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Appendix A Figures & Photographs of work areas
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Part 1 General

1.1 SECTION INCLUDES

- .1 Title and description of Work.
- .2 Contract Method.
- .3 Work sequence.
- .4 Contractor use of premises.
- .5 Owner occupancy.

1.2 PRECEDENCE

- .1 For Federal Government projects, General Conditions take precedence over technical specification sections.

1.3 RELATED SECTIONS

- .1 Section 01 14 00 – Work Restrictions
- .2 Section 01 31 00 – Project Managing and Coordination
- .3 Section 01 33 00 - Submittal Procedures
- .4 Section 01 35 30 – Health and Safety Requirements
- .5 Section 01 35 43 – Environmental Procedures

1.4 PROJECT LOCATION

- .1 The project is located in Jasper National Park, Alberta, along Highway 16 west of the town of Jasper.

The following are key locations relative to the project:

Highway 16 Locations:

The western boundary of Jasper National Park on Highway 16 is designated as km 0.000, and distances are measured to the east (towards Hinton) from this point. The slope sections are on the right of the highway relative to the direction of increasing distance unless designated otherwise with (l) or a reference to “left”. At least three historical chainages have been used to reference slopes in JNP. Minor discrepancies exist between the historical chainage systems and the ones used in this inspection program. This is due to the slight variations in the assumed starting point of each slope, accuracy of the vehicle odometers, and travelled paths.

The main work areas along Highway 16 are subdivided into four separate rock cuts shown in the table below.

Jasper National Park – Work Site Locations:

.1	Km 7.673 - 8.173	(Right)
.2	Km 9.619 - 10.149	(Right)
.3	Km 11.872 - 12.125	(Right)
.4	Km 12.222 - 12.924	(Right)

1.5 WORK COVERED BY CONTRACT DOCUMENTS

- .1 In preparation for and during the Work in Jasper National Park, an “Environmental Protection Plan” (EPP) is to be prepared by the successful Contractor to meet the requirements of Section 01 35 43 – Environmental Procedures to ensure the desired minimal adverse effects are achieved. The Departmental Representative and Parks Canada’s Environmental Surveillance Officer (ESO) will refer to the approved EPP in determining compliance with the plan and contract specifications. The EPP will form part of the contract.
- .2 Without limiting the scope of work, the work under this Contract generally comprises the following:
 - .1 Rock Scaling, Trimming, Rock Bolting, Drainage holes, Common Excavation, hauling debris and excavated materials to disposal sites, supply and installation of concrete guard rail, temporary removal and replacement or relocation of concrete guardrail, and other related works.
 - .2 Mobilization and Demobilization of all manpower, equipment, materials, and other resources necessary to execute the Work.
 - .3 Assess with the Departmental Representative the work to be done at each location.
 - .4 Manage the project in accordance with Section 01 31 00 – Project Managing and Coordination.
 - .5 Carry out the Work in the order of priority specified, or as determined by the Departmental Representative.
 - .6 Prepare and submit all required submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .7 Responsibility for all aspects of site safety in accordance with Section 01 35 30 – Health and Safety Requirements.
 - .8 Provide traffic signage and traffic control in accordance with Section 01 35 31 – Special Procedures for Traffic Control.

- .9 Coordinate work with Parks Canada and other contractors who may be working in the project area.

1.6 CONTRACT METHOD

- .1 Construct Work under combined price contract.
- .2 Rates for provision of equipment and operators to carry out any additional works, or works not explicitly specified herein shall be in accordance with the most recent edition of the Alberta Roadbuilders and Heavy Construction Association Equipment Rental Rate Guide and will be all inclusive and fully operated. Hourly rental of equipment will be measured in actual working time and necessary travel time within project limits. Transportation time to and from site is to be reimbursed only if equipment is used exclusively for additional work.

1.7 ACTION REQUIRED BY CONTRACTOR

- .1 The Contractor shall take whatever measures are necessary to protect all existing infrastructure including the surface of Highway 16 at the worksites.
- .2 The Contractor has checked or is familiar with the site and understands the extent and details of the work.

1.8 WORK SEQUENCE

- .1 Coordinate Progress Schedule to allow Departmental Representative unrestricted access to inspect all phases of the Work.
- .2 Conduct the work in the priority order determined by the Departmental Representative.
- .3 Maintain fire and emergency access at all times.
- .4 All work under this contract located on Highway 16 shall be completed by October 11, 2013.
- .5 At each work site where there is a requirement for Trimming, priority shall be given to work directly associated with completing Trimming prior to rock bolting, general scaling and other work activities.

1.9 CONTRACTOR USE OF PREMISES

- .1 The Contractor has unrestricted use of site, subject to Section 01 14 00 – Work Restrictions, from award of contract and approval of submissions, until the contract is completed.
- 2 The Department Representative reserves the right to stop work in the event of excessive traffic delays during peak summer months.
- .3 The Contractor shall coordinate use of premises with others under direction of the Departmental Representative.

- .4 The Contractor is responsible for obtaining and paying for use of additional storage or work areas needed for operations under this Contract.
- .5 The Contractor shall obtain a business license from the Jasper National Park Administration Office prior to commencement of work on site. Details will be provided at start-up meeting.
- .6 All Contractor's business and private vehicles are required to display a vehicle work pass from Parks Canada. These permits may be obtained free of charge from Parks Canada.

1.10 OWNER OCCUPANCY

- .1 Owner will occupy premises during construction period to execute normal operations.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.11 OWNER FURNISHED ITEMS

- .1 Owner will not supply any labour, equipment, or material resources for this project.

1.12 CONSTRUCTION SIGNAGE

- .1 No signs or advertisements, other than warning signs, are permitted on site.
- .2 Signs and notices for safety and instruction shall be in both official languages, or utilize graphic symbols. All signs shall be diamond grade and shall conform to the Alberta Transportation (AT) – Traffic Accommodation in Work Zones.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by the Departmental Representative.
- .4 Signage shall be coordinated with other Contractors where necessary.

1.13 SETTING OUT OF WORK

- .1 Departmental Representative will provide:
 - .1 Complete set of Photographs as part of this document.
 - .2 Measurements for Payment.
- .2 Contractor shall:
 - .1 Allow sufficient time and facilitate site access for Departmental Representative to inspect the work and take measurements for payment. Such inspection may include the use of the Contractors rope access equipment to facilitate locating the work and measurement for payment.

- .2 Discuss and come to an agreement (sign off sheet required) with the Departmental Representative on measurement for payment at the end of each day or completion of work in an area, whichever is more frequent.

1.14 EXECUTION

- .1 Disposal of Materials from Rock Slope Stabilization
 - .1 All materials from rock scaling, trimming and excavation of existing fallen material in ditches in work areas shall be hauled to a disposal site as identified by the Departmental Representative, and noted within these specifications (Section 31 23 22 Common Excavation).
 - .2 All ditches in work sites where stabilization work is carried out, shall be cleaned and restored to a visually pleasing quality, which includes having side slopes and bottom slopes, as well as preventing the ponding of water, or as directed by Departmental Representative.
 - .3 Roadways and sidewalks in work sites shall be cleaned of blasted and scaled rock before motorists and pedestrians are permitted to pass through the work site.
 - .4 No extra payment will be made for clean up of roadway and work site following rock scaling, trimming, and all other project work as it will be considered incidental to project. Ditch clean up and disposal of rock materials are paid under the Common Excavation bid item.
- .2 Blasting
 - .1 The Departmental Representative must be provided with proposed blasting plans for review and must be notified as to where blasts are proposed and how long traffic is proposed to be delayed. The Contractor shall be completely responsible for all liaison and coordination with respect to blasting.
 - .2 Notwithstanding Departmental Representative's approval of blasting methods, the Contractor shall be completely responsible for any damage, which is a direct result of its blasting or other operations.
 - .3 Prior to blasting the Contractor with the Departmental representative will jointly inspect the road, other infrastructure and other tangible assets (including but not limited to trees, ditches, culverts, pipelines and railways). This record will be used as the basis to establish if damage has occurred as a result of blasting.
 - .4 Explosives shall be stored **outside** the Park in accordance with applicable regulations.
- .3 Execution of Work
 - .1 The Contractor shall execute work in an efficient and expeditious manner. The Departmental Representative reserves the right to order the removal from the work site any employee of the Contractor who fails to work in an efficient and

expeditious manner. This may include but is not limited to the Project Superintendent. This shall be strictly enforced.

- .2 Departmental Representative reserves right to order removal from work site, any piece of equipment that is not in good operating condition and the Contractor shall immediately rectify problem or replace faulty equipment with an equivalent unit within 48 hours.

.4 Crew Qualifications

- .1 The Contractor must have a crew and supervisors experienced and qualified in rock scaling as specified, drilling and blasting, rock bolt installation, excavation and disposal of excavated material, and all other work identified herein.
- .2 The Project Superintendent shall have at least 10 years experience with rock stabilization projects involving scaling, bolting and trim blasting. The deputy Project Superintendent shall have at least 5 years experience with rock stabilization projects involving scaling, bolting and trim blasting.
- .3 The Contractor shall provide qualified traffic control personnel.
- .4 The blasting consultant shall have 10 years experience in the design of blasts for rock excavation and trim blasts on slopes for rock stabilization purposes. The blasting consultant shall not be a direct employee or affiliated with the Contractor, and shall be registered with a professional body.

.5 Scope and Description of Specific Work Sites

- .1 Work sites are illustrated and described in Appendix A included in contract specifications.
- .2 The quantities of work at different work sites indicated in Appendix A, and summarized in the Unit Price Table, are for estimating purposes only.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 PRECEDENCE

- .1 For Federal Government projects, General Conditions take precedence over technical specification.

1.2 RELATED SECTIONS

- .1 Section 01 35 30 – Health and Safety Requirements.
- .2 Section 01 35 31 - Special Procedures for Traffic Control.
- .3 Section 01 35 43 - Environmental Procedures.

1.3 EXISTING SERVICES

- .1 Provide for pedestrian, bicycle, vehicular, and wildlife traffic through the work areas for the duration of the construction.

1.4 USE OF THE WORKSITE/LAYDOWN AREA

- .1 Laydown area(s) will be allocated by Parks Canada and shall only be used for purposes of the Work. Laydown area(s) will be made available for the Contractors non-exclusive use for the duration of the Work, unless otherwise provided in the Contract Documents.
- .2 Parks Canada Agency regulations prohibit anyone working within the Park from using public campground facilities.
- .3 While the Work Site and laydown area are under the Contractor's control, the Contractor shall be entirely responsible for their security. The definition of the work site will be taken to mean any place or location the Contractor is working, has personnel (either working or on standby), or has equipment (being used or stored), or any location noted in the annotated photographs.
- .4 The Contractor shall keep the Work Site clean and free from accumulation of waste materials and rubbish regardless of source. Snow shall be removed by the Contractor as necessary for the performance and inspection of the Work.
- .5 The Contractor shall provide and maintain at least two (2) portable sanitary facilities (toilets), one at either end of each traffic control area for use by both the Contractor and the Public, in accordance with governing regulations and Environmental Procedures for this project.
- .6 Any damage to the Work Site or adjacent roadways or other existing facilities caused by the Contractor shall be repaired by the Contractor at its own expense.
- .7 The Contractor may work during daylight hours, seven (7) days per week from 6:00 a.m. to 8:00 p.m. with the following restrictions:

- .1 No work during the period including one day prior to and one day following an Alberta or British Columbia statutory holiday long weekend (e.g. no work on Friday through Tuesday if the holiday falls on Monday).
- .2 No hauling of material during inclement weather.
- .3 Restricted hours for blasting – 7:00 a .m. to 3:00 p.m. seven days per week, except long weekends. Blasting may be undertaken between 3 pm and 6 pm with the Departmental Representatives approval.
- .4 Traffic closures to facilitate the work shall be limited to 20 minutes and/or traffic lineups of no more than 1 km.
- .5 The Work may be restricted to accommodate special events with in the Park. Parks Canada will provide two weeks notice of any upcoming restrictions.
- .6 The Departmental Representative reserves the right to stop work in the case of excessive traffic delays during peak travel times.

1.5 WORK CONDUCTED OVER OR ADJACENT TO WATERWAYS

- .1 All components of the Work shall be conducted in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan for the project.
- .2 All components of the Work shall be conducted without equipment entering into wetlands, waterbodies, streams and rivers.
- .3 All waste materials from the Work shall be contained and collected in a manner to prevent any contact with the river valleys and waterways. Waste materials shall be disposed of in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan for the project.
- .4 The Contractor is responsible for the development and supply of construction access to the Work as approved by the Departmental Representative.

1.6 ACCESS TO ADJACENT PROPERTIES

- .1 Construction operations shall be conducted so as to cause minimal inconvenience to the public and to owners of adjoining property. Existing access to property shall be maintained as far as possible and if new access must be provided, every effort shall be taken to provide the new access before the existing access is removed.

1.7 UTILITIES & EXISTING INFRASTRUCTURE

- .1 The Contractor shall be responsible for locating any/all utilities in the Work Area and for any damage incurred to utilities in the Work Area while occupying site.
- .2 The Contractor shall be responsible for moving signs, concrete barriers, and other infrastructure where feasible to do so, and otherwise protecting all existing infrastructure

such as pavement surface, curb, sidewalks and culverts, in the work sites. Contractor shall be responsible for repairing all damage which can reasonably be prevented.

- .3 No separate payment will be made for aforementioned work. Costs of this work shall be considered incidental to contract.

1.8 PROTECTION OF PERSONS AND PROPERTY

- .1 The Contractor shall comply with all applicable safety regulations of Work Safe Alberta including, but not limited to, the Worker's Compensation Act and the Occupational Health and Safety Regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.
- .2 The Contractor shall take all necessary precautions and measures to prevent injury or damage to persons and property on or near the Work Site in accordance with Section 01 35 30 – Health and Safety Requirements.
- .3 The Contractor shall promptly repair, replace or compensate for any loss or damage caused by the Contractor to any property or, if Parks Canada so directs, shall promptly reimburse to Parks Canada the costs resulting from such loss or damage.

1.9 USE OF PUBLIC AREAS

- .1 The Contractor shall ensure its vehicles and equipment do not cause nuisance in public areas. Vehicles and equipment leaving the Work Site and entering public roadways shall be cleaned of mud and dirt clinging to the vehicle body and wheels. All vehicles transporting materials to or from the Work Site shall be loaded in a manner that prevents dropping of materials or debris on the roadways. Where contents may be blown off during transit such loads shall be covered by tarpaulins or other suitable covers. Spills of materials in public areas shall be removed or cleaned immediately by the Contractor at no cost to the Owner. All activities shall be in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan for the project.
- .2 Hauling units running on Highway 16 are not to exceed legal highway load limits. If the Contractor fails to follow these provisions the Contractor shall pay the cost of any repairs required to the roadway.
- .3 All tracked equipment operating on paved roadways shall be equipped with "Street Pads" to prevent damage to the road surface.

1.10 SUPERVISORY PERSONNEL

- .1 Within five (5) days after award notification, the Contractor shall submit to the Departmental Representative confirmation of the names of the supervisory personnel and other key staff designated for assignment on the Contract.

The following personnel shall be included in the list:

- .1 Project Superintendent;

- .2 Deputy Project Superintendent;
 - .3 Safety Representative.
 - .4 Blasting Consultant.
- .2 The above personnel shall perform the following duties:
- .1 The Project Superintendent shall be employed full time and shall be present on the Work Site each and every workday that Work is being performed, from the commencement of Work to Total Performance of the Work.
 - .2 The Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence.
 - .3 The Safety Representative shall possess safety experience in general construction. Duties shall encompass all matters of safety activities from commencement of Work until the Total Performance of the Work.
 - .4 The Blasting Consultant shall prepare, review and/or certify the blasting plans, and visit the site as detailed within these specifications.

1.11 MEETINGS

- .1 The Work includes attending meetings between the Contractor and the Departmental Representative. The meetings will be called and chaired by the Departmental Representative as required. The Contractor shall be represented at such meetings to the satisfaction of the Departmental Representative.
- .2 The Departmental Representative will schedule an initial meeting to be held on site after award notification and prior to any work being carried out. Senior representatives of the Owner, Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
- .3 The Contractor shall assemble all its site staff for an initial environmental briefing to be conducted by Parks Canada Environmental Safety Officer at initial project start-up. The briefing shall be approximately 2 hours in duration and held at a time and place agreeable to the Departmental Representative and Contractor. Subsequent environmental briefings will be arranged for new staff arriving on the project.
- .4 Cost of attending the above meetings and briefings shall be considered incidental to the Unit Price items and no additional payment will be made.

1.12 MIXING AND STORAGE OF EXPLOSIVES

- .1 No site for storage of explosives products will be provided to the Contractor. It is the responsibility of the Contractor to store all explosives products **outside** of the Park.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Prime Cost Sum.
- .2 Measurement procedures.

1.2 REFERENCES

- .1 General Conditions.

1.3 PRIME COST SUM

- .1 Include in Contract Price a total Prime Cost Sum of \$ 150,000.
- .2 The Contract Price, and not Prime Cost Sum, includes Contractor's overhead and profit in connection with such prime cost sum.
- .3 Prime Cost Sum provided for in the unit price table is not a sum due the Contractor. Rather, payment will be made against it for miscellaneous work not included in the unit price table ordered under GC 6.1 of the General Conditions.
- .4 Such work may include, but not be limited to:
 - .1 Rock Scaling, common excavation, rock bolting, trim blasting, removal and replacement of road barriers, within Jasper National Park.
- .5 The Contract Price, and not prime cost sum, includes Contractor's overhead and profit in connection with such prime cost sum.
- .6 Once a Prime Cost Sum has been agreed upon with Parks, it shall be included as an item on the Project Schedule. This shall occur on the next update of the Project Schedule.

1.4 MEASUREMENT FOR PAYMENT

- .1 Payment for work under the Prime Cost Sum will be made using negotiated rates or by material, labour and equipment rates as per the following:
 - .1 Rental rates will be in accordance with current British Columbia Roadbuilders rate schedule, or for work undertaken in Alberta the current Alberta Roadbuilders and Heavy Construction Association rate schedule, and will be all inclusive and fully operated. Hourly rental of equipment will be measured in actual working time and necessary travel time within project limits.
 - .2 Transportation time to and from site to be reimbursed only if equipment is used exclusively for additional work.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Mobilization and Demobilization.

1.2 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work.

1.3 DESCRIPTION

- .1 Consists of preparatory work and operations including but not limited to, those necessary for the movement of personnel, equipment, supplies, shops, offices and incidentals to and from the project sites.

1.4 MEASUREMENT PROCEDURES

- .1 Payment shall be made under “Lump Sum Priced Item 1 – Mobilization/Demobilization”.
- .2 50% of Lump Sum Contract Price for Mobilization and Demobilization to be paid when mobilization to site is complete.
- .3 The Remainder of Lump Sum Price for 2013 Mobilization and Demobilization to be paid when work is complete and all materials, equipment, camp, buildings, shops, offices and other facilities have been removed from site and site cleaned and left in a condition to the satisfaction of the Departmental Representative and all other Agencies having Jurisdiction.
- .4 Payment of only 5% of the total price tendered will be scheduled as outlined above. If the amount bid for Mobilization and Demobilization is greater than 5% of the total price tendered, payment of the remainder of the amount will be authorized when contract has been completed.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Definition of Site Occupancy

1.2 RELATED SECTIONS

- .1 SACC R2850D GC 5.10
- .2 Section 01 11 00 – Summary of Work

1.3 DEFINITION OF OCCUPANCY

- .1 OCCUPANCY – Contract Completion Date:
 - .1 Notwithstanding SACC R2850D – GC 5.10, the Contactor shall be permitted to lease and occupy sites where he will be working in Jasper National Park, free of charge from contract award up to and including the Contract Completion date of 2013 October 11. The sites to be leased by the Contractor include all roads and areas specified in this contract and as directed by the Departmental Representative.
 - .2 If the Contractor has not completed the work identified in the contract by 2013 October 11, to the satisfaction of the Departmental Representative, a site lease fee of \$3,000.00 per calendar day shall be payable for each and every calendar day, commencing 2013 October 11, and continuing until the Contractor has completed the work and is no longer occupying the site to a maximum of 15 days of \$45,000.00. No allowances shall be made for days of inclement weather, equipment breakdown or any reasons outside of the Contractor's control.
 - .3 If the Contractor has completed the work identified in the contract prior to 2013 October 11th to the satisfaction of the Departmental Representative, Parks Canada will pay the Contractor an amount equal to the site lease fee of \$3,000.00 per calendar day multiplied by the number of days the Contractor has completed the work and is no longer occupying the sites. The maximum amount payable by Parks Canada to the Contractor shall be \$45,000.00
 - .4 The Contractor's occupancy of the site will be deemed to have ended when both of the following conditions are met to the satisfaction of Parks Canada:
 - .1 All work identified under this contract has been completed.
 - .2 All site clean up including completed demobilization and camp removal and any outstanding deficiencies have been addressed to the satisfaction of the Departmental Representative (at the sites located in this contract).

END OF SECTION

Part 1 General

1.4 SECTION INCLUDES

- .1 Coordination of Work, progress meetings, schedules, submittals, and close out procedures.

1.5 RELATED SECTIONS

- .1 Section 01 11 10 - Summary of Work.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 35 43 - Environmental Procedures.
- .4 Section 01 52 00 - Construction Facilities.

1.6 COORDINATION

- .1 Co-ordinate progress schedules, submittals, use of site, temporary utilities, construction facilities, construction Work, and Work by Others, under instructions of the Departmental Representative.
- .2 The Contractor shall co-ordinate with other contractors working on the site to develop a work schedule agreeable to all parties to carry out the work without interruption.

1.7 CONSTRUCTION ORGANIZATION AND START-UP

- .1 Within seven (7) days after award of Contract, a start-up meeting is required to discuss administrative procedures and responsibilities.
- .2 Senior representatives of the Owner, Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors are to attend the start-up meeting. Meeting is to be in Jasper National Park (time and location to be determined).
- .3 Start-up meeting agenda to include following:
 - .1 Appointment of official representatives of participants in Work.
 - .2 Schedule of Work and progress scheduling in accordance with Section 01 32 18.
 - .3 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.
 - .4 Site safety and security in accordance with Section 01 52 00.
 - .5 Proposed changes, change orders, approvals required, mark-up percentages, time extensions, and other administrative requirements and procedures.

- .6 Monthly progress claims, photographs, and holdbacks.
- .7 Insurances, blasting licenses, and transcript of policies.
- .4 Comply with Departmental Representative's allocation of laydown areas on site for field offices and sheds, for access, traffic, parking, sanitary facilities, and use of temporary utilities and construction facilities.
- .5 Co-ordinate intra-project communications including submittals, reports and records, schedules, coordination of Drawings, recommendations, and resolution of ambiguities and conflicts through Departmental Representative.
- .6 Coordinate with Departmental Representative to review and layout the proposed work at each site prior to the start of work at that site.

1.8 ON-SITE DOCUMENTS

- .1 Maintain at job site, one copy each of the following:
 - .8 Contract Drawings, Specifications, and Addenda.
 - .9 Change Orders.
 - .10 Other modifications to Contract.
 - .11 Traffic Management Plan.
 - .12 Safety Plan.
 - .13 WHMIS documentation and all Health and Safety records.
 - .14 Environmental Protection Plan.
 - .15 Field test reports.
 - .16 Proposed and As-built Blasting Plans for each blast.
 - .17 Copy of approved Work Schedule.
 - .18 Labour conditions and wage schedules.
 - .19 Applicable current editions of municipal regulations and by-laws.

1.9 SCHEDULES

- .1 Submit preliminary construction progress schedule in accordance with Section 01 32 18 to Departmental Representative coordinated with Owner's project schedule.
- .2 After review, revise and resubmit schedule to comply with revised project schedule.

- .3 Periodically revise and resubmit schedule as directed by Departmental Representative.

1.10 CONSTRUCTION PROGRESS MEETINGS

- .20 Meetings are to be held on a regular basis as required.

1.11 SUBMITTALS

- .1 Submit requests for payment for review and transmittal to Departmental Representative.
- .2 Submit requests for interpretation of Contract Documents, and obtain instructions through Departmental Representative.
- .3 Process change orders through Departmental Representative.
- .4 Deliver closeout submittals for review and preliminary inspections, for transmittal to Departmental Representative.

1.12 CLOSEOUT PROCEDURES

- .1 Notify Departmental Representative when Work is considered ready for Substantial Completion Inspection.
- .2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.
- .3 Comply with Departmental Representative's instructions for correction of items of Work listed in executed certificate of Substantial Completion.

2 Products

2.1 NOT USED

- .1 Not Used.

3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .2 Shop Drawings and product data.
- .3 Certificates and transcripts.
- .4 Required Contractor Submittals
 - .1 Pre-mobilization Submittals
 - .1 Schedule
 - .2 Contractor Chain of Command
 - .3 Work Plan
 - .4 Traffic Management Plan
 - .5 Construction Access Plan
 - .6 Environmental Protection Plan (EPP)
 - .7 Blasting Safety Plan
 - .8 Emergency Response Protocol
 - .9 Blasting Plans
 - .10 Health and Safety Plan
 - .11 Common Excavation Disposal Plan
 - .12 Rock Bolt Installation Procedure
 - .2 Construction Phase Submittals
 - .13 Proposed Blast Designs
 - .14 Rock Bolt Installation Records
 - .15 Monthly Progress Reports including revised Project Schedule
 - .16 Daily Quantity Sheets
 - .17 Pre-Construction Condition Surveys
 - .18 Blasting Consultant Field Report(s)
 - .3 Project Completion Submittals
 - .1 Record digital Photographs (CD not prints)
 - .2 As-Built Blasting Records

3.2 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

3.3 1.3 RELATED SECTIONS

- .1 Section 01 14 00 – Work Restrictions.
- .2 Section 01 35 30 – Health and Safety Requirements.
- .3 Section 01 35 31 – Special Procedures for Traffic Control.
- .4 Section 01 35 43 – Environmental Procedures.
- .5 Section 01 78 00 - Closeout Submittals.

3.4 REFERENCES

- .1 Not used.

3.5 ADMINISTRATIVE

- .1 Provide submittals to Departmental Representative for review with reasonable promptness so as not to delay the Work. Failure to provide submittals in ample time is not considered sufficient reason for an extension of Contract Time.
- .2 Work affected by a submittal shall not proceed until review is complete.
- .3 Where information is not produced in SI Metric units, converted values are acceptable.
- .4 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.
- .5 Notify Departmental Representative, in writing at time of submission, identifying any deviations from requirements of the Contract Documents stating reasons for deviations.
- .6 Verify that field measurements and affected adjacent Work are coordinated.
- .7 The Contractor's responsibility for errors and omissions in submissions is not relieved by Departmental Representative's review of submittals.
- .8 The Contractor's responsibility for deviations in submissions from requirements of the Contract Documents is not relieved by Departmental Representative's review.
- .9 Keep one reviewed copy of each submission on site.

3.6 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit manufacturers data sheets for all explosive, rock bolt, concrete guardrail, fencing, and all other products to be incorporated into the Work prior to their use in the Work.

3.7 SAMPLES

- .1 Not used.

3.8 MOCK-UPS

- .1 Not used.

3.9 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

3.10 REQUIRED CONTRACTOR SUBMITTALS

- .1 General
 - .1 This Clause identifies the plans, programs, and documentation required prior to mobilization to site, during the construction phase, and upon project completion.
 - .2 The Contractor shall not construe the Departmental Representative's review and authorization of the submittals to imply approval of any particular method or sequence for conducting the Work. Authorization of the programs shall not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal or Provincial regulations, this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor shall remain solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.
- .2 Pre-Mobilization Submittals
 - .1 Submit the following plans and programs to the Departmental Representative for review a minimum of five (5) days prior to mobilization to the project site. The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of the submittals in writing.
 - .1 Project Schedule detailing milestone dates, schedule of workdays, and manpower required to complete each project activity.
 - .2 Contractor Chain of Command, listing the key Contractor personnel, names and positions, addresses, telephone, cellular telephone and/or pager numbers. The list shall include contact persons who are available on a 24-hour basis in the event of emergencies.

- .3 Work Plan, describing the Contractor's intended methods of construction including but not limited to the environmental mitigation strategies and projected number of personnel on site.
- .4 Site Specific Traffic Management Plan, in accordance with the requirements of Section 01 14 00 - Work Restrictions and Section 01 35 31 - Special Procedures for Traffic Control.
- .5 Construction Access Plan, which shall include, but not be limited to, procedures for accessing all areas of the Work.
- .6 Environmental Protection Plan (EPP), which shall meet the requirements of Section 01 35 43 - Environmental Procedures.
- .7 Blasting Safety Plan, describing special procedures to be followed during rock blasting to ensure protection of the public and workers in accordance with Section 01 35 30 – Health and Safety Requirements.
- .8 Emergency Response Protocol detailing the Contractor's procedures for management of emergency situations and providing a response plan, protocols, and contact information.
- .9 General Blasting Plan for the work which outlines the proposed types of explosives, delays and detonators, and provide details for drilling, loading, and blasting. Handling and storage practices for explosives products shall be described in detail.
- .10 Occupational Health And Safety Program - The Contractor shall have a Certificate of Recognition (COR) or Registered Safety Plan (RSP) including a site specific Health and Safety Plan acceptable to the Departmental Representative. The Contractor shall implement and maintain the Health and Safety Plan during the Work.
- .11 Common Excavation Disposal Plan detailing disposal site location and Ownership in accordance with Section 31 23 22 – Common Excavation.
- .12 Rock Bolt Installation Procedure in accordance with Section 31 23 23 – Rock Bolts.

.3 Construction Phase Submittals

.1 Proposed Blast Designs.

- .1 Not less than two (2) days prior to commencing work at each trimming location, submit a Proposed Blast Design for that trim location to the Departmental Representative for review in accordance with Section 31 23 21 – Trimming.

- .2 Typical blast designs for Trimming shall be prepared by or certified by an independent Blasting Consultant retained at the Contractor's expense where directed by the departmental representative, or as detailed within these specifications. For specific blasts where a vibration limit has been imposed on a receptor, the blast designs will be prepared by the blasting consultant. Qualifications of the Consultant are to be reviewed and approved by the Departmental Representative.
- .2 Rock Bolt Installation Record in accordance with Section 31 23 23 – Rock Bolts.
- .3 Monthly Progress Report updates will be submitted, including an updated schedule.
- .4 Daily Quantity Sheet. The Contractor is required to submit a daily quantity sheet for the work.
- .5 Pre-Construction Condition Survey. The Contractor shall submit a survey of the pre-existing conditions at each work site prior to undertaking scaling, trimming, or other work that could damage existing infrastructure. The Pre-Construction Condition Survey shall be in a format acceptable to the Departmental Representative and include digital photos, measurements, and written descriptions as appropriate to document the existing conditions.
- .6 Blasting Consultant Field Reports.
- .7 Work Site Health and Safety Inspection Report (weekly) – Submit weekly in accordance with Section 01 35 30 – Health and Safety Requirements.
- .4 Project Completion Submittals
 - .1 Record Digital Photographs -The Contractor shall submit copies of all Contractor's Digital Photographs (by electronic copy (jpg, tiff) not prints).
 - .2 As-Built Blasting Record - The Contractor shall submit an As-Built Blasting Record for each blast.

4 Products

4.1 NOT USED

- .1 Not Used.

5 Execution

5.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

5.2 SECTION INCLUDES

- .1 Health and safety considerations required to ensure that PCA shows due diligence towards health and safety on construction sites, and meets the requirements laid out in PCA/RPB Departmental Policy DP 073 - Occupational Health and Safety - Construction.

5.3 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

5.4 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures

5.5 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
- .3 Province of Alberta
 - .1 Workers Compensation Act.
 - .2 Occupational Health and Safety Regulations.
 - .3 Occupational Health and Safety Code Part 41 – Work Requiring Rope Access

5.6 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan at least five (5) days prior to mobilization to site. Health and Safety Plan must include:
 - .4 Identification of applicable compliance obligations.
 - .5 Definition of responsibilities for project safety/organization chart for project.
 - .6 General safety rules for project.
 - .7 Job specific safe work procedures.

- .8 Inspection policy and procedures.
- .9 Incident reporting and investigation policy and procedures.
- .10 Occupational Health and Safety meetings.
- .11 Occupational Health and Safety communications and record keeping procedures.
- .12 Results of site specific safety hazard assessment.
- .13 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit two (2) copies of a weekly Work Site Health and Safety Inspection Report prepared by the Contractor's authorized Safety Representative to Departmental Representative and authority having jurisdiction, on a weekly basis.
- .4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit copies of Material Safety Data Sheets (MSDS) to Departmental Representative.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within seven (7) days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within five (5) days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .10 On-site Contingency and Emergency Response Plan to address standard operating procedures to be implemented during emergency situations.

5.7 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

5.8 1.7 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

5.9 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

5.10 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with National Parks Act.

5.11 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with WCB Alberta.

5.12 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

5.13 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

5.14 COMPLIANCE REQUIREMENTS

- .1 Comply with the Workers Compensation Act and Occupational Health and Safety Regulations of Alberta.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

5.15 UNFORESEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or conditions occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

5.16 HEALTH AND SAFETY REPRESENTATIVE

- .1 Employ and assign to the Work, a competent and authorized Health and Safety Representative. The Health and Safety Representative must:

- .14 Have minimum 2 years' site-related working experience specific to activities associated with roadway construction.
- .15 Have working knowledge of occupational safety and health regulations.
- .16 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .17 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .18 Be on site during execution of Work and report directly to and be under direction of Site Supervisor.

5.17 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

5.18 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.
- .4 In the event that work is temporarily stopped either by the Departmental Representative, or by a body having jurisdiction, it will not relieve the Contractor of his responsibilities under this Contract. Standby time and all costs associated with a stop work order due to safety considerations, is considered incidental to the contract.

5.19 BLASTING

- .1 Blasting or other use of explosives is not permitted without prior receipt of written instructions by the Departmental Representative.
- .2 Blasting is to be in accordance with Section 01 35 43 - Environmental Procedures.

5.20 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from the Departmental Representative.

5.21 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

6 Products

6.1 NOT USED

- .1 Not used.

7 Execution

7.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

7.2 SECTION INCLUDES

- .1 Informational and Warning Devices.
- .2 Protection and Control of Public Traffic.
- .3 Operational Requirements.

7.3 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

7.4 RELATED SECTIONS

- .1 Section 01 14 00 -Work Restrictions.

7.5 MEASUREMENT PROCEDURES

- .1 No measurement as such will be made for Traffic Management, and for the preparation and implementation of Traffic Management Plans, for the Contractor to meet the requirements of this section. The Departmental Representative will review that the measures detailed within the Traffic Management Plans are being implemented.

7.6 REFERENCES

- .1 Uniform Traffic Control Devices for Canada, (UTCD) September 1998 (distributed by Transportation Association of Canada), and subsequent amendments. Manual of Uniform Traffic Control Devices for Streets and Highways, US FHWA, Part IV, 2001.
- .2 Manual of Uniform Traffic Control Devices for Streets and Highways, US FHWA, Part IV, 2009, and subsequent amendments.
- .3 BC Traffic Control Manual for Work on Roadways (1999) and subsequent amendments.

7.7 GENERAL

- .1 The Contractor shall develop and implement a Traffic Management Plan in accordance with the requirements of the latest edition of the Alberta Transportation Standard, except where specified otherwise. The Traffic Management Plan shall be submitted to the Departmental Representative a minimum of five (5) days prior to commencement of site work and be accepted by the Departmental Representative prior to commencement of the site work.
- .2 Traffic Management Plan shall include special requirements for traffic control during blasting.

- .3 The Traffic Management Plan shall include plans specific to each traffic control location which needs to be established during construction.
- .4 The Contractor shall design, supply, erect, move and maintain all traffic control devices, signs and other safety measures and provide staff to ensure safe passage of all traffic from commencement of site work to date of acceptance by the Departmental Representative.
- .5 All traffic and warning signs shall be either bilingual or of a symbolic or pictorial type. If bilingual signs are used, the English and French message shall be of equal letter size and at same elevation, with English on left and French on right. Assistance in translation of construction and warning signs to French may be obtained from Parks Canada. All signs shall be "Diamond Grade" reflectivity.
- .6 All speed limits, traffic control and warning signs shall have an 'NPC' adhesive sticker added to bottom right-hand corner. These stickers will be supplied by Parks Canada following the acceptance by the Departmental Representative of the Contractor's Traffic Management Plan.
- .7 The Work shall be staged and/or detour roads provided, with the appropriate controls in place, so that two lanes of highway traffic are maintained through the work zone at all times throughout the construction, except where allowed for under 1.10 – Operational Requirements.
- .8 The Contractor shall coordinate traffic management procedures with other Contractors working in the area.

1.7 PROTECTION OF PUBLIC TRAFFIC

- .9 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .10 When working on travelled way:
 - .1 Place equipment in position to present minimum of interference and hazard to traveling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .11 Do not close any lanes of road without approval of Departmental Representative. Before re-routing traffic erect suitable signs and devices in accordance with instructions contained in Part D of Uniform Traffic Control Device for Canada (UTCD).
- .12 Keep travelled way graded, free of potholes and debris, and of sufficient width to accommodate two 3.7 m wide lanes for traffic, one in each direction.

- .13 As directed by the Departmental Representative, provide paved detours to facilitate passage of traffic around restricted construction area, within the existing paved width of the Highway. In active work zones where the shoulder width has been reduced:
 - .4 Traffic barriers shall be provided on both sides of the roadway.
 - .5 The reduced speed limit shall be 50 km/hr.
 - .6 The Contractor shall provide temporary lighting of the roadway from dusk until dawn throughout the periods where detours are constructed and in use. These lights shall be capable of providing adequate illumination of the work site and detour without blinding drivers of approaching vehicles on the highway. The Contractor shall provide power supply for temporary lighting throughout the construction period.
 - .7 The Contractor shall provide competent supervision and/or contract personnel as required during non working hours to ensure that safety flares, flashing beacons, signs, lights, etc. are in proper working order.
 - .8 The Departmental Representative will monitor traffic control measures and may require modifications of these measures from time to time to achieve satisfactory traffic flow, safety of traveling public and coordination with adjacent contracts.
- .14 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, unless other means of road access exist that meet approval of Departmental Representative.
- .15 The Contractor shall maintain a dust free construction zone by means of sweeping and watering when required.

7.8 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in the Traffic Management Plan.
- .3 Place signs and other devices to standards and in locations recommended in AlbertaTraffic Accommodation in Work Zones (2008) and subsequent amendments. Provide intermediate signage if work zones exceed 1.0 km in length.
- .4 Signs shall be wind resistant.
- .5 Prior to the commencement of Work, the Contractor is to provide for the Departmental Representative's review, a Detour/Traffic Management Plan outlining signs and other devices required for the project. If the situation on site changes, revise the Plan and resubmit for the approval of the Departmental Representative.

- .6 Continually maintain traffic control devices in use by:
 - .9 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .10 Removing or covering signs which do not apply to conditions existing from day to day or time to time.

7.9 CONTROL OF PUBLIC TRAFFIC

- .1 Provide competent Traffic Control Persons (TCPs), trained in accordance with, and properly equipped as specified in the Alberta Traffic Accommodation in Work Zones (2008) and subsequent amendments:
 - .11 When public traffic is required to pass working vehicles or equipment which block all or part of travelled roadway.
 - .12 When stoppage of public traffic is required due to rock scaling, blasting, rock bolting, excavation, and other work.
 - .13 When it is necessary to institute a one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
 - .14 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .15 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .16 For emergency protection when other traffic control devices are not readily available.
 - .17 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .18 At each end of restricted sections where pilot cars are required.
- .2 The Contractor shall provide and equip responsible TCPs for the direction and control of traffic. The Contractor shall ensure that TCPs are instructed in and use proper traffic control procedures appropriate for the prevailing conditions.
- .3 TCPs shall have proof of certification from a recognized training program on traffic control procedures through construction zones. The Departmental Representative will recognize traffic control programs administered by the Alberta Construction Safety Association or BC Road Construction and Maintenance Safety Network, however the Departmental Representative reserves the right to accept or reject certification from any other institute.

- .4 TCPs shall be dressed in safety apparel (coveralls), which meets the Class 3 Level 2 requirements of the [BC Traffic Control Manual for Work on Roadways](#), High Visibility Safety Apparel. Each pair of coveralls shall have a permanent label affixed certifying compliance with Class 3 Level 2 of CSA Z96-02 or equivalent within the [BC Traffic Control Manual for Work on Roadways](#). The colour of the coveralls shall be fluorescent yellow-green with silver retroreflective striping. The retroreflective striping shall be a minimum of 50mm wide and shall be sewn onto a 100mm wide fluorescent red-orange background material. TCPs safety apparel must be kept clean and in good condition. Faded, torn and/or dirty coveralls, or coveralls without a CSA certification label, will not be acceptable and shall be replaced by the Contractor at the Departmental Representative's discretion.
- .5 TCPs shall also wear fluorescent orange hardhats, and shall be equipped with the traffic control paddles.
- .6 TCPs shall be equipped with two-way radios and back up batteries.
- .7 During hours of darkness, TCPs shall be additionally equipped with a red signal hand-light of sufficient brightness to be clearly visible to approaching traffic and flagging stations shall be illuminated by overhead lighting. Signs indicating hazardous conditions and signs requiring increased attention shall be marked with flashers.

7.10 OPERATIONAL REQUIREMENTS

- .1 Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken as specified herein and approved by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:
 - .19 Speed limit reduced to 50 km/h in work zones in work periods.
- .2 Maintain existing conditions for traffic crossing right-of-way.
- .3 Post construction advisories on the DriveBC website (<http://www.drivebc.ca>) and 511 Alberta <http://511.alberta.ca>, and update regularly. Delays to public traffic due to Contractor's operation: maximum 20 minutes, and no longer than 1000 metres of line up.
- .4 Emergency vehicles are to be directed through the work site immediately once conditions are safe.

7.11 PAYMENT

- .1 Payment will be as per the lump sum price in the lump sum price breakdown, pro-rated over the duration of the work.

8 Products

8.1 NOT USED

- .1 Not Used.

9 Execution

- .1 Traffic management for the purposes of all aspects of the work including but not limited to; Rock Scaling, Trim Blasting, Common Excavation, removal and replacement of road barriers, installation of new road barriers, and Rock Bolting shall be undertaken as per this specification.

END OF SECTION

10 General

10.1 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

10.2 MEASUREMENT PROCEDURES

- .1 Preparation and implementation of an Environmental Protection Plan in accordance with this Section 01 35 43 – Environmental Procedures will not be measured separately for payment and will be considered incidental to the work.

10.3 SUBMITTALS

- .1 The Contractor is required to prepare an Environmental Protection Plan (EPP) in accordance with this Section 01 35 43 – Environmental Procedures.

10.4 NATIONAL PARK REGULATIONS

- .1 The Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the Canada National Parks Act and Regulations.
- .2 The Contractor and any sub-Contractors shall obtain a business license from the Jasper Parks Canada Administration Office, prior to commencement of the contract.
- .3 All Contractors' vehicles are required to display a vehicle work pass from Parks Canada. These permits may be obtained free of charge from Parks Canada.

10.5 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

- .1 Execution of the work is subject to the provisions within the Canadian Environmental Assessment Act (CEAA) Guidelines Order of 2003 and subsequent amendments.
- .2 Failure to comply with or observe environmental protection measures identified in these specifications may result suspension of the work pending rectification of the problems.

10.6 START-UP AND ENVIRONMENTAL BRIEFING

- .1 All staff employed at the construction site will be subject to a briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. Employees must attend this briefing, lasting approximately 2 hours, before beginning their work at the site. Each employee, having received the briefing, will be issued a certification sticker to be displayed on his or her helmet. It is recognized new employees may join the Contractors' work force after the initial round of "environmental briefing". In that case and as required, subsequent "environmental briefings" can be presented as numbers warrant, by arrangement with the ESO (Environmental Safety Officer) through the Departmental

Representative. Also, some sub-trades may be present at the site for a short time, to perform once-only duties. In these cases, the “environmental briefing” will be replaced by the Contractor explaining the environmental sensitivity of the work location to the sub-trade worker(s), and reviewing highlights of personal conduct expected, with reference to a one-page briefing summary to be provided to the Contractor by the ESO. A copy of this summary will be provided to each sub-trade worker joining the work force.

- .2 Parks Canada will have an ESO attending the site to monitor the construction activity for conformance with the EPP. The ESO or alternate designated Parks Canada staff member will present the “environmental briefing”. The ESO’s main duties are to monitor the progress of the construction on an on-going basis to ensure compliance with environmental protection measures, and to provide guidance through the Departmental Representative, in the event of unanticipated environmental problems. Although the ESO has authority to enforce National Parks Act violations, direction to the Contractor will be the duty of the Departmental Representative.

10.7 CONSTRUCTION SITE ACCESS AND PARKING

- .1 The Contractor shall review both short and long term construction access requirements with the Departmental Representative, both at start-up and on an ongoing basis. In consultation with the Departmental Representative, the Contractor shall formulate an agreement for worker transportation to and from the work sites and where workers shall park their private vehicles. Generally, personal vehicles shall be parked at least 10 metres distance from any watercourse.
- .2 Workers private vehicles are to remain within the construction footprint.

10.8 PROTECTION OF WORK LIMITS

- .1 The EPP shall include details of how the Contractor shall mark work limits and procedures that shall be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Departmental Representative and the ESO. The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers’ vehicles or construction machinery and shall instruct workers so that the “footprint” of the project is kept within defined boundaries

10.9 EROSION CONTROL

- .1 Sediment and erosion control measures that prevent sediment from entering any waterway, water body or wetland in the vicinity of the construction site are a critical element of the project and shall be implemented by the Contractor.
- .2 On-site sediment control measures shall be constructed and functional prior to initiating activities that may generate sediment or deleterious runoff. The EPP shall include an Erosion Control Plan to the satisfaction of the Departmental Representative and ESO.
- .3 The regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. If the design of the control measures is not functioning

effectively they are to be repaired. The Departmental Representative and ESO also will monitor erosion control performance.

- .4 The site shall be secured against erosion during periods of construction inactivity.

10.10 POLLUTION CONTROL

- .1 The Contractor shall prevent any deleterious and objectionable materials from entering streams, rivers, wetlands, water bodies or watercourses that would result in damage to aquatic and riparian habitat.
- .2 A Spill Response Plan shall be prepared as part of the EPP and shall detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Departmental Representative and the ESO and in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement, sand blasting agents, and petroleum based products.
- .3 The containment, storage, security, handling, use, unique spill response requirements and disposal of empty containers, surplus product or waste generated in the use of any hazardous or toxic products shall be in accordance with all applicable federal and provincial legislation. Hazardous products shall be stored no closer than 100 metres from any rivers and their tributaries.
- .4 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berm shall be capable of holding 110% of the tank storage volume and shall be to the satisfaction of the Departmental Representative and the ESO before start-up. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.
- .5 The Contractor shall prevent blowing dust and debris by covering and/or providing dust control by methods approved by the Departmental Representative or ESO.
- .6 The Contractor shall provide spill kits at re-fuelling, lubrication, and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order at all times. The ESO and Departmental Representative prior to project start-up must approve these spill kits. The Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in their use.
- .7 If not available, Banff Dispatch shall be immediately contacted at 403-762-4506 (emergencies) or the Wardens Office in Jasper (respectively 780-852-6156). In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and clean up.

- .8 The costs involved in a spill incident (the control, clean up, disposal of contaminants and site remediation to pre-spill conditions) shall be the responsibility of the Contractor. The site will be inspected to ensure completion to the expected standard and to the satisfaction of the Departmental Representative and ESO.

10.11 EQUIPMENT MAINTENANCE, FUELLING AND OPERATION

- .1 The Contractor shall ensure that all soil, seeds and any debris attached to construction equipment to be used on the project site shall be removed (e.g. power washing) outside of the National Park before delivery to the work site.
- .2 Equipment fuelling sites will be identified by the Contractor and approved by the Departmental Representative and the ESO. Except for chain saws, any fuelling closer than 100 metres to any streams, wetlands, water bodies or waterways shall require the authorization and oversight of the Departmental Representative.
- .3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than 100 metres from any streams, wetlands, water bodies or watercourses. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain presence at and immediate attention to fuelling operations.
- .4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times.
- .5 Equipment used on the project shall be fuelled with E10, and low sulphur diesel fuels and shall conform to local emission requirements. The Contractor is to ensure that unnecessary idling of vehicles is avoided.
- .6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations approved by the ESO or the Departmental Representative. Waste lubrication products (e.g. oil filters, used containers, used oil, etc.) shall be secured in spill-proof containers and properly recycled or disposed of at an approved facility. No waste petroleum, lubricant products or related materials are to be discarded, buried or disposed of in borrow pits, turnouts, picnic areas, viewpoints, etc anywhere within a National Park.
- .7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order.
- .8 Fuel containers, lubricant products, or other potentially deleterious substances shall be stored only in secure locations specified by the Departmental Representative and be secured to ensure they are tamperproof and cannot be drained by vandals. Alternatively, the Contractor may hire security personnel to prevent vandalism.

10.12 OPERATION OF EQUIPMENT

- .1 Equipment movements shall be restricted to the 'footprint' of the construction area. The work limits shall be identified by stake and ribbon or other methods approved by the Departmental Representative. Unless authorized by the Departmental Representative,

activities beyond the work limits are not permitted. No machinery shall enter, work in or cross over streams, rivers, wetlands, water bodies or watercourses, nor damage aquatic and riparian habitat or trees and plant communities.

- .2 When, in the opinion of Parks Canada, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond the designated work area, the Contractor shall be responsible, at his or her expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc. to the satisfaction of the Departmental Representative and ESO.
- .3 Restrict vehicle movements to work limits.

10.13 FIRE PREVENTION AND CONTROL

- .1 A fire extinguisher shall be carried and available for use on each machine and equipment.
- .2 Construction equipment shall be operated in a manner and with all original manufacturer's safety devices to prevent ignition of flammable materials in the area.
- .3 Care shall be taken while smoking on the construction site to ensure that the accidental ignition of any flammable material is prevented. Smoking or other activities with the potential to cause a fire may be restricted and/or prohibited in some of the work areas at the discretion of the ESO and the Departmental Representative depending on the current fire hazard rating.
- .4 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. The ESO and the Departmental Representative shall be notified of any fire immediately. If not available, Jasper Dispatch shall be immediately contacted at 780-852-6155, dial 911 in case of emergencies.
- .4 Fires or burning of waste materials is not permitted.

10.14 WILDLIFE

- .1 During the Environmental Briefing all personnel shall be instructed by the ESO on procedures to follow in the event of wildlife appearance near or within the work site and any other wildlife concerns.
- .2 If necessary, schedule construction activities around important wildlife windows.
- .3 Avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from the immediate location if bears, cougars, wolves, elk or moose display aggressive behavior or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) shall be exercised at all times.
- .4 Notify the ESO and Departmental Representative immediately about dens, litters, nests, carcasses (road kills), bear activity or encounters on or around the site or crew accommodation. Other wildlife-related encounters are to be reported within 24 hours. If

the ESO or Departmental Representative is not available, Jasper Dispatch shall be immediately contacted at 780-852-6155.

10.15 RELICS, FOSSILS AND ANTIQUITIES

- .1 Artifacts, relics, fossils, antiquities and items of historical interest such as cornerstones, commemorative plaques, inscribed tablets and similar objects found on the work site shall be reported to the ESO or the Departmental Representative immediately. The Contractor and workers shall wait for instructions before proceeding with their work.
- .2 All historical or archaeological objects found in Jasper National Park are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any articles found and request direction from the ESO or the Departmental Representative.

10.16 WASTE MATERIALS STORAGE AND REMOVAL

- .1 The Contractor shall dispose of hazardous wastes in conformance with the Environmental Contaminants Act, applicable provincial regulations, and the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.
- .2 All wastes originating from construction, trade, hazardous and domestic sources, shall be kept separate for disposal in separate waste streams where available or required.
- .3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere within National Parks. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers, and disposed of at an appropriate waste landfill and recycling site(s) located outside the park. Construction waste storage containers, provided by the Contractor, shall be emptied by the Contractor when 90% full. Waste containers shall have lids, and waste loads shall be covered while being transported.
- .4 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials.
- .5 All efforts to prevent wildlife from obtaining food, garbage or other domestic wastes shall be made by the Contractor and contract staff while undertaking work in National Parks. Such wildlife attractants shall not be stored at the work site overnight. Lunches, coolers and food products, including waste food products, shall be securely stored away from access by animals. Daily removal from the National Park and off site disposal of food scraps, food wrappers, pop cans, domestic waste, and other potential wildlife attractants is mandatory. Existing Parks Canada waste receptacles shall not be used for disposal of such wastes without prior arrangement with Parks Canada.
- .6 The Contractor and workers shall immediately report any circumstances related to food/garbage and wildlife to the ESO or the Departmental Representative. If neither can be reached, the Contractor/worker shall immediately contact Jasper Dispatch shall be at 780-852-6155.

- .7 Sanitary facilities, such as a portable container toilet, shall be provided and maintained in a clean condition by the Contractor. Sanitary facilities shall be provided at both ends of a traffic control zone and be available for use by both the Public and the Contractor's crew.

10.17 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 The National Park Act regulations prohibit anyone working within National Parks from using public campground facilities.
- .2 Removal and storage of snow shall be the Contractors responsibility and arranged with the ESO and the Departmental Representative.
- .3 The Contractor shall control blowing dust and debris generated from the construction site by means such as covering or wetting down dry materials and rubbish. Dust control measures for temporary access roads may also have to be initiated.
- .4 Security services at the work site may be desirable or necessary during the contract, especially during quiet times. Fuel tanks or other potentially deleterious substances shall be secured to ensure they are tamperproof and cannot be drained by vandals.
- .5 Pets shall not be brought to or maintained at the construction site.

11 Products

11.1 NOT USED

- .1 Not Used.

12 Execution

12.1 CLEARING AND GRUBBING

- .1 Not Used

12.2 SPECIFIC CONCERNS RELATIVE TO BLASTING AND SCALING

- .1 Kinder morgan TMX oil pipeline is downslope of and skirts the work areas along H16. Blasting operations must be suitable for the individual rock slope constraints. Some of the rock slopes in Jasper are constrained by the CN rail line and the TMX pipeline. Protection of both of these assets during remediation work will require careful communication between the contractor and PCA. If a rock slope is subject to these issues, those rock cuts should have their blasts designed by a suitably qualified, experienced, blasting consultant.
- .2 The Contractor shall ensure that all work activities meet or exceed the standards outlined in DFO's "Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters"; Canadian Technical Report of Fisheries and Aquatic Sciences 2107, 1998.

- .3 Steps shall be taken to minimize fly-rock and dust. Vegetation outside of the designated area shall not be damaged or destroyed.
- .4 Ditches shall be formed and cleaned upon the completion of the work and the natural drainage shall be restored as specified or as directed by the Departmental Representative.
- .5 The Contractor shall describe the proposed type and quantities of explosives to be used to the satisfaction of the Departmental Representative and ESO. Blasting products that may produce high residual nitrogen concentrations (such as ANFO) will not be permitted.

12.3 SPECIFIC CONCERNS RELATIVE TO EXCAVATING AND PLACEMENT

- .1 Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location. The Contractor shall instruct workers to prevent pushing, placement, raveling, storage or stockpiling of any materials (e.g. slash, rock, fill or topsoil) in the trees bordering the right-of-way or into watercourses or water bodies.
- .2 All sediment control measures shall be implemented by the Contractor prior to the commencement of the work in the vicinity of water bodies, watercourses, and wetlands.
- .3 Special precautions must have to be taken during excavation in the vicinity of intermittent or active drainage channels. See "Specific Concerns".
- .4 Fisheries protection windows shall be observed for any watercourse in this contract and will guide the timing of the work so that stream disturbance is prevented.
- .5 If a pump-out sump to dewater excavation sites will be required, the Contractor is to prepare an EPP which details how the dewatering shall be undertaken, to the satisfaction of the Departmental Representative and the ESO. Special attention is to be given to the environmental sensitivity of the discharge area, freezing conditions operation, and overflow avoidance, decanting and settlement pond reclamation. Water containing suspended materials shall not be pumped into watercourses, drainage systems or on to land, except with the permission of the Departmental Representative and the ESO.

12.4 SPECIFIC CONCERNS RELATIVE TO EROSION CONTROL AND SEDIMENTATION

- .1 The EPP shall include an Erosion and Sedimentation Management Plan for the components of this contract that are undertaken in proximity to watercourses, wetlands or riparian environments. This plan shall be to the satisfaction of the Departmental Representative and ESO. If sediment ponds are required, they shall be designed to settle all sediment particles 0.02 mm or larger. The ponds shall also be designed to handle 1:5 year storm events, with overflow spill capacity for 1:10 year storm events and emergency spillway capacity for 1:100 year storm events. If the ditches are filled with runoff in the spring, such work shall be considered in the fall.

- .2 An important desired end result is to allow no release into watercourses of sediments in levels that are deleterious to fish or that would harmfully alter, disrupt, or destroy fish habitat. Similarly there is to be no sediment release into areas of vegetation growth or sensitive areas of sediments in levels that would adversely alter growing or hydraulic conditions. The target is 0 mg/L of TSS over background levels. The threshold is a maximum instantaneous increase of 25 mg/L over background levels when background levels are <250 mg/L, or a maximum instantaneous increase of 10% over background levels when background levels are >250 mg/L. This threshold shall not be exceeded.

12.5 SPECIFIC CONCERNS RELATIVE TO PROJECT WORK SITE(S)

- .1 The Contractor is advised that Smokey River is situated adjacent to Highway 16 throughout the work area that manholes and storm water catch basins may drain directly to the creek in some areas. The Environmental Protection Plan for this project shall provide details of the methods the Contractor shall employ to prevent sediment from entering Smokey River.

END OF SECTION

Part 1 General

12.6 SECTION INCLUDES

- .1 Construction aids.
- .2 Office and sheds.
- .3 Parking.
- .4 Project identification.
- .5 Resident Departmental Representative facilities requirements.

12.7 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

12.8 INSTALLATION AND REMOVAL

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such facilities after use.

12.9 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load any part of the Work with a weight or force that will endanger the Work.

12.10 CONSTRUCTION PARKING

- .1 Provide and maintain adequate access and parking at the project site in areas approved by the Departmental Representative.
- .2 Build and maintain temporary roads and provide snow removal during period of Work.
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

12.11 SECURITY

- .1 If required by the Contractor, the Contractor shall provide and pay for security personnel to guard the work, work site, and contents of site after working hours, during holidays, and during extended shutdowns. The Contractor is advised that some random acts of vandalism to equipment have occurred within the Park.

12.12 OFFICES

- .1 No site office is required to be provided.
- .2 Provide a clearly marked and fully stocked first aid case in a readily available location.

12.13 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities and to minimise aesthetic impacts.

12.14 SANITARY FACILITIES

- .1 Provide sanitary facilities for use by the Public and Contractor's work force at both ends of traffic control areas in accordance with governing regulations, ordinances and the EPP.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

12.15 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.
- .2 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN3-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and remove from site upon completion, or earlier if directed by Departmental Representative.

13 Products

13.1 NOT USED

- .1 Not Used.

14 Execution

14.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

14.2 SECTION INCLUDES

- .1 Barriers.
- .2 Environmental Controls.
- .3 Traffic Controls.
- .4 Fire Routes.

14.3 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

14.4 RELATED SECTIONS

- .1 Section 01 35 31 - Special Procedures for Traffic Control.
- .2 Section 01 52 00 - Construction Facilities.

14.5 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

14.6 HOARDING

- .1 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

14.7 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guardrails and barricades around deep excavations.

14.8 WEATHER ENCLOSURES

- .1 Not used.

14.9 DUST TIGHT SCREENS

- .1 Not used.

14.10 ACCESS TO SITE

- .1 Provide and maintain access roads, as may be required for access to Work.

14.11 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain competent TCPs, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

14.12 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

14.13 PROTECTION OF BUILDING FINISHES

- .1 The Contractor is advised that concrete curbs and sidewalks, light fixtures, architectural stone faced walls, and other infrastructure are present in some of the work areas and shall be protected against damage due to the Work.

15 Products

15.1 NOT USED

- .1 Not Used.

16 Execution

16.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

16.2 SECTION INCLUDES

- .1 Progressive cleaning.
- .2 Final cleaning.

16.3 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

16.4 RELATED SECTION

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 01 77 00 - Closeout Procedures.

16.5 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by the Owner, the Public, or other Contractors.
- .2 Roadways and sidewalks in work areas shall be thoroughly cleaned to remove all loose soil and rock material at the end of each work day.
- .3 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .4 Clear snow and ice from access to work areas during active construction periods and to maintain access to environmental protection facilities outside active construction times.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Provide on-site bear proof containers for collection of waste materials and debris.
- .7 Remove waste material and debris from site at end of each working day.
- .8 Dispose of waste materials and debris off site.
- .9 Store volatile waste in covered metal containers, and remove from premises at end of each work day.
- .10 Provide adequate ventilation during use of volatile or noxious substances.

- .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

16.6 FINAL CLEANING

- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .3 Remove waste products and debris including that caused by Owner or other Contractors.
- .4 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Inspect finishes, and ensure specified workmanship and operation.
- .7 Remove dirt and other disfiguration from exterior surfaces.
- .8 Sweep and wash clean paved areas.
- .9 Clean drainage systems.

17 Products

17.1 NOT USED

- .1 Not Used.

18 Execution

18.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

18.2 SECTION INCLUDES

- .1 Administrative procedures preceding preliminary and final inspections of Work.

18.3 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

18.4 RELATED SECTIONS

- .1 Section 01 74 11 - Cleaning.
- .2 Section 01 78 00 - Closeout Submittals.

18.5 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
 - .3 Work has been completed and inspected for compliance with Contract Documents.
 - .4 Defects have been corrected and deficiencies have been completed.
 - .5 Work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

19 Products

19.1 NOT USED

.1 Not Used.

20 Execution

20.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 As-built records.
- .2 Warranties and bonds.

1.2 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 77 00 – Closeout Procedures.

1.4 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Inspection certificates.
- .2 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .3 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .3 Keep record documents and samples available for inspection by Departmental Representative.

1.5 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of Drawings and site photos are required.

- .2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Specifications: legibly mark each item to record actual construction, including:
 - .1 Changes made by Addenda and change orders.

1.6 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- .4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .3 Verify that documents are in proper form, contain full information, and are notarized.
- .4 Co-execute submittals when required.
- .5 Retain warranties and bonds until time specified for submittal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 RELATED SECTIONS

- .1 Section 01 35 31 - Special Procedures for Traffic Control.
- .2 Section 31 23 22 - Common Excavation.
- .3 Section 34 71 43 - Concrete Barrier.
- .4 Section 31 23 21 – Trimming (Rock Excavation).

1.3 DEFINITIONS

- .1 Scaling: Scaling consists of the removal of loose soil, rock, and overburden from the crest of the slope, the slope face, and benches on the slope. Scaling shall be done by hand working from a fall restraint or work positioning system and using suitable hand tools and powered equipment. Scaling also includes felling and removal of trees and brush, and pulling down larger rocks with wire rope attached to equipment on the highway.
- .2 Manlift Scaling: Manlift Scaling consists of the removal of loose soil, rock, and overburden from the slope face beneath overhanging areas that are not easily accessible using rope access techniques. Manlift Scaling shall be done by a single scaler working from a mobile powered manlift or telescopic crane with man-basket using suitable hand tools and powered equipment.
- .3 Mechanical Scaling: Mechanical Scaling consists of the removal of loose soil, rock, trees and bushes, on above or below the slope using mechanical means, typically a backhoe excavator with toothed bucket, hydraulic breaker or rack system.

1.4 MEASUREMENT PROCEDURES

- .1 Scaling will be measured as the hours of time spent by each ***individual*** scaler actively working on the slope, beginning at the top of rope decent to the scaling area, and ending at the time the scaler reaches the bottom of that particular rope decent, ***including standby for passing traffic***. Time spent accessing scaling areas, maintaining equipment, or carrying out work using tools or methods which are not the most appropriate or best suited to a particular situation will not be measured for payment.
- .2 Manlift Scaling will be measured as the hours of time spent by a single scaler actively scaling the slope in designated areas while working from a manlift, commencing when the scaler ascends from ground level, and ending at the time the scaler returns to ground level, including standby for passing traffic. Time spent repositioning the manlift will be measured for payment. Time spent by a second crew member responsible for operating

the manlift or telescopic crane will be considered incidental to Manlift Scaling and will not be measured for payment. Time spent, maintaining equipment, or carrying out work using tools or methods which are not the most appropriate or best suited to a particular situation will not be measured for payment.

- .3 Payment for Scaling will be made at the Contract Unit Price per hour for Scaling, which shall be full compensation for supplying all material, labour and equipment to execute the work as specified, including timber and brush disposal, and other overhead costs.
- .4 Disposal and clean up of materials from rock scaling, trimming, and excavation of existing fallen materials in ditches in the work areas, will be paid separately under the Common Excavation bid item.
- .5 Temporary removal and replacement of concrete guardrail from work areas will be paid separately in accordance with Section 34 71 43 – Concrete Barrier.
- .6 Protection of infrastructure shall be considered incidental to scaling and all other unit price work items. Clean up and removal of scaled material from the roadway and adjacent areas is incidental to scaling.
- .7 Repair or replacement of all infrastructure damaged by scaling operations, to the satisfaction of the Departmental Representative, shall be at the Contractors cost.

Part 2 Products

2.1 NOT USED

- .1 Not Used

Part 3 Execution

3.1 SUBMITTALS

- .1 Pre-Construction Condition Survey: The Contractor shall submit to the Departmental Representative, not less than one day before the commencement of Work at each work area, a Pre-Construction Condition Survey of all infrastructure in the work area that may be subject to damage as a result of the work. The format of the survey shall be acceptable to the Departmental Representative.
- .2 Prior to the commencement of Scaling, the Contractor shall provide the Departmental Representative with a Work Plan/Procedure which details measures the Contractor shall implement to protect any existing utilities and infrastructure which may be impacted by scaling or other construction activities.

3.2 REQUIREMENTS

- .1 The Contractor shall provide an experienced scaling crew that consists of a supervising scaling foreman with at least eight (8) years experience and a minimum of five (5) rock scalers with an average of at least four (4) years experience each scaling and working from ropes at heights. The scaling crew shall not have more than one (1) scaler with less than one (1) year experience at any time. The scaling crew size shall be maintained at all times until the completion of all work above the highway grade.
- .2 Where scaling activities may impact upon any existing infrastructure the Contractor shall provide protective measures as detailed in the Contractor's Work Plan/Procedure, prior to commencing scaling. Protective measures shall include but not be limited to; padding material placed on the roadway, blasting mats, temporary rock berms or barriers, and temporary removal of signs, guardrail and similar infrastructure. The Contractor shall be completely responsible for all damage that is a result of its scaling or other operations.
- .3 The Contractor shall have scaling bars, mattocks / pulaskis, shovels, hydraulic jacks or wedge jacks, compressed air "blow pipes", air bags, chainsaws, wire rope for pulling down large rock using a front end loader, and other hand tools and equipment available on site such that scaling can be carried out using the most appropriate and effective tools and methods for any given situation.
- .4 The Contractor shall supply a front end wheel loader (CAT 966 or equivalent) equipped with a flat blade for removal of rock and debris from the pavement surface.
- .5 The Contractor shall supply a telescopic boom manlift or telescopic boom crane with man-basket for Manlift Scaling. The manlift or crane shall have sufficient reach to safely position the scaler at a height of up to 27 m while maintaining sufficient horizontal reach to allow scaling without risk of damage to the manlift.
- .6 The scaling foreman and at least one other scaler on the slope shall have a 2-way radio for communication with supervisory/traffic control personnel at the highway grade.

3.3 EXECUTION

- .1 For each slope section, scale areas shown on the photographs and as directed by the Departmental Representative.
- .2 Trees and brush shall only be removed as directed and approved by the Departmental Representative.
- .3 Scaling shall be carried out using the most appropriate and effective tools and methods for any given situation as directed by the Departmental Representative.
- .4 Any construction access on the slope including but not limited to trail building, installing access ropes, ladders, and tree and brush removal to facilitate access to the designated scaling areas shall be considered incidental to work and all shall be removed upon completion of the work.
- .5 All rope work shall comply with best practices detailed in the Alberta Occupational Health and Safety Code, Section 41 – Work Requiring Rope Access. END OF SECTION

Part 1 General

Blasting operations must be suitable for the individual rock slope constraints. Some of the rock slopes in Jasper are constrained by the CN rail line and the TMX pipeline. Protection of both of these assets during remediation work will require careful communication between the contractor and PCA. If a rock slope is subject to these issues, those rock cuts should have their blasts designed by a suitably qualified, experienced, blasting consultant.

- i) Specifically, some portions of the slope cut at 12.222 runs adjacent to the TMX pipeline at a distance of 50m or less (specifically for trim blasts shown on photos 12.222 r and 12.222 v). This is a particular concern due to the amount of trimming that is required. Special allowance has been made for 3 site visits by a qualified blasting consultant. As a result the Peak Particle Velocity from the blast should not exceed 50mm/sec as measured at the pipeline. Based on previous blasting vibration measurements, the charge weight per delay for initial blasting should not exceed 12 kg for these blasts. As noted in the Specification this charge weight per delay may be relaxed based on the blasting results and actual measured vibrations. The annotated photographs present the approximate distance from the TMX pipeline to the trim blast shown in the photo.

1.1 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 RELATED SECTIONS

- .1 Section 01 35 43 - Environmental Procedures.
- .2 Section 31 23 20 – Rock Scaling.
- .3 Section 31 23 22 - Common Excavation.
- .4 Section 34 71 43 - Concrete Barrier.

1.3 DEFINITIONS

- .1 Trimming consists of rock excavation to remove unstable rock masses on a slope that are too large or solid to remove by scaling, rock excavation to improve slope and ditch geometry, and breaking up rock boulders larger than 1.5 m³ in volume from sources other than Trimming to facilitate loading to trucks for off-site disposal. Frozen soils are not classified as rock.
- .2 Limits of Excavation: Surfaces forming the required extent of excavation by Trimming as shown on the photographs or as directed by the Departmental Representative.
- .3 Blasting Consultant: A consultant with expertise in blasting and non-explosive rock excavation who is independent of the Contractor and retained by the Contractor to provide blasting design and quality control functions as specified herein.

- .4 Controlled Blasting: The use of blasting methods designed to prevent rock damage or overbreak beyond the Limits of Excavation, provide adequate fragmentation, and prevent damage to infrastructure from vibrations, flyrock, or falling rock. Unless otherwise authorized by the Departmental Representative, Controlled Blasting requires that:
 - .1 Blast holes shall not exceed 8 m depth.
 - .2 The spacing of blast holes situated along the backline or Limit of Excavation shall not exceed 0.75 m.
 - .3 “Buffer Blasting” shall be used with appropriate delays between successive rows of blast holes where there are more than two rows of holes.

1.4 MEASUREMENT PROCEDURES

- .1 Trimming will be measured as the in-situ “bank” volume of rock excavated, based on measurements agreed upon by the Departmental Representative and the Contractor before and after each trim. Over excavation and over break beyond the Limits of Excavation, and secondary breaking of oversize material resulting from Trimming will not be measured for payment.
- .2 Payment for Trimming will be made at the Contract Unit Price per cubic meter of rock trimmed. The tendered unit price shall be full compensation for supplying all material, labour and equipment to execute the work as specified.
- .3 Payment for Trimming will not be made until all related submittals have been received and approved by the Departmental Representative.
- .4 Each Blasting Consultant Site Visit of minimum 8 hours duration on site will be measured as one (1) Site Visit. Payment for each Site Visit will be made at the Contract Unit Price which shall include all hourly and disbursement costs associated with travel, costs incurred on site, reporting and administration. Only Site Visits requested by and approved in advance by the Departmental Representative will be measured for payment.
- .5 Disposal and clean up of materials produced by rock scaling and trimming will be paid separately in accordance with Section 31 23 22 - Common Excavation.
- .6 Temporary removal and replacement of concrete guardrail from work areas will be paid separately in accordance with Section 34 71 43 – Concrete Barrier.
- .7 Rock Scaling to facilitate access to trim locations and performance of Trimming, and Scaling of the trim area and the slope below the trim area to remove all loose rock produced by Trimming shall be incidental to Trimming.
- .9 Preparation of submittals and engaging a Blast Consultant to prepare and/or certify Proposed Blasting Plans is considered incidental to Trimming.
- .10 Protection of infrastructure and removal of trimmed material from the roadway and adjacent areas is considered incidental to Trimming.

- .11 If the Contractor fails to follow the Blast Design and the slope remains in an undesirable condition following Trimming, all remedial measures necessitated by improper blasting as determined by the Departmental Representative shall be at the Contractors expense.

Part 2 Products

2.1 TYPES OF EXPLOSIVES AND ACCESSORIES

- .1 Bulk ammonium nitrate and fuel oil (ANFO) type explosives shall not be used.
- .2 Where there is a danger of initiation system cut-offs, detonators and delay elements must be of a type that includes down-hole delays (e.g. Handidet) to prevent cut-offs.
- .3 Non-explosive rock excavation products shall be produced by a recognized manufacturer.

Part 3 Execution

3.1 SUBMITTALS

- .1 Pre-Construction Condition Survey: The Contractor shall submit to the Departmental Representative, not less than two (2) days before Trimming, a Pre-Construction Condition Survey of all infrastructure in the area that might be subject to damage. The format of the survey shall be acceptable to the Departmental Representative.
- .2 Proposed Blast Design: Not less than two (2) days prior to commencing work for each trim location, submit a Proposed Blast Design for that trim location to the Departmental Representative for review. The Proposed Blast Design shall be in a format acceptable to the Departmental Representative and include as a minimum the following information:
 - .1 Site kilometer location and Station limits of proposed Trimming.
 - .2 Plan and cross section sketch drawings of proposed trim showing the free face, drill pattern (burden and spacing), dimensions, and estimated volume.
 - .3 Diameter, inclination, orientation, depth, and number of drilled holes.
 - .4 Loading diagram showing type and amount of high explosive or non-explosive products, initiators, and depth of stemming for each type of blast hole.
 - .5 Initiation sequence for blast holes including delay pattern and delay times.
 - .6 Manufacturer's data sheets for all explosive and non-explosive products, delays and initiation systems to be used.
 - .7 Make and model of non-explosive rock excavation equipment (e.g. hydraulic splitters, excavator mounted Hydraulic Breaker, etc.).
 - .8 Methods of protecting existing infrastructure that shall be employed.
- .3 In the case of trim blasts that are within 100 m of the Kinder Morgan TMX pipeline, the proposed blast design should be submitted 2 weeks before the blast to allow for review by Kinder Morgan.

- .3 As-Built Blasting Record: Not more than one (1) working day after completing work at each trim location, submit an As-built Blasting Record to the Departmental Representative. The As-built Blasting Record shall indicate all deviations from the Proposed Blast Design, the actual date, time, and duration of Trimming, and identify any known or suspected damage, traffic delays, or other problems which may have resulted from Trimming.
- .4 Blasting Consultant Field Report: Within three (3) days following each Site Visit, the Contractor shall submit a Field Report prepared by the Blasting Consultant. The Field Report shall document observations and recommendations made by the Blasting Consultant and consist of 2 to 4 typed pages plus relevant photographs and drawings.
- .5 Blasting plan submittals are for quality assurance and record keeping purposes. Review of the Proposed Blast Designs by Departmental Representative shall not relieve Contractor from responsibility for accuracy and adequacy of the designs when implemented.

3.2 QUALITY CONTROL

- .1 Proposed Blast Designs for Trimming shall be prepared by the licensed Blaster who will directly oversee the Trimming, or by the Blasting Consultant.
- .2 Proposed Blast Designs for trim blasts within 100 m of the TMX pipeline **shall be prepared by and/or certified** by the Blasting Consultant.
- .3 The Blasting Consultant shall have designed controlled blasts for at least three (3) similar projects over the past five (5) years and have at least ten (10) years relevant experience, including experience with non-explosive rock excavation methods. Qualifications of the Blasting Consultant shall be subject to approval by the Departmental Representative.
- .4 The Blasting Consultant shall make an initial Site Visit prior to any Trimming to inspect the Trimming areas and advise on Trimming methods and measures necessary to protect infrastructure and the environment. The Departmental Representative may require the Blasting Consultant to make subsequent Site Visits during the course of the work.
- .5 The Blaster shall be licensed with WorkSafeBC or Alberta equivalent, and shall have designed and carried out trim blasts for at least four (4) similar projects in the last five (5) years.
- .6 The Blaster shall directly oversee the drilling, loading, and detonation of all blasts.
- .7 The Contractor shall not commence drilling or other work on a trim blast until the Blast Design has been submitted to and reviewed by the Departmental Representative.
- .8 The Contractor shall provide at least four (4) hours between the completion of drilling and start of loading to permit the Departmental Representative to measure the length of holes, dimensions of the blast, and perform other quality assurance tasks.

3.3 GENERAL REQUIREMENTS

- .1 The Contractor shall provide a front end wheel loader (CAT 966 or equivalent) equipped with a flat blade for removal of rock and debris from the pavement surface.

- .2 The Contractor shall provide blasting mats and all other supplies, labour, and equipment necessary to control flyrock and protect existing infrastructure during the work.
- .3 The contractor shall obtain all necessary permits from, and shall comply fully with the laws, rules and regulations of Municipal, Provincial and Federal agencies in connection with the use, transport, storage and safe handling of all explosives. The contractor shall be familiar with the Industrial Health and Safety regulations published by the Worker's Compensation Board of the Province in which the site is located.
- .4 Explosives and all detonating apparatus shall be stored in a magazine in accordance with the requirements of all Federal or Provincial inspectors having jurisdiction, and the requirements of the Explosives Act (Canada), R.S. 1985, as amended, and any applicable Municipal By-laws.
- .5 Blasting shall only be conducted after the Engineer has received the Certificates of Insurance required by the Contract Documents. The Certificates shall verify that the Blaster's General Liability and Property Damage Coverage contain no specific exclusions for Work related to Blasting.
- .6 The Blaster shall bear full responsibility for ensuring that all Blasting Operations are conducted in a satisfactory manner and in accordance with these specifications. The Engineer's review of the Blasting Plan shall in no way relieve the Blaster from this obligation, nor shall the Engineer assume any responsibility for the adequacy of the Blasting to achieve adequate breakage or acceptable results.

3.4 ENVIRONMENTAL REQUIREMENTS

- .1 Due to the sensitive nature of the infrastructure, and environment, in Jasper National Park, the Resource Conservation Officer has placed strict limitations on Trimming. Consequently, Trimming in some areas may not be allowed and may be deleted from the project scope, and/or the scope and type of Trimming may be amended to satisfy environmental protection requirements.
- .2 Use pneumatic chippers and/or an excavator mounted hydraulic rock breaker to remove all drill hole traces in the final excavation surfaces produced by trimming to the satisfaction of the Departmental representative and ESO (Environmental Surveillance Officer). Removal of drill hole traces shall be incidental to Trimming.
- .4 Dispose of waste materials as specified in Section 01 35 43 - Environmental Procedures.

3.5 EXECUTION

- .1 Trimming shall be performed prior to other specified work such as scaling or rock bolting where this work may be adversely impacted by Trimming.
- .2 Supply, place and remove protective measures for roadways and all other infrastructure that might be damaged by Trimming. Protective measures shall include but not be limited to; granular padding material to protect roadways, timbers or blasting mats to prevent

flyrock or protect structures, and temporary removal of infrastructure at risk. The Contractor shall repair or replace any and all damage caused by Trimming at its own cost.

- .3 Trimming shall be scheduled and coordinated with all stakeholders including but not limited to Parks Canada, the Departmental Representative, utilities, and local businesses in compliance with traffic control and blasting related provisions of the specifications.
- .4 Following Trimming, the slope shall be scaled to provide a sound rock surface in the trim area and to remove all loose rock and debris caused by Trimming.
- .5 Where possible contamination of excavated rock with organic material shall be minimized.
- .6 The majority of the work will be conducted directly upslope of the CN Railway line. Special attention will need to be made when scaling loose material as well as during trimming, it is not acceptable for flyrock to enter into the boundary of the CN Railway.
- .7 The table below presents the location, reference photo and approximate rock volume of the blasts and trim blasts between km 11.872 and 12.924. The table also shows the approximate distance from the trim blast to the TMX pipeline. The Contractor should note that two different rates for trim blasting have been presented in the unit price table. One for blasting within 100 m of the TMX pipeline, the other for blasting outside of a 100 m distance from the TMX pipeline. Notwithstanding this distinction, the 50mm/sec vibration limit applies to all blasts, wheresoever they may occur, as measured at the nearest location above the TMX pipeline.

Jasper National Park - Distance of Trim Blasts from TMX Pipeline			
Trim Blast Location	Reference Photo Number	Approximate Volume of Rock [m³]	Approximate Distance to TMX pipeline [m]
km 11.872 to 12.125 - Sta 0+100	11.872 (additional #1)	1500	180
km 12.222 to 12.924 - Sta 0+040	12.222 a	500	200
km 12.222 to 12.924 - Sta 0+240	12.222 j	100	135
km 12.222 to 12.924 - Sta 0+250	12.222 k	100	140
km 12.222 to 12.924 - Sta 0+285	12.222 l	187	125
km 12.222 to 12.924 - Sta 0+325	12.222 m	75	130
km 12.222 to 12.924 - Sta 0+335	12.222 n	120	130
km 12.222 to 12.924 - Sta 0+403	12.222 o	135	125
km 12.222 to 12.924 - Sta 0+405	12.222 p	10	125
km 12.222 to 12.924 - Sta 0+660	12.222 r	350	45
km 12.222 to 12.924 - Sta 0+735	12.222 v	75	45

- .8 The Departmental Representative will undertake blast monitoring and provide the results to the Contractor immediately after the blast. Should the Peak Particle Velocity exceed 50 mm/sec as measured directly above the pipeline, then the Contractor will take measures to avoid a re-occurrence of excessive vibrations.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 35 31 - Special Procedures for Traffic Control.
- .2 Section 31 23 20 – Rock Scaling.
- .3 Section 31 23 21 – Trimming.
- .4 Section 34 71 43 - Concrete Barrier.

1.2 DEFINITIONS

- .1 Common Excavation consists of excavation, hauling, and disposal of scaled and trimmed materials, and pre-existing loose rock and soil material from highway ditches and adjacent slope areas as shown on the photographs and as directed by the Departmental Representative. Common Excavation may include rock fragments up to 1.5 m³ in volume as well as weak or fractured rock that can be removed with moderate effort with a 15 tonne excavator equipped with a rock bucket.
- .2 Common Excavation materials also includes timber, brush, and organic materials, but shall be separated from inorganic material where practical. Snow and ice are not considered to be common fill.

1.3 MEASUREMENT PROCEDURES

- .1 Common Excavation will be measured to the nearest cubic meter as the loose (bulk) volume of material excavated, loaded, and hauled to the disposal site(s). Interim payment and measurement will be based on the measured volume of common excavation material in the box of haul trucks, multiplied by the number of truck loads. Where practical at the discretion of the departmental representative large/bulk organic material should be segregated from inorganic materials at source. Or segregated at the Disposal site as directed by the Departmental Representative.
- .2 The Departmental Representative will measure the volume of each different haul truck based on:
 - .1 Physical dimensions of the truck box measured up to the base of batter boards, or if there are no batter boards, the physical dimensions that would provide a freeboard of at least 300 mm with a level load.
 - .2 An adjustment factor (percentage of the physical dimensions) to account for partial or non-level loading based on random measurement of five percent (5%) of loaded trucks.
 - .3 Periodic verification of the measured volume by measurement of spoil piles dumped from trucks.

- .3 At the start of the work the Contractor and Departmental Representative will inspect the disposal site/s. At the end of the work, final payment, and an adjustment to the interim payments for common excavation, will be made based on a survey or measured volume of the spoil piles dumped from trucks at the designated disposal site/s.
- .4 Haul truck Operators shall submit a haul ticket for each load to the Departmental Representative or an individual designated by the Departmental Representative prior to taking each load off site. Failure to do so will result in the load not being measured for payment.
- .5 Payment for Common Excavation will be made at the Contract Unit Price per cubic meter of material hauled to the disposal site. The tendered unit price shall be full compensation for supplying all material, labour and equipment to execute the work as specified.
- .6 Overexcavation beyond the limits shown on the photographs or directed by the Departmental Representative will not be measured for payment.
- .7 The grading of stockpiles, clean up of excavation areas, and all costs related to use of the disposal site are considered incidental to Common Excavation.
- .8 Excavation, removal, stockpiling, clearance of snow or other frozen materials are not considered to be measurable items.

1.4 WASTE MANAGEMENT

- .1 Separate and recycle waste materials in accordance with Section 01 35 43 - Environmental Procedures.

Part 2 Products

2.1 NOT USED

- .1 Not Used

Part 3 Execution

- .1 The designated disposal site within Jasper National Park is the Marmot Pit (refer to enclosed location Plan).

3.1 SUBMITTALS

- .1 Should the Contractor wish to use an alternative disposal site the he will provide the Departmental Representative with a Common Excavation Disposal Plan: At least two (2) weeks prior to the start of Common Excavation, the Contractor shall submit details of its proposed disposal site to the Departmental Representative for review. The minimum information required in the Common Excavation Disposal Plan includes:
 - .1 Legal description and address of the disposal site.

- .2 Name, address, and phone number of the registered Owner of the disposal site.
- .3 Letter signed by the registered Owner of the disposal site authorizing the Contractor to use the site for disposal of Common Excavation materials, and granting the Departmental Representative access to the site for inspection and measurement purposes.

3.2 REQUIREMENTS

- .1 Excavation shall be carried out with a wheeled excavator of minimum 15 tonne weight class such as Caterpillar Model 214 or equivalent, or an equivalent tracked excavator equipped with Street Pads. Tracked equipment that might damage the asphalt surface are not permitted. Use of a front-end loader for excavation will only be permitted where, in the opinion of the Departmental Representative, a loader can adequately complete the required excavation and properly clean and shape the ditches.
- .2 The disposal site must be accessible to the Departmental Representative during working hours to facilitate random measurement of hauled loads.

3.3 EXCAVATION

- .1 Common Excavation shall be carried out within two (2) weeks of completing stabilization work at each work site unless otherwise authorized by the Departmental Representative
- .2 Common Excavation areas shall be cleaned and restored to a visually pleasing quality, which includes having final slopes and grades as directed by the Departmental Representative.
- .3 Catch basins and culvert inlets shall be cleaned out and restored.
- .4 Excavated materials hauled to the Contractors disposal site shall be leveled and graded as required by the Disposal Site Owner.

END OF SECTION

Part 1 General

1.1 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 RELATED SECTIONS

- .1 Section 01 35 31 - Special Procedures for Traffic Control.
- .2 Section 31 23 20 – Rock Scaling.
- .3 Section 31 23 21 – Trimming.

1.3 GENERAL

- .1 Rock Bolts consist of the supply and installation of deformed steel bars in holes drilled into rock. Rock Bolts shall be fully grouted and either tensioned or untensioned as directed by the Departmental Representative.
- .2 Numerous existing rock bolts have been installed at most of the work sites. Most of these bolts are camouflaged and not visible without close on-slope inspection. Therefore, the requirements for rock bolting can not be determined in advance of construction and the photographs indicate estimated rock bolting allowances only.
- .3 The required number, length, location, and orientation of Rock Bolts will be determined on site by the Departmental Representative. The Contractor shall be prepared to install any number of rock bolts ranging up to 9 m in length at any or all of the work sites.
- .4 Reserve Supply: The Contractor shall maintain on site a Reserve Supply of rock bolts, accessories and grout such that there are no delays for procurement of materials.

1.4 MEASUREMENT PROCEDURES

- .1 Supply of Rock Bolt Bars will be measured for payment as the length in meters of Rock Bolt Bar supplied to site and installed. The quantity of Rock Bolts delivered to site shall not exceed the tender amount. If required, additional Rock Bolts will be authorized by the Departmental representative. Rock Bolt Bar which is supplied but not used in the work will become the property of the Contractor and an assessment equal to eighty percent (80%) of the tendered unit price per metre for supply, multiplied by the length of unused Rock Bolt Bar will be charged to the Contractor. This assessment will be deducted from any monies due the Contractor.
- .2 Installation of Rock Bolts shall include the supply of bearing plates, nuts, hardened flat washers, beveled washers, centralizers, couplers, grout, resin, recessing of plates, mortar and the drilling, installation and testing of the rock bolts. Installation of Rock Bolts will be measured as the length in meters of Rock Bolt successfully installed and embedded into rock. Excessive bar protruding from the rock face shall not be measured.

- .3 Payment for Rock Bolts will be at the Contract Unit Prices for Supply and Installation. Payment will not be authorized until all related submittals have been received and approved by the Departmental Representative.
- .4 The Contract Unit Prices for rock bolts shall be considered full compensation for all rock bolt requirements in the specification. Scaling to facilitate access to the designated rock bolt areas is considered incidental to the work.

Part 2 Products

2.1 MATERIALS

- .1 Rock Bolts shall be 25 mm diameter, Grade 517/690 MPa deformed steel bars conforming to CAN/CSA G30.18, such as “Dywidag Threadbar” manufactured by Dywidag Canada Limited, or approved equal. The first 20% of Rock Bolt Bar shall be supplied to a designated laydown area to be directed by the Departmental Representative. The first 20% of bolt shall be delivered in pieces of 9 m length and shall be field cut to the required length(s) as needed. Thereafter, additional Rock Bolt Bar shall be supplied in cut lengths of 4 m to 6 m as directed by the Departmental Representative.
- .2 Steel bearing plates shall conform to CAN/CSA-G40.21, Grade 300 W and have minimum dimensions of 10 mm by 150 mm by 150 mm. Plates shall be of “calotte” or similar style to accommodate non-perpendicular alignment of the bolt with the plate.
- .3 Nuts shall be hexagonal head, heavy duty type, with hemispherical end matching the bearing plate and shall conform to ASTM A325. Threads and nuts shall be capable of developing the full strength of the bolt.
- .4 Rock Bolts and all associated hardware shall be hot-dip galvanized to CSA G164 & CSA G30.18M. Field cut rock bolt bar shall be touched up with “Galvanox” zinc-rich paint or approved alternate by the Departmental Representative.
- .5 Resin grout or cementitious grout may be used. Resin grout shall not be used where the rock is excessively fractured or wet, as determined by the Departmental Representative.
- .6 Resin Grout shall be the product of an established manufacturer who has been producing these products for at least five (5) years. Resin shall be supplied in cartridge form and have a shelf life of not less than six (6) months, as dated on the container, and be used within the first three (3) months of the shelf life. Cartridges shall be stored in accordance with the manufacturer’s recommendations. Resin used for the anchorage length of the bolt shall have a gel set time of one (1) to two (2) minutes. Resin used to encapsulate the remainder of the bolt length shall have a gel time of fifteen (15) to thirty (30) minutes.
- .7 Cement grout shall be a pre-bagged, non-shrink cementitious product such as “Microsil® Anchor Grout” produced by Basalite Concrete Products or approved equal. Cement grout shall have a minimum three (3) day and twenty-eight (28) day compressive strengths of 30 MPa and 50 MPa respectively when tested in accordance with CAN/CSA A23.2-1B. Equipment for mixing and pumping grout shall be capable of satisfactorily mixing and agitating the grout, and pumping it into the holes at the water/cement ratio recommended

by the grout manufacturer. Grouting shall be tremied from the base of the hole to rock face. Cementaceous grouts and mortar shall not be warmer than 30°C or colder than 5°C during mixing or pumping.

- .8 Cement mortar shall be SIKA 212 or similar product mixed, placed and cured in accordance with the manufactures recommendations.

Part 3 Execution

3.1 SUBMITTALS

- .1 Rock Bolt Installation Procedure: Prior to ordering Rock Bolt materials, the Contractor shall submit a Rock Bolt Installation Procedure for review by the Departmental Representative. The Installation Procedure shall include product information from the bolt hardware and grout manufacturers including their recommended installation procedures, drilling equipment and hole diameter, grouting and tensioning procedures, calibration certificate(s) for rock bolt testing equipment, and similar information.
- .2 Rock Bolt Installation Records: The Contractor shall submit to the Departmental Representative on a daily basis in a format approved by the Departmental Representative.
 - i. Drillers Logs, including but not limited to details of flush losses/reductions, inferred faults, depth of overburden, hole diameter, rig type, type of flush, water ingress, jamming during drilling, changes in rock type and other relevant information that may affect the quality of the rock bolt installation. Logs shall be submitted to Departmental Representative within one (1) day after drilling or on request.
 - ii. Grout testing results, including but not limited to Compressive Strength testing, temperature, Flow and bleed.
 - iii. Rock bolt Installation records, these shall include but shall not be limited to, Individual bolt reference number, bar length, bar grade/diameter, depth of anchor distal end, proximal extension from face, proximal bar extension behind nut, over-drill depth, grout/resin type, grout/resin temperature, grout volume used, resin capsules used , number of spacers used, grout samples taken, spin time in resin, lock off load/tension, date/time tested, as constructed bolt azimuth, dates/time of staged grouting, date/time completed,
 - iv. Mill Certificates for the Rock Bolt Bar.

3.2 QUALITY CONTROL

- .1 Drill holes for, and install Rock Bolts under the direct supervision of an individual having at least four (4) years experience in the installation of resin and cement grouted bolts.
- .2 The first ten (10) rock bolts shall be installed in the presence of the Departmental Representative.
- .3 Hydraulic jacks, gauges and torque wrenches used for testing and tensioning of rock bolts shall be calibrated by an independent, certified testing laboratory.

- .4 Provide the Departmental Representative with any samples of grouting materials that may be requested for quality assurance testing.

3.3 PROCEDURES

- .1 Drill holes for each bolt to a uniform diameter recommended by the resin and bolt manufacturers to ensure bolt holes are completely filled with resin. In the case of cement grouted bolts, drill holes to a minimum diameter of 60 mm, or smaller if required to accommodate an expansion shell anchor. Completely clean holes of all drill cuttings, sludge, debris and water using clean water and air.
- .2 Rock Bolts shall either be installed with an exposed plate and nut, or with the bolt cut off flush to the rock surface without plate and nut, or plate may be counter sunk into a recess in the rock face as directed by the Departmental Representative.
- .3 Rock Bolts shall be installed with sufficient thread exposed to accept a plate and nut (if required) and to facilitate tensioning and testing. Where a plate and nut is not required, bolts shall be cut off flush with the rock surface after tensioning and testing, and be covered with mortar coated with drill cuttings. Burlap shall be placed over all mortar to aid curing.
- .4 Installation – Resin Grouted Rock Bolts

Insert resin cartridges in the hole. The number of cartridges per hole shall be not less than recommended by the manufacturer for the hole length, diameter, and bar size combination. Add additional cartridges as necessary to ensure holes are completely filled with resin. Use at least three (3) fast setting cartridges at the bottom of the hole for anchorage and slow setting cartridges for the remainder of the hole. Mix the resin by inserting the bolt in the hole and rotating it at a uniform penetration rate, rotation rate and duration as recommended by the resin manufacturer. After allowing the fast setting cartridges to set, but at least 10 minutes prior to the gel time of the slower cartridges, perform testing and tensioning, and attach the bearing plate and nut (if required).
- .5 Installation – Cement Grouted Rock Bolts

Cement grouted bolts that are to be tensioned shall use either resin cartridges or an expansion shell for the bond length anchorage. Use commercially manufactured centralizers at intervals not greater than 2 m to keep the bar centered in the hole. Fill the holes with grout by pumping the grout through a delivery line that extends to the lowest end of the hole, while providing a means of venting at the highest end of the hole. Prior to the grout setting, perform testing and tensioning, and attach the bearing plate and nut (if required).
- .6 Remove all excess or spilt resin and cement grout from rock surfaces.
- .7 Testing

Testing equipment shall consist of a suitably sized hollow core jack, an adjustable bearing truss for aligning the direction of pull with the centreline of the bolt, an extension bar for attaching the jack to the bolt, a hydraulic pump with a gauge, calibration chart for the

ram/gauge combination that provides the applied load directly in kilonewtons, and an independently mounted dial gauge for measuring the strain of the bolt under load. Rock bolts will be selected at random by the Departmental Representative for testing by the Contractor. The first eight (8) of each type installed shall be tested; thereafter, 20% of the rock bolts shall be tested. Bolts shall be either Proof Tested or Pull Tested as directed by the Departmental Representative. Additional tests shall be performed where different rock types or bolt installation conditions are encountered as construction progresses.

- .1 Proof Tests: Prior to grout within the free stressing length of the bolt curing, the bond length of the bolt shall be Proof Tested by loading the bolt in tension to 184 kN (41,500 lbs) and maintaining the load for five (5) minutes. Bolts will be considered to have failed and shall be replaced if total axial movement exceeds 12 mm or if movement continues to occur at or below the test load.
- .2 Pull Tests: After grout within the free stressing length of the bolt has cured, the bolt shall be Pull Tested by loading the bolt in tension to 184 kN and maintaining the load for five (5) minutes. Bolts will be considered to have failed and shall be replaced if the total axial movement exceeds 6 mm or if movement continues to occur at or below the test load. Cement grouted bolts shall not be Pull Tested until at least seven (7) days after grouting.
- .3 Up to five (5) additional bolts in the vicinity of a failed bolt shall be tested as required by the Departmental Representative.

.8 Tensioning

The Departmental Representative will determine the tension load for each rock bolt. Tensioning equipment shall consist of the hollow core jack. A calibrated impact or torque wrench may be used for light tension loads, subject to approval by the Departmental Representative. Tensioned Rock Bolts shall be tensioned before the grout within the free stressing length of the rock bolt cures. Bolts shall be tensioned and locked-off at tensions ranging from 50 kN to 158 kN as directed by the Departmental Representative.

Untensioned bolts with a bond length anchorage shall be nominally tensioned to 25 kN using an approved impact or torque wrench. Where a bearing plate and nut is not required, these shall be removed and the protruding length of bolt cut off after the grout in the free stressing length has cured. In the case of untensioned, cement grouted bolts with a plate and nut, they shall be nominally tensioned to 25 kN after the grout in the free stressing length has cured.

END OF SECTION

Part 1 General

1.1 PRECEDENCE

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 RELATED SECTIONS

- .1 Section 01 35 43 - Environmental Procedures

1.3 SCOPE OF WORK

- .1 Temporarily remove and then reinstall or relocate existing concrete guard rail to protect guardrail from damage and facilitate the Work. Guard rail shall only be removed to facilitate Common Excavation where in the opinion of the Departmental Representative, this is necessary to allow adequate cleaning of the ditch. This specification only applies to areas directly adjacent to the work areas and includes one area as follows:
 - .1 Highway 16, Km 12.222 – The entire work area contains concrete guardrails, with 12.222 to 12.450 containing guardrails and chainlink fencing. The existing concrete guard rail shall be temporarily relocated to the left shoulder as work progresses.

1.4 MEASUREMENT AND PAYMENT

- .1 Removal and Reinstallation, or Removal and Relocation of existing concrete guardrail will be measured for payment as the length in lineal metres of guardrail that is either temporarily removed and then reinstalled, or removed and permanently relocated. Only that portion of the guardrail which is directly below Scaling or Trimming work areas as measured perpendicular to the highway centerline, will be measured. The Contract Unit Price shall be considered full compensation for all requirements in this specification, including provision of labour, equipment, and materials
- .2 Supply and Install new “F” Style Concrete Barrier will be measured for payment as the length in lineal metres of barrier that is supplied and installed. The Contract Unit Price shall be considered full compensation for all requirements in this specification, including provision of labour, equipment, and materials.
- .3 Temporary removal and replacement (or protection) of guard rail beyond the work limits if deemed necessary by the Contractor to protect such installations from damage shall be at the Contractors cost and will not be measured for payment.
- .4 The Contractor shall replace all guard rail which is damaged due to the work such that it is no longer useful for the intended purpose at the Contractors expense.

Part 2 Products

2.1 MATERIALS

- .1 "F" Style Concrete Barrier shall be Con-Force Structures Limited Standard Product No. 7-0073 (Full "F" Style Median Barrier 810mm Depth) or approved equal.

Part 3 Execution

3.1 DESCRIPTION OF THE PROCEDURE OF THE WORK

- .1 Carefully disassemble the existing concrete guard rail prior to the start of scaling or trimming in any area and temporarily or permanently relocate to the specified locations.
- .2 Guardrail that is temporarily removed at Km 12.222 shall be temporarily positioned along the opposite road shoulder to prevent scaled rock from bouncing beyond the road shoulder.
- .3 Carefully mark and photograph all temporary openings in the existing guard rail with traffic cones except during active work in that area.
- .4 Replace guardrail that was temporarily relocated within three (3) days of the completion of other work in that area.
- .5 Prepare a level graded and compacted sub-grade surface for permanent guard rail installations using imported granular material if suitable material is not present on site.
- .6 Supply and install new Type "F" guardrail in the specified location within three (3) days of completing other work in that area.
- .7 Dispose of all damaged guardrail at a suitable facility located outside the National Park.

END OF SECTION