

SECTION 31 23 18
ROCK REMOVAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing identified and discovered rock during excavation.
 - 2. Expansive tools to assist rock removal.
 - 3. Explosive tools to assist rock removal.
- B. Related Sections:
 - 1. Section 31 22 16 - Excavation and Fill: Excavating and filling for road or site work.
 - 2. Section 31 23 17 - Trenching: Excavating and backfilling for utilities.

1.2 REFERENCES

- A. National Fire Protection Association:
 - 1. NFPA 495 - Explosive Materials Code.

1.3 DEFINITIONS

- A. Rock: Solid mineral material with volume in excess of 1/3 cubic yard or solid material that cannot be removed with 3/4 cubic yard capacity excavator without drilling or blasting.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate proposed method of blasting, delay pattern, explosive types, and type of blasting mat or cover. Indicate intended rock removal method.
- C. Survey Report: Submit survey report on conditions of buildings near locations of rock removal.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with NFPA 495.
- B. Seismic Survey Firm: Licensed company specializing in seismic surveys with five years documented experience.
- C. Explosives Firm: Company specializing in explosives for disintegration of rock with five years documented experience.

1.6 PROJECT CONDITIONS FOR USE OF EXPLOSIVES

- A. Conduct survey and document conditions of buildings near locations of rock removal prior to blasting; photograph existing conditions identifying existing irregularities.
- B. Advise owners of adjacent buildings or structures, in writing, prior to executing seismographic survey. Explain planned blasting and seismic operations.

- C. Obtain seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.

1.7 SCHEDULING

- A. Schedule Work to avoid disruption to occupied buildings nearby and conform to local laws and regulations pertaining to blasting times.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Conform to NFPA 495.
- B. Explosives, Delay Devices, and Blast Mat Materials: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction.
- C. Mechanical Disintegration Compound: Grout mix of materials that expand on curing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify site conditions and note subsurface irregularities affecting Work of this Section.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.

3.3 ROCK REMOVAL BY MECHANICAL METHOD

- A. Excavate and remove rock by mechanical method.
 - 1. Drill holes and use expansive tools, wedges, and mechanical disintegration compound to fracture rock.
- B. Cut away rock at bottom of excavation to form level bearing.
- C. Remove shaled layers to provide sound and unshattered base for footings and foundations.
- D. In utility trenches, excavate to 6 inches below invert elevation of pipe and 16 inches wider than pipe diameter.
- E. Remove excavated materials from site.
- F. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 23 16.

3.4 ROCK REMOVAL BY EXPLOSIVE METHODS

- A. When rock is uncovered requiring explosives method for rock disintegration, notify Architect/Engineer prior to executing as follows.
 - 1. Provide seismographic monitoring during progress of blasting operations.
 - 2. Drill blasting holes within 12 feet of finished slope.
 - 3. Disintegrate rock and remove from excavation.
 - 4. Remove rock at excavation bottom to form level bearing.
 - 5. Remove shaled layers to provide sound and unshattered base for footings and foundations.
 - 6. In utility trenches, excavate to 6 inches below invert elevation of pipe and 16 inches wider than pipe diameter.
 - 7. Remove excavated material from site.
 - 8. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 23 16.

- B. Notify affected parties 72 hours in advance of using explosives including.
 - 9. Home owners.
 - 10. Schools
 - 11. Fire department.
 - 12. Rescue.
 - 13. Emergency management.
 - 14. Local Law Enforcement department.
 - 15. NC Department of Transportation.
 - 16. Railroads.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

- B. Request visual inspection of foundation bearing surfaces by Architect/Engineer and inspection agency before installing subsequent work.

END OF SECTION