

This specification outlines the requirements for the removal of rock or boulders classified as rock in grading operations or excavations.

PART 1 REFERENCES

This specification refers to the following standards, specifications, or publications:

Government of Newfoundland and Labrador, Department of Transportation and Infrastructure (TI), Highway Design and Construction Division, Highway Specifications Book:

Division 1 – Specifications General

Section 190 Occupational Health and Safety

Canadian Construction Safety Code

Canadian Blasting Association Standards

Government of Newfoundland and Labrador, Occupational Health and Safety Act, Chapter O-3

Government of Newfoundland and Labrador, Regulation 5/12, Occupational Health and Safety Regulations

PART 2 GENERAL

2.1 SUBMITTALS

.1 Blasting Operation

- .1 Submit to Owner and local Authorities Having Jurisdiction for approval, written proposal of operations for removal of rock by blasting.
- .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.
- .3 Submit to Owner proof of calibration of equipment prior to any blasting operations.
- .4 Submit records to Owner at end of each shift. Maintain complete and accurate records for drilling and blasting operations.
- .5 Prior to any blasting operations, the contractor shall carry out a pre-blast survey. This survey will be conducted by an independent agency. The survey report will be submitted to the Owner for review.

4.6 No blasting shall take place without a minimum of two (2) working days' notice to the Owner.

4.22.2 QUALIFICATIONS

- .1 Retain licensed explosives expert to program and supervise blasting work, to interpret recommendations of pre-blasting report, and to determine precautions, preparation, and operations techniques.
- .2 Blasting operations shall be conducted in accordance with the requirements of the Canadian Construction Safety Code, Canadian Blasting Association Standards, and the Newfoundland and Labrador Regulation 5/12 Occupational Health and Safety Regulation.
- .3 Blasting shall only be performed by an experienced blaster licensed in the Province of Newfoundland and Labrador to use explosives.
- .4 Where blasting is required, the Contractor, at a minimum, must:
 - .1 Ensure a valid Blaster's Certificate and Certificates of Qualification acceptable to the OHS Regulations 5/12 under Section 419 identifying the Level of Qualification for the project requirements (Journey Persons Blaster Certificate will still be accepted). An acceptable letter of extension of blasters certificate from the Apprenticeship and Trades Certification Division of the Department of Jobs, Immigration and Growth is required where their certificate expires (5 years max). Certificate numbers and names are required for all blasters proposed for the project.
 - .2 Hold a Temporary Magazine License, when required, issued by Natural Resources Canada.
 - .3 Hold an Explosives Vehicle Certificate, when required, issued by Transport Canada for transport of explosives regulated under the Transportation of Dangerous Goods Act.
 - .4 Ensure that the Blaster's resume clearly states and demonstrates:
 - .1 Minimum five (5) years of experience in handling, storage and detonation of explosives.
 - .2 Training at a blaster's school which is acceptable to the Provincial Government.
 - .5 Ensure blasting operations are carried out under the direct visual supervision of a certified Blaster either registered with the Apprenticeship and Trades Certification Division of the Department of Jobs, Immigration and Growth or has been issued a certificate from completion of a program approved by the Department of Government Modernization and Service Delivery. Ensure that the

certificate level is appropriate for the blasting activities which will occur. Comply with the requirements of:

- .1 Explosives Act
- .2 Explosives Regulations.
- .3 Newfoundland Regulation 5/12, Occupational Health and Safety Regulations.
- .4 Role of certified blaster set out in section 419 of the Occupational Health and Safety Regulations 5/12.
- .6 Store explosives in accordance with the “Explosives Act (Canada) and transport, handle and use in the manner prescribed by the manufacturer of the substance and subject to specific regulations. An inventory of explosives shall be kept at all times.
- .7 Ensure that workers required to transport explosives have a valid Transportation of Dangerous Goods Training Certification in accordance with the Transportation of Dangerous Goods Act and the Explosives Act. Vehicle used to transport explosives on site shall be placarded and explosives shall be transported in containers lined with non-sparking materials (reference section 428 of the Occupational Health and Safety Regulations 5/12). Detonators shall not be placed in a magazine or daybox with other types of explosives or in a compartment of a vehicle with another type of explosive.
- .8 Ensure that the use of explosives on site complies with the Occupational Health and Safety Regulations 5/12 General Blasting requirements are set out in Part XIX of the Regulations. Loaded holes shall be clearly identified with barricades put in place to prevent access to the holes. Drilling shall not be done closer to a loaded bore hole than a distance half the total depth of the hole being drilled and in no case shall drilling be conducted at a distance closer than 6 metres from a loaded borehole. Drill cuttings shall not be used as stemming material.
- .9 Advise the public by suitable public notices, advertisements, house to house contacts etc. for blasting operations in close proximity to areas occupied by the public. Advise of the warning device to be sounded and the procedure to be used before detonation of individual blasts. Roads and approaches to the danger area are guarded or barricaded to prevent anyone from entering. Loaded holes which have not been fired by the end of the day shall not be left unattended.
- .10 Prior to detonation of a blast, give sufficient warning in every direction and ensure that all persons have reached a place of safety before the blast is fired.

- .11 File an Emergency Response Assistance Plan with the Explosives Branch, Natural Resources Canada.
- .12 Ensure that the Blaster:
 - .1 Is solely responsible for implementation of the Explosives Management Program.
 - .2 Has a valid blaster's safety certificate from the Apprenticeship and Trades Certification Division of the Provincial Department of Jobs, Immigration and Growth and have a valid temporary Magazine License, when required, issued by Natural Resources Canada, for storage and explosives.
 - .3 Possess a thorough working knowledge of the Federal Explosives Act and Provincial Regulations.
 - .4 Possess a specialized training in handling storage and detonation of explosives.
 - .5 Keeps a field journal concerning all blast activities.

2.3 BLASTING AND VIBRATION CONTROL

- .1 Reduce ground vibrations to avoid damage to structures or remaining rock mass.
- .2 Carry out trial blasting at the commencement of the blasting work in order to determine the amount of charge required to keep vibrations within safe limits, to the satisfaction of the Owner. Take seismograph recordings during such trial blasting and at any other time while blasting is continued, as considered necessary by the Contractor for their own protection, or as may be directed by the Owner. A minimum of three (3) self-triggering seismographs shall be maintained and operated on site to monitor all blasting operations. Submit results to Owner for review prior to proceeding. Peak particle velocity Maximum acceleration during blasting must not exceed 50 mm/s², measured at the closest point to any residential or utility structure so as to cause no damage to persons, property, or utilities.
- .3 No increase in charges will be permitted without further trial blasting and seismograph recordings, as described above.

PART 2 PART 3 PRODUCTS

2.13.1 NOT APPLICABLE.

PART 3 PART 4 EXECUTION

4.1 PROTECTION

- .1** Blasting may not be permitted or may be limited to such an extent as to ensure the safety of structures, if considered necessary by the Owner.
- .2** Prevent damage to persons and property from flying rocks, by covering the site of the blasting with blasting mats or other suitable devices. Post guards, sound warnings and display signs when blasting is to take place.

4.2 NOTICE

- .1** The Contractor shall provide ample notice, through both Radio and Newspaper media, advising the public of the planned blasting operations. These announcements shall commence a minimum of one week prior to any planned blasting activity and shall be continued for the duration of the blasting work. Additionally, notices shall be hand delivered to all households within the defined blast zone to ensure residents are made aware of the future blasting work.

4.3 PRE-BLAST SURVEY

- .1** For their own protection, the Contractor is advised to engage a qualified inspection company to carry out a pre-blasting survey of buildings in the vicinity of their blasting operation in order to record pre-blasting conditions.
- .2** A pre-blast survey shall be performed on all dwellings and structures within a minimum of 500m radius of all blast areas. A copy of the entire pre-blast survey (including copies of the detailed property inspection reports) and any associated reports, photos, etc. shall be submitted to the Engineer prior to the commencement of blasting.
- .3** The contractor shall provide the Department with the contact information for their representative who will be responsible for dealing with all matters associated with the blasting operations including concerns from residential property owners.
- .4** Prior to blasting commencing, the contractor shall supply a summary of all names and addresses where blasting notices were delivered including date and time of delivery.

.1 All costs associated with providing these notices shall be the sole responsibility of the Contractor.

3.14.4 ROCK REMOVAL

.1 For their own protection, the Contractor is advised to engage a qualified inspection company to carry out a pre-blasting survey of buildings in the vicinity of their blasting operation in order to record pre-blasting conditions.

.2 Co-ordinate this Section with Section 01545 – Safety Requirements, specifically references to HDC's 190.05.02 Blasting Operations.

.3 Remove rock to alignments, profiles, and cross sections as indicated.

.4 Explosive blasting is not permitted at locations indicated.

.5 Do blasting operations in accordance with local and provincial codes, requirements of authority having jurisdiction.

.6 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize overbreak, and to avoid damage to adjacent structures.

.7 Excavate rock to horizontal surfaces.

.8 Scale, pressure wash and broom clean rock surfaces which are to bond to concrete.

.9 Use pre-shearing, cushion blasting or other smooth wall drilling and blasting techniques directed by Owner.

.10 Correct unauthorized rock removal at no extra cost, in accordance with backfilling requirements specified in Section 02223 – Excavating, Trenching and Backfilling.

.11 Remove boulders and fragments that may slide or roll into excavated areas.

.12 Excavate trenches to lines and grades to minimum of 150 mm below pipe invert indicated. Provide recesses for bell and spigot pipe to ensure bearing will occur along barrel of pipe.

.13 Cut trenches to widths specified.

.14 Repair any damage caused by blasting.

4.5 **ROCK DISPOSAL**

- .1 Dispose of surplus removed rock off site. Dispose in locations acceptable to authorities having jurisdiction and Owner.
- .5.2 Do not dispose removed rock into landfill. Material must be sent to appropriate location as approved by the Owner.

PART 4PART 5 PAYMENT

4.15.1 MEASUREMENT FOR PAYMENT

- .1 Measurement of rock excavation is by plan quantity of the volumes in cubic metres below the existing rock surface and within theoretical paylines, except that the minimum depth of excavation for measurement purposes shall not be less than 300 mm.
- .2 The volume of excavated boulders and rock fragments in excess of 0.5 m³ will be determined by measuring three maximum mutually perpendicular dimensions.
- .3 Rock removal shall be measured and paid in accordance with the applicable rock excavation Sections of 02215 – Site Work and Site GradingEarthwork and Related Work, 02223 – Excavating, Trenching and Backfilling, or 02224 – Roadway Excavation, Embankment & Compaction.

4.25.2 BASIS OF PAYMENT

No separate or direct payment will be made for work as outlined in this specification. All costs associated with the work outlined in this specification shall be deemed to be included in the appropriate unit and lump sum prices quoted as outlined in the Measurement for Payment subsection of this section and as included in the MERX Schedule of Quantities and Prices.

Not For Construction