

## **Section 2103. Presplitting and Production Blasting of Rock Slope Cuts**

### **2103.01 DESCRIPTION.**

- A.** These specifications cover the work of presplitting a rock slope cut by establishing a free surface in the rock by the controlled use of explosives placed in properly aligned and spaced drill holes. The contract documents may specify more than one elevation level of pre-split holes.
- B.** These specifications also cover the work of production blasting an area to be excavated by the controlled use of explosives placed in properly aligned and spaced drill holes.

### **2103.02 MATERIALS.**

- A.** Furnish blasting material for presplitting complying with the explosive manufacturer's instructions.
- B.** Furnish granular stemming material specified by the explosive manufacturer.

### **2103.03 CONSTRUCTION.**

#### **A. Removal of Material above the Top Pre-Split Hole Line Elevation.**

Remove all material above the top elevation of the first level of pre-split drill holes according to [Section 2102](#).

#### **B. Presplitting.**

- 1.** For each elevation level of pre-split holes, align the pre-split holes so that a finish slope is cut within reasonably close conformity with the design slope specified in the contract documents. Space a line of pre-split holes so that uniform shear occurs between holes with minimum disturbance of the rock cut face. Use a maximum spacing between pre-split holes of 48 inches (1.2 m).
- 2.** For each elevation level of pre-split holes, drill each hole with a maximum length of 40 feet (10.5 m). Drill each pre-split hole with a maximum diameter of 3.5 inches (90 mm).
- 3.** Use blasting procedures for presplitting complying with the explosive manufacturer's instructions. Before placing the explosive charge, determine that the hole is free of obstructions for the depth of the required cut. Do not use explosives for which the maximum diameter is greater than one-half the diameter of the hole.
- 4.** After explosive charges have been placed in the pre-split holes and prior to detonation, place backfill consisting of granular stemming material in the holes to contain the explosion. Ensure backfill consisting of stemming material is placed in all voids that may be present in the pre-split holes. If it is not possible to place this backfill material in a void, place the explosive charges in the hole so that detonation does not occur within the void area.
- 5.** For each elevation level of pre-split holes, the Contractor may set or detonate explosive charges the full length of the pre-split line or sections of the pre-split line. If detonation is by sections, extend the detonation for each section of pre-split line at least 50 feet (15 m) past each production blast area or to the end of the pre-split line. Simultaneously detonate all explosive charges within the pre-split line or section.

#### **C. Production Blasting.**

- 1.** For each elevation level of pre-split holes, place production blasting holes in a pattern so that material suitable for excavation will be produced adjacent to the pre-split hole lines. Do not place production holes within 8 feet (2.4 m) of the pre-split hole line, except when otherwise approved by the Engineer. For each elevation level of pre-split holes, drill production blasting holes no deeper than the minimum depth pre-split hole.
- 2.** Use blasting materials and procedures for production blasting that comply with the explosive manufacturer's instructions. Contain the explosion by placing backfill material consisting of granular stemming material (or use another suitable method), as specified by the explosive

manufacturer and as approved by the Engineer, in the production blasting holes after placing the explosive charges and prior to detonation.

3. Detonate the explosive charges in a production blast area separately from the detonation of explosive charges of an adjacent pre-split line section. The Contractor may use appropriate time delays when detonating the explosive charges of the production blast area and an adjacent pre-split line section if:
  - The pre-split line section is fired first, and
  - Production blasting progresses so that the holes nearest the pre-split line are fired last.
4. After detonation, excavate material in the production blast area as Class 12 Excavation according to [Section 2102](#).

#### **2103.04 METHOD OF MEASUREMENT.**

- A. Measurement for Presplitting of Rock Cuts will be square yards (square meters) determined by calculating the area of the pre-split face.
- B. Measurement for the work of removing material above the top elevation of the first level of pre-split holes will be for the specified class of excavation according to [Article 2102.04, A](#).
- C. Production blasting (including drilling holes, setting and detonating explosive charges, and removing material from the production blast area) will not be measured separately, but will be measured as part of the Class 12 Excavation according to [Article 2102.04, A](#).

#### **2103.05 BASIS OF PAYMENT.**

- A. Payment for Presplitting of Rock Cuts will be the contract unit price per square yard (square meter) as determined according to [Article 2103.04](#) of this specification.
- B. Payment is full compensation for:
  - All labor, equipment, and materials necessary to drill the pre-split holes,
  - Placing explosive charges, and
  - Detonating explosive charges to produce a finished acceptable slope cut for each elevation level of pre-split holes.
- C. Payment for the work of removing material above the top elevation of the first level of pre-split holes will be for the class of excavation specified in the contract documents according to [Article 2102.05, A, 1](#).
- D. Payment for the work of production blasting, including drilling holes, setting and detonating explosive charges, and removing material from the production blast area, will be as part of Class 12 Excavation according to [Article 2102.05, A, 1](#).