

SECTION 31 23 16

ROCK REMOVAL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Removal of identified and discovered rock during excavation.
- B. Use of explosives to assist rock removal.
- C. Incorporating removed rock into fills and embankments.

1.2 RELATED SECTIONS

- A. Construction Manager's Manual – Unit Prices
- B. Section 02 32 00 – Earthwork
- C. Section 31 23 00 - Excavation
- D. Section 31 23 33 - Excavation, Backfill, and Compaction for Utilities
- E. Geotechnical Report for boring locations and findings of subsurface materials and conditions.
- F. Construction Drawings

1.3 REFERENCE STANDARDS

- A. National Fire Protection Association (NFPA) latest edition
495 Code For Explosive Materials

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Determine environmental effects associated with proposed work and safeguard those concerns as regulated by law and local governing authorities by reasonable and practical methods.

1.5 PROJECT CONDITIONS

- A. Discrepancy with Construction Drawings and Specifications regarding amount and type of rock to be removed shall immediately be brought to attention of the Owner or his designated representative. Revised removal plan and schedule shall subsequently be provided and followed.

1.6 QUALIFICATIONS

- A. Submit records of documented experience to the Owner or his designated representative prior to removal of rock by blasting.

1.7 QUANTITY VERIFICATION

- A. Contractor to be responsible for costs incurred for surveyor Geotechnical Engineer, or other qualified individuals to verify quantity of rock removed. This shall be included in the Unit Price cost.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Explosives, detonator/delay device, blast mat materials and accessories shall be as recommended by explosive supplier and shall comply with requirements of applicable governing authorities.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify site conditions and note subsurface conditions affecting work of this section.
- B. Establish required lines, grades, and elevations that will determine extent of proposed rock removals.

3.2 ROCK EXCAVATION

- A. Rock excavation is defined as igneous, metamorphic, or sedimentary rock that cannot be removed by rippers or other mechanical methods and, therefore requires drilling and blasting. Cut rock to form level bearing at bottom of footing and trench excavations. In utility trenches excavate rock to 6-in. below invert elevation of pipe. Remove shaled layers to provide sound and unshattered base for footings or foundations.
- B. Comply with laws, rules, and regulations of Federal, State, and local authorities and insurer which govern storage, use, manufacture, sale, handling, transportation, licensing, or other disposition of explosives. Take special precautions for proper use of explosives to prevent harm to human life and damage to surface structures, utility lines, or other subsurface structures. Do not conduct blasting operations until persons in vicinity have had ample notice and have reached positions of safety.

- C. Contractor shall save harmless the Owner or his designated representative, Architect, and Engineer from claims growing out of use of such explosives. Removal of materials of any nature by blasting shall be done in such manner and at such time as to avoid damage affecting integrity of design and to avoid damage to new or existing structures included in or adjacent to work. It shall be Contractor's responsibility to determine method of operation to ensure desired results and integrity of completed work.
- D. Use Controlled Low Strength Material (CLSM) / Flowable Fill or other acceptable materials to replace rock overblast or overexcavation in building area to facilitate placement of utilities and future footings.

END OF SECTION