitable guards and barricades for adjacent trees, shrubbery, pole lines or other objects; the purpose being to prevent damage rather than to control the amount of damage.

When controlled blasting is specified, all blasting in connection with excavation shall be performed in accordance with requirements of these specifications utilizing pre-splitting

EARTHWORK

SECTION 204 EARTHWORK

methods when the design slope is steeper than 3/4 to one and when cut slopes have a depth greater than 15 feet.

Prior to any blasting operations that requires controlled blasting, the Contractor shall furnish a written statement setting forth details and materials he proposes to use in connection with pre-splitting operations. If the results obtained are satisfactory in relation to the character of the material being pre-split, the procedures shall be continued. Otherwise, the details of the operation to be modified in a written statement of the modifications and shall be furnished to the Public Works Director.

The amount of explosives used, the method of loading and method of stemming shall be modified until the results obtained in pre-splitting operations are satisfactory in relation to the character or the material being pre-split.

Drill holes for pre-splitting shall be spaced at centers not exceeding three feet and shall be drilled as near to the design slope lines and as parallel to one another as possible. Pre-drilling and pre-splitting to depths greater than one lift (approximately 20 feet) will be permitted only if satisfactory hole alignment is maintained.

Explosive charges placed in slope-drilled holes shall be uniformly spaced along the length of hole and shall be as light as possible to effect clean splitting of the rock along the plane of the slope and to reduce to a minimum the fracturing of the remaining rock face or cut.

Loading of slope-drilled holes shall be by string charges so connected that all charges in a hole and all holes in the designated section are exploded simultaneously. Explosives for pre-splitting shall be detonated at least several milliseconds in advance of primary

EARTHWORK

SECTION 204 EARTHWORK

blasting. Primary blasting shall be accomplished by means of millisecond delay excavation blasting methods.

204.10 FILL AND BACKFILL:

Unless otherwise specified in the special provisions, material obtained from the project excavations may be presumed to be suitable for use as fill or backfill provided that all organic material, rubbish, debris, and other objectionable material is first removed. However, stone, broken portland cement concrete and bituminous type pavement obtained from the project excavations will be permitted in the backfill or fill with the limitations as specified in Section 211. All fill and embankment construction shall conform to the requirements of the specification entitled "Fill and Embankment Construction". Unless otherwise specified in the special provisions, the density of fills and backfills shall be at least 90 percent.

204.11 GRADING:

All work shall be constructed to the lines and grades as shown on the plans and may not vary by more than 0.04 of a foot above or below grade.

Grading of unlined channels, ditches, levees and access roads shall conform to the following tolerances:

(A) A vertical tolerance of none above and 3 inches below the specified grade will be allowed on:

- (1) Channel and ditch bottom

EARTHWORK

SECTION 204 EARTHWORK

(2) Channel and ditch side slopes in both cut and fill

(3) Levee and access road side slopes in cut

(B) A vertical tolerance of none below and 3 inches above the specified grade will be allowed on:

(1) Top surfaces of levee and access roads in both cut and fill

(2) Levee and access road side slopes in fill

Regardless of the construction tolerance specified, excavation and grading shall be performed so that finished surfaces are in uniform planes with no abrupt breaks in the surface.

Construction tolerances specified above for grading are solely for purposes of field control.

204.12 UNSUITABLE MATERIAL:

Material below the natural ground surface in embankment areas and below the grade in excavation areas that is unsuitable for the planned use shall be excavated and disposed of as directed by the Public Works Director.

When suitable material is removed and disposed of, the resulting space shall be filled with material suitable for the planned use. Such suitable material shall be placed and compacted in accordance with embankment compaction requirements herein.

EARTHWORK

SECTION 204 EARTHWORK

204.13 SURPLUS MATERIAL:

Unless otherwise specified in the special provisions, after all fill and embankment construction has been completed, surplus excavated material shall be removed from the job site and disposed of by the Contractor in a manner satisfactory to the Public Works Director and in accordance with the requirements of the Special Conditions. Shortages of material caused by the premature disposal of any material by the Contractor shall be replaced by the Contractor without compensation.

204.14 TESTING:

Density tests shall be determined by ASTM D-2922 and D-3017 with the percent of density adjusted in accordance with the rock correction procedure for maximum density determination, in accordance with Figure 204.1 to compensate for the rock content larger than that which will pass a No. 4 sieve. A minimum of one test shall be taken on each layer and every 300 feet.

204.15 METHOD OF MEASUREMENT:

Measurement shall be in accordance with the terms of the contract and shall be based as set forth in the proposal.

204.16 BASIS OF PAYMENT:

If provided for in the proposal, payment for earthwork will be made in conformity with the terms of the contract, for each site this specification applies to, and will be based on unit prices and/or lump sums as set forth in the proposal. Such payment shall include full

EARTHWORK

SECTION 204 EARTHWORK

compensation for furnishing all labor, materials, tools and equipment, and doing all work required to complete the job in conformity with the plans and specifications.