

rock.

204.02.26 Rock – Rock is Type A material as defined in SS 201.11.01.

204.02.27 Scaling – The removal of all loose material using scaling bars, portable hydraulic jacks, other hand tools, wire rope cables, compressed air blow pipes, blasting without the need for drilled holes and other methods authorized by the Ministry Representative.

204.02.28 Setback Distance – The setback distance is the horizontal distance between the top of the excavation backslope and the toe of the overburden material. Setback is created by removing overburden.

204.02.29 Spacing – The distance between blastholes perpendicular to the burden.

204.02.30 Stemming – Material placed on top of the explosive to provide confinement of the explosive gases.

204.02.31 Subdrill – The distance drilled below subgrade level.

204.02.32 Trimming – The removal by drilling and controlled blasting of potentially unstable rock remaining at the exposed excavation backslope. Trimming may not require backline holes.

204.03 Quality Control

204.03.01 General – Quality control shall be conducted for all blasting operations.

204.03.02 Blasting Consultant – The Contractor shall retain a blasting consultant, acceptable to the Ministry Representative, to provide quality control. The consultant shall not be an employee of the Contractor, explosives manufacturer or explosives distributor.

204.03.03 Blast Vibration Monitoring – The Contractor shall provide a blast vibration monitor if required. The blast vibration monitoring shall be under the direction of the Vibration Specialist.

204.03.04 Quality Control Activities For Blasting Operations – Quality control for blasting operations shall be performed for test sections, full scale blasting operations and trimming. The Contractor shall provide to the Ministry Representative a copy of the field report generated by the Consultant within one day of each site visit by the Consultant. Quality control for blasting includes, but is not limited to the following activities by the blasting consultant:

- Viewing the proposed blast area at least one (1) week before drilling operations commence.
- Preparing and submitting blast designs for production and backline holes.
- Intermittently viewing the site during drilling for each blast area.
- Intermittently observing the loading of holes with

explosives and tying in to the delay system.

- Observing the blasts and reviewing the excavated areas.
- Attending on site to view the excavation backslope after each lift and reviewing excavation backslope for quality control purposes.
- Viewing the site while reviewing proposed changes to the blast design and preparing new designs.
- Attending on site at other times as are appropriate to assist the Contractor in the setting up, assessment and adjustment of the various procedures to be employed for blasting.
- Preparing a field report for each site visit, including details of the progress of blasting operations, a statement whether the blast design is being complied with, any changes to the blast design, any recommendations made to the Contractor and any problems encountered by the Contractor.

204.04 Submittals

204.04.01 General – Review of submittals by the Ministry shall not relieve responsibility from the Contractor for the accuracy and adequacy of the submittals. Submittals are for quality assurance and record keeping purposes. Inadequate or incorrect submittals will be returned for revisions prior to acceptance. The Contractor shall submit to the Ministry Representative the following documentation for review.

204.04.02 Qualifications and Experience of Contractor

– Prior to the pre-construction meeting, the Contractor shall provide a statement of the qualifications, experience and work function of all personnel assigned to drilling and blasting duties. A statement of previous work experience on similar projects shall also be provided. This statement shall include the project name, location, volume of rock, year constructed and the owner/client contact name. The company, the driller and the blaster shall each have a minimum of 5 consecutive years demonstrated experience in drilling and controlled blasting work on at least 3 projects involving rock cuts over 8 m height along transportation corridors.

204.04.03 Qualifications and Experience of Proposed Blasting Consultant

– By the pre-construction meeting, the Contractor shall provide the name of the consulting firm, and the name and qualifications of the blasting consultant's on-site representative who will be providing the quality control for rock excavation. The blasting consultant shall have a minimum of 5 consecutive years demonstrated experience in preparing successful blast designs along transportation corridors for at least 3 projects. The following information shall be included in the qualifications submitted:

- Project name, location and experience.
- Name and phone number of owner/client contact who