

1. General

Blasting is not anticipated on this project. Boulders and/or rock fragments greater than 1.0 m³ are part of the scope of work.

1.1 Section Includes

- 1.1.1 This Section covers the requirements for the removal of rock or boulders classified as rock in grading operations, mass excavation and trench excavation.

1.2 Related Sections

- 1.2.1 Section 01 33 00 – Submittal Procedures.
- 1.2.2 Section 31 23 33 – Excavating, Trenching and Backfilling.

References

- 1.2.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
- Material Safety Data Sheets (MSDS).
- 1.2.4 National Fire Code of Canada (2005).
- 1.2.5 Transportation Dangerous Goods Act (TDG Act) 1999.
- 1.2.6 Transportation of Dangerous Goods Regulations (T.19.01-SOR/2003-400).
- 1.2.7 Occupational Health and safety Act, Government of Newfoundland and Labrador.
- 1.2.8 Canadian Blasting Association Standards.
- 1.2.9 Canadian Construction Safety Code.

1.3 Qualifications

- 1.3.1 Perform blasting operations in accordance with the requirements of the Canadian Construction Safety Code, local and provincial code requirements of Authority having jurisdiction, Canadian Blasting Association Standards.
- 1.3.2 Retain an explosives expert, licensed in the Province of Newfoundland and Labrador, to program and supervise blasting work, to interpret recommendations of pre-blasting report, and to determine precautions, preparation and operations techniques.

1.4 Submittals

- 1.4.1 Submit to the Departmental Representative and local authorities having jurisdiction for approval, written proposal of operations for removal of rock by blasting, in accordance with Section 00 33 00 – Submittal Procedures.
- 1.4.2 Indicate proposed method of carrying out work types and quantities of explosives to be used, loading charts and drill hole patterns, type of caps, blasting techniques, blast protection measures for items such as flying rock, vibration, dust and noise control.

- Include details on protective measures, time of blasting and other pertinent details. Contractor to provide matting as required to control fly rock.
- 1.4.3 Submit records to Departmental Representative at end of each shift. Maintain a complete and accurate record of drilling and blasting operations.
- 1.5 Blasting Survey and Monitoring**
- 1.5.1 The Contractor shall engage a qualified inspection company to complete a Pre-Blast Survey of all facilities and structures in the vicinity of the blasting operation in order to record pre-blasting operations.
- 1.5.2 Pre-Blast Survey and monitoring shall be the responsibility of the Contractor.
- 1.6 Work Progress**
- 1.6.1 Reduce ground vibrations to avoid damage to structures or remaining rock mass.
- 1.6.2 The maximum peak particle velocity during blasting must not exceed 50 mm per sec.
- 1.6.3 Complete blasting before any structural element including rock anchors, concrete footings, walls and columns are installed on the work site.
- 1.7 Protection**
- 1.7.1 Prevent injury to persons and damage to surrounding properties. Erect barricades, fencing, post guards, sound warnings and display signs when blasting to take place.
- 1.8 Rock Excavation**
- 1.8.1 Excavation of materials from solid beds or masses of igneous, sedimentary or metamorphic rock which, prior to its removal was integral with its parent mass, and which cannot normally be excavated without blasting, and boulders of rock fragments having individual volume in excess of 1.0m³ determined from three (3) mutually perpendicular dimensions.
- 2. Products**
- 2.1 Materials**
- 2.1.1 Not used.
- 3. Execution**
- 3.1 Rock Removal**
- 3.1.1 Remove rock to alignments, profiles, and cross sections as shown on the contract drawings unless otherwise indicated.
- 3.1.2 Do blasting operations in accordance with local, provincial and federal code requirements of authority having jurisdiction.

- 3.1.3 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize over-break and to avoid damage to adjacent structures.
- 3.1.4 Excavate rock to horizontal surfaces and outward to a vertical face not exceeding a slope of 4V:1H.
- 3.1.5 Remove boulders and fragments which may slide or roll into excavated areas.

4. Measurement and Basis for Payment

4.1 Measurement for Payment

- 4.1.1 Measurement of rock excavation is by plan quantity of the volumes in cubic meters below the existing rock surface and within theoretical pay lines as outlined on the Contract Drawings and Specifications, except that the minimum depth of excavation for measurement purposes shall not be less than 300 mm.
- 4.1.2 The Contractor shall accurately cross section the existing rock surface prior to any blasting or rock removal. This cross section information will be used for the purpose of calculating the rock removal quantity.
- 4.1.3 The volume of excavated boulders and rock fragments in excess of 1.0 m³ will be determined by measuring three (3) mutually perpendicular dimensions.
- 4.1.4 Any boulders or rock fragments less than 1.0 m³ in volume will not be measured for payment under rock excavation.

4.2 Basis for Payment

- 4.2.1 Costs of all work specified in this Section is deemed to be included in the Lump Sum and Unit Prices of the Schedule of Quantities and Prices.