

PART 1 **GENERAL**

1.1 **REFERENCES**

- .1 Definitions:
 - .1 Rock: any solid material in excess of 0.25 m³ and which cannot be removed by means of heavy duty mechanical excavating equipment with 1.15 m³ bucket. Frozen material not classified as rock.
 - .2 PPV: peak particle velocity.

1.2 **ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Blasting Submittals: submit for approval, written proposal of operations for removal of rock by blasting to Departmental Representative and local authorities having jurisdiction.
 - .1 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.
 - .2 Submit records to Departmental Representative at end of each shift. Maintain complete and accurate record of drilling and blasting operations.
- .3 Qualification Statements:
 - .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 Submit documentation verifying explosives expert's qualifications.

1.3 **DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

1.4 **QUALITY ASSURANCE**

- .1 Blasting Survey and Monitoring:
 - .1 Departmental Representative will visit property holders of adjacent buildings and structures to determine existing conditions and describe blasting and seismic recording operations and obtain their permission for setting up seismographs.
 - .2 Seismographic monitoring will be conducted during entire progress of blasting operations.

PART 2 **PRODUCTS**

2.1 **MATERIALS**

- .1 Not used.

PART 3 **EXECUTION**

3.1 **ROCK REMOVAL**

- .1 Perform excavation in accordance with Erosion and Sedimentation Control Plan.
- .2 Co-ordinate this Section with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Remove rock to alignments, profiles, and cross sections as indicated.
- .4 Do blasting operations in accordance with local and provincial codes.
- .5 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize overbreak, and to avoid damage to adjacent structures.
- .6 Excavate rock to horizontal surfaces with slope not to exceed 4:1.
- .7 Prepare rock surfaces which are to bond to concrete, by scaling, pressure washing and broom cleaning surfaces.
- .8 Excavate trenches to lines and grades to minimum of 300 mm below pipe invert indicated. Provide recesses for bell and spigot pipe to ensure bearing will occur uniformly along barrel of pipe.
- .9 Cut trenches to widths as indicated.
- .10 Remove boulders and fragments which may slide or roll into excavated areas.
- .11 Correct unauthorized rock removal at no extra cost, in accordance with Section 31 23 33.01 – Excavating, Trenching and Backfilling.

3.2 **CLEANING**

- .1 Clean in accordance with Section 01 74 00 – Cleaning.
- .2 Rock Disposal:
 - .1 Dispose of surplus removed rock off site in accordance with Section 01 74 19 – Construction/Demolition Waste Management and Disposal.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

3.3 **PROTECTION**

- .1 Prevent damage to surroundings and injury to persons. Erect post guards, sound warnings and display signs when blasting to take place.

END OF SECTION