

SECTION 205 ROCK EXCAVATION FOR ROADWAY

205.01 Description. This work consists of bedrock and ledgerrock removal for roadway that cannot be accomplished without either blasting or using rippers. This work also consists of the use or disposal of such excavated material and backfilling the excavation with suitable material.

CONSTRUCTION METHODS.

205.02 Rock Classification. All boulders and other detached stones, having a volume of 1/2 yd³ (0.30 m³) or more, shall be considered as rock. The classification "Rock Excavation" shall not apply to soft disintegrated rock, bituminous pavements, gravel, broken stone, or concrete pavements. These and other materials are classified as normal excavation and are included under [Subsection 202.03](#).

205.03 Excavation and Backfilling. Rock excavation shall be made in conformity with the lines, grades, and cross-sections shown on the Plans, or as directed.

Excavated rock shall be used in forming embankments wherever the depth of the fill is sufficient to properly contain the rock in accordance with [Section 202](#). All material from rock excavation within the limits of construction, excavated under this Section, shall be used in the formation of embankments and shoulders before using any borrow, unless otherwise approved by the Engineer. Unless otherwise specified, material classified as rock shall be excavated, within the limits of the roadbed, to a minimum depth of 6" (150 mm) but not more than 12" (300 mm) below the subgrade.

The excavation, regardless of the depth, shall be backfilled with approved material and compacted to the specifications designated on the Plans, the Special Provisions, or by the Engineer. Undrained pockets left in the surface of the rock shall be drained prior to backfilling.

All unsuitable and excess material shall be disposed of as specified in [Subsection 106.09](#), or as directed.

205.04 Blasting. Prior to any blasting, the Department will call a blasting conference at which the Contractor shall submit for approval its blasting methods, schedule, and the required protection it will use to ensure the utmost safety during blasting operations. The Contractor shall be responsible for all damage due either directly or indirectly from the blasting operations.

When rock that is encountered in cuts requires drilling and blasting, all necessary precautions shall be exercised to preserve the rock in the finished slope in a natural undamaged condition. The surfaces shall remain reasonably straight and clean. Excessive blasting or "over shooting" will not be tolerated. Any material outside the limits shown on the Plans which becomes shattered or loosened shall be removed and replaced with approved backfill material. When the results of the blasting do not yield a natural undamaged condition, the Contractor shall adjust its operations to obtain the required slope conditions called for on the Plans. The method of drilling and blasting shall be modified by procedures such as drilling blast holes at the inclination of the finished slope, employing delayed blasting techniques, changing the spacing of blast holes, or reducing the quantity of explosive.

When the pre-splitting method of excavation is specified, the excavation shall be performed in a manner that will produce a uniform plane of rupture in the rock, and will ensure that the resulting backslope face will be unaffected by subsequent blasting and excavation operations. The Contractor shall pre-split the rock along rock slopes at locations, lines, and inclinations shown on the Plans, or as directed. A 100ft (30 m) test section shall be provided to establish the diameter and spacing of the drill holes and the proper blasting charge to be used in the pre-splitting operation. The spacing of the drill holes shall not exceed 3ft (900 mm), unless approved. Drill holes shall extend to plan grade, or shall extend in lifts of not more than 25ft (7.5 m), whichever is less. If drilled in benches, an offset will be permitted to accommodate the head of the drill. Each

individual offset shall not exceed 18" (450 mm). Pre-splitting shall extend a minimum of 20ft (6 m) ahead of the limits of fragmentation blasting, unless otherwise directed. If the pre-splitting is determined to be unsatisfactory, adjustments shall be made in the spacing, diameter, and loading of the pre-split holes using another 100ft (30 m) test section.

The Contractor shall schedule its operations so that all rock excavation within a distance of 100ft (30 m) from bridges or other large structures is completed to the required slope lines and depths before any structure work is started.

All loose and unstable material, breakage, and slices, even if located beyond the payment lines indicated on the Plans, shall be removed as directed, as the excavation for each vertical stage (lift) progresses.

205.05 Method of Measurement. The quantity of rock excavation for roadway will be measured in cubic yards (cubic meters). The volume of rock excavation will be measured to the limits of excavation shown on the Plans or as adjusted by the Engineer, computed by the method of average end areas. Areas shall be based on cross-sections taken before and after rock excavation. When it is impractical to measure rocks or boulders by the cross-section method, three-dimensional measurement using a pre-approved method of calculation may be used. Rock excavated from depths in excess of 12" (300 mm) below the subgrade will not be measured.

The material used for backfilling the excavated areas will be measured under the appropriate Section, within the limits established by that Section. In areas where rock was excavated to depths in excess of 12" (300 mm) below the subgrade, backfill material placed between 12" (300 mm) below the subgrade and the bottom of the excavation will not be measured.

205.06 Basis of Payment. The quantity of rock excavation for roadway will be paid for at the Contract unit price per cubic yard (cubic meter). Price and payment will constitute full compensation for drilling, blasting, and pre-splitting; for excavating, removing, backfilling, and compacting materials within the area between the subgrade as shown on the Plans or adjusted by the Engineer and 12" (300 mm) below the subgrade; for disposing of surplus material; for draining undrained pockets in the surface of the rock; for removing shattered or loosened material and replacing it with approved backfill material; and for all labor, equipment, tools, and incidentals required to complete the work.

The material used for backfilling excavated areas will be paid for under the appropriate Section for the materials used, as long as the work is within the area between the subgrade as shown on the Plans or adjusted by the Engineer and 12" (300 mm) below the subgrade.

No payment will be made for rock excavated from depths in excess of 12" (300 mm) below the subgrade. No payment will be made for backfilling areas from the bottom of the excavation to 12" (300 mm) below the subgrade.

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