

Excavation

1. SCOPE

The work shall consist of the excavation required by the drawings, specifications and special provisions, as well as disposal of the excavated materials.

2. CLASSIFICATION

Unless otherwise specified in the special provisions, all excavation will be common.

Excavation will be classified as common excavation or rock excavation in accordance with the following definitions or will be designated as unclassified.

Common excavation shall be defined as the excavation of all materials that can be excavated, transported, and unloaded by the use of heavy ripping equipment and wheel tractor-scraper with pusher tractors. Common excavation shall also include excavated material that can be dumped into place or loaded onto hauling equipment by means of excavators having a rated capacity of one cubic yard or larger. The excavators shall be equipped with attachments (such as shovel, bucket, backhoe, dragline or clam shell) appropriate to the character of the materials and the site conditions.

Rock excavation shall be defined as the excavation of all hard, compacted or cemented materials, the accomplishment of which requires blasting or the use of excavators larger than defined for common excavation. The excavation and removal of isolated boulders or rock fragments larger than 1 cubic yard in volume encountered in materials otherwise conforming to the definition of common excavation shall be classified as rock excavation. Though, the presence of isolated boulders or rock fragments larger than one cubic yard in size will not, in itself, be sufficient cause to

change the classification of the surrounding material.

Excavation will be classified according to the above definitions by the Technician, based on their judgment of the character of the materials and the site conditions.

For the purpose of this classification, the following definitions shall apply:

Heavy ripping equipment shall be defined as a rear-mounted, heavy duty, single-tooth, ripping attachment mounted on a tractor having a power rating of 250 or greater net horsepower (at the flywheel) unless otherwise specified in the special provisions.

Wheel tractor-scraper shall be defined as a self-loading (not elevating) and unloading scraper having a struck bowl capacity of at least 12 cubic yards.

Pusher tractor shall be defined as a track-type tractor having a power rating of 250 or greater net horsepower (at the flywheel) equipped with appropriate attachments.

3. UNCLASSIFIED EXCAVATION

Items shall be designated as "Unclassified Excavation" when classifications as defined in Section 2 of this specification do not apply. "Unclassified Excavation" encompasses all materials encountered regardless of their nature or the manner in which they are removed.

4. STRIPPING

Stripping consists of excavating the top layer of soil which contains vegetation, roots and other undesirable organic matter. Stripping is required at all sites upon which embankments and fills are to be constructed and at required excavations and borrow areas required for the proper installation of the work.

Stripping of Base for Embankments for Dams, Dikes, and Canals

Areas to be covered by embankments and fills shall be stripped of all vegetation, and the topsoil removed to sufficient depth to expose subsoil reasonably free of roots and other organic matter. All slopes within the limits of foundations and abutments, except pipe trenches, shall be excavated to slopes not steeper than 1:1 unless otherwise indicated on the drawings. The foundation shall be cleared of all loose unconsolidated material to provide a firm base.

Stripping Borrow Areas and Required Excavations

Required excavations and areas from which borrow materials are to be obtained shall be stripped of all vegetation, and topsoil shall be removed to sufficient depth to expose subsoil reasonably free of roots and other organic matter.

Use of Materials from Stripping

Materials which are suitable for spreading over disturbed areas after construction has been completed shall be stockpiled and subsequently spread as directed by the Technician.

Materials suitable for use in construction of the required earth fill shall be used as directed by the Technician.

Unsuitable and/or excess materials shall be wasted as directed by the Technician.

The suitability of materials for specific purposes will be determined by the Technician.

5. BLASTING

A Montana Construction Blasters License shall be required of the person directing and supervising the blasting operation. This

includes transportation, handling, storage, and use of dynamite and other explosives. Material Safety Data Sheets (MSDS) for dynamite and other explosive materials shall be provided to the Technician prior to the blasting operation.

Blasting shall be done in such a way as to prevent damage to the work or unnecessary fracturing of the foundation and shall conform to any requirements (such as a blasting plan) noted in the special provisions.

6. USE OF EXCAVATED MATERIALS

To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of required permanent earth fill or rock fill. The suitability of materials for specific purposes will be determined by the Technician. The Contractor shall not waste or otherwise dispose of suitable excavated materials.

7. DISPOSAL OF WASTE MATERIALS

All surplus or unsuitable excavated materials will be designated as waste and shall be disposed of by the Contractor at sites of his or her own choosing away from the site of the work or as shown on the drawings. The designated waste site shall be approved by the owner/operator.

8. EXCAVATION LIMITS

Excavations shall comply with OSHA Construction Industry Standards (29CFR Part 1926) Subpart P, Excavations, Trenching, and Shoring.

All excavations shall be completed and maintained in a safe and stable condition through the total construction phase. Excavated surfaces too steep to be safe and stable shall be supported as necessary to safeguard the work and workers, to prevent

sliding or settling of the adjacent ground, and to avoid damaging existing improvements. Structure and trench excavations shall be completed to the specified elevations and to sufficient length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work. Bracing and supports, when needed, shall be in place before any concrete, pipe, structure or earth fill is placed within the limits of the excavation.

Excavations outside the lines and limits shown on the drawings or specified herein required to meet safety requirements shall be the responsibility of the contractor in constructing and maintaining a safe and stable excavation.

9. BORROW EXCAVATION

When the quantities of suitable materials obtained from specified excavations are insufficient to construct the specified earth fills, additional materials shall be obtained from borrow areas approved by the Technician, as agreed-to by the owner/operator.

Borrow pits shall be excavated and finally dressed in a manner to eliminate unstable side slopes or other hazardous conditions, blend with the existing topography, prevent ponding, and provide drainage.

10. OVER-EXCAVATION

Unless otherwise approved by the Technician, excavation in rock beyond the specified lines and grades shall be corrected by filling the resulting voids with portland cement concrete. Rock surfaces shall be thoroughly cleaned and de-watered prior to placement of the concrete. Concrete shall be made of materials and mix proportions approved by the Technician. Concrete that will be exposed to the atmosphere when construction is completed shall contain not

less than 6 sacks of cement per cubic yard of concrete. Concrete that will be permanently covered shall contain not less than 5 sacks of cement per cubic yard.

Excavation in earth beyond the specified lines and grades shall be corrected by filling the resulting voids with approved compacted earth fill. If the backfill is to become the subgrade for riprap, rock fill, drain fill, or sand or gravel bedding, the voids may be filled with material conforming to the specifications for the riprap, rock fill, bedding, drain fill, or gravel. Before correcting an over-excavation condition, the contractor shall review the planned corrective action with the Technician and obtain approval of the corrective measures.

11. MEASUREMENT AND PAYMENT

(Used only if applicable)

For items of work for which specific unit prices are established, each item will be measured to the nearest unit applicable. Payment for each item will be made at the agreed-to unit price for that item. For items of work for which specific lump sum prices are established, payment will be made at the lump sum price.

Such payment will constitute full compensation for all materials, labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Compensation for any item of work shown on the drawings or described in the special provisions but not listed on the bid schedule will be considered incidental to and included in the pay items listed on the bid schedule.