

| | | |
|----------------------------|--|------------|
| SECTION 01 11 00 | SUMMARY OF WORK | 1 |
| SECTION 01 14 00 | WORK RESTRICTIONS | 6 |
| SECTION 01 21 00 | ALLOWANCES | 11 |
| SECTION 01 25 00 | MOBILIZATION DEMOBILIZATION | 13 |
| SECTION 01 29 01 | SITE OCCUPANCY | 14 |
| SECTION 01 31 00 | PROJECT MANAGING AND COORDINATION | 15 |
| SECTION 01 32 16.07 | CONSTRUCTION PROGRESS SCHEDULES BAR (GANTT) CHART | 19 |
| SECTION 01 33 00 | SUBMITTAL PROCEDURES | 23 |
| SECTION 01 35 29.06 | HEALTH AND SAFETY PROCEDURES | 29 |
| SECTION 01 35 31 | SPECIAL PROCEDURES FOR TRAFFIC CONTROL | 33 |
| SECTION 01 35 43 | ENVIRONMENTAL PROCEDURES | 38 |
| SECTION 01 45 00 | QUALITY CONTROL | 44 |
| SECTION 01 52 00 | CONSTRUCTION FACILITIES | 47 |
| SECTION 01 56 00 | TEMPORARY BARRIERS AND ENCLOSURES | 49 |
| SECTION 01 61 00 | COMMON PRODUCT REQUIREMENTS | 51 |
| SECTION 01 71 00 | EXAMINATION AND PREPARATION | 55 |
| SECTION 01 74 11 | CLEANING | 57 |
| SECTION 01 77 00 | CLOSEOUT PROCEDURES | 59 |
| SECTION 01 78 00 | CLOSEOUT SUBMITTALS | 61 |
| SECTION 02 41 13.14 | ASPHALT PAVEMENT REMOVALS | 64 |
| SECTION 02 61 33 | HAZARDOUS MATERIALS | 67 |
| SECTION 31 11 00 | BRUSHING | 71 |
| SECTION 31 24 00 | ROADWAY & DRAINAGE EXCAVATION | 74 |
| SECTION 32 01 16.8 | FULL DEPTH RECLAMATION | 78 |
| SECTION 32 12 13.16 | ASPHALT TACK COAT | 82 |
| SECTION 32 12 16 | ASPHALT CONCRETE PAVEMENT (EPS) | 85 |
| SECTION 32 16 15 | CONCRETE WALKS, CURBS AND GUTTERS | 88 |
| SECTION 32 17 23 | PAVEMENT MARKING | 92 |
| SECTION 32 92 22 | SEEDING | 98 |
| SECTION 34 71 13.01 | PRECAST CONCRETE BARRIER | 104 |
| SECTION 34 71 13.25 | GUARDRAIL | 107 |
| SECTION 33 42 13 | PIPE CULVERTS | 114 |

Drawings: Emerald Lake Road KM 0 to KM 9 – Trans Canada Highway KM 17 to
KM 23 – Pavement Rehabilitation

| Drawing Index | | |
|---------------|--|------------|
| Sheet No. | Sheet Title | Date |
| C01 | Cover Sheet | March 2016 |
| C02 | Location Map – Emerald Lake Road – STA 0+000 to 9+000 | March 2016 |
| C03 | Location Map – Trans Canada Highway – STA 17+000 to 23+000 | March 2016 |
| 101-108 | Plans – Emerald Lake Road – STA 0+000 to 9+000 | March 2016 |
| 109-114 | Plans – Trans Canada Highway – STA 17+000 to 23+000 | March 2016 |
| 301 | Typical Sections and Details – Emerald Lake Road | March 2016 |
| 302 | Typical Sections and Details – Trans Canada Highway | March 2016 |

Reference Documents: Parks Canada National Best Management Practices
Mannix Pit Plan

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 Specification.

1.2 DEFINITIONS

- .1 Any reference to “Parks Canada Agency”, “Parks Canada”, “PCA” or “Owner”, shall refer to Parks Canada Agency and shall include any affiliate or sub group of Parks Canada and their duly appointed Representatives that shall include the Departmental Representative.
- .2 British Columbia Ministry of Transportation and Infrastructure is referred to as “BC MoTI”.

http://www.th.gov.bc.ca/publications/const_maint/contract_serv/standardspecs.htm

- .3 Alberta Transportation is referred to as “AT”.

http://www.transportation.alberta.ca/images/Standard_Specifications_for_Highway_Construction_2013.pdf

Changes in Definition, - The following changes in definitions have been made to the “AT Specifications”:

Consultant – The word “Consultant” shall mean Departmental Representative or their duly appointed representative.

Department – The word “Department” shall mean Parks Canada Agency.

- .4 BNP means Banff National Park of Canada
- .5 YNP means Yoho National Park of Canada
- .6 TCH means Trans-Canada Highway

1.3 RELATED SECTIONS

- .1 Section 01 29 01 - Site Occupancy.
- .2 Section 01 33 00 - Submittal Procedures.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- .1 In preparation for and during construction of the project, the Contractor shall review 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 Section 01 35 43 – Environmental Procedures in determining compliance.
- .2 Without limiting the scope of work, the work of the Contract generally comprises the following:
 - .1 Load and haul stockpiled granular material within Mannix Pit, BNP to produce 19mm Medium Mix Asphalt Aggregate for a Class 1 Asphalt Concrete Pavement mix as per BC MoTI 2012 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS). Crushed granular material is stockpiled in Mannix pit in locations

as noted in the drawings or as directed by the Departmental Representative.

- .2 Prepare and gain approval of an Asphalt Mix Design for BC MoTI Class 1 Asphalt Concrete Pavement using Asphalt Cement 150-200A penetration grade and 19mm Asphalt Aggregate. Mix design is subject to acceptance by the Departmental Representative. **No Recycled Asphalt Pavement (RAP) may not be utilized in the mix design.**
- .3 Remove existing asphalt by milling at tie-ins and alongside curbs or concrete barriers, as directed by the Departmental Representative. Stockpile material at Mannix Pit, BNP, as directed by the Departmental Representative.
- .4 Supply Asphalt Cement 150-200A, mix, load, haul and place BC MoTI Class 1 Asphalt Concrete Pavement (ACP) on Trans-Canada Highway (TCH) in BNP and on Emerald Lake Road in YNP, or as directed by the Departmental Representative.
- .5 The Contractor will be permitted to set up an Asphalt Plant at Mannix Pit, BNP as directed by the Departmental Representative.
- .6 The Asphalt Plant to be used on the project, regardless of location, shall be a minimum of 200 tonnes per hour production, equipped with a dry bag system for pollution control, in addition to, or in replacement of standard cyclone dust collectors, to effectively eliminate emissions of dust and smoke pollutants into the atmosphere.
- .7 Supply and install rumble strips at locations on TCH in BNP or as directed by the Departmental Representative.
- .8 Carry out Full Depth Reclamation repair in areas identified in the Drawings that shall include pulverizing the existing base and ACP, compacting, and reconditioning the resulting pulverized mix prior to overlaying the area with new ACP.
- .9 Haul and place supplied mixed RAP aggregate to shoulders at both the TCH in BNP and Emerald Lake Road in YNP.
- .10 Removing, stockpiling and reinstalling existing concrete barriers to both facilitate construction access and carry out repairs as approved by the Departmental Representative.
- .11 Remove, dispose of, and replace existing steel guardrail, posts, and end treatments with new at locations identified in the Drawings or as approved by the Departmental Representative.
- .12 Painting and reinstatement of roadway paint lines and other pavement markings.
- .13 Roadside vegetation removal and brushing.
- .14 Re-grading and cleanout of roadside ditches.
- .15 Hydraulic seeding of re-graded ditches and other areas as directed by the Departmental Representative.
- .16 Supply and installation of traffic control and other temporary construction facilities required for completion of the Works of the Project.

- .17 Miscellaneous Additional Work as directed by the Departmental Representative.
- .3 Where material and construction specifications for work covered under the Contract, including any Change Orders are not available, BC MoTI – 2012 Standard Specifications for Highway Construction shall apply unless directed by the Departmental Representative.

1.5 PROJECT LOCATION

- .1 The project is located in BNP in Alberta and YNP in British Columbia. The following are key locations relative to the project:

.2 Banff National Park

- .1 West Boundary BNP: TCH km 81.9
- .2 Icefields Parkway Interchange: TCH km 75
- .3 Niblock Pit –Hwy 93 North 0.5 km of TCH km 75
- .4 Km 69 Pit: TCH km 67
- .5 Lake Louise Overflow parking: TCH km 67
- .6 Mannix Pit: TCH km 49.9
- .7 Castle Mountain Interchange: TCH km 47
- .8 Sunshine Road Interchange: TCH Km 25.4
- .9 East Boundary BNP: TCH km 0

.3 Yoho National Park

- .1 West Boundary YNP: TCH km 127.5
- .2 Boulder Creek: TCH km 102.8
- .3 Emerald Lake Road: TCH 99.7
- .4 Yoho Valley Road: TCH 94.6
- .5 Wapta Pit: TCH km 87.1
- .6 East Boundary YNP: TCH km 81.9

1.6 CONTRACT METHOD

- .1 Construct Work under combined price contract.

1.7 WORK BY OTHERS

- .1 The Contractor is advised that the following Work in the vicinity has been or will be contracted by Parks Canada:
 - .1 Line painting at various locations. Contractor is AAA Striping and Seal Coating Service. Anticipated contract completion Fall 2016.
 - .2 Various contractors accessing and working in Mannix Pit throughout the Contract period. Works will likely include aggregate crushing, asphalt production, material storage, clearing and grubbing, and staging.

Okanagan Aggregates Ltd is underway with works to be completed in Summer 2016. Other Contractors are yet to be determined.

- .3 Likely rock profiling activities along the TCH in YNP at approximately km 88. Works will include drilling, blasting, hauling, and traffic delays including road closures. Contractor to be determined.
 - .4 AltaLink are undertaking site preparation works in the Bow Valley for the installation and upgrade of power distribution lines.
 - .5 Other maintenance and project work may occur along TCH in 2016.
- .2 Where it is necessary that work is to proceed in areas of the Contract common to both the Contractor and forces of others, the Contractor shall cooperate with the other contractors and the Owner in reviewing their construction schedules, sharing their work space, and shall coordinate their operations with the other Contractors, including traffic management and construction staging.
- .3 Mannix Pit is an operational pit used by many contractors and PCA. If access is required the Contractor shall gain authorization from the Departmental representative prior to entrance and use of the pit, and shall cooperate with the other users of the pit.

1.8 WORK SEQUENCE

- .1 Schedule work progress to allow Owner/Departmental Representative unrestricted access to inspect all phases of the Work.
- .2 Maintain fire and emergency access on the roadways at all times.
- .3 The Contractor shall prepare a meaningful bar chart or network diagram showing the proposed schedules of major work, which shall be submitted to the Departmental Representative one (1) week prior to commencement of any work.
- .4 The Contractor shall:
 - .1 Complete all Work within the Emerald Lake Parking Lot by May 27 2016.
 - .2 Complete all Work on Emerald Lake Road by June 24, 2016 (Contract Completion Date).
 - .3 Complete all Work on the Trans Canada Highway by June 24, 2016 (Contract Completion Date).

1.9 CONTRACTOR USE OF PREMISES

- .1 Contractor has unrestricted use of site, subject to Section 01 14 00 and Section 01 29 01, until Contract Completion date.
- .2 Contractor shall limit use of premises for Work, for storage, and for access, to allow:
 - .1 Owner occupancy.
 - .2 Work by other Contractors.
- .3 Coordinate use of premises with the acceptance of the Departmental Representative.
- .4 Obtain additional storage or work areas needed for operations under the Contract with the acceptance of the Departmental Representative.
- .5 The Contractor and each sub-contractor shall purchase a business license from the PCA office in Lake Louise Visitor Information Centre, prior to commencement of the contract.

- .6 All Contractor's business and private vehicles are required to display a vehicle work pass from PCA. These permits may be obtained free of charge from PCA Environmental Surveillance Officer or as directed by the Departmental Representative.

1.10 OWNER FURNISHED ITEMS

- .1 The following materials are available to the Contractor:
 - .1 RAP mixed with gravel for shouldering production available in stockpiles at Mannix and km 69 Pits.
 - .2 19mm asphalt aggregate available for use in stockpiles at Mannix Pit, BNP.

1.11 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.
- .3 Contractor must allow access to Mannix Pit for other Contractors and PCA. It is up to the Contractor to plan their work accordingly.

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. Signs shall be diamond grade and shall conform to CAN3-Z321.
- .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.

1.13 SETTING OUT OF WORK

- .1 The Departmental Representative will identify location of all work sites. The Contractor shall be responsible for all other layout of work.
- .2 The Contractor shall not permanently mark any infrastructure or feature during their setting out of the work. They shall fully remove any set out marks, markers, or other identifiers that they installed, prior to demobilizing from the Work Sites.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .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 Specification.

1.2 RELATED SECTIONS

- .1 Section 01 32 16.07 - Construction Progress Schedules - Bar (Gantt) Chart.
- .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, cyclist, railway and vehicular traffic for the duration of the construction.

1.4 USE OF THE WORK SITE

- .1 The Work Sites specified in the Contract shall only be used for the purposes of the Work.
- .2 The Work Sites will be made available by PCA to the Contractor for its non-exclusive use for the duration of the Work, unless otherwise provided in the Contract. The Contractor shall include in the tender, payment to taxes properly levied by law (Federal, Provincial and Municipal) including the cost of any collection of permits and business licenses.
- .3 The Contractor will not be permitted to set up a camp in the National Parks. PCA regulations prohibit anyone working within the Park from using public campground facilities.
- .4 Office-tool trailer can be set up at the Lake Louise Overflow Camp Ground, BNP or Mannix Pit, BNP in accordance with Section 01 35 43 - Environmental Procedures.
- .5 The Contractor's Asphalt Plants shall be set up in accordance with governing regulations and the Environmental Procedures for the Works and as directed by the Departmental Representative. No sites, other than Mannix Pit, are available in BNP or YNP to set up a plant
- .6 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 and at their cost for the performance and inspection of the Work.
- .7 The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and the Environmental Procedures for the Contract. The Contractor shall post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.
- .8 Any damage to the Work Site caused by the Contractor shall be repaired by the Contractor at its expense.

1.5 WORKING TIMES

- .1 **Work in BNP and YNP is permitted during daylight hours from 07:00am to 10:00pm, Monday to Saturday inclusive, except within the travelled lanes on TCH during the months of July and August.**

- .2 **No Work shall occur on Sundays unless prior written approval is granted by the Departmental Representative.**
- .3 **During the months of July and August, the Contractor will be permitted to work within the travelled lanes on TCH during nighttime hours between 07:00pm and 07:00am only, unless prior written approval is granted by the Departmental Representative.**
- .4 **The Contractor will not be permitted to work during the following Civic Holidays or long weekends unless prior written approval is granted by the Departmental Representative:**
Statutory and Civic Holidays:
 - Canada Day weekend: From 07:00 PM Wednesday, June 29, 2016 to 07:00 AM Tuesday, July 5, 2016.
 - Heritage Day weekend: From 07:00 AM Thursday August 1, 2016 to 07:00 AM Tuesday August 6, 2016.
 - Labour Day long weekend: From 07:00 AM. Friday, September 2, 2016 to 07:00 AM Tuesday, September 6, 2016.
 - Thanksgiving Day weekend: From 07:00 AM Friday, October 7, 2016 to 07:00 AM Tuesday, October 11, 2016.
 - Remembrance Day weekend: From 07:00 AM Thursday 10, 2016 to 07:00 AM Monday, November 14, 2016.

1.6 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.
- .2 All components of the Work shall be conducted without equipment entering into wetlands, water bodies, streams and rivers. Refer to Section 01 35 43 - Environmental Procedures for details.
- .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. All collected waste materials shall be disposed of in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan prepared for the project.

1.7 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.

1.8 UTILITIES

- .1 **The Contractor shall become familiar with all utilities and services adjacent to the Work and shall be responsible for cost of repair of any damage resulting from their operations.**
- .2 The Contractor shall establish and maintain direct and continuous contact with the owners or operators of any Utilities which may interfere with the Work. The Contractor shall co-operate with them at all times and in all places of Work. The Contractor shall keep the

Departmental Representative informed of all communications with the Utility companies and authorities.

- .3 The Contractor shall notify the Departmental Representative and the Utility companies at least seven days in advance of any activities which may interfere with the operation of such Utilities.
- .4 Whenever working in the vicinity of Utilities, the Contractor shall locate such Utilities and expose those that may be affected by the Work, using hand labour as required.
- .5 The Contractor shall assess the possible impact of its operations on all Utilities that may be affected by its operations, and shall, in consultation with Utility owner(s), protect, divert, temporarily support or relocate, or otherwise appropriately treat such Utilities to ensure that they are preserved.
- .6 The Contractor shall immediately report any damage to Utilities to the Departmental Representative and to the Utility company or authority affected, and shall promptly undertake such remedial measures as are necessary at no additional cost to the Owner.

1.9 SURVEY OF EXISTING PROPERTY CONDITIONS

- .1 Submission of tender is deemed to be confirmation that the Contractor has inspected the site and is conversant with all conditions affecting execution and completion of work.
- .2 The Contractor shall regularly monitor the condition of the Work Sites and of properties on and adjoining the Work Sites throughout the construction period, and shall immediately notify the Owner if any deterioration in condition is detected. Such monitoring shall cover all pertinent features and properties including, but not limited to, buildings, structures, roads, walls, fences, slopes, sewers, culverts and landscaped areas.
- .3 The Departmental Representative may, but shall not be obligated to survey and record the condition of the Work Sites and of properties on or adjoining the Work Sites prior to the commencement of construction by the Contractor. If requested, the Departmental Representative will provide a copy of the survey records to the Contractor for reference.
- .4 Whenever supplied with survey records, the Contractor shall satisfy itself as to the accuracy and completeness of the survey records provided by the Departmental Representative for any area before commencing construction in that area. Commencement of construction in any area shall be interpreted to signify that the Contractor has accepted such survey records as being a true record of the existing conditions prior to construction.
- .5 The provision of the records of a survey of existing conditions by the Departmental Representative shall in no way limit or restrict the Contractor's responsibility to exercise proper care to prevent damage to all properties within or adjacent to the Work Sites, where all such properties are covered by the survey or not.

1.10 PROTECTION OF PERSONS AND PROPERTY

- .1 Comply with Occupational Health and Safety Act, General Safety Regulation, Alberta and British Columbia; depending which province the Contractor is working in at the time.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- .3 The Contractor shall take all necessary precautions and measures to prevent injury or damage to persons and property on or near the Work Sites.

- .4 The Contractor shall promptly take such measures as are required to repair, replace or compensate for any loss or damage caused by the Contractor to any property or, if PCA so directs, shall promptly reimburse to PCA the costs resulting from such loss or damage.

1.11 USE OF PUBLIC AREAS

- .1 Steel tracked equipment with cleats will not be allowed on pavement designated for future use. Asphalt, granular, embankment and excavation materials may be hauled on existing highway but shall be by standard highway trucks not exceeding legal highway load limits.
- .2 The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas. All vehicles and equipment leaving the Work Sites and entering public roadways shall be cleaned of mud and dirt clinging to the body and wheels of the vehicle. All vehicles arriving at or leaving the Work Sites and transporting materials shall be loaded in a manner which will prevent dropping of materials or debris on the roadways, and where contents may otherwise 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 prepared for the project.

1.12 SUPERVISORY PERSONNEL

- .1 Within five Days after Contract 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.
At a minimum, the following personnel shall be included in the list:
 - .1 Project Superintendent;
 - .2 Deputy Superintendent;
 - .3 Safety Representative;
 - .4 Quality Control Representative.
 - .5 Traffic Control Supervisor.
- .2 The above personnel shall perform the following duties:
 - .1 The Project Superintendent shall nominate at least one Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence;
 - .2 The Contractor may not perform Work unless either the Project Superintendent or the Deputy Superintendent is actively on site.
 - .3 The Project Safety Coordinator shall possess a minimum of 2 years construction safety supervisory experience. Their duties shall encompass all matters of safety activities from commencement of Work until the Total Performance of the Work.
 - .4 The Quality Control Representative shall be responsible for development, implementation and execution of the Quality Management Plan and shall be the single point of contact for all quality related queries.

- .5 The Traffic Control Supervisor shall be responsible for development, implementation and execution of the Traffic Control Plan and shall be the single point of contact for all traffic related queries.

1.13 WASTE DISPOSAL

- .1 All surplus, unsuitable and waste materials shall be removed from the Work Sites to approved sites outside the National Parks. Refer to Section 01 35 43 - Environmental Procedures.
- .2 Deposit of any construction debris into any waterway is strictly forbidden.
- .3 Cost for Waste Disposal described above shall be considered incidental to the Unit Price items and no additional payment will be made.
- .4 Waste Disposal shall be completed in accordance with Section 01 35 43 - Environmental Procedures.

1.14 WORK STOPPAGE

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

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 General Conditions.

1.2 PRIME COST SUM

- .1 Included in Contract Amount is a total Prime Cost Sum of **\$750,000.00**.
- .2 Do not include in the Contract Amount, additional contingency allowances for products, installation, overhead or profit.
- .3 Prime Cost Sum provided for in the lump sum 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 under the General Conditions of the Contract.
- .4 Any and all additional work must be approved in writing by the Departmental Representative prior to commencement.
- .5 All expenditures must be substantiated with verified invoices and/or approved daily extra work reports as noted in Clause 1.4 below.
- .6 Such work may include, but not be limited to:
 - .1 Additional asphalt concrete pavement
 - .2 Clearing, grubbing and/or stripping in Pits
 - .3 Assessment and safe removal of danger trees
 - .4 Additional clearing and other roadside vegetation removal
 - .5 Shoulder gravelling operations
 - .6 Additional line painting and pavement marking
 - .7 Crack filling, pot hole patching, and other related minor asphalt repairs
 - .8 Mill and fill of pavement failures
 - .9 Road structure repairs
 - .10 Additional granular materials to supplement Full Depth Reclamation
 - .11 Full Depth Reclamation additives
 - .12 Removing and re-installing additional existing and/or new barriers or guardrails
 - .13 Additional drainage repairs, earthwork, slope stabilization, and grass seeding
 - .14 Additional ditch cleaning, re-grading, and cleanout
 - .15 Removal and disposal/unplugging of existing culverts
 - .16 Additional supply and installation of rip rap, surface drainage materials, and other activities associated with culver inlet and outlet works
 - .17 Supply and installation of permanent signs (not construction signs)
 - .18 Removal, disposal, supply and installation of snow fencing.
 - .19 Additional supply and installation of raised reflective road markers and barrier reflectors
 - .20 Additional supply and installation of rumble strips
 - .21 Supply and/or installation of guide posts
 - .22 Additional survey resulting from changes made by the Departmental Representative
 - .23 Stripping, excavation and disposal of waste materials as directed by the Departmental Representative
 - .24 Remediation or removal and replacement of unsuitable or contaminated soils not described in the contract documents
 - .25 Excavation of rock as directed by the Departmental Representative

- .26 Rehabilitation work in the pits
 - .27 Providing facilities for Owner (Office or Lab Trailer)
 - .28 Providing additional Traffic Control equipment
 - .29 Miscellaneous work as directed by the Departmental Representative
- .7 The Contract Amount, and not Prime Cost Sum, includes Contractor's overhead and profit in connection with the Work.

1.3 MEASUREMENT PROCEDURES

- .1 Payment for Work under the “**Lump Sum Price Item 3 – Prime Cost Sum**” will be made using negotiated rates or by material, labour and equipment rates as per the following:
- .1 For Work in BNP:
Equipment rates will be in accordance with current Alberta Roadbuilders and Heavy Construction Association rate schedule, and will be all inclusive and fully operated.
 - .2 For Work in YNP:
Equipment rates will be in accordance with current British Columbia Roadbuilders and Heavy Construction Association Equipment Rental Rate Guide, and will be all inclusive and fully operated.
 - .3 Hourly rental of equipment will be measured in actual working time and necessary travel time within project limits. Transportation time to and from site to be reimbursed only if equipment is used exclusively for additional work.
 - .4 Equipment paid on standby will be paid on 50% of the relevant Less Operator rates to a maximum of 10hrs per day.
 - .5 When based upon actual costs for additional works under Prime Cost Sum, payment will be based upon verified supplied invoices and other work records.
 - .6 The Prime Contractor may apply a 10% mark-up to subcontractor or supplier invoices only, as approved by the Departmental Representative. No mark-up will be allowed on relevant equipment and labour rates.
 - .7 A claim for additional payment will not be considered submitted until all required documentation has been received by the Departmental Representative.

Part 2 Products

- .1 Products shall be in accordance with AT – 2013 Standard Specifications for Highway Construction 2013 or BC MoTI – 2012 Standard Specifications for Highway Construction, and/or as directed by the Departmental Representative.

Part 3 Execution

- .1 Work shall be in accordance with AT – 2013 Standard Specifications for Highway Construction 2013 or BC MoTI – 2012 Standard Specifications for Highway Construction, and/or as directed by the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 11 00 – Summary of Work

1.2 DESCRIPTION

- .1 Mobilization and Demobilization consists of preparatory work and operations including but not limited to, those necessary for the movement of personnel, equipment, buildings, shops, offices, supplies and incidentals to and from the project sites.
- .2 Any protective measures or movement of Contractor trailers necessitated by animal interactions and required by PCA will be paid by the Departmental Representative, and are not to be anticipated in the Lump Sum Price for Mobilization and Demobilization.

1.3 MEASUREMENT PROCEDURES

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

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .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 the Specification.

1.2 RELATED SECTIONS

- .1 SACC R2850D GC 5.10
- .2 Section 01 11 00 – Summary of Work Section 1.8 - WORK SEQUENCE
- .3 Section 01 14 00 – Work Restrictions Section 1.4 - USE OF THE WORK SITE

1.3 DEFINITION OF OCCUPANCY

- .1 The Contractor shall be permitted to lease and occupy sites when working in BNP and YNP, free of charge from the date of award of the contract up to and including the Contract Completion Date.
- .2 The Contractor's occupancy of the sites identified in the Contract will be deemed to have ended, when both of the following conditions are met to the satisfaction of PCA:
 - .1 All the Work identified under the Contract, has been completed.
 - .2 All sites' clean up and any outstanding deficiencies for the work identified under the Contract have been addressed to the satisfaction of the Departmental Representative.
 - .3 Contractor has removed from the park all trailers and equipment and sites have been cleaned-up to the satisfaction of the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 11 00 - Summary of Work.
- .2 Section 01 14 00 – Work Restrictions.
- .3 Section 01 32 16.07 - Construction Progress Schedules – Bar (Gantt) Chart.
- .4 Section 01 33 00 - Submittal Procedures.
- .5 Section 01 35 43 - Environmental Procedures.
- .6 Section 01 45 00 – Quality Control.
- .7 Section 01 52 00 - Construction Facilities.
- .8 Section 01 77 00 – Close out Procedures.
- .9 Section 01 78 00 – Close out Submittals.

1.2 MEASUREMENT PROCEDURES

- .1 This Work shall be incidental to the Contract and will not be measured for payment.

1.3 COORDINATION

- .1 Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of other Contractors, and Work by Owner, under instructions of the Departmental Representative.
- .2 Coordinate field engineering and layout work with the Departmental Representative.
- .3 During construction, coordinate use of site and facilities through Departmental Representative's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of Drawings, recommendations, and resolution of ambiguities and conflicts.

1.4 PROJECT MEETINGS

- .1 The Contractor shall provide physical space and make arrangements for meetings at or near the Work Sites for all meetings that take place in relation to the Contract from their mobilization until their demobilization.
- .2 Meetings held outside of this time will either be held in the local PCA Field Unit offices, or at Castle Junction, BNP as notified by the Departmental Representative.
- .3 The Contractor will attend or otherwise ensure the attendance of their staff, subcontractors, consultants, suppliers, or other key parties all other meetings identified in the Contract or reasonably requested by the Departmental Representative in an effort to resolve specific issues as they may arise.
- .4 Comply with Departmental Representative's allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.
- .5 Comply with instructions of the Departmental Representative for use of temporary utilities and construction facilities.

1.5 CONSTRUCTION ORGANIZATION AND START-UP

- .1 Within seven (7) days after award of Contract, the Contractor shall request a meeting of Contract Representatives to discuss and resolve administrative procedures and responsibilities. Meeting to be chaired by the Departmental Representative who will also record the minutes of the meeting.
- .2 Senior representatives of the Owner, Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
- .3 Agenda to include following:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work, progress scheduling in accordance with Section 01 32 16.07.
 - .3 Schedule of submittals in accordance with Section 01 33 00.
 - .4 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.
 - .5 Site safety and security in accordance with Sections 01 14 00, 01 52 00 and 01 35 43.
 - .6 Environmental procedures in accordance with Section 01 35 43.
 - .7 Quality Control in accordance with Section 01 45 00.
 - .8 Administrative procedures for proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
 - .9 Arrangements for supply of Owner-furnished materials.
 - .10 Monthly progress payment procedures, administrative procedures, photographs, and holdbacks.
 - .11 Close out procedures and submittals in accordance with Sections 01 77 00 and 01 78 00.
 - .12 Insurances and transcript of policies.
 - .13 Other business.

1.6 ON-SITE DOCUMENTS

- .1 The Contractor is to maintain at job site, one copy each of the following:
 - .1 Contract Drawings if part of tender
 - .2 Specifications
 - .3 Addenda
 - .4 Reviewed Shop Drawings and mix designs
 - .5 Change Orders
 - .6 Other modifications to Contract
 - .7 Traffic Management Plan
 - .8 Safety Plan
 - .9 WHMIS
 - .10 Environmental Protection Plan
 - .11 Quality Control Plan and field test reports
 - .12 Copy of approved Work schedule and most recent updated schedule
 - .13 Labour conditions and wage schedules
 - .14 Equipment rate schedule and applicable versions of the relevant rate guides
 - .15 Applicable current editions of municipal regulations and by-laws

1.7 SUBMITTAL SCHEDULE

- .1 Contractor is to prepare a schedule of the required submissions and the date the submissions will be made. Include columns for Actual Date of Submission, Review Comments Received, Final Submission and Final Acceptance Received. Provide this schedule to the Departmental Representative in Excel format.
- .2 The Owner and/or Departmental Representative will not be responsible for any construction delays resulting from delays in submission acceptance if the submittal dates shown in the Submittal Schedule are not achieved.

1.8 PROJECT SCHEDULES

- .1 Submit preliminary construction progress schedule in accordance with Section 01 32 16.07 to Departmental Representative.
- .2 After review, revise and resubmit schedule to comply with revised project schedule.
- .3 During progress of Work revise and resubmit as directed by the Departmental Representative.

1.9 CONSTRUCTION PROGRESS MEETINGS

- .1 During the course of the Work, the Contractor shall attend weekly construction meetings as scheduled, chaired, and minuted by the Departmental Representative.
- .2 The agenda will include among other things, general construction, payment, scheduling, risk, quality, environmental, and safety management items as well as any other reasonably requested by the parties.

1.10 SUBMITTALS

- .1 Submit product data to Section 01 33 00 for review for compliance with Contract Documents.
- .2 Submit requests for payment for review, and for transmittal to Departmental Representative. Payment request is due on the last day of the month.
- .3 Submit requests for interpretation of Contract Documents, and obtain instructions through Departmental Representative.
- .4 Process substitutions through Departmental Representative.
- .5 Process change orders through Departmental Representative.
- .6 Deliver closeout submittals for review and preliminary inspections, for transmittal to Departmental Representative.

1.11 CLOSEOUT PROCEDURES

- .1 Notify Departmental Representative when Work is considered ready for Substantial Performance.
- .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 Performance.

- .4 Notify Departmental Representative of instructions for completion of items of Work determined in Departmental Representative's final inspection.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 14 00 – Work Restrictions
- .3 Section 01 21 00 - Allowances

1.2 MEASUREMENT PROCEDURES

- .1 This Work shall be incidental to the Contract and will not be measured for payment.

1.3 PRECEDENCE

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

1.4 DEFINITIONS

- .1 Activity: An element of Work performed during course of Project. An activity normally has an expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (Gantt chart): A graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: Original approved plan for Project, plus or minus approved scope changes.
- .4 Construction Work Week: Defined schedule calendar working days as per the allowable working times identified in the Contract as part of Bar (GANTT) Chart submission.
- .5 Duration: Number of work periods (not including holidays or other nonworking periods required to complete an activity or other Project element. Usually expressed as workdays or work weeks.
- .6 Master Plan: A summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: A significant event in Project, usually completion of a major deliverable.
- .8 Project Schedule: The planned dates for performing activities and the planned dates for meeting milestones. A dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: Overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.5 REQUIREMENTS

- .1 Ensure the Project Schedule is practical and remains within specified Contract duration and all identified Milestones.
- .2 Ensure all the Work required for the Contract is identified in the Project Schedule. Refer to Section 01 11 00 – Summary of Work for a potential list of activities.
- .3 Include an allowance in the schedule for Work performed and paid for as Prime Cost Sum. Refer to Section 01 21 00 – Allowances for a list of activities.
- .4 Plan to complete Work in accordance with prescribed Project Schedule.
- .5 Limit activity durations to maximum of approximately 14 working days, to allow for progress reporting.
- .6 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this Contract.
- .7 Include the requirements of Section 01 14 00 - Work Restrictions and Section 01 35 43 – Environmental procedures.

1.6 SUBMITTALS

- .1 Submit to Departmental Representative within 10 working days of Award of Contract, Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .2 Submit Project Schedule to Departmental Representative within 10 working days of receipt of acceptance of Master Plan.

1.7 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule. Completion of each Stage of Construction:
 - .1 **Contract Award Date**
 - .2 **Planned Substantial Performance Date**
 - .3 **Complete all Work within the Emerald Lake Parking Lot by May 27 2016.**
 - .4 **Complete all Work on Emerald Lake Road by June 24, 2016 (Contract Completion Date).**
 - .5 **Complete all Work on the Trans Canada Highway by June 24, 2016 (Contract Completion Date).**

1.8 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.

- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.9 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule separately identifies the Work by area and station.
- .3 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Contract Award
 - .2 Obtaining Permits
 - .3 Pre-mobilization Submittals
 - .4 Mobilization
 - .5 Detours / Site Access
 - .6 Barrier removal
 - .7 Culvert works
 - .8 Ditch works
 - .9 Pavement removal
 - .10 Asphalt Concrete Pavement placement
 - .11 Shouldering
 - .12 Barrier installation
 - .13 Line painting
 - .14 Brushing
 - .15 Additional Work as and when requested
 - .16 Interim Inspection
 - .17 Site Clean-up / De-mobilization
 - .18 Final Completion

1.10 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on monthly basis or as and when requested by the Departmental Representative, reflecting activity changes and completions, as well as activities in progress.
- .2 Provide weekly Progress Reports that identify completed work and Work planned for the following week.
- .3 Include as part of Project Schedule Update, a narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.11 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

Part 2 Products

- .1 Not Used.

Project No. 201547

Road Rehabilitation
Trans-Canada Highway km 17-23 &
Emerald Lake Rd

Section 01 32 16.07

CONSTRUCTION
PROGRESS SCHEDULES
BAR (GANTT) CHART
Page 22

Parks Canada Agency

Banff & Yoho National Parks

Part 3 Execution

.1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 14 00 - Work Restrictions.
- .2 Section 01 32 16.07 - Construction Progress Schedules - Bar (Gantt) Chart.
- .3 Section 01 35 29.06 – Health and Safety Requirements.
- .4 Section 01 35 31 - Special Procedures for Traffic Control.
- .5 Section 01 35 43 - Environmental Procedures.
- .6 Section 01 45 00 – Quality Control.
- .7 Section 01 78 00 - Closeout Submittals.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to the Contract and will not be measured for payment.

1.3 REFERENCES

- .1 Not used.

1.4 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time or to acceptable standard is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 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 co-ordinated 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.
- .6 Notify Departmental Representative in writing at time of submission, identifying any deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work is consistent.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

- .10 Keep one reviewed copy of each submission on site.

1.5 “DESIGN – BUILD”, SHOP DRAWINGS, PRODUCT DATA AND MIX DESIGNS

- .1 “Design – Build”: The term “Design” refers to all detailed design activities (survey, investigation, drawings, specifications) based on general requirements contained in these specifications and shown on the drawings. “Build” refers to construction of Contractor’s detailed design after design has been reviewed by the Departmental Representative. Contractor’s responsibility for error and omissions in submission is not relieved by Departmental Representative’s review of submittals.
- .2 The term “shop drawings” means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by the Contractor to illustrate details of a portion of Work.
- .3 The term “Mix Design” means engineered design for proportioning materials in concrete or asphalt concrete pavement including all supporting test results, materials properties and Departmental Representative’s letter of recommendation. Asphalt mix design to be performed by a qualified test laboratory licensed to practice in British Columbia.
- .4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of section under which adjacent items will be supplied and installed. Indicate cross-references to design drawings and specifications.
- .5 Allow fourteen (14) calendar days for Departmental Representative’s review of each submission.
- .6 Adjustments made on shop drawings by the Departmental Representative are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Departmental Representative prior to proceeding with the Work.
- .7 Make changes in shop drawings as the Departmental Representative may require, consistent with the Contract Documents. When resubmitting, notify the Departmental Representative in writing of any revisions other than those requested.
- .8 Submit letter(s) of certification with all mix designs.
- .9 Accompany submissions with a transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor’s name and address.
 - .4 Identification and quantity of each shop drawing, mix design, product and sample.
 - .5 Other pertinent data.
- .10 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of: Subcontractor, Supplier, Manufacturer
 - .4 Contractor’s stamp, signed by Contractor’s authorized representative certifying approval of submissions, verification of field measurements and compliance with the Contract Documents.
 - .5 Details of appropriate portions of the Work as applicable:

- .6 Fabrication,
- .7 Performance characteristics,
- .8 Standards.
- .11 After the Departmental Representative's review, distribute copies.
- .12 Submit one (1) electronic copy of the shop drawings or mix design for each requirement requested in the Specification Sections and as requested by the Departmental Representative.
- .13 Submit one (1) electronic copy of the product data sheets or brochures for requirements requested in the Specification Sections and as requested by the Departmental Representative where shop drawings will not be prepared due to standardized manufacture of the product.
- .14 Delete information not applicable to project.
- .15 Supplement standard information to provide details applicable to project.
- .16 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .17 The review of shop drawings and mix designs by Departmental Representative is for the sole purpose of ascertaining conformance with general concept. There review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.6 SAMPLES

- .1 Not used.

1.7 MOCK-UPS

- .1 Not used.

1.8 CERTIFICATES AND TRANSCRIPTS

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

1.9 REQUIRED CONTRACTOR SUBMITTALS

.1 General

- .1 This Clause identifies the plans, programs, and documentation required prior to mobilization on site and during the construction phase.

.2 Pre-Mobilization Submittals

- .2 Submit the following plans and programs to the Departmental Representative for review a minimum of twenty (20) days prior to mobilization to the project site:
- .3 Project schedule, detailing the schedule of the workdays required from Contractor, subcontractors, suppliers and consultants to complete each activity of the project by road segment or location in order to meet stages specified in Section 01 11 00. In addition, for each activity critical elements that could impact on the schedule are to be identified. Submission shall include both a paper copy of the schedule and an electronic copy in Microsoft Projects format.
- .4 List of subcontractors, suppliers and consultants, their role and their key personnel, including names and positions, addresses, telephone, cellular telephone and/or pager numbers.
- .5 Contractor Chain of Command, listing key Contractor personnel, including for each name, position, qualification, experience, telephone, cellular telephone and/or pager numbers. The list shall include the names and telephone/cellular telephone/pager numbers for contact persons who are available on a 24-hour basis in the event of emergencies.
- .6 Work Plan, describing in detail for each activity by road segment and location, the Contractor's intended methods of construction, and materials, equipment and manpower use to meet stages specified in Section 01 11 00. The Work Plan has to be linked to the Project Schedule.
- .7 Quality Control Plan in accordance with Section 01 45 00 – Quality Control.
- .8 Traffic Management Plan, in accordance with the requirements of Section 01 35 31 - Special Procedures for Traffic Control.
- .9 Materials Purchase Plan describing the Contractor's intended methods of getting materials required for this project in a timely fashion in order to meet stages specified in Section 01 11 00.
- .10 Contractor shall develop an "Emergency Procedures Protocol" in consultation with Parks Canada. Parks Canada will supply the Contractor with a template with contact names and numbers to be used for this purpose.
- .11 Health And Safety Plan - 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.
- .12 Health and Safety Plan must include in accordance with Section 01 35 29.06.
- .13 Submit copies of Material Safety Data Sheets (MSDS).
- .14 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.
- .15 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

- .16 The Contractor shall not begin any Work on the Site until the Departmental Representative has provided a Notice to Proceed.
- .17 Submit a copy of the filed Notice of Project with Provincial authorities.
- .18 The Contractor shall not construe the Departmental Representative's authorization of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. 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.

.3 Construction Phase Submittals

- .1 Monthly Progress Reports in accordance with Section 01 32 16.07.
- .2 Weekly Progress Reports that outline the detailed Work (Contractor, subcontractors, suppliers, consultants) completed to date as well as the anticipated Work to be performed for the following week on a day-by-day basis. Work to be linked to activities by road segment or location identified in project schedule and to provide information on materials, equipment and manpower. Also, alternate Work to be identified if Work or a portion of, proposed cannot be done due to weather, equipment breakdown, delays in delivery, etc.
- .3 Quality Control Inspection Reports - The Contractor shall maintain a daily inspection report that itemizes the results of all Quality Control inspections conducted by the Contractor. The reports shall be made available for review by the Departmental Representative upon request. A summary of all Quality Control inspections conducted to date shall be submitted by the Contractor with each request for payment.
- .4 "Design and Build" documents, Shop Drawings and Mix Designs - The Contractor shall submit all design drawings, shop drawings and mix designs required to fabricate and / or conduct the work a minimum 30 days prior to fabrication / production.
- .5 Progress Photographs:
 - .1 Format: Electronic: jpg files, minimum three (3) mega pixels.
 - .2 Submission requirements: one (1) set of electronic files.
 - .3 Identification: Name and number of project, description of photograph and date.
 - .4 Viewpoints: viewpoints determined by Construction Manager or Departmental Representative.
 - .5 Submission Frequency: prior to commencement of Work and weekly thereafter with progress statement, or as directed by Construction Manager or Departmental Representative.
 - .6 Submit CD with all electronic pictures as part of closeout package.

- .6 Submit an electronic copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
- .7 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .8 Submit copies of incident and accident reports.
- .4 **Project Completion Submittals**
 - .1 Record Drawings -The Contractor shall submit copies of all Contractor's Drawings revised as necessary to record all as-built changes to the Work and the Contractor shall submit a set of Contract Drawings clearly marked to record as-built changes to the Work.
 - .2 Quality Control Records – The Contractor shall submit a bound and itemized set of project quality control documentation.
 - .3 All other documents noted with the Specifications, and under Section 01 78 00.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 14 00 – Work Restrictions
- .2 Section 01 33 00 – Submittal Procedures
- .3 Section 01 35 43 - Environmental Procedures
- .4 Section 02 81 01 - Hazardous Materials: Submission Requirements for WHMIS MSDS.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.3 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System.

(WHMIS) Material Safety Data Sheets (MSDS).

Province of Alberta

Province of British Columbia

Occupational Health and Safety Act

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 General safety rules for project.
 - .5 Job specific safe work procedures.
 - .6 Inspection policy and procedures.
 - .7 Incident reporting and investigation policy and procedures.
 - .8 Occupational Health and Safety meetings.
 - .9 Occupational Health and Safety communications and record keeping procedures.
 - .10 Results of site specific safety hazard assessment.
 - .11 Results of safety and health risk or hazard analysis for site tasks and operation.

- .12 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
- .13 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .14 Submit copies of incident and accident reports.
- .15 Submit copies of Material Safety Data Sheets (MSDS) to Departmental Representative.
- .16 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within ten (10) 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.
- .17 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.
- .18 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.
- .19 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.5 FILING OF NOTICE

- .1 **File Notice of Project with Provincial authorities prior to beginning Work** and provide a copy to the Departmental Representative.

1.6 SAFETY ASSESSMENT

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

1.7 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work. This meeting may be combined with the Organization and Start-Up meeting identified elsewhere.
- .2 At this meeting the Contractor is required to complete and sign an Attestation to certify the Contractor will comply with the requirements set out in the Attestation and the terms and conditions of the contract
- .3 A copy of the "Attestation and Proof of Compliance with Occupational Health and Safety (OHS)" form is attached as Appendix A.
- .4 PCA recognizes that federal Occupational Health and Safety legislation places specific responsibilities upon PCA as owner of the work place. In order to meet those requirements, PCA has implemented a contractor safety regime to ensure roles and responsibilities assigned under Part II of the Canada Labour Code and the Canada Occupational Health and Safety Regulations are implemented and observed when involving contractor(s) to undertake work in PCA work places, including on PCA property.

1.8 REGULATORY REQUIREMENTS

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

1.9 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with British Columbia, and Alberta Occupational Health and Safety.

1.10 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.

1.11 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.

1.12 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, General Safety Regulation, Alberta and British Columbia when working in that province.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.13 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.

1.14 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Co-ordinator must:
 - .1 Have minimum 2 years site-related working experience specific to activities associated with roadway construction.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 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.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.15 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.

1.16 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.

1.17 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.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .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 their Specification.

1.2 RELATED SECTIONS

- .1 All sections in Divisions 01, 02 and 32.

1.3 MEASUREMENT PROCEDURES

- .1 Cost of Traffic Control, including temporary pavement marking and layout, described in their Section 01 35 31 and Section 01 74 11, shall be considered incidental to “**Lump Sum Price Item 2 – Traffic Accommodation**”, and no additional payment will be made for the duration of the Contract.
- .2 Temporary Pavement Marking and layout shall be considered incidental to “**Lump Sum Price Item 2 – Traffic Accommodation**”.

1.4 REFERENCES

- .1 The Contractor shall provide traffic control in accordance with current edition of:
 - .1 AT Traffic Accommodation in Work Zones 1st Edition (2008)
 - .2 AT – Traffic Control Standards, latest edition
 - .3 Manual of Uniform Traffic Control Devices for Canada, (MUTCD) distributed by Transportation Association of Canada.

1.5 QUALITY CONTROL

- .1 All Quality Control by the Contractor.

1.6 GENERAL

- .1 **The Contractor will not be permitted to remove the temporary pavement marking until the final pavement markings have been installed to the satisfaction of the Contract and Departmental Representative.**
- .2 At all work sites, the Contractor shall mark **accurately**, at regular intervals, the location and type of existing painted lines prior to their removal or covering, including start and ends of passing lanes and intersections, with a stake at the side of the roadway and make a written record of markings in a book, in order that painted lines can be accurately re-established after work is completed. If no lines are present the Contractor shall mark **accurately (+ or – 20 mm)** and at regular intervals in accordance with the Section 2.2.1 of the “**BC MoTI - Traffic Control Manual for Work on Roadways, 2010**”.
- .3 The Contractor shall develop and implement a Traffic Management Plan (TMP) in accordance with AT Traffic Accommodation in Work Zones, except where specified

otherwise in these specifications. The TMP will include plans specific to each roadway for their project.

- .4 The Traffic Management Plan must duly consider the traffic volumes associated with the direction volume increases typically experienced on the lead up to weekends and/or special events. Adjustments to the TMP may be required at the request of the Departmental Representative to mitigate delays in excess of the stipulated maximum 20minutes.
- .5 The Contractor shall design, supply, erect, move and maintain all traffic control devices, signs, temporary pavement marking, 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.
- .6 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.
- .7 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.
- .8 **Temporary pavement marking used shall be acceptable to the Departmental Representative and in accordance with Section 2.2.1 of the “BC MoTI Traffic Control Manual for Work on Roadways, 2010”.**
- .9 All temporary pavement markings will be removed at the Contractor’s expense prior to the completion of the Contract.
- .10 Contractor shall have appropriate traffic control measures in place so that one lane of highway traffic is maintained through the work zone at all times throughout the construction.
- .11 The Contractor shall coordinate traffic management procedures with other Contractors working in the area.

1.7 PROTECTION OF PUBLIC TRAFFIC

- .1 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.
- .2 Carry out traffic regulation in accordance with the approved TMP.
- .3 The Contractor shall develop a Traffic Control Plan taking into account all hazards associated with paving operations on a busy highway and minimize risks to motorists.
- .4 **A minimum of one travelling lane 4 m wide shall be maintained by the Contractor at all times to provide for safe movement of traveling public through work area.** The

Contractor shall submit a Traffic Management Plan prior to commencement of work. Short closures may be allowed by the Departmental Representative for some activities such as asphalt removal as long as the delay to motorists does not exceed 20 minutes.

- .5 Regardless of type of traffic control being used, maximum period of delay to public traffic shall be 20 minutes. Emergency vehicles (i.e., ambulance, RCMP, Park Warden) must be granted immediate passage at all times. The Departmental Representative reserves the right to reduce delay time for public traffic at times when specified delay results in excessive backup of public traffic.
- .6 The Contractor shall also 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.
- .7 The Departmental Representative will monitor the 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. The Contractor shall bear the costs of implementing these requirements so as to ensure the traffic control specifications and associated performance standards are met.
- .8 The Contractor shall maintain a dust free construction zone by means of cleaning and watering when required.

1.8 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 submitted by the Contractor and approved by the Departmental Representative. **All temporary signs that are used for longer than one day shall be mounted on wood posts, other than changeable message signs that must be secured and stabilised at all times.**
- .3 Signs, as an installed unit, shall be wind resistant.
- .4 The Contractor may utilize alternative sign mounting devices or posts provided that they are equivalent in performance and approved by the Departmental Representative prior to their installation.
- .5 Place signs and other devices to standards and in locations recommended in the TMP. Provide intermittent signage if work zones exceed 2.0 km in length.
- .6 As situation at work sites changes, Contractor to update their Traffic Management Plan outlining signs and other devices required for the project and submit for the approval of the Departmental Representative.
- .7 Continually inspect and maintain traffic control devices in use by:
 - .1 Checking signs daily for legibility, damage, suitability and location.

- .2 Cleaning, repairing or replacing signs as required ensuring clarity and reflectance.
- .3 Removing or covering signs which do not apply to conditions existing from day to day or time to time.

1.9 CONTROL OF PUBLIC TRAFFIC

- .1 The Contractor shall provide competent flag persons, trained in accordance with, and properly dressed and equipped as specified in the AT - 2008 Traffic Accommodation in Work Zones.
 - .1 When public traffic is required to pass working vehicles or equipment, which block all or part of travelled roadway.
 - .2 When vehicles are entering or exiting Worksite access points.
 - .3 When it is necessary to institute one-way traffic system through construction area or other blockage and traffic signal system is not in use.
 - .4 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.
 - .5 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .6 For emergency protection when other traffic control devices are not readily available.
 - .7 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .8 At each end of restricted sections where pilot cars are required.
- .2 Delays to public traffic due to Contractor's operators shall not exceed a **maximum of 20 minutes**.
- .3 The Contractor shall phase the Work in the Emerald Lake Parking Lot so that half of the parking lot remains functional and accessible to the public at all times.
- .4 The Contractor shall phase the Work on Emerald Lake Road so that one lane remains operational at all times.
- .5 No stoppage of traffic will be allowed for the periods specified in Section 01 14 00, Work Restrictions, 1.5 pertaining to Statutory Holiday or long weekend.
- .6 During hours of darkness, if permitted under these specification, Contractor shall determine requirements but as a minimum, flag persons 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.

Part 2 Products

.1 Not used.

Part 3 Execution

.1 Not used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 All Divisions 01, 02 and 32 Sections

1.2 PRECEDENCE

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

1.3 MEASUREMENT PROCEDURES

- .1 The cost of environmental and aesthetic protection 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.

1.4 SUBMITTALS

- .1 The Contractor shall describe environmental mitigation measures to implement that will ensure that all work is in compliance with this Section 01 35 43 – Environmental Procedures in their Environmental Protection Plan (EPP).

1.5 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 For the Work in BNP and YNP, the Contractor and any sub-Contractors shall obtain a business license from the PCA Administration Office in Lake Louise prior to commencement of the contract.
- .3 All Contractor's vehicles are required to display a vehicle work pass from PCA. These permits may be obtained free of charge from the PCA Administration Office once a business permit has been obtained.

1.6 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 as identified in these specifications may result in the work being suspended pending rectification of the problems.
- .3 **Refer to the PCA National Best Management Practices (National BMPs) for the Work included with this tender. The Contractor is required to implement all recommendations and mitigations, and follow all procedures and processes whether supply, construction, administration or otherwise as described by the National BMPs.**

- .4 **The Contractor shall prepare their Environmental Protection Plan (EPP) to include the National BMPs as a minimum but shall ensure that all environmental requirements under the Contract and associated with the Works are appropriately managed through their EPP processes.**
- .5 **Where there is a discrepancy or inconsistency between the National BMPs and other documents, the National BMPs take precedence.**
- .6 Minimize concentrations of particularly noisy/disruptive activity or non-essential activity (e.g. staging/ stockpiling/ maintenance areas, equipment turnarounds, idling, parking, etc.) within 250 metres of major wildlife crossing structures (overpasses, bridges and underpasses).
- .7 Plan paving to ensure that those areas within 250 metres of a major crossing structure are completed as quickly as possible.
- .8 Paving in areas within 250 metres of a major crossing structure is not permitted during the specific time periods when wary wildlife species are most likely to be active/travelling - the hour prior to sunrise and the hour after sunset.
- .9 For the purpose of the above work restriction, the time of sunrise and sunset shall be as calculated by the National Research Council Canada for the City of Calgary, AB on the same day that the Work is being carried out. If for any reason the National Research Council Canada is inaccessible, the Departmental Representative will determine a time for sunrise and sunset.

The calculation is accessible at:

<http://www.nrc-cnrc.gc.ca/eng/services/sunrise/>

1.7 START-UP AND ENVIRONMENTAL BRIEFING

- .1 All staff employed at the construction site will be subject to an approximately half hour briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. **All Employees must attend their briefing before beginning their work at the site.** 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 Environmental Surveillance Officer (SO) 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 SO. A copy of their summary will be provided to each sub-trade worker joining the work force at the site.
- .2 PCA will have an SO attending the site to monitor the construction activity for conformance with these specifications. The SO or alternate designated PCA staff member will present the "environmental briefing". The SO'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 SO has authority to enforce National Parks Act violations, direction to the Contractor will be the duty of the Departmental Representative.

1.8 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 the National Parks before delivery to the work site.
- .2 Equipment fuelling sites will be identified by the Contractor and approved by the Departmental Representative and the SO. Except for chain saws, any fuelling closer than 100 metres from 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 streams, wetlands, water bodies or waterways. 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 the fuelling operation.
- .4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times.
- .5 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order.

1.9 FIRE PREVENTION AND CONTROL

- .1 A fire extinguisher shall be carried and available for use on each machine and at locations within the plant in the event of fire. Basic firefighting equipment recommended (e.g. a water truck; minimum 500 Imperial gallons with 500 feet of fire hose and a pump capable of producing 45 psi water pressure at the nozzle, three shovels, two pulaskis, and two five gallon backpack pumps) shall be maintained at the construction site at a location known and easily accessible to all the Contractor's staff. Contractor's staff shall receive basic training in early response to wildfire events during the "environmental briefing".
- .2 Care shall be taken while smoking on the construction site to ensure that the accidental ignition of any flammable material is prevented.
- .3 Fires or burning of waste materials are not permitted. This specific restriction extends to the removal of vegetation debris and despite all other notes, takes precedence over the any interpretation of the National BMPs that may suggest burning of any waste on site is permitted.
- .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 SO and the Departmental Representative shall be notified of any fire immediately.

1.10 WILDLIFE

- .1 During the Environmental Briefing all personnel shall be instructed by the SO on procedures to follow in the event of wildlife appearance near or within the work site and any other wildlife concerns.
- .2 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 behaviour or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.

1.11 RELICS AND ANTIQUITIES

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

1.12 WASTE MATERIALS STORAGE AND REMOVAL

- .1 The Contractor and workers shall dispose of hazardous wastes in conformance with the Environmental Contaminants Act and applicable provincial regulations while observing 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 not be mixed, but will be kept separate.
- .3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere in the 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 site located outside the park. Construction waste storage containers, provided by the Contractor, shall be emptied by the Contractor when 90% full. Waste containers will 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 their 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 of food scraps, food wrappers, pop cans or other attractive products to bear proof containers is mandatory. It is incumbent on the

Contractor to notify Parks Canada and make specific arrangements to have garbage collected by Parks Canada when using existing Parks Canada receptacles.

- .6 The Contractor and workers shall immediately report any circumstances related to food/garbage (e.g. overflowing container or strong smell) and wildlife to the SO or the Departmental Representative.

1.13 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 A Contractor's office, equipment parking, and storage area will be permitted at Lake Louise Overflow Campground (TCH Km 67) or Mannix Pit in BNP. Other locations may be considered by the Departmental Representative.
- .2 No Camp or worker accommodation will be allowed within the National Parks and the National Park Act regulations prohibit anyone working within National Parks from using public campground facilities.
- .3 The Contractor shall provide toilets and maintain them in a clean and sanitary condition at the work sites. These facilities shall not be used for the disposal of anything but human wastes.
- .4 Removal and storage of snow shall be arranged with the SO and the Departmental Representative.
- .5 Pets shall not be brought to or maintained at the construction site.
- .6 Water can be obtained by drilling or excavating to the water table at Mannix Pit BNP provided the Contractor has the Departmental Representative's prior approval.
- .7 Should the Contractor request an alternate water source, the Departmental Representative, in consultation with the SO may give direction as to an alternative location to be used. Specific intake measures are required when water is approved to be withdrawn from open watercourses.

Part 2 Products

- 2.1** Not Used.

Part 3 Execution

3.1 SPECIFIC CONCERNS RELATIVE TO EROSION CONTROL AND SEDIMENTATION

- .1 The Contractor shall prepare an Erosion and Sedimentation Management Plan (ESMP) for the components of the contract that are undertaken in proximity to watercourses, wetlands or riparian environments. Their plan shall be included in their EPP and prepared to the satisfaction of the Departmental Representative and SO.
- .2 The ESMP shall be prepared so as to ensure that there is 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.

3.2 CULVERT INSTALLATION

- .1 All culverts shall be installed using best management practices for working in or near water that will result in a minimum amount of sedimentation and damage to the riparian area of the watercourse. The Contractor shall prepare a plan for the installation of each culvert, a minimum one (1) week prior to doing the work for approval by the Departmental Representative and SO.

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 Specification.

1.2 RELATED SECTIONS

- .1 All sections in Divisions 01, 02 and 32.

1.3 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.4 REFERENCES

- .1 BC MoTI – 2012 Standard Specifications for Highway Construction Manual

1.5 QUALITY CONTROL PLAN

- .1 Contractor's quality control plan shall be in accordance with Section 101 of the BC MoTI – 2012 Standard Specifications for Highway Construction.

1.6 TESTING BY THE CONTRACTOR

- .1 Testing required to provide quality control to assure that the Work strictly complies with the Contract requirements shall include, but not be limited to:
 - .1 All testing specified in the Contract Documents
 - .2 Any other testing required as a condition for deviation from the specified Contract procedures.
- .2 Testing proposed shall be in accordance with the BC MoTI – 2012 Standard Specifications for Highway Construction.
- .3 The Contractor shall be fully responsible and bear all costs for all quality control testing and shall conduct such testing in the following manner:
 - .1 Provide testing facilities and personnel for the tests and inform the Departmental Representative in advance to enable the Departmental Representative to witness the tests if it so desired;
 - .2 Notify the Departmental Representative when sampling will be conducted;
 - .3 Within one Day after completion of testing, submit test results to the Departmental Representative

- .4 Identify test reports with the name and address of the organization performing all tests, and the date of the tests
- .4 Approval of tested samples will be for characteristics or use named in such approval and shall not change or modify any Contract requirements.
- .5 Testing agencies, their inspectors, and their representatives are not authorized to revoke, alter, relax, enlarge or release any requirement of the Contract Documents, nor to approve or accept any part of the Work

1.7 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.8 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by the Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .3 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Departmental Representative at no cost to the Departmental Representative.

1.9 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.10 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Provide labour and facilities to obtain and handle samples and materials on site.

1.11 REJECTED WORK

- .1 Remove defective Work, whether the result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.12 REPORTS

- .1 Submit one (1) electronic copy of all inspection and test reports to Departmental Representative in accordance with Section 01 33 00 Submittals Procedures.

1.13 TESTS AND MIX DESIGNS

- .1 Furnish test results and designs as may be requested.

1.14 MILL TESTS

- .1 Submit mill test certificates as required of specification sections.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 35 31 - Special Procedures for Traffic Control.

1.2 PRECEDENCE

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

1.3 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.4 INSTALLATION AND REMOVAL

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

1.5 SITE STORAGE/LOADING

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

1.6 CONSTRUCTION PARKING

- .1 Provide and maintain adequate access and parking at the project site in areas approved by the Departmental Representative and in accordance with among all others, the environmental requirements of the Contract.
- .2 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.

1.7 SECURITY

- .1 If required by the Contractor, provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays. For extended shut-downs, the Contractor shall provide the level of security as required to protect the Work. The Contractor is advised that some random acts of vandalism to equipment have occurred within the National Parks.
- .2 It is strongly advised that the Contractor consider the provision of security personnel.

1.8 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.

1.9 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations, ordinances and these specifications.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning and traffic control 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 dispose of offsite on completion of project or earlier if directed by Departmental Representative.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .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 Specification.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.3 RELATED SECTIONS

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

1.4 INSTALLATION AND REMOVAL

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

1.5 HOARDING

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

1.6 GUARD RAILS AND BARRICADES

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

1.7 WEATHER ENCLOSURES

- .1 Not used.

1.8 DUST TIGHT SCREENS

- .1 Not used.

1.9 ACCESS TO SITE

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

1.10 PUBLIC TRAFFIC FLOW

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

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.12 PROTECTION OF BUILDING FINISHES

- .1 Not used.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 45 00 - Quality Control.

1.2 REFERENCE STANDARDS

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .5 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

1.3 QUALITY

- .1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. The Contractor shall remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.4 AVAILABILITY

- .1 Immediately after signing contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In the event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason,

Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber and miscellaneous metals on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.7 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.8 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative whose decision is final.

1.9 CO-ORDINATION

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

- .1 The Departmental Representative will inspect all work prior to any concrete pours. The Contractor shall notify the Departmental Representative 24 hours before any pour for inspection.

1.11 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.

- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 PROTECTION OF WORK IN PROGRESS

- .1 Do not cut, drill or sleeve any load bearing structural member without written approval of Departmental Representative, unless specifically indicated.

Part 2 Products

2.1 Not Used.

Part 3 Execution

3.1 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 Specification.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.3 RELATED SECTIONS

- .1 Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.

1.4 REFERENCES

- .1 Owner's identification of existing survey control points and property limits.

1.5 LAYOUT REQUIREMENTS

- .1 The Departmental Representative shall identify location of all work sites. The Contractor shall be responsible for all other layout work as identified in this Section, elsewhere in the Contract and as required to complete the Works to the required standards.
- .2 The Contractor shall provide at their own cost, any survey activities as required and including, but not limited to, the following:
 - .1 Layout for interim and final lane markings, including those for intersection treatments
 - .2 Re-establishing the start and finish of "No Passing Zones", Passing Lanes or at new limits as directed by the Departmental Representative
 - .3 String line or other markings for the alignment or grade control of construction equipment
 - .4 Layout of culverts, clearing limits, guardrail and barriers
 - .5 Pavement repair and rehabilitation
 - .6 All other activities required to complete the Works

1.6 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 Record locations of maintained, re-routed and abandoned service lines.

1.7 SUBMITTALS

- .1 On request of Departmental Representative, submit documentation to verify accuracy of layout work.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .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 Specification.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.3 RELATED SECTION

- .1 Section 01 35 31 - Special Procedures for Traffic Control.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 01 77 00 - Closeout Procedures.

1.4 PROJECT CLEANLINESS

- .1 Maintain the whole of the Work Site in accordance with Section 01 35 43 – Environmental Procedures, the Departmental Representative’s reasonable requests
- .2 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by PCA or other Contractors.
- .3 The Contractor is required to regularly clean and tidy the Work Site so as to maintain a regular state of cleanliness.
- .4 The Departmental Representative and Environmental Surveillance Officer may, at their total discretion, require the Contractor to suspend work activities until such a time as the Work Site is cleaned and debris, waste, and animal attractants are satisfactorily managed. The Contractor shall do as requested at their cost and no claim for time or additional costs will be accepted.

1.5 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 PCA or other Contractors.
- .4 Inspect finishes, and ensure specified workmanship and operation.
- .5 Remove dirt and other disfiguration from exterior surfaces.
- .6 Sweep and wash clean paved areas.

.7 Clean drainage systems.

Part 2 Products

.1 Not Used.

Part 3 Execution

.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 Specification.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.3 RELATED SECTIONS

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

1.4 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 and submit all closeout submittals.
 - .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:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 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.

Part 2 Products

- .1 Not Used.

Project No. 201547

Road Rehabilitation
Trans-Canada Highway km 17-23 &
Emerald Lake Rd

Section 01 77 00

Parks Canada Agency

Banff & Yoho National Park

CLOSEOUT
PROCEDURES
Page 60

Part 3 Execution

.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 Specification.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.3 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 71 00 - Examination and Preparation.
- .4 Section 01 77 00 - Closeout Procedures.

1.4 CLOSEOUT SUBMITTALS

- .1 The Contractor shall provide the following documents and information to the Departmental Representative prior to them being eligible for Final Completion as detailed in Section 01 77 00.

1.5 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain a copy of the following documents on-site prior to providing the Departmental Representative with one final record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Accepted final shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Prior to submittal, store record documents and samples in field office apart from documents used for construction.

- .3 Label record documents and file in accordance with Section number listings in List of Contents of the Specification. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque Drawings and in copy of the Specification.
- .2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders.
 - .3 Details not on original Contract Drawings.
 - .4 References to related shop drawings and modifications.
- .4 Specifications: legibly mark each item to record actual construction, including:
 - .1 Changes made by Addenda and change orders.

1.7 FINAL SURVEY

- .1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.8 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.

- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 35 31 – Special Procedures for Traffic Control
- .2 Section 01 35 43 - Environmental Procedures

1.2 MEASUREMENT PROCEDURES

- .1 Payment under the **“Unit Price Item 1 – Asphalt Pavement Removal”** will include operations involved in milling, brooming, loading, hauling and stockpiling at Mannix Pit, designated asphalt pavement and cleaning of remaining pavement surface. Payment shall be made as follow:
 - .1 **“Unit Price Item 1a) – Partial Depth (Milling)”** will be measured for payment in square metres of existing asphalt actually removed according to the Drawings, these specifications or as directed by the Departmental Representative, and shall include all labour, equipment and material to satisfactorily complete the item of work.
 - .2 No overhaul will be paid for **“Unit Price Item 1 - Asphalt Pavement Removal”**.
 - .3 Traffic Control required for the Work shall be incidental to **“Lump Sum Price Item 2 - Traffic Accommodation”** and no separate payment will be made to the Contractor.
 - .4 Mobilization and demobilization required for the Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”** and no additional payment will be made.
 - .5 Environmental mitigations required in accordance with Section 01 35 43 –Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Place milled asphalt material in stockpile at Mannix Pit, or at locations designated by the Departmental Representative.

Part 2 Products**2.1 EQUIPMENT**

- .1 Use cold milling, planning or grinding self-powered equipment with automatic grade controls capable of operating from string line, and capable of removing part of pavement surface to depths or grades indicated.

- .2 The Contractor is to ensure that the maximum particle size of milled materials is less than 50 mm and shall sieve or otherwise separate/remove larger particles at their cost.

Part 3 Execution

3.1 PREPARATION

- .1 Prior to beginning removal operation, inspect and verify with Departmental Representative areas, depths and lines of asphalt pavement to be removed.
- .2 Have appropriate Traffic Control measures in place for the Work prior to commencement.

3.2 PROTECTION

- .1 Protect existing pavement not designated for removal, concrete deck, concrete curb and barriers, light units and structures from damage. In event of damage, immediately replace or make repairs to approval of Departmental Representative at no additional cost.

3.3 REMOVAL

- .1 To tie from existing pavement to new overlay, remove existing asphalt pavement by milling to lines and grades established by Departmental Representative in field or as per Drawing 17.
- .2 At mill and fill locations, remove existing asphalt to the depths, lengths and width specified in the Drawings and as established by Departmental Representative in field.
- .3 Use self-powered equipment and methods of removal and hauling which do not damage or disturb underlying roadway structure.
- .4 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel or other materials.
- .5 Provide for suppression of dust generated by removal process to ensure a dust free Work Site.

3.4 STOCKPILING OF MATERIAL

- .1 The stockpile site shall be firm and consist of a compacted granular base layer 100 mm thick.

3.5 FINISH TOLERANCES

- .1 Finished surfaces in areas where asphalt pavement has been removed to be within +/-5 mm of grade specified but not uniformly high or low.

3.6 SWEEPING

- .1 Sweep remaining asphalt pavement surfaces clean of debris resulting from removal operations using rotary power brooms and hand brooming as required.

Project No. 201547

Road Rehabilitation
Trans-Canada Highway km 17-23 &
Emerald Lake Rd

Section 02 41 13.14

ASPHALT PAVEMENT
REMOVALS

Parks Canada Agency

Banff & Yoho National Parks

Page 66

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 Specification.

1.2 MEASUREMENT PROCEDURES

- .1 This work shall be incidental to contract and will not be measured for payment.

1.3 RELATED SECTIONS

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

1.4 REFERENCES

- .1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92-637.
- .2 National Fire Code of Canada 1995.
- .3 Transportation of Dangerous Goods Act (TDG Act) 1992, (T-19.01).
- .4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/85-77, SOR/85-585, SOR/85-609, SOR/86-526).

1.5 DEFINITIONS

- .1 Dangerous Goods: Product, substance, or organism that is specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulations.
- .2 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .3 Hazardous Waste: Any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .4 Workplace Hazardous Materials Information System (WHMIS): A Canada-wide system designed to give employers and workers information about hazardous materials used in the workplace. Under WHMIS, information on hazardous materials is to be provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by a combination of federal and provincial laws.

1.6 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

- .2 Submit to Departmental Representative current Material Safety Data Sheet (MSDS) for each hazardous material required prior to bringing hazardous material on site.
- .3 Submit hazardous materials management plan to Departmental Representative that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.7 STORAGE AND HANDLING

- .1 Coordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
- .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
- .3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.
- .4 All explosives must be mixed outside of the Park and delivered to the site. No storage of explosives shall be allowed within the National Parks.
- .5 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.
- .6 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
 - .6 Store hazardous materials and wastes in a secure storage area with controlled access.
 - .7 Maintain a clear egress from storage area.
 - .8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.
 - .9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.

- .10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .7 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .8 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

1.8 TRANSPORTATION

- .1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.
- .3 If hazardous waste is generated on site:
 - .1 Coordinate transportation and disposal with Departmental Representative.
 - .2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.
 - .3 Use only a licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept the material.
 - .5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
 - .6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.
 - .7 Provide a photocopy of all shipping documents and waste manifests to Departmental Representative.
 - .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Departmental Representative.
 - .9 Report any discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

Part 2 Products

2.1 MATERIALS

- .1 Only bring on site the quantity of hazardous materials required to perform Work.
- .2 Maintain MSDSs in proximity to where the materials are being used. Communicate the location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 DISPOSAL

- .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
- .2 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.
- .3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.
- .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 35 00.06 – Special Procedures for Traffic Control
- .2 Section 01 35 43 – Environmental Procedures

1.2 MEASUREMENT PROCEDURES

- .1 Quantities for payment for brushing, including flush cutting, will be paid under **“Unit Price Item 2 – Brushing”** and will be measured based on horizontal measurements in hectares of land acceptably brushed, and flush cut, as shown in the Drawings to a standard width of 3m from the edge of pavement, and debris disposed of according to these specifications, and shall include all labour, equipment and material to satisfactorily complete this item of work.
- .2 The specific locations for machine assisted brushing and hand brushing through the use of hand tools will be as directed by the Departmental Representative and paid accordingly under either **“Unit Price Item 2a) – Emerald Lake Road – Machine Brushing”** or **“Unit Price Item 2b) – Emerald Lake Road – Hand Brushing”**.
- .3 Overhaul for the transportation of vegetative debris will be paid for under **“Lump Sum Price Item 3 – Prime Cost Sum”**.
- .4 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”**, and no additional payment will be made.
- .5 Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no additional payment will be made.
- .6 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor
- .7 If the Contractor is requested to arrange for sale of merchantable timber. Any cost / credit for the sale of merchantable timber will be paid under **“Lump Sum Price Item 3 – Prime Cost Sum”**.
- .8 Assessment of danger trees and their safe removal are to be paid through **“Lump Sum Price Item 3 – Prime Cost Sum”** in accordance with BC MoTI 2012 Standard Specifications for Highway Construction Section 200.05.

1.3 DEFINITIONS

- .1 Brushing consists of cutting trees and brush vegetative growth to within 75 mm of the ground and disposing of felled trees, previously uprooted trees, stumps, and clearing wood debris as specified.
- .2 Clearing means gathering cut vegetation from the area. The surface must be clear of all loose debris greater than 1m in length.
- .3 Merchantable timber is all timber with butt diameter in excess of 150 mm and top down to 100 mm.

1.4 QUALITY CONTROL

- .1 All Quality Control testing by the Contractor.

1.5 PROTECTION

- .1 Prevent damage to trees, natural features, bench marks, existing pavement, water courses and root systems of trees that are to remain.
- .2 Repair any damaged items to approval of Departmental Representative.
- .3 Replace any trees designated to remain, if damaged, as directed by Departmental Representative.

Part 2 Products

- .1 Not used.

Part 3 Execution**3.1 BRUSHING AREA**

- .1 The Contractor is to brush areas identified on the Drawings and as directed by the Departmental Representative.

3.2 PREPARATION

- .1 Inspect site and verify with Departmental Representative, items designated to remain.
- .2 Contractor shall have the area assessed for danger trees by a certified assessor prior to the Works commencing.
- .3 Danger trees identified by the certified assessor and approved by the Departmental Representative shall be safely removed by a qualified feller prior to other Works.

3.3 BRUSHING

- .1 Brush and flush cut as directed by Departmental Representative by cutting trees and vegetative growth.
- .2 Cut off branches and cut down trees overhanging area cleared as directed by Departmental Representative.
- .3 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.
- .4 All clearing shall be felled in such a manner that surrounding vegetation is preserved along the construction limits. Stumps remaining within 3.0 metres of cleared perimeter are to be cut flush with ground and vegetative mat left undisturbed.
- .5 All clearing and grubbing to be completed in accordance with the relevant environmental procedures contained and referenced herein.

3.4 REMOVAL AND DISPOSAL

- .1 All brushed and cleared wood and vegetative materials excluding merchantable timber shall be loaded, hauled and disposed of outside of the National Park at a disposal site as agreed with the Departmental Representative at the Contractor's expense at the earliest opportunity following brushing in that area.

- .2 The Contractor may request to be allowed to incinerate the above materials provided that all environmental requirements are met and approval by the Environmental SO and Departmental Representative is obtained. If approved, all incineration shall take place in Mannix Pit.
- .3 Cut merchantable timber to 6-12m lengths and stockpile at an approved location in Mannix Pit as directed by the Departmental Representative. Stockpiled timber becomes property of the owner.
- .4 To facilitate ease of transport, the Contractor may chip brushed and cleared wood and vegetative materials prior to removal and disposal at their cost. Chipping must be undertaken in accordance with all relevant safety and environmental requirements as approved by the Departmental Representative prior to Works commencing.

3.5 FINISHED SURFACE

- .1 In areas of brushing, once complete, the Contractor is to ensure that the finished surface is cleared of brushing debris including both fine and medium woody fuel materials as detailed below.
- .2 Fine woody fuel materials have a diameter less than 3cm and shall not exceed 10% ground cover or 10cm in depth.
- .3 Medium woody fuel materials have a diameter between 3cm and 7cm and shall not exceed 20% ground cover or 20cm in depth.
- .4 All woody or vegetative debris of length greater than 1m or is to be removed and disposed of as detailed above.
- .5 To facilitate the above, the Contractor shall prepare a demonstration section of finished surface for review by the Environmental SO and Departmental Representative. If satisfactory, the standard will be utilized as Works progress. If unsatisfactory or found to be not in accordance with the requirements, the Environmental SO and Departmental Representative will provide feedback and the Contractor shall prepare a second, and subsequent, demonstration sections until the standard of acceptance is understood by all.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 35 00.06 – Special Procedures for Traffic Control.
- .2 Section 01 35 43 – Environmental Procedures.
- .3 Section 01 56 00 – Temporary Barriers and Enclosures.
- .4 Section 31 11 00 - Brushing

1.2 DESCRIPTION

- .1 This item consists of the excavation and disposal of all materials in conformity with the lines, grades and dimension indicated on the drawings and as directed by the Departmental Representative and includes:
 - .1 Roadway ditch cleanout and re-grading.
 - .2 Removal and disposal of unsuitable materials from excavations.
 - .3 Transportation of excavated materials.
 - .4 Finishing of top surfaces and slopes.
 - .5 Maintenance of the work set forth under this section in a finished condition until any portion thereof has been accepted as completed by the Departmental Representative.

1.3 MEASUREMENT PROCEDURES

- .1 Excavation-Common:
 - .1 The quantity of Type 'D' excavation for which payment will be made shall be the volume in cubic metres measured in its original position from cross sections taken by Departmental Representative in areas of excavation. Payment will be made under "**Unit Price Item 3a) — Ditch Cleanout**" and shall include cost of excavating, hauling, stockpiling of material and disposing of material deemed as unsuitable by the Departmental Representative in accordance with these specifications and as directed by the Departmental Representative. Excavated material shall be hauled to Mannix Pit or as directed by the Departmental Representative.
 - .2 No overhaul will be paid for this Work.
- .2 Mobilization and demobilization required for this Work shall be incidental to "**Lump Sum Price Item 1 – Mobilization / Demobilization**", and no additional payment will be made.
- .3 Traffic Control required for this Work shall be incidental to "**Lump Sum Price Item 2 – Traffic Accommodation**" and no separate payment will be made to the Contractor.

- .4 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor
- .5 No measurement payment will be made for:
 - .1 Excavating unnecessarily beyond lines established by Departmental Representative, with exception of unavoidable slide material. Do not measure slide material, when such slides are attributable to negligence.
 - .2 Loading hauling, placing and compaction of boulders less than 1.5 cubic metres into large embankments.
 - .3 Scarifying or benching existing slopes or existing road surfaces.
 - .4 Removing unsuitable material from embankment attributable to negligence.
 - .5 Watering, drying or compacting.
 - .6 Proof rolling.
 - .7 Compaction of material (150 mm) below subgrade horizon in areas of cut.
 - .8 Finishing.

1.4 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
- .2 BC MoTI 2012 Standard Specifications for Highway Construction Section 201 – Roadway and Drainage Excavation (BC MoTI SS201).

1.5 DEFINITIONS

- .1 Type 'A' Solid Rock: excavation of:
 - .1 Material from solid masses of igneous, sedimentary or metamorphic rock that, prior to removal, was integral with parent mass. Material that cannot be ripped with reasonable effort from Caterpillar D9L or equivalent to be considered integral with parent mass.
 - .2 Boulder or rock fragments measuring 2 cubic metres or more in volume.
 - .3 As defined in BC MoTI SS201.
- .2 Type 'D' Excavation: excavation of materials that are not Rock Excavation or Stripping as defined in BC MoTI SS201.
- .3 Unsuitable Material: material unsuitable for embankment, embankment foundation or material surplus to requirements as defined in BC MoTI SS201.
- .4 Topsoil: material passing a 100 mm sieve and capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

1.6 QUALITY CONTROL

- .1 All Quality Control testing by the Contractor in accordance with BC MoTI SS201 where applicable.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle or dispose of waste materials as appropriate in accordance with Section 01 35 43 - Environmental Procedures.

Part 2 Products

- .1 Not used.

Part 3 Execution**3.1 Water Distributors**

- .1 Apply water with equipment capable of uniform distribution.

3.2 Excavating

- .1 General
 - .1 Notify the Departmental Representative when unsuitable materials are encountered and remove to depth and extent as approved by the Departmental Representative. This material shall be placed on the sideslope outside the 2:1 slope.
 - .2 Notify the Departmental Representative of material appearing to conform to classification for Type 'A' Solid Rock is encountered, to enable measurements to be made to determine volume of rock. Provide 6 hour notification.
 - .3 The dimensions of the excavations and embankments shall be, in accordance with the typical sections accompanying these specifications, but the dimensions of any or all excavations and embankments may be increased or decreased at any time by the Departmental Representative as conditions and circumstances may determine.
- .2 Ditch Cleanout
 - .1 Excavate material from existing ditches to the line, level, and extents provided in the Drawings and as detailed by the Departmental Representative.
 - .2 Prior to acceptance the cleaned ditches are to be neatly finished and trimmed to the lines, levels, and cross-sections, shown on the Drawings, or as directed by the Departmental Representative to reproduce smooth surfaces, slopes and uniform cross-sections. Finished surface to be within $\pm 15\text{mm}$.
- .3 Drainage:

- .1 Maintain profiles, crowns and cross slopes to provide good surface drainage at all times.
- .2 Provide ditches as work progresses to provide drainage.

3.3 Protection

- .1 Maintain finished surfaces in condition conforming to this section until acceptance by the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 02 41 13.14 - Asphalt Pavement Removal
- .2 Section 32 12 16 – Asphalt Concrete Pavement

1.2 GENERAL DESCRIPTION

- .1 This section refers to those portions of the work that are unique to full depth reclamation of existing road structure. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein.
- .2 Full depth reclamation is an in-place reclamation procedure in which the full flexible pavement section and a predetermined portion of the underlying granular materials are uniformly pulverized, blended and incorporated into a base or subbase course; further stabilization may be obtain through the use of additives if approved by the Departmental Representative.

1.3 DEMONSTRATION

- .1 Prior to the start of work, the Contractor shall demonstrate effectiveness of proposed reclamation operation by reclaiming test section of minimum 15m long and not proceed with further Works until approved to do so by the Departmental Representative.

1.4 SAMPLES

- .1 The Contractor shall collect samples and testing for the demonstration section, as directed by Departmental Representative.

1.5 MEASUREMENT AND PAYMENT

- .1 Payment for Full Depth Reclamation shall be made under **“Unit Price Item 1b) – Asphalt Concrete Pavement Removal - Full Depth Reclamation”** and shall be the total compensation for all operations involved in reclamation including but not limited to, pulverizing, cold milling, sweeping, grading, conditioning, compacting, testing, and preparation of the surface for paving. Payment shall be made as follows:
 - .1 **“Unit Price Item 1b) - Asphalt Concrete Pavement Removal - Full Depth Reclamation”** will be measured for payment in square metres of reclamation of existing roadway, or as directed by the Departmental Representative, and shall include all labour, equipment and material to satisfactorily complete this item of work. The depth of existing surfacing varies by location, actual depth of pulverized material shall be adjusted as directed by the Department Representative in order to achieve the desired blend of 50% asphalt and 50% granular base course if possible.
 - .2 Full Depth Reclamation shall be completed in the areas shown on the Contract Drawings or as specified by the Department Representative.

- .3 Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item 2 - Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .4 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”** and no additional payment will be made for remobilization of equipment if all full depth reclamation work cannot be completed at once
- .5 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.
- .2 Payment for additional base material, if requested by the Departmental Representative, will be paid under **“Lump Sum Item 3 – Prime Cost Sum”**.
- .3 Payment of additives, if requested by the Departmental Representative, will be paid under **“Lump Sum Item 3 – Prime Cost Sum”**.

1.6 INSPECTION AND TESTING

- .1 The Contractor shall complete proctor testing of samples of reclaimed demonstration section material to establish optimum moisture content and compaction requirements in accordance with ASTM D 698 test procedures for Standard Proctor Density in accordance with BC MoTI SS202 Clause 26.02.
- .2 The Contractor shall prepare additional demonstration sections and lab testing as directed by the Departmental Representative if it is determined that the reclaimed material has substantially changed characteristics due to differing in situ pavement and subgrade or base course conditions from initial demonstration section.
- .3 The Contractor shall complete one (1) ASTM D 698 test procedures for Standard Proctor Density per 25,000 m³ of reclaimed material or whenever the composition of the material changes.

Part 2 Products

2.1 MATERIALS

- .1 Material produced from this procedure to be well graded with a maximum particle size of 38mm.

2.2 ADDITIVES

- .1 Liquid additives do not include water.
- .2 The Contractor shall store, transport, handle and apply in a manner so as to ensure no spillage or discharge into adjacent ditches or streams.
- .3 The Contractor shall protect all surfaces treated with additives from inclement weather.

Part 3 Execution**3.1 EQUIPMENT**

- .1 The Contractor shall maintain equipment at all times in first class working condition. The Contractor shall use skilled and experienced operators.
- .2 The Contractor shall have the capability to effectively pulverize and blend existing pavement and underlying subbase and/or base materials to achieve. To have capability to handle various types and thicknesses of pavement surface, from 25mm to 250mm of asphalt concrete, to a maximum depth including subbase and/or base material of 400mm.
- .3 To be complete with integral metered liquid additive system to introduce liquid additives uniformly and accurately to blended materials concurrent with pulverizing and placement and only when equipment is moving.
- .4 Metering system to include a totalizer, so amount of liquid addition used during any given period can be read directly, and a litre per minute gauge to indicate instantaneous flow rate during blending operation.

3.2 PREPARATION

- .1 The Contractor shall schedule reclamation operations to minimize traffic disruption.
- .2 The Contractor shall neatly cut existing asphaltic concrete pavement at limits of reclamation operation, or mill as directed by the Departmental Representative.
- .3 The Contractor shall protect adjacent pavement, curb and gutter, appurtenances (manhole castings, valve covers) from damage.

3.3 CONSTRUCTION PROCEDURES

- .1 The Contractor shall pulverize existing pavement and a minimum of 100mm of base materials and blend so entire mass of material is uniformly graded. Disperse liquid additive, if required, uniformly throughout processed material during pulverizing and blending operation.
- .2 Remove all material with any dimension greater than 38mm.
- .3 After material has been processed, the Contractor shall shape, grade and compact to lines, grades and depth as shown on Drawings or as directed by the Departmental Representative.
- .4 Water shall be applied to ensure optimum moisture content at time of blending and compaction. The Contractor shall uniformly compact restored cross section to density not less than 100% Standard Proctor Density in accordance with ASTM D 698. The Contractor shall be responsible for any double handling, excavating, loading, hauling, placing, conditioning as required to meet the required density and moisture, and no additional payment shall be made.
- .5 The Contractor shall determine a suitable and consistent compaction and rolling pattern that reliably correlates with the point at which repeated ASTM D 2922 Shallow Depth

Nuclear tested density ceases to increase with additional compaction effort. Once this compaction pattern is established and accepted by the Departmental Representative the Contractor may proceed.

- .6 The Departmental Representative may require the Contractor to re-test and examine the Contractor's compaction and rolling pattern should the materials, conditions, equipment or any other factor reasonably affecting the outcome change from the previous test.
- .7 Where additional granular material is required, the Contractor shall place material on the road surface prior to reclaiming or spread the material on the surface of reclaimed material and blend with reclaimed material.
- .8 The Contractor shall complete the reclamation procedures in continuous segments. The Contractor shall complete each segment, compact, and pave bottom course asphalt by end of each day and open to traffic. The Contractor shall not be permitted to leave reclaimed sections of highway unpaved (bottom lift only required) at end of work day.

3.4 ACCEPTANCE PARAMETERS

- .1 The Contractor shall not proceed with paving or otherwise covering a section of Full Depth Reclamation until the underlying work is acceptance by the Departmental Representative.
- .2 The completed Full Depth Reclamation shall be tested for acceptance in accordance with BC MoTI SS202 Clause 202.05.02 Rut Resistance and 202.29 Proof Rolling and Stabilizing Crushed Base Course.

3.5 DISPOSAL

- .1 The Contractor shall dispose unsuitable material to an approved off-site disposal area at their cost unless specified otherwise in Contract Documents or approved by the Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 32 12 16 – Asphalt Concrete Pavement

1.2 MEASUREMENT PROCEDURES

- .1 Supply, delivery and application of tack coat will be will not be measured separately and will be considered to be incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement - EPS”**.

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)

 ASTM D140-01, Standard Practice for Sampling Bituminous Materials.
- .2 Canadian General Standards Board (CGSB)

 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.

1.4 SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit two - 1 L samples of asphalt tack coat material proposed for use in new, clean, airtight, sealed, wide mouth bottles made with plastic to Departmental Representative, at least 2 weeks prior to beginning Work.
- .3 Sample asphalt tack coat material to: ASTM D140.
- .4 Provide access on tank truck for Departmental Representative to sample asphalt material to be incorporated into Work, in accordance with ASTM D140.

1.5 QUALITY ASSURANCE

- .1 Upon request by Departmental Representative, submit manufacturer's test data and certification that asphalt tack coat material meets requirements of this Section.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with ASTM D140.
- .2 Provide, maintain and restore asphalt storage area.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 43 - Environmental Procedures and with the Waste Reduction Work Plan.
- .2 Divert unused asphalt materials to facility capable of recycling materials.

Part 2 Products**2.1 MATERIALS**

- .1 Anionic emulsified asphalt: to CAN/CGSB-16.2, grade: SS-1.
- .2 Water: clean, potable, free from foreign matter.

2.2 EQUIPMENT

- .1 Pressure distributor to be:
 - .1 Maintained at even temperature.
 - .2 Applied uniformly on variable widths of surface up to 5 m.
 - .3 Applied at readily determined and controlled rates from 0.2 to 5.4 L/m² with uniform pressure, and with an allowable variation from any specified rate not exceeding 0.1 L/m².
 - .4 Distributed in uniform spray without atomization at temperature required.
- .3 Equipped with meter, registering metres of travel per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.
- .4 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.
- .5 Equipped with an easily read, accurate and sensitive device which registers temperature of liquid in reservoir.
- .6 Equipped with accurate volume measuring device or calibrated tank.
- .7 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
- .8 Equipped with nozzle spray bar, with operational height adjustment.
- .9 Cleaned if previously used with incompatible asphalt material.

Part 3 Execution**3.1 APPLICATION**

- .1 Obtain Departmental Representative's approval of surface before applying asphalt tack coat.
- .2 Apply asphalt tack coat only on clean and dry surface.
- .3 Dilute asphalt emulsion with water at 1:1 ratio for application.
- .4 Mix thoroughly by pumping or other method accepted by Departmental Representative.
- .5 Apply asphalt tack coat evenly to pavement surface at rate as directed by Departmental Representative, of 0.5 L/m² plus or minus 0.2 L/m².
- .6 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.
- .7 Do not apply asphalt tack coat when air temperature is less than 10 degrees C or when rain is forecast within 2 hours of application.
- .8 Apply asphalt tack coat only on unfrozen surface.
- .9 Evenly distribute localized excessive deposits of tack coat by brooming as directed by Departmental Representative.
- .10 Where traffic is to be maintained, treat no more than one half of width of surface in one application.
- .11 Keep traffic off tacked areas until asphalt tack coat has set.
- .12 Re-tack contaminated or disturbed areas as directed by Departmental Representative.
- .13 Permit asphalt tack coat to set before placing asphalt pavement.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 11 00 – Summary of Work.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 35 31 – Special Procedures for Traffic Control.
- .4 Section 01 35 43 - Environmental Procedures.
- .5 Section 02 41 13.14 - Asphalt Pavement Removal.
- .6 Section 32 12 13.16 - Asphalt Tack Coat.

1.2 DESCRIPTION

- .1 Work shall consist of supplying, loading, hauling and placing BC MoTI Medium Mix Class 1 Asphalt Concrete Pavement at locations on the Trans-Canada Highway in BNP, Emerald Lake Road in YNP, and as asphalt walkways at locations identified on the Drawings, or as directed by the Departmental Representative.
- .2 For the Class 1 mix, asphalt aggregate used shall consist of a 19mm Medium Mix Asphalt Aggregate in accordance with BC MoTI – 2012 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS). Asphalt Cement used shall be 150-200A penetration grade in accordance with BC MoTI – 2012 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS).
 - .1 The 19mm Medium Mix Asphalt Aggregate is available as an Owner Supplied material for the Contractor's use in completion of the Works and is stored in stockpiles at Mannix Pit, BNP.
- .3 Perform mix design for BC MoTI Class 1 Asphalt Concrete Pavement using Asphalt Cement 150-200A penetration grade and 19mm Asphalt Aggregate. Mix design is subject to acceptance by the Departmental Representative.
- .4 Milled Rumble Strips to be installed on the Trans-Canada Highway as detailed herein and as directed by the Departmental Representative.

1.3 MEASUREMENT PROCEDURES AND UNIT PRICE ADJUSTMENTS

- .1 Accepted asphalt concrete pavement will be measured in tonnes. Payment shall be compensation in full for supply of asphalt concrete mix including all materials, if permitted by the Departmental Representative, supply and application of prime/tack coat, processing, plant mixing, loading, hauling, paver laying, compacting, finishing surface, raking, interim and final lane marking, quality control testing, safety, and maintenance.. Payments shall be made accordingly under **“Unit Price Item 4a) – Asphalt Concrete Pavement - EPS”**.

- .2 Applicable payment adjustments (additions or subtractions as applicable) shall be applied to the top lift only and shall not include asphalt walkways, in accordance with Part F – Payment Adjustments of BC MoTI – 2012 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS)
- .3 Supply, installation, maintenance, calibration of weight scales and a scale house, or alternately electronic calibrated silo scales, at the plant by the Contractor shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement - EPS”** and no additional payment will be measured for payment. A scale person will be provided if required.
- .4 Preparing asphalt mix designs (including anti-stripping test), **by a qualified test laboratory licensed to practice in British Columbia** shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement - EPS”** and no additional payment will be measured for payment.
- .5 The movement of equipment and crew, shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement - EPS”** for the type of asphalt placed. A move is defined as the Contractor moving equipment and crew to the next section to pave after having completed, in its totality, the previous section.
- .6 No overhaul will be considered for payment under the Contract.
- .7 Supply and delivery of asphalt cement, and anti-stripping agent(s), if required and accepted by the Departmental Representative, will be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement - EPS”**.
- .8 Payment for the installation of the Milled Rumble Strips shall be made under **“Unit Price Item 4b) – Milled Rumble Strips”**.
- .9 Traffic Control required for the Work shall be incidental to **“Lump Sum Price Item 2 - Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .10 Mobilization and demobilization required for the Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”** and no additional payment will be made.
- .11 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.

Part 2 Products

2.1 MATERIALS

- .1 Materials used shall be in accordance with BC MoTI – 2012 Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS).
- .2 Penetration grade 150-200A Asphalt Cement shall be used in the ACP Mix.
- .3 The use of Recycled Asphalt Pavement (RAP) is not permitted for this project.

Part 3 Execution**3.1 WORK METHODOLOGY**

- .1 Execution of the Work shall be in accordance with BC MoTI – 2012 Standard Specifications for Highway Construction Section 502 - Asphalt Pavement Construction (EPS).
- .2 ACP level course to comprise a single lift as directed by the Departmental Representative.
- .3 ACP overlay thickness to be as noted on the Drawings.
- .4 ACP full depth thickness to be as noted on the Drawings.
- .5 Asphalt walkway to be installed following the Departmental Representative's acceptance of relevant work completed in relation to the concrete curb and gutter and associated backfill.
- .6 Milled Rumble Strips shall be installed in accordance with BC MoTI – Supplement to TAC Geometric Design Guide Section 650 – Rumble Strips. The Milled Shoulder Rumble Strips shall be Continuous SRS and are to be installed at various locations along on the Trans-Canada Highway or as directed by the Departmental Representative.
- .7 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.

3.2 EQUIPMENT, PLANT AND MIXING REQUIREMENTS

- .1 Execution of the Work shall be in accordance with BC MoTI – 2012 Standard Specifications for Highway Construction Section 502 - Asphalt Pavement Construction (EPS).
- .2 Asphalt plant to be used on this project, regardless of location, shall be a minimum of 200 tonne per hour production plant, equipped with a dry bag system for pollution control, in addition to, or in replacement of standard cyclone dust collectors, to effectively eliminate emissions of dust and smoke pollutants into the atmosphere. Use of secondary dust collection systems, requiring discharge of dust polluted water into settling ponds or drainage system will not be permitted. Asphalt plant located outside the park must comply with all environmental pollution control regulations applicable in the asphalt plant area.

END OF SECTION

Part 1 General**1.1 RELATED WORK**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 31 – Special Procedures for Traffic Control.
- .3 Section 01 35 43 – Environmental Procedures.
- .4 Section 01 74 11 – Cleaning.

1.2 DESCRIPTION

- .1 Removal and disposal of existing concrete curb at various locations along Emerald Lake Road in YNP as identified on the Drawings.
- .2 Supply and installation of concrete curb and gutter at the same locations or as directed by the Departmental Representative.
- .3 Supply and installation of asphalt paved walkways adjacent to installed concrete curb and gutter.
- .4 Work includes:
 - Mobilization / Demobilization
 - .1 Survey, layout and staging
 - .2 Traffic Accommodation
 - .3 Removal and disposal of existing concrete curb and gutter and existing asphalt walkway
 - .4 Supply and installation of concrete curb and gutter
 - .5 Backfilling of holes and incidental grading, surface preparation and compaction of walkway base
 - .6 Cleanup

1.3 REFERENCES

- .1 BC MoTI – 2012 Standard Specifications for Highway Construction – Section 582 Concrete Curb and Gutter and Storm Drainage (BC MoTI – SS582).
- .2 CSA A23.1-09
- .3 CSA A23.2-09

1.4 MEASUREMENT FOR PAYMENT

- .1 Concrete curb and gutter removal in YNP including will be measured in linear metres and shall be paid under **“Unit Price Item 5a) – Remove and Dispose of Existing Curb and**

Gutter". Payment shall be compensation in full for all material, equipment and labour required to access, remove, and dispose the existing concrete curb and gutter outside the National Parks, grade the area as necessary and clean up the work sites. Contractor to supply disposal ticket(s) to Departmental Representative for approval of disposal site(s) prior to its disposal.

- .2 Supply and installation of concrete curb and gutter in YNP in accordance with these specifications. The measurement for payment shall be the number of linear metres, of complete concrete curb and gutter supplied, installed, and accepted by the Departmental Representative, and shall be inclusive of all costs of labour, materials, tools and equipment to satisfactorily complete this work including site preparation, forming, and finalization. Payment will be made under **"Unit Price Item 5b) – Supply and Install Curb and Gutter"**.
- .3 Backfill against the curb to the lines, levels, cross-sections, and extents described in the Drawings and as directed by the Departmental Representative so as to form the asphalt walkway base is considered incidental to **"Unit Price Item 5b) – Supply and Install Curb and Gutter"** and no additional payment will be made.
- .4 Traffic Control required during work identified under this Section shall be included under **"Lump Sum Price Item 2 - Traffic Accommodation"** and no separate payment will be made to the Contractor.
- .5 Mobilization and demobilization required for this Work shall be included under **"Lump Sum Price Item 1 - Mobilization / Demobilization"** and no separate payment will be made to the Contractor.
- .6 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.

1.5 LOCATION

- .1 The Work is located as generally indicated on the Drawings.
- .2 Actual curb and gutter removal and installation locations will be as directed on site by the Departmental Representative, quantities may vary from those listed.
- .3 The Contractor is to provide a disposal location outside of the National Parks at their cost.

1.6 QUALITY CONTROL

- .1 Contractor to provide quality control documentation as per Section 01 45 00 – Quality Control and as per BC MoTI – SS582, and CSA A23.1-09 applicable.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Store materials in accordance with manufacturer's recommendations
 - .1 Replace defective or damaged materials with new.

Part 1 Products

1.1 GENERAL

- .1 Concrete curb and gutter to be in accordance with BC MoTI – SS582 but have a typical cross section as indicated in the Drawings.

1.2 WASTE MATERIALS

- .1 Once removed from its existing location, all existing concrete curb and gutter shall become the property of the Contractor who shall dispose of it outside the National Parks in an approved facility. Contractor to supply disposal ticket(s) to Departmental Representative for approval of disposal site(s) prior to its disposal.

1.3 MATERIAL

- .1 Concrete to be supplied in accordance with CSA A23.1-09 and CSA A23.2-09 under the Performance Alternative method of specification.
- .2 Concrete to be as described in the Drawings.

Part 2 Execution

2.1 PREPARATION

- .1 Complete pavement removal in accordance with relevant section.

2.2 REMOVAL AND DISPOSAL

- .1 Remove existing concrete curb and gutter in accordance with these specifications.
- .2 Prepare area for installation of new concrete curb and gutter.

2.3 INSTALLATION

- .1 Contractor shall perform all relevant layout and notify the Departmental Representative prior to proceeding.
- .2 Contractor to prepare the base surface, form, and pour the concrete curb and gutter.

2.4 BACKFILL

- .1 Following required curing, the Contractor is to remove forms and backfill the curb with locally sourced material available from exposing existing curb and gutter, nearby asphalt milling and other sources approved by the Departmental Representative.
- .2 Contractor is to prepare and compact the asphalt walkway base to the lines, levels, cross-sections, and extends as described in the Drawings.

2.5 CLEANUP

- .1 Cleanup of work sites as accepted by the Departmental representative in accordance with all relevant sections of Contract.

END OF SECTION

Part 3 General

3.1 RELATED WORK

- .1 Section 01 35 00.06 – Special Procedures for Traffic Control.
- .2 Section 01 35 43 – Environmental Procedures.
- .3 Section 02 81 01 – Hazardous Materials.
- .4 Section 32 12 16 – Asphalt Concrete Pavement.

3.2 REFERENCES

- .1 CAN/CGSB-1.5-M99 Low Flash Petroleum Spirits Thinner.
- .2 CGSB1-GP-12C-83 Standard Paint Colours.
- .3 CGSB1-GP-71-83 Method, of Testing Paints and Pigments.
- .4 CAN/CGSB 1.74-01 Alkyd Traffic Paint.
- .5 U.S. FED-STD-595B, 1989 – Colours Used in Government Procurement.
- .6 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
- .7 Material Safety Data Sheets (MSDS).

3.3 GENERAL

- .1 As detailed here and in the Drawings, the Contractor is to supply and install pavement markings in the areas adjacent to and impacted by the Works.
- .2 The Contractor shall complete a survey of the pre-existing pavement markings prior to their disturbance so as to ensure their ability to re-instate them accurately.
- .3 In addition to the above, the Contractor will be supplied with additional layout details of specific areas by the Departmental Representative where the final pavement markings are to differ from the pre-existing condition. The Contractor shall integrate both of the above tasks so as to ensure smooth and consistence pavement marking throughout the whole Works in accordance with the relevant specifications.

3.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative following material sample quantities at least 4 weeks prior to commencing work.
 - .1 Two samples of each type of paint.
 - .2 One sample of glass beads.

- .3 Sampling to CGSB1-GP-71.
- .4 Mark samples with name of project and its location, paint manufacturer's name and address, name of paint, CGSB specification number and formulation number and batch number.

3.5 MEASUREMENT FOR PAYMENT

- .1 Temporary Pavement Marking including supply of paint and reflective glass beads in accordance with Section 01 35 00.06 - Special Procedures for Traffic Control shall be considered incidental to **"Lump Sum Price Item 2 – Traffic Accommodation"** and will not be measured for payment.
- .2 Final line painting shall be measured in linear metres along the centre of the paint line regardless of width or line-gap ratio and payment shall be considered full compensation for all equipment, labour, and materials required to complete the Work. Payment will be made under **"Unit Price Item 6a) – Pavement Marking - Line Painting"**.
- .3 Gore areas will be measured in metres squared of painted surface. Payment shall be considered full compensation for all equipment, labour, and materials required to complete the Work. Payment will be made under **"Unit Price Item 6b) – Pavement Marking – Gore Marking"**. Gore area boundary lines shall be measured and paid for under **"Unit Price Item 6a) – Pavement Marking - Line Painting"**.
- .4 Stop bar areas will be measured in metres squared of painted surface. Payment shall be considered full compensation for all equipment, labour, and materials required to complete the Work. Payment will be made under **"Unit Price Item 6c) – Pavement Marking – Stop Bar Marking"**.
- .5 Traffic Control required for this Work shall be incidental to **"Lump Sum Price Item 2 – Traffic Accommodation"** and no separate payment will be made to the Contractor.
- .6 Mobilization and demobilization required for this Work shall be incidental to **"Lump Sum Price Item 1 – Mobilization / Demobilization"**, and no additional payment will be made.
- .7 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor.

Part 2 Products

2.1 Materials

- .1 Paint:
 - .1 To CGSB 1.74-2001-CAN/CGSB, alkyd traffic paint.
 - .2 Colour: to FED-STD-595B, yellow 33538 and white 37925.
- .2 Upon request, Departmental Representative will supply a qualified product list of paints applicable to work. Qualified paints may be used but Departmental Representative reserves right to perform further tests.

- .3 Thinner:
 - .1 To CAN/CGSB-1.4-2000.
- .4 Overlay type:
 - .1 To CGSB1-GP-74M.

2.2 Supply, Storage and Handling

- .1 Storage and handling shall meet the requirements of Section 01 35 43 - Environmental Procedures and Section 02 81 01 - Hazardous Materials.
- .2 The Contractor shall make all arrangements for the supply and delivery of paint and glass beads and shall provide the Departmental Representative with records of all materials received and/or returned, on a daily basis.
- .3 The Contractor shall provide, maintain and reclaim all material storage sites.
- .4 No paint formulation shall be diluted or mixed with a different formulation or with any other material, without the specific approval of the Departmental Representative.
- .5 The Contractor shall take all necessary steps to prevent contamination of the materials. Paint shall be protected from freezing.
- .6 The Contractor shall be responsible for the proper cleanup of waste or spilled material, and the proper disposition of containers.

Part 3 Execution

3.1 Temporary Markings

- .1 The Contractor shall supply and place temporary line markings on newly constructed hard surfaces throughout the project, **re-establishing centerline and all lane-dividing lines prior to being opened to traffic**, and shall maintain such markings until the earlier of the Actual Completion Date or the date permanent markings have been placed. Temporary line markings are not required for lane edge lines (fog lines) unless otherwise directed.
- .2 Centerline of undivided highway shall be marked throughout as “no passing” unless otherwise directed by the Departmental Representative.
- .3 Painted temporary lines are not permitted on the final surface.

3.2 Permanent Markings

- .1 Prior to any work affecting existing pavement markings, the Contractor shall pick-up survey all key control points of existing markings at intersections, turn slots, exit tapers and similar features and, upon completion of the final hard surfacing, re-establish those points.

- .2 Further to the key control point pick-up, the Contractor shall also pick-up survey all Transverse and Chevron and Crosshatch Pavement Markings, upon completion of the final hard surfacing, re-establish those points.
- .3 All layout markings shall be done with white or yellow centreline paint which will be clearly visible after exposure to all Site conditions for a minimum period of two (2) months past the Actual Completion Date.
- .4 Key control points shall be marked at their design location within tolerances of ± 50 mm transversely and ± 100 mm longitudinally. Longitudinal tolerances for intermediate points, when required, are ± 10 m.
- .5 Equipment Requirements:
 - .1 Paint applicator to be an approved pressure type mobile distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut-off.
 - .2 Distributor to be capable of applying reflective glass beads as an overlay on freshly applied paint.
- .6 Condition of Surfaces:
 - .1 Pavement surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials.
- .7 Application:
 - .1 Pavement markings to be laid out by Contractor.
 - .2 Apply paint only when air temperature is above 10°C , wind speed is less than 60 km/h and no rain is forecast within next 4 h.
 - .3 Apply traffic paint evenly at rate of 3 m²/L.
 - .4 Do not thin paint.
 - .5 Paint lines to be of uniform colour and density with sharp edges.
 - .6 Thoroughly clean distributor tank before refilling with paint of different colour.
 - .7 Apply glass beads at rate of 200 g/m² of painted area immediately after application of paint.
- .8 Tolerance:
 - .1 Paint markings to be within plus or minus 12 mm of dimensions indicated.
 - .2 Remove incorrect markings as directed by the Departmental Representative.

3.3 Traffic Control

- .1 In accordance with Section 01 35 00.06 and Contractor's Traffic Management Plan.

3.4 Quality Control Inspection Plan

- .1 The Contractor is responsible for quality control inspection throughout every stage of the work to ensure that materials and workmanship comply with the requirements of this specification.
- .2 The Contractor shall develop and submit a Quality Control Inspection Program (QCIP) that addresses all the elements that affect the quality of the line painting including, but not limited to:
 - .1 Paint Application Rates.
 - .2 Glass Bead Application Rates.
 - .3 Pavement Surface and Atmospheric Conditions.
 - .4 Line Widths, Line Lengths and Space Lengths.
- .3 The Contractor shall maintain records of QCIP data, complaints from the public, and other details relevant to the Work and shall provide these records to the Departmental Representative daily.

3.5 Highway Operation

- .1 Highway operation shall be in accordance with the Contractor's **approved** Traffic Management Plan and shall meet the following requirements:
 - .1 Painting shall be carried out during hours of daylight between ½ hour after sunrise and ½ hour before sunset. Generally, the Contractor may paint lines during any day of the week but is cautioned that traffic volumes are usually higher on all highways on Friday, Saturday and Sunday.
 - .2 Operation of the painting truck against the flow of traffic will not be permitted.
 - .3 Loading glass beads or paint onto the painting truck is not permitted on a roadway surface.
 - .4 Operation of Companion Vehicles:
 - .5 When the roadway to be painted is open to public traffic, the Contractor shall operate a crash attenuator vehicle and a pilot vehicle in conjunction with the painting truck during the painting of all longitudinal lines. Companion vehicle operators shall not attempt to control traffic from inside the vehicle.
 - .6 The actual operating parameters of the companion vehicles will be determined by the Contractor to safely accommodate traffic and will be based on site specific conditions such as sight distances, highway geometrics and traffic patterns and volumes. Typical operating parameters are as follows:
 - .7 The crash attenuator vehicle shall be equipped with a crash attenuator that meets National Cooperative Highway Research Program, Report 350 Test Criterion. Test Level 3 for 100 km/hr. The vehicle shall follow behind the painting truck at a distance of 50 to 400 m.

- .8 The pilot vehicle shall be driven in the same travel lane as the paint machine, following it at a constant distance of approximately two kilometres.
- .9 The crash attenuator vehicle, pilot truck and the painting truck are to display the same message at all times. The painting truck and the companion vehicles shall be equipped with a two-way radio for communication and overhead revolving beacon with an amber lens of a minimum 180 mm high and 180 mm wide.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 35 00.06 – Special Procedures for Traffic Control.
- .3 Section 01 35 43 – Environmental Procedures.

1.2 DESCRIPTION OF WORK

- .1 The work covered by this specification shall consist of: hydraulically seeding and fertilizing in the areas within the limits of construction, or as designated by the Departmental Representative.

1.3 MEASUREMENT FOR PAYMENT

- .1 Hydraulic Seeding will be measured by the square metre acceptably installed, complete with seed, fertilizer, mulch and tackifier, resulting in full grass growth, 75% germination and growth of specified seed mixture, within the dimensions indicated on the Drawings or as approved by the Departmental Representative. Payment for seeding shall be full compensation for all labour, equipment, materials and incidentals required to place the materials in accordance with the requirements of the Specifications, Drawings and direction of the Departmental Representative. **“Unit Price Item 7 – Seeding”**.
- .2 Areas of blending into existing landscape will not be measured for payment.
- .3 Maintenance is incidental and will not be paid for separately.
- .4 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”**, and no additional payment will be made.
- .5 Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .6 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor.

1.4 SUBMITTALS

- .1 Submit Product Data in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Provide Product Data for:
 - .1 Seed
 - .2 Mulch
 - .3 Tackifier/Soil Stabilizer

- .4 Fertilizer
- .3 Submit in writing to Departmental Representative 14 days prior to commencing work:
 - .1 Volume capacity of hydraulic seeder in litres.
 - .2 Amount of material to be used per tank based on volume.
 - .3 Number of tank loads required per hectare to apply specified slurry mixture per hectare.

1.5 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

1.6 MATERIAL DELIVERY, HANDLING AND STORAGE

- .1 Use all means necessary to protect all materials before, during and after installation. Provide adequate protection to materials that may deteriorate if exposed to weather.
- .2 Fertilizer shall be packaged in waterproof bags labelled clearly, indicating net mass, analysis and manufacturer. Store on pallets and protect from weather.
- .3 Seed to be stored in dry weatherproof place and shall be protected from damage by heat, rodents and other causes. Deliver and store grass seed in original packages with label indicating:
 - .1 Analysis of seed mixture
 - .2 Percentage of pure seed by weight
 - .3 Year of production
 - .4 Net mass
 - .5 Date tagged and location

Part 2 Products

2.1 SEED

- .1 Seed shall be Certified Canada No. 1 Grade quality seed varieties, in accordance with the Canadian Seeds Act and Regulations, and having a minimum purity of 97% and germination of 75%. Seed shall be free of impurities and disease.
- .2 The Contractor shall confirm that the Seed mixture has not been modified prior to purchasing the seed with the Departmental Representative. Seed mix for all applications to be provided by the Departmental Representative.
- .3 Seed tags to be retained and given to the Departmental Representative.
- .4 Seed mix shall be certified free of Scentless Chamomile, Downy Brome and Canada Thistle.

2.2 FERTILIZER

- .1 Fertilizer 1 shall be a 45-25-20 mixture.
- .2 Contractor to verify fertilizer blend and application rate following testing of topsoil.

2.3 WATER

- .1 Water shall be free of impurities that would inhibit germination and growth. The Contractor must apply for a Restricted Activity Permit (RAP) to withdraw water from any source(s) within the National Parks. Approval from the Environmental SO is required prior to any water being withdrawn and may or may not be granted depending on flows and/or species at risk.
- .2 In the event that it is not reasonable to withdraw water from a source as noted above, the Contractor must supply water at their cost.

2.4 SOIL STABILIZER/TACKIFIER

- .1 Soil stabilizer/tackifier shall be a nontoxic, colourless copolymer emulsion with no less than 52.6% solids. Acceptable product is: Soil Master WR or approved alternate. Supplier: Target Products, Phone: 1-800-575-7700.

2.5 MULCH

- .1 Wood fibre mulch shall be manufactured from virgin wood fibres and contain not less than 3% of an organic tackifier by volume.
- .2 **Cellulose type products are not acceptable.**
- .3 Acceptable product is: Eco Fibre Plus or approved alternate. Supplier: Professional Gardener, Phone: (403) 263-4200.

Part 3 Execution**3.1 GENERAL SEEDING**

- .1 Contractor shall advise Departmental Representative prior to the start of seeding operations.
- .2 Contractor shall ensure that equipment is steam cleaned, free of soil and seed from previous project to prevent site contamination.
- .3 Seeding shall be done upon completion of stripped soil material/chip compost placement.
- .4 Contractor shall not perform work under adverse field conditions such as frozen soil, excessively wet or dry soil, or soil covered with snow, ice or standing water.
- .5 Contractor shall hydraulic seed only during dry weather conditions with no rain forecasted for the next 24 hours and ensuring a seasonably dry seedbed to provide for proper curing of soil stabilizers/tackifier. Contractor shall check weather conditions to ensure soil stabilizer has sufficient time to cure prior to heavy rainfall.

- .6 Seeding shall be done to ensure a catch satisfactory to the Departmental Representative's approval. In areas where seed fails to germinate for whatever reason, the Contractor shall re-cultivate and reseed until acceptable germination takes place.
- .7 Contractor shall carry out seeding in locations as shown on Drawings or, as directed by Departmental Representative:

3.2 HYDRAULIC SEEDING

- .1 The following application rates are the minimum required for hydraulic seeding:
 - .1 Seed: 100 kg/hectare
 - .2 Fertilizer 1: 125 kg/hectare
 - .3 Mulch: 500 kg/hectare
 - .4 Soil Stabilizer/tackifier: Soil Master WR 1300 L/hectare
 - .5 Water: 30,000 L minimum
- .2 The Contractor shall measure quantities of materials by weight, or weight calibrated Contractor to calculate and submit applicable area of coverage per tank load of slurry in accordance with Section 01 33 00 – Submittal Procedures
- .3 Contractor shall physically stake and identify limits of tank coverage prior to seeding to the satisfaction of Departmental Representative.
- .4 Each tank load of slurry shall be fully applied within the designated boundaries for each load as staked. Volume measurement, to the satisfaction of the Departmental Representative.
- .5 The Contractor shall fill the tank half full with required water and add mulch while continuing to fill with water. Seed mix and fertilizer is to be added. All material is to be added into the hydraulic seeder under agitation. The Contractor shall pulverize mulch with tackifier and charge slowly into seeder.
- .6 The Contractor shall charge soil stabilizer/tackifier into seeder after all other material is well mixed in seeder. Contractor shall mix slowly to avoid foaming but thoroughly to complete slurry.
- .7 The Contractor shall use hydraulic seeding equipment with a minimum slurry tank capacity of 4500 litres.
- .8 The Contractor's equipment shall have an agitation system for slurry capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and mechanical method:
 - .1 Pumps shall be capable of maintaining a continuous non-fluctuating flow of solution.
 - .2 Equipment shall be capable of seeding up to 150m distance from hydraulic seeder using hand operated hoses and appropriate nozzles.
- .9 The Contractor shall apply slurry when wind velocities will not affect the application and cause the mixture to be blown.

- .10 The Contractor shall apply slurry uniformly, at optimum angle of application for adherence to surfaces and germination of seed. Ensure good contact of slurry with soil with minimal air pockets.
- .11 The Contractor shall use the correct nozzle(s) for application and use hoses to access difficult to reach surfaces and to control application.
- .12 The Contractor shall ensure that the application is uniform and the surface is evenly covered. Contractor shall blend into retained landscape for approximately 1 metre.
- .13 The Contractor shall clean all structures, appurtenances and natural features not designated to be seeded of any overspray, to the satisfaction of the Departmental Representative.
- .14 The Contractor shall ensure that at all times during the seeding, that no vehicles are parked within the path of public travel and the Contractor shall provide warning devices as directed by the Departmental Representative to ensure safe operations.

3.3 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Establishment period is a minimum of four months of continuous growing season. Growing season shall not to be divided by winter.
- .2 The Contractor shall repair and reseed dead or bare spots, as directed in these specifications to Departmental Representative's satisfaction, to allow establishment of seed prior to acceptance.
- .3 For areas of poor seed germination and growth, as determined by the Departmental Representative, the soil shall be scarified or re-cultivated as directed by the Departmental Representative, and seeding and fertilizing undertaken as specified. This work is incidental to the contract.

3.4 CONSTRUCTION COMPLETION ACCEPTANCE

- .1 Seeded areas will be accepted by the Departmental Representative provided that all areas are uniformly established and turf is not eroded or rutted and relatively free of weeds. Seeded areas to be growing for a minimum of four continuous months prior to construction completion acceptance inspection.
- .2 Areas seeded in fall will be accepted in following spring, a minimum of four months after start of growing season, provided acceptance conditions are fulfilled.
- .3 Minimum 75% growth by area of coverage of specified seed mixture must be present in order to be acceptable.

3.5 MAINTENANCE DURING WARRANTY PERIOD

- .1 Maintenance shall occur for one full year from Construction Completion Acceptance. The estimated period of maintenance within one calendar year shall be from approximately April 1 to September 30. The Contractor will be required to employ all of the necessary measures to establish and maintain all seeding in an acceptable, vigorous and healthy growing condition.

- .2 The Contractor shall repair and reseed dead or bare spots, as directed in these specifications to Departmental Representative's satisfaction, to allow establishment of seed prior to acceptance. In the case of erosion, the Contractor shall be compensated at the specified unit rates for reseeding.
- .3 For areas of poor seed germination, or as determined by the Departmental Representative, the soil shall be scarified or re-cultivated as directed by the Departmental Representative, and seeding and fertilizing undertaken as specified. This work is incidental to the contract.
- .4 For small areas of poor seed germination or as determined by the Departmental Representative, the soil shall be scarified to a depth of 25mm and seeding and fertilizing shall be undertaken as specified. This work is incidental to the contract.
- .5 Weed control shall be undertaken as determined by the Departmental Representative. Hand pulling of weeds may be required. This work is incidental to the contract.

3.6 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 00.06 – Special Procedures for Traffic Control.
- .3 Section 01 35 43 – Environmental Procedures.
- .4 Section 32 12 16 – Asphalt Concrete Pavement - EPS.
- .5 Section 33 42 13 – Pipe Culverts
- .6 Section 03 10 00 – Concrete Forming and Accessories.
- .7 Section 03 30 00 – Cast-in-Place Concrete.

1.2 DESCRIPTION

- .1 Work includes the installation of precast concrete barriers in accordance to this Section and as per Drawings. Precast Concrete barrier supplied shall be as per British Columbia 2012 Standard Specifications for Highway Construction Section 941 – Precast Reinforced Concrete Barriers (BC MoTI – SS941). **In addition, all end faces to have 25 mm chamfered edges.**
- .2 Barriers will be installed for traffic control and permanent installation. So the same barrier can be installed more than once.
- .3 At some drainage barriers, Barrier Drains shall be supplied and installed in accordance to the drawings to control runoff.

1.3 MEASUREMENT PROCEDURES

- .1 Remove and reinstall barrier:
 - .1 Remove concrete barrier from the roadway and reinstall in the original position once paving has been completed. Payment shall be the number of linear metres of precast concrete barrier, including end treatments loaded, hauled, stockpiled and reinstalled at locations as directed by the Departmental Representative in accordance with these specifications. Payment will be made under **“Unit Price Item 8 –Precast Concrete Barrier: Remove and Reinstall Barrier”**.
- .2 Barrier costs shall be inclusive of all costs of labour, materials, equipment to satisfactorily complete the item as specified and in accordance with this Section.
- .3 The survey and layout of the Precast Concrete Barriers as per requirements identified in this Section and the plans, will not be measured directly for payment but shall be considered incidental to **“Unit Price Item 8 – Precast Concrete Barrier”**.

- .4 Mobilization and demobilization required for the Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”**, and no additional payment will be made.
- .5 Traffic Control for survey, installation or relocation of Precast Concrete Barriers shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .6 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor

Part 2 Products

- .1 Not used.

Part 3 Execution

3.1 DELIVERY

- .1 Storage of Precast Concrete Barriers on site to be in single layer, for first seven days.
- .2 Stacking of three layers high, with wood blocking between lifts, permitted with Departmental Representative approval, after seven days.
- .3 Barriers to be stacked three layers high, with wood blocking between lifts, at delivery location. Cost of supply and installation of wood blocking shall be incidental to the contract and no separate payment will be made.

3.2 PREPARATION

- .1 Asphalt concrete paving in accordance with Section 32 12 16 and as indicated.

3.3 INSTALLATION

- .1 Precast Concrete Barriers shall be installed permanently on asphalt concrete pavement in accordance with Drawings and these Specifications or as directed by the Departmental Representative.
- .2 Precast Concrete Barriers installed temporarily for traffic protection as verified by the Departmental Representative. When no longer needed, the barriers will be re-installed elsewhere or stored as directed by the Departmental Representative.
- .3 Contractor shall do the layout of the barriers for both removal and installation operations.
- .4 Barrier drain pipe shall be supplied installed at locations and in accordance to the drawings and as directed by the Departmental Representative.
- .5 The Departmental Representative will determine location of barriers with drainage opening for drainage and for small animal crossings. Some of the roadside drainage

barriers will require the installation of drain pipe to control runoff. The drain shall be supplied installed at locations and in accordance to the drawings and as directed by the Departmental Representative.

3.4 FIELD QUALITY CONTROL

- .1 Contractor shall carry out all the necessary quality control to ensure the barrier work complies with these specifications.

3.5 CLEANING

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General**1.1 RELATED WORK**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 31 – Special Procedures for Traffic Control.
- .3 Section 01 35 43 – Environmental Procedures.
- .4 Section 01 74 11 – Cleaning.

1.2 DESCRIPTION

- .1 Removal and disposal of W-Beam Guardrail at various locations along Emerald Lake Road in YNP.
- .2 Supply and installation of Strong Post W-Beam Guardrail with metal posts at the same locations or as directed by the Departmental Representative. The Contractor shall not install replacement guardrail until approved by the Department Representative.
- .3 Supply and installation of impact absorbing guardrail end treatments at locations in YNP as directed by the Departmental Representative.
- .4 Work includes:
 - Mobilization / Demobilization
 - .1 Survey, layout and staging
 - .2 Traffic Accommodation
 - .3 Removal and disposal of existing W-Beam guardrail, posts and hardware
 - .4 Supply and installation of Strong Post W-Beam guardrail, posts, and hardware
 - .5 Supply and installation of impact absorbing guardrail end treatment
 - .6 Supply and installation of reflectors and guide posts
 - .7 Backfilling of holes and incidental grading
 - .8 Cleanup

1.3 REFERENCES

- .1 BC MoTI – 2012 Standard Specifications for Highway Construction – Section 312 Steel Traffic Barriers and Wood Post (BC MoTI – SS312).
- .2 BC MoTI – 2012 Standard Specifications for Highway Construction – Section 604 Steel Traffic Barriers Construction (BC MoTI – SS604).
- .3 CSA G40.20 and G40.21-M87 - Structural Quality Steels

- .4 CSA G164-M - Hot Dip Galvanizing of Irregularly Shaped Articles
- .5 CSA W59-M - Welded Steel Construction (Metal Arc Welding)
- .6 CSA 080-M - Wood Preservation,
- .7 AASHTO Standard Designation M-180-841 "Corrugated Sheet Steel Beams for Highway Guardrail
- .8 ARTBA Technical Bulletin No. 268-B
- .9 NLGA Standard Grading Rules for Canadian Lumber

1.4 MEASUREMENT FOR PAYMENT

- .1 W-Beam Guardrail (rails and posts) removal in YNP including end terminals will be measured in linear metres and shall be paid under **“Unit Price Item 9a) – Remove & Dispose of Existing Guardrail”**. Payment shall be compensation in full for all material, equipment and labour required to dismantle the W-Beam rails, remove posts, dispose of the rails, hardware and posts outside the national parks, backfill post holes, grade the area as necessary and clean up the work sites. Contractor to supply disposal ticket(s) to Departmental Representative for approval of disposal site(s) prior to its disposal.
- .2 Supply and installation of Strong Metal Post W-Beam Guardrail in YNP in accordance with these specifications. The measurement for payment shall be the number of linear metres, measured along the installed length of rail not including terminal ends, of complete strong metal post w-beam guardrail supplied, assembled, installed, and accepted by the Departmental Representative, and shall be inclusive of all costs of labour, materials, tools and equipment to satisfactorily complete this work. Payment will be made under **“Unit Price Item 9b) – Supply & Install Strong Metal Post W-Beam Guardrail”**.
 - .1 For measurement purposes, the terminal end (BCT) begins at the parabolic curve as identified in BC MoTI – SS312 SP312-2 and continues until its termination.
- .3 Supply and installation of Breakaway Cable Terminal (BCT) “Crash Attenuator” assemblies in accordance with these specifications and manufacturers requirements. The measure for payment shall be by each BCT supplied, assembled, installed and accepted by the Departmental Representative, and will be inclusive of all costs of labour, materials, tools and equipment to satisfactorily complete this work. Payment will be made under **“Unit Price Item 9c) – Supply & Install BCT Assembly”**.
- .4 Site preparation, including but not limited to shoulder widening, grading and levelling to the standard required by the specifications for the installations of each BCT Assembly shall be considered incidental to **“Unit Price Item 9c) – Supply & Install BCT Assembly”**, and no separate or additional payment will be made.
- .5 Traffic Control required during work identified under this Section shall be included under **“Lump Sum Price Item 2 - Traffic Accommodation”** and no separate payment will be made to the Contractor.

- .6 Mobilization and demobilization required for this Work shall be included under “**Lump Sum Price Item 1 - Mobilization / Demobilization**” and no separate payment will be made to the Contractor
- .7 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.

1.5 LOCATION

- .1 The Work is located as generally indicated on the Drawings.
- .2 Actual guardrail replacement and installation locations will be as directed on site by the Departmental Representative, quantities may vary from those listed.

1.6 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Quality Control submittals: submit following in accordance with Section 01 45 00 - Quality Control.
 - .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .2 Manufacturer's Instructions: submit manufacturer's storage and installation instructions and special handling criteria, installation sequence, and cleaning procedures.

1.7 QUALITY CONTROL

- .1 Provide certification by Professional Engineer licensed to practice in British Columbia that the Strong Metal Post W-Beam Guardrail system and BCT Assemblies meets the specifications prior to delivery of materials. Certification to include mill certifications and galvanizing thickness test results performed by independent laboratory retained by the Contractor.
- .2 Contractor to provide quality control documentation as per Section 01 45 00 – Quality Control and as per BC MoTI - SS312 and BC MoTI - SS604 as applicable.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Store materials in accordance with manufacturer's recommendations
 - .1 Replace defective or damaged materials with new.

Part 2 Products**2.1 GENERAL**

- .1 The Contractor shall inform the Departmental Representative and make clear in their bid, the proposed post material or system that they will supply and install.
- .2 The Contractor shall supply and install steel post systems with spacer blocks where the complete system meets or exceeds NCHRP 350 TL-3 crash requirements.

2.2 WASTE MATERIALS

- .1 All existing guardrails, posts and hardware shall become the property of the Contractor who shall dispose of it outside the National Parks in an approved facility. Contractor to supply disposal ticket(s) to Departmental Representative for approval of disposal site(s) prior to its disposal.

2.3 MATERIAL

- .1 Strong Metal Post W-Beam Guardrail to be in accordance with BC MoTI – SS312, or as contained herein, whichever requirement is more stringent.
- .2 Breakaway Cable Terminal to be in accordance with BC MoTI 0 SS312, or as contained herein, whichever requirement is more stringent.
- .3 Steel posts shall be W150 x 14 x 1830mm. Steel for post, spacer and hardware to be in accordance with manufacturer's recommendations, CSA Standard G40.21 Grade 350W or ASTM Standard A36, and be hot dip galvanized after fabrication as per CSA G164-M or ASTM A123/A123M.

2.4 RAILS AND TERMINAL ELEMENTS

- .1 W-beam guardrail shall consist of rail sections fabricated to develop a continuous beam strength with the necessary safety end feature components
- .2 All rail sections and other components shall match the design profiles and dimensions of the AASHTO/ARTBA hardware requirements for full interchangeability of similar components regardless of the manufacturer.

- .3 The name or trademark of the manufacturer, the metal thickness and the year of production shall be clearly and permanently stamped on each component clear of the splicing overlap and on the face opposite the traffic side.
- .4 The rails and terminal elements shall be manufactured from open hearth, electric furnace or basic oxygen semi-spring steel sheet and hot dip galvanized after fabrication, all in general accordance with the AASHTO Standard Designation M180-841 and shall conform to the relevant TEB and RDG drawings.
- .5 Rails shall be punched for splice and post bolts in strict conformity with the AASHTO Standard to the designated number and centre-to-centre spacing of posts. No punching, cutting or welding will be permitted on site except for special details in unforeseen and exceptional cases with the prior approval of the Departmental Representative.
- .6 If any guardrail installation requires curved W-beam rails, the Contractor shall form these to fit the radius of the existing highway.
- .7 The rails and terminal elements shall be manufactured according to the following standards where the metal properties of the base metal conform to the following requirements:
 - .1 Minimum Yield Point: 345 MPa
 - .2 Minimum Tensile Strength: 483 MPa
 - .3 Minimum Elongation: 12% in 50 mm length
 - .4 Sheet thickness shall be in accordance with Table 1 (Class A, Type 2) of AASHTO Standard M180-841 with a nominal base metal thickness of 2.8 mm (2.67 mm minimum).
 - .5 Sheet width for the W-beam rail shall be 483 mm, with a permissible tolerance of minus 3.2 mm.
 - .6 Welding for the fabrication of terminal elements shall conform to the requirements of CSA-W59M. Rails and terminal elements shall be hot dip galvanized after fabrication, in accordance with CSA-G164M.
 - .7 Drainage Slots: Cast-in as shown on drawings.

2.5 BOLTS, NUTS AND WASHERS

- .1 Bolts, nuts and washers shall conform to ASTM-A307, and shall be hot dip galvanized in accordance with CSA-G164M (Drawing TEB 3.06).

Part 3 Execution

3.1 PREPARATION

- .1 Removal and disposal of existing guardrail sections and posts outside of the National Parks.
- .2 Backfill holes and perform minor grading as necessary.

- .3 Excavate accumulated granular material, load, haul, and stockpile in Mannix Pit or as directed by Departmental Representative.

3.2 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.3 DELIVERY

- .1 Materials shall be inspected by the contractor during delivery to ensure that they are free of defects.
- .2 Materials are to be stored in a secure location prior to installation as designated by the Departmental Representative.

3.4 INSTALLATION

- .1 Strong Metal Post W-Beam Guardrail and BCT Assemblies shall be installed permanently along the road embankment in accordance with BC MoTI – SS604, Drawings and these Specifications.
- .2 The installed top of rail height shall be in accordance with BC MoTI – SS312.
- .3 Contractor shall perform the layout of the Strong Post W-Beam Guardrail and BCT Assemblies.

3.5 FIELD QUALITY CONTROL

- .1 Prior to installing any guardrail, the Contractor shall provide the Departmental Representative with a copy of the manufacturer's certificate verifying that materials supplied conform to Section 16 of CSA G40.20M, for each of the mechanical and chemical tests.
- .2 Inspection of W-Beam Guardrail Material:
 - .1 Hot dip galvanized coating shall be smooth, free of beading or sharp projections at edges. Coating adherence shall prevent the peeling of any portion of the zinc coating so as to expose the base metal by cutting or prying with a stout knife under considerable pressure (bond check). A magnetic gauge will be used for checking thickness in accordance with ASTM Standard E316.3(c).
 - .2 Warped or otherwise deformed rails and terminal elements will be rejected, as will those with injurious defects or excessive roughness of the zinc coating. When the rail is laid on a flat surface, the warpage shall not be greater than 5 cm.
- .3 Inspection of Posts and Blocks:

- .1 The Departmental Representative may verify the penetration and retention of the preservative by the assay method.
- .2 Posts and blocks shall be subject to inspection by the Departmental Representative when the bundles are opened immediately prior to use. Contractor shall carry out all the necessary quality control to ensure Strong Metal Post W-Beam Guardrail are supplied and installed as per these specifications.

3.6 CLEANUP

- .1 Cleanup of work sites as accepted by the Departmental representative in accordance with all relevant sections of Contract.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures.
- .3 Section 33 05 13 - Manholes and Catch Basin Structures.

1.2 MEASUREMENT

- .1 If ordered by the Departmental Representative, supply and installation of CSP Culverts shall be paid for under **“Lump Sum Price Item 3 – Prime Cost Sum”**.
- .2 Traffic Control during the survey, layout and Construction of the culverts shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .3 Mobilization and demobilization shall be incidental to the work and no additional payment will be made.
- .4 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor.
- .5 Culvert installation must be coordinated with other Works. No payment will be made for re-excavation of embankment material required to install culverts.
- .6 No separate measurement will be made for couplings, fittings or end sections.

1.3 REFERENCES

- .1 CSA G401 01, Corrugated Steel Pipe Products.
- .2 CSA-B182.8-02, Profile Polyethylene Storm Sewer and Drainage Pipe and Fittings.

1.4 SUBMITTALS

- .1 Submit manufacturer's test data and certification at least one week prior to beginning Work.
- .2 Provisions for staged construction shall be shown in the shop drawings, including any temporary support required.
- .3 Certification to be marked on pipe.

1.5 STORAGE AND HANDLING

- .1 Handle and store pipe products in a manner to avoid damage, alteration, deterioration and soiling.
- .2 Store pipes on a clean and flat surface.
- .3 Where the material supplied is damaged, the Contractor shall immediately separate nested sections of the plate or pipe to facilitate more detailed inspection. Culvert material designated by the Departmental Representative as unacceptable, due to damage or failure to meet specified requirements, shall be immediately repaired or replaced by the Contractor.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on site bins for recycling in accordance with Section 01 35 43 - Environmental Procedures.
- .4 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products**2.1 CORRUGATED STEEL PIPE**

- .1 Corrugated steel pipe: to CSA G401.
- .2 Culverts to be annular or spiral with annular ends. Coupling bands to be two piece annular bolted with minimum width of nine corrugations.
- .3 Minimum wall thickness to be 2.0 mm.
- .4 Corrugations to be 68 mm x 13 mm.
- .5 For all exposed culvert ends, 4:1 mitred end sections will be required.
- .6 Design Code CHBDC S6-06.
- .7 Design Live Load CL-800.

2.2 GRANULAR BEDDING AND BACKFILL

- .1 The Contractor may utilize aggregate sources available under other activities under this Contract if approved by the Departmental Representative.

Part 3 Execution**3.1 CUT ENDS**

- .1 All exposed ends of CSP culverts to have sloped end sections conforming to roadside slope, by cutting culvert with mechanical saw.
- .2 All cut edges shall be made smooth by grinding so that all the burrs are removed. Any damaged galvanizing shall be restored by zinc metallizing in accordance with CSA G401.
- .3 Where an existing culvert is extended, up to 3 m of the existing culvert end shall be removed as directed by the Departmental Representative. Thoroughly clean and flush the existing pipe, excavating 1 metre back from present exposed end, cutting off damaged sections of exposed end and painting remaining end with a high zinc dust oxide paint and supplying and placing a joint sealant.

3.2 BEDDING

- .1 Dewater excavation, as necessary, to allow placement of culvert bedding in dry condition.
- .2 Place minimum thickness of 300 mm of approved granular material on bottom of excavation and compact to minimum 95% maximum density to ASTM D698.
- .3 Shape bedding to fit lower segment of pipe exterior so that width of at least 50% of pipe diameter is in close contact with bedding and to camber as indicated or as directed by Departmental Representative, free from sags or high points.
- .4 Place bedding in unfrozen condition.

3.3 LAYING CORRUGATED STEEL PIPE CULVERTS

- .1 Begin pipe placing at downstream end.
- .2 Ensure bottom of pipe is in contact with shaped bed or compacted fill throughout its length.
- .3 Do not allow water to flow through pipes during construction except as permitted by Departmental Representative.

3.4 JOINTS: CORRUGATED STEEL CULVERTS

- .1 Match corrugations of coupler with pipe sections before tightening.
- .2 Insert and tighten bolts.

- .3 Tap couplers firmly with a rubber mallet or similar non-marring tool as they are being tightened, to take up slack and ensure snug fit.
- .4 Repair spots where damage has occurred to coating in the field by applying two coats of zinc rich paint approved by the CSP supplier. Allow each coat to dry before placing second coat, bedding or backfill.

3.5 BACKFILLING

- .1 Backfill around and over culverts as indicated or as directed by Departmental Representative.
- .2 Place granular backfill material, in 150 mm layers to full width, alternately on each side of culvert, so as not to displace it laterally or vertically.
- .3 Compact each layer to 98% maximum density to ASTM D698 taking special care to obtain required density under haunches. Hand tamp where necessary to obtain compaction.
- .4 Protect installed culvert with minimum 900 mm cover of compacted fill before heavy equipment is permitted to cross. During construction, width of fill, at its top, to be at least twice diameter or span of pipe and with slopes not steeper than 2H:1V.
- .5 Place backfill in unfrozen condition.
- .6 Place riprap.

3.6 TRENCHING EXISTING PAVEMENT STRUCTURES

- .1 Where trenches are cut into existing pavement structures, backfill will match the existing materials and thickness.

3.7 CULVERT EXTENSIONS

- .1 Extensions to existing culverts shall be as noted on drawings.

3.8 CULVERT/STRUCTURE REMOVAL

- .1 Culvert removal shall be as indicated on drawings or as directed by the Departmental Representative and shall include disposal of sections to a site outside of the National Parks.

END OF SECTION