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Drawing List

SHEET NO.	REVISION NO. AND DATE	SHEET TITLE
11147-00	Rev. 0 – 2021-03-01	Title Page
11147-01	Rev. 0 – 2021-03-01	Location Plan, Legend & Drawing Index
11147-02	Rev. 0 – 2021-03-01	Entrance Kiosk Work Area Site Plan
11147-03	Rev. 0 – 2021-03-01	Typical Sections and Details

Reference Documents:

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. Tournis des truites – Unité de gestion du secteur de Lake Louise et des parcs nationaux Yoho et Kootenay – avril 2017
5. Standard CMS Translations July 2018
6. Construction Signage Translation July 2018

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 these specifications.

1.2 DEFINITIONS

- .1 Alberta Transportation is referred to as “AT”.
 - .1 AT specifications specified for the work can be found at the following AT website address:
<https://open.alberta.ca/publications/standard-specifications-for-highway-construction-edition-16>.
- .2 Changes in Definition, - The following changes in definitions have been made to the “AT Specifications”:
 - .1 Departmental Representative – The word “Departmental Representative” shall mean Parks Canada Departmental Representative or their duly appointed representative.
 - .2 Department – The word “Department” shall mean Parks Canada Agency.
- .3 Waterton Lakes National Park of Canada is referred to as “WLNP”.
- .4 Hwy 5 means Highway 5 (Waterton Entrance Road)
- .5 Parks Canada Agency is referred to as “PCA”.
- .6 Environmental Surveillance Officer is referred to as “ESO”.
- .7 “Watercourse” is as defined in the National Parks Act.
- .8 “Site” means the areas on or within the limits of Construction as referenced on the Drawings and/or described in the Contract Documents.
- .9 “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 in Waterton Lakes National Park, Alberta. Construction work is on Highway 5, south of Highway 6 from km 0.0 at the intersection with Hwy 6 to km 8.62 at the stop bar of the three-way intersection with Mt View Road in the Waterton Town site.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- .1 The Work generally consists of the overlay of 8.62 km of roadway with isolated areas requiring deeper repairs and select areas requiring mill and inlay.
- .2 All requirements noted within the Contract Documents shall be completed by the Contractor unless specifically stated otherwise.

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- .3 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 Removal of existing asphalt a) to full depth and b) by cold milling in accordance with Section 02 41 13 – Asphalt Pavement Removal and 32 01 16 Cold-Milling Asphalt Concrete Pavement. Disposal outside of Park.
 - .3 Excavating road embankment material below asphalt at deep repair areas, hauling and disposing of this material outside of the Park in accordance with Section 31 24 13 – Roadway and Drainage Excavation.
 - .4 Excavating and shaping a ditch near the Park Gate kiosks in accordance with Section 31 24 13 – Roadway and Drainage Excavation.
 - .5 Supply, load, haul and place base course materials in accordance with Section 32 11 24 - AT Designation 2 Class 25 Base Course Aggregate. Gravel fill to be supplied by the Contractor from outside of Park.
 - .6 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 of Park.
 - .7 Use of processed Reclaimed Asphalt Pavement (RAP) material in hot mix asphalt construction is permitted to maximum 10% in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition) and as accepted by the Departmental Representative.
 - .8 Purchase asphalt binder PG 52-34 mix with aggregate, haul and place AT Mix Type M1 (12.5mm) Asphalt Concrete Pavement as directed by the Departmental Representative.
 - .9 Supply and installation of hydroseeding on finished ditch slopes in accordance with Section 32 92 22 – Hydraulic Seeding.
 - .10 Supply and install permanent, or remove and dispose, Guide Posts as per the Contract Documents and as directed by the Departmental Representative in accordance with Section 32 17 31 – Guide Posts.
 - .11 Traffic signage, control and other traffic accommodations in accordance with Section 01 35 31 – Special Procedures for Traffic Control.
 - .12 Supply and install permanent line markings as per the Contract Documents and as directed by the Departmental Representative in accordance with Section 32 17 23 – Pavement Marking.
 - .13 Supply and install transverse rumble strips in accordance with Section 32 01 16 Cold-Milling Asphalt Concrete Pavement.
 - .14 Supply and install permanent regulatory, advisory or cautionary signs in accordance with Section 10 14 53 – Traffic Signage.
 - .15 Miscellaneous Additional Work as directed by the Departmental Representative.
- .4 The Contractor will not be permitted to set up a crushing plant within the National Park.

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- .5 The Contractor will not be permitted to set up a Mobile Asphalt Plant or use a Stationary Asphalt Plant for this Project within the National Park.
- .1 The asphalt plant to be used on this project, regardless of location, shall be a minimum of 200 tonnes per hour production, equipped with a dry bag system for pollution control, in addition to, or in replacement of standard cyclone dust collectors, to effectively eliminate emissions of dust and smoke pollutants into the atmosphere.
- .6 The Contractor is responsible for sourcing water required for the Works and may be required to obtain it from outside of the National Park. Accessing local water sources in nearby pits or from other Park facilities can be coordinated through the Departmental Representative and the ESO but will require the Contractor to obtain a Restricted Activity Permit and to adhere to all conditions contained therein.
- .7 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.
- .8 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 Crandall Mountain Campground construction
- .2 Red Rock Canyon construction
- .3 Highway 5 Day Use Area construction
- .4 Prince of Wales construction
- .5 Alpine and Wilderness Trail construction
- .6 Contaminated Site construction
- .7 Visitor Experience Centre construction
- .8 Various other miscellaneous PCA projects.
- .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.

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 Co-ordinate Work with other Contractors / Departmental Representatives doing maintenance, survey / testing work.
- .4 The Contractor shall prepare a meaningful bar chart or network diagram showing the proposed schedules of major work, which shall be submitted to the Departmental Representative in accordance with Section 01 32 16 - Construction Progress Schedules.
- .5 The Contractor shall:
 - .1 Obtain the Interim Certificate (Substantial Performance) by July 15, 2021;
 - .2 Complete all the Work by July 31, 2021 (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 Coordinate use of premises under direction of the Departmental Representative.
- .4 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 Seed.
- .2 Precast Concrete Barrier

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 Complete set of construction Drawings.
 - .2 Provide a list of control monuments including coordinates and elevations on request.
 - .3 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 20 m 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 Provide for pedestrian, cyclist, and vehicular traffic for the duration of the construction.
- .2 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.
- .3 The Contractor is responsible for the development and supply of construction access to the Work as approved by the Departmental Representative.
- .4 Work at the kiosks shall allow for one entry and one exit lane.

1.3 USE OF THE SITE AND FACILITIES

- .1 The Work is to stay on the existing entrance road, with the exception of the new ditch that will be excavated near the entrance gates.
- .2 The Work Site (limits shown on the Drawings and as noted in the Specifications) will be specified by Parks Canada and shall only be used for the purposes of the Work. The Work Site will be made available by Parks Canada to the Contractor for its non-exclusive use for the duration of the Work, unless otherwise provided in the Contract Documents.
- .3 The Contractor will not be permitted to set up a camp in the National Park. PCA regulations prohibit anyone working within the Park from using public campground facilities.
- .4 The Contractor shall not store material or park equipment along the Highway Right of Way within the clear zone.
- .5 Contractor shall maintain adequate drainage at the Work Site.
- .6 The Contractor shall keep the Work Site clean and free from accumulation of waste materials and rubbish regardless of source. Snow shall be removed by the Contractor as necessary and at their cost for the performance and inspection of the Work.
- .7 The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and 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.
- .8 Any damage to the Work Site caused by the Contractor shall be repaired by the Contractor at their expense.
- .9 Pets shall not be brought to or maintained at the construction site.

- .10 During the milling and inlay paving operations adjacent to the four salamander crossings within the station range of km 7.55 to km 7.85, the Contractor will allow for and coordinate the inspections of each of the crossings by Parks staff, if required.
- .11 Overnight parking or storage at the kiosks is prohibited. Overnight parking in the gravel parking area at the Red Rock Parkway intersection area is permitted.

1.4 WORKING TIMES

- .1 Work in WLNP up to and including June 17, 2021 is permitted during daylight hours from 06:00 to 22:00, 7 days per week unless stipulated otherwise in the Contract Documents.
- .2 Work in WLNP on and after June 18, 2021 is permitted during daylight hours from 06:00 to 22:00, Mondays to Thursday. Fridays from 06:00 to 12:00.
- .3 Work from km 0.00 to km 1.30 and from km 6.05 (Alpine Stables) to km 8.35 (Akamina Parkway) before or after June 18, 2021 is permitted only from one hour after sunrise to one hour before sunset to help ensure salamander safety.
- .4 All Work at the Kiosks shall be completed prior to June 18, 2021 at 12:00 p.m.
- .5 The Contractor will not be permitted to work during the period of any Alberta or British Columbia statutory holiday long weekend, including one day prior to and one day following the holiday weekend. The Contractor will not be permitted to work during the following Civic Holidays or long weekends unless prior written approval is granted by the Departmental Representative:
 - .1 Statutory and Civic Holidays (2021)
 - .1 Good Friday weekend: From 19:00 Thursday, April 1, 2021 to 06:00 Tuesday, April 6, 2021.
 - .2 Victoria Day Weekend: From 19:00 Thursday May 20, 2021 to 06:00 Tuesday, May 25, 2021.
 - .3 Canada Day weekend: From 12:00 Wednesday June 30, 2021 to 06:00 Monday, July 5, 2021.
 - .4 Heritage Day weekend: From 19:00 Thursday July 29, 2021 to 06:00 Tuesday August 3, 2021.
 - .5 Labour Day long weekend: From 19:00. Thursday, September 2, 2021 to 06:00 Tuesday, September 7, 2021.
 - .6 Variance of the specified Working Times 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. Approval of a Variance is provided on the presumption that no additional costs nor any delay will be attributed to Parks Canada in relation to the Work. 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 beyond the staked working limits.
- .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 Drawings include indicative utility details from within the area for reference. The Contractor remains fully responsible for determining the full and accurate extent of utilities within the area of their Works.
- .4 The Contractor shall notify the Departmental Representative and the Utility companies at least twenty-one (21) days in advance of any activities which may interfere with the operation of such Utilities.
- .5 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.
- .6 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.
- .7 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 familiar with all existing conditions that might affect the execution and completion of the 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 The Contractor shall undertake the Works in accordance with the Archaeological Impact Assessment Letter of Clearance and AOA as described in Section 01 35 43 - Environmental Procedures.

1.9 FISH HABITAT

- .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 and the Reference Documents.
- .2 The period of least risk for instream works is as listed in the Contract Documents.
- .3 No work identified in Section 01 35 43 – Environmental Procedures, or otherwise, as requiring DFO Request for Review is to occur until such a review has been completed by the Departmental Representative.
- .4 This project is considered to be within 30m of known Bull Trout critical habitat. Special mitigations have been put in place to ensure the safety of these endangered species. They include;
 - .1 Project construction to ensure that riparian critical habitat is avoided and disturbance is kept to a minimum;
 - .2 Prevent runoff from construction sites into any waterbody
 - .3 If any trees or other vegetation needs to be removed from critical habitat to accommodate the resurfacing activities, leave the woody debris in place (i.e. artificially fallen trees still provide the natural function within the riparian area); Project design must be done to ensure vegetation removal is kept to a minimum

and only occurs where absolutely necessary, while ensuring vegetation is still prevalent throughout the riparian zone;

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 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 may 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, when working in that province.
- .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 highway except at designated areas where the existing highway 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 highways, 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, except those listed with restricted working times, shall be flood-lit for night operations.

1.12 USE OF PITS AND QUARRIES

- .1 The Contractor is not approved to use any existing pits or quarries within the National Park.

1.13 USE OF PITS, QUARRIES, AND DISPOSAL SITES OUTSIDE OF NATIONAL PARK

- .1 When the Contractor is supplying material from a pit or quarry outside of the National Park 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 Park 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 Park.
- .4 Material supplied from pits and quarries outside of the National Park must be clean of all, seeds, organics, topsoil, or contaminants. No additional payment will be made for cleaning or washing material supplied from pits and quarries outside of the National Park.
- .5 Material supplied from pits and quarries outside of the National Park must meet requirements in the Contract Documents.
- .6 Pit excavation must not take place to within a minimum distance of 2m from the edge of cleared and stripped areas.
- .7 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.
- .8 No dumping of debris or petroleum products is permitted. The pit must be left in a clean and safe condition.
- .9 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.

1.14 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 – Submittal Procedures

1.15 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. Project Superintendent and their designated Deputy must be competent and have relevant experience in the type of works being performed. The Project Superintendent and their designated Deputy are responsible for supervising all of their subcontractors and ensuring each subcontractor has their own foreman onsite during all works
 - .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 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.

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- .7 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.

1.16 WASTE MANAGEMENT AND DISPOSAL

- .1 All surplus, unsuitable and waste materials shall be removed from the Work Sites to approved sites outside the National Park. 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.

1.17 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.

1.18 SEASONAL OR PROLONGED SHUTDOWN

- .1 If the Contractor anticipates a prolonged shutdown, or if the Contractor cannot complete the Work prior to a seasonal shut-down, the Contractor may request a prolonged or seasonal shutdown.
- .2 If the Departmental Representative is considering the granting of a prolonged or seasonal shutdown request, the Contractor will host a meeting between the Contractor, the Departmental Representative, PCA, and any other necessary participants.
- .3 The purpose of the meeting is to document a "Shutdown Plan" based on the specific needs and requirements of the project. The Contractor must ensure that all Work Areas are restored to a condition suitable for safe traffic operations and acceptable to the Departmental Representative.
- .4 The Shutdown Plan must include the applicable items listed below and outline the Contractor's methods and procedures for monitoring and maintaining the project during the shutdown period, and will outline any and all responsibilities of the other parties. The Departmental Representative record of the results of the meeting will be circulated amongst the parties and if not objected to or revised forms the Shutdown Plan.
- .5 As applicable, the items in the Shutdown Plan include, but are not limited to:
- .1 work area signage (i.e. advance warning, proper spacing etc.) and permanent signage in the work zone (maintaining and cleaning)
 - .2 appropriate speed zones (i.e. reconstructed sections, Work Areas, non-surfaced areas)
 - .3 delineators along grade widening where slopes are not completed
 - .4 temporary protection hazards measures
 - .5 arrangements for any special maintenance requirements
 - .6 environmental protection measures

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- .7 proper barricading of adjacent and intersecting roads
 - .8 drainage issues
 - .9 securing any open excavation borrows, gravel pits, etc.
 - .10 roadway - maintenance including, but not limited to, line painting, pavement irregularities including pot hole repair, guardrail and other safety items
 - .11 service roads
 - .12 detours
 - .13 traffic accommodation
 - .14 shutdown transition planning and coordination for the start and end of the shutdown period
 - .15 Occupational Health and Safety
- .6 Once the shutdown plan is accepted by the Departmental Representative and the Shutdown Plan has been finalized, and implemented, the Departmental Representative will arrange for an inspection with the Contractor and the PCA to ensure all shutdown aspects are in place.
- .7 Once any issues arising from the inspection are resolved and all Shutdown Plan items are in place, the Departmental Representative will issue a Shutdown Notification. Unless otherwise provided in the Shutdown Plan, the date of the Shutdown Notification will serve as the date for transferring the responsibility for arranging snow removal and ice control to PCA. If snow removal is required prior to this date or under the terms of the Shutdown Plan, the Contractor shall make arrangements for snow and ice removal in accordance with the PCA's Highway Maintenance Standards
- .8 Once the Shutdown Notification is issued, the following general responsibilities will apply:
- .1 The Contractor will remain the Prime Contractor for the Work Zone.
 - .2 The Contractor will be responsible for all signs and maintenance of the road surfaces, except for snow removal and ice control, inside the Work Zone during the shutdown period.
 - .3 During the shutdown period, if any concerns or issues with respect to the project are identified by the Departmental Representative or PCA, the Departmental Representative will notify the Contractor for his follow-up.
 - .4 Reporting of any known accidents is a joint effort of all parties. The first person aware of the accident is to advise the other parties. If the Contractor becomes aware of an accident in the Work Zone, he shall immediately advise the Departmental Representative and PCA. The Departmental Representative will complete an investigation and accident report.
 - .5 Prior to the re-commencement of construction, a pre-construction meeting will be held and date set for when the Contractor will return to Work. Once construction has recommenced, the Contractor shall submit an updated construction schedule.
- .9 Notwithstanding the above, no component of the Shutdown Plan will relieve the Contractor of his obligations under the Contract. No separate or additional payment will be made. A Shutdown Plan is not a guarantee of an extension of Contract Time.

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 is a total Prime Cost Sum of **\$60,000.00** for items 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 AC admixtures;
 - .2 Supply and implementation of full depth reclamation additives;
 - .3 Additional supply and installation of asphalt concrete pavement;
 - .4 Additional supply and installation of granular sub-base and base course materials;
 - .5 Installation of integral asphalt curb;
 - .6 Additional pavement removal;
 - .7 Crack filling, pothole patching and other related minor asphalt repairs;
 - .8 Clearing and Grubbing;
 - .9 Additional stripping, excavation and disposal of waste materials as directed by the Departmental Representative;
 - .10 Danger tree assessment and removal;
 - .11 Relocation or removal and disposal of existing signs, guardrail, guide posts and other miscellaneous items;
 - .12 Supply and installation of permanent signs (not construction signs);
 - .13 Removal and disposal or plugging of existing culverts;

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- .14 Additional supply and installation of lane markings;
 - .15 Supply and installation of specialty items at Day Use Areas including, but not limited to, dry toilets, picnic tables, and garbage bins;
 - .16 Additional survey resulting from changes made by the Departmental Representative;
 - .17 Relocation / protection of existing utilities, including payment of utility service provider costs;
 - .18 Utility Pole Relocation;
 - .19 Remediation or removal and replacement of unsuitable or contaminated soils not described in the Contract Documents;
 - .20 Supply and installation of wildlife fencing;
 - .21 Supply and installation of seeding;
 - .22 Supply and installation of landscaping;
 - .23 Supply and installation of Riprap;
 - .24 Road structure repairs;
 - .25 Drainage improvements, ditching, culvert repairs, cleaning or other;
 - .26 Sub-drainage not specified in the tender documents;
 - .27 Supply and installation of precast concrete barrier;
 - .28 Supply and installation of barrier drains;
 - .29 Removal and reinstallation of existing crash attenuator;
 - .30 Supply and installation of guardrail or precast concrete barrier.
 - .31 Removal and disposal of existing guardrail or precast concrete barrier;
 - .32 Supply and installation of Guide Posts;
 - .33 Supply and installation of raised reflective road and barrier markers
 - .34 Asphalt EPS unit price adjustments;
 - .35 Installation of milled rumble strips;
 - .36 Rehabilitation work in gravel pits;
 - .37 Miscellaneous rock scaling as directed by the Departmental Representative;
 - .38 Supply and installation of rock bolts;
 - .39 Additional subgrade preparation
 - .40 Traffic control equipment additional to as required by the applicable regulations and standards.
 - .41 Relocation of existing structures;
 - .42 Processing of blast rock as requested by the Departmental Representative;
 - .43 Manhole adjustments
 - .44 Supply and maintenance of Departmental Representative's office trailer; and
 - .45 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 (ie. 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 up to a maximum of 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 Force Account 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.

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 AT - 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**”. The lump sum price bid will be considered full compensation for all labour, materials, equipment, tools, and incidentals necessary to complete the Work to the satisfaction of the Departmental Representative.
 - .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 Park, 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 All sites have been cleaned up and 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 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.

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- .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.

1.5 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 Agenda to include:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Safety / Risk
 - .3 Environmental
 - .4 Review of Work progress since previous meeting
 - .5 Progress schedule, during succeeding work period.
 - .6 Field observations, problems, conflicts.
 - .7 Review of off-site material delivery schedules.
 - .8 Corrective measures and procedures to regain projected schedule.
 - .9 Review submittal schedules: expedite as required.
 - .10 Quality Control
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Payment
 - .13 Other business.

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- .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, Departmental Representatives, 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.

1.6 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.

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- .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.

1.9 SUBMITTAL SCHEDULE

- .1 In accordance with Section 01 33 00 – Submittal Procedures
- .2 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.
- .3 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.

1.10 CLOSEOUT PROCEDURES

- .1 In accordance with Section 01 77 00 – Closeout Procedures

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 Saturday, inclusive, will provide six-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.

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- .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.
 - .8 Plan to complete Work in accordance with prescribed Project Schedule

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 Departmental Representative reviewed impractical schedule and resubmit within 5 working days.
- .3 Accepted revised schedule will become 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 applicable, as follows:
 - .1 Contract Award
 - .2 Obtaining Permits
 - .3 Pre-mobilization Submittals
 - .4 Crushing

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- .5 Mobilization
 - .6 Milling
 - .7 Deep repairs
 - .8 Granular base course
 - .9 Asphalt concrete pavement
 - .10 Traffic signage & guideposts
 - .11 Line painting
 - .12 Rumble Strips
 - .13 Stripping
 - .14 Ditch grading
 - .15 Topsoil placement
 - .16 Hydroseeding
 - .17 Interim Inspection
 - .18 Remediation of any noted deficiencies
 - .19 Site Clean-up / Demobilization
 - .20 Final Completion Contract Award

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. Activities considered behind schedule are those with projected start or completion dates later than current accepted dates shown on baseline schedule.
- .2 Meetings in accordance with Section 01 31 00 – Project Management and Coordination

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, within 14 days, to Departmental Representative submittals listed for review. Failure to submit in required 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 Check Sheet in accordance with Section 01 45 00 – Quality Control prior to submission to Departmental Representative. This completed Quality Control Check Sheet represents that all the necessary requirements have been met and that the submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.
- .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.

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- .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.

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- .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.

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- .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 a minimum of fourteen (14) calendar days prior to preconstruction meeting:

- .1 Project schedule, detailing the schedule of the workdays required from Contractor, subcontractors, suppliers and Departmental Representatives 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 Project 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 in accordance with Section 01 35 29 – Health and Safety Requirements and acceptable to the Departmental Representative. The Contractor shall implement and maintain the Health and Safety Plan during the Work.
- .5 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.
- .6 Completed and signed copy of “Attestation and Proof of Compliance with Occupational Health and Safety (OHS)” form (included in the Invitation to Tender Package), in accordance with Section 01 35 29 – Health and Safety Requirements
- .7 Traffic Management Plan, in accordance with the requirements of Section 01 35 31 – Special Procedures for Traffic Control.

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- .8 Quality Control Plan in accordance with Section 01 45 00 – Quality Control, including Quality Control checklist examples for each item of Work.
 - .9 Alberta One Call and Utilities Coordination Plan, including notifications to Utility Owners.
 - .10 Contractor and any subcontractors to submit a copy of their valid Parks Canada Business License.
 - .11 Contractor and Subcontractor 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.
 - .12 List of subcontractors, suppliers and Departmental Representatives, their role and their key personnel including Foreman, experience of key personnel, including names and positions, addresses, telephone and cellular telephone.
 - .13 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.
 - .14 Site Access Plan shall include, but not be limited to, engineered Drawings and procedures for accessing all areas of the Work
 - .15 Schedule of Force Account rates, in accordance with Section 01 21 00 – Allowances.
 - .16 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.
 - .17 Asphalt Plant provincial registration and records showing compliance with provincial and federal regulations for emission testing and monitoring.
 - .18 Pit sourcing information and testing (i.e. Micro-Deval Test).
 - .19 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) 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.

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- .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, Product Data 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.
 - .10 Environmental reports including Spill Reports in accordance with Section 01 35 43 – Environmental Procedures
 - .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.

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 Alberta - Occupational Health and Safety Act.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

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

1.3 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.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 – Submittal Procedures
- .2 Submit site-specific Health and Safety Plan in accordance with this Section and Section 01 33 00 – Submittal Procedures within 7 days after date of Notice to Proceed and prior to commencement of Work.

1.5 FILING OF NOTICE

- .1 File Notice of Project with Provincial Authorities prior to beginning of Work and provide a copy to the Departmental Representative. Notice of Project to be posted on site upon mobilization and remain posted until project completion.

1.6 SAFETY ASSESSMENT

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

1.7 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work. This meeting may be combined with the Pre-Construction meeting identified in Section 01 31 00 – Project Management and Coordination.

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- .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.

1.8 REGULATORY REQUIREMENTS

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

1.9 PROJECT / SITE CONDITIONS

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

1.10 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.

1.11 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, General Safety Regulation, Alberta.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.12 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.

1.13 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.

1.14 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.

1.15 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.

1.16 BLASTING

- .1 Blasting or other use of explosives is not permitted without prior receipt of written approval by 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, implementation, maintenance and removal of Traffic Accommodation Measures and Traffic Control Personnel for the duration of the Contract, in accordance with the Contract or as directed by the Departmental Representative.

1.2 REFERENCES

- .1 The Contractor shall provide traffic control in accordance with:
 - .1 AT – Traffic Accommodation in Work Zones (latest edition)
 - .2 Manual of Uniform Traffic Control Devices for Canada, (MUTCD) distributed by Transportation Association of Canada. (latest edition)
 - .3 Parks Canada – Construction Signage Translation Rev 1 Nov 2016 and Standard CMS Translations Rev 1 Nov 2016

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 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
 - .3 Keeping the existing roadway within the Work limits, clean, free of potholes while Contractor is on site.
 - .4 Repairing potholes in within the Work limits during Winter Shutdown.
 - .5 Cost of snow removal required by the Contractor to complete the work identified in the Contract.
 - .6 Surveying the existing pavement markings prior to overlay or milling and their reinstatement after paving final lift, by survey.

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- .5 The Contractor shall not be responsible for the snow removal required for general highway road 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 SUBMITTALS

- .1 In accordance with Section 01 33 00 – Submittal Procedures
- .2 Submit site-specific Traffic Management Plan (TMP) in accordance with this Section and Section 01 33 00 – Submittal Procedures, outlining each stage of construction, 14 days in advance of the Work for review.

1.5 QUALITY CONTROL

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

1.6 GENERAL

- .1 The Contractor will not be permitted to remove the temporary pavement marking until the final pavement markings have been installed to the satisfaction of the Contract and Departmental Representative.
- .2 At all work sites, the Contractor shall mark accurately, at regular intervals and at intersections, 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.
- .3 The Contractor shall develop and implement a Traffic Management Plan (TMP) 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.
- .4 The Traffic Management Plan shall 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.
- .5 The Contractor shall design, supply, erect, move and maintain all traffic control devices, signs, temporary pavement marking, other safety measures and provide staff to ensure safe passage of all traffic from commencement of site work to date of acceptance by the Departmental Representative.
- .6 The Contractor shall supply, install and maintain a minimum of two (2) Flashing Arrow Boards (FAB), as required for the Works per work zone, in accordance with the accepted TMP. All FAB shall be as per MUTCD (latest edition). Exact installation locations of FABs to be agreed on site with the Departmental Representative. All cost associated with the supply, installation, maintenance and removal of FABs will be incidental to **“Lump**

Sum Price Item 2 – Traffic Accommodation”. Removal will only be permitted upon completion of the Works.

- .7 The Contractor shall supply, install and maintain a minimum of two (2) Portable Changeable Message Signs (CMS) per work zone 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. Removal of the CMS will only be permitted upon completion of the Works.
- .8 The Contractor shall supply, install and maintain a minimum of two (2) speed reader boards (SRB), as required for the Works. Exact installation locations of SRBs to be agreed on site with the Departmental Representative. Removal will only be permitted upon completion of the Works.
- .9 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 Reference Documents.
- .10 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.
- .11 Temporary pavement marking used shall be acceptable to the Departmental Representative and in accordance with AT – Traffic Accommodation in Work Zones (latest edition).
- .12 All temporary pavement markings will be removed to the satisfaction of the Departmental Representative at the Contractor’s expense prior to the completion of the Contract.
- .13 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.
- .14 Contractor shall have appropriate traffic control measures in place so that one (1) lane of highway traffic is maintained in each direction through the work zone at all times throughout the construction, except where flagging operations, permitting one-lane, two-way traffic are in use adjacent to the Work zone.
- .15 During paving operations at the kiosks, a minimum of one entry lane and one exit lane are to be maintained until and including June 17, 2021. A minimum of two entry lanes and one exit lane are required after this date and during non-working hours.
- .16 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. In consideration of the number of grading, paving, rock scaling and bridge construction projects in the corridor the Contractor must make a concerted effort to coordinate their traffic management strategies with other stakeholders. The Contractor must also be

prepared to attend traffic management and construction staging coordination meetings as requested by the Departmental Representative.

- .17 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.

1.7 PROTECTION OF PUBLIC TRAFFIC

- .1 Comply with requirements of Acts, Regulations and By Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 Carry out traffic regulation in accordance with 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. Short closures to traffic in both directions may be allowed by the Departmental Representative for some activities if the delay to motorists does not exceed 20 minutes.
- .6 Do not close any lanes of road without approval of Departmental Representative. Before re-routing traffic erect suitable signs and devices in accordance with the requirements of the AT – Traffic Accommodation in Work Zones (latest edition), except where specified otherwise.
- .7 Contractor to provide a minimum of 5.0m wide available paved surface for single lane alternating traffic, unless otherwise authorized by the Departmental Representative.
- .8 Regardless of type of traffic control being used, maximum period of delay to public traffic shall be 20 minutes. Emergency vehicles (i.e., ambulance, RCMP, Park Warden) must be granted immediate passage at all times. The Departmental Representative reserves the right to reduce delay time for public traffic at times when specified delay results in excessive backup of public traffic.
- .9 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.

- .10 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.
- .11 The Contractor shall maintain a dust free construction zone by means of cleaning and watering when required.

1.8 INFORMATIONAL AND WARNING DEVICES

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work 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, supply, install and maintain CMS's with a minimum of three (3) lines with eight (8) characters for the duration of the project.
- .4 Place signs and other devices to standards and in locations recommended in AT – Traffic Accommodation in Work Zones (latest edition). Provide intermittent signage if work zones exceed 2.0 km in length.
- .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.

1.9 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.

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- .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 workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .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.
 - .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 weekends or Special Events or as directed by Departmental Representative.

1.10 OPERATIONAL REQUIREMENTS

- .1 Maintain existing conditions for traffic throughout period of Contract except that, when required for construction under Contract and when measures have been taken as specified herein and approved by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:
 - .1 Speed limit reduced to 20 km/h below posted in work zones in non-work periods, except in the posted 30 km/h zone where no speed reduction is required.
 - .2 Speed limit reduced to 50 km/h in work zones in work periods, except in the posted 30 km/h zone where no speed reduction is required.
 - .3 Contractor to provide a minimum of 4.0 m wide available paved surface for uni- or bi-directional traffic, unless otherwise authorized by the Departmental Representative.
 - .4 The delay due to single lane alternating traffic shall not exceed 20 minutes.
 - .5 There may be restrictions to accommodate special events within the National Park. PCA will provide two (2) weeks' notice of any upcoming restrictions.
 - .6 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.
 - .7 Maintain existing conditions for traffic crossing right-of-way.

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- .8 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.
 - .9 Emergency vehicles are to be directed through the Work Site immediately once conditions are safe.
 - .10 No stoppage of traffic shall be allowed during inclement weather conditions.
 - .2 Maintain existing conditions for traffic crossing right-of-way.
 - .3 No stoppage of traffic shall be allowed during inclement weather conditions.
 - .4 When vehicles are entering or exiting work area, the Contractor shall ensure that no damage to the adjacent, undisturbed pavement (saw-cut edge) occurs. Where truck and other equipment are entering or leaving the work area, the Contractor shall construct a pavement fillet adjacent to the saw-cut edge to prevent damage to the adjacent, undisturbed pavement structure.

1.11 QUALITY CONTROL

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

1.12 SUBMITTALS

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

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 DEFINITIONS**

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.2 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 Lake Louise, Yoho, Kootenay Field Unit – Direction for Permitted Users conducting water-related activities in LLYK – April 2017.
- .4 Tournis des truites – Unité de gestion du secteur de Lake Louise et des parcs nationaux Yoho et Kootenay – Avril 2017

1.3 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.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit Environmental Protection Plan (EPP) for review and approval by the Departmental Representative and ESO before mobilizing to site or commencing construction activities.
- .3 EPP shall include comprehensive overview of known or potential environmental issues to be addressed on site during construction.
- .4 Include in the Environmental Protection Plan (EPP).
 - .1 Name[s] of person[s] responsible for ensuring adherence to EPP
 - .2 Name[s] and qualifications of person[s] responsible for manifesting hazardous waste to be removed from site
 - .3 Descriptions of environmental protection personnel training program.

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- .4 Submit a site-specific Stormwater Pollution Prevention Plan (SPPP) in accordance with EPA-833-R-06-004. Include the site-specific Erosion and Sediment Control Plan (ESCP) identifying the type and location of erosion and sediment control measures to be provided on site. Include monitoring and reporting requirements to ensure that ESC control measures are in compliance with erosion and sediment control plan, Federal and Provincial regulations.
 - .5 Submit a Site Work Plan (SWP) showing work areas for proposed activities in each portion of area and identifying areas of limited use or non-use
 - .1 SWP to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
 - .6 Submit a Spill Control Plan (SCP) including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .7 Submit a Solid Waste Disposal Plan (SWDP) for non-hazardous solid wastes identifying methods and locations for solid waste disposal including clearing debris.
 - .8 Submit an Air Pollution Control Plan (APCP) detailing provisions to ensure that dust, debris, materials, and trash, are contained within the project site.

1.5 NATIONAL PARK REGULATIONS

- .1 The Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the Canada National Parks Act and Regulations.
- .2 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.

1.6 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

- .1 Execution of the work is subject to the provisions within the Impact Assessment Act (IAA 2019).
- .2 The Contractor is required to implement all recommendations and mitigations and follow all procedures and processes whether supply, construction, administration or as otherwise described in this Section 01 35 42 – Environmental Procedures, BMPs, and all Contract Documents.
- .3 Refer to the PCA Best Management Practices (BMPs) for the Work included with this tender. The Contractor is required to implement all recommendations and mitigations and follow all procedures and processes whether supply, construction, administration or otherwise as described in the BMPs.
- .4 The Contractor shall prepare their Environmental Protection Plan (EPP) to implement the mitigations identified in this Section 01 35 42 – Environmental Procedures, the 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.

- .5 Where there is a discrepancy or inconsistency between this Section 01 35 43 – Environmental Procedures, the BMPs or Pre-Approved Routine Impact Assessments (PRIA) and other documents, the more stringent takes precedence over other documents.
- .6 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.

1.7 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 Contractor will provide 14 days notice and coordinate with the Departmental Representative and Parks Canada to have an ESO inspect the construction equipment for cleanliness as per PCA National Best Management Practices Roadway, Highway, Parkway and Related Infrastructure prior to it being offloaded to site.
- .3 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.
- .4 The ESO is not to act as daily environmental monitor but shall check activities with the approved EPP to ensure compliance, at their discretion.
- .5 The Contractor's QEP shall be responsible for ensuring all activities are conducted in accordance with the approved environmental documents and Contract Documents.

1.8 ENVIRONMENTAL PROTECTION PLAN

- .1 The EPP is to be prepared certified by a Qualified Environmental Professional. Certification by a QEP is considered incidental to the Works and no additional payment will be made.

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- .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 this Section 01 35 42 – Environmental Procedures, the BMPs, and 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.

1.9 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.

1.10 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.

1.11 ACCIDENTAL FINDS

- .1 It is possible that a scattering of 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:
 - .1 Structural remains, high artifact concentrations, tent platforms, log cribbing retaining features, human remains, marked trees and other various items.
 - .2 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, the more stringent shall take precedence.

1.12 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 A RAP application will be required for any permitted Work camps 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.

1.13 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 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.

1.14 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 / non-collapsible roadside spill containment system shall be constructed around fuel tanks and any other potential spill area. The berms / containment system 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 double-lined fuel tanks are permitted. Dirt berms

and/or plastic lining is not permitted. Drip trays are required below all machinery when not in use.

- .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 Park before delivery to the work site. Physical inspection by ESO prior to unloading at site and/or Contractor provided photos of cleaning proof prior to mobilization will be required.
- .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.

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- .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 Park.
 - .7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order.
 - .8 Fuel containers 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 Park. 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 The Contractor shall have a qualified environmental professional conduct a bird sweep prior to vegetation removal and stripping.
- .2 Restricted Activity Period: Migratory Bird General Breeding Period: April 1 to August 31. Work will be occurring during the Migratory Bird timing windows. Therefore, nest sweeps will be performed by an outside qualified consultant if necessary, between April 1 to August 31.
- .3 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.
- .4 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.
- .5 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.
- .6 Salamander culverts along Linnet lake will be left in place during construction. The contractor is responsible for preventing resurfacing material from entering the holes on

the top of the culverts and will ensure that the culverts are left in good working order throughout the course of the project.

- .7 ESO shall be contacted 24 hours before stripping and must be on site to monitor for amphibians.
- .8 The ESO must preform a frog sweep prior to excavation beginning on the entrance gate ditch.
- .9 The ESO must be present during ditch excavation to ensure the safety of salamanders that have dug into the ground. If a salamander is discovered, work will cease until the salamander is moved to a safe location.

1.19 RELICS AND ANTIQUITIES

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

1.20 WASTE MANAGEMENT AND DISPOSAL

- .1 The Contractor and workers shall dispose of hazardous wastes in conformance with the Environmental Contaminants Act and applicable provincial regulations while observing the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.
- .2 All wastes originating from construction, trade, hazardous and domestic sources, shall not be mixed, but will be kept separate.
- .3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere in the National Park. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers and disposed of at an appropriate waste landfill site located outside the Park. Construction waste storage containers, provided by the Contractor, shall be emptied by the Contractor when 90% full. Waste containers will have lids, and waste loads shall be covered while being transported.
- .4 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials.
- .5 All efforts to prevent wildlife from obtaining food, garbage or other domestic wastes shall be made by the Contractor and Contract staff while undertaking their work in the National Park. Such wildlife attractants shall not be stored at the work site overnight. Lunches, coolers and food products, including waste food products, shall be securely stored away from access by animals. Daily removal of food scraps, food wrappers, pop cans or other attractive products to bear proof containers is mandatory. It is incumbent

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

- .6 The Contractor and workers shall immediately report any circumstances related to food/garbage (e.g. overflowing container or strong smell) and wildlife to the 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.
- .7 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 WATER EXTRACTION AND DISTRIBUTORS

- .1 All water related activities are to be conducted in accordance with Direction for Permitted Users conducting water-related activities in Alberta.
- .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 Water is available for withdrawal from the Operations compound without 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 Park to mitigate the risk of cross- contamination of water bodies.

3.2 CLEARING AND GRUBBING

- .1 Clearing, grubbing and/or tree removal is not permitted under this Contract.

3.3 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.
- .2

END OF SECTION

01 45 00 QUALITY CONTROL**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 The Contractor is responsible for quality control inspection throughout every stage of the Work to ensure that all equipment, materials and workmanship comply with the requirements of the Contract.

1.2 REFERENCES

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

1.3 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.

1.4 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.

1.5 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, subgrade, granular base course, 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 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

CONSTRUCTION TYPE	TEST TYPE	MINIMUM FREQUENCY OF TESTS
Tests During Aggregate Production (In cases where material is already crushed, at a minimum, 2 sieve tests will still be required. Other tests may also be requested at the discretion of the Departmental Representative.)	ASTM C136 / C136M – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates	- Split Stockpiles: 1 for each stockpile for every 2 hours of production. - One main stockpile: for every 300 tonnes.
	Or C 117 – Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing	- 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.

CONSTRUCTION TYPE	TEST TYPE	MINIMUM FREQUENCY OF TESTS
	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.*

1.6 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;

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- .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.

1.7 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

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- .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.

1.8 INDEPENDENT INSPECTION AGENCIES

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

1.9 ACCESS TO WORK

- .1 Allow inspection / testing agencies access to Work, 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.

1.10 PROCEDURES

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

1.11 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):

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- .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.
 - .2 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.
 - .3 The Departmental Representative will accept or reject the proposed resolution and corrective action proposal.
 - .4 Payment for the Work itself may be withheld until the NCR issue is resolved.
 - .3 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.
 - .4 The Completion Certificate will not be issued if there are any unresolved Non-Conformance Reports.
 - .5 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.

1.12 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.

1.13 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.

1.14 REPORTS

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

1.15 TESTS AND MIX DESIGNS

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

1.16 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 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.

1.9 CLEAN UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways

1.10

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 to execute Work and remove from site after use.

1.3 GUARDRAILS AND BARRICADES

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

1.4 WEATHER ENCLOSURES

- .1 Not used.

1.5 DUST TIGHT SCREENS

- .1 Not used.

1.6 ACCESS TO SITE

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

1.7 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public in accordance with Section 01 35 31 - Special Procedures for Traffic Control.

1.8 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.
- .4 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .5 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

1.3 QUALITY

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

1.6 TRANSPORTATION

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

1.7 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in 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 covering or concealment of the work with subsequent work. The Contractor shall notify the Departmental Representative 24 hours before covering or concealing any portion of the work.
- .2 If the Contractor fails to provide sufficient notice prior to covering or concealing any portion of the work, the Departmental Representative may:
 - .1 Require the Contractor to uncover the concealed work to allow for inspection. Exposing the concealed work to allow inspection, and replacing the subsequent concealing work will be considered incidental to the Work and no separate or additional payment will be made; or
 - .2 Accept the concealed work without inspection at zero cost to the owner.

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

2.1 MATERIALS

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

PART 3 EXECUTION

3.1 CONTROL OF WORK

- .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

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- .5 Vertical shall be less than $0.008 \times \sqrt{k}$ where k is distance in kilometres.
 - .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 50 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 prove they meet Contract tolerances 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.
 - .7 Contractor to provide a stake out report as requested by the Departmental Representative.

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

<u>Survey Layout</u>	<u>Maximum Interval</u>	<u>Product</u>	<u>Tolerances</u>
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

<u>Survey Layout</u>	<u>Maximum Interval</u>	<u>Product</u>	<u>Tolerances</u>
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 accuracy per Specifications
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
Retaining Walls	Not more than 10 m, and at alignment changes.	One stake showing control line location and either the elevation at the top of the wall or the elevation at the bottom of footing excavation, as well as station.	Per Specifications
Profile Milling	5m Grid Pattern	5 m grid on pavement break points with cuts / fills.	N/A
Level Course / Profile Paving	5m Grid Pattern	5 m grid on pavement break points with cuts / fills.	N/A
Paving	20 m	Stake showing station and offset, reference points (eg. centerline offset, barrier, changes in paint lines etc.)	N/A
Super-elevation change	At percentage change points	Stakes showing station and super elevation 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
Curb and Gutter	10 m and at alignment changes. Curb returns: 5 m or at quarter points, whichever is less.	Offset hub and nail with cut/fill to gutter grade, show stationing.	+/- 0.30m – up or down chainage Offset from CL accuracy required +/- 0.030m Vertical tolerance +/- 0.010m
Median/Island Curb	Continuous.	Paint line at face/edge of curb	+/- 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

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- .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 Contractor to provide any 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 outside of the Park 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.

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.

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- .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.

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.
- .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.

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- .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:
 - .5 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.
- .8 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .9 Written verification to follow oral instructions.
 - .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.
- .10 Warranty period is one (1) year.

PART 2 PRODUCTS

2.1 NOT USED.

PART 3 EXECUTION

3.1 NOT USED.

END OF SECTION

02 81 01 HAZARDOUS MATERIAL**PART 1 GENERAL****1.1 REFERENCES**

- .1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92 637.
- .2 National Fire Code of Canada 1995.
- .3 Transportation of Dangerous Goods Act, 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 Safety Data Sheet (SDS) for each hazardous material required on site. Submit SDS to Departmental Representative upon request.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 In accordance with Section 01 35 43 - Environmental Procedures
- .2 Coordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
- .3 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

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- .4 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.
 - .5 All explosives must be mixed outside of the Park and delivered to the site. No storage of explosives shall be allowed within the National Park.
 - .6 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.
 - .7 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.
 - .8 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .9 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.

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- .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 SDS 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.
- .7 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.

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- .8 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

END OF SECTION

31 24 13 ROADWAY AND DRAINAGE EXCAVATION**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 This item consists of the excavation and use/disposal of all materials in conformity with the lines, grades and dimension indicated in the Contract Documents and as directed by the Departmental Representative and includes:
 - .1 Stripping of organic material at kiosk ditching area.
 - .2 Construction of roadway ditches.
 - .3 Removal and disposal of waste / unsuitable / surplus materials from full depth repair excavation and ditching areas.
 - .4 Transportation of excavated materials.
 - .5 Compaction of subgrade.
 - .6 Finishing of top surfaces and slopes.
 - .7 Maintenance of the work set forth under this section in a finished condition until any portion thereof has been accepted as completed by the Departmental Representative.

1.2 REFERENCES

- .1 AT - Standard Specifications for Highway Construction (latest edition).
- .2 American Society for Testing and Materials International, (ASTM)
- .3 ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft³) (600 kN-m/m³).

1.3 DEFINITIONS

- .1 Ditching: includes stripping to stockpile, excavating, grading, shaping, compacting and topsoil placement from stockpile
- .2 Waste Material: material unsuitable for embankment, embankment foundation, and material surplus to requirements.
- .3 Topsoil: material passing a 100 mm sieve and capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

1.4 MEASUREMENT AND PAYMENT PROCEDURES**.1 Waste Excavation:**

- .1 Measure for payment for Waste Excavation will be the volume in cubic metres measured in its original position from field measurements taken by the Departmental Representative in areas of excavation. Work is to be done in accordance with the Contract Documents and accepted by the Departmental Representative.
- .1 Payment will be made under “**Unit Price Item 4a Road Embankment - Waste Excavation**” and the price(s) bid shall be full compensation for the

cost of furnishing all labour, materials, equipment, tools, disposal outside of the Park, bird nest sweeps, and incidentals necessary to complete the work as specified in the Contract Documents.

.2 Ditching:

.1 Measure for payment for Ditching will be the length in lineal metres measured by the Departmental Representative. Work is to be done in accordance with the Contract Documents and accepted by the Departmental Representative.

.1 Payment will be made under **“Unit Price Item 5a – Cleaning and Reshaping of Ditches”** and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, tools, disposal outside of the Park, bird nest sweeps, and incidentals necessary to complete the work as specified in the Contract Documents.

.3 Items considered incidental to the Work include, but are not limited to:

.1 General:

.1 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.

.2 Survey and layout.

.3 Excavating, loading, hauling, placing and compacting material within the limits of the Works.

.4 Separating of organic material from non-organic material and stockpiling, as directed by the Departmental Representative.

.5 Overhaul.

.6 Watering, drying or compacting soils to achieve specified densities inclusive of all compaction efforts.

.7 Proof rolling.

.8 Compaction of material (150 mm) in areas of deep repair.

.9 Placing material in stockpiles, grading, or maintaining the stockpile site.

.10 Finishing.

.2 Ditching:

.1 Loading, hauling and stockpiling stripping material, excavating, grading, shaping, ensuring positive drainage, compacting and topsoil placement from stockpile as described in this section or other location(s) as directed by the Departmental Representative.

.3 Waste:

.1 Excavation, loading, hauling, and disposal of material to the designated areas as shown in the bid table / outside of the Park at a location determined by the Contractor.

.2 Obtaining, maintaining and reclamation of a disposal site outside of the Park and all incidentals associated with the removal and disposal of waste.

.4 In addition to incidental items, no measure for payment will be made for:

.1 Stripping below the design ditch grade.

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- .2 Excavating and/or construction embankments unnecessarily beyond design lines established by Departmental Representative, with exception of unavoidable slide material. Do not measure slide material, when such slides are attributable to negligence.
 - .3 Contractor contaminated suitable surplus materials with unsuitable materials. Contaminated unsuitable materials shall be removed from the Park at the Contractor's expense.
 - .4 Ditch or backslope overcut below the design grade line and/or filling back to design grade.
 - .5 If overcut, no payment will be made for filling an area back to grade.
 - .6 Removing unsuitable material from embankment attributable to negligence.
 - .5 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.
 - .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 to the Contractor.

1.5 QUALITY CONTROL

- .1 Regulatory Requirements:
 - .1 Adhere to regulations of authority having jurisdiction when blasting is required.
 - .2 Adhere to Provincial and National Environmental requirements when potentially toxic materials are involved.
- .2 In accordance with Section 01 45 00 – Quality Control.

1.6 SUBMITTALS

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

1.7 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Embankment materials require acceptance by Departmental Representative.
 - .1 The Contractor shall provide material test certificates to the Departmental Representative for consideration.
- .2 Material used for embankment not to contain more than 3% organic matter by mass, frozen lumps, weeds, sod, roots, logs, stumps or other unsuitable material.

PART 3 EXECUTION

3.1 UTILITY COORDINATION

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

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- .2 Coordinate relocations or protection of utilities (manholes, ducts, conduits or other associated infrastructure) with utility service providers and perform works required to complete relocation or protection. Work to be in accordance with utility service provider instruction or as directed by the Departmental Representative.
 - .3 Existing buried utilities are to be located at all new culvert locations and every 100 m along segments of the Work where the utilities may be damaged by the Work, by using low impact excavation such as hydrovac or similar methods which will not damage buried utilities.
 - .4 Payment for locating utilities to be incidental to the Works and no additional payment will be made.
 - .5 Payment for utility relocations or protection to include all coordination efforts, labour, equipment and materials to be made under "Lump Sum Item 3 – Prime Cost Sum" in accordance with Section 01 21 00 - Allowances and Section 01 14 00 - Work Restrictions.

3.2 COMPACTION EQUIPMENT

- .1 Compaction equipment must be equivalent of one 12 tonne vibratory packer capable of obtaining required densities in materials on project. Equipment that does not achieve specified densities must be replaced or supplemented.

3.3 WATER DISTRIBUTORS

- .1 Apply water with equipment capable of uniform distribution and in accordance with Section 01 35 43 – Environmental Procedures.

3.4 STRIPPING OF TOPSOIL

- .1 Notify Departmental Representative 24 hours in advance of topsoil stripping for amphibian monitoring.
- .2 Commence topsoil stripping of areas on acceptance by the Departmental Representative after clearing and grubbing debris have been removed from these areas.
- .3 Stripping depth for the removal of organic material is estimated to be on average 200-300 mm but will fluctuate from one location to the other. Contamination of non-organic material will not be permitted during stripping.
- .4 Strip topsoil to depths as verified by the Departmental Representative. Do not mix topsoil with subsoil. Stripping depth will vary.
- .5 Stripping material is to be either hauled to and stockpiled in a windrow as directed by the Departmental Representative.
- .6 Stripped soil materials shall be placed and stored at locations and in amounts and form as instructed by the Departmental Representative, for later reclamation use on the ditch. Stripping piles may require erosion control, sedimentation protection or stabilization, depending on the location and anticipated duration of storage. At the Departmental Representatives direction, the Contractor shall prepare a plan for management of each stripping pile.

3.5 EXCAVATING

- .1 General:
 - .1 Stockpiling along the ROW outside of the cut/fill slope will not be permitted unless approval has been given by the Departmental Representative.
 - .2 Notify the Departmental Representative when waste materials are encountered and remove to depth and extent as approved by the Departmental Representative. This material shall be hauled to and stockpile at the designated pit locations.
 - .3 Subcut below subgrade elevation in deep repair areas only as approved by the Departmental Representative and replace with acceptable embankment material and compact. Compact top 300 mm below final subgrade elevation to minimum 100% Standard Proctor density, ASTM D698 (AASHTO T99).
 - .4 The dimensions of the excavations shall be, in accordance with the typical sections accompanying these specifications, but the dimensions of any or all excavations and embankments may be increased or decreased at any time by the Departmental Representative as conditions and circumstances may determine.
- .1 Drainage:
 - .1 Maintain profiles, crowns and cross slopes to provide positive surface drainage.
 - .2 Provide ditches as work progresses for positive drainage.

3.6 PROOF ROLLING

- .1 Finished subgrade must not rut or deflect when proof rolled with a truck having a 9 tonne single axle dual tire or 17 tonne tandem axle group with dual tires with a tire pressure of 600 kPa. The prepared subgrade shall receive one complete coverage by the tires of a truck as specified.
- .2 Proof roll subgrade. If use of non-standard proof rolling equipment is approved, Departmental Representative to accept level of proof rolling.
- .3 Where proof rolling reveals areas of defective subgrade:
 - .1 Remove subgrade material to depth and extent as directed by Departmental Representative.
 - .2 Backfill excavated subgrade with suitable Common material and compact in accordance with Section 31 24 13 – Roadway and Drainage Excavation.
 - .3 Replace subgrade material and compact in accordance with the Contract Documents.
- .4 All associated Works, including replacing defective material with new materials in accordance with the appropriate Sections is to be done at the Contractor's cost.

3.7 FINISHING

- .1 Shape entire subgrade to within ± 15 mm of design elevations but not to be uniformly high or low.

3.8

PROTECTION

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

END OF SECTION

31 32 19 GEOTEXTILES**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 The Work includes the supply and installation of woven geotextile at locations shown on the Drawings, described in the Special Provisions or as directed by the Departmental Representative.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM D4491, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D4595, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D4716, Test Method for Determining the (In-Plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .4 ASTM D4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
 - .5 ASTM A123 / A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- .2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-4.2 No. 11.2-M89(R2013), Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
 - .3 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
 - .4 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
 - .5 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
 - .6 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .7 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.
- .3 Canadian Standards Association (CSA International)
- .1 CAN/CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 AT - Standard Specifications for Highway Construction (latest edition)
 - .3 AT - Standard Specifications for Bridge Construction (latest edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measurement shall be in square metres of ground covered, excluding the area associated with laps or stitching.
- .2 The supply and installation of geotextile will be made under **“Unit Price Item 4b – Road Embankment Woven Geotextile – Supply & Install”** and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, hauling, tools and incidentals necessary to complete the work as specified in the Contract Documents.

1.4 QUALITY CONTROL

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

1.5 SUBMITTALS

- .1 Submit samples in accordance with 01 33 00 – Submittal Procedures for each type of geotextile used.
- .2 Submit copies of mill test data and certificates in accordance with Section 01 33 00 – Submittal Procedures.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.
- .2 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.
- .2 Unused geotextiles to be removed from the Park at the Contractor's expense.

PART 2 PRODUCTS**2.1 MATERIAL**

- .1 Woven geotextile shall be Mirafi H2Ri or approved equivalent. If the Contractor wishes to propose an alternate woven geotextile, the approval is subject to the discretion of the Department Representative.

2.2 IDENTIFICATION, SHIPMENT, AND STORAGE

- .1 Geosynthetics are to be labelled in accordance with ASTM D4873/D4873M and must clearly show the manufacturer name, product style number and roll number.
- .2 Products without proper identification or labelling, mis-labelling, or misrepresentation of materials shall be rejected. The labelling should be clearly visible on product rolls at regular intervals.

- .3 Geotextile rolls shall be wrapped with a material that will protect the geosynthetic, including the ends of the roll, from damage due to shipment, water, sunlight, and contaminants.
- .4 Protective wrapping shall be maintained during shipment and storage and shall remain on the geotextile fabric until installation.
- .5 During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from site construction damage, precipitation, contamination by dirt or dust, extended ultraviolet radiation, and any other environmental condition that may damage the physical properties of the geosynthetic.

PART 3 EXECUTION

3.1 GENERAL

- .1 These installation instructions are intended for use in conjunction with the material specification for geosynthetics. The specification details material properties for geosynthetics used in separation, subsurface drainage, erosion control, and stabilization applications. Proper material handling, construction, and installation techniques are essential in order to ensure that the intended function of the geosynthetic is fulfilled.
- .2 The surface to receive the geotextile shall be prepared to a relatively smooth condition free of protrusions, depressions, debris, and soft or low density pockets of material. The geotextile fabric shall be installed free from tensile stresses, folds, wrinkles, or creases.
- .3 In order to minimize the adverse effects of natural elements, the geotextile shall be covered shortly after placement, and within sufficient time so that the damage does not occur. In no case shall this time exceed 7 days for ultraviolet radiation exposed material, or 14 days for ultraviolet radiation protected material and low ultraviolet susceptible polymer geotextile.
- .4 The geotextile fabric shall be protected all times during construction. Wheeled or tracked vehicles shall not be allowed to travel directly on the geotextile fabric. Any geotextile fabric damaged during installation or during placement of overlying material shall be replaced by the Contractor at their own expense.
- .5 If a sewn seam is to be used for seaming the geotextile, the thread used shall consist of high strength polypropylene or polyester which are resistant to ultraviolet radiation. Nylon thread shall not be used.

3.2 SEPARATION & FILTRATION / STABILIZATION CONSTRUCTION

- .1 The geotextile shall be laid smooth without wrinkles or folds on the prepared subgrade in the direction of construction traffic. Adjacent geotextile panels shall be overlapped or sewn as follows:

$\text{CBR} \geq 3\%$	400 - 450 mm overlap
$1\% \leq \text{CBR} < 3\%$	600 - 900 mm overlap
$0.5\% \leq \text{CBR} < 1\%$	900 mm overlap or sewn
$\text{CBR} < 0.5\%$	Sewn with two rows of stitches over 200 mm overlap

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- .2 Prior to covering, the geotextile shall be inspected to ensure that it has not been damaged during installation. The inspection shall be done by the Departmental Representative. Damaged geotextiles, as identified by the Departmental Representative, shall be repaired immediately. A geotextile patch shall be placed over the damaged area, extending beyond the damaged area a distance equal to the overlap specified above.
 - .3 The soil or aggregate shall be placed by end dumping onto the geotextile from the edge of the geotextile or from previously placed soil or aggregate. Construction vehicles shall not be allowed directly on the geotextile. The soil or aggregate shall be placed such that at least the minimum specified lift thickness shall always be between the geotextile and equipment tires or tracks.

3.3 FILTER FABRIC FOR RIPRAP AREA REQUIREMENTS:

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with Pins.
- .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- .4 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .5 Pin successive strips of geotextile with securing pins at 3m intervals.
- .6 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .7 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .8 Place and compact Riprap in accordance with Section 31 37 00 - Riprap.
- .9 Install as per manufacturers specifications.

3.4 PROTECTION

- .1 Vehicular traffic not permitted directly on geotextile.
- .2 Turning of vehicles shall not be permitted on the first lift above the geotextile.

END OF SECTION

32 11 24 GRANULAR BASE COURSE**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 Granular base course shall consist of an intimate mixture of crushed aggregate and water, which is placed in layers upon a prepared surface, compacted and finished, as specified herein.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C117, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
 - .5 ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
 - .6 ASTM D1883, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - .7 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 AT - Standard Specifications for Highway Construction (latest edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measure for payment of granular base course shall be in neat line cubic meter volumes calculated from the Design cross sections for work completed in accordance with the Contract Documents and accepted by the Departmental Representative.
- .2 Payment shall be made under **“Unit Price Item 3a – Load, Haul, Place and Compact Granular Material (Kiosk Deep Repair) – Granular Base Course Des. 2 Class 25”** respectively and the price(s) bid shall be full compensation for processing, hauling and placing the material on the roadway, intersections, entrances and approaches; supplying water and adjusting the moisture content; preparing the surface; the supply and application of asphalt material for prime coat; supplying and applying blotting sand when required; maintaining the treated surface; interim lane marking; quality control; and all

labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Departmental Representative.

- .3 Items considered incidental to the Work include, but are not limited to:
 - .1 Supply, loading, hauling, placing, compacting, water for compaction, drying of material and finishing.
 - .2 Overhaul.
 - .3 Any temporary stockpiling of aggregates onsite.
 - .4 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
- .4 Mobilization and demobilization required for this Work shall be incidental to “Lump Sum Price Item 1 – Mobilization / Demobilization”, and no additional payment will be made.
- .5 Traffic Control required for this Work shall be incidental to “Lump Sum Price Item 2 – Traffic Accommodation” and no separate payment will be made to the Contractor.

1.4 ENVIRONMENTAL PROCEDURES

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

1.5 TRAFFIC CONTROL

- .1 Traffic Control required for this Work in accordance with Section 01 35 31 – Traffic Control

1.6 QUALITY CONTROL

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

1.7 SUBMITTALS

- .1 In accordance with Section 01 33 00 Submittal Procedures.
- .2 Contractor to provide material samples to the Departmental Representative prior to works commencing for Quality Assurance purposes.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.
- .2 Divert unused granular material to outside of the National Park as accepted by Departmental Representative.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 AT - Standard Specifications for Highway Construction (latest edition).

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- .2 AT Designation 2 Class 25 Base Course Aggregate to be supplied by the Contractor from outside the Park or produced from suitable material excavated from within the roadway cuts and structure excavations.

PART 3 EXECUTION

3.1 PLACING

- .1 Load, haul and place base aggregate after sub-base aggregate surface is inspected and accepted by Departmental Representative.
- .2 Placing
- .1 Construct base aggregate to depth and grade in areas indicated.
 - .2 Ensure no frozen material is placed.
 - .3 Place material only on clean unfrozen surface, free from snow and ice. For each lift, material shall be placed on crown line using a Tonne / metre spreadsheet. Contractor shall have a checker to indicate spread distance when material is being placed.
 - .4 Begin spreading base aggregate on crown line or on high side of one-way slope.
 - .5 Place material using methods that do not lead to segregation or degradation of aggregate.
 - .6 For spreading and shaping material, use spreader boxes having adjustable templates or screeds that will place material in uniform layers of required thickness.
 - .7 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Departmental Representative may authorize thicker lifts if specified compaction can be achieved.
 - .8 Shape each layer to smooth contour and compact to the specified density before succeeding layer is placed.
 - .9 Remove and replace that portion of layer in which material becomes segregated during spreading.

3.2 COMPACTION

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density not less than 100% Standard Proctor density in accordance with ASTM D698.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
- .4 Apply water as necessary during compacting to obtain specified density.
- .5 Dry as necessary to obtain specified compaction.
- .6 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
- .7 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.3 PROOF ROLLING

- .1 Granular Base Course must not rut or deflect when proof rolled with a truck having a 9 tonne single axle dual tire or 17 tonne tandem axle group with dual tires with a tire pressure of 600 kPa. Each compacted course of base course aggregate shall receive one complete coverage by the tires of a truck as specified.
- .2 Proof roll Granular Base Course. If use of non-standard proof rolling equipment is approved, Departmental Representative to accept level of proof rolling.
- .3 Where proof rolling reveals areas of defective Granular Base Course or subgrade:
 - .1 Remove Gravel fill and subgrade material to depth and extent as directed by Departmental Representative.
 - .2 Backfill excavated subgrade with suitable Common material and compact in accordance with Section 31 24 13 – Roadway and Drainage Excavation.
 - .3 Replace Gravel fill and/or Granular Base Course material and compact in accordance with the Contract Documents.
 - .4 All associated Works, including replacing defective material with new materials in accordance with the appropriate Sections is to be done at the Contractor's cost.

3.4 SITE TOLERANCES

- .1 Finished granular base course surface to be within +/- 10 mm of the design elevation and cross section but not uniformly high or low.

3.5 PROTECTION

- .1 Maintain finished base in condition conforming to this Section until succeeding material is applied.

END OF SECTION

31 05 10 CORRECTED DRY DENSITY FOR FILL**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 This Section defines correction to maximum dry density to take into account aggregate particles larger than 19mm.

1.2 REFERENCES

- .1 ASTM C127, Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.
- .2 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- .3 ASTM D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- .4 ASTM D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.3 DEFINITIONS

- .1 Corrected maximum dry density is defined as:
- .1 $D = (D1 \times D2) / ((F1 \times D2) + (F2 \times D1))$.
- .2 $D = (F1 \times D1) + (0.9 \times D2 \times F2)$.
- .3 Where: D = corrected maximum dry density kg/m³.
- .4 F1 = fraction (decimal) of total field sample passing 19mm sieve.
- .5 F2 = fraction (decimal) of total field sample retained on 19mm sieve (equal to 1.00 - F1).
- .6 D1 = maximum dry density, kg/m³ of material passing 19mm sieve determined in accordance with Method A of ASTM D1557.
- .7 D2 = bulk density, kg/m³, of material retained on 19mm sieve, equal to 1000G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127.
- .2 For free draining aggregates, determine D1 (maximum dry density) to ASTM D4253 wet method when directed by Departmental Representative.

1.4 MEASUREMENT AND PAYMENT

- .1 All aspects of the Corrected Dry Density for Fill will be considered incidental to the Work and no separate or additional payment will be made.

PART 2 PRODUCTS

2.1 NOT USED.

PART 3 EXECUTION

3.1 NOT USED.

END OF SECTION

31 05 17 AGGREGATES AND GRANULAR MATERIALS**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 This specification covers the general requirements for production, gradation, stockpiling, and pit operations for specified aggregate materials.
- .2 All aggregate used in the Work shall be supplied by the Contractor from sources located outside of the National Park boundary.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Unless otherwise specified, the production of aggregates including the processing, hauling and addition of blend sand, the production and addition of extra manufactured fines, and any other aggregate gradation adjustments and modifications will not be paid for separately. The cost of this work will be considered included in the unit price of the Contract item for which the aggregates are being produced.

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 Aggregate produced from all sources shall comply fully with the Specifications, and the Contractor shall recognize and satisfy himself as to the type and amount of work that may be necessary to produce the material required.
- .2 The Contractor shall adjust and modify aggregates as required to meet specification requirements.
- .3 The crushed aggregate shall be composed of sound, hard and durable particles of sand, gravel and rock; and shall be free from elongated particles, injurious quantities of flaky particles, soft shales, organic matter, clay lumps and other foreign matter.
- .4 For Designation 1 aggregates used for wearing surfaces (top lift), the Contractor shall produce aggregates such that material retained on the 5 000 micron sieve shall not contain more than 3% detrimental matter based on the total mass of the combined aggregates in the final product.

- .5 Prior to the production of any aggregate for use as a wearing surface, the Contractor shall submit a proposal to the Consultant detailing the action to be taken in the event the specification requirement for detrimental matter cannot be achieved. Production of aggregates for use as a wearing surface shall not proceed until such an action plan has been approved by the Departmental Representative.
- .6 Specifications for Aggregate are as follows:

Designation		1 Asphalt Concrete Pavement			2 Granular Base Course			6 Gravel Fill
Class (mm)		12.5	16	25	20	25	40	80
Percent Passing Metric Sieve (um)	80 000							100
	50 000							55-100
	40 000						100	
	25 000			100		100	70-94	38-100
	20 000			85-95	100	82-97		
	16 000		100	75-87	84-94	70-94	55-85	32-85
	12 500		80-92	65-80				
	10 000	100	70-84	58-72	63-86	52-79	44-74	
	5 000	60-75	50-65	40-58	40-67	35-64	32-62	20-65
	1 250	26-45	26-45	25-44	20-43	18-43	17-43	
	630	18-38	18-38	16-36	14-34	12-34	12-34	
	315	12-30	12-30	10-28	9-26	8-26	8-26	6-30
	160	8-20	8-20	6-18	5-18	5-18	5-18	
	80	4-10	4-10	4-10	2-10	2-10	2-10	2-10
% Fracture by Weight (2 faces)	All +5000	60	90	90	60+	60+	50+	N/A
Plasticity Index (PI)		NP	NP	NP	NP-6	NP-6	NP-6	NP-8
LA Abrasion (% Loss Max)		40	40	40	50	50	50	N/A
Micro-Devel (% Loss Max)		17	17	17	21	21	21	

For crushed aggregates, a tolerance of three percent in the amount passing the maximum size sieve will be permitted provided all oversize material passes the next larger standard sieve size.

PART 3 EXECUTION

3.1 GENERAL

- .1 The Contractor shall produce aggregates conforming to the Specifications for the Designations and Classes called for in the Contract.
- .2 Prior to any aggregate production, the Contractor shall submit a written proposal to the Consultant, detailing aggregate processing procedures intended to be used. These proposed procedures will require the approval of the Consultant. Aggregates produced prior to this approval will not be accepted.
- .3 The Contractor shall notify the Consultant a minimum of two days in advance of the start of aggregate production to allow the visual inspection of the process and testing of the production as deemed necessary by the Consultant.
- .4 Any recombining of aggregates or addition of blend materials shall be performed so that a uniform mix of the various sizes is achieved.
- .5 Unless otherwise specified, the Contractor shall ensure that manufactured fines are retained in the crushed aggregate stockpile.
- .6 There will be no separate payment made for any additional work associated with the Contractor's proposal in achieving the specification requirements for detrimental matter and all related costs shall be included in the unit price bid for "Asphalt Concrete Pavement" for the class of material used.

3.2 PRODUCTION OF DESIGNATION 1 AGGREGATES

- .1 The Contractor shall split aggregates for Designation 1 material into coarse and fine fractions prior to crushing of the coarse fraction. The crushed coarse and the fine fractions shall be stockpiled separately.
- .2 The Contractor shall select a screen size at which splitting will take place. Splitting of aggregates shall be controlled such that the coarse aggregate fraction, before crushing, shall contain no more than 5% passing the 5000 sieve for all mix types.
- .3 Further splitting of the crushed coarse aggregate into separate stockpiles may be performed at the Contractor's option. No additional payment will be made for this work.

3.3 PRODUCTION AND ADDITION OF BLEND SAND

- .1 When the aggregate being produced is destined for further processing through a mixing plant, the addition of any required blend sand shall take place at the mixing plant.
- .2 Prior to the mix production, blend sand shall be separately stockpiled so that a representative sample can be obtained in order to establish a mix design.

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- .3 All blend sand shall be screened before being incorporated into the mix, to remove clay lumps, roots and other deleterious materials. All blend sand so screened shall pass the 5000 sieve.
 - .4 Blend sand shall be dried if necessary to ensure a uniform feed.
 - .5 All other aggregates requiring an addition of blend sand to meet the gradation requirements shall be adjusted at the crushing stage by means of a separate conveyor or other approved device capable of metering the blend sand at a specified uniform rate. The blend sand shall be added prior to or onto the crusher screen deck.

3.4 PRODUCTION OF EXTRA MANUFACTURED FINES

- .1 Manufactured fines are defined as that portion of the material passing the 5 000 sieve size which is produced by the crushing process.
- .2 In the event the manufactured fines in the total combined aggregate do not meet the requirement for the specified Asphalt Concrete Mix Type, extra manufactured fines shall be produced by screening the pit-run material so that the screened material contains no more than 5% material passing a 5 000 sieve. This material shall be crushed and all material produced by this crushing process shall be placed in a separate stockpile and designated as Extra Manufactured Fines.

END OF SECTION

32 12 14 ASPHALT PRIME AND TACK COAT**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 Prime Coat: Supply and application of a low viscosity liquid asphalt to an absorbent surface to waterproof and promote bonding between the surface being primed and the next course in accordance with the Contract Document and as directed by the Departmental Representative.
- .2 Tack Coat: Supply and application of a liquid asphalt to ensure a bond between the surface being paved and the next course of Asphalt Concrete Pavement 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 prime and tack coats will not be measured separately and will be incidental to **“Unit Price Item 3a “Granular Base Course – Designation 2 Class 25” and “Unit Price Item 2a and 2b – Asphalt Concrete Pavement - EPS”** respectively, 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 prime and tack coat material proposed for use in new, clean, airtight, sealed, plastic wide mouth bottles to Departmental Representative, at least 2 weeks prior to beginning Work.
- .3 Sample asphalt prime and 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 prime and tack coat material meets requirements of this Section.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 In accordance with Section 01 61 00 – Common Product Requirements
- .2 Deliver, store and handle materials in accordance with ASTM D140.
- .3 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 Park.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Prime Coat: Low viscosity liquid asphalt: SEP-1, SEP-2 or SS-1.
- .2 Tack Coat: Anionic emulsified asphalt: to CAN/CGSB 16.2, grade: SS 1 or MS-1.
- .3 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.
 - .2 Applied uniformly on variable widths of surface up to 5 m.
 - .3 Applied at readily determined and controlled rates from 0.2 to 5.4 L/m² with uniform pressure, and with an allowable variation from any specified rate not exceeding 0.1 L/m².
 - .4 Distributed in uniform spray without atomization at temperature required.
 - .5 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.
 - .6 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.
 - .7 Equipped with an easily read, accurate and sensitive device that registers temperature of liquid in reservoir.
 - .8 Equipped with accurate volume measuring device or calibrated tank.
 - .9 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
 - .10 Equipped with nozzle spray bar, with operational height adjustment.

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- .11 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 prime or tack coats.
- .2 Apply asphalt prime and tack coats 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 prime or tack coat when air temperature is less than 10 degrees Celsius or when rain is forecast within 2 hours of application.
- .7 Apply asphalt prime or tack coat only on unfrozen surface.
- .8 Evenly distribute localized excessive deposits of prime or 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 primed or tacked areas until asphalt coats have set.
- .11 Re prime or tack contaminated or disturbed areas as directed by Departmental Representative.
- .12 Permit asphalt prime and tack coats 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 Asphalt Mix Type M1 as per the Contract Documents, or as directed by the Departmental Representative
- .2 For the asphalt mix, asphalt aggregate supplied shall consist of AT Designation 1 Class 12.5 (12.5mm) Aggregate in accordance with AT - Standard Specifications for Highway Construction (latest edition)
- .3 Asphalt Cement used shall be PG 52-34 in accordance with AT- Standard Specifications for Highway Construction (latest edition)
- .4 Recycled Asphalt Pavement (RAP) will be permitted to a maximum of 10% in the asphalt pavement mix design in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition).
- .5 Perform mix designs for Asphalt Mix Type M1 Asphalt Concrete Pavement using Asphalt Cement PG 52-34 and Designation 1 Class 12.5 aggregate. Perform additional mix designs where RAP is included, if applicable. Mix design is subject to acceptance by the Departmental Representative.
- .6 Acceptance and/or rejection of all placed Asphalt Concrete Pavement shall be determined in accordance with the EPS. The Contractor shall be fully responsible for the removal and replacement of rejected materials.

1.2 REFERENCES

- .1 AT - Standard Specifications for Highway Construction (latest edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Asphalt Concrete Pavement
 - .1 Asphalt concrete pavement will be measured in tonnes by scale ticket submitted to and accepted by the Departmental Representative. Payment for Asphalt Concrete Pavement shall be made under **“Unit Price Items 2a and 2b – “Asphalt Concrete Pavement (EPS) – AT Mix Type M1 PG 52-34 Asphalt Binder (Main Line), 35 mm depth or (Mill & Patch Fill), depths vary”** and the price(s) bid shall be full compensation for supply of asphalt concrete mix including all materials, supply of asphalt cement and aggregate, crushing of aggregate, processing, plant mixing, loading, hauling, supply and application of prime/tack coat, paver laying, compacting, finishing surface, raking, quality control testing, survey and layout, safety and maintenance, and all labour, materials, equipment, tools and incidentals necessary to complete the Work in accordance with the Contract Documents and to the satisfaction of the Departmental Representative.

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- .2 Leveling course will not be measured separately for payment but will be paid at the unit price bid for **“Asphalt Concrete Pavement (EPS) Mix Type M1”**.
 - .3 Applicable EPS 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).
 - .4 Contrary to AT – Standard Specifications for Highway Construction Section 3.54 – Pavement Smoothness Testing, the following shall apply:
 - .1 Smoothness testing to be arranged by the Departmental Representative
 - .2 The following work will be considered incidental to the Work and no separate or additional payment will be made:
 - .1 Supply, installation, maintenance, calibration of weight scales and a scale house, or alternately electronic calibrated silo scales, at the plant.
 - .2 The provision of a scale person at the plant to weigh the produced mix, and prepare scale tickets
 - .3 The provision of a road checker to record mix time and location of mix deliveries.
 - .4 Preparing asphalt mix designs, in accordance with Section 01 45 00 – Quality Control and Section 01 33 00 – Submittal Procedures.
 - .5 Cleaning of granular base course and existing pavement prior to paving.
 - .6 The supply and addition of anti-stripping agent(s) and other additives.
 - .7 Reestablishment of existing facilities on finished ACP surface, including restrooms and garbage cans. Damage to any facility shall be repaired at the Contractor's own cost. Adjustment to any facility, if requested in writing by the Departmental Representative, shall be paid under the lump sum “Prime Cost Sum”, only if the price has been accepted by the Departmental Representative prior to Construction.
 - .3 Traffic Control required for this Work shall be incidental to “Lump Sum Price Item 2 - Traffic Accommodation” and no separate payment will be made to the Contractor.
 - .4 Mobilization and demobilization required for this Work shall be incidental to “Lump Sum Price Item 1 – Mobilization / Demobilization” and no separate payment will be made to the Contractor.
 - .5 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the Contract and no separate payment will be made to the Contractor.

1.4 SUBMITTALS

- .1 In accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit mix design AT Mix Type M1 (12.5 mm) Asphalt Concrete Pavement using PG 52-34 asphalt cement for review and acceptance by Departmental Representative.
- .3 Submit product data including source for additional Natural Fines required for review and acceptance by Departmental Representative.

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 binder material meets requirements of this Section.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 In accordance with Section 01 61 00 – Common Product Requirements
- .2 Deliver, store and handle materials in accordance with ASTM D140.
- .3 Provide, maintain and restore asphalt storage area.

1.7 SUBMITTALS

- .1 In accordance with Section 01 33 00 Submittal Procedures.
- .2 Submit mix design AT Mix Type M1 (12.5mm) Asphalt Concrete Pavement using PG 58-28 asphalt cement for review and acceptance by Departmental Representative.
- .3 Inform Departmental Representative of proposed source of aggregates and provide access for sampling [4] weeks prior to beginning work.

1.8 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 Park.

PART 2 PRODUCTS**2.1 MATERIALS**

- .1 Asphalt Cement
 - .1 PG 52-34 Asphalt Cement shall be used on Hwy 5
- .2 Asphalt Aggregate:
 - .1 The Contractor shall supply Designation 1 Class 12.5 aggregate in accordance with Section 31 05 17- Aggregates and Granular Materials
 - .2 Materials used shall be in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition), as applicable.
- .3 Asphalt Concrete Mix
 - .1 The Contractor shall supply Type M1 asphalt concrete mix in accordance with AT Standard Specifications for Highway Construction Section 3.50.3.2 (latest edition), except that the top size aggregate shall be 12.5 mm for this project.
- .4 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 10% in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition) and as approved by the Departmental Representative.
- .3 RAP testing is required in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition).
- .4 The Contractor shall process and crush the RAP to ensure compliance with all gradation requirements of their approved Job Mix Formula.
- .5 All additives (including anti-stripping agents) to be in accordance with the Approved Products List as published by AT.

PART 3 EXECUTION

3.1 PREPARATION

- .1 Prior to beginning paving operations, the Contractor shall inspect and verify with the Departmental Representative, all areas to be paved.
- .2 Sweeping and clearing of winter sanding on the roadway surface, 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 QUALITY CONTROL

- .1 Contractor is responsible for all Quality Control required in accordance with AT Standard Specifications for Highway Construction Section 3.50 (latest edition) and in accordance with Section 01 45 00 – Quality Control.
- .2 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), as applicable.
- .3 The Road Checker's Summary shall be provided to the Departmental Representative no less than 24 hrs after the relevant shift end.
- .4 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.
- .5 The method of tests for asphalt appeal samples shall be the same method of tests conducted as during Quality Control / Quality Assurance testing.

3.3 METHODOLOGY

- .1 ACP placement:

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- .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 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.

3.4 EQUIPMENT, PLANT AND MIXING REQUIREMENTS

- .1 Execution of the Work shall be in accordance with AT - Standard Specifications for Highway Construction (latest edition) Section 3.50 – Asphalt Concrete Pavement (EPS).
- .2 The Contractor will not be permitted to setup a Mobile Asphalt Plant or use a Stationary Asphalt Plant in the National Park for this Project.
- .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

02 41 13 ASPHALT PAVEMENT REMOVAL**PART 1 GENERAL****1.2 DESCRIPTION**

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

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measure for payment for Milling will be the square metres of asphalt pavement of existing roadway actually removed and stockpiled in accordance with the Contract Document or as directed by the Departmental Representative.
 - .1 Payment for milling shall be made under **“Unit Price Item 1a – Asphalt Pavement Removal – Cold Milling Asphalt Pavement (50mm Depth)”** 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 full depth removal shall be made under **“Unit Price Item 1b – Asphalt Pavement Removal – Asphalt Pavement Full Depth Removal and Disposal”** 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 Payment for full depth removal shall be made under **“Unit Price Item 1c – Asphalt Pavement Removal – Cold Milling Asphalt Pavement (35 mm Depth, Area Bounded by Salamander Crossings)”** 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 Payment for full depth removal shall be made under **“Unit Price Item 1d – Asphalt Pavement Removal – Cold Milling Asphalt Pavement (35 mm Depth, Adjacent to Curbs)”** 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 per square metre of asphalt removal will remain the same regardless of the number of passes required to complete the Work, to the depth and extents specified, as per the Contract Documents.
- .3 Items considered incidental to the Work include, but are not limited to:
 - .1 All operations involved in milling and pulverizing 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 Overhaul.
 - .3 Asphalt Concrete Pavement placing and subsequent removal at milled tie-in locations.

- .4 Cleaning of existing pavement shoulder, whether via sweeping or other methods.
- .5 Maintaining milled areas, including drainage, until completion of asphalt paving.
- .6 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.

.4 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.

.5 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.

1.4 QUALITY CONTROL

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

1.5 SUBMITTALS

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

1.6 WASTE MANAGEMENT AND DISPOSAL

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

1.7 DEFINITIONS

- .1 Partial Depth 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.

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, 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, planing 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 For Full Depth Asphalt Removal, it is anticipated that the depth of the existing pavement is 50 – 80 mm deep. Existing asphalt pavement thickness is not uniform and will vary from one location to the next.
- .3 Full depth asphalt pavement removal shall be done to the station ranges shown in Table 3.1 below or as designated by the Departmental Representative.

Table 3.1 – Full Depth Asphalt Removal and Replacement Locations

Station From	Station To	Length, m	Side*	Offset from Centreline, m	Approx. Width, m***	Approx. Area, m² ****	Comment
0+134	0+174	40	RT	0.8	1.3	52	
0+209	0+262	53	RT	0.0	1.5	80	
0+458	0+481	23	RT	0.6	3.3	76	
1+409	1+427	18	RT	0.0	4.1	74	Entire right lane
1+427	1+438	11	L/R	0.0	8.5	94	Full width
1+553	1+558	8	LT	0.5	3.2	26	
1+630	1+637	7	LT	0.0	3.7	26	
1+668	1+672	4	LT	0.8	2.7	11	
1+710	1+715	5	LT	0.3	2.8	14	
2+129	2+132	3	LT	0.0	3.0	9	
2+376	2+378	2	LT	0.2	2.7	6	
2+886	2+897	11	LT	0.0	4.1	45	Entire left lane
2+897	2+902	5	RT	2.3	1.9	10	
3+025	3+031	6	L/R	0.0	8.1	49	Full width
3+064	3+072	8	RT	-0.7	5.4	43	Offset is into LT lane
3+298	3+343	45	RT	2.0	2.0	90	
3+645	3+651	6	RT	2.1	1.9	11	
3+683	3+700	17	RT	1.8	2.3	39	
3+774	3+776	2	RT	2.5	0.9	2	
3+820	3+822	2	RT	2.2	0.9	2	
4+130	4+136	6	RT	1.7	2.4	14	
4+136	4+158	22	L/R	0.0	8.1	178	
4+200	4+203	3	RT	2.0	1	3	
4+410	4+416	6	RT	1.7	1.9	11	
5+032	5+041	9	LT	0.7	0.9	8	In painted median
5+235	5+284	48	L/R	VAR.	2.6	126	30% RT 70% LT
5+892	5+907	15	LT	0.4	2.8	43	
6+004	6+097	94	RT	5.0	VAR.	236	Stable Left Turn Bypass
6+177	6+253	76	LT	0.0	4.2	319	
6+327	6+360	33	RT	2.3	1.6	53	

6+419	6+439	20	RT	0.0	4.0	80	Entire right lane
8+095	8+119	24	RT	1.9	1.8	44	
TOTAL AREA FOR REMOVAL						1875	
TOTAL REPLACEMENT ASPHALT (ASSUMING AVERAGE DEPTH OF 70 mm)						315 t	

* Facing south.

* Measured longitudinally along the centreline.

*** Measured transversely across the crown of the road.

**** Payment made based on actual area measured in field.

- .4 Partial Depth Asphalt Pavement Removal by milling to lines and grades shown on the IFC Drawings or as established by Departmental Representative in field:
- .5 Use self-powered equipment and methods of removal and hauling which do not damage or disturb underlying roadway structure.
- .6 Prevent contamination of removed asphalt pavement by topsoil, underlying gravel or other materials.
- .7 Provide for suppression of dust generated by removal process to ensure a dust free Work Site.
- .8 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.
- .9 If applicable, 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.
- .10 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.
- .11 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.
- .12 The maximum delay between the area cold milled and the completion of asphalt paving of the same area will be five (5) days. Beyond 5 days, the Contractor shall repair any failure areas to the milled surface at his own expense, to the satisfaction of the Departmental Representative. The Contractor shall be responsible for maintaining the milled surface for the travelling public as directed by the Departmental Representative.
- .13 Cold milling asphalt pavement shall be performed in a manner which prevents the tearing and breaking of underlying and adjacent pavement and the contamination of the RAP with granular, subgrade or deleterious materials. All RAP shall be loaded directly to trucks from the milling machine and hauled to stockpile or disposed of.
- .14 The milled roadway surface shall be swept clean prior to opening to traffic. At locations including but not limited to urban areas and bridge decks, the Contractor shall sweep the surface in a manner which minimizes dust.
- .15 The Contractor shall, at his own expense, promptly repair any localized areas of distress in the milled surface that may present a hazard to traffic.

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- .16 At the point of daily termination of cold milling operations, the following shall apply:
- .1 Longitudinal changes in roadway surface profile or cross-section shall be limited to 50 mm and longitudinal transitions shall be a maximum of 25 mm
- .2 Transverse joints exceeding 25 mm in height shall be treated with a temporary fillet with a minimum slope of 1V:40H.
- .17 In the event of rain or other inclement weather, the Contractor shall suspend cold milling operations. The Contractor shall make necessary allowances for drainage of water that may pond in areas where the milled sections have not been paved.

3.4 STOCKPILING OF MATERIAL

- .1 The Contractor shall place removed asphalt material outside of the National Park or at other locations designated by the Departmental Representative.
- .2 Removed asphalt material shall remain the property of the contractor
- .3 Stockpiles shall be removed before the end of each Work day.
- .4 The height of the pile shall not exceed the height of the loader bucket.
- .5 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

32 01 16 TRANSVERSE MILLED RUMBLE STRIPS**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 Transverse milled rumble strips shall be installed in accordance with Section 3.52 Milled Rumble Strips of AT Standard Specifications for Highway Construction – Edition 16, 2019.
- .2 Sets of strips to be installed at same location and spacing as existing.

1.2 RECLAIMED ASPHALT PAVEMENT

- .1 The material produced as a result of rumble strip operations will be defined as reclaimed asphalt pavement. The Contractor shall assume ownership of the milled material and shall haul it from the roadway to his own disposal site located outside of the National Park boundary.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measurement of milled centreline rumble strips will be by the set.
- .2 Payment for milled rumble strips shall be made under “**Unit Price Item 7a – Transverse Rumble Strips – Rumble Strips**” and the price(s) bid shall be full compensation for traffic accommodation; constructing the milled rumble strips; removing and disposing of all debris; and all labour, equipment, tools and incidentals necessary to complete the work to the satisfaction of the Departmental Representative.
- .3 Traffic Control required for this Work shall be incidental to the lump sum price bid for “Traffic Accommodation” and no separate or additional payment will be made to the Contractor.
- .4 Mobilization and demobilization required for this Work shall be incidental to the lump sum price bid for “Mobilization / Demobilization”, and no separate or additional payment will be made.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 - Environmental Procedures.
- .2 The Contractor shall dispose of all removed asphalt material outside the Park; or at other locations as directed by the Departmental Representative.

1.5 QUALITY CONTROL

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

1.6 SUBMITTALS

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

1.7 ENVIRONMENTAL

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

PART 2 PRODUCTS**2.1 NOT USED.****PART 3 EXECUTION****3.1 RUMBLE STRIP EQUIPMENT**

- .1 For milled rumble strips, the cutter head shall be 0.3m, and capable of producing grooves meeting the requirements detailed on Standard Drawing 650A (Patterned Shoulder Rumble Strip (SRS)) and 650E (Centreline) of the BC MoTI Supplement to the TAC Geometric Design Guide. Machines shall be equipped with integral sweeping device mounted directly behind the cutter, or a separate sweeping operation shall be conducted as construction of the rumble strips progresses within the signed construction zone.

3.2 MILLED RUMBLE STRIPS

- .1 General
 - .1 Work shall be carried out during daylight hours only and only when visibility is 700 m or greater. Active work areas shall not exceed 3 km in length.
- .2 Traffic Accommodation
 - .1 The Contractor shall supply sequential arrow boards as part of his traffic accommodation measures for rumble strip construction. Rumble strips shall be constructed at the locations shown on the Drawings; or designated by the Departmental Representative.
- .3 Rumble strips shall be milled into the top lift of pavement only.
- .4 After milling the grooves, the Contractor shall sweep the milled areas clean; and dispose of the milling debris at a location outside of the National Park Boundary.
- .5 Patterns of milled rumble strips constructed outside the tolerances shown on the Drawings, or rumble strips exhibiting obvious defects will be rejected; and the Contractor shall be responsible for repairing the unacceptable work.

3.3 REPAIR OF UNACCEPTABLE RUMBLE STRIPS

- .1 Areas where unacceptable rumble strips have been constructed shall be repaired by the Contractor to the satisfaction of the Departmental Representative. Rumble strips shall then be re-established at these locations.
- .2 The Contractor shall submit details of his proposed repair methods to the Departmental Representative for review and acceptance prior to implementation.
- .3 All costs associated with the repair of unacceptable rumble strips will be considered incidental to the Work, and no separate or additional payment will be made.

3.4 SWEEPING

- .1 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

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 Safety Data Sheets (SDS).
- .7 AT Standard Specification for Highway Construction (current edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Temporary Pavement Lines and Markings
 - .1 Temporary Pavement Markings in accordance with Section 01 35 31 – Special Procedures for Traffic Control shall be considered incidental to the Contract and will not be measured for payment.
- .2 Roadway Lines and Pavement Messages
 - .1 Final line painting shall be measured in linear metres along the centre of the paint line regardless of width or line-gap ratio. Double centre lines are to be measured as one line. Centreline pavement lines happen before and after rumble strip installation. Both instances are paid. Payment will be made under **“Unit Price Items 8a-b – Pavement Markings – Roadway Lines”** and the price(s) bid shall be full compensation for materials, labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Departmental Representative.
 - .2 Pavement messages will be measured on a per message basis for each message applied to the roadway surface. Payment for Pavement Messages for the message specified will be made under **“Unit Price Item 8c-g – Pavement Markings – Pavement Messages”** and the price(s) bid shall be full compensation for materials, labour, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Departmental Representative.

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- .3 Contractor survey and layout of painted roadway lines and pavement messages will be considered incidental to the Work and no separate or additional payment will be made.
 - .3 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.
 - .4 Traffic Control required for this Work shall be incidental to the lump sum price for "Traffic Accommodation" and no separate or additional payment will be made.
 - .5 Mobilization and demobilization required for this Work shall be incidental to the lump sum price bid for "Mobilization / Demobilization" and no additional or separate payment will be made.
 - .6 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures shall be incidental to the Work and no separate or 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:

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- .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, daily.
- .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 shown in the Contract documents or as directed by the Departmental Representative.
- .4 Painted temporary lines are not permitted on the final surface.

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 IFC drawings or as 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.
- .6 Contractor Supervisor must be present on site when permanent markings are being reinstated.
- .7 Centreline rumble strips receive a double solid paint line application prior to rumble strip installation to act as a guide for the rumble strip installation. Following completion of rumble strips, a second application is made.

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.

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- .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.
- .4 The Contractor shall maintain records of QCIP data, complaints from the public, and other details relevant to the Work and shall provide these records to the Departmental Representative daily.

3.9 TRAFFIC CONTROL

- .1 In accordance with Section 01 35 31 – Special Procedures for Traffic Control and Contractor's accepted Traffic Management Plan

3.10 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.
 - .2 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:

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- .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.

3.11 PROTECTION OF COMPLETED WORK

- .1 Protect pavement markings until dry.

END OF SECTION

10 14 53 PERMANENT HIGHWAY SIGNAGE**PART 1 GENERAL****1.1 REFERENCES**

- .1 Removal and disposal, 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 Manual on Uniform Traffic Control Devices (latest edition)
- .3 AT - Standard Specifications for Highway Construction (latest edition).

1.3 MEASUREMENT AND PAYMENT

- .1 General
 - .1 All unit prices shall include traffic accommodation and temporary, construction signing; and all labour, materials, equipment, tools and incidentals necessary to complete the Work.
- .2 Removal of Existing Signs
 - .1 Measurement will be made of the number of sign installations removed. Payment will be made at the applicable **“Unit Price Item 9a Permanent Highway Signage - Remove and Dispose”**. Payment will be full compensation for removing, salvaging and reinstalling the wooden posts and signs, or removing and disposing of the existing wooden posts and signs.
 - .2 If the Department’s Representative determines that the removed post is not suitable for reinstallation and the existing sign is reinstalled, payment will be made for "Removal and Reinstallation or Disposal of Existing Sign Assembly" plus "Supply and Install - Wooden Post" for the applicable cross section of post installed.
- .3 New Signs and Posts
 - .1 Measurement will be made based on the number of sign and post assemblies installed. Payment shall be made under **“Unit Price 9b - Permanent Highway Signage”** and the price(s) bid shall be full compensation for the supply and installation of reflective sheeting, aluminum backing, powder coating and all labour, materials, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Departmental Representative.
- .4 Items considered incidental to the Work include, but are not limited to:
 - .1 Wooden posts.
 - .2 Filling holes as required for removal of existing sign bases.
 - .3 Survey and layout.

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- .1 Temporary stockpiling and retrieval of signs.
 - .2 Bilingual signage requirements as detailed in the Contract Documents.
 - .3 Locating utilities in prior to commencing the Works.
 - .4 Disposal of damaged items as directed by the Departmental Representative.
 - .4 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.

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 MATERIALS

2.1 GENERAL

- .1 The Contractor shall supply all materials required for the installation of permanent signs including frames for cluster signs, concrete bases, steel breakaway posts, wooden posts and all bolts and required mounting hardware.
- .2 The Contractor shall supply the Consultant with certification from the Supplier that the signs conform with the Specifications and shall only purchase signs that are certified by the Supplier to meet the Specifications of the sheeting Manufacturer
- .3 Traffic signs shall be supplied and installed in accordance with AT - Standard Specifications for Highway Construction (latest edition) unless specified otherwise in the Contract Documents.
- .4 All signs (permanent and temporary) shall be in both English and French. Translations to be accepted by the Departmental Representative prior to ordering.
- .5 All custom signs to be accepted by the Departmental Representative prior to ordering.

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- .6 When the Work necessitates the removal, salvage and reinstallation of signs, only materials from the existing installations shall be used. Contractor stockpiles of used material from other sources will not be considered acceptable.

2.2 SIGNS

- .1 All signs supplied by the Contractor shall be clearly marked with the following information:
- .1 Manufacturer's Name or Trademark
 - .2 Date of manufacture
 - .3 Type of sheeting material
- .2 The information shall be provided on a weatherproof label, or some other form of permanent marking fixed to the back of the sign near the bottom right-hand corner. The label shall be smaller than 100 mm x 100 mm in size.
- .3 Sign patterns shall conform to the Uniform Traffic Control Devices of Canada Sign Pattern Manual or to the Alberta Transportation Sign Pattern Manual. All other signs shall be as specified by the Departmental Representative.
- .4 All lettering on signs shall conform to the series Type Highway Font from the Standard Alphabet for Highway Signs, available from the Federal Highway Administration (CHTO-20), Washington, D.C., 20590, unless otherwise specified by the Uniform Traffic Control Devices of Canada Sign Pattern Manual or the Alberta Transportation Sign Pattern Manual.
- .5 When signs not included in the Schedule of Signs are required, the Departmental Representative will provide the following information:
- .1 Dimensions of the sign;
 - .2 Dimensions of the lettering;
 - .3 Colours of the sign;
 - .4 Material specifications.

2.3 WOODEN POSTS

- .1 Posts shall be No. 2 and better clear grade cedar.
- .2 Post sizes to be supplied shall be 100 mm x 150 mm dimension lumber, in lengths varying according to the sign size and required vertical clearance as indicated in the design drawings. The top of the sign shall be 10 feet above grade.
- .3 At the discretion of the Departmental representative, all sign posts should have a field drilled breakaway feature as per standard drawing TEB-1.81.
- .4 Sign posts to be as per Parks Canada Exterior Signage Standards and Guidelines (latest edition) Section 5.7.

2.4 CLUSTER FRAMES

- .1 The Contractor shall supply cluster frames suitable for the installation of multiple signs of up to 1.5 m² in accordance with AT Standard Drawing TEB 1.71A, C-Cluster Frame.

The frames shall be painted with rust resistant aluminum paint or a metal primer and aluminum paint suitable to the Departmental Representative.

2.5 CONCRETE BASES

- .1 If required, the Contractor shall supply bases in accordance with Drawing TEB 1.83. The Contractor shall provide the Departmental Representative with the Manufacturer's certification indicating that the base has been manufactured to specified requirements.
- .2 The Contractor shall supply all material necessary to install the base, including suitable backfill material. Cementitious and organic materials are not acceptable backfill.

2.6 MOUNTING HARDWARE

- .1 The Contractor shall supply all bolts and other hardware required to mount signs to posts or to frames and the frames to the posts. All bolts and hardware shall be stainless steel and nylon as shown in detail in Part 3 Installation of Signs below.

2.7 REFLECTIVE SHEETING FOR SPECIALIZED APPLICATION PERMANENT HIGHWAY SIGNS

- .1 The reflective sheeting supplied by the Contractor for the following signs shall meet or exceed the performance requirements specified in ASTM-D4956 for Type IX or Type XI Unmetallized Cube Corner Microprismatic Retroreflective Element Material. Products meeting these requirements are listed on the Alberta Transportation Products List under the "Specialized Applications" Category.
 - RA-1 "Stop"
 - RA-2 Yield
 - RB-22 "Wrong Way"
 - RB-23 Do Not Enter
 - Overhead Guide Signs without sign illumination
- .2 The reflective sheeting supplied by the Contractor for the following signs shall meet or exceed the performance requirements specified in ASTM-D4956 for Type IX or Type XI fluorescent yellow sheeting. Products meeting these requirements are listed on the Alberta Transportation Products List under the "Warning Signs" Category.
 - WA-1, WA-2, WA-3, WA-4, WA-5 and WA-6 Curve Signs (L & R)
 - WA-9 Chevron
 - WA-26 Low Clearance
 - WA-27 Low Clearance
 - WA-36 Hazard Marker - Centre
 - WA-36-L Hazard Marker - Object On Left
 - WA-36-R Hazard Marker - Object On Right
 - WB-1 Stop Ahead
 - WB-2 Yield Ahead
 - WB-3 Two-Way Traffic Ahead
 - WB-3-T "Two Way Traffic Ahead" Tab
 - WB-4 Signals Ahead
 - WB-5 Prepare to Stop
 - WB-5A Prepare to Stop

- WB-5-T "Prepare to Stop" Tab
- WB-6 Railway Crossing Ahead
- WB-6A Railway Crossing Ahead
- WC-2-L Left Side Pedestrian Crossing Ahead
- WC-2-R Right Side Pedestrian Crossing Ahead
- WC-2-T "Pedestrian" Tab
- WC-2A "Watch For Pedestrians On Highway"
- WC-3 Playground Ahead
- WC-3-T "Playground" Tab
- WC-3A-T "30 km/h" Tab
- WC-9 School Bus Stop Ahead
- WC-9-T "School Bus Stop Ahead" Tab

2.8 BACKING

.1 Aluminum

- .1 Extruded aluminum panels for major signs, shall be Alcan Shape #73247 with anodize treatment and shall conform to ASTM B221M, "Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes", Alloys 6061-T6 or 6063-T5.
- .2 Aluminum for standard signs shall be a minimum of 3 mm flat sheet tension leveled, sign grade aluminum and shall conform to the requirements of ASTM B209M, "Specification for Aluminum and Aluminum-Alloy Sheet and Plate", Alloys 6061-T6 or 5052-H38.
- .3 Sign backing to be powder coated as per Parks Canada Exterior Signage Standards and Guidelines (latest edition) Section 5.3.

PART 3 EXECUTION

- .1 In accordance with AT - Standard Specifications for Highway Construction (latest edition).

3.1 REMOVAL OF EXISTING SIGNS

- .1 Existing signs which must be removed in the prosecution of the Work shall be carefully salvaged and reinstalled. New wooden posts shall be used if the existing posts cannot be salvaged. Critical signs necessary for the protection of traffic such as railroad crossing signs or stop signs shall be maintained.
- .2 Existing signs designated for removal and disposal shall become the property of the Contractor.

3.2 GENERAL INSTALLATION AND LAYOUT

- .1 The Departmental Representative will provide plan layout information in the form of a base line for the installation of the permanent signs. The Contractor shall establish the height and elevation of the sign and install it in accordance with the Drawings or as directed by the Departmental Representative.

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- .2 It is the Contractor's responsibility to have all sign locations checked for utilities prior to digging holes for posts. Any adjustments to the locations of signs will be subject to the approval of the Departmental Representative.
 - .3 The soil at the bottom of holes shall be thoroughly compacted to provide a firm bearing. Posts shall be set vertically and backfilled with material free of organics. All backfill shall be placed in thin layers and thoroughly compacted for the full depth. Cementitious materials shall not be used as backfill.
 - .4 The disturbed area around installations shall be restored to the original contours.
 - .5 The signs shall be fixed securely to the post(s) in accordance with the Drawings.
 - .6 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.
 - .7 All signs are to be covered until the Departmental Representative advises to uncover.

3.3 INSTALLATION OF WOODEN POSTS

- .1 Posts shall be installed in accordance with AT Standard Drawing TEB 1.70 and shall be within 1.5 degree of vertical.
- .2 When a post is removed and replacement is not requested, the Contractor shall backfill the hole in thin compacted lifts.
- .3 Posts with rectangular cross-sections shall be installed such that the longer dimension is orientated parallel to the direction of the highway.
- .4 Unless otherwise directed by the Departmental Representative, wooden posts shall be weakened as shown on AT Standard Drawing TEB 1.81. All costs associated with weakening of wooden posts will be considered incidental to the Work, and no separate or additional payment will be made.

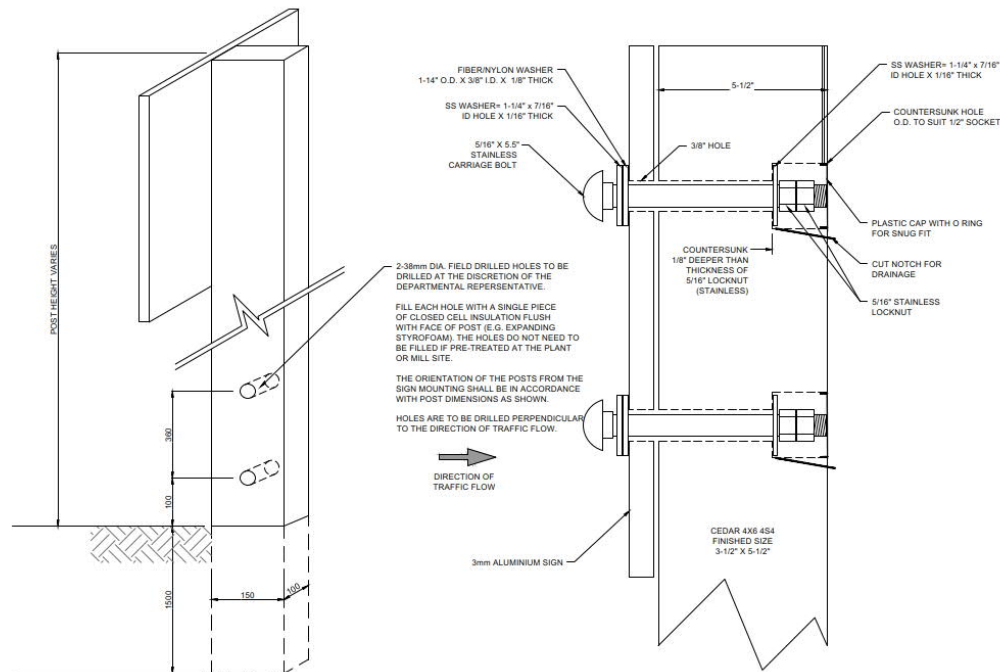
3.4 INSTALLATION OF SIGNS

- .1 Signs shall be mounted in accordance with AT Standard Drawings TEB 1.69, TEB 1.71, TEB 1.72, TEB 1.75, TEB 1.82 and TEB 1.95.
- .2 The installed sign shall be clean and not bent or twisted. The reflectorized surface shall be free of scratches and marks and must be securely fastened to the post or frame.
- .3 Signs on utility posts shall be mounted by a procedure approved by the utility owner.
- .4 New signs shall be installed on 100 mm x 150 mm clear cedar wood posts at the following locations:

Table 3.1 – Permanent Sign Installation Locations

Station	Location	Qty	Sign Name	Sign Code	Comment
0+700	Kiosks	2	Stop	RA-1	Replacing Ex. Signs and Posts
0+716	Kiosk crosswalk, south side	4	Pedestrian and Bicycle Crossing Ahead	WC-46	3 facing SB traffic (entry lanes). 1 facing NB traffic (exit lane)
4+830	SB approach to Red Rock Canyon Rd. intersection	1	Max. Speed Ahead (60)	RB-5	Facing SB traffic
4+930	SB approach to Red Rock Canyon Rd. intersection	1	60 km/h	RB-1	Facing SB traffic
4+930	North of Red Rock Canyon Rd. intersection	1	80 km/h	RB-1	Facing NB traffic
5+120	Crosswalk south of Red Rock Canyon Rd.	4	Pedestrian Crossing	RB-4-L/R	L & R mounted back to back on same post on each side of road
5+430	South of Pass Creek DUA Access	1	80 km/h	RB-1	Facing SB traffic
5+430	South of Pass Creek DUA Access	1	60 km/h	RB-1	Facing NB traffic
5+530	South of Pass Creek DUA Access	1	Max. Speed Ahead (60)	RB-5	Facing NB traffic
7+450	North of Linnet Lake DUA access	1	Bicycle Warning	WC-7	Facing SB traffic
7+500	Linnet Lake DUA access	1	Stop	RA-1	Non-standard size of 300 mm x 300 mm. Facing SB cyclists at end of paved pathway
7+520	Crosswalk south of Linnet Lake DUA access	4	Pedestrian Crossing	RB-4-L/R	L & R mounted back to back on same post on each side of road
8+020	Crosswalk south of Bear's Hump Trailhead Parking Lot	4	Pedestrian Crossing	RB-4-L/R	L & R mounted back to back on same post on each side of road
8+600	South project limit and	1	Bicycle Warning	WC-7	Facing NB traffic
TOTAL SIGNS		27			
TOTAL POSTS		20			

- .5 New signs shall be installed as per the following installation details. Back of signs to be powder coated parks Canada Heritage Green. Back to back pedestrian crossing signage to use stainless steel lag bolts as opposed to carriage bolts.



3.5 ACCEPTANCE OF WORK AND WARRANTY

- .1 Prior to the final acceptance of the Work, all damage or deficiencies from any cause in signs and posts installed under this Contract shall be rectified by the Contractor at his own expense.
- .2 In addition to the warranty requirements detailed in Specification 1.2, General, during the warranty period the Contractor shall straighten and recompact or reinstall, as required, all posts which are more than 2.0 degrees from vertical.

3.6 CORRECTING DEFECTS

- .1 Correct defects, identified by Departmental Representative, in sign message, consistency of reflectivity, colour or illumination. Correct angle of signboard and adjust luminaire aiming angle for optimum performance during night conditions to approval of Departmental Representative.

3.7 CLEANING

- .1 Progress Cleaning. Clean in accordance with Section 01 74 00 – Cleaning.
- .2 Leave work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00.

3.8

PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by traffic signage installation and salvage operations.

END OF SECTION

32 91 19 TOPSOIL PLACEMENT AND GRADING**PART 1 PART 1 GENERAL****1.1 DESCRIPTION**

- .1 Topsoil to be native organic soils stripped from the Contract Work area, left on site during the excavation, and replaced on finished slopes from stockpile(s) to assist with the regeneration process as directed by the Departmental Representative.

1.2 REFERENCES

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Canadian Council of Ministers of the Environment
 - .1 PN1340-[2005], Guidelines for Compost Quality.
- .3 Canadian Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-[December 2004], LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.
- .4 U.S. Environmental Protection Agency (EPA)/Office of Water .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
- .5 AT Standard Specifications for Highway Construction (latest edition)

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measure for payment for topsoil placement and finishing will be in horizontal square metres to a nominal depth of 150 mm. No allowances will be made for uneven or sloping ground, or the depth of topsoil being placed.
- .2 Payment for topsoil placement will be incidental to **“Unit Price Item 5a – Cleaning and Reshaping of Ditches”**
- .3 The following items, if required will be paid under the lump sum price for **“Prime Cost Sum”**. Payment will be considered full compensation for all labour, materials, equipment, tools and incidentals necessary to complete the Work to the satisfaction of the Departmental Representative:
 - .1 Payment for soil testing
 - .2 Payment for supply and application of soil amendments
- .4 Traffic Control shall be incidental to the lump sum price bid for “Traffic Accommodation” and no separate or additional payment will be made.

- .5 Mobilization and demobilization required for this Work shall be incidental to the lump sum price bid for "Mobilization/ Demobilization" and no separate or additional payment will be made.

1.4 DEFINITIONS

- .1 Compost:
- .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
 - .2 Composed bio-solids to: CCME Guidelines for Compost Quality, Category (A) (B).

1.5 SUBMITTALS

- .1 In accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit erosion and sedimentation control plan for Credit SSp1 in accordance with LEED Canada-NC.
- .3 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 35 43 – Environmental Procedures.
- .2 Divert unused soil amendments from landfill to official hazardous material collections site, outside of the Park, as approved by Departmental Representative.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 PRODUCTS

2.1 TOPSOIL

- .1 Topsoil for seeded areas and planting beds: mixture of particulates, microorganisms and organic matter that provides suitable medium for supporting intended plant growth.
 - .1 Native topsoil to be stripped from on-site sources.
 - .2 Contain no toxic elements or growth inhibiting materials.
 - .3 Finished surface free from:
 - .1 Debris and stones over 100 mm diameter.
 - .2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.

2.2 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 – Quality Control.
- .2 Advise Departmental Representative of sources of topsoil and manufactured topsoil to be utilized with sufficient lead time for testing.

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- .3 Contractor is responsible for amendments to supply topsoil as specified.
 - .4 Soil testing by recognized testing facility for PH, P and K, and organic matter.
 - .5 Testing of topsoil will be carried out by testing laboratory designated by Departmental Representative.
 - .6 Soil sampling, testing and analysis to be in accordance with Provincial standards.

PART 3 EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 In accordance Section 01 35 43 – Environmental Procedures
- .2 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of sediment and erosion control drawings, sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .3 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .4 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 PREPARATION OF EXISTING GRADE

- .1 Verify that grades are correct.
 - .1 If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Departmental Representative.
- .2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- .3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.
 - .1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.
 - .2 Remove debris that protrudes more than 75mm above surface.
 - .3 Dispose of removed material off site.
 - .4 Cultivate entire area that is to receive topsoil to minimum depth of 100 mm (allowing for the placement of 150 mm, settling to 100 mm).
 - .1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.3 PLACING AND SPREADING OF TOPSOIL / PLANTING SOIL

- .1 Place topsoil after Departmental Representative has accepted the final trimming of disturbed areas.
- .2 Spread topsoil in uniform layers not exceeding 150 mm.

.3 Spread topsoil as indicated to following minimum depths after settlement.

.1 100 mm for seeded areas.

.2 600 mm for shrub beds.

.4 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.4 FINISH GRADING

.1 Grade to eliminate rough spots and low areas and ensure positive drainage.

.2 Prepare loose friable bed by means of cultivation and subsequent raking.

.3 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.

.4 Leave surfaces smooth, uniform and firm against deep footprinting.

3.5 ACCEPTANCE

.1 Departmental Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

3.6 SURPLUS MATERIAL

.1 Topsoil not required for the topsoil placement operation shall be hauled to the Contractor's disposal site located outside of the National Park boundary, or to a location as directed by Departmental Representative.

END OF SECTION

32 92 22 HYDRAULIC SEEDING**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 Supply and application of Hydraulic Seeding as required to complete the Work in accordance with the Contract Documents and as directed by the Departmental Representative.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measure for payment for Hydraulic Seeding will be by the square metre acceptably installed resulting in full grass growth, 75% germination and growth of specified seed mixture, within the dimensions indicated in the Contract Documents or as approved by the Departmental Representative.
- .2 Payment for hydraulic seeding will be made under **“Unit Price item 6a – Landscaping - Seeding”** 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 The following items will be considered incidental to the Work and no separate or additional payment will be made:
 - .1 Areas of blending into existing landscape will not be measured for payment.
 - .2 Maintenance.
 - .3 Supply of water
 - .4 Mechanical or chemical weed control
- .4 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures.
- .5 Mobilization and demobilization required for this Work shall be incidental to the lump sum price bid for “Mobilization / Demobilization”, and no separate or additional payment will be made.
- .6 Traffic Control required for this Work shall be incidental to the lump sum price bid for “Traffic Accommodation” and no separate or additional payment will be made to the Contractor.

1.3 SUBMITTALS

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

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

1.4 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 – Quality Control.
- .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties to be provided to the Departmental Representative.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Parks Canada to provide the seed source. Seed shall be mixed and tested and clearly marked with the name of the supplier and the specified seed composition.
- .2 The Contractor is responsible for ensuring seed is viable and stored in a cool dry place until planting. Any seed found to be mouldy, heated or otherwise damaged will be rejected by the Departmental Representative.

PART 2 PRODUCTS

2.1 SEED

- .1 Seed mixture to be provided by Parks Canada for regeneration of newly created ditch at entrance gates.
- .2 Seeding rate to be provided by Parks Canada.

2.2 WATER

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

2.3 SOIL STABILIZER/TACKIFIER

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

2.4 MULCH

- .1 Wood fibre mulch shall be manufactured from virgin wood fibres and contain not less than 3% of an organic tackifier by volume. Cellulose type products are not acceptable. Acceptable product is: Eco Fibre Plus or approved alternate.

PART 3 EXECUTION**3.1 GENERAL**

- .1 No mechanical seeding will be allowed for this project.
- .2 Contractor shall advise Departmental Representative prior to the start of seeding operations.
- .3 Contractor shall mechanically remove any weeds prior to seeding. Weed removal method to be approved by Departmental Representative prior to commencement. This will be incidental to the work.
- .4 Contractor shall ensure that equipment is steam cleaned, free of soil and seed from previous project to prevent site contamination.
- .5 Seeding shall be done upon completion of stripped soil material/chip compost placement.
- .6 Contractor shall not perform work under adverse field conditions such as frozen soil, excessively wet or dry soil, or soil covered with snow, ice or standing water.
- .7 Contractor shall hydraulic seed only during dry weather conditions with no rain forecasted for the next 24 hours and ensuring a seasonably dry seedbed to provide for proper curing of soil stabilizers/tackifier. Contractor shall check weather conditions to ensure soil stabilizer has sufficient time to cure prior to heavy rainfall.
- .8 Seeding shall be done to ensure a catch satisfactory to the Departmental Representative's approval. In areas where seed fails to germinate for whatever reason, the Contractor shall re-cultivate and reseed until acceptable germination takes place.
- .9 Contractor shall carry out seeding in locations as per the Contract Documents or, as directed by Departmental Representative.

3.2 HYDRAULIC SEEDING

- .1 The following application rates are the minimum required for hydraulic seeding:
 - .1 Seed: 100 kg/hectare
 - .2 Mulch: 1500 kg/hectare
 - .3 Tackifier: As per Manufacturer's Instructions
 - .4 Water: 30,000 L/hectare
- .2 The Contractor shall measure quantities of materials by weight, or weight calibrated Contractor to calculate and submit applicable area of coverage per tank load of slurry in accordance with Section 01 33 00 – Submittal Procedures
- .3 Contractor shall physically stake and identify limits of tank coverage prior to seeding to the satisfaction of Departmental Representative.
- .4 Each tank load of slurry shall be fully applied within the designated boundaries for each load as staked volume measurement, to the satisfaction of the Departmental Representative.

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- .5 The Contractor shall fill the tank half full with required water and add mulch while continuing to fill with water. Seed mix and fertilizer is to be added. All material is to be added into the hydraulic seeder under agitation. The Contractor shall pulverize mulch with tackifier and charge slowly into seeder.
 - .6 The Contractor shall charge soil stabilizer/tackifier into seeder after all other material is well mixed in seeder. Contractor shall mix slowly to avoid foaming but thoroughly to complete slurry.
 - .7 The Contractor shall use hydraulic seeding equipment with a minimum slurry tank capacity of 4500 litres.
 - .8 The Contractor's equipment shall have an agitation system for slurry capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and mechanical method:
 - .1 Pumps shall be capable of maintaining a continuous non-fluctuating flow of solution.
 - .2 Equipment shall be capable of seeding up to 150 m distance from hydraulic seeder using hand operated hoses and appropriate nozzles.
 - .9 The Contractor shall apply slurry when wind velocities will not affect the application and cause the mixture to be blown.
 - .10 The Contractor shall apply slurry uniformly, at optimum angle of application for adherence to surfaces and germination of seed. Ensure good contact of slurry with soil with minimal air pockets.
 - .11 The Contractor shall use the correct nozzle(s) for application and use hoses to access difficult to reach surfaces and to control application.
 - .12 The Contractor shall ensure that the application is uniform and the surface is evenly covered. Contractor shall blend into retained landscape for approximately 1 metre.
 - .13 The Contractor shall clean all structures, appurtenances and natural features not designated to be seeded of any overspray, to the satisfaction of the Departmental Representative.
 - .14 The Contractor shall always ensure that during the seeding, that no vehicles are parked within the path of public travel and the Contractor shall provide warning devices as directed by the Departmental Representative to ensure safe operations.
 - .15 Traffic Control to be in accordance with Section 01 35 31 – Special Procedures for Traffic Control.

3.3 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Establishment period is a minimum of four months of continuous growing season. Growing season shall not to be divided by winter.
- .2 The Contractor shall repair and reseed dead or bare spots, as directed in the Contract Documents, to Departmental Representative's satisfaction, to allow establishment of seed prior to acceptance. In the case of erosion, the Contractor shall be compensated at the specified unit rates for reseeding.

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- .3 For areas of poor seed germination and growth, as determined by the Departmental Representative, the soil shall be scarified or re-cultivated as directed by the Departmental Representative, and seeding and fertilizing undertaken as specified. This work is incidental to the Contract.

3.4 CONSTRUCTION COMPLETION ACCEPTANCE

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

3.5 MAINTENANCE DURING WARRANTY PERIOD

- .1 Maintenance shall occur for one full year from Construction Completion Acceptance. The estimated period of maintenance within one calendar year shall be from approximately April 1 to October 31. The Contractor will be required to employ all of the necessary measures to establish and maintain all seeding in an acceptable, vigorous and healthy growing condition.
- .2 The Contractor shall repair and reseed dead or bare spots, as directed in the Contract Documents, to Departmental Representative's satisfaction, to allow establishment of seed prior to acceptance. In the case of erosion, the Contractor shall be compensated at the specified unit rates for reseeding.
- .3 For areas of poor seed germination, or as determined by the Departmental Representative, the soil shall be scarified or re-cultivated as directed by the Departmental Representative, and seeding and fertilizing undertaken as specified. This work is incidental to the Contract.
- .4 For small areas of poor seed germination or as determined by the Departmental Representative, the soil shall be scarified to a depth of 25 mm and seeding and fertilizing shall be undertaken as specified. This work is incidental to the Contract.
- .5 Weed control shall be undertaken as determined by the Departmental Representative. Hand pulling of weeds may be required. This work is incidental to the Contract.

END OF SECTION

34 71 13 CONCRETE BARRIER**PART 1 GENERAL****1.1 DESCRIPTION**

- .1 The Work includes the installation of concrete barrier at locations shown on the Drawings, described in the Special Provisions or as directed by the Departmental Representative.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measurement shall be in units of barrier installed.
- .2 Payment for the installation will be made under “**Unit Price Item 10a – Precast Concrete Low Barrier – Install PCA-Supplied Precast Concrete Low Barrier**” and the price(s) bid shall be full compensation for the cost of furnishing all labour, materials, equipment, hauling, tools and incidentals necessary to complete the work as specified in the Contract Documents.

1.3 QUALITY CONTROL

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

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver to site and handle materials in accordance with Section 01 61 00 – Common Product Requirements.

PART 2 PRODUCTS**2.1 NOT USED.****PART 3 EXECUTION****3.1 GENERAL**

- .1 Contractor to remove existing precast bull-nose at km 0.807 complete with hazard sign, install 16 units of 3.050 m long precast concrete low barrier making the appropriate connections, at same offset as existing barrier, and reconnect the bull-nose and hazard sign to the last barrier unit installed at approx. km 0.758.
- .2 Precast concrete barriers stored at PCA Operations Compound located at km 7.40.

END OF SECTION