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Reference Documents:

- A. Parks Canada National Best Management Practices – Roadway, Highway, Parkway and Related Infrastructure, May 2015
- B. Pratiques exemplaires nationales de gestion de Parcs Canada - Routes, autoroutes, promenades et infrastructure connexe – Mai 2015
- C. Whirling Disease in Banff National Park (BNP), Alberta – Direction for Permitted Users conducting water-related activities in BNP – October 2016.
- D. Whirling Disease in Lake Louise, Yoho, Kootenay Field Unit (LLYK) – Direction for Permitted Users conducting water-related activities in LLYK – April 2017.
- E. Tournis des Truites – Unité de gestion du secteur de Lake Louise et des parcs nationaux Yoho et Kootenay – avril 2017
- F. Standard CMS Translations Rev 2, July 2018
- G. Construction Signage Translations Rev 5, November 2019
- H. Mannix Pit Plan November 2019

01 11 00 SUMMARY OF WORK

Part 1 General

1.1 PRECEDENCE

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

1.2 DEFINITIONS

- .1 British Columbia Ministry of Transportation and Infrastructure is referred to as "MoTI".
 - .1 BC MoTI specifications specified for the work can be found at the following website address:
<https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/standard-specifications-for-highway-construction>
- .2 Alberta Transportation is referred to as "AT".
 - .1 AT specifications specified for the work can be found at the following AT website address:
http://www.transportation.alberta.ca/images/Standard_Specifications_for_Highway_Construction_2013.pdf
- .3 Changes in Definition, - The following changes in definitions have been made to the "BC MoTI Specifications":
 - .1 Ministry Representative – The word "Ministry Representative" shall mean Parks Canada Departmental Representative or their duly appointed representative.
 - .2 Ministry – The word "Ministry" shall mean Parks Canada Agency.
- .4 Changes in Definition, - The following changes in definitions have been made to the "AT Specifications":
 - .1 Consultant – The word "Consultant" shall mean Departmental Representative or their duly appointed representative.
 - .2 Department – The word "Department" shall mean Parks Canada Agency.
- .5 Banff National Park of Canada is referred to as "BNP".
- .6 Trans-Canada Highway is referred to as "TCH"
- .7 Bow-Valley Parkway is referred to as "BVP"
- .8 Parks Canada Agency is referred to as "PCA".
- .9 Canadian Pacific Railway is referred to as "CP Rail".
- .10 Environmental Surveillance Officer is referred to as "ESO".
- .11 Watercourse is as defined in the National Parks Act.
- .12 Site means the areas on or within the limits of Construction as referenced on the Drawings and/or described in the Contract Documents.
- .13 Work means the provision of all labour, services, material, and equipment as necessary for the Contractor to complete and perform its obligations in accordance with the Contract.

1.3 PROJECT LOCATION

- .1 The project is located in Banff National Park, Alberta. Construction work is on the Bow Valley Parkway between Km 3.3 to Km 49.7. The following are key locations relative to the project:
 - .1 TCH km 0 – BNP East Gate
 - .2 BVP km 0 – BVP East Limits (TCH km 23)
 - .3 BVP km 17.5 – Johnston Canyon
 - .4 BVP km 24 – Castle Mountain Interchange (TCH km 46)
 - .5 TCH km 49.9 – Mannix Pit
 - .6 BVP km 35.3 – Protection Mountain Campground
 - .7 BVP km 38.6 – Baker Creek Chalets
 - .8 BVP km 50 – BVP West Limits (Intersection with Whitehorn Road)

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- .1 All requirements noted within the Contract Documents shall be completed by the Contractor unless specifically stated otherwise.
- .2 Without limiting the scope of work, the work of this Contract generally comprises the following, as directed by the Departmental Representative:
 - .1 Installation and maintenance of temporary barriers and supply and installation of temporary traffic control and other temporary construction facilities required for the Work.
 - .2 Partial depth removal of existing asphalt by milling in accordance with Section 02 41 13 – Asphalt Pavement Removal.
 - .3 Perform mix design for AT Mix Type M1 (12.5mm) Asphalt Concrete Pavement using PG 52-34 Asphalt Binder. AT Designation 1 Class 12.5 Asphalt Aggregate is to be supplied by the Contractor from outside the Park.
 - .4 Supply, haul and place AT Mix Type M1 (12.5mm) Asphalt Concrete Pavement including PG 52-34 asphalt binder, in accordance with Section 32 12 16 – Asphalt Concrete Pavement (EPS) as directed by the Departmental Representative.
 - .5 Supply and install temporary roadway paint markings during construction as required in accordance with Section 01 35 31 – Special Procedures for Traffic Control.
 - .6 Supply and install Permanent Pavement Markings as per the Contract Documents and as directed by the Departmental Representative in accordance with Section 32 17 23 – Pavement Marking.
 - .7 Removal, stockpiling and reinstallation of existing Precast Concrete Barriers as directed by the Departmental Representative and in accordance with Section – 33 71 13 Precast Concrete Barrier.
 - .9 Remove, replace, relocate and /or supply and install regulatory signs including posts as per the Contract Documents in accordance with Section 10 14 53 – Traffic Signage.
 - .10 Traffic signage, control and other traffic accommodations in accordance with Section 01 35 31 – Special Procedures for Traffic Control.

- .11 Miscellaneous Additional Work as directed by the Departmental Representative.
- .3 The Contractor will not be permitted to set up a crushing plant within the National Parks.
- .4 The Contractor will be permitted to set up a Mobile Asphalt Plant or use a Stationary Asphalt Plant for this Project within Mannix Pit at the discretion of the Departmental Representative.
 - .1 The asphalt plant to be used on this project, regardless of location, shall be capable of 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.
 - .2 The Contractor is responsible for sourcing water required for the Works and may be required to obtain it from outside of the National Parks or be required to request and obtain a Restricted Activity Permit (RAP) for water withdrawal within the National Parks.
 - .3 In preparation for and during construction of this project, an “Environmental Protection Plan” (EPP) is to be prepared by the Contractor to meet the requirements of Section 01 35 43 – Environmental Procedures to ensure the desired minimal adverse effects are achieved. The Contractor’s EPP must be approved by Parks Canada Agency prior to the commencement of construction. The Departmental Representative and Parks Canada’s Environmental Surveillance Officer (ESO) will refer to the approved EPP in determining compliance with the Plan and Contract Documents. The EPP will form part of the Contract.
 - .4 Where material and construction specifications for work covered under the Contract, including any Change Orders are not available, **AT - Standard Specifications for Highway Construction (latest edition)** shall apply unless directed otherwise by the Departmental Representative.

1.5 CONTRACT METHOD

- .1 Construct Work under combined price Contract.

1.6 WORK BY OTHERS

- .1 The Contractor is advised that the following Work and anticipated completion in the vicinity has been or will be contracted by Parks Canada:
 - .1 BVP - Utility Work (AltaLink), Spring – Fall 2020
 - .2 Lake Louise Signalization, Spring – Fall 2020
 - .3 TCH – km 63-82 Pavement Rehab – Fall 2020
 - .4 TCH – km 98 Field Intersection Improvement – Fall 2020
 - .5 TCH – km 124 Mount Hunter Trailhead Relocation – Fall 2020
 - .6 Hwy 93S – km 0-103 Pavement Maintenance – Fall 2020
 - .7 Other project and maintenance work may occur near Contract Work in 2020.
- .2 Where it is necessary that work is to proceed in areas of this project common to both the Contractor and forces of others, the Contractor shall cooperate with the other Contractors and the PCA Departmental Representative in reviewing their construction schedules and sharing their work space, and shall coordinate their operations with the other Contractors, including traffic management and construction staging.
- .3 The Contractors shall coordinate all work on this project with other Contractors including Site Safety and Traffic Control.

- .4 The borrow, staging areas and pits mentioned in the Contract Documents are operational and are used by many contractors and PCA. The Contractor shall coordinate and cooperate with the other users of the applicable areas.

1.7 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 Maintain public access to campgrounds and other accommodations in accordance with Section 01 35 31 Special Procedures for Traffic Control
- .4 Co-ordinate Work with other Contractors / Departmental Representatives doing maintenance, survey / testing work.
- .5 The Contractor shall prepare a meaningful bar chart or network diagram showing the proposed schedules of major work and closures, which shall be submitted to the Departmental Representative in accordance with Section 01 32 16 - Construction Progress Schedules.
- .6 The Project Site is split into four (4) Segments based on location along the BVP as shown in table below. The table also includes the dates during which Single Lane Alternating Traffic accommodation is permitted to complete the works based on Segment location as well as the working times. Table to be read in conjunction with Section 01 14 00 Work Restrictions.

<u>SEGMENT</u>	<u>LOCATION (BVP)</u>	<u>Single Lane Alternating Traffic (SLAT)</u>	<u>Working Times (Monday – Sunday)</u>
1	KM 0 – KM 12.75	Spring: April 15, 2020 to May 15, 2020 Fall: September 20, 2020 to October 31, 2020	08:00 – 20:00
2	KM 12.75 – KM 24.15	Spring: April 15, 2020 to May 15, 2020 Fall: September 20, 2020 to October 31, 2020	08:00 – 20:00 (KM 0 – KM 16.6) 06:00 – 19:00 (KM 16.6 – KM 24.15)
3	KM 24.15 – KM 38.5	Spring: April 15, 2020 – July 20, 2020	06:00 – 19:00
4	KM 38.5 – KM 49.7	Fall: September 8, 2020 – October 31, 2020	06:00 – 19:00

- .7 The Contractor shall:
- .1 **Complete all Pavement Rehabilitation works in Segments 1 and 2 on or prior to May 15, 2020 or after September 20, 2020.**
 - .1 **Signage works in Segments 1 and 2 not impacting traffic may occur on or prior to July 20, 2020 and after September 7, 2020**
 - .2 **Complete Segment 3 of the works on or prior to July 20, 2020.**
 - .3 **Demobilize offsite on or prior to July 20, 2020 and undertake no Works and maintain no presence on site between July 20, 2020 and September 8, 2020.**
 - .4 **Commence Segment 4 of the Works no earlier than September 8, 2020.**
 - .5 **Interim Inspection and issuance of Interim Certificate (Substantial Performance) by October 17, 2020.**
 - .6 **Complete all Work by October 31, 2020 (Contract Completion Date).**

1.8 CONTRACTOR USE OF PREMISES

- .1 Contractor has unrestricted use of site subject to Section 01 14 00 –Work Restrictions and Section 01 29 01 – Site Occupancy, until Contract Completion date. The Contractor's use of the site is not exclusive of other contractors or work zones within the limits of this Contract.
- .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 Contractor shall coordinate use of premises under direction of the Departmental Representative.
- .4 Contractor shall obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 The Contractor and any subcontractors shall obtain a business license and vehicle work passes in accordance with Section 01 35 43 - Environmental Procedures.

1.9 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 the Work Site for other contractors and PCA. It is up to the Contractor to plan their work accordingly.

1.10 OWNER FURNISHED ITEMS

- .1 Not Applicable

1.11 CONSTRUCTION SIGNAGE

- .1 To be in accordance with Section 01 35 31 - Special Procedures for Traffic Control.
- .2 Signage shall be coordinated with other Contractors.

- .3 No signs or advertisements, other than warning signs, are permitted on site.

1.12 SETTING OUT OF WORK

- .1 Departmental Representative will establish control points and provide:
- .1 Detailed cross-section templates showing design centreline and shoulder grades.
 - .2 Complete set of construction Drawings.
 - .3 Alignment notes showing curve data and control point coordinates.
 - .4 Provide a list of control monuments including coordinates and elevations on request.
 - .5 Measurements for Payment (Quantity Surveys) and volumes by the surface to surface prismatic method for roadway and drainage excavation and neat line for all surfaces above the excavated surface at a maximum of 20m intervals. Coordinates unless otherwise stated are UTM Grid and no adjustments will be made to scale the coordinates to ground when calculated volumes by cross-section or setting out of work.
- .2 Contractor shall:
- .1 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.
 - .2 Set additional control points as necessary.
 - .3 Set all work stakes necessary to complete work.
 - .4 Allow sufficient time for Departmental Representative to take measurements for payment.
 - .5 Not damage geodetic benchmarks or control monuments unless authorized by Departmental Representative.
- .3 No separate payment for setting out work, unless changes are made and approved by the Departmental Representative and additional survey costs are incurred. Payment for additional survey required due to changes by Departmental Representative to be paid for as part under **“Lump Sum Price Item 3 – Prime Cost Sum”**.

Part 2 Products

- .1 To be in accordance with AT - Standard Specifications for Highway Construction (latest edition).

Part 3 Execution

- .1 To be in accordance with AT - Standard Specifications for Highway Construction (latest edition).

END OF SECTION

01 14 00 WORK RESTRICTIONS**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 ACCESS AND EGRESS

- .1 All existing CP Rail accesses are to be maintained.
- .2 Provide for pedestrian, cyclist, and vehicular traffic for the duration of the construction unless otherwise specified and approved by the Departmental Representative.
- .3 Construction operations shall be conducted 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. Contractor will be responsible for repairing any damage incurred, at the Contractor's cost.
- .4 The Contractor is responsible for the development and supply of construction access to the Work as approved by the Departmental Representative.
- .5 The Contractor shall provide and maintain access for PCA, CP Rail and AltaLink at all times for the duration of the Works.

1.3 USE OF THE SITE AND FACILITIES

- .1 The Work Sites specified in the Contract shall only be used for the purposes of the Work.
- .2 The Work Site (limits shown on the Drawings) will be specified by PCA and shall only be used for the purposes of the Work. The Work Site 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 Documents.
- .3 Contractor Accommodations:
 - .1 Hotels: The contractor is welcome to search for accommodation through our many local providers, but note that accommodation in the area is in high demand from May through October.
 - .2 Camping:
 - .1 Contractors Camping shall be permitted at a location and of a dimension and area designated by the Departmental Representative.
 - .2 Permitted accommodations will be limited to RV's in good condition as approved by the Departmental Representative. No other camp type units or tents will be allowed.
 - .3 No charges for camping will be applied within the prescribed location
 - .4 Services are available at the Lake Louise Campground, however there is a fee to use showers (\$2.90 per use) and fee to use the Sani dump (\$8.80 per use). Fees are payable at the entrance Kiosk and are subject to change.

- .5 All campers are subject to the camping rules and regulations of Parks Canada and Banff National Park.
- .6 No outbuildings, including but not limited to sheds, decks, fences and/or hot tubs will be permitted.
- .7 The Prime Contractor is responsible for each person using the Contractors Camp under their required RAP.
- .4 Contractor office and/or tool trailer may be set up at a location pre-approved by PCA. See Section 01 35 43 – Environmental Procedures.
- .5 The Contractor shall not store material or park equipment along the BVP Right of Way within the clear zone.
- .6 Contractor shall maintain adequate drainage at the Work Site at all times.
- .7 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.
- .8 The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and Section 01 35 43 - Environmental Procedures. The Contractor shall post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.
- .9 Any damage to the Work Site caused by the Contractor shall be repaired by the Contractor at their expense.
- .10 Pets shall not be brought to or maintained at the construction site.

1.4 WORKING TIMES

- .1 Work in BNP is permitted during daylight hours from 06:00 to 19:00, Monday to Saturday unless stipulated otherwise in the Contract Documents or approved by the Departmental Representative.
- .2 See Section 01 11 00 for additional information on work restrictions and allowances.
- .3 The Contractor will not be permitted to work during the period of any Alberta or British Columbia civic or statutory holiday long weekend, including one day prior to and one day following unless prior written approval is granted by the Departmental Representative:
 - .1 Statutory and Civic Holidays (2020)
 - .1 Good Friday weekend: From 19:00 Thursday, April 9, 2020 to 06:00 Tuesday, April 14, 2020.
 - .2 Victoria Day weekend: From 19:00 Thursday May 14, 2020 to 06:00 Tuesday, May 19, 2020.
 - .3 Canada Day: From 19:00 Friday June 26, 2020 to 06:00 Monday July 6, 2020.
 - .4 Heritage Day weekend: From 19:00 Thursday July 30, 2020 to 06:00 Tuesday August 4, 2020.
 - .5 Labour Day long weekend: From 19:00 Thursday, September 3, 2020 to 06:00 Tuesday, September 8, 2020.
 - .6 Thanksgiving Day weekend: From 19:00 Thursday, October 8, 2020 to 06:00 Tuesday, October 13, 2020.

- .4 The Contractor will not be permitted to work during special events unless prior written approval is granted by the Departmental Representative. The Special Events list below may not be comprehensive; the Contractor is responsible for meeting work restriction and site condition requirements for any Special Event within the Project Limits regardless of notice period provided.
 - .1 Special Events (2020):
 - .1 Banff Marathon – June 21, 2020 (BVP km 0 to km 12.75)
 - .2 Other Special Events as provided by the Departmental Representative
- .5 Variance of the Working Times and any others may be provided on the strict condition of satisfactory performance in all requirements as determined at the Departmental Representative's discretion and may be revoked at any time for any reason. It is provided on the presumption that no additional costs or any delay will be attributed to Parks Canada in relation to conducting Works in accordance with the Variance and if that is not the case, the Contractor shall not commence work under the Variance. No claims for additional costs, delays, schedule impacts, loss of productivity or other extra Works resulting from a Variance will be entertained.

1.5 WORK CONDUCTED OVER OR ADJACENT TO WATERWAYS

- .1 All components of the Work shall be conducted in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan prepared for the project.
- .2 All components of the Work shall be conducted without equipment entering into wetlands, water bodies, or streams.
- .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.

1.6 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 (7) 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.

1.7 SURVEY OF EXISTING 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 Site and of property on and adjoining the Work Site 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 property 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 Site and of property on or adjoining the Work Site prior to the commencement of construction by the Contractor. If requested and available, 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.
- .5 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.
- .6 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 property within or adjacent to the Work Site, whether all such property is covered by the survey or not.

1.8 ARCHAEOLOGICAL RESOURCES

- .1 In accordance with Section 01 35 43 – Environmental Procedures.

1.9 INSTREAM WORK

- .1 Contractor shall adhere to recommendations for measures and standards to mitigate serious harm to fish as identified in Section 01 35 43 – Environmental Procedures.
- .2 The period of least risk for instream works is from April 15th to October 1st.

1.10 PROTECTION OF PERSONS AND PROPERTY

- .1 The Contractor shall comply with all applicable safety regulations of WorkSafe AB and the Workers Compensation Act of British Columbia and Alberta including, but not limited to, Occupational Health and Safety Regulations and General Safety Regulations. Within the Site, the Contractor has all the responsibilities of an “employer” under the *Workers Compensation Act* and the *Occupational Health and Safety Regulation* and is designated as the “Prime Contractor”. Other contractors will be working within the limits of construction of this project.

- .2 Prime Contractor must comply with Workers Compensation Act and Occupational Health and Safety Regulation Section 20.3 Coordination of multiple employer workplaces.
- .3 Comply with all applicable safety regulations of the Workers' Compensation Board of Alberta (WCB) including, but not limited to, WCB's Industrial Health and Safety Regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.
- .4 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- .5 The Contractor shall take all necessary precautions and measures to prevent injury or damage to persons and property on or near the Work Site.
- .6 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 Parks Canada so directs, shall promptly reimburse to Parks Canada the costs resulting from such loss or damage.

1.11 USE OF PUBLIC AREAS

- .1 Off-road construction equipment will not be allowed on the existing parkway except at designated areas where the existing parkway is scheduled for re-construction in this Contract, material loading areas, or alternate sites as designated and approved by the Departmental Representative.
- .2 Steel tracked equipment with cleats will not be allowed on pavement designated for future use. If or when crossing asphalt designated for future use, rubber mats must be used under the tracks to protect the asphalt. Asphalt, granular, embankment and excavation materials may be hauled on existing highway and/or parkway but this shall be by standard highway trucks not exceeding legal highway load limits unless accepted in writing by the Departmental Representative.
- .3 Flag persons shall be provided when vehicles are entering or exiting Work Site access points and when vehicles are entering or exiting gravel pits in the park. Pit access gates must remain closed at all times or have a gate person monitoring the opening for wildlife.
- .4 The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas. All vehicles and equipment leaving the Work Site 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 Site and transporting materials shall be loaded in a manner that 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.
- .5 Construction areas and construction crossings shall be flood-lit for night operations.

1.12 USE OF PITS AND QUARRIES

- .1 The Contractor shall be responsible for managing the operations of the pit gate including but not limited to:

- .1 Keeping the operational paths of the gate panels (fully closed and fully open) free from obstruction and/or debris build-up;
- .2 Clearing the solar panels of snow/ice accumulations and/or dust/debris build-up;
- .3 Charging of batteries using Contractor supplied generator and fuel for use beyond intended solar capacities/capabilities;
- .4 Providing a gate monitor to prevent wildlife movements onto the TCH ROW at all times when the gate is being left open between successive vehicle entries and/or exits regardless of cause.
- .5 Rectifying any damages to gate components as a result of Contractor use.
- .2 Temporary stockpiling of contractor supplied materials and equipment will be permitted within Mannix Pit as approved by the Departmental Representative.
- .3 When the Contractor is operating in a PCA pit or quarry, the Contractor shall utilize the pit or quarry in accordance with the Departmental Representative's authorization. Under no circumstances will waste of useable material be permitted, and no excavation or use of materials other than as specified in the Contract Documents shall be permitted.
- .4 Expansion of working pits is not authorized unless written approval has been given from the Departmental Representative. The Contractor shall confine all work in the pit within the limits of the existing cleared area.
- .5 The Contractor shall be responsible for managing their working space within the pit and for coordination with other Parks Canada contractors, personnel or others, to maintain access.
- .6 Any claims by the Contractor or its subcontractors arising from the quality and quantity of material available, condition of, access and working space within the available pits and quarries will not be entertained, even if those claims are associated with the activities of Contractors or works conducted for Parks Canada Agency.
- .7 No separate payment will be made for disposal or relocation of stockpiles, debris or contaminated materials, or for any other costs of site preparation, pit development, pit maintenance and final cleanup, or access, or for any delay or other cost arising from, the suitability of the referenced PCA pit, or the use of referenced PCA pits by others, and all costs thereof shall be covered in the prices for the Items under which payment is provided for the applicable materials.
- .8 No clearing, grubbing, excavation or pit development activities will be permitted under this Contract.
- .9 All working pit faces and stockpiles must be trimmed to 1.5H to 1V slope. Working pit faces must be reshaped with native granular materials. All other permanent slopes must be re-sloped to no steeper than 2H to 1V.
- .10 No dumping of debris or petroleum products is permitted. The pit must be left in a clean and safe condition.
- .11 Pit work must be carried out in accordance with the local provincial government Health, Safety and Reclamation requirements, the current Standard Specifications for Highway Construction and Best Management Practices for the area the Work is occurring in.

1.13 USE OF PITS, QUARRIES, AND DISPOSAL SITES, OUTSIDE OF THE NATIONAL PARKS

- .1 When the Contractor is supplying material from a pit or quarry outside of the National Parks the Contractor is responsible for all permits and approvals. Pit or quarry development and reclamation must be in accordance with local and Provincial regulatory agency requirements.
- .2 When the Contractor is disposing of, stripping, unsuitable, or surplus material in a pit or other disposal sites outside of the National Parks the Contractor is responsible for all permits and approvals. Disposal site or pit development and reclamation must be in accordance with local and Provincial regulatory agency requirements.
- .3 The Contractor shall bear and pay all costs, fees, and royalties for pits, quarries, or disposal sites, outside of the National Parks.
- .4 Material supplied from pits and quarries outside of the National Parks must be clean of all, seeds, organics, top soil, or contaminants. No additional payment will be made for cleaning or washing material supplied from pits and quarries outside of the National Parks.
- .5 Material supplied from pits and quarries outside of the National Parks must meet requirements in the Contract Documents.

1.14 SUPERVISORY PERSONNEL

- .1 When requesting a Preconstruction Meeting, in accordance with Section 01 31 00 - Project Management and Coordination, 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.
- .2 At a minimum, the following personnel shall be included in the list:
 - .1 Contractor Manager
 - .2 Project Superintendent;
 - .3 Safety Representative;
 - .4 Quality Control Manager;
 - .5 Environmental Representative;
 - .6 Traffic Control Representative;
- .3 The above personnel shall perform the following duties:
 - .1 Contractor Manager with full authority, as agent of the Contractor, to act on behalf of and legally bind the Contractor in connection with the Work and the Contract. The Contractor may, at its discretion, appoint one person as both Contractor Manager and Project Superintendent.
 - .2 The Project Superintendent shall be employed full time with full authority to supervise the Work, who shall be directly available to the Department Representative during all active periods of Work. Either they or their designated deputy shall be present on the Work Site each and every workday that Work is being performed, from the commencement of Work to Total Performance of the Work.
 - .3 The Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence.

- .4 The Safety Representative 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.
- .5 The Quality Control Representative shall be responsible for the development, implementation and execution of the Quality Management Plan and shall be the single point of contact for all quality related queries.
- .6 The Traffic Control Representative shall be responsible for the development, implementation and execution of the Traffic Management Plan and shall be the single point of contact for all traffic control related queries.
- .7 The Environmental Representative shall be responsible for the development, implementation and execution of the Environmental Protection Plan and shall be the single point of contact for all environmental related queries.

1.15 WASTE MANAGEMENT AND 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 management and disposal described above shall be considered incidental to the Unit Price items and no additional payment will be made.

1.16 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

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 21 00 ALLOWANCES**Part 1 General****1.1 REFERENCES**

- .1 General Conditions.

1.2 PRIME COST SUM

- .1 Included in Contract Price a total Prime Cost Sum of:
 - .1 **\$1,000,000.00** for items as listed below.
- .2 Do not include in the Contract Price, additional contingency allowances for products, installation, overhead or profit.
- .3 Prime Cost Sum provided for in the Lump Sum Arrangement Table is not a sum due to 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 No interpretation of the items listed under Prime Cost Sum Allowances shall indicate that work will be included under the Prime Cost Sum. Items, tasks, and activities included in the Works elsewhere in the Contract, including Unit Price and Lump Sum Items, shall be paid as indicated in those sections and not under the Prime Cost Sum.
- .5 Any and all additional work must be approved in writing by the Departmental Representative prior to commencement.
- .6 All expenditures must be substantiated with verified invoices and/or accepted daily extra work reports as noted in Measurement and Payment Procedures below.
- .7 Such work may include, but not be limited to:
 - .1 Additional supply and delivery of bituminous materials including asphalt prime, anti-stripping agents, and warm mix A/C admixtures;
 - .2 Additional supply and installation of asphalt concrete pavement;
 - .3 Supply and installation of granular base course;
 - .4 Supply and installation of gravel fill;
 - .5 Installation of integral asphalt curb;
 - .6 Additional pavement removal;
 - .7 Spray patching, crack filling, pot hole patching and other related minor asphalt repairs;
 - .8 Removal and replacement of bridge deck control joints;
 - .9 Supply and/or installation of embedded pipe backfill;
 - .10 Clearing and Grubbing;
 - .11 Sale of merchantable timber to a mill or equivalent as directed by the Departmental Representative. Revenue generated from this sale will be credited back to this Contract;
 - .12 Stripping, excavation, subgrade preparation, road base reconstruction and/or disposal of waste materials as directed by the Departmental Representative;
 - .13 Danger tree assessment and removal;

- .14 Additional supply and installation, relocation or removal and disposal of existing signs, guardrail, precast concrete barrier, guide posts and other miscellaneous items;
- .15 Additional supply and installation, relocation or removal and replacement of permanent signs (not construction signs);
- .16 Removal and disposal or plugging of existing culverts;
- .17 Additional supply and installation of pavement markings;
- .18 Supply and installation of specialty items at Day Use Areas including, but not limited to, dry toilets, picnic tables, and garbage bins;
- .19 Additional survey resulting from changes made by the Departmental Representative;
- .20 Relocation or additional protection of existing utilities, including payment of utility service provider costs;
- .21 Utility pole relocation;
- .22 Remediation or removal and replacement of unsuitable or contaminated soils not described in the Contract Documents;
- .23 Supply and installation of imported topsoil including testing;
- .24 Supply and installation of wildlife fencing;
- .25 **Removal and disposal and/or supply and installation of Texas gates including electrified gates;**
- .26 Supply and installation of seeding;
- .27 Supply and installation of additional landscaping;
- .28 Supply and installation of riprap;
- .29 Road structure repairs including supply and installation of geotextile and/or geogrid;
- .30 Drainage improvements; including but not limited to ditching, culvert repairs and/or replacements and/or cleaning, and/or installation of downspouts;
- .31 Sub-drainage not specified in the tender documents;
- .32 Supply and installation of precast concrete barrier;
- .33 Supply and installation of barrier drains;
- .34 Removal and reinstallation of existing crash attenuator;
- .35 Supply and installation of W-Beam Guardrail or Impact Absorbing End Treatment materials.
- .36 Supply and installation of raised reflective road and barrier markers;
- .37 Asphalt EPS unit price adjustments;
- .38 Installation of milled rumble strips;
- .39 Rehabilitation work in gravel pits;
- .40 Additional traffic control equipment as required by the applicable regulations and standards;
- .41 Relocation of existing structures;
- .42 Rock excavation and processing of oversized material;
- .43 Installation of pool riffle treatment at culvert outlet;

- .44 Relocation of existing hiking trails and wooden pedestrian footbridges;
- .45 Supply and maintenance of Departmental Representative's office trailer; and
- .46 Miscellaneous work as directed by the Departmental Representative.
- .8 The Contract Price, and not Prime Cost Sum, includes Contractor's overhead and profit in connection with the Work.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Payment for Work under the **"Lump Sum Price Item 3 – Prime Cost Sum"** made using negotiated rates or by material, labour and equipment rates as per the following:
 - .1 Rental rates will be in accordance with current Alberta Roadbuilders & Heavy Construction Association's rate schedule and will be all inclusive and fully operated.
 - .2 Vehicles (i.e.. Pickup trucks) will be paid either at daily rates as per the Alberta Roadbuilders & Heavy Construction Association's (most recent) or by mileage using National Joint Council (NJC) rates, whichever is lower. The Contractor will not be permitted to claim both daily rental and mileage rates.
 - .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 10 hours per day.
 - .5 When based upon actual costs for additional works under Prime Cost Sum, payment will be based upon supplied invoices and other work records.
 - .6 The Prime Contractor may apply a 10% mark-up to subcontractor or supplier invoices only, as accepted by the Departmental Representative. No mark-up will be allowed on relevant equipment and labour rates.
 - .7 A claim for additional payment will be considered submitted when all required documentation has been received by the Departmental Representative.
 - .8 The Departmental Representative's, or their delegate's, signature on extra work reports is only a record of the equipment, materials and labour hours utilized on the task, not an agreement to entitlement or quantification of that Work. Review and acceptance may be based on Contractor submitted finalized extra work reports, which are to include appropriate rates, quantities and applicable invoices. Labour and equipment rates are to be reviewed by the Departmental Representative against the appropriate accepted rates when submitted for payment.
 - .9 The Contractor shall submit extra work reports to the Departmental Representative within 24 hours of the day of extra work.
 - .1 Extra work reports not submitted within the specified timelines may be denied payment at the Departmental Representative's sole discretion.
 - .10 The Departmental Representative's, or their delegate's, signature on any of the Contractor's Daily Extra Work Reports shall not be an agreement to waive any portion of the Contract regardless of any wording to the contrary.

- .11 Unless otherwise provided for in the Contract, payment on a time and materials basis represents complete payment (exclusive of GST) and reimbursement for all impacts, related costs and expenses, including, without limitation: time; labour; materials; equipment; mobilization; subcontracting; overhead; profit; general supervision; occupational tax and any other Federal or Provincial revenue legislation exclusive of GST; premiums for public liability and property damage insurance policies; bonding; for the use of all tools and equipment for which no specific rental payment provision exists; and for all costs incurred by the Contractor in supplying materials.
- .12 Reimbursement for Living Out Allowance (LOA), as agreed upon by the Departmental Representative, shall be pro-rated based on the portion of the standard 10-hour work day spent on extra work items up to a maximum of 10 hours. LOA reimbursement will only be considered for extra works completed under Force Account rates and payment for LOA will not exceed the agreed upon daily rate.

Part 2 Products

- .1 Products shall be in accordance with AT - Standard Specifications for Highway Construction (latest edition) or as directed by the Departmental Representative.

Part 3 Execution

- .1 Work shall be in accordance with - Standard Specifications for Highway Construction (latest edition) or as directed by the Departmental Representative.

END OF SECTION

01 25 20 MOBILIZATION AND DEMOBILIZATION**Part 1 General****1.1 DESCRIPTION**

- .1 Mobilization and Demobilization consists of preparatory work and operations including but not limited to, those necessary for the movement of personnel, equipment, camp, 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 Parks Canada will be paid by the Departmental Representative and are not to be anticipated in the Lump Sum Contract Price for Mobilization and Demobilization.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

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

Part 2 Products**2.1 NOT USED.****Part 3 Execution****3.1 NOT USED.****END OF SECTION**

01 29 01 SITE OCCUPANCY

Part 1 General

1.1 DEFINITION OF OCCUPANCY

- .1 The Contractor shall be permitted to lease and occupy sites where they will be working in the National Parks, free of charge from the date of award of the Contract up to and including the specified completion date. The sites to be leased by the Contractor include all the roads and areas specified in the Contract Documents and as directed by the Departmental Representative.
- .2 The Contractor's occupancy of the sites identified in Contract will be deemed to have ended, when the following conditions are met to the satisfaction of Parks Canada:
 - .1 All the work identified under this Contract, has been completed.
 - .2 Any outstanding deficiencies for the work identified under this 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.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 31 00 PROJECT MANAGEMENT AND COORDINATION

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 CHANGES TO DESIGN

- .1 If a change from the IFC design is accepted in writing by the Departmental Representative and agreed on by the Contractor, a design variance letter will be issued by the Departmental Representative. The design variance letter must state what changes are being made from the IFC design and what the method of measurement for payment will be, if varying from the Contract Documents.
- .2 The design variance letter must be signed by both the Contractor's Representative and the Departmental Representative prior to performing the Work.
- .3 The Departmental Representative reserves the right to use as-built survey or neat line measurements for payment if for any reason tolerances are not in accordance with the IFC design.

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.

1.4 PROJECT MEETINGS

- .1 During the course of the Work, the Contractor shall attend weekly construction meetings as scheduled, chaired, and documented 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.
- .3 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.
- .4 Meetings held outside of the time noted above (before mobilization or after demobilization) will either be held in the local PCA Field Unit offices, or at the Owner's site office, as notified by the Departmental Representative.
- .5 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.
- .6 Meetings will be called and chaired by the Departmental Representative as required. The Contractor shall be represented at such meetings to the satisfaction of the Departmental Representative.

- .7 As described in Section 01 35 43 – Environmental Procedures, an environmental briefing for all staff will take place before beginning work at the site.

1.5 CONSTRUCTION ORGANIZATION AND START-UP

- .1 Within seven (7) days after award of Contract, request a Preconstruction meeting of Contract Representatives to discuss and resolve administrative procedures and responsibilities. Meeting shall be chaired by the Departmental Representative who will prepare 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 Work.
 - .2 Schedule of Work, progress scheduling in accordance with Section 01 32 16 – Construction Progress Schedules.
 - .3 Schedule of submittals in accordance with Section 01 33 00 – Submittal Procedures.
 - .4 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 – Construction Facilities.
 - .5 Site safety and security in accordance with Sections 01 14 00 – Work Restrictions, 01 35 29 – Health and Safety Requirements, 01 52 00 – Construction Facilities and 01 35 43 – Environmental Procedures.
 - .6 Quality Control in accordance with Section 01 45 00 – Quality Control.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
 - .8 Owner-furnished materials.
 - .9 Monthly progress claims, administrative procedures, photographs, and holdbacks.
 - .10 Closeout procedures and submittals in accordance with Sections 01 77 00 – Closeout Procedures and 01 78 00 – Closeout Submittals.
 - .11 Insurances and transcript of policies.
 - .12 Other business.
- .4 Comply with Departmental Representative's allocation of mobilization areas of site, for field offices and sheds, and for access, traffic, and parking facilities.
- .5 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.
- .6 Comply with instructions of the Departmental Representative for use of temporary utilities and construction facilities.
- .7 Coordinate field engineering and layout work with the Departmental Representative.

1.6 ON-SITE DOCUMENTS

- .1 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 accepted 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 PROJECT SCHEDULES

- .1 In accordance with Section 01 32 16 - Construction Progress Schedules.

1.8 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit requests for payment for review, and for transmittal to Departmental Representative. Payment request on 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 Submittal Schedule:
 - .1 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 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.

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Parks Canada Agency

Bow Valley Parkway

Pavement Rehabilitation

Km 3.3 to 49.7

Banff National Park

Revision:

Amendment 1

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Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 32 16 CONSTRUCTION PROGRESS SCHEDULES**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 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 a 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 accepted plan for Project.
- .4 Construction Work Week: Monday to Sunday, inclusive, will provide seven-day work week and define schedule calendar working days 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.

1.3 REQUIREMENTS

- .1 Ensure the Project Schedule is practical and remains within specified Contract duration.
- .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 potential activities.
- .4 Include the requirements of Section 01 14 00 – Work Restrictions and Section 01 35 43 – Environmental Procedures.

- .5 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.
- .6 After review, revise and resubmit schedule to comply with revised project schedule.
- .7 During progress of Work revise and resubmit as directed by the Departmental Representative. If schedule is requested and not received, the Departmental Representative may hold back progress payment until an updated Project Schedule is received and accepted.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 – Submittals Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract a Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

1.5 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
- .2 Include in Project Schedule the Contractual dates under Section 01 11 00 - Summary of Work.

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Revise schedule if deemed impractical during the Departmental Representative's review and resubmit within five (5) working days.
- .3 Accepted schedule will become the Master Plan and be used as baseline for updates.

1.7 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 Barrier removal, stockpiling and reinstallation
 - .6 Pavement removal
 - .7 Asphalt paving
 - .8 Traffic signage works
 - .9 Pavement marking
 - .10 Interim Inspection for Substantial Performance
 - .11 Remediation of any noted deficiencies

- .12 Site Clean-up / Demobilization
- .13 Final Completion

1.8 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 in accordance with Section 01 33 00 - Submittal Procedures.
- .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.

1.9 PROJECT MEETINGS

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

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 33 00 SUBMITTAL PROCEDURES**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 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 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 Do not proceed with Work affected by submittal until review is complete, and written acceptance of the submittal has been issued by the Departmental Representative.
- .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 Submittals must be accompanied by a completed Quality Control Checksheet in accordance with Section 01 45 00 – Quality Control prior to submission to Departmental Representative. This completed Quality Control Checksheet represents that all the necessary requirements have been met and that the 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 accepted copy of each submission on site.

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

- .1 “Design and Build”: The term “Design” refers to all detailed design activities (survey, investigation, drawings, specifications) based on general requirements contained in the Contract Documents. “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 that are to be provided by the Contractor to illustrate details of a portion of Work.

- .3 The term “Mix Design” means an engineered design for proportioning materials in concrete or asphalt concrete pavement including all supporting test results, materials properties, that is acceptable to the Departmental Representative. **Asphalt mix design to be performed by a qualified member of the Association of Professional Engineers and Geoscientist who is licenced to practice in Alberta, or by a qualified technician registered in Alberta who has CCIL Asphalt Certification.**
- .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 Contract Documents.
- .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:
 - .1 Subcontractor,
 - .2 Supplier,
 - .3 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:
 - .1 Fabrication,
 - .2 Performance characteristics,
 - .3 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 Contract Documents 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 Contract Documents 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 the Contract requirements. This review shall not mean that Departmental Representative approves details of the design inherent in shop drawings, responsibility for that 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 the generality of the 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.

1.4 SAMPLES

- .1 Material samples to be provided as outlined in the Contract Documents or as requested by the Departmental Representative.

1.5 MOCK-UPS

- .1 Not used.

1.6 CERTIFICATES AND TRANSCRIPTS

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

1.7 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

The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of submittals in writing. Submit the following plans and

programs to the Departmental Representative for review a minimum of fourteen (14) calendar days prior to mobilization to the project site:

- .1 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 32 16 – Construction Progress Schedules. 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.
- .2 Environmental Protection Plan (EPP) that meets the requirements of Section 01 35 43 – Environmental Procedures. Submission of EPP must allow 2 weeks for review by the Parks ESO, in accordance with Section 01 35 43 – Environmental Procedures.
- .3 Plan describing methods the Contractor will have to meet their responsibilities as the Prime Contractor for Safety and Traffic Control within the Work limits and to co-ordinate Work, traffic control, site access, safety, with other Contractors working in or adjacent to the Contract Work zone.
- .4 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. 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. Health and Safety Plan must include in accordance with Section 01 35 29 – Health and Safety Requirements.
 - .1 Contractor shall develop an “Emergency Procedures Protocol” in consultation with Parks Canada. On site Contingency and Emergency Response Plan to address standard operating procedures to be implemented during emergency situations. Emergency Response Plan can be incorporated into the Health and Safety Plan.
- .5 Traffic Management Plan, in accordance with the requirements of Section 01 35 31 – Special Procedures for Traffic Control.
 - .1 Site Access and Detour Plans shall include, but not be limited to, engineered drawings and procedures for accessing all areas of the Work or for proposed detours.
- .6 Quality Control Plan in accordance with Section 01 45 00 – Quality Control, including Quality Control checklist examples for each item of Work.
- .7 Alberta One Call and Utilities Coordination Plan, including notifications to Utility Owners.
- .8 Contractor and any subcontractors to submit a copy of their valid Parks Canada Business License.
- .9 Contractor Chain of Command, listing key Contractor personnel, including for each name, position, qualification, experience, telephone and cellular telephone.

The list shall include the names and telephone/cellular telephone for contact persons who are available on a 24-hour basis in the event of emergencies.

- .10 List of subcontractors, suppliers and consultants, their role and their key personnel, including names and positions, addresses, telephone and cellular telephone.
- .11 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 that will be used to meet stages specified in Section 01 32 16 – Construction Progress Schedules. The Work Plan must be linked to the Project Schedule.
- .12 Schedule of Force Account rates, in accordance with Section 01 21 00 – Allowances.
- .13 Survey Plan describing the Contractor's intended methods of surveying during this project and applicable resumes in accordance with Section 01 71 00 – Examination and Preparation.
- .14 Asphalt Plant provincial registration and records showing compliance with provincial and federal regulations for emission testing and monitoring.
- .15 Pit sourcing information and testing results (i.e. Micro-Deval Test).
- .16 The Contractor shall not begin any Work on the Site until the Departmental Representative has provided a Notice to Proceed.

.3 Construction Phase Submittals

- .1 Monthly Progress Reports in accordance with Section 01 32 16 – Construction Progress Schedules.
- .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. Weekly Progress Reports shall be submitted at the end of each week.
- .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 submitted to the Departmental Representative with the Weekly Progress Report. A summary of all Quality Control inspections conducted to date shall be submitted by the Contractor with each Weekly Progress Report.
- .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 fourteen (14) calendar days prior to fabrication / production.
- .5 Progress Photographs Format:
 - .1 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 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 immediately.
- .8 Submit copies of incident and accident reports immediately.
- .9 Submit daily extra work reports in accordance with Section 01 21 00 – Allowances.
- .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 .pdf electronic file containing an itemized set of project quality control documentation.
 - .3 All other documents noted within the Contract Documents, and under Section 01 78 00 – Closeout Submittals.
- .5 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 and 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.
- .6 The Departmental Representative may, at their sole discretion, withhold payment from the Contractor for Work completed until acceptable submittal documents have been provided by the Contractor to the Departmental Representative.

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Parks Canada Agency

Bow Valley Parkway

Pavement Rehabilitation

Km 3.3 to 49.7

Banff National Park

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Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 35 29 HEALTH AND SAFETY REQUIREMENTS**Part 1 General****1.1 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System
 - .1 (WHMIS) Safety Data Sheets (SDS).
- .3 Province of British Columbia / Alberta - Occupational Health and Safety Act, depending on the province where the Work is occurring.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

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

1.3 FILING OF NOTICE

- .1 Not used.

1.4 SAFETY ASSESSMENT

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

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work. This meeting may be combined with the Preconstruction meeting identified elsewhere.
 - .1 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.
 - .2 A copy of the "Attestation and Proof of Compliance with Occupational Health and Safety (OHS)" form is part of the Invitation to Tender package.
- .2 Parks Canada recognizes that federal Occupational Health and Safety legislation places specific responsibilities upon Parks Canada as owner of the work place. In order to meet those requirements, Parks Canada 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 Parks Canada work places, including on Parks Canada property.

1.6 REGULATORY REQUIREMENTS

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

1.7 PROJECT / SITE CONDITIONS

- .1 Work at site will involve contact with British Columbia / Alberta Occupational Health and Safety, depending on which province the Work is occurring in.

1.8 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.

1.9 RESPONSIBILITY

- .1 The Contractor shall act as the Prime Contractor in all matters relating to Occupational Health and Safety. They shall conduct their work and make all such arrangements necessary to allow them to be accepted as such by the relevant Provincial Authorities.
- .2 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.
- .3 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.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, General Safety Regulation, British Columbia / Alberta, depending on which province the Work is occurring in.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 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.

1.12 HEALTH AND SAFETY REPRESENTATIVE

- .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.

1.13 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.

1.14 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. The Contractor shall do as requested at their cost and no claim for time or additional costs will be accepted.

1.15 BLASTING

- .1 Blasting or other use of explosives is not permitted without prior receipt of written approval by the Departmental Representative.

1.16 POWDER ACTUATED DEVICES

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

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

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 35 31 SPECIAL PROCEDURES FOR TRAFFIC CONTROL**Part 1 General****1.1 DESCRIPTION**

- .1 Supply, installation, maintenance and removal of Traffic Accommodation for the duration of the Contract or as described in this Section.

1.2 REFERENCES

- .1 British Columbia - Traffic Control Manual for Work on Roadways (1999)
- .2 AT – Traffic Accommodation in Work Zones (latest edition)
- .3 AT – Traffic Control Standards (latest edition)
- .4 Manual of Uniform Traffic Control Devices for Canada, (MUTCD) distributed by Transportation Association of Canada. (latest edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Payment for Traffic Control as described in this Section, shall be made under “**Lump Sum Price Item 2 – Traffic Accommodation**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .2 Payment for Traffic Accommodation will be on a monthly basis based on the percent of Contract Works completed, not to exceed the total lump sum bid price for Traffic Accommodation. Extra works are not to be included in determining the percent complete of the Contract.
- .3 Payment for Traffic Accommodation will commence once the Contractor has implemented their accepted Traffic Management Plan and setup is accepted by the Departmental Representative.
- .4 Items considered incidental to the Work include, but are not limited to:
 - .1 Installation and removal of temporary pavement markings as described in the Contract Documents.
 - .2 Relocation of Traffic Accommodation to a different Segment within the Project Site.
 - .3 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
 - .4 Keeping the existing roadway within the Work limits, clean, free of pot holes while Contractor is on site.
 - .5 Cost of snow removal required by the Contractor to complete the work identified in the Contract.
 - .6 The use of pilot cars during periods of Single Lane Alternating Traffic control (SLAT), to escort public traffic through the work site as directed by the Departmental Representative.
- .5 The Contractor shall not be responsible for the snow removal required for general parkway maintenance operations within the limit of construction so long as the roadway has been

left in a condition deemed suitable, by Departmental Representative, for maintenance crews to safely complete the work.

1.4 GENERAL

- .1 The Contractor shall implement traffic accommodation measures in accordance with the dates and locations specified in Section 01 11 00 - Summary of Work.
- .2 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.
- .3 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 Section 2.2.1 of the BC MoTI Traffic Control Manual for Work on Roadways, 1999..
- .4 The Contractor shall develop and implement a Traffic Management Plan in accordance with AT – Traffic Accommodation in Work Zones (latest edition), except where specified otherwise in the Contract Documents. The Traffic Management Plan will include plans specific to each roadway for this project.
- .5 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 20 minutes.
- .6 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.
- .7 The Contractor shall supply, install and maintain six (6) Portable Changeable Message Signs (CMS) to inform the traffic of construction delays. All CMS shall be as per MUTCD (latest edition) and shall be in both English and French with equal space allotted to each. Exact installation locations of the CMS to be agreed on site with the Departmental Representative. All cost associated with the supply, installation, maintenance and removal of the CMS will be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”**. Removal of the CMS will only be permitted upon completion of the Works.
- .8 All traffic and warning signs shall be either bilingual or of a symbolic or pictorial type. All signs are to be selected from the Construction Signage Translation Database provided in the Contract Documents.
- .9 All Changeable Message Sign (CMS) messages are to be selected from the preapproved database provided and are to be bilingual as shown.
 - .1 Any signage requiring translation that is not shown in the standard translation Contract Document must be approved by Parks Canada prior to fabrication.
- .10 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, 1999. Spacing between temporary line markings to not exceed 10m.

- .11 All temporary pavement markings will be removed at the Contractor's expense prior to the completion of the Contract.
- .12 Temporary lane markings that are not consistent with the final geometric design layout shall be removed using eradication or water blasting to the satisfaction of the Departmental Representative. Blackout painting of existing lines will not be permitted. No additional payment will be made for removal of existing paint lines.
- .13 The Contractor shall have appropriate traffic control measures in place to allow for work zones as described in Section 01 11 00 – Summary of Work at all times throughout the construction as approved by the Departmental Representative.
- .14 The Contractor shall coordinate traffic management procedures with other Contractors working in the immediate vicinity as well as collaborate with the Departmental Representative in respect to Traffic Management restrictions on the Highway Network. Contractor must make a concerted effort to coordinate their traffic management strategies with stakeholders. The Contractor must also be prepared to attend traffic management and construction staging coordination meetings as requested by the Departmental Representative.
- .15 The Contractor is responsible for keeping the roadway, within the Construction Limits, clean at all times. Sweeping, grading and/or dust control to the acceptance of the Departmental Representative is considered incidental to the Contract and no additional payment will be made.

1.5 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 AT – Traffic Accommodation in Work Zones (latest edition), except where specified otherwise.
- .3 When working on existing travelled way:
 - .1 Place equipment in a position presenting a minimum of interference and hazard to traveling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
 - .3 Do not leave equipment on travelled way overnight.
- .4 The Contractor shall develop and have in place a completed Traffic Management Plan taking into account all hazards associated with construction operations on a busy highway and minimize risks to motorists prior to beginning Work. This plan shall be updated regularly in response to any incidents or changes in conditions, be they weather, work, traffic, or otherwise.
- .5 The Contractor shall submit a Traffic Management Plan prior to commencement of work.
- .6 Emergency vehicles (i.e., ambulance, RCMP, Park Warden) must be granted immediate passage at all times.

- .7 The Contractor shall provide competent supervision and/or contact personnel as required during non-working hours to ensure that safety flares, flashing beacons, signs, lights, etc., are in proper working order.
- .8 Traffic control measures will be monitored by the Departmental Representative, who may require modifications of these measures from time to time to achieve satisfactory traffic flow, safety of traveling public and coordination with adjacent contracts.
- .9 The Contractor shall maintain a dust free construction zone by means of cleaning and watering when required.

1.6 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 that 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 or steel posts installed in the shoulder areas at locations accepted by the Departmental Representative.**
- .3 At each end of the Work site and as directed by the Departmental Representative, supply, install and maintain CMS's with a minimum of three (3) lines with eight (8) characters for the duration of the project (See Clauses 1.4.7 and 1.4.9 of this Section).
- .4 Place signs and other devices to standards and in locations recommended in AT – Traffic Accommodation in Work Zones (latest edition).
- .5 All construction signs shall be installed to prevent incidental blow down or displacement and must remain in service throughout the construction period. Construction signage heights to be minimum 1.5m from ground to the bottom of the sign, or as per AT – Traffic Accommodation in Work Zones (latest edition), whichever is higher.
- .6 As situation on site changes, Contractor to update their Traffic Management Plan outlining signs and other devices required for the project and submit for the acceptance of the Departmental Representative.
- .7 Continually inspect and maintain traffic control devices in use by:
 - .1 Checking signs daily for legibility, damage, suitability, location and height.
 - .2 Cleaning, repairing or replacing signs as required ensuring clarity and reflectance.
 - .3 Removing or covering signs that do not apply to conditions existing from day to day or time to time.

1.7 CONTROL OF PUBLIC TRAFFIC

- .1 Contractor shall provide competent flag persons, trained in accordance with, and properly dressed and equipped as specified in AT – Traffic Accommodation in Work Zones (latest edition).
 - .1 When public traffic is required to pass working vehicles or equipment, that block all or part of travelled roadway.
 - .2 When vehicles are entering or exiting Work Site access points.

- .3 When vehicles are entering or exiting gravel pits in the park.
- .4 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
- .5 When workers 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.
- .6 Where temporary protection is required while other traffic control devices are being erected or taken down.
- .7 For emergency protection when other traffic control devices are not readily available.
- .8 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
- .9 At each end of restricted sections where pilot cars are required.
- .2 Delays to public traffic due to Contractor's operations: **maximum 20 minutes**. In consideration of the anticipated cumulative effect of the multiple construction sites in the corridor traffic total travel time delay through the construction zones must not exceed 90 minutes, as a result of all construction activities in BNP. To maintain that objective a concerted effort must be made between all of the active contractors to coordinate construction sequencing.
- .3 During hours of darkness, 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.
- .4 No stoppage of traffic will be allowed for the periods specified in Section 01 14 00 – Work Restrictions, pertaining to Statutory Holiday, long weekend and/or Summer work restrictions (July and August).
- .5 If night shift operations are implemented on 2-lane undivided sections, the public traffic must be escorted through the work zone by pilot cars in both directions.
- .6 When approved single lane alternating traffic control patterns are in effect, public traffic must be escorted through the work zone by pilot cars in both directions, unless otherwise approved by the Departmental Representative.

1.8 OPERATIONAL REQUIREMENTS

- .1 Maintain existing conditions for traffic throughout period of Contract except that, when required for construction under Contract and when measures have been taken as specified herein and approved by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:
 - .1 The Contractor shall have appropriate traffic control measures in place to allow for work zones as described in Section 01 11 00 – Summary of Work at all times throughout the construction as approved by the Departmental Representative.
 - .2 Speed limit reduced to 50 km/h in work zones in non-work periods.
 - .3 Speed limit reduced to 30 km/h in work zones in work periods.
 - .4 Access between, major intersections:

TCH km 23/BVP;
Hwy 93S/BVP; and
Whitehorn Road/BVP

and accommodations along BVP including but not limited to:

Johnston Canyon Campground
Johnston Canyon Resort
Castle Mountain Campground
Castle Mountain Chalets
Protection Mountain Campground
Baker Creek Chalets

must be maintained at all times unless otherwise stipulated and approved by the Departmental Representative.

- .5 The delay due to single lane alternating traffic shall not exceed 20 minutes.
- .6 A schedule for all full work zone closures required longer than 45 minutes must be provided to the Departmental Representative at least one (1) week in advance of the planned closure.
- .7 There may be restrictions to accommodate special events within the National Parks.
- .8 The Departmental Representative reserves the right to stop work in the case of excessive traffic delays. The Contractor shall do as requested at their cost and no claim for time or additional costs will be accepted.
- .9 Provide the Departmental Representative with construction advisories for posting to the Official Alberta Traffic Advisor website (<http://511.alberta.ca/>) and update advisories regularly to reflect the current and planned construction activities and highway closures. A minimum of 4 days notice is required for changes to the accepted TMP.
- .10 Emergency vehicles are to be directed through the Work Site immediately once conditions are safe.
- .11 No stoppage of traffic shall be allowed during inclement weather conditions.
- .12 Maintain existing conditions for traffic crossing right-of-way.
- .13 No stoppage of traffic shall be allowed during inclement weather conditions.

1.9 VEHICLE DETECTION LOOPS

- .1 Damage to vehicle detection loops shall be repaired by the Contractor at their cost.
- .2 Notify the Departmental Representative immediately of any damage.

1.10 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 - Quality Control.

1.11 SUBMITTALS

- .1 In accordance with Section 01 33 00 Submittal Procedures.

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Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 35 43 ENVIRONMENTAL PROCEDURES**Part 1 General****1.1 REFERENCES**

1. Parks Canada National Best Management Practices – Roadway, Highway, Parkway and Related Infrastructure, May 2015
2. Pratiques exemplaires nationales de gestion de Parcs Canada - Routes, autoroutes, promenades et infrastructure connexe – Mai 2015
3. Whirling Disease in Banff National Park (BNP), Alberta – Direction for Permitted Users conducting water-related activities in BNP – October 2016.
4. Whirling Disease in Lake Louise, Yoho, Kootenay Field Unit (LLYK) – Direction for Permitted Users conducting water-related activities in LLYK – April 2017.
5. Tournis des truites – Unité de gestion du secteur de Lake Louise et des parcs nationaux Yoho et Kootenay – avril 2017
6. Seed Mixes and Reclamation Strategies for Projects in the LLYK Field Unit of Banff, Kootenay and Yoho National Parks: FINAL – November 2016.
7. DFO: Measures to Protect to Fish and Fish Habitat.
.1 <https://www.dfo-mpo.gc.ca/pnw-ppe/measures-measures-eng.html>

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 This Work shall be incidental to the Contract and will not be measured for payment.
- .2 Preparation and implementation of an Environmental Protection Plan (EPP) in accordance with this Section 01 35 43 – Environmental Procedures, including certification by a registered Qualified Environmental Professional (QEP), will not be measured separately for payment and will be considered incidental to the Work.

1.3 SUBMITTALS

- .1 The Contractor is required to prepare and submit an Environmental Protection Plan in accordance with this Section 01 35 43 – Environmental Procedures and Section 01 33 00 – Submittal Procedures. The EPP document will be reviewed and accepted for use on the project by the Departmental Representative in collaboration with the Parks Canada designated Environmental Surveillance Officer (ESO).

1.4 NATIONAL PARK REGULATIONS

- .1 The Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the Canada National Parks Act and Regulations.
- .2 The Contractor and any sub-contractors shall obtain a business license from a Parks Canada Administration Office, prior to commencement of the Contract. The business license must be valid for the Park in which the Work is occurring.
- .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.

1.5 IMPACT ASSESSMENT ACT (IAA)

- .1 Execution of the work is subject to the provisions within the *Impact Assessment Act, 2019* (IAA 2019) and subsequent amendments.
- .2 The Contractor is required to implement all recommendations and mitigations and follow all procedures and processes whether supply, construction, administration or otherwise as described in particular in this Section 01 35 42 – Environmental Procedures, BMPs, and all Contract Documents.
- .3 The Contractor shall prepare their Environmental Protection Plan (EPP) to implement the mitigations identified in this Section 01 35 42 – Environmental Procedures, BMPs, and all Contract Documents 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.
- .4 Where there is a discrepancy or inconsistency between this Section 01 35 43 – Environmental Procedures and other documents, this Section takes precedence over other documents.
- .5 Failure to comply with or observe environmental protection measures as identified in the Contract Documents may result in the work being suspended pending rectification of the problems. The Contractor shall do as requested at their cost and no claim for time or additional costs will be accepted.

1.6 ENVIRONMENTAL BRIEFING AND ESO

- .1 **All staff employed at the construction site will be required to attend an approximate one (1) hour environmental briefing presented by PCA prior to their commencement of work on site.** It is recognized that new employees may join the Contractors' work force after the initial round of "environmental briefing". In that case and as required, subsequent "environmental briefings" can be presented as numbers warrant, by arrangement with the ESO through the Departmental Representative. Also, some sub-trades may be present at the site for a short time, to perform once-only duties. In these cases, the "environmental briefing" will be replaced by the Contractor explaining the environmental sensitivity of the work location to the sub-trade worker(s), and reviewing highlights of personal conduct expected, with reference to a one-page briefing summary to be provided to the Contractor by the ESO. A copy of this summary will be provided to each sub-trade worker joining the work force at the site.
- .2 Parks Canada will have an ESO attending the site to inspect the construction activity for conformance with the EPP. The ESO or alternate designated Parks Canada staff member will present the "environmental briefing". The ESO's main duties are to inspect the progress of the construction on an on-going basis to ensure compliance with environmental protection measures, and to provide guidance through the Departmental Representative, in the event of unanticipated environmental problems. Although the ESO has authority to enforce National Parks Act violations, direction to the Contractor will be the duty of the Departmental Representative.
- .3 The ESO is not to act as daily environmental monitor but shall check activities with the approved EPP to ensure compliance, at their discretion.
- .4 The Contractor's QEP shall be responsible for ensuring all activities are conducted in accordance with the Contract Documents.

1.7 ENVIRONMENTAL PROTECTION PLAN

- .1 The EPP is to be prepared and certified by a Qualified Environmental Professional. Certification by a QEP is considered incidental to the Works and no additional payment will be made.
- .2 Changes and/or revisions to the EPP may be required by the ESO as the Work progresses and more information becomes available. No additional payment will be made for changes and/or revisions to the EPP.
- .3 The Contractor's EPP will detail how the work limits shall be marked and what procedures will be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Departmental Representative and the ESO.
- .4 The EPP will include how the Contractor will manage all environmental risks and specify site-specific details for implementing mitigation or achieving mitigation outcomes identified in particular in this Section 01 35 42 – Environmental Procedures, BMPs, and all Contract Documents.
- .5 Spill Response and Erosion and Sedimentation Management Plans are to be included in the EPP, in accordance with this Section.
- .6 QEP resumes are to be included in the EPP for Departmental Representative and ESO review.
- .7 The Contractor shall submit the EPP in accordance with Section 01 33 00 – Submittal Procedures yet **allow no less than 2 weeks for the review of their EPP** and shall address and respond to all comments raised during the review within a maximum of 2 weeks.

1.8 RESTRICTED ACTIVITY PERMITS

- .1 Prior to commencing any activity, the Contractor may be required to first obtain a Restricted Activity Permit (RAP) in consultation with PCA and Departmental Representative.
- .2 Prior to mobilization, Contractor is to establish what RAPs are required for the Works, for the duration of the project. Include, in the project schedule, the acquisition of the application for RAPs, allowing no less than 2 weeks for review and acceptance by the ESO.
- .3 Contractor shall list RAPs they require in the EPP.
- .4 The Contractor is required to submit an application form to the Departmental Representative for each required RAP.
- .5 RAP application details include, but are not limited to: Name of activity, start and end date of activity, location of Work, Contractor company name and address, Contractor contact name, phone number and email address and vehicle / equipment information.
- .6 Following the application submission, the Contractor may be required to provide further details regarding the Work to PCA.
- .7 Submission of a RAP application to the Departmental Representative does not permit the Contractor to commence the restricted activity.

1.9 CONSTRUCTION SITE ACCESS AND PARKING

- .1 Points of access from the existing roadway to the various construction sites will be required. The Contractor shall review both short and long-term construction access requirements with the Departmental Representative, both at start-up and on an ongoing basis. In consultation with the Departmental Representative, the Contractor shall formulate an agreement for worker transportation to and from the work sites and where workers shall park their private vehicles.
- .2 The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers' vehicles or construction machinery and shall instruct workers so that the "footprint" of the project is kept within defined boundaries.

1.10 ACCIDENTAL FINDS

- .1 It is possible that undocumented historic objects will be found within the Project limits. If significant features are encountered, stop Work in the immediate area, notify the Departmental Representative, take photographs of the findings and a GIS location reading.
- .2 Significant features include items such as:
 - .2 Structural remains, high artifact concentrations, tent platforms, cornerstones, commemorative plaques, inscribed tablets, log cribbing retaining features, human remains, marked trees and other various items.
- .3 If unsure, contact the Departmental Representative immediately.
- .3 The Departmental Representative will notify the Contractor when Works can resume in the area.
- .4 Should any process or requirements regarding archeological matters listed in this Section contradict the BMPs and other Contract Documents, this Section shall take precedence.
- .5 All historical or archaeological objects found in the National Parks are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any articles found and request direction from the ESO or the Departmental Representative.

1.11 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 A RAP application will be required for any activity that contravenes the Parks Canada Act, including but not limited to occupation of permitted Work camps and/or off-highway operation of a motor vehicle.
- .2 A Contractor's office and work headquarters material laydown, equipment parking and storage area will be permitted in accordance with this Section and Section 01 14 00 - Work Restrictions.
- .3 Removal and storage of snow shall be in accordance with Section 01 35 31 - Special Procedures for Traffic Control. If coordination is required, the Contractor shall coordinate through the Departmental Representative.
- .4 The Contractor shall control blowing dust and debris generated from the construction site by means such as covering or wetting down dry materials and rubbish. Dust

generated during the grade construction and or utilization of any temporary access roads must be kept at a reasonable level so as not to impart any hazard to the public traffic. Control measures must be initiated as and when required and may require increased vigilance at the discretion of the Departmental Representative.

1.12 SPECIFIC CONCERNS RELATIVE TO EROSION CONTROL AND SEDIMENTATION

- .1 The Contractor's QEP 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. The plan shall be included in the EPP and prepared to the satisfaction of the Departmental Representative and ESO.
- .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 If necessary, on-site sediment control measures shall be constructed and functional prior to initiating construction activities.
- .4 The regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. If the design of the control measures is not functioning effectively they are to be repaired. The Departmental Representative and ESO also will monitor erosion control performance.
- .5 The site will be secured against erosion during any periods of construction inactivity or shutdown.

1.13 SPECIFIC CONCERNS RELATIVE WATER DIVERSIONS

- .1 The Contractor's EPP shall describe the proposed locations and types of temporary stream or channel diversions, complete with construction procedures and timing of construction. Temporary stream or channel diversions shall be subject to the same environmental constraints as permanent watercourses and shall be built to pass, at least, the 10-year return period flood for the time of year during which the temporary diversion will be in place. Temporary stream or channel diversions that have been constructed during periods of low precipitation shall be completely removed prior to periods of increased precipitation unless otherwise approved by the Departmental Representative.

1.14 POLLUTION CONTROL

- .1 The Contractor shall prevent any deleterious and objectionable materials from entering streams, rivers, wetlands, water bodies or watercourses that would result in damage to aquatic and riparian habitat. Hazardous or toxic products shall be stored no closer than 100 metres from watercourses.

- .2 A Spill Response Plan will be prepared by the Contractor's QEP as part of the EPP and shall detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Departmental Representative and PCA and in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement and sand blasting agents.
- .3 The containment, storage, security, handling, use, unique spill response requirements and disposal of empty containers, surplus product or waste generated in the use of any hazardous or toxic products shall be in accordance with all applicable federal and provincial legislation. Hazardous products shall be stored no closer than 100 metres from watercourses.
- .4 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berms shall be capable of holding 110% of tank storage volumes and shall be to the satisfaction of the Departmental Representative and the ESO before start-up. Measures such as collection / drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.
- .5 The Contractor shall prevent blowing dust and debris by covering and/or providing dust control for temporary roads and on-site work by methods that are approved by the Departmental Representative or ESO.
- .6 The Contractor shall provide spill kits at re-fuelling, lubrication, and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order on the construction site. The ESO and Departmental Representative prior to project start-up must approve these spill kits. The Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in its use.
- .7 Timely and effective action shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. Parks Canada Dispatch shall be notified immediately of any spill immediately and can be contacted at a phone number provided in the Preconstruction Meeting. Following notification of Parks Canada Dispatch, the Departmental Representative and the ESO shall be notified. Spill response cards will be distributed during the initial Environmental Briefing with basic instructions and phone numbers.
- .8 In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and clean-up.
- .9 The costs involved in a spill incident (the control, clean up, disposal of contaminants and site remediation to pre-spill conditions), shall be the responsibility of the Contractor. The site will be inspected to ensure completion to the expected standard and to the satisfaction of the Departmental Representative and ESO.

1.15 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 ESO. Except for chain saws, any fuelling closer than 100 metres any streams, wetlands, water bodies or waterways shall require the authorization and oversight of the Departmental Representative.
- .3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than 100 metres from any streams, wetlands, water bodies or watercourses. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain presence at and immediate attention to the fuelling operation.
- .4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times. Protection and containment of approved fuel storage sites is addressed above.
- .5 Equipment used on the project shall be fuelled with E10, and low sulfur diesel fuels and shall conform to local emission requirements. The Contractor is to ensure that unnecessary idling of vehicles is avoided.
- .6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations approved by the ESO or the Departmental Representative. Waste lubrication products (e.g. oil filters, used containers, used oil, etc.) shall be secured in spill-proof containers and properly recycled or disposed of at an approved facility. No waste petroleum, lubricant products or related materials are to be discarded, buried or disposed of in borrow pits, turnouts, picnic areas, viewpoints, etc., anywhere within the National Parks.
- .7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order.
- .8 Fuel containers and lubricant products shall be stored only in secure locations specified by the Departmental Representative. Fuel tanks or other potentially deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals when left overnight the National Parks. Alternatively, the Contractor may hire a security person employed to prevent vandalism in accordance with Section 01 52 00 - Construction Facilities.

1.16 OPERATION OF EQUIPMENT

- .1 Equipment movements shall be restricted to the 'footprint' of the construction area. The work limits shall be identified by stake and ribbon or other methods approved by the Departmental Representative. Unless authorized by the Departmental Representative, activities beyond the work limits are not permitted. No machinery will enter, work in or cross over streams, rivers, wetlands, water bodies or watercourses, nor damage aquatic and riparian habitat or trees and plant communities. Some of the construction shall require working close to watercourses or water bodies. In these instances, the Contractor is to describe measures to be employed to ensure fugitive materials (e.g.

- rocks, soil, branches) and especially deleterious substances (e.g. chemicals) do not enter any watercourses, to the satisfaction of the Departmental Representative and ESO.
- .2 The Contractor shall instruct workers to prevent pushing, placement, raveling, storage or stockpiling of any materials (e.g. slash, rock, fill or topsoil) in the trees bordering the right-of-way or into watercourses or water bodies.
 - .3 When, in the opinion of Parks Canada, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond the designated work area, the Contractor shall be responsible, at his or her expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc., to the satisfaction of the Departmental Representative and ESO.
 - .4 Restrict vehicle movements to work limits.
 - .5 Workers private vehicles are to remain within the construction footprint.

1.17 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 Contractors' staff.
- .2 A water truck may be necessary and will depend on the timing of the Contract (e.g. not required during winter or snow-covered conditions).
- .3 Construction equipment shall be operated in a manner and with all original manufacturers' safety devices to prevent ignition of flammable materials in the area.
- .4 Care shall be taken while smoking on the construction site to ensure that the accidental ignition of any flammable material is prevented. Fires or burning of waste materials is not permitted.
- .5 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. Parks Canada Dispatch shall be notified immediately of any fire immediately and can be contacted at a phone number provided in the Preconstruction Meeting. Following notification of Parks Canada Dispatch, the Departmental Representative and the ESO shall be notified.
- .6 Fires or burning of waste materials is not permitted.

1.18 WILDLIFE

- .1 During the Environmental Briefing all personnel shall be instructed by the ESO on procedures to follow in the event of wildlife appearance near or within the work site and any other wildlife concerns.
- .2 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.
- .3 Notify the ESO and Departmental Representative immediately about dens, litters, nests, carcasses (road kills), bear activity or encounters on or around the site or crew

accommodation. Other wildlife-related encounters are to be reported within 24 hours. If the ESO or Departmental Representative is not available, Parks Canada Dispatch will be contacted at a phone number provided in the Preconstruction Meeting.

- .4 The following mitigations apply to any Work performed during the amphibian breeding season (Approximately mid- April – August):
 - .1 Amphibians of any life stage may not be harmed during construction.
 - .2 After snowmelt and prior to construction, each culvert where work is proposed will be checked by the ESO and/or a qualified environmental professional with experience identifying all life stages of amphibians for the presence of amphibian eggs, larvae, juveniles or adults.
 - .3 If present and there is significant risk of harm, construction will be postponed until it is confirmed that all individuals have metamorphosed or died or until the end of the breeding season (August).
 - .4 If an adult is in the project area and a check for eggs/tadpoles shows none of these are present, the adult amphibian should be moved from the immediate project area to an appropriate area close to the project site and the project area should be fenced to prevent it from re-entering. Approved handling techniques should be used including:
 - .1 Whenever possible, wear latex gloves and ensure there is no insect repellent, suntan lotion, perfume, or other potentially noxious substance on gloves/hands before capturing or handling amphibians. Keep gloves/hands wet when handling amphibians and rinse hands/gloves between individuals.
 - .2 Grasp toads around the waist with the hind limbs extended to prevent kicking.
 - .5 If amphibians are present outside the immediate project area, the project boundaries will be fenced with exclusion fencing between the construction zone and amphibian use areas. The fencing used should last the duration of the culvert removal and replacement. Fencing should be inspected and repaired daily to maintain effectiveness and avoid potential breaches. Fencing should be installed so that construction sediment does not enter into wetlands or aquatic systems. Construction workers should be informed regarding fenced areas and their importance for amphibians. Temporary exclusion fencing must be removed upon completion of work.
 - .6 A “slow zone” for salamander migration across the BVP may be implemented in the spring (April/May) around the first pull out at the east end of the Sawback burn, between 6 and 7 km from the east entrance to the BVP. Workers transiting through the area must be made aware of the slow zone and vehicle speeds must be reduced through this area during salamander migration.

1.19 WASTE MANAGEMENT AND DISPOSAL

- .1 The Contractor shall submit a Waste Management Plan as part of the EPP.
- .2 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.

- .3 All wastes originating from construction, trade, hazardous and domestic sources, shall not be mixed, but will be kept separate.
- .4 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.
- .5 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials.
- .6 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 the 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.
- .7 The Contractor and workers shall immediately report any circumstances related to food/garbage (e.g. overflowing container or strong smell) and wildlife to the ESO or the Departmental Representative. If neither can be reached, the Contractor/worker shall immediately contact Parks Canada Dispatch at the phone number provided in the Preconstruction Meeting and report the details.
- .8 Sanitary facilities, such as a portable container toilet, shall be provided by the Contractor and maintained in a clean condition.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 INSTREAM WORK

- .1 Instream work is not specified in the Contract Documents. If instream work is to be undertaken at the request of the Departmental Representative it shall be conducted in accordance with the following and as directed:
- .2 In accordance with this Section, Section 01 14 00 – Work Restrictions, the National BMPs and all Contract Documents and DFO Measures to Avoid Causing Harm to Fish and Fish Habitat.
- .3 Instream work is to be conducted during the applicable species' least risk window defined as April 15 to October 1.

- .4 A QEP hired by the Contractor is to provide surveillance while working within 30 metres of a watercourse and during any instream works, in accordance with the Contract Documents. The QEP services are considered incidental to the Work and no additional payment will be made.
- .5 Construction in the dry and/or low flow period is required for culvert replacement.
 - .1 If the watercourse at a site is still flowing in the low flow period, the work area is to be isolated and a fish salvage completed prior to commencement of construction works.
 - .2 Prior to site isolation, a stream isolation/dewatering plan is to be prepared by a Qualified Environmental Professional (QEP) and submitted to the ESO and Departmental Representative for review and approval. Using the appropriate stream isolation technique, the works can be completed in the dry, while flow is diverted around the construction area, thereby maintaining flow to downstream areas.
 - .3 Work in these locations will be monitored by the QEP.
 - .4 Work areas will be isolated and a fish salvage will be completed within the isolated areas by the QEP. Results of fish salvage will be submitted to the ESO.
 - .5 To minimize the risk of transporting aquatic invasive species between wetlands, project staff must follow *Direction for Permitted Users conducting water-related activities in BNP*.

3.2 WATER EXTRACTION AND DISTRIBUTORS

- .1 All water related activities are to be conducted in accordance with *Whirling Disease in BNP - Direction for Permitted Users conducting water-related activities in BNP and/or LLYK (Latest Edition)*.
- .2 Backflow prevention is required on all water trucks.
- .3 All water trucks and water extraction equipment must be thoroughly cleaned prior to entering any Park. Proof of cleaning must be provided to the Departmental Representative and ESO for verification.
- .4 Extraction of water within any National Park requires a RAP.
- .5 Care must be taken by the Contractor to ensure extracted water does not enter another water body, other than the initial source of extraction.
- .6 ESO may require water trucks to be cleaned prior to moving between sites within the Parks to mitigate the risk of cross- contamination of water bodies.

3.3 CLEARING AND GRUBBING

- .1 Clearing, grubbing and/or tree removal is only permitted during the migratory bird least risk window, which is approximately **September 1 to April 14** in Banff National Park or as confirmed by the ESO. A RAP must be obtained prior to any vegetation removal. Clearing, grubbing and/or tree removal will only be permitted outside of the migratory bird least risk window upon written approval by the Departmental Representative.
- .2 If the Contractor wants to conduct clearing, grubbing and/or vegetation removal within the migratory bird window then they must conduct a bird nest sweep.
 - .1 The bird nest sweep must be conducted by the Contractor's QEP.

- .2 If the QEP is different from the one specified in the EPP then a resume must be submitted five (5) days before any bird nest sweep is conducted.
- .3 Clearing, grubbing and/or vegetation removal must be performed within five (5) days of conducting a bird nest sweep.
- .4 The completion of a bird nest sweep does not guarantee that the Contractor will be allowed to perform any clearing, grubbing and/or vegetation removal during the migratory bird window, the acceptance of any clearing, grubbing and/or vegetation removal will reside with the ESO.
- .5 All cost associated with the bird nest sweep will be considered incidental to the Contract.

3.4 SPECIFIC CONCERNS RELATIVE TO SENSITIVE SITES AND ACTIVITIES

- .1 Grade construction and paving activity near streams, rivers, wetlands, water bodies or watercourses must be undertaken with care to prevent damage to aquatic and riparian habitat or associated tree and plant communities. A large and mobile spill kit shall be kept at hand during construction at these sensitive sites in proximity to watercourses.

END OF SECTION

01 45 00 QUALITY CONTROL**Part 1 General****1.1 REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A23.2-04, Methods of Test and Standard Practices for Concrete
- .2 BC MoTI – Standard Specifications for Highway Construction Manual (latest edition)
- .3 AT - Standard Specifications for Highway Construction (latest edition)

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 All Quality Control is to be done by the Contractor.
- .2 This work shall be incidental to the Contract and will not be measured for payment.

1.3 QUALITY CONTROL PLAN

- .1 Contractor's Quality Control Plan shall be in accordance with AT - Standard Specifications for Highway Construction (latest edition).
- .2 Submittals in accordance with Section 01 33 00 – Submittals Procedures.

1.4 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 Testing all structural concrete, grout, reinforcing steel, asphalt concrete pavement, structural backfill, corrugated steel culverts, miscellaneous metals, concrete barriers, and all source acceptance testing; and
 - .2 All testing specified in the Contract Documents; and
 - .3 Any other testing required as a condition for deviation from the specified Contract procedures.
- .2 Testing proposed shall be based on testing requirements in the latest edition of the AT Standard Specifications for Highway Construction in collaboration with current ASTM and CSA Standards or as stated below.
- .3 All Quality Control technicians are to be certified by Canadian Council of Independent Laboratories (CCIL) for testing asphalt, aggregates and concrete, as applicable to the testing requirements for that item of Work.
- .4 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 (1) Day after completion of testing, submit test results to the Departmental Representative; and

- .4 Identify test reports with the name and address of the organization performing all tests, and the date of the tests.
- .5 Approval of tested samples will be for characteristics or use named in such approval and shall not change or modify any Contract requirements.
- .6 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
- .7 The minimum frequency for Quality Control testing during embankment construction will be as follows:

CONSTRUCTION TYPE	TEST TYPE	MINIMUM FREQUENCY OF TESTS
Embankment construction with fine grained or granular soil	Standard Proctor by: ASTM D698	1 per change in material or 1 per week, whichever is more frequent
	Field density by: ASTM D1556 / D1556M – Sand Cone ASTM D2167 – Balloon ASTM D6938 – Nuclear	1 per 1000 m ² per lift, spaced randomly across full width of embankment
	Proof Roll and or Rutting Test	As required by the Departmental Representative
Embankment construction with blasted rock or oversize granular	Field observation with daily field report; and a summary report signed and stamped by the Contractor's Engineer.	Full time during blasted rock placement
Road structure construction with granular materials	Standard Proctor by: ASTM D698	1 for each material type and 1 for each accepted change in material gradation.
	Field density by: ASTM D1556 / D1556M – Sand Cone ASTM D2167 – Balloon ASTM D6938 – Nuclear	3 tests per 50 m per lift; on centreline and on lt and rt fog lines
	Proof Roll and or Rutting Test	As required by the Departmental Representative
Culvert Installation	Field Density	Minimum three per 300 mm lift per culvert, spaced through the length and depth of the culvert backfill
Tests Prior to Concrete Discharge	C 143 / C143M-08 Slump of Hydraulic-Cement Concrete CSA A23.2-7C Air Content of Plastic Concrete by the Volumetric Method	One per truck load.
Tests During Concrete Pour	C 39 / C 39M-05e2 Compressive Strength of Cylindrical Concrete Specimens	Minimum of one cylinder for each pour and at least for every 30 cubic metres of concrete being poured.

	ASTM Test	*Minimum Frequency
Tests During Aggregate Production	ASTM C136 / C136M – Standard Test Method for	-Split Stockpiles: 1 for each stockpile for every 2 hours of production.

Tests During Aggregate Production (cont.)	Sieve Analysis of Fine and Coarse Aggregates Or C 117 – Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing	- One main stockpile: for every 300 tonnes. - Blend Sand: 1 for every 100 tonnes during stockpiling. - Natural filler: 1 for every 50 tonnes during stockpiling.
	ASTM D5821 – Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate	Every second coarse aggregate sieve test
	C 117 – Sieve Analysis of Aggregates by Washing (Modified for Field Lab)	1/shift on reduced sample obtained from combined samples from the crusher
Asphalt Products Tests	Tack and Prime	Mill certifications.
Tests during Asphalt Plant Mixing	C 136 / C 136M – Dry Sieve Analysis of Aggregate	1 of combined aggregate (off the belt) every 300 tonnes.
	D 2216 – Moisture Content	Aggregate: 2 tests/Lot Asphalt mix: 1 on first Sub-Lot and every second day.
	C 117 – Sieve Analysis of Aggregates by Washing (Modified for Field Lab)	1/shift on reduced sample obtained from combined samples from the plant cold feed.
	D 5581 – Resistance to Plastic Flow Using Marshall Apparatus	One set of three briquettes for 1,200 tonnes or Lot, whichever is less.
	D 6307 – Asphalt Extraction, Ignition Method	One/Sub-Lot.
	D 5 / D 5M – 13 Penetration of Bituminous Materials	One per Manufacturer's Batch. Samples should be taken for every 3000 tonnes of mix production.
	D 2171 / D 2171M – Viscosity	Contractor's Option
	D 2041 / D 2041M – Maximum Theoretical Density	One per sub-lot
Test During Asphalt Paving for Density Testing	AASHTO T 245- Resistance to Plastic Flow Using Marshall Apparatus	One 15 kg sample for every Sub-Lot or minimum 1/day for field testing.
	Core Samples	At start, two cores for each Sub-Lot. After rolling pattern established, only one core for each Sub-Lot. All Marshall mix cores to be a minimum of 100 mm diameter, Superpave mixes shall require minimum 150 mm diameter cores.

**These are the minimum frequencies and the Contractor is responsible to assess the need to increase testing frequency, where aggregate source is not uniform or any other condition exists that may warrant it. QC frequencies may be reduced below this level, subject to the Departmental Representative's authorization, should the Contractor's QC plan be proven very effective.*

** Passing the minimum quantity of QC tests does not relieve the Contractor from the obligation of meeting the Contract requirements and any identified non-compliant works or products shall be rectified by the Contractor at their cost.*

1.5 CONTRACTOR'S QUALITY CONTROL PROGRAM

- .1 The Contractor shall prepare a Quality Control Program. The purpose of the program shall be to ensure the performance of the Work in accordance with Contract requirements.
- .2 The Quality Control Program shall be described in a Quality Control Plan. The Contractor shall submit the Manual to the Departmental Representative for review in accordance with Section 01 33 00 - Submittal Procedures. The Manual shall develop a logical system for tracking and documenting the Quality Control of the Work. A systematic format and a set of procedures patterned on a recognized Quality Control Standard will be acceptable, subject to review by the Departmental Representative.
- .3 The Quality Control Plan shall include the following information:
 - .1 Distribution list, providing a list of names to whom the Manual shall be distributed;
 - .2 Title page, identifying the Contract, Contractor and copy number;
 - .3 Revision page, identifying the revision number and date of the Manual;
 - .4 Table of contents;
 - .5 Revision control, tabulating the revision number, date of revision, description of revisions and authorized signature;
 - .6 Details of measuring and testing equipment including methods and frequency of calibration;
 - .7 Purchasing details of all materials and equipment including procurement documents and vendor's Quality Control Program standards;
 - .8 Procedures for inspection of incoming items, in-process inspection and final inspection and tagging of all supply items;
 - .9 Details of special processes as identified by the Departmental Representative, including qualifications of personnel and certification;
 - .10 Procedures for shipping, packaging and storage of materials;
 - .11 Procedures for maintaining quality records and Statements of Compliance, including filing and storage of documents for a period of one year after Completion of the Works;
 - .12 Details of any non-conformance, including identification and recording of deficiencies, tagging procedures for "HOLD" or "REJECT" items, and final disposition of non-conformance forms by the Quality Control Manager;
 - .13 Inspection and test checklists, including tabulated checklists describing all manufacturing and delivery activities such as Inspection or Test, frequency of tests, description of tests, acceptance criteria of tests, such as verification,

witnessing or holding tests and sign-off by the Quality Control Manager and the Departmental Representative, if the Departmental Representative witnesses the tests; and

- .14 Forms used to ensure the application of the inspection and test checklist requirements. These forms shall be identified in the checklists and describe all testing requirements for Contract Document compliance.
- .4 The Contractor shall appoint a full time qualified and experienced Quality Control Manager, 100% of their time dedicated to quality matters and who will report regularly to the Contractor's management at a level that shall ensure that Quality Control requirements are not subordinated to manufacturing, construction or delivery. The Quality Control Manager shall be empowered by the Contractor to resolve quality matter and shall be onsite for the duration of the Contract.
- .5 The Quality Control Plan shall include samples of all forms to be filled in by the Quality Control Inspectors. All forms shall be signed by the Quality Control Manager and submitted promptly to the Departmental Representative who will add its review signature.
- .6 An independent check of all Work shall be performed by the Contractor. The Contractor shall appoint Quality Control Inspectors to ensure compliance of products and workmanship with Contract requirements. The same personnel may not be used to perform a given task and to check the quality and accuracy of the task.
- .7 At completion of the Work a bound and itemized copy of all Quality Control documents and reports shall be prepared by the Contractor's Quality Manager and submitted to the Departmental Representative.

1.6 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 will 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.
- .5 The Departmental Representative will provide the Contractor with an Approval to Proceed document, after performing an audit and confirming all requirements are met, as stated in Section 01 71 00 - Examination and Preparation. The Approval to Proceed must be signed by the Departmental Representative and the Contractor's representative before proceeding to the next layer.
- .1 The Contractor shall provide a minimum of 48 hours notice to the Departmental Representative to arrange for an audit and Approval to Proceed.

1.7 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.

1.8 ACCESS TO WORK

- .1 Allow inspection / testing agencies access to Work, including but not limited to: off site manufacturing and fabrication plants, QC testing facilities and asphalt plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.9 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.

1.10 NON-CONFORMANCES

- .1 A Non-Conformance can relate to any item within the Contract including but not limited to: materials testing, lines and levels, products, design-build items, traffic accommodation, quality control, environmental, health and safety, and other general procedural matters including communication protocols.
- .2 Contractor's Internal Non-Conformance Report (NCR):
 - .1 Should the Contractor's QC reporting indicate that the Work is not in conformance, the Contractor's QC Manager shall issue an internal Non-Conformance Report (NCR) to the Contractor, with a copy to the Departmental Representative, including a response time.
- .3 The Contractor shall then respond to the QC Manager, with a copy to the Departmental Representative, with respect to the NCR, within the specified time, with proposed resolutions and corrective actions. The Contractor and/or the QC Manager shall consult with the Departmental Representative on the resolutions.
- .4 The Departmental Representative will accept or reject the proposed resolution and corrective action proposal.
- .5 Payment for the Work itself may be withheld until the NCR issue is resolved.
- .6 Owner Issued NCR:
 - .1 Should the Quality Assurance reporting indicate that the Work is not in conformance, the Departmental Representative will issue to the Contractor a NCR, including a response time.

- .2 The Contractor shall then respond to that NCR, within the specified time, with proposed resolutions and corrective actions.
- .3 The Departmental Representative will accept or reject the proposed resolution and corrective action proposal.
- .4 Assurance testing and inspection will be performed to determine if the corrective action has provided an acceptable product. Acceptance and rejection will continue until the Departmental Representative determines that a quality product has been achieved.
- .5 Payment for the Work itself may be withheld until the NCR issue is resolved.
- .7 The Completion Certificate will not be issued if there are any unresolved Non-Conformance Reports.
- .8 **Appealing an NCR:**
 - .1 If the Contractor disputes the validity of a finding in an NCR, the Contractor may file an appeal with the Departmental Representative. The Departmental Representative and the Contractor Representative will use all reasonable efforts to refine the area of dispute and to resolve the determination of conformance with the Contract.
 - .2 If the Departmental Representative and the Contractor Representative cannot come to a mutually agreeable resolution, the Work that is the subject of the Non-Conformance Report shall be re-evaluated by an independent third-party, selected by the Departmental Representative in consultation with the Contractor, at a test frequency equivalent to twice that specified in the Contract or to such other frequency as may be mutually agreed between the Departmental Representative and the Contractor.
 - .3 If the appeal testing confirms the non-conformance determination, all appeal testing costs will be borne by the Contractor. If the appeal testing shows that the Work did in fact meet the requirements of the Contract, all appeal testing costs will be borne by the Owner.

1.11 OPPORTUNITIES FOR IMPROVEMENT

- .1 Should the QA review indicate that the Work is not in conformance, but the variance is deemed minor by the Departmental Representative, the Departmental Representative may issue an Opportunity for Improvement (OFI) report.
- .2 The Contractor is encouraged to review the findings and undertake such modifications to the QC Plan and the work procedures as necessary to address the issue.

1.12 REJECTED WORK

- .1 Remove defective Work, whether as a result of poor workmanship, use of defective products or damage and whether incorporated in Work or not. Replace or re-execute defective Work in accordance with Contract Documents, through the NCR process.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in the opinion of the Departmental Representative, it is not expedient to the greater benefit of the Project to remedy defective Work or Work not performed in accordance

with Contract Documents, the Owner may deduct from the Contract Price the difference in value between the Work performed and that called for by Contract Documents, the amount of which shall be determined by Departmental Representative.

1.13 REPORTS

- .1 In accordance with Section 01 33 00 - Submittals Procedures.

1.14 TESTS AND MIX DESIGNS

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

1.15 MILL TESTS

- .1 Submit mill test certificates as required in the Contract Documents.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 52 00 CONSTRUCTION FACILITIES**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

- .1 All work of this section shall be incidental to Contract and will not be measured for payment.

1.2 INSTALLATION AND REMOVAL

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

1.3 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.

1.4 CONSTRUCTION PARKING

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

1.5 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 Park. Cost of security personnel is incidental to the Work and no additional payment will be made.
- .2 It is strongly advised that the Contractor consider the provision of security personnel.

1.6 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.

1.7 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations, ordinances and the EPP.

- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.8 CONSTRUCTION SIGNAGE

- .1 To be in accordance with Section 01 35 31 - Special Procedures for Traffic Control.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 56 00 TEMPORARY BARRIERS AND ENCLOSURES

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 INSTALLATION AND REMOVAL

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

1.3 HOARDING

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

1.4 GUARDRAILS AND BARRICADES

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

1.5 WEATHER ENCLOSURES

- .1 Not used.

1.6 DUST TIGHT SCREENS

- .1 Not used.

1.7 ACCESS TO SITE

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

1.8 PUBLIC TRAFFIC FLOW

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

1.9 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 In accordance with Section 01 14 00 - Work Restrictions.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED

END OF SECTION

01 61 00 COMMON PRODUCT REQUIREMENTS**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

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

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 the Contract Documents.
- .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 in accordance with Section 01 45 00 – Quality Control.
- .4 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 In accordance with Section 01 45 00 - Quality Control.
- .2 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.
- .3 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. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in Contract Documents, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 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.
- .7 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .8 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative whose decision is final.

1.4 AVAILABILITY

- .1 Immediately after signing the 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, alteration, 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 the Contract Documents, 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 Contract Documents 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 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.

1.9 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.

1.10 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.

1.11 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 that cause spalling or cracking of material to which anchorage is made are not acceptable.

1.12 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

- .1 Materials shall be in accordance with AT - Standard Specifications for Highway Construction (latest edition), or as directed by the Departmental Representative.

Part 3 Execution

- .1 Work shall be completed in accordance with AT - Standard Specifications for Highway Construction (latest edition), or as directed by the Departmental Representative.

END OF SECTION

01 71 00 EXAMINATION AND PREPARATION**Part 1 General****1.1 REFERENCES**

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

1.2 MEASUREMENT AND PAYMENT PROCEDURES

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

1.3 QUALIFICATIONS OF SURVEYOR

- .1 Qualified surveyor, licensed to practise in Place of Work, acceptable to Departmental Representative.

1.4 SURVEY REQUIREMENTS

- .1 The Departmental Representative shall identify the location of all work sites.
- .2 The Contractor shall be responsible for all other survey and layout work identified in the Contract Documents and as required to complete the works including but not limited to:
 - .1 Establishing lines and levels, locate and layout, by instrumentation.
 - .2 Staking for grading, cut and fill.
 - .3 Staking for slopes and top of embankment, sub-base course, base course and centreline for paving.
 - .4 Establishing culverts, catch basin structures, invert elevations and locations.
 - .5 Incidental field adjustments, such as staking of embankments and culverts to match post-stripping ground lines and actual field drainage patterns.
 - .6 Layout for interim and final lane markings, including those for intersection treatments
 - .7 Re-establishing the start and finish of "No Passing Zones", Passing Lanes or at new limits as directed by the Departmental Representative
 - .8 Re-establishing Reference Survey Control Points that are in danger of being damaged or destroyed.
 - .9 Ensuring survey instruments are properly calibrated prior to commencing Works.
- .3 Survey Accuracy:
 - .1 All survey work shall be tied into the existing Control Monument Network with grid coordinates in UTM Zone 11 NAD 83. Departmental Representative will provide information on Control Points.
 - .2 All traverses will be closed and balanced. All level loops and traverses will be tied into the Control Monument Network.
 - .3 Secondary Control Points will be tied into and relative to Control Monument Network. Accuracy for Control Point surveys shall be to second order:
 - .4 Horizontal shall be less than $r = 5(d+0.2)$ where "r" is in cm and "d" is in km

- .5 Vertical shall be less than $0.008 \times \sqrt{k}$ where k is distance in kilometers.
- .4 Staking accuracy shall be:
 - .1 In bush areas, all elevations shall be within 100 mm of correct elevation. In open ground, all elevations shall be within 25 mm of correct elevation.
 - .2 In bush areas, all horizontal locations shall be within 100 mm of Design. In open ground, all horizontal locations shall be within 50 mm of Design.
 - .3 On highway surface, all elevations shall be within 10 mm of correct elevation.
 - .4 All structures shall be within 20 mm of Design elevation and horizontal
- .5 The Departmental Representative will complete quality assurance construction survey measurements to verify grades and alignment, interim survey re-measurements for excavation limits and final neat line measurements to verify payment quantities for completed works.
- .6 Contractor to provide cut sheet reports for all layers of road template to demonstrate that the defined construction tolerances have been achieved before advancing to the next stage. Departmental Representative to verify that they are correct by performing an audit.
 - .1 Shots are to be taken at 10m intervals along centreline, mid-points and shoulders.
 - .2 The Departmental Representative will provide the Contractor with an Approval to Proceed document in accordance with Section 01 45 00 - Quality Control.

1.5 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.

1.6 SUBMITTALS

- .1 In accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit name and address of Surveyor to Departmental Representative.
- .3 On request of Departmental Representative, submit documentation to verify accuracy of field engineering work.
- .4 On request of Departmental Representative, submit survey data.
- .5 Submit certificate signed by surveyor certifying those elevations and locations of completed Work that conform to the Contract Documents.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 CROSS SECTIONS

- .1 Cross sections will be taken at a maximum of 20 metre intervals. Additional cross sections will be taken where variations occur, including but not limited to: drainage channels, structures and/or other obstructions.

- .1 Cross section intervals will be established on OG and are to be used for the duration of the project.

3.2 LAYOUT REQUIREMENTS

Survey Layout	Maximum Interval	Product	Tolerances
Right-of-way	At each point of deflection and at sufficient points between as to be continuously visible.	Stake showing station and offset, or flagging.	Sufficient accuracy to prohibit encroachment into adjoining properties.
Clearing and Grubbing	Same as Right-of-way.	Same as Right-of-way.	Sufficient accuracy to prohibit encroachment into adjoining properties.
Grading – Slope Stakes	10 m in rock cuts; 20 m in all other cases. (100 m for machine-controlled grading)	One slope stake each side, at top of cut or bottom of fill, showing station, offset, vertical dimension to subgrade, and slope, plus cut/fill transition stake. Non-standard ditches will be staked separately. An additional slope stake, where applicable, at the top of a rock cut after the removal of overburden.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m Vertical accuracy 25mm
Grading – Subgrade	20 m. (100 m for machine-controlled grading)	One stake at each side of the subgrade, showing station, offset and grade at the stake location, one at each break point, and one at centreline.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m Vertical accuracy per Specifications
Top of Sub-base	20 m. (100 m for machine-controlled grading)	One stake at each side of the sub-base course, showing station, offset and grade at the stake location, one at each break point, and one at centreline.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m Vertical accuracy per Specifications
Each Base Course	20 m. (100 m for machine-controlled grading)	One stake at each side of the base course, showing station, offset and grade at the stake location, one at each break point, and one at centreline.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m Vertical accuracy per Specifications
Final Base Course only	20 m. (100 m for machine-controlled grading)	One stake at each side of the base course, showing station, offset and grade at the stake location, one at each break point, and one at centreline.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m Vertical accuracy per Specifications
Culverts	Inlet and outlet.	One stake at each end of the culvert, plus an offset line, showing invert elevation and station.	+/- 0.30m – up or down chainage

			Offset from CL accuracy required +/- 0.030m Vertical tolerance 0.020m
Storm Drainage, Subdrain, Watermain or Sanitary Sewer		Stakes showing locations of manholes, catch basins and other structures, and invert locations of pipe inlets and outlets, as well as stations.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m Vertical tolerance 0.020m
Paving	20 m	Stake showing station and offset, reference points (eg. centerline offset, barrier, changes in paint lines etc.)	N/A
Level Course / Profile Paving	5 m grid pattern	5 m grid on pavement break points with cuts / fills.	N/A
Profile Milling	5 m grid pattern	5m grid on pavement break points with cuts / fills.	N/A
Superelevation change	At percentage change points	Stakes showing station and superelevation percentage.	N/A
Concrete Barriers	Same as paving.	Same as paving.	Offset from CL accuracy required +/- 0.030m
Signs		Stake at each sign location with stationing and sign designation.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m
Pavement Marking	10 m, changes in line type, symbols	Paint dots and lines	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m

- .1 This table shows layout details for general situations; particular circumstances may require more or less staking.
- .2 The right-of-way limit will be laid out only where there is the work, including utility relocation, to be performed within three metres of it.

3.3 MACHINE-CONTROLLED GRADING

- .1 Machine controlled grading may be used as a substitute for conventional grade staking under the following conditions:
 - .1 The equipment utilized shall be capable of meeting the Design vertical and horizontal tolerances and the use of machine-controlled equipment will in now way relieve the Contractor of the requirement to meet the specified tolerances.
 - .2 The Departmental Representative may require the Contractor to revert to conventional staking methods at any point during construction if the machine-controlled grading is producing unacceptable Work and the cost of doing so will be borne by the Contractor.
 - .3 The Departmental Representative may provide the Contractor the available electronic files of Design information without warrant with respect to the suitability for the purposes intended by the Contractor and the cost of making them suitable shall be borne by the Contractor. The Contractor remains

responsible for completing the works as described in the Contract Documents, even in the event that the electronic Design information provided is not consistent with the Contract Documents.

- .2 As a minimum the Contractor shall provide an orientation stake every 100 metres showing station, offset and grade.

END OF SECTION

01 74 11 CLEANING**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative and in accordance with Section 01 35 43 - Environmental Procedures. Do not burn waste materials on site.
- .3 Clear snow and ice in accordance with Section 01 35 31 – Special Procedures for Traffic Control.
- .4 Keep roadway clean in accordance with Section 01 35 31 – Special Procedures for Traffic Control.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 One bear proof container will be provided by Parks Canada. Contractor to provide any additional on-site bear proof containers they require for collection of waste materials and debris.
- .7 Remove waste material and debris from site at end of each working day.
- .8 Dispose of waste materials and debris off site in accordance with Section 01 35 43 - Environmental Procedures.
- .9 Store volatile waste in covered metal containers and remove from premises at end of each working day.
- .10 Provide adequate ventilation during use of volatile or noxious substances.
- .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12 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.
- .13 Maintain excavation and trenches free of debris and waste.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Prior to final review, remove surplus products, tools, construction machinery and equipment.

- .3 Remove waste products and debris including that caused by Owner or other Contractors.
- .4 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Inspect finishes and ensure specified workmanship and operation.
- .7 Remove dirt and other disfiguration from exterior surfaces.
- .8 Sweep and wash clean paved areas.
- .9 Remove all construction debris and accumulated dirt from completed drainage systems; manholes; catch basins; and all piping.
- .10 Clean hydroseed / hydromulch overspray from buildings, pavement, fences, light poles, and other unintended surfaces.
- .11 Clean and regrade occupied space and/or reshape disturbed material stockpiles within pits as directed by and to the satisfaction of the Departmental Representative.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

01 77 00 CLOSEOUT PROCEDURES**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Contractor and all subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
 - .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**2.1 NOT USED.****Part 3 Execution****3.1 NOT USED.****END OF SECTION**

01 78 00 CLOSEOUT SUBMITTALS**Part 1 General****1.1 MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 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 – Closeout Procedures.

1.3 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 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 this Project Manual. 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.

1.4 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque Drawings and in copy of the Project Manual.
- .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.

1.5 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.

1.6 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible personnel.
- .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

2.1 NOT USED.

Part 3 Execution

3.1 NOT USED.

END OF SECTION

02 41 13 ASPHALT PAVEMENT REMOVAL**Part 1 General****1.1 DESCRIPTION**

- .1 Removal of existing asphalt pavement to depths and extents shown in the Contract Documents and as accepted by the Departmental Representative.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measure for payment for Partial Depth Asphalt Removal (Milling) will be the square metres of asphalt pavement of existing roadway actually removed and stockpiled in Mannix Pit in accordance with the Contract Documents or as directed by the Departmental Representative.
 - .1 Payment for Milling shall be made under **“Unit Price Item 1a - Asphalt Pavement Removal – Partial Depth Milling”** and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
 - .2 Sawcutting, if required, will be considered incidental to the unit price item(s), regardless of the number of passes required to complete the Work, as per the Contract Documents.
 - .3 Payment per square metre of asphalt removal, whether partial or full depth, will remain the same, regardless of the number of passes required to complete the Work.
 - .4 Items considered incidental to the Work include, but are not limited to:
 - .1 All operations involved in milling and full depth removal including but not limited to;
 - .1 Survey, cold milling or excavating, sweeping, loading, hauling, stockpiling and/or disposal and cleaning of remaining pavement surface.
 - .2 Loading, hauling and stockpiling millings at Mannix Pit as directed by the Departmental Representative.
 - .3 Overhaul.
 - .4 Asphalt Concrete Pavement temporary ramp placing and subsequent removal at milled tie-in locations.
 - .5 Cleaning of existing pavement shoulder, whether via sweeping or other methods.
 - .6 Maintaining milled areas, including drainage, until completion of asphalt paving.
 - .7 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
 - .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 for remobilization of equipment if all milling work cannot be completed at once.

1.3 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 - Quality Control.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 Submittal Procedures.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.

1.6 DEFINITIONS

- .1 Profile Milling: Removal of asphalt concrete pavement to an accurate depth of cut, profile and cross slope and shall include loading the milled material directly into trucks.
- .2 Partial Depth Milling: Removal of asphalt concrete pavement to specified depths and widths, other than Profile Milling.

Part 2 Products**2.1 MATERIALS**

- .1 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, the Contractor shall inspect and verify with the Departmental Representative, all areas, depths and lines of asphalt pavement to be removed.
- .2 Placement of gravels to level the running surface for the milling machine, if required, will be considered incidental to the Work and no additional payment will be made.
- .3 Have appropriate Traffic Control measures in accordance with Section 01 35 31 - Special Procedures for Traffic Control.

3.2 PROTECTION

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

3.3 REMOVAL

- .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 Partial Depth Asphalt Pavement Removal by milling to extents shown on the IFC Drawings or as established by Departmental Representative in field:
 - .1 Use self-powered equipment and methods of removal and hauling which do not damage or disturb underlying roadway structure.
- .3 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel or other materials.
 - .1 Provide for suppression of dust generated by removal process to ensure a dust free Work Site.
- .4 To tie in 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 the Contract Documents.
- .5 At mill and fill locations, remove existing asphalt to the depths, lengths and width specified in the Contract Documents and as established by Departmental Representative in field.
- .6 If the base course is disturbed by milling operations the Contractor will be required to rectify the base course, to the acceptance of the Departmental Representative, at the Contractor's cost.
- .7 In low areas where water may pond, the Contractor shall cut drainage channels through the shoulders to prevent water from collecting in the milled areas, prior to opening the lane(s) to traffic, as directed by the Departmental Representative.
- .8 The maximum delay between the area cold milled and the completion of asphalt paving of the same area will be seven (7) days. The Contractor shall be responsible for maintaining the milled surface for the travelling public as directed by the Departmental Representative.

3.4 STOCKPILING OF MATERIAL

- .1 The Contractor shall place removed asphalt material as follows:
 - .1 If requested, full depth asphalt removed by methods other than milling shall become property of the Contractor and shall be disposed of outside of the Parks at a Contractor determined location at the Contractor's cost.
 - .2 Milled asphalt material shall remain the property of Parks Canada and is to be hauled and stockpiled at Mannix Pit and/or at other locations designated by the Departmental Representative.
- .2 Millings shall be stockpiled by a loader and in such a manner as to prevent consolidation which means exercising caution and minimizing running equipment on the stockpiles. Trucks and trailers shall not drive on the pile.
- .3 The height of the pile shall not exceed the height of the loader bucket.
- .4 The Contractor shall be responsible to remove any contamination of the stockpile millings.

3.5 FINISH TOLERANCES

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

3.6 SWEEPING

- .1 Sweeping shall be done using the same lane closures as the milling operation and all loose material must be removed prior to opening the lane(s) to traffic.

- .2 Sweep remaining asphalt pavement surfaces clean of debris resulting from removal operations using rotary power brooms and hand work and brooming as required. No extra payment will be made for sweeping or associated hand work.

END OF SECTION

02 81 01 HAZARDOUS MATERIAL**Part 1 General****1.1 REFERENCES**

- .1 Export and Import of Hazardous Waste Regulations (EIHWR Regulations), SOR/92-637.
- .2 National Fire Code of Canada 1995.
- .3 Transportation of Dangerous Goods Act, 1992 (TDG Act) [1992], (c. 34).
- .4 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).

1.2 MEASUREMENT AND PAYMENT PROCEDURES

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

1.3 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.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 - Submittal Procedures.
- .2 Retain current Material Safety Data Sheet (MSDS) for each hazardous material required on site. Submit MSDS to Departmental Representative upon request.

1.5 DELIVERY, 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.

1.6 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 this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.
- .2 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
- .3 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.
- .4 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.
- .5 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .6 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

END OF SECTION

10 14 53 TRAFFIC SIGNAGE**Part 1 General****1.1 DESCRIPTION**

- .1 Removal, disposal, salvage, supply and installation and relocation of permanent regulatory and custom traffic signs as required to complete the Work as specified in the Contract Documents and as directed by the Departmental Representative.

1.2 REFERENCES

- .1 Parks Canada Exterior Signage Standards and Guidelines (latest edition)
- .2 ASTM A276, Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
- .3 ASTM B209M, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .4 ASTM B210M, Specification for Aluminum-Alloy Drawn Seamless Tubes.
- .5 ASTM B211M, Specification for Aluminum and Aluminum-Alloy Bar, Rods and Wire.
- .6 CAN/CSA-G40.21 Structural Quality Steels.
- .7 CAN/CSA-G16-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .8 CAN/CSA-O80 Series, Wood Preservation.
- .9 CSA O121M, Douglas Fir Plywood.
- .10 CSA W47.2, Certification of Companies for Fusion Welding of Aluminum.
- .11 CGSB1-GP-12c-65, Standard Paint Colours:
- .12 CAN/CGSB-1.28, Alkyd, Exterior House Paint.
- .13 CAN/CGSB-1.59, Alkyd, Exterior Gloss Enamel.
- .14 CAN/CGSB-1.94-M89, Xylene Thinner (Xylol).
- .15 CAN/CGSB-1.99-92, Exterior and Marine Phenolic Resin Varnish.
- .16 CAN/CGSB-1.104-M91, Semigloss Alkyd Air Drying and Baking Enamel.
- .17 CAN/CGSB-1.132-M90, Zinc Chromate Primer, Low Moisture Sensitivity.
- .18 CGSB 1-GP-189M-78, Primer, Alkyd, Wood, Exterior.
- .19 CGSB 31-GP-3M-88, Corrosion Preventive Compound, Cold Application, Soft Film.
- .20 CGSB 62-GP-9M-80, Prefabricated Markings, Positionable, Exterior, for Aircraft Ground Equipment and Facilities.
- .21 CGSB 62-GP-11M-78, Marking Material, Retroreflective, Enclosed Lens, Adhesive Backing.
- .22 BC MoTI Standard Specification for Highway Construction (latest edition), Section 635.
- .23 AT - Standard Specifications for Highway Construction (latest edition).

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measure for payment for supply and installation of wood posts will be based on each complete unit installed in accordance with the Contract Documents and accepted by the Departmental Representative.

- .1 Payment will be made under “**Unit Price Item 2a – Traffic Signage – Supply and Install Single Wood Post**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .2 Measure for payment for supply and installation of signs and hazard markers will be by the sign face area in square metres for signs supplied and installed in accordance with the Contract Documents and accepted by the Departmental Representative.
 - .1 Payment will be made under “**Unit Price Item 2b – Traffic Signage – Supply and Install Sign Face**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .3 Measure for payment for reinstallation of existing sign faces as indicated will be based on each complete unit removed and reinstalled in accordance with the Contract Documents and accepted by the Departmental Representative.
 - .1 Payment will be made under “**Unit Price Item 2c – Traffic Signage – Reinstall Existing Signs**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .4 Measure for payment for relocation of existing signage as indicated will be based on each complete unit relocated in accordance with the Contract Documents and accepted by the Departmental Representative.
 - .1 Payment will be made under “**Unit Price Item 2d – Traffic Signage – Relocate Existing Signs**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .5 Measure for payment for removal and disposal of existing signage, markers, posts and bases as indicated will be based on each complete unit removed and disposed of outside of the Parks in accordance with the Contract Documents and accepted by the Departmental Representative.
 - .1 Payment will be made under “**Unit Price Item 2e – Traffic Signage – Remove and Dispose Existing Signs**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .6 Measure for payment for removal and salvage of existing signage, markers, posts and bases as indicated will be based on each complete unit removed and stockpiled in accordance with the Contract Documents and accepted by the Departmental Representative.
 - .1 Payment will be made under “**Unit Price Item 2f – Traffic Signage – Remove and Salvage Existing Signs**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .7 Items considered incidental to the Work include, but are not limited to:
 - .1 Filling holes as required for removal of existing sign bases/posts.
 - .2 Buried utility location and protection.
 - .3 Removal and salvage of existing amber beacon lights on existing signs and posts.

- .4 Disposal or salvage of existing sign faces identified for removal as identified on Drawings.
 - .5 Removal and salvage or disposal of existing sign posts for relocated sign faces as identified on Drawings.
 - .6 Relocation of existing sign posts for relocated sign faces.
 - .7 Survey and layout.
 - .8 Adjustment to existing sign heights as identified on Drawings.
 - .9 Temporary stockpiling and retrieval of signs.
 - .10 Bilingual signage requirements as detailed in the Contract Documents.
 - .11 Locating utilities in prior to commencing the Works.
 - .12 Dismantling of signage components for disposal, salvage, relocation or reinstallation.
 - .13 Hauling and placement of salvaged materials as directed by the Departmental Representative.
 - .14 Backfill, compaction and landscaping around sign posts.
 - .15 Disposal of damaged items as directed by the Departmental Representative.
 - .16 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
- .8 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.
- .9 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.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 Submittal Procedures.

1.5 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 - Quality Control.

1.6 DELIVERY, STORAGE AND HANDLING

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

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.

Part 2 Products

2.1 MATERIALS

- .1 The Contractor is responsible for supplying all materials associated with the installation of signage.

- .2 Traffic signs shall be supplied and installed in accordance with AT - Standard Specifications for Highway Construction (latest edition) and PCA sign standards unless specified otherwise in the Contract Documents.
- .3 In accordance with AT Standard Specifications for Highway Construction (latest edition), wooden sign posts shall be pine or spruce structural framing no. 2 or better, as per NLGA 1980 Rules Par. 123 C. Posts are to be CCA (Copper, Chromate, Arsenate) pressure treated in accordance with CSA 080.14 and CSA 081.1. Material supplied shall be free from wane and shall be clean and dry.
 - .1 Post sizes to be supplied shall be 100mm x 100mm dimensional lumber in lengths appropriate for installations based on the Contract Documents.
- .4 Sign hangers, where required, are to be properly sized for the sign face area in accordance with the Contract Documents. Sign hanger bases shall be of a type capable of sliding under the concrete barrier and shall be approved by the Departmental Representative prior to order and installation. Reuse of existing/salvaged bases and/or mounting hardware is subject to the approval of the Departmental Representative.
- .5 All custom signs to be accepted by the Departmental Representative prior to ordering.
- .6 All signs (permanent and temporary) shall be pictorial or in both English and French. Translations to be accepted by the Departmental Representative prior to ordering.

Part 3 Execution

3.1 INSTALLATION

- .1 In accordance with AT - Standard Specifications for Highway Construction (latest edition).
- .2 Supply, load, haul and install single wood posts and aluminum signs and bases in the following manner:
 - .1 Locating power / telephone / gas lines / services / utilities at all proposed sign locations.
 - .2 Perform layout and verify measurements to ensure signs are installed as per the Contract Documents; final locations to be approved by the Departmental Representative.
 - .3 Adjust the post height, as required, by using a cut off saw in accordance with AT - Standard Specifications for Highway Construction (latest edition). The Contractor will measure existing elevations at each site and calculate the cuts needed.
 - .4 Tolerance for the plumb of the posts is 0.01 m per 1.0 m or 1/4" on a two-foot carpenters level. Tolerances for the signs are 0.075 m for distance from asphalt and 0.075 m for height above white line.
 - .5 The Contractor is responsible for hauling all materials to and from each work site.
 - .6 Landscape so the top of the base is flush or 50 mm above finished grade.
 - .7 Remove all excess material from site, including boulders larger than 100 mm.
 - .8 All signs are to be covered until the Departmental Representative advises to uncover.

3.2 REINSTALL EXISTING SIGNAGE

- .1 The Contractor shall carefully remove, dismantle and stockpile posts and signs.
- .2 Install new wood posts as noted under 3.1 and per the Contract Documents in the same location as the original post (Replace existing post with new wood post). Final location to be approved by the Departmental Representative.
- .3 Reinstall sign face on new wood posts as per the Contract Documents or as directed by the Departmental Representative.
- .4 Fill holes with acceptable gravel and compact adequately.

3.3 RELOCATE EXISTING SIGNAGE

- .1 The Contractor shall carefully remove, dismantle and stockpile posts and signs.
- .2 Damaged posts and/or signs, if applicable, are to be removed and disposed by the Contractor at the Contractor's expense as noted in the Contract Documents.
- .3 Relocate and reinstall signage (post and/or sign face) as per the Contract Documents or as directed by the Departmental Representative.
- .4 Fill holes with acceptable gravel and compact adequately.

3.4 REMOVE AND DISPOSE

- .1 Signage and/or posts as noted in the Contract Documents shall be removed and disposed of at an appropriate location outside the Parks.
- .2 Recyclable materials shall be hauled to a recycling facility outside of Parks as accepted by the Departmental Representative at the Contract's expense.
- .3 Fill holes with acceptable gravel and compact adequately.

3.5 REMOVE AND SALVAGE

- .1 Signage and/or posts as noted in the Contract Documents shall be carefully dismantled and stockpiled at the HES Compound in Banff or as otherwise directed by the Departmental Representative.
- .2 Stockpile, load, haul and deliver salvaged materials to HES Compound in Banff (TCH km 15.1 EB; 600m West of intersection between Compound Rd and Hawk Ave), or as directed by the Departmental Representative.
- .3 Fill holes with acceptable gravel and compact adequately.

END OF SECTION

32 12 14 ASPHALT TACK COAT**Part 1 General****1.1 DESCRIPTION**

- .1 Supply and application of a liquid asphalt to ensure a bond between the surface being paved and the Asphalt Concrete Pavement lift, in accordance with the Contract Document and as directed by the Departmental Representative.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM D140, Standard Practice for Sampling Bituminous Materials.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.
- .3 AT - Standard Specifications for Highway Construction (latest edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Supply, delivery and application of tack coat will not be measured separately and will be incidental to “Unit Price Item 3 – Asphalt Concrete Pavement - EPS” and shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.

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 CONTROL

- .1 In accordance with Section 01 45 00 – Quality Control.
- .2 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 In accordance with Section 01 35 43 - Environmental Procedures.

- .2 Divert unused asphalt materials to facility capable of recycling materials outside of the National Parks.

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 designed, equipped, maintained and operated so that asphalt material can be:
 - .1 Maintained at even temperature.
 - .1 Applied uniformly on variable widths of surface up to 5 m.
 - .2 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.
 - .3 Distributed in uniform spray without atomization at temperature required.
 - .4 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.
 - .5 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.
 - .6 Equipped with an easily read, accurate and sensitive device that registers temperature of liquid in reservoir.
 - .7 Equipped with accurate volume measuring device or calibrated tank.
 - .8 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
 - .9 Equipped with nozzle spray bar, with operational height adjustment.
 - .10 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.
 - .1 Mix thoroughly by pumping or other method accepted by Departmental Representative.

- .4 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.
- .5 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.
- .6 Do not apply asphalt tack coat when air temperature is less than 10 degrees Celsius or when rain is forecast within 2 hours of application.
- .7 Apply asphalt tack coat only on unfrozen surface.
- .8 Evenly distribute localized excessive deposits of tack coat by brooming as directed by Departmental Representative.
- .9 Where traffic is to be maintained, treat no more than one half of width of surface in one application.
- .10 Keep traffic off tacked areas until asphalt tack coat has set.
- .11 Re-tack contaminated or disturbed areas as directed by Departmental Representative.
- .12 Permit asphalt tack coat to set before placing asphalt pavement.

END OF SECTION

32 12 16 ASPHALT CONCRETE PAVEMENT (EPS)**Part 1 General****1.1 DESCRIPTION**

- .1 Work shall consist of supplying, loading, hauling and placing AT Mix Type M1 Asphalt Concrete Pavement (EPS) as per the Contract Documents, or as directed by the Departmental Representative
- .2 Production of AT Designation 1 Class 12.5 (12.5mm) asphalt aggregate.
- .3 Perform and submit mix designs for AT Mix Type M1 Asphalt Concrete Pavement using Asphalt Cement PG 52-34 and 12.5mm Asphalt Aggregate. Mix design is subject to acceptance by the Departmental Representative.
- .4 Acceptance and/or rejection of all placed Asphalt Concrete Pavement shall be determined in accordance with the End Product Specifications.

1.2 REFERENCES

- .1 AT - Standard Specifications for Highway Construction (latest edition)
 - .1 Design Bulletin #13 – Revisions to Pavement Design Manual for Selection of ACP Mix Types and Asphalt Binder Grades (March 2017)
- .2 BC MoTI - Standard Specifications for Highway Construction (latest edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES**.1 Asphalt Concrete Pavement**

- .1 Measure for payment of Asphalt Concrete Pavement will be in tonnes by scale tickets submitted to and accepted by the Departmental Representative in accordance with the Contract Documents.
- .2 Payment for accepted Asphalt Concrete Pavement will be made under “**Unit Price Item 3a - Asphalt Concrete Pavement (EPS) – AT Mix Type M1 (12.5mm), PG 52-34 Asphalt Binder**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .3 Level Course as directed by the Departmental Representative shall not be measured separately for payment but shall be paid under “**Unit Price Item 3a- Asphalt Concrete Pavement (EPS) – AT Mix Type M1 (12.5mm), PG 52-34 Asphalt Binder**”.

.2 Unit Price Adjustments

- .1 Applicable unit price payment adjustments (additions or subtractions as applicable) shall be in accordance with AT – Standard Specifications for Highway Construction Section 3.50 – Asphalt Pavement Construction (EPS).
 - .1 With the exception of:
 - .1 Testing and Evaluation of Finished Pavement Surface Smoothness Using International Roughness Index (IRI)

Criteria which shall be as defined in Alberta Transportation's Special Provision SP_S301, and any current Special Provisions.

- .2 Smoothness testing to be arranged by the Departmental Representative.
- .3 Application Rate unit price payment adjustments to be in accordance with BC MoTI - Standard Specifications for Highway Construction Section 502 – Asphalt Pavement Construction (EPS).
- .4 Applicable unit price adjustments for Level Course shall apply only for Asphalt Content and Gradation.
- .2 Payment for Unit Price Adjustments shall be under **“Lump Sum Price Item 3 – Prime Cost Sum”**.
- .3 **Reclaimed Asphalt Pavement**
 - .1 Testing, production and usage of Reclaimed Asphalt Pavement (RAP) shall be considered incidental to **“Unit Price Item 3 – Asphalt Concrete Pavement – EPS”** and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .4 Items considered incidental to the Work include, but are not limited to:
 - .1 Production of asphalt aggregate.
 - .2 The movement of equipment and crew.
 - .1 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.
 - .3 Cleaning of existing pavement prior to paving, whether via sweeping or other methods.
 - .4 Survey and layout for asphalt concrete paving and milled rumble strips.
 - .5 Preparing asphalt mix designs (including anti-stripping test), in accordance with Section 01 45 00 Quality Control and Section 01 33 00 Submittal Procedures.
 - .6 Supply, delivery and incorporation of asphalt cement.
 - .7 Anti-stripping agent(s) and other additives including testing and reporting within the mix design as accepted by the Departmental Representative.
 - .8 Supply, installation, maintenance, calibration of weight scales and a scale house, or alternately electronic calibrated silo scales, at the plant by the Contractor.
 - .1 Contractor shall provide a scale person, as required, at their cost.
 - .9 Asphalt Concrete Pavement placing at milled tie-in locations
 - .10 Cleaning of existing pavement shoulder, whether via sweeping or other methods
 - .11 Adjustment of existing catch basin grates and manhole lids as accepted by the Departmental Representative
 - .12 Sloped paved shoulders in areas designated for overlay as described in this Section.

- .13 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures
- .14 Collection, storage, removal and disposal of asphalt plant dust outside of the National Parks.
- .15 Overhaul.
- .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.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 Submittal Procedures.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.

Part 2 Products

2.1 MATERIALS

- .1 PG 52-34 Asphalt Cement shall be used.
- .2 Asphalt Aggregate:
 - .1 Materials used shall be in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition).
 - .2 AT Designation 1 Class 12.5 Asphalt Aggregate is to be supplied from outside the Park.
- .3 Reclaimed Asphalt Pavement (RAP):
 - .1 RAP to be processed by crushing and/or screening into a consistent material with uniform gradation, AC content and other properties prior to being utilized in accordance with the AT Standard Specifications for Highway Construction Section 3.50 (latest edition).
 - .2 Use of processed Reclaimed Asphalt Pavement (RAP) material in hot mix asphalt construction is permitted to maximum 15% in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition) and as approved by the Departmental Representative.
 - .3 RAP sourced from locations other than the Bow Valley Parkway must be approved by the Departmental Representative prior to incorporating into the mix design. Only Classified RAP will be permitted.
 - .4 The Contractor shall fulfill or exceed the requirements of the BC MoTI Standard Specifications for Highway Construction SS 505 Appendix 1 – RAP Management Best Practices for the management of RAP materials from the time of collection through processing, mix design, and quality control practices during the production of asphalt mixtures containing RAP as confirmed through the Contractor's Quality Control documentation.

- .5 RAP testing is required in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition).
- .6 The Contractor shall process and crush the RAP so as to ensure compliance with all gradation requirements of their approved Job Mix Formula.
- .4 All additives (including anti-stripping agents) to be in accordance with the Approved Products List as published by AT.

Part 3 Execution

3.1 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 - Quality Control.
- .2 Contractor is responsible for all Quality Control required in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition) and Section 01 45 00 – Quality Control.
- .3 Contractor is to provide a full time Road Checker during all times of asphalt placement that shall be responsible for providing a daily Road Checker's Summary in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition).
- .4 The Road Checker's Summary shall be provided to the Departmental Representative no less than 24 hrs after the relevant shift end.
- .5 To assist in the Road Checker's role, the Contractor shall layout and stake stations at the appropriate intervals to achieve the desired accuracy throughout the Work Site. All survey and marking stakes shall be removed prior to completion of the Works.
- .6 The method of tests for asphalt appeal samples shall be the same method of tests conducted as during Quality Control / Quality Assurance testing.

3.2 METHODOLOGY

- .1 ACP placement:
 - .1 Asphalt concrete mix shall not be placed when the air temperature is below 4°C, or when rain is forecasted.
 - .2 Asphalt concrete mix shall be placed only on clean, dry, and unfrozen surfaces.
 - .3 Unless otherwise shown on the plans, the asphalt concrete mix shall be placed in the following lift thicknesses:
 - .1 in a single lift when the design compacted total thickness is 75 mm or less.
 - .2 in two or more lifts when the design compacted total thickness is greater than 75 mm. The lift thickness selection shall be determined by the Contractor except that:
 - .1 the maximum thickness of any lift shall be 75 mm.
 - .2 the minimum thickness of a final lift shall be 50 mm.
 - .3 On widenings, the thickness of asphalt concrete mix up to 75 mm may be placed in one lift. Over 75 mm thickness, the asphalt concrete shall be placed in two or more lifts.
 - .4 A pickup machine shall be used for all mainline highway lane paving.

- .2 The edge of pavement in areas designated for overly shall have sloped paved shoulders following the existing side slope for the length of the paving limits, except where there is guardrail or concrete barrier, and shall be constructed in conjunction with all lifts of ACP, as shown in the Contract Documents or as directed by the Departmental Representative.

3.3 EQUIPMENT, PLANT AND MIXING REQUIREMENTS

- .1 Execution of the Work shall be in accordance with AT - Standard Specifications for Highway Construction (latest edition).
- .2 The Contractor will be permitted to setup a Mobile Asphalt Plant or use a Stationary Asphalt Plant for this Project. If used, mobile asphalt plant shall be set up at Mannix Pit at the discretion and direction of the Departmental Representative.
- .3 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. In addition, Asphalt plant must comply with all environmental pollution control regulations applicable in the asphalt plant area. The plant operator must make daily inspections of the emission control components, to ensure proper working order and provide the most recent stack monitoring results for viewing by the Departmental Representative or their designate.

END OF SECTION

32 17 23 PAVEMENT MARKING**Part 1 General****1.1 DESCRIPTION**

- .1 Supply and installation of Pavement Markings in areas in accordance with the Contract Document and as directed by the Departmental Representative.
- .2 The Contractor shall complete a survey of the pre-existing pavement markings prior to their disturbance to ensure their ability to re-instate them accurately.

1.2 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)
 - .1 Material Safety Data Sheets (MSDS).
- .7 AT Standard Specification for Highway Construction (current edition)
- .8 AT Design Bulletin #18/2003
- .9 AT Typical Drawings
 - .1 CB6-3.52M1
 - .2 CB6-3.52M3
 - .3 CB6-3.52M4

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measure for payment for final line painting shall be in linear metres along the centre of the paint line regardless of width or line-gap ratio in accordance with the Contract Documents and accepted by the Departmental Representative.
- .2 Double center lines are to be measured as one line.
 - .1 Payment will be made under “**Unit Price Item 4a – Pavement Marking - Line Painting**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
 - .2 Gore area boundary lines shall be measured and paid for under “**Unit Price Item 4a - Pavement Marking – Line Painting**”.
- .3 Final pavement gore areas, hatching markings and stop bars shall be measured in square metres of paint work completed in accordance with the Contract Documents and accepted by the Departmental Representative.
 - .1 Payment will be made under “**Unit Price Item 4b – Pavement Markings – Gore, Stop Bars and Hatch Marking**” and the price(s) bid shall be full

- compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .4 Arrow markings shall be measured for payment per unit completed, regardless of the specific type or size in accordance with the Contract Documents and accepted by the Departmental Representative.
- .1 Payment will be made under “**Unit Price Item 4c – Pavement Marking – Arrows**” and shall include all labour, equipment and material to complete the work.
- .5 Removal of existing paint lines shall be incidental to “**Lump Sum Price Item 2 – Traffic Accommodation**”, in accordance with Section 01 35 31 – Special Procedures for Traffic Control, and no separate payment will be made to the Contractor.
- .2 Items considered incidental to the Work include, but are not limited to:
- .1 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Survey and layout.
- .3 Repair or removal and replacement of incorrect pavement markings as directed by the Departmental Representative shall be completed at the Contractor’s cost.
- .4 Final design Pavement Marking layout by string line, surveyor or other methods accepted by the Departmental Representative.
- .5 Temporary Pavement Marking in accordance with Section 01 35 31 - Special Procedures for Traffic Control.
- .6 Traffic Control required for this Work shall be incidental to “**Lump Sum Price Item 2 - Traffic Accommodation**” and no separate payment will be made.
- .7 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.

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative following material sample quantities in accordance with Section 01 33 00 – Submittal Procedures.
- .1 Two samples of each type of paint.
- .2 One sample of glass beads.
- .3 Sampling to CGSB1-GP-71.
- .3 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.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.

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.
 - .3 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.
- .2 Thinner: to CAN/CGSB-1.4-2000.
- .3 Glass beads:
 - .1 Overlay type: to CGSB1-GP-74M.

2.2 DELIVERY, 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 clean-up 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 (pavement, sealcoat, etc.) throughout the project, re-establishing centreline 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 by the Departmental Representative.
- .2 Temporary line markings must be placed on an offset from the permanent lane marking and must be removed once permanent markings are in place.
- .3 Centreline of undivided highway shall be marked throughout as “no passing” unless otherwise directed by the Departmental Representative.
- .4 Painted temporary lines are not permitted on the final surface.
- .5 Pavement markings for traffic detours shall be in accordance with Part 2 Products.

3.2 PERMANENT MARKINGS

- .1 Prior to any work affecting 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, unless shown otherwise in the Contract Documents or directed by the Departmental Representative.
- .2 Further to the key control pick-up, the Contractor shall also pick-up survey all Transverse and Chevron and Crosshatch Pavement Markings and upon completion of the final hard surfacing, re-establish those points, unless shown otherwise on the IFC drawings or directed by the Departmental Representative.
- .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 $\pm 50\text{mm}$ transversely and $\pm 100\text{mm}$ longitudinally. Longitudinal tolerances for intermediate points, when required, are $\pm 10\text{mm}$.
- .5 Permanent pavement markings are to be reinstated within two (2) weeks of paving completion, or earlier as acceptable to the Departmental Representative.

3.3 TOLERANCE

- .1 All painted lines shall not exceed a dimensional width of 110 mm for specified 100 mm wide line. No tolerance below 100 mm is allowed for the specified 100 mm wide line.
- .2 All painted lines shall not exceed a dimensional width of 210 mm for specified 200 mm wide line. No tolerance below 200 mm is allowed for the specified 200 mm wide line.
- .3 All painted direction dividing, lane dividing or continuity lines shall not exceed a maximum dimensional length deviation of $\pm 100\text{ mm}$ for specified 3 m length of line.
- .4 All spaces between painted direction dividing, lane dividing or continuity lines shall not exceed a maximum dimensional length deviation of $\pm 100\text{ mm}$ for specified 6 m or 3 m length of space.
- .5 All paint shall be applied at the proper locations in accordance with the Contract Documents or as directed by the Departmental Representative.
- .6 All paint and glass beads shall be uniformly applied.
- .7 All painted lines shall be uniform in thickness and free of tire tracking, with no splatter, excessive overspray or other defects.
- .8 Remove incorrect markings as directed by the Departmental Representative at Contractor's cost.
 - .1 Blackout painting for incorrect lane marking will not be permitted. Incorrect paint work must be eradicated and re-painted by method approved by the Departmental Representative.

3.4 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.

3.5 CONDITION OF SURFACES

- .1 Pavement surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials.

3.6 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 L/m².
- .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.

3.7 REMOVAL, REPAIR OR REPLACEMENT OF UNACCEPTABLE PAVEMENT MARKINGS

- .1 All painted lines that do not meet the requirements of the Contract Documents shall be removed and correctly applied or repaired by the Contractor.
- .2 In cases where the paint is "tracked" by vehicles tires, the lines may be repaired by reapplying paint and glass beads to the damaged areas.
- .3 In cases where incorrectly painted lines need to be removed, the Contractor shall use methods and equipment that will totally eliminate the pattern of the lines without damaging the integrity of the pavement surface. The methods and equipment used for such work shall be reviewed and accepted by the Departmental Representative prior to their use. Obliterating incorrectly painted lines through the sole use of paint, liquid asphalt, slurry seal or other similar materials will not be permitted.

3.8 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 – Quality Control.
- .2 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 the Contract Documents.
- .3 The Contractor to include in the Quality Control Plan actions to address 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.

3.9 HIGHWAY OPERATION

- .1 Highway operation shall be in accordance with the Contractor's accepted Traffic Management Plan and shall meet the following requirements:

.1 General

- .1 Painting shall be carried out in accordance with Section 01 14 00 - Work Restrictions and Section 01 35 31 - Special Procedures for Traffic Control.
- .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.

.1 Operation of Companion Vehicles

- .1 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.
- .2 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:
 - .1 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.
 - .2 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.
 - .3 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.

3.10 PROTECTION OF COMPLETED WORK

- .1 Protect pavement markings until dry.

END OF SECTION

33 71 13 PRECAST CONCRETE BARRIER**Part 1 General****1.1 DESCRIPTION**

- .1 Removal, stockpiling and reinstallation of Precast Concrete Barriers in accordance with the Contract Documents. If supplying new, at the request of the Departmental Representative, Precast Concrete Barrier supplied shall be as per British Columbia Standard Specifications for Highway Construction (latest edition), Section 941 – Precast Reinforced Concrete Barriers. In addition, all end faces to **have 25 mm chamfered edges**.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Remove, Stockpile and Reinstall Barrier:
 - .1 Removal, temporary stockpiling and reinstalling concrete barrier will be measured for payment in linear metres of barrier actually removed, stockpiled and reinstalled in its final location in accordance with the Contract Documents and accepted by the Departmental Representative.
 - .2 Payment will be made under **“Unit Price Item 5a – Precast Concrete Barrier – Remove, Stockpile and Reinstall Barrier”** and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools and incidentals necessary to complete the work as specified in the Contract Documents.
- .2 Items considered incidental to the Work include, but are not limited to:
 - .1 Removal and replacement and/or supply and installation of new barrier mounted reflectors as directed by the Departmental Representative.
 - .2 Cleaning of shoulders including winter sand build-up, by methods accepted by the Departmental Representative, in front and behind barrier locations shall be considered incidental to the Work. Barriers that are to be placed back into their original location must be cleaned of all debris.
 - .3 Temporary stockpiling of barrier.
 - .4 Removal, temporary stockpiling and reinstallation of barrier related signage including replacement of posts/mounts as required and directed by the Departmental Representative.
 - .5 Survey and layout.
 - .6 Traffic Control measures during removal and reinstallation Works
 - .7 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
 - .8 The placement and removal of Precast Concrete Barriers for use as temporary barricades during construction.
- .3 Barrier drain pipes, if required, shall be supplied and installed in accordance with the Contract Documents at locations specified by the Departmental Representative. Payment will be made 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 for survey, installation, removal 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.

1.3 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 – Quality Control.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 - Submittal Procedures.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.

Part 2 Products

2.1 MATERIALS

- .1 If supplying new barrier, at the request of the Departmental Representative, Precast Concrete barrier shall be manufactured as per British Columbia Standard Specifications for Highway Construction (latest edition), Section 941 - Precast Reinforced Concrete Barriers with the following exceptions:
 - .1 All end faces to have 25mm chamfered edges.
 - .2 Synthetic Fiber reinforcing shall be added to the precast concrete barriers in accordance with the Contract Documents.
- .2 Barrier reflectors to be hard plastic type raised pavement markers (RPM) mounted with fast cure construction adhesive.
 - .1 Reflectors are to be double sided and the colour is to match the proper lane line (white or yellow), as accepted by the Departmental Representative.
 - .2 Reflectors to be placed at 25m intervals and mounted as directed by the Departmental Representative.
 - .3 Acceptable products include:
 - .1 3M Raised Pavement Marker (RPM)
 - .2 Stimsonite Raised Pavement Marker (RPM)
 - .3 Or equivalent as approved by the Departmental Representative

2.2 PRECAST CONCRETE BARRIER

- .1 Concrete Quality: to CAN/CSA-A23.1 except where amended below.
- .2 Compressive Strength: Compressive strength test result is equal to or exceeds 30 MPa and no individual cylinder strength is less than 27 MPa.
- .3 Calcium chloride or admixtures containing calcium chloride are not to be used in concrete.

- .4 Cement Content: minimum of 320 kg/m³.
- .5 Water/Cement Ratio: maximum of 0.45.
- .6 Coarse Aggregate: nominal maximum size not exceeding 28mm.
- .7 Slump: 50 mm plus or minus 20mm.
- .8 Entrainment Air: 5 to 8%.
- .9 Reinforcement:
 - .1 Fibrillated fiber strand reinforced concrete to be used for production of barriers. Welded wire mesh reinforcement will not be permitted.
 - .2 50 mm fibrillated polypropylene fibres to be added at the rate of 1.0 kg/m³.
 - .3 Fibrillated fibres shall meet requirements of ASTM C 1116 Type 3 Synthetic Fibre Reinforced Concrete or shotcrete.
 - .4 Fibres shall have a minimum tensile strength of 350 MPa and a minimum modulus of elasticity of 4.2 GPa.
 - .5 Fibres are to be added early in the mixing process following manufacture's recommendations to ensure evenly distributed fibres.
 - .6 A single length of 15 mm rebar shall be wire tied to the horizontal sections of the hook or eye assemblies as indicated in the Contract Documents.
 - .7 Additional 10M rebar shall be installed for drainage barriers as indicated in the Contract Documents.
- .10 Concrete Placing and Consolidation:
 - .1 To CAN/CSA-A23.4, Clause 19.
- .11 Concrete Curing and Protection:
 - .1 Strictly to CAN/CSA-A23.4, Clause 21.
 - .2 During curing period temperature differential between concrete surface and ambient air not to exceed 20 °C.
- .12 Exposed Concrete Surfaces:
 - .3 Uniform in texture and colour as produced from well-maintained steel form surfaces and proper vibration methods without excessive surface fines or laitance.
- .13 Surface defects will normally be cause for rejection of any unit except where such are within the following permissible limits or area subject to making good within the following permissible limits:
 - .4 Unobtrusive defects of any kind where their total area is not in excess of 2% of exposed surface area of unit.
 - .5 Air holes not greater than 3 mm in diameter and not more than 20 in any isolated 300 mm x 300 mm area.
 - .6 Sharp ridges at edges of exposed concrete surfaces softened where necessary by careful rubbing or grinding.
 - .7 Patching of isolated small holes, cavities and similar self-confining defects may be permitted when authorized by the Departmental Representative.
- .14 Patching, if authorized, to be completed as follows:

- .1 Defective are saturated with water and defect prepared with cement paste and filled with mortar.
- .2 Mortar to be properly proportioned to same sand and cement as original concrete and reasonably colour-matched to cured dry unit with addition of white cement where necessary, to be pre-shrunk for about one hour before retempering and use.
- .3 Patching mortar to be well tooled in, finished flush and smooth and are covered to cure adequately.
- .15 Surface tolerance to be +/- 3 mm unless otherwise directed by the Departmental Representative.
- .16 Finished Product:
 - .1 Contractor to notify Departmental Representative in advance of manufacturing of schedule so that inspection can be carried out. All processes are subject to inspection by the Departmental Representative. Inspection or release of units by the Departmental Representative is required prior to shipping.
 - .2 Identification indicated by embedding manufacturer's name or trademark, year of manufacture, and form number on end of each unit in manner, size and depth that will be permanently legible.
 - .3 Authorized patching or making good to be inspected by the Departmental Representative before shipment or upon delivery and rejected units replaced at no cost.
- .17 Welded Steel Wire Mesh Reinforcement:
 - .1 Welded wire mesh reinforcement will not be permitted.
- .18 Reinforcing Steel for Bent and Hooked Connections:
 - .1 To CAN/CSA-G40.21-M, Grade 260W.
- .19 Bending:
 - .1 Carefully bend reinforcing steel to radii detailed and install as indicated in the Contract Documents.
 - .2 Inspect reinforcing steel after bending for evidence of fracture. Fractured pieces to be replaced.
- .20 Surface Treatment:
 - .1 Treatment of exposed surfaces not required.
- .21 Pick-up Points:
 - .1 Form with accurately placed rigid PVC pipe recessed 15 mm from both finished surfaces as indicated in the Contract Documents.
- .22 Drainage Slots:
 - .1 Drainage slots to be cast-in as indicated in the Contract Documents.

Part 3 Execution

3.1 REMOVAL AND STOCKPILING OF EXISTING BARRIER

- .1 Care shall be taken to protect Precast Concrete Barrier from damage during removal and stockpiling activities.

- .2 Temporary stockpiling locations shall be approved by the Departmental Representative.
- .3 Stacking of three layers high, with wood blocking between lifts, permitted with Departmental Representative approval.
- .4 All traffic control measures shall be provided to allow for a minimum of one lane of traffic during removals at the discretion of the Departmental Representative and shall be considered incidental to **“Lump Sum Unit Price Item 2 – Traffic Accommodation”**.

3.2 INSTALLATION

- .1 Precast Concrete Barriers shall be installed permanently on asphalt concrete pavement in accordance with the Contract Documents or as directed by the Departmental Representative.
- .2 Contractor shall do the layout of the barriers for both removal and installation operations.
- .5 All traffic control measures shall be provided to allow for a minimum of one lane of traffic during reinstallations at the discretion of the Departmental Representative and shall be considered incidental to **“Lump Sum Unit Price Item 2 – Traffic Accommodation”**.
- .3 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 as directed by the Departmental Representative.
- .4 Precast Concrete Barriers shall be installed within seven (7) calendar days following toplit paving.

END OF SECTION