Drawings :

CIVIL DRAWING INDEX		
Sheet No.	Revision and Date	Sheet Title
S000	July 2019	Cover Sheet
S100	2019-05-16 R1	Location Map & General Notes
S101	2019-05-16 R1	Existing Culvert Layout
S102	2019-05-16 R1	Culvert Backfill Details
S103	2019-05-16 R1	Culvert End Treatment
S104	2019-05-16 R1	Inlet & Outlet Riprap Details

Appendices:

A. Parks Canada National Best Management Practices– Roadway, Highway, Parkway and Related Infrastructure (English) - May 2015
B. Pratiques exemplaires nationales de gestion de Parcs Canada – Routes, autoroutes, promenades et infrastructure connexe - Mai 2015
C. Direction for Permitted Users conducting water-related activities in LLYK (English) – April 2017.
D. Directives à l'intention des titulaires de permis exerçant des activités dans les plans d'eau de l'Unité de gestion du secteur de Lake Louise et des parcs nationaux Yoho et Kootenay – Avril 2017
E. Standard CMS Translations Rev 1 - July 2018
F. Construction Signage Translation Rev 1 - July 2018
G. Geotechnical Investigation for Two Culvert Replacements (Kilometres 95.6 and 100.6) along Highway 93S in Kootenay National Park, BC – February 2018
H. Proposed South Gate KNP, BC - Geotechnical Assessment – August 2016
I. Proposed KNP South Gate Redevelopment: Site Review and Revised Geotechnical Recommendations – May 2019
J. Settlers Pit Plan 2019

01 11 00 SUMMARY OF WORK

Part 1 General

1.1 PRECEDENCE

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

1.2 DEFINITIONS

.1 British Columbia Ministry of Transportation and Infrastructure is referred to as "MoTI".

.1 BC MoTI specifications specified for the work can be found at the following website address:

http://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/standard-specifications-for-highway-construction

.2 Alberta Transportation is referred to as “AT”.

.1 AT specifications specified for the work can be found at the following AT website address:

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

.3 Changes in Definition, - The following changes in definitions have been made to the “BC MoTI Specifications”:

.1 Ministry Representative – The word “Ministry Representative” shall mean Parks Canada Departmental Representative or their duly appointed representative.

.2 Ministry – The word “Ministry” shall mean Parks Canada Agency.

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

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

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

.5 Kootenay National Park of Canada is referred to as “KNP”.

.6 Parks Canada Agency is referred to as “PCA”.

.7 Trans Canada Highway is referred to as “TCH”.

.8 Canadian Pacific Railway is referred to as “CP Rail”.

.9 Environmental Surveillance Officer is referred to as “ESO”.

.10 Site means the areas

.1 On or within the limits of Construction as referenced on the Drawings or described in the Contract.

.2 Outside the limits of Construction, all roads, highways, pits, or quarries, used to complete the Work.

.11 Work means the provision of all labour, services, material, and equipment as necessary, for the Contractor to complete and perform its obligations in accordance with the Contract.

1.3 PROJECT LOCATION

.1 The project is located in Kootenay National Park, British Columbia. Construction work is on Highway 93S at the South Gate located approximately at km 100. The following are key locations relative to the project:

- .1 Hwy 93S km 0 – Hwy 93S / TCH Interchange
- .2 Hwy 93S km 103.2 – Existing KNP South Gate
- .3 Hwy 93S km 104.5 – Hwy 93S/95 Intersection

1.4 WORK COVERED BY CONTRACT DOCUMENTS

.1 All requirements noted within the Contract Documents shall be completed by the Contractor unless specifically stated otherwise.

.2 Without limiting the scope of work, the work of this Contract generally comprises the following, as directed by the Departmental Representative:

- .1 Installation and maintenance of temporary barriers and supply and installation of temporary traffic control and other temporary construction facilities required for completion of the Work of the Project.
- .2 Excavating all types of material from the required locations, hauling and placing this material in embankments or in stockpiles designated in the Contract Documents and in accordance with Section 31 24 13 – Roadway and Drainage Excavation.
- .3 Supply, load, haul and place sub-base course materials in accordance with Section 32 11 20 – Sub-Base Aggregates. Aggregates are to be supplied by the Contractor.
- .4 Concrete repairs in accordance with Section 03 30 00 – Cast-in-Place Concrete.
- .5 Supply and installation of Riprap in accordance with Section 31 37 00 – Riprap.
- .6 Supply and installation of Geotextiles in accordance with Section 31 32 19 – Geotextiles.
- .7 Preservation of water courses in accordance with Section 35 01 40.92 – Preservation of Water Courses.
- .8 Remove and dispose of concrete barrier in accordance with Section 31 24 13 – Roadway and Drainage Excavation.
- .9 Traffic signage, control and other traffic accommodations in accordance with Section 01 35 31 – Special Procedures for Traffic Control.
- .10 Miscellaneous Additional Work as directed by the Departmental Representative.

.3 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 Parks.

.4 The Contractor will not be permitted to set up a crushing plant within the National Parks.

.5 The Contractor is responsible for sourcing water required for the Works and is required to obtain it from outside of the National Parks. Accessing local water sources in nearby pits or from other Parks facilities will not be permitted.

.6 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.

.7 Where material and construction specifications for work covered under the Contract, including any Change Orders are not available, **BC MoTI –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 Highway pavement rehabilitation, including paving, milling, spray patching, rumble strips and line painting, Highway 93S, kilometres 81-88, 71-81 and 88-101. Estimated completion October 2019.

.2 Culvert replacement, Highway 93S, kilometre 95.9. Estimated completion October 2019.

.3 Culvert liner rehabilitation, Highway 93S, kilometres 99.3 and 101. Estimated completion November 2019.

.4 Rock scaling, including trim blasts, rock bolting and hauling, Highway 93S, kilometres 100-102. Estimated completion October 2019.

.2 Where it is necessary that work is to proceed in areas of this project common to both the Contractor and forces of others, the Contractor shall cooperate with the other Contractors and the PCA Departmental Representative in reviewing their construction schedules and sharing their work space, and shall coordinate their operations with the other Contractors, including traffic management and construction staging.

.3 The Contractors shall coordinate all work on this project with other Contractors including Site Safety and Traffic Control.

.4 The pits in the National Park are operational pits and are used by many contractors and Parks Canada. The Contractor shall cooperate with the other users of the pits if access is allowed.

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 November 15, 2019.**

.2 **Complete all of the Work by November 29, 2019 (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 None.

1.11 CONSTRUCTION SIGNAGE

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

.2 Signage shall be coordinated with other Contractors.

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

1.12 SETTING OUT OF WORK

.1 Departmental Representative will establish control points and provide:

.1 Detailed cross-section templates showing design centreline and shoulder grades.

.2 Complete set of construction Drawings.

.3 Alignment notes showing curve data and control point coordinates.

.4 Provide a list of control monuments including coordinates and elevations on request.

.5 Measurements for Payment (Quantity Surveys) and volumes by the surface to surface prismoidal method for roadway and drainage excavation and neat line for all surfaces above the excavated surface at a maximum of 20m intervals. Coordinates unless otherwise stated are UTM Grid and no adjustments will be

made to scale the coordinates to ground when calculated volumes by cross-section or setting out of work.

.2 Contractor shall:

.1 Not permanently mark any infrastructure or feature during their setting out of the work. They shall fully remove any set out marks, markers, or other identifiers that they installed, prior to demobilizing from the Work Sites.

.2 Set additional control points as necessary.

.3 Set all work stakes necessary to complete work.

.4 Allow sufficient time for Departmental Representative to take measurements for payment.

.5 Not damage geodetic benchmarks or control monuments unless authorized by Departmental Representative.

.3 No separate payment for setting out work, unless changes are made and approved by the Departmental Representative and additional survey costs are incurred. Payment for additional survey required due to changes by Departmental Representative to be paid for as under **"Lump Sum Price Item 3 – Prime Cost Sum"** only with prior approval from the Departmental Representative.

Part 2 Products

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

Part 3 Execution

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

END OF SECTION

01 14 00 WORK RESTRICTIONS

Part 1 General

1.1 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.

1.2 USE OF THE SITE AND FACILITIES

.1 The Work Sites specified in the Contract shall only be used for the purposes of the Work.

.2 The Work Site (limits shown on the Drawings) will be specified by 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 Parks. PCA regulations prohibit anyone working within the Park from using public campground facilities.

.4 Office-tool trailer may also be set up at the Red Rock Wall parking lot, within the limits of the Works. See Section 01 35 43 – Environmental Procedures.

.5 The Contractor shall not store material or park equipment along the Highway Right of Way within the clear zone.

.6 Contractor shall maintain adequate drainage at the Work Site.

.7 The Contractor shall keep the Work Site clean and free from accumulation of waste materials and rubbish regardless of source. Snow shall be removed by the Contractor as necessary and at their cost for the performance and inspection of the Work.

.8 The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and Section 01 35 43 - Environmental Procedures. The Contractor shall post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.

.9 Any damage to the Work Site caused by the Contractor shall be repaired by the Contractor at their expense.

.10 Pets shall not be brought to or maintained at the construction site.

1.3 WORKING TIMES

.1 Work in KNP is permitted during daylight hours from 07:00 to 19:00, Monday to Saturday unless stipulated otherwise in the Contract documents.

.2 No work will be permitted on Sundays unless prior written approval is granted by the Departmental Representative

.3 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 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 (2019)

.1 Labour Day long weekend: From 19:00. Thursday, August 29, 2019 to 07:00 Tuesday, September 3, 2019.

.2 Thanksgiving Day weekend: From 19:00 Thursday, October 10, 2019 to 07:00 Tuesday, October 15, 2019.

.3 Remembrance Day Weekend: From 19:00 Thursday, November 7, 2019 to 07:00 Tuesday, November 12, 2019.

.2 Statutory and Civic Holidays (2020)

.1 Good Friday weekend: From 19:00 Thursday, April 9, 2020 to 07:00 Tuesday, April 14, 2020.

.2 Victoria Day Weekend: From 19:00 Thursday May 14, 2020 to 07:00 Tuesday, May 19, 2020.

.3 Canada Day: From 19:00 Monday June 29, 2020 to 07:00 Friday, July 3, 2020.

.4 The Contractor will not be permitted to work during special events unless prior written approval is granted by the Departmental Representative. Special Events affecting the work will be advised by PCA.

1.4 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 works adjacent to or conducted over waterways to be in accordance with 01 35 43 – Environmental Procedures and 35 01 40.92 – Preservation of Water Courses.

.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.

1.5 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 however 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 seven (7) 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.

1.6 SURVEY OF EXISTING CONDITIONS

.1 Submission of tender is deemed to be confirmation that the Contractor has inspected the Site and is conversant with all conditions affecting execution and completion of work.

.2 The Contractor shall regularly monitor the condition of the Work Site and of property on and adjoining the Work Site throughout the construction period, and shall immediately notify the Owner if any deterioration in condition is detected. Such monitoring shall cover all pertinent features and property including, but not limited to, buildings, structures, roads, walls, fences, slopes, sewers, culverts and landscaped areas.

.3 The Departmental Representative may, but shall not be obligated to, survey and record the condition of the Work Site and of property on or adjoining the Work Site prior to the commencement of construction by the Contractor. If requested, 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.

1.7 ARCHAEOLOGICAL RESOURCES

.1 As identified in the Basic Impact Analysis known archaeological sites and others that have high archaeological potential are not located within the construction limits. The Archaeological Overview Assessment (AOA), included in the BIA, provides a list of areas of archaeological concern.

.2 The Contractor shall undertake the Works in accordance with the AOA as described in Section 01 35 43 - Environmental Procedures.

1.8 INSTREAM WORK

.1 Contractor shall adhere to recommendations for measures and standards to mitigate serious harm to fish as identified in Section 01 35 43 – Environmental Procedures and the Reference Documents.

.2 Care will be taken to prevent increased sediment deposition into Sinclair Creek from October 1 – April 15, which is the sensitive spawning and early developmental period for brook trout, which have the potential to occur within the Project area.

.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.

1.9 PROTECTION OF PERSONS AND PROPERTY

.1 The Contractor shall comply with all applicable safety regulations of WorkSafe BC and the Workers Compensation Act of British Columbia and Alberta including, but not limited to, Occupational Health and Safety Regulations and General Safety Regulations. Within the Site, the Contractor has all the responsibilities of an "employer" under the *Workers Compensation Act* and the *Occupational Health and Safety Regulation* and is designated as the "Prime Contractor".

.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 British Columbia and 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.

1.10 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. Steel tracked equipment with cleats will not be allowed on pavement designated for future use. If or when crossing asphalt designated for future use, rubber mats must be used under the tracks to protect the asphalt. Asphalt, granular, embankment and excavation materials may be hauled on existing highway but this shall be by standard highway trucks not exceeding legal highway load limits unless accepted in writing by the Departmental Representative.

.2 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.

.3 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.

.4 Construction areas and construction crossings shall be flood-lit for night operations.

1.11 USE OF PITS AND QUARRIES

.1 When the Contractor is operating in a PCA pit or quarry, the Contractor shall utilize the pit or quarry in accordance with the Departmental Representative's authorization. Under no circumstances will waste of useable material be permitted, and excavations shall be continued to depths below water level if suitable material is available.

.2 Expansion of working pits is not authorized unless written approval has been given from the Departmental Representative. The Contractor shall confine all work in the pit within the limits of the existing cleared area.

.3 The Contractor must determine the quality and quantity of material available and the condition of the PCA pit or quarry made available to the Contractor

.4 The Contractor is responsible for producing material in accordance with the Contract Documents should the Contractor choose to utilize the available pit(s) or quarry for the Work.

.5 The Contractor shall be responsible for managing their working space within the pit(s) and quarries and coordination with Parks Canada contractors, personnel or others, to maintain access.

.6 Any claims by the Contractor or its subcontractors arising from the quality and quantity of material available, condition of, access and working space within the available pits and quarries will not be entertained, even if those claims are associated with the activities of Contractors or works conducted for Parks Canada Agency.

.7 No separate payment will be made for clearing, grubbing, disposal or relocation of stockpiles, debris or contaminated materials, or for any other costs of site preparation, pit development, pit maintenance and final cleanup, or access, or for any delay or other cost arising from, the suitability of the referenced PCA pit, or the use of referenced PCA pits by others, and all costs thereof shall be covered in the prices for the Items under which payment is provided for the applicable materials.

.8 Pit excavation must not take place to within a minimum distance of 2m from the edge of cleared and stripped areas.

.9 All working pit faces and stockpiles must be trimmed to 1.5H to 1V slope. Working pit faces must be reshaped with native granular materials. All other permanent slopes must be re-sloped to no steeper than 2H to 1V.

.10 No dumping of debris or petroleum products is permitted. The pit must be left in a clean and safe condition.

.11 Pit work must be carried out in accordance with the local provincial government Health, Safety and Reclamation requirements, the current Standard Specifications for Highway Construction and Best Management Practices for the area the Work is occurring in.

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

.1 When the Contractor is supplying material from a pit or quarry outside of the National Parks the Contractor is responsible for all permits and approvals. Pit or quarry development and reclamation must be in accordance with local and Provincial regulatory agency requirements.

.2 When the Contractor is disposing of; stripping, unsuitable, or surplus material in a pit or other disposal sites outside of the National Parks the Contractor is responsible for all permits and approvals. Disposal site or pit development and reclamation must be in accordance with local and Provincial regulatory agency requirements.

.3 The Contractor shall bear and pay all costs, fees, and royalties for pits, quarries, or disposal sites, outside of the National Parks.

.4 Material supplied from pits and quarries outside of the National Parks must be clean of all, seeds, organics, top soil, or contaminants. No additional payment will be made for cleaning or washing material supplied from pits and quarries outside of the National Parks.

.5 Material supplied from pits and quarries outside of the National Parks must meet requirements in the Contract Documents.

.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.

1.13 SUBMITTALS

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

1.14 SUPERVISORY PERSONNEL

.1 When requesting a Preconstruction Meeting, in accordance with Section 01 31 00 -Project Management and Coordination, the Contractor shall submit to the Departmental Representative confirmation of the names of the supervisory personnel and other key staff designated for assignment on the Contract.

.2 At a minimum, the following personnel shall be included in the list:

- .1 Contractor Manager
- .2 Project Superintendent;
- .3 Safety Representative;
- .4 Quality Control Manager;
- .5 Environmental Representative;
- .6 Traffic Control Representative;

.3 The above personnel shall perform the following duties:

.1 Contractor Manager with full authority, as agent of the Contractor, to act on behalf of and legally bind the Contractor in connection with the Work and the Contract. The Contractor may, at its discretion, appoint one person as both Contractor Manager and Project Superintendent.

.2 The Project Superintendent shall be employed full time with full authority to supervise the Work, who shall be directly available to the Department Representative during all active periods of Work. Either they or their designated deputy shall be present on the Work Site each and every workday that Work is being performed, from the commencement of Work to Total Performance of the Work.

.3 The Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence.

.4 The Safety Representative shall possess a minimum of 2 years' construction safety supervisory experience. Their duties shall encompass all matters of safety activities from commencement of Work until the Total Performance of the Work.

.5 The Quality Control Representative shall be responsible for the development, implementation and execution of the Quality Management Plan and shall be the single point of contact for all quality related queries.

.6 The Traffic Control Representative shall be responsible for the development, implementation and execution of the Traffic Management Plan and shall be the single point of contact for all traffic control related queries.

.7 The Environmental Representative shall be responsible for the development, implementation and execution of the Environmental Protection Plan and shall be the single point of contact for all environmental related queries.

1.15 WASTE DISPOSAL

.1 All surplus, unsuitable and waste materials shall be removed from the Work Sites to approved sites outside the National Parks. Refer to Section 01 35 43 - Environmental Procedures.

.2 Deposit of any construction debris into any waterway is strictly forbidden.

.3 Cost for Waste Disposal described above shall be considered incidental to the Unit Price items and no additional payment will be made.

.4 One "Bear Proof" garbage container will be provided by PCA in accordance with Section 01 74 11 - Cleaning.

1.16 WORK STOPPAGE

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

Part 2 Products

.1 Not Used.

Part 3 Execution

.1 Not Used.

END OF SECTION

01 21 00 ALLOWANCES

Part 1 General

1.1 REFERENCES

.1 General Conditions.

1.2 PRIME COST SUM

.1 **Included in Contract Price a total Prime Cost Sum of: $50,000.00.**

.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 rice 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 Supply and delivery of bituminous materials including asphalt prime, anti-stripping agent, and warm mix A/C admixtures;
- .2 Supply and installation of asphalt concrete pavement;
- .3 Installation of integral asphalt curb;
- .4 Pavement removal;
- .5 Crack filling, pot hole patching and other related minor asphalt repairs;
- .6 Clearing and Grubbing;
- .7 Load, haul and sale of merchantable timber to a mill or equivalent as directed by the Departmental Representative. Revenue generated from this sale will be credited back to this Contract;
- .8 Stripping, excavation and disposal of waste materials as directed by the Departmental Representative;
- .9 Danger tree assessment and removal;
- .10 Relocation or removal and disposal of existing signs, guardrail, guide posts and other miscellaneous items;
- .11 Supply and installation of permanent signs (not construction signs);
- .12 Removal and disposal or plugging of existing culverts;
- .13 Supply and installation of lane markings;
- .14 Supply and installation of specialty items at Day Use Areas including, but not limited to, dry toilets, picnic tables, and garbage bins;

.15 Additional survey resulting from changes made by the Departmental Representative;

.16 Relocation / protection of existing utilities, including payment of utility service provider costs;

.17 Utility Pole Relocation;

.18 Additional remediation or removal and replacement of unsuitable or contaminated soils not described in the Contract documents;

.19 Supply and installation of seeding;

.20 Supply and installation of additional landscaping;

.21 Additional supply and installation of Riprap;

.22 Road structure repairs;

.23 Additional drainage improvements; ditching; culvert repairs; and cleaning;

.24 Sub-drainage not specified in the tender documents;

.25 Supply and installation of precast concrete barrier;

.26 Supply and installation of barrier drains;

.27 Additional supply and installation of Riprap;

.28 Additional removal and disposal of existing precast concrete barrier;

.29 Supply and installation of raised reflective road and barrier markers

.30 Installation of milled rumble strips;

.31 Rehabilitation work in gravel pits and/or borrow sites;

.32 Miscellaneous rock scaling as directed by the Departmental Representative;

.33 Shoulder graveling;

.34 Traffic control equipment additional to is required by the applicable regulations and standards;

.35 Relocation of existing structures;

.36 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 British Columbia Roadbuilders and Heavy Construction Association schedule, and will be all inclusive and fully operated.

.2 Vehicles (ie. Pickup trucks) will be paid at daily rates as per the British Columbia Roadbuilders and Heavy Construction Association 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 Fuel price adjustment to be determined from https://www2.gov.bc.ca/gov/content/industry/construction-industry/transportation-infrastructure/hired-equipment-program/fuel-price-adjustment

for the applicable rate at the time the work is being performed.

.1 Pick-ups, light plants, service vehicles and similar equipment are excluded from the fuel price adjustments.

.4 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.

.5 Equipment paid on standby will be paid on 50% of the relevant Less Operator rates to a maximum of 10hrs per day.

.6 When based upon actual costs for additional works under Prime Cost Sum, payment will be based upon supplied invoices and other work records.

.7 The Prime Contractor may apply a 10% mark-up to subcontractor or supplier invoices only, as accepted by the Departmental Representative. No mark-up will be allowed on relevant equipment and labour rates.

.8 A claim for additional payment will be considered submitted when all required documentation has been received by the Departmental Representative.

.9 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.

.10 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.

.11 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 waiver any portion of the Contract regardless of any wording to the contrary.

.12 Unless otherwise provided for in the Contract, payment on a time and materials basis represents complete payment (exclusive of GST) and reimbursement for all impacts, related costs and expenses, including, without limitation: time; labour; materials; equipment; mobilization; subcontracting; overhead; profit; general supervision; occupational tax and any other Federal or Provincial revenue legislation exclusive of GST; premiums for public liability and property damage insurance policies; bonding; for the use of all tools and equipment for which no specific rental payment provision exists; and for all costs incurred by the Contractor in supplying materials.

.13 Reimbursement for Living Out Allowance (LOA), as agreed upon by the Departmental Representative, shall be pro-rated based on the portion of the standard 10-hour work day spent on extra work items up to a maximum of 10 hours. LOA reimbursement will only be considered for extra works completed under Force Account rates and payment for LOA will not exceed the agreed upon daily rate.

Part 2 Products

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

Part 3 Execution

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

END OF SECTION

01 25 20 MOBILIZATION AND DEMOBILIZATIONS

Part 1 General

1.1 DESCRIPTION

.1 Mobilization and Demobilization consists of preparatory work and operations including but not limited to, those necessary for the movement of personnel, equipment, camp, buildings, shops, offices, supplies and incidentals to and from the project sites.

.2 Any protective measures or movement of Contractor trailers necessitated by animal interactions and required by Parks Canada will be paid by the Departmental Representative, and are not to be anticipated in the Lump Sum Contract Price for Mobilization and Demobilization.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

.1 Mobilization and Demobilization:

.1 Payment will be made under **"Lump Sum Price Item 1 – Mobilization / Demobilization".**

.2 50% of Lump Sum Contract Price for Mobilization and Demobilization to be paid when mobilization to site is complete.

.3 The remainder of the Lump Sum Price for Mobilization and Demobilization to be paid when work is complete and all materials, equipment, camp, buildings, shops, offices, and other facilities have been removed from site and site cleaned and left in condition to the satisfaction of the Departmental Representative and all other Agencies having Jurisdiction.

.4 Payment of only **5%** of the total price tendered will be scheduled as outlined above. If the amount bid for mobilization and demobilization is greater than **5%** of the total price tendered, payment of the remainder of the amount will be authorized when the Contract has been completed.

Part 2 Products

.1 Not Used.

Part 3 Execution

.1 Not Used.

END OF SECTION

01 29 01 SITE OCCUPANCY

Part 1 General

1.1 DEFINITION OF OCCUPANCY

.1 The Contractor shall be permitted to lease and occupy sites where they will be working in the National Parks, free of charge from the date of award of the Contract up to and including the specified completion date. The sites to be leased by the Contractor include all the roads and areas specified in the Contract documents and as directed by the Departmental Representative.

.2 The Contractor's occupancy of the sites identified in Contract will be deemed to have ended, when the following conditions are met to the satisfaction of Parks Canada:

.1 All the work identified under this Contract, has been completed.

.2 Any outstanding deficiencies for the work identified under this Contract have been addressed to the satisfaction of the Departmental Representative.

.3 Contractor has removed from the park all trailers and equipment and sites have been cleaned-up to the satisfaction of the Departmental Representative.

Part 2 Products

.1 Not Used.

Part 3 Execution

.1 Not Used.

END OF SECTION

01 31 00 PROJECT MANAGEMENT AND COORDINATION

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 CHANGES TO DESIGN

.1 If a change from the IFC design is accepted in writing by the Departmental Representative and agreed on by the Contractor, a design variance letter will be issued by the Departmental Representative. The design variance letter must state what changes are being made from the IFC design and what the method of measurement for payment will be, if varying from the Contract Documents.

.2 The design variance letter must be signed by both the Contractor's Representative and the Departmental Representative prior to performing the Work.

.3 The Departmental Representative reserves the right to use as-built survey or neat line measurements for payment if for any reason tolerances are not in accordance with the IFC design.

1.3 COORDINATION

.1 Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of other Contractors, and Work by Owner, under instructions of the Departmental Representative.

1.4 PROJECT MEETINGS

.1 During the course of the Work, the Contractor shall attend weekly construction meetings as scheduled, chaired, and documented by the Departmental Representative.

.2 The agenda will include among other things, general construction, payment, scheduling, risk, quality, environmental, and safety management items as well as any other reasonably requested by the parties.

.3 The Contractor shall provide physical space and make arrangements for meetings at or near the Work Sites for all meetings that take place in relation to the Contract from their mobilization until their demobilization.

.4 Meetings held outside of the time noted above (before mobilization or after demobilization) will either be held in the local PCA Field Unit offices, or at the Owner's site office, as notified by the Departmental Representative.

.5 The Contractor will attend or otherwise ensure the attendance of their staff, subcontractors, consultants, suppliers, or other key parties all other meetings identified in the Contract or reasonably requested by the Departmental Representative in an effort to resolve specific issues as they may arise.

.6 Meetings will be called and chaired by the Departmental Representative as required. The Contractor shall be represented at such meetings to the satisfaction of the Departmental Representative.

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

1.5 CONSTRUCTION ORGANIZATION AND START-UP

.1 Within seven (7) days after award of Contract, request a Preconstruction meeting of Contract Representatives to discuss and resolve administrative procedures and responsibilities. Meeting shall be chaired by the Departmental representative who will prepare the minutes of the meeting.

.2 Senior representatives of the Owner, Departmental Representative, Contractor, major subcontractors, field inspectors and supervisors are to be in attendance.

.3 Agenda to include following:

- .1 Appointment of official representative of participants in Work.
- .2 Schedule of Work, progress scheduling in accordance with Section 01 32 16 – Construction Progress Schedules.
- .3 Schedule of submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .4 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 – Construction Facilities.
- .5 Site safety and security in accordance with Sections 01 14 00 – Work Restrictions, 01 35 29 – Health and Safety Requirements, 01 52 00 – Construction Facilities and 01 35 43 – Environmental Procedures.
- .6 Quality Control in accordance with Section 01 45 00 – Quality Control.
- .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .8 Owner-furnished materials.
- .9 Monthly progress claims, administrative procedures, photographs, and holdbacks.
- .10 Closeout procedures and submittals in accordance with Sections 01 77 00 – Closeout Procedures and 01 78 00 – Closeout Submittals.
- .11 Insurances and transcript of policies.
- .12 Other business.

.4 Comply with Departmental Representative's allocation of mobilization areas of site, for field offices and sheds, and for access, traffic, and parking facilities.

.5 During construction, coordinate use of site and facilities through Departmental Representative's procedures for intra-project communications: submittals, reports and records, schedules, coordination of Drawings, recommendations, and resolution of ambiguities and conflicts.

.6 Comply with instructions of the Departmental Representative for use of temporary utilities and construction facilities.

.7 Coordinate field engineering and layout work with the Departmental Representative.

1.6 ON-SITE DOCUMENTS

.1 Maintain at job site, one copy each of the following:

- .1 Contract Drawings if part of tender
- .2 Specifications
- .3 Addenda

.4 Reviewed Shop Drawings and mix designs
.5 Change Orders
.6 Other modifications to Contract
.7 Traffic Management Plan
.8 Safety Plan
.9 WHMIS
.10 Environmental Protection Plan
.11 Quality Control Plan and field test reports
.12 Copy of accepted Work schedule and most recent updated schedule
.13 Labour conditions and wage schedules
.14 Equipment rate schedule and applicable versions of the relevant rate guides
.15 Applicable current editions of municipal regulations and by-laws
.16 WorkSafe BC Notice of Project

1.7 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.

1.8 PROJECT SCHEDULES

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

1.9 SUBMITTALS

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

.2 Submit requests for payment for review, and for transmittal to Departmental Representative. Payment request on last day of the month.

.3 Submit requests for interpretation of Contract Documents, and obtain instructions through Departmental Representative.

.4 Process substitutions through Departmental Representative.

.5 Process change orders through Departmental Representative.

1.10 CLOSEOUT PROCEDURES

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

Part 2 Products

.1 Not Used.

Part 3 Execution

.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 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 activities.

.4 Plan to complete Work in accordance with prescribed Project Schedule.

.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.

.8 Include the requirements of Section 01 14 00 – Work Restrictions and Section 01 35 43 – Environmental Procedures.

1.4 SUBMITTALS

.1 Submittals 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.

.3 Submit Project Schedule to Departmental Representative in accordance with Section 01 33 00 - Submittal Procedures.

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 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 follows:

- .1 Contract Award
- .2 Obtaining Permits
- .3 Pre-mobilization Submittals
- .4 Mobilization
- .5 Temporary barrier removal
- .6 Culvert works
  - .1 Removal of temporary backfill
  - .2 Joint repairs
  - .3 Concrete works
  - .4 Geotextile and riprap
  - .5 Instream works
  - .6 Backfill
- .7 Interim Inspection

.8 Remediation of any noted deficiencies

.9 Site Clean-up / Demobilization

.10 Final Completion

1.8 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on monthly basis or as and when requested by the Departmental Representative, reflecting activity changes and completions, as well as activities in progress.

.2 Provide Weekly Progress Reports that identify completed work and Work planned for the following week in accordance with Section 01 33 00 - Submittal Procedures.

.3 Include as part of Project Schedule Update, a narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. 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

.1 Not Used.

Part 3 Execution

.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 Contract and will not be measured for payment.

1.2 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete, and written acceptance of the submittal has been issued by the Departmental Representative.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Submittals must be accompanied by a completed Quality Control Checksheet in accordance with Section 01 45 00 – Quality Control prior to submission to Departmental Representative. This completed Quality Control Checksheet represents that all the necessary requirements have been met and that the submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

.6 Notify Departmental Representative in writing at time of submission, identifying any deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work is consistent.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative’s review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.10 Keep one accepted copy of each submission on site.

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

.1 “Design and Build”: The term “Design” refers to all detailed design activities (survey, investigation, drawings, specifications) based on general requirements contained in the Contract Documents. “Build” refers to construction of Contractor’s detailed design after design has been reviewed by the Departmental Representative. Contractor’s responsibility for error and omissions in submission is not relieved by Departmental Representative’s review of submittals.

.2 The term “shop drawings” means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided by the Contractor to illustrate details of a portion of Work.

.3 The term "Mix Design" means an engineered design for proportioning materials in concrete or asphalt concrete pavement including all supporting test results, materials properties, that is acceptable to the Departmental Representative.

.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:
  - .7 Subcontractor,
  - .8 Supplier,
  - .9 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with the Contract Documents.
- .5 Details of appropriate portions of the Work as applicable:
  - .1 Fabrication,
  - .2 Performance characteristics,
  - .3 Standards.

.11 After the Departmental Representative's review, distribute copies.

.12 Submit one (1) electronic copy of the shop drawings or mix design for each requirement requested in the Contract Documents and as requested by the Departmental Representative.

.13 Submit one (1) electronic copy of the product data sheets or brochures for requirements requested in the Contract Documents and as requested by the Departmental Representative where shop drawings will not be prepared due to standardized manufacture of the product.

.14 Delete information not applicable to project.

.15 Supplement standard information to provide details applicable to project.

.16 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.17 The review of shop drawings and mix designs by Departmental Representative is for the sole purpose of ascertaining conformance with the Contract requirements. This review shall not mean that Departmental Representative approves details of the design inherent in shop drawings, responsibility for that shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting the generality of the foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 SAMPLES

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

1.5 MOCK-UPS

.1 Not used.

1.6 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

1.7 REQUIRED CONTRACTOR SUBMITTALS

.1 **General**

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

.2 **Pre-Mobilization Submittals**

The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of submittals in writing. Submit the following plans and programs to the Departmental Representative for review a minimum of fourteen (14) days prior to mobilization to the project site:

.1 Project schedule, detailing the schedule of the workdays required from Contractor, subcontractors, suppliers and consultants to complete each activity of the project by location in order to meet stages specified in Section 01 32 16 –

Construction Progress Schedules. In addition, for each activity critical elements that could impact on the schedule are to be identified. Submission shall include both a paper copy of the schedule and an electronic copy in Microsoft Projects format.

.2 Environmental Protection Plan (EPP) that meets the requirements of Section 01 35 43 – Environmental Procedures. Submission of EPP must allow 2 weeks for review by the Parks ESO, in accordance with Section 01 35 43 – Environmental Procedures.

.3 Plan describing methods the Contractor will have to meet their responsibilities as the Prime Contractor for Safety and Traffic Control within the Work limits and to co-ordinate Work, traffic control, site access, safety, with other Contractors working in or adjacent to the Contract Work zone.

.4 Health and Safety Plan - The Contractor shall have a Certificate of Recognition (COR) or Registered Safety Plan (RSP) including a site-specific Health and Safety Plan acceptable to the Departmental Representative. The Contractor shall implement and maintain the Health and Safety Plan during the Work. Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative. Health and Safety Plan must include in accordance with Section 01 35 29 – Health and Safety Requirements.

.1 Contractor shall develop an "Emergency Procedures Protocol" in consultation with Parks Canada. On site Contingency and Emergency Response Plan to address standard operating procedures to be implemented during emergency situations. Emergency Response Plan can be incorporated into the Health and Safety Plan.

.5 Traffic Management Plan, in accordance with the requirements of Section 01 35 31 – Special Procedures for Traffic Control.

.1 Site Access and Detour Plans shall include, but not be limited to, engineered drawings and procedures for accessing all areas of the Work or for proposed detours.

.6 Quality Control Plan in accordance with Section 01 45 00 – Quality Control, including Quality Control checklist examples for each item of Work.

.7 Submit a copy of the filed Notice of Project with Provincial authorities.

.8 BC One Call and Utilities Coordination Plan, including notifications to Utility Owners.

.9 Contractor and any subcontractors to submit a copy of their valid Parks Canada Business License.

.10 Contractor Chain of Command, listing key Contractor personnel, including for each name, position, qualification, experience, telephone and cellular telephone. The list shall include the names and telephone/cellular telephone for contact persons who are available on a 24-hour basis in the event of emergencies.

.11 List of subcontractors, suppliers and consultants, their role and their key personnel, including names and positions, addresses, telephone and cellular telephone.

.12 Work Plan, describing in detail for each activity by 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.

.13 Schedule of Force Account rates, in accordance with Section 01 21 00 – Allowances.

.14 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.

.15 The Contractor shall not begin any Work on the Site until the Departmental Representative has provided a Notice to Proceed.

.3 **Construction Phase Submittals**

.1 Monthly Progress Reports in accordance with Section 01 32 16 – Construction Progress Schedules.

.2 Weekly Progress Reports that outline the detailed Work (Contractor, subcontractors, suppliers, consultants) completed to date as well as the anticipated Work to be performed for the following week on a day-by-day basis. Work to be linked to activities by location identified in project schedule and to provide information on materials, equipment and manpower. Also, alternate Work to be identified if Work or a portion of, proposed cannot be done due to weather, equipment breakdown, delays in delivery, etc. Weekly Progress Reports shall be submitted at the end of each week.

.3 Quality Control Inspection Reports - The Contractor shall maintain a daily inspection report that itemizes the results of all Quality Control inspections conducted by the Contractor. The reports shall be submitted to the Departmental Representative with the Weekly Progress Report. A summary of all Quality Control inspections conducted to date shall be submitted by the Contractor with each Weekly Progress Report.

.4 "Design and Build" documents, Shop Drawings and Mix Designs – The Contractor shall submit all design drawings, shop drawings and mix designs required to fabricate and / or conduct the work a minimum fourteen (14) days prior to fabrication / production.

.5 Progress Photographs:

.1 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.

.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

.1 Not Used.

Part 3 Execution

.1 Not Used.

END OF SECTION

01 35 29 HEALTH AND SAFETY REQUIREMENTS

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Health Canada/Workplace Hazardous Materials Information System

.1 (WHMIS) Material Safety Data Sheets (MSDS).

.3 Province of British Columbia / Alberta - Occupational Health and Safety Act, depending on the province where the Work is occurring.

1.3 SUBMITTALS

.1 Make submittals 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.

1.4 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 onsite upon mobilization and remain posted until project completion.

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

.1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work. This meeting may be combined with the Organization and Start-Up meeting identified elsewhere.

.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.

1.7 REGULATORY REQUIREMENTS

.1 Do Work in accordance with National Parks Act.

1.8 PROJECT / SITE CONDITIONS

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

1.9 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.

1.10 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, British Columbia / Alberta, depending on which province the Work is occurring in.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.12 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.

1.16 BLASTING

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

.2 Production of blasting powder must be done in accordance with Section 01 35 43 – Environmental Procedures.

.3 Do blasting operations in accordance with Section 31 24 13 – Roadway and Drainage Excavation.

1.17 POWDER ACTUATED DEVICES

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

1.18 WORK STOPPAGE

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

Part 2 Products

.1 Not used.

Part 3 Execution

.1 Not used.

END OF SECTION

01 35 31 SPECIAL PROCEDURES FOR TRAFFIC CONTROL

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

.1 Cost of Traffic Control, including temporary pavement marking, described in this Section, shall be considered incidental to **"Lump Sum Price Item 2 – Traffic Accommodation",** and no additional payment will be made for the duration of the Contract.

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

.2 Keeping the existing roadway within the Work limits, clean, free of pot holes while Contractor is on site.

.3 Cost of snow removal required by the Contractor to complete the work identified in the Contract.

.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.

1.2 REFERENCES

.1 British Columbia - Traffic Control Manual for Work on Roadways (1999)

.2 BC MoTI – Standard Specifications for Highway Construction – Traffic Management for Work Zones (latest edition)

.3 Manual of Uniform Traffic Control Devices for Canada, (MUTCD) distributed by Transportation Association of Canada. (latest edition)

.4 Standard CMS Translations Rev 1 - July 2018

.5 Construction Signage Translation Rev 1 - July 2018

1.3 QUALITY CONTROL

.1 All Quality Control by the Contractor.

1.4 GENERAL

.1 The Contractor will not be permitted to remove the temporary pavement marking until the final pavement markings have been installed to the satisfaction of the Contract and Departmental Representative.

.2 At all work sites, the Contractor shall mark **accurately**, at regular intervals, the location and type of existing painted lines prior to their removal or covering, including start and ends of passing lanes and intersections, with a stake at the side of the roadway and make a written record of markings in a book, in order that painted lines can be accurately re-established after work is completed. If no lines are present the Contractor shall mark **accurately (+ or – 20 mm)** and at regular intervals in accordance with the Section 2.2.1 of the **"BC MoTI - Traffic Control Manual for Work on Roadways, 1999".**

.3 The Contractor shall develop and implement a Traffic Management Plan in accordance with BC MoTI - Traffic Control Manual for Work on Roadways (1999), except where specified otherwise in the Contract Documents. The Traffic Management Plan will include plans specific to each roadway for this project.

.1 A Traffic Management Plan to include strategies and contingencies for the presence of bighorn sheep on or near the Project area and the adjacent highway.

.4 The Traffic Management Plan must duly consider the traffic volumes associated with the direction volume increases typically experienced on the lead up to weekends and/or special events. Adjustments to the TMP may be required at the request of the Departmental Representative to mitigate delays in excess of the stipulated maximum as described in this Section.

.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 two flashing arrow boards (FAB) minimum, as required for the Works, in accordance with the accepted TMP. 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 two portable Changeable Message Signs (CMS) minimum to inform the traffic of construction delays. All CMS shall be in both English and French with equal space allotted to each. Exact installation locations of the CMS to be agreed on site with the Departmental Representative. All cost associated with the supply, installation, maintenance and removal of the CMS will be incidental to **"Lump Sum Price Item 2 – Traffic Accommodation"**. Removal of the CMS will only be permitted upon completion of the Works.

.8 The Contractor shall supply, install and maintain speed reader boards (SRB), as reasonably required to maintain compliance with construction speed zones. Exact installation locations of SRBs to be agreed on site with the Departmental Representative. All cost associated with the supply, installation, maintenance and removal of SRBs will be incidental to **"Lump Sum Price Item 2 – Traffic Accommodation"**. 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 reference documents must be approved by Parks Canada prior to fabrication.

.11 All speed limits, traffic control and warning signs shall have an "NPC" adhesive sticker added to bottom right-hand corner. These stickers will be supplied by Parks Canada following the acceptance by the Departmental Representative of the Contractor's traffic management plan.

.12 Temporary pavement marking used shall be acceptable to the Departmental Representative and in accordance with Section 2.2.1 of the BC MoTI Traffic Control Manual for Work on Roadways, 1999. Spacing between temporary line markings to not exceed 10m.

.13 All temporary pavement markings will be removed at the Contractor's expense prior to the completion of the Contract.

.14 Temporary lane markings that are not consistent with the final geometric design layout shall be removed using eradication or water blasting to the satisfaction of the Departmental Representative. Blackout painting of existing lines will not be permitted. No additional payment will be made for removal of existing paint lines.

.15 Contractor shall have appropriate traffic control measures in place so that one lane of highway traffic is maintained in each direction through the work zone at all times throughout the construction.

.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 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.

1.5 PROTECTION OF PUBLIC TRAFFIC

.1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.

.2 Carry out traffic regulation in accordance with BC MoTI – Standard Specifications for Highway Construction – Traffic Management for 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 may be allowed by the Departmental Representative for some activities such as asphalt removal as long as the delay to motorists does not exceed **20 minutes**.

.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 BC MoTI - Traffic Control Manual for Work on Roadways (1999), except where specified otherwise.

.7 Contractor to provide a minimum of 10.0m wide available paved surface for traffic, with at least one lane in each direction, 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.

1.6 INFORMATIONAL AND WARNING DEVICES

.1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work that requires road user response.

.2 Supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in the Traffic Management Plan submitted by the Contractor and approved by the Departmental Representative. **All temporary signs that are used for longer than one day shall be mounted on wood or steel posts installed in the shoulder areas at locations accepted by the Departmental Representative.**

.3 At each end of the Work site, supply, install and maintain CMS's with a minimum of three (3) lines with 8 characters for the duration of the project.

.4 Place signs and other devices to standards and in locations recommended in BC MoTI - Traffic Control Manual for Work on Roadways (1999). 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 BC MoTI - Traffic Control Manual for Work on Roadways (1999), whichever is higher.

.6 As situation on site changes, Contractor to update their Traffic Management Plan outlining signs and other devices required for the project and submit for the acceptance of the Departmental Representative.

.7 Continually inspect and maintain traffic control devices in use by:

.1 Checking signs daily for legibility, damage, suitability, location and height.

.2 Cleaning, repairing or replacing signs as required ensuring clarity and reflectance.

.3 Removing or covering signs that do not apply to conditions existing from day to day or time to time.

1.7 CONTROL OF PUBLIC TRAFFIC

.1 Contractor shall provide competent flag persons, trained in accordance with, and properly dressed and equipped as specified in BC MoTI - Traffic Control Manual for Work on Roadways (1999).

.1 When public traffic is required to pass working vehicles or equipment, that block all or part of travelled roadway.

.2 When vehicles are entering or exiting Work Site access points.

.3 When vehicles are entering or exiting gravel pits in the park.

.4 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.

.5 When 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 or long weekend.

1.8 OPERATIONAL REQUIREMENTS

.1 Maintain existing conditions for traffic throughout period of Contract except that, when required for construction under Contract and when measures have been taken as specified herein and approved by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:

.1 Speed limit reduced to 30 km/h in work zones in work periods.

.2 Speed limit reduced to 30 km/h on detours at all times.

.3 Contractor to provide a minimum of 10.0m wide available paved surface for traffic, with at least one lane in each direction, unless otherwise authorized by the Departmental Representative.

.4 The delay due to single lane alternating traffic shall not exceed 20 minutes.

.5 A schedule for all full work zone closures required longer than 45 minutes must be provided to the Departmental Representative at least one (1) week in advance of the planned closure.

.6 There may be restrictions to accommodate special events within the National Parks. PCA will provide two (2) weeks' notice of any upcoming restrictions.

.7 The Departmental Representative reserves the right to stop work in the case of excessive traffic delays.

.8 Maintain existing conditions for traffic crossing right-of-way.

.9 Provide the Departmental Representative with construction advisories for posting to the DriveBC website (http://www.drivebc.ca) and update advisories regularly to reflect the current and planned construction activities and highway closures. A minimum of 4 days notice is required for changes to the accepted TMP.

.10 Emergency vehicles are to be directed through the Work Site immediately once conditions are safe.

.11 No stoppage of traffic shall be allowed during inclement weather conditions.

.2 Maintain existing conditions for traffic crossing right-of-way.

Part 2 Products

.1 Not used.

Part 3 Execution

.1 Not used.

END OF SECTION

01 35 43 ENVIRONMENTAL PROCEDURES

Part 1 General

1.1 REFERENCES

.1 Parks Canada National Best Management Practices– Roadway, Highway, Parkway and Related Infrastructure (English) - May 2015

.2 Pratiques exemplaires nationales de gestion de Parcs Canada – Routes, autoroutes, promenades et infrastructure connexe - Mai 2015

.3 Direction for Permitted Users conducting water-related activities in LLYK (English) – April 2017.

.4 Directives à l'intention des titulaires de permis exerçant des activités dans les plans d'eau de l'Unité de gestion du secteur de Lake Louise et des parcs nationaux Yoho et Kootenay – Avril 2017

1.2 PRECEDENCE

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

1.3 MEASUREMENT AND PAYMENT PROCEDURES

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

.2 The cost of environmental and aesthetic protection in accordance with this Section 01 35 43 Environmental Procedures will not be measured separately for payment and will be considered incidental to the Work.

1.4 GENERAL

.1 All Contractor operations shall be performed in such a manner that no detritus from his operations shall enter Sinclair Creek or any other waterway, ditches, or wetlands within Kootenay National Park.

.2 If, in the opinion of the Departmental Representative or Parks Canada, full containment of Contractor's detritus is not being achieved, operations may be ordered halted until the situation is rectified.

.3 In addition to the requirements outlined in the project specifications, the Contractor shall adhere to the Parks Canada National Management Practices for Roadway, Highway, Parkway and Related Infrastructure (BMP's) the Direction for Permitted Users Conducting Water-Related activities in LLYK (LLYK Decontamination Procedure) and any revisions, which are provided as reference documents.

.1 Where there is a discrepancy or inconsistency between the project specifications, the BMP's and the LLYK Decontamination Procedure, the most rigorous with regard to environmental stewardship shall be followed.

.4 The following key mitigations are highlighted. This list does not replace the comprehensive mitigation requirements and details provided elsewhere in the project specifications, the

BMP's, the decontamination procedure, or the Chance Find Procedures for Archaeological Material:

.1 The Environmental Protection Plan (EPP) certified by a Qualified Environmental Professional (QEP) is to be submitted at least 14 days prior to the start of construction. EPP to be approved by LLYK Field Unit (FU) prior to start of construction.

.2 All Contractor personnel working on site are required to attend an on-site environmental briefing conducted by the LLYK FU.

.3 To minimize contamination, biodegradable hydraulic fluids may be required for machinery working within drainages, wetlands, water courses and water bodies. This will be at the discretion of the Environmental Surveillance Officer (ESO) and Departmental Representative.

.4 The Contractor will prepare a detailed water management plan regarding the temporary diversion of Sinclair Creek during construction, under the guidance of their QEP. The plan will be reviewed and approved by the LLYK FU prior to the start of construction.

.5 If required, a fish salvage completed by a QEP is required prior to diverting water flows. Results of the fish salvage (including species, sex, age, weight and fork length) will be sent to the ESO and Departmental Representative.

.6 Fish screens will be used on pumps and diversion structures.

.7 Removal of vegetation used by birds (either migratory or non-migratory) to be completed outside of the nesting period of April 14 to August 19. If removal of vegetation within the nesting period is required, the Contractor shall coordinate and pay for pre-clearance nest surveys and potential additional bird-related mitigations with LLYK FU approval.

.8 Disturbance to natural materials and vegetation that contribute to fish habitat or stream channel stability will be minimized. If such vegetation needs to be removed, a restoration plan that meets PCA requirements for re-vegetation will be submitted by the Contractor at their cost.

.9 At spawning and early developmental periods:

.1 In clear flow, the turbidity level should not increase more than 2 Nephelometric Turbidity Units (NTUs) from background levels for a long-term exposure (e.g. 1 month) or increase more than 8 NTUs from background levels for short term exposure (e.g. 1 day)

.2 In high flow or turbid water, the turbidity levels should not increase more than 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Turbidity levels should not increase more than 10% of background levels when background is >80 NTUs.

.3 Monitoring requirements in regard to these NTU limits are to be addressed in the ESC that is part of the EPP.

.10 The Traffic Management Plan is to include strategies and contingencies for the presence of bighorn sheep on or near the Project area and the adjacent highway.

.11 A QEP will conduct a pre-construction survey before ground disturbance activities occur. Potential rubber boa habitat (rock outcrops, rock piles, rock bluffs, or talus slopes) will be surveyed for snake presence.

.12 Work will be conducted outside areas of known historical or cultural significance and there will be no trespass over such areas.

.13 To minimize fire risk, a single location on site for smoking shall be designated and a plan developed for proper disposal of cigarette butts.

.14 No vehicle fueling or servicing permitted within 100 m of Sinclair Creek.

.15 Equipment, propane storage, and fuel lines to be inspected daily for leaks. All equipment stored overnight in staging areas to be stored on tarps with appropriate containment and with drip trays and/or pans under fuel tanks.

.16 Prior to coming on site, all equipment that came into contact with soil at previous site (i.e. clearing, grading, etc.) must be cleaned (blow down/scrape down) and approved by the LLYK FU.

.17 To prevent spread of whirling disease, all gear and equipment arriving on site which may be used instream/touching water must be cleaned and decontaminated in accordance with the protocol outlined in the Direction for Permitted Users Conducting Water-Related activities in LLYK (LLYK Decontamination Procedure) for whirling disease prevention and evidence of decontamination provided to the Departmental Representative and ESO.

.18 Turbidity monitoring by qualified QEP required during in-stream culvert works.

.5 LLYK Field Unit (FU) to be kept apprised of timelines, work periods, and construction activities so that their staff can provide information to the public to prevent additional safety risks for recreational users in the vicinity of the Project site during construction. Communication to the FU shall be through the Departmental Representative.

1.5 SUBMITTALS

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

.2 The EPP will include how the Contractor will manage all environmental risks.

1.6 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 business and private vehicles are required to display a vehicle work pass from Parks Canada. These permits may be obtained free of charge from PCA Administration Office once a business permit has been obtained.

1.7 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

.1 Execution of the work is subject to the provisions within the Canadian Environmental Assessment Act (CEAA) Guidelines Order of 2003 and subsequent amendments.

.2 Failure to comply with or observe environmental protection measures as identified in these specifications may result in the work being suspended pending rectification of the problems.

1.8 START-UP AND ENVIRONMENTAL BRIEFING

.1 All staff employed at the construction site will be subject to an approximately one hour briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. Employees must attend this briefing before beginning their work at the site. Each employee, having received the briefing, will be issued a certification sticker to be displayed on their helmet. It is recognized that new employees may join the Contractors' work force after the initial round of "Environmental Briefing". In that case and as required, subsequent "Environmental Briefings" can be presented as numbers warrant, by arrangement with the ESO through the Departmental Representative. Also, some sub-trades may be present at the site for a short time, to perform once-only duties. In these cases, the "Environmental Briefing" will be replaced by the Contractor explaining the environmental sensitivity of the work location to the sub-trade worker(s), and reviewing highlights of personal conduct expected, with reference to a one-page briefing summary to be provided to the Contractor by the ESO. A copy of this summary will be provided to each sub-trade worker joining the work force at the site.

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

.3 The ESO is not to act as daily environmental monitor, but shall check activities with the approved EPP to ensure compliance, at their discretion. The Contractor's QEP shall be responsible for ensuring all activities are conducted in accordance with the approved environmental documents.

1.9 ENVIRONMENTAL PROTECTION PLAN

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

.2 Changes and/or revisions to the EPP may be required by the ESO as the Work progresses and more information becomes available. No additional payment will be made for changes and/or revisions to the EPP.

.3 The Contractor's EPP will detail how the work limits shall be marked and what procedures will be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Departmental Representative and the ESO.

.4 The EPP will include how the Contractor will manage all environmental risks and specify site-specific details for implementing mitigation or achieving mitigation outcomes.

.5 Spill Response, Erosion and Sedimentation Management Plan, Emergency Response Plan and Fire Prevention Plan 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.

1.10 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 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.

1.11 CONSTRUCTION SITE ACCESS AND PARKING

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

.2 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.

1.12 ACCIDENTAL FINDS

.1 It is possible that undocumented historic objects will be found within the Project limits. If significant features are encountered, stop Work in the immediate area, notify the Departmental Representative, take photographs of the findings and a GIS location reading.

.2 Significant features include items such as:

.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.

1.13 PROTECTION OF WORK LIMITS

.1 The Contractor is to prepare an EPP that details 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.

1.14 EROSION CONTROL

.1 Erosion control measures that prevent sediment from entering waterway at the construction site are a critical element of the project and shall be implemented by the Contractor.

.2 On-site sediment control measures shall be constructed and functional prior to initiating activities required for the work. The Contractor shall prepare an Erosion and Sediment Control Plan to the satisfaction of the Departmental Representative and the ESO.

.3 The regular monitoring and maintenance of all erosion and sediment 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, remediated, or replaced. The Departmental Representative and ESO will also monitor erosion control performance.

.4 The site will be secured against erosion during any periods of construction inactivity or shutdown.

.5 Construction and equipment travel will be minimized during periods of heavy precipitation and excavation activities halted during heavy rainfall events (50mm or more in 1 hour).

.1 Contingency plans for isolating worksites during high precipitation, high wind and runoff events will be identified in the Contractor's EPP.

.6 The area of exposed soil at any given time will be minimized by using techniques such as phased construction activities, retaining vegetation as much as possible, and, following construction works completion, stabilizing the exposed soils as soon as possible via methods acceptable to the ESO and Departmental Representative.

.7 All components of the Contractor's Erosion and Sedimentation Controls will be regularly maintained, and the regular inspection must be documented in a report that will be submitted to the ESO and Departmental Representative for weekly review.

1.15 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 as part of the EPP and shall detail the containment and storage, security, handling, use and disposal of empty containers, surplus product or waste generated in the application of these products, to the satisfaction of the Departmental Representative and the ESO and in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement 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 more than 100 metres from watercourses.

.4 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berms shall be capable of holding 110% of tank storage volumes and shall be to the satisfaction of the Departmental Representative and the ESO before start-up. Measures such as collection /drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.

.5 The Contractor shall prevent blowing dust and debris by covering and/or providing dust control for temporary roads and on-site work by methods that are approved by the Departmental Representative or ESO.

.6 The Contractor shall provide spill kits at re-fuelling, lubrication, and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order on the construction site. The ESO and Departmental Representative prior to project start-up must approve these spill kits. The Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in its use.

.7 Timely and effective action shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. The Departmental Representative and the ESO shall be notified immediately of any spill. In the event of a major spill, all other work shall be stopped and all personnel devoted to spill containment and clean-up.

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

1.16 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 is removed (e.g. power washing) outside the Parks before delivery to the work site.

.2 Equipment fuelling sites will be identified by the Contractor and approved by the Departmental Representative and the ESO. Except for chain saws, any fuelling closer than 100 metres to any streams, wetlands, water bodies or waterways shall require the authorization and oversight of the Departmental Representative.

.3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than 100 metres from any streams, wetlands, water bodies or watercourses. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain presence at and provide 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 in 1.15.4 of Pollution Control above.

.5 Equipment used on the project shall be fuelled with E10, and low sulfur diesel fuels and shall conform to local emission requirements. The Contractor is to ensure that unnecessary idling of vehicles is avoided.

.6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations approved by the ESO or the Departmental Representative. Waste lubrication products (e.g. oil filters, used containers, used oil, etc.) shall be secured in spill-proof

containers and properly recycled or disposed of at an approved facility. No waste petroleum, lubricant products or related materials are to be discarded, buried or disposed of in borrow pits, turnouts, picnic areas, viewpoints, etc., anywhere within National Parks.

.7 All site equipment shall use bio-based or biodegradable hydraulic fluid for works.

.8 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order. If any equipment is found to have fluid/fuel leaks the leaks are to be contained and cleaned up immediately and the piece of equipment shall be repaired or removed from site.

.9 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 in National Parks. Alternatively, the Contractor may hire a security person employed to prevent vandalism. The access gates to the pits shall be locked at the end of each working day and during extended periods when the pit is not being used. The Contractor is to ensure that workers are briefed on proper 'daisy-chain' use of locks to ensure no other contractor or Parks Canada Highways are locked out.

1.17 OPERATION OF EQUIPMENT

.1 Unless authorized by the Departmental Representative, activities beyond the work limits are not permitted. Equipment and vehicle (including personal) 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.. For this project, construction requires working close to watercourses or water bodies 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 Instream works to be in accordance with this Section and the Contract Documents.

.3 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.

.4 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 their expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc., to the satisfaction of the Departmental Representative and ESO.

.5 The Contractor shall restrict vehicle movements to work limits.

.6 No equipment will idle when not in use, unless required under extenuating circumstances.

.7 Workers private vehicles are to remain within the construction footprint, or as directed by the Departmental Representative.

1.18 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). Construction equipment shall be operated in a manner and with all original manufacturers' safety devices to prevent ignition of flammable materials in the area.

.3 Care shall be taken while smoking on the construction site to ensure that the accidental ignition of any flammable material is prevented.

.4 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 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.

.5 Fires or burning of waste materials is not permitted.

1.19 WILDLIFE

.1 During the Environmental Briefing all personnel shall be instructed by the ESO on procedures to follow in the event of wildlife appearance near or within the work site and any other wildlife concerns.

.2 The Contractor shall avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from the immediate location if wildlife including bears, cougars, wolves, deer, elk or moose display aggressive behaviour or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. disposal and storage of lunches and food scraps) must be exercised at all times.

.3 Food and attractants (i.e. lunches) are to be stored inside vehicles or site trailers. Daily offsite disposal of food wastes and other wildlife attractants are mandatory.

.4 The Contractor shall 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.

1.20 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 Parks are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any articles found and request direction from the ESO or the Departmental Representative.

1.21 WASTE MATERIALS STORAGE AND REMOVAL

.1 The Contractor and workers shall dispose of hazardous wastes in conformance with the Environmental Contaminants Act and applicable provincial regulations while observing the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.

.2 All wastes originating from construction, trade, hazardous and domestic sources, shall not be mixed, but will be kept separate.

.3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere in the Parks. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers, and disposed of at an appropriate waste landfill site located outside the parks. 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 Parks. Such wildlife attractants shall not be stored at the work site overnight. Lunches, coolers and food products, including waste food products, shall be securely stored away from access by animals. Daily removal of food scraps, food wrappers, pop cans or other attractive products to bear proof containers, such as the Overflow Campground, 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.

.7 Sanitary facilities, such as a portable container toilet, shall be provided by the Contractor and maintained in a clean condition.

1.22 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

.1 Contractor’s office, work headquarters, material laydown, equipment parking and storage area will be in locations approved by Parks Canada and the Departmental Representative with the goal of minimizing impacts to visitor experience and safety, motorists, wildlife and water quality.

.2 The National Park Act regulations prohibit anyone working within the Parks from using public campground facilities.

.3 Removal and storage of snow shall be arranged with the ESO and 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 control measures for temporary access roads may also have to be initiated.

1.23 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental

.2 Protection plan. Contractor: after receipt of such notice, inform Department Representative of proposed corrective action and take such action for approval by Departmental Representative.

.1 Take action only after receipt of written approval by Departmental Representative.

.3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED.

Part 3 Execution

3.1 CLEARING AND GRUBBING

.1 The Contractor shall ensure that the substrate or riparian area of streams, rivers or watercourses, whether open water or frozen over shall not be disturbed by tracked, wheeled or self-propelled equipment, (e.g. a skidder or truck).

.2 The Contractor shall take all measures to ensure that trees do not fall into streams, rivers, wetlands or water bodies or outside the clearing limits. Generally, work within a 30 metre buffer of watercourses, water bodies or wetland requires the close oversight of the ESO or the Departmental Representative.

.3 Trees inadvertently felled into streams, rivers, watercourses or outside the clearing limits shall be removed by means so as not to damage the substrate or any standing trees left outside the clearing limits. Machinery shall not go outside the clearing limits, or into streams, rivers, watercourses or water bodies to remove felled trees.

.4 Logs and other salvage materials are to be transported to and placed at the storage site without spread of debris or damage to other standing trees or landscape resources outside the marked clearing or storage limits. They shall not be skidded through wetlands, waterways or water bodies.

.5 During the grubbing component, stumps, roots, imbedded logs and other non-soil debris shall be pulled and shaken free of loose soil and rocks before being transported for disposal.

.6 No slash clearing, pickup or grubbing shall occur outside of the designated area or within 1 metre of the drip line of existing forest.

3.2 STRIPPING

.1 A contingency plan for control of dust generated from the construction site shall be prepared, with materials availability arranged in the event of their need. In the event of a work program shutdown during inclement weather erosion control of bared soils or excavated materials stockpiles will be required. The Contractor's EPP will describe measures to be implemented in such a circumstance.

.2 Stripping close to any watercourse, water body or wetland shall employ methods to ensure materials are not pushed, are not eroded and do not fall into the water or wetlands. Generally, work within a 30 metre buffer of waterways or wetlands requires the close oversight of the ESO and the Departmental Representative.

.3 No stripping shall occur outside of the designated area or within 1 metre of the drip line of existing forest.

.4 Stripped soil (including fine forest litter) materials shall be placed and stored at locations and in amounts and form as instructed by the Departmental Representative, for later reclamation use on graded slopes. 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.

3.3 MATERIAL LOADING, HAULING, PLACEMENT AND GRADE BUILDING

.1 During grade construction conducted close to any watercourse, water body or wetland methods shall be employed to ensure materials are not pushed, are not eroded and do not fall into the water or wetlands. Generally, work within a 30 metre buffer of waterways or wetlands requires the close oversight of the ESO and the Departmental Representative.

.2 No grade building shall occur outside of the designated area or within 1 metre of the drip line of existing forest. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location. Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location.

3.4 EXCAVATING AND PLACEMENT

.1 Excavation will be undertaken according to the design drawings.

.2 Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location.

.3 All sediment control measures shall be implemented by the Contractor prior to the commencement of the work in the vicinity of water bodies, watercourses, and wetlands.

.4 If sediments enter watercourses during any excavation nearby or at its banks, the Contractor shall ensure that sediment levels in the waters of the river or creeks do not exceed specified limits and meet the “desired end result” limits outlined. See 3.7 - Specific Concerns Relative to Erosion Control and Sedimentation and 3.8 - Specific Concerns Relative to Sensitive Sites and Activities of this Section 01 35 43 – Environmental Procedures.

.5 Placement of riprap and backfill at creeks shall be undertaken without contacting the watercourse or wetted margins of the stream, unless approved by the Departmental Representative.

.6 Fisheries protection windows shall be observed for any other watercourse in this contract and will guide the timing of the work so that stream disturbance is prevented. See 3.7 - Specific Concerns Relative to Erosion Control and Sedimentation and 3.8 - Specific Concerns Relative to Sensitive Sites and Activities of this Section 01 35 43 – Environmental Procedures.

.7 If a pump-out sump to dewater excavation sites will be required, the Contractor is to prepare an EPP that details how the dewatering shall be undertaken, to the satisfaction of the Departmental Representative and the ESO. Special attention is to be given to the environmental sensitivity of the discharge area, freezing conditions operation, overflow

avoidance, decanting and settlement pond reclamation. Water containing suspended materials shall not be pumped into watercourses, drainage systems or on to land, except with the permission of the Departmental Representative and the ESO.

3.5 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 LLYK and Direction for Permitted Users conducting water-related activities in KNP.

.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 may be requested by the Departmental Representative and ESO for verification.

.4 Extraction of water within any National Park requires a RAP. Should the Contractor require/request a water source the Departmental Representative, in consultation with the ESO may approve a RAP and give direction as to a location to be used. Specific intake measures are required when water is approved to be withdrawn from open watercourses.

.5 Care must be taken by the Contractor to ensure extracted water does not enter another water body, other than the initial source of extraction.

.6 ESO may require water trucks to be cleaned prior to moving between sites within the Parks to mitigate the risk of cross-contamination of water bodies.

3.6 FINE GRADING, TOPSOIL PLACEMENT AND SEEDING

.1 This contract involves the final shaping of cut slopes, fills and landscapes disturbed in the construction of the Works. These slopes will be covered by stripped soil, chip compost materials and seeded. Environmental concerns related to these activities largely focus on erosion prevention and sediment control. The Contractor is to present a plan for placement, spreading, and stabilization of reclamation materials that controls erosion and prevents sedimentation, to the satisfaction of the Departmental Representative and ESO.

3.7 SILT FENCE

.1 Silt fence shall only be installed where the drainage area is no more than 0.10 hectares per 30 meters of silt fence length. The maximum slope length above the barrier is 30 meters, and the maximum gradient above the barrier is 50 percent.

.2 The height of the silt fence shall not exceed 0.9 meters.

.3 Filter fabric should be purchased and installed in a continuous roll and cut to the length needed, to avoid joints.

.4 Silt fence shall be installed perpendicular to the slope, below disturbed areas where runoff may occur.

.5 Silt fence is to be burlap, synthetic filter fabric or geotextile, wire mesh is to be used as reinforcement where necessary, wooden or steel fence posts and staples and wire and ground staples are to be used.

.6 Regular inspections shall be conducted after each rainfall and storm to ensure the fence is intact and debris has not accumulated at the bottom. Remove deposits when they reach one-half the fence height.

.7 Installation to be in accordance with Section 31 32 19 - Geotextiles.

3.8 SPECIFIC CONCERNS RELATIVE TO EROSION CONTROL AND SEDIMENTATION

.1 The Contractor shall prepare an Erosion and Sedimentation Management Plan for this contract due to the proximity to waterbody and riparian environment. This plan shall be to the satisfaction of the Departmental Representative and ESO.

.2 An important desired end result is to allow no release into watercourses of sediments in levels that are deleterious to fish or that would harmfully alter, disrupt, or destroy fish habitat. Similarly there is to be no sediment release into areas of vegetation growth or sensitive areas of sediments in levels that would adversely alter growing or hydraulic conditions.

3.9 SPECIFIC CONCERNS RELATIVE TO SENSITIVE SITES AND ACTIVITIES

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

END OF SECTION

01 45 00 QUALITY CONTROL

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CAN/CSA-A23.2-04, Methods of Test and Standard Practices for Concrete

.2 BC MoTI – Standard Specifications for Highway Construction Manual (latest edition)

1.3 QUALITY CONTROL PLAN

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

.2 Submittals in accordance with Section 01 33 00 – Submittals Procedures.

1.4 TESTING BY THE CONTRACTOR

.1 Testing required to provide quality control to assure that the Work strictly complies with the Contract requirements shall include, but not be limited to:

.1 Testing all structural concrete, grout, reinforcing steel, asphalt concrete pavement, structural backfill, corrugated steel culverts, miscellaneous metals, concrete barriers, and all source acceptance testing; and

.2 All testing specified in the Contract Documents; and

.3 Any other testing required as a condition for deviation from the specified Contract procedures.

.2 Testing proposed shall be based on testing requirements in the latest edition of the BC MoTI 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 – Sand Cone ASTM D2167 – Balloon ASTM D2922 - 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 – Sand Cone ASTM D2167 – Balloon ASTM D2922 - Nuclear	3 tests per 50 m per lift; on centreline and on lt and rt fog lines
	Proof Roll and or Rutting Test	As required by the Departmental Representative
Culvert Installation	Field Density	Minimum three per 300 mm lift per culvert, spaced through the length and depth of the culvert backfill
Tests Prior to Concrete Discharge	C 143 / C143M-08 Slump of Hydraulic-Cement Concrete CSA A23.2-7C Air Content of Plastic Concrete by the Volumetric Method	One per truck load.
Tests During Concrete Pour	C 39 / C 39M-05e2 Compressive Strength of Cylindrical Concrete Specimens	Minimum of one cylinder for each pour and at least for every 30 cubic metres of concrete being poured.

**These are the minimum frequencies and the Contractor is responsible to assess the need to increase testing frequency, where aggregate source is not uniform or any other condition exists that may warrant it. QC frequencies may be reduced below this level, subject to the Departmental Representative's authorization, should the Contractor's QC plan be proven very effective.*
** Passing the minimum quantity of QC tests does not relieve the Contractor from the obligation of meeting the Contract requirements and any identified non-compliant works or products shall be rectified by the Contractor at their cost.*

1.5 CONTRACTOR'S QUALITY CONTROL PROGRAM

.1 The Contractor shall prepare a Quality Control Program. The purpose of the program shall be to ensure the performance of the Work in accordance with Contract requirements.

.2 The Quality Control Program shall be described in a Quality Control Plan. The Contractor shall submit the Manual to the Departmental Representative for review in accordance with Section 01 33 00 - Submittal Procedures. The Manual shall develop a logical system for tracking and documenting the Quality Control of the Work. A systematic format and a set of procedures patterned on a recognized Quality Control Standard will be acceptable, subject to review by the Departmental Representative.

.3 The Quality Control Plan shall include the following information:

.1 Distribution list, providing a list of names to whom the Manual shall be distributed;

.2 Title page, identifying the Contract, Contractor and copy number;

.3 Revision page, identifying the revision number and date of the Manual;

.4 Table of contents;

.5 Revision control, tabulating the revision number, date of revision, description of revisions and authorized signature;

.6 Details of measuring and testing equipment including methods and frequency of calibration;

.7 Purchasing details of all materials and equipment including procurement documents and vendor's Quality Control Program standards;

.8 Procedures for inspection of incoming items, in-process inspection and final inspection and tagging of all supply items;

.9 Details of special processes as identified by the Departmental Representative, including qualifications of personnel and certification;

.10 Procedures for shipping, packaging and storage of materials;

.11 Procedures for maintaining quality records and Statements of Compliance, including filing and storage of documents for a period of one year after Completion of the Works;

.12 Details of any non-conformance, including identification and recording of deficiencies, tagging procedures for "HOLD" or "REJECT" items, and final disposition of non-conformance forms by the Quality Control Manager;

.13 Inspection and test checklists, including tabulated checklists describing all manufacturing and delivery activities such as Inspection or Test, frequency of tests, description of tests, acceptance criteria of tests, such as verification, witnessing or holding tests and sign-off by the Quality Control Manager and the Departmental Representative, if the Departmental Representative witnesses the tests; and

.14 Forms used to ensure the application of the inspection and test checklist requirements. These forms shall be identified in the checklists and describe all testing requirements for Contract Document compliance.

.4 The Contractor shall appoint a full time qualified and experienced Quality Control Manager who will report regularly to the Contractor's management at a level that shall ensure that Quality Control requirements are not subordinated to manufacturing,

construction or delivery. The Quality Control Manager shall be empowered by the Contractor to resolve quality matter and shall be onsite for the duration of the Contract.

.5 The Quality Control Plan shall include samples of all forms to be filled in by the Quality Control Inspectors. All forms shall be signed by the Quality Control Manager and submitted promptly to the Departmental Representative who will add its review signature.

.6 An independent check of all Work shall be performed by the Contractor. The Contractor shall appoint Quality Control Inspectors to ensure compliance of products and workmanship with Contract requirements. The same personnel may not be used to perform a given task and to check the quality and accuracy of the task.

.7 At completion of the Work a bound and itemized copy of all Quality Control documents and reports shall be prepared by the Contractor's Quality Manager and submitted to the Departmental Representative.

1.6 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative will order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

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

1.7 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by the Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.

.2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.3 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Departmental Representative at no cost to the Departmental Representative.

1.8 ACCESS TO WORK

.1 Allow inspection / testing agencies access to Work, including but not limited to: off site manufacturing and fabrication plants, QC testing facilities and asphalt plants.

.2 Co-operate to provide reasonable facilities for such access.

1.9 PROCEDURES

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Provide labour and facilities to obtain and handle samples and materials on site.

1.10 NON-CONFORMANCES

.1 A Non-Conformance can relate to any item within the Contract including but not limited to: materials testing, lines and levels, products, design-build items, traffic accommodation, quality control, environmental, health and safety, and other general procedural matters including communication protocols.

.2 Contractor's Internal Non-Conformance Report (NCR):

.1 Should the Contractor's QC reporting indicate that the Work is not in conformance, the Contractor's QC Manager shall issue an internal Non-Conformance Report (NCR) to the Contractor, with a copy to the Departmental Representative, including a response time.

.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.

1.11 OPPORTUNITIES FOR IMPROVEMENT

.1 Should the QA review indicate that the Work is not in conformance, but the variance is deemed minor by the Departmental Representative, the Departmental Representative may issue an Opportunity for Improvement (OFI) report.

.2 The Contractor is encouraged to review the findings and undertake such modifications to the QC Plan and the work procedures as necessary to address the issue.

1.12 REJECTED WORK

.1 Remove defective Work, whether as a result of poor workmanship, use of defective products or damage and whether incorporated in Work or not. Replace or re-execute defective Work in accordance with Contract Documents, through the NCR process.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in the opinion of the Departmental Representative, it is not expedient to the greater benefit of the Project to remedy defective Work or Work not performed in accordance with Contract Documents, the Owner may deduct from the Contract Price the difference in value between the Work performed and that called for by Contract Documents, the amount of which shall be determined by Departmental Representative.

1.13 REPORTS

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

1.14 TESTS AND MIX DESIGNS

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

1.15 MILL TESTS

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

Part 2 Products

.1 Not Used.

Part 3 Execution

.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 in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 SITE STORAGE / LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.4 CONSTRUCTION PARKING

.1 Provide and maintain adequate access and parking at the project site in areas approved by the Departmental Representative.

.2 Build and maintain temporary roads and provide snow removal during period of Work.

.3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.5 SECURITY

.1 If required by the Contractor, provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays. For extended shut-downs, the Contractor shall provide the level of security as required to protect the Work. The Contractor is advised that some random acts of vandalism to equipment have occurred within the Park. Cost of security personnel is incidental to the Work and no additional payment will be made.

.2 It is strongly advised that the Contractor consider the provision of security personnel.

1.6 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.7 SANITARY FACILITIES

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

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

1.8 CONSTRUCTION SIGNAGE

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

Part 2 Products

.1 Not Used.

Part 3 Execution

.1 Not Used.

END OF SECTION

01 56 00 TEMPORARY BARRIERS AND ENCLOSURES

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.3 HOARDING

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

1.4 GUARDRAILS AND BARRICADES

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

1.5 WEATHER ENCLOSURES

.1 Not used.

1.6 DUST TIGHT SCREENS

.1 Not used.

1.7 ACCESS TO SITE

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

1.8 PUBLIC TRAFFIC FLOW

.1 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.

1.9 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

1.10 PRODUCTS

.1 Not Used.

Part 2 Execution

.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 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 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.4 Unless otherwise indicated in Contract Documents, maintain uniformity of manufacture for any particular or like item throughout building.

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 QUALITY OF WORK

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

.2 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.

.3 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.4 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative whose decision is final.

1.9 CO-ORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

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

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

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

1.13 PROTECTION OF WORK IN PROGRESS

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

Part 2 Products

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

Part 3 Execution

.1 Work shall be completed in accordance with BC MoTI – 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 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 REFERENCES

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

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 Establishing subgrade elevation.
- .3 Re-establishing Reference Survey Control Points that are in danger of being damaged or destroyed.
- .4 Conducting and providing a topographic survey of the finished surface and completing an elevation boundary analysis against the design elevations.

.3 Survey Accuracy:

- .1 All survey work shall be tied into the existing Control Monument Network with grid coordinates in UTM Zone 11 NAD 83. Departmental Representative will provide information on Control Points.
- .2 All traverses will be closed and balanced. All level loops and traverses will be tied into the Control Monument Network.
- .3 Secondary Control Points will be tied into and relative to Control Monument Network. Accuracy for Control Point surveys shall be to second order:
- .4 Horizontal shall be less than $r = 5(d+0.2)$ where “r” is in cm and “d” is in km
- .5 Vertical shall be less than $0.008 \times \sqrt{k}$ where k is distance in kilometres.

.4 Staking accuracy shall be:

- .6 All elevations shall be within 0.01 m of correct elevation.

.5 The Contractor shall provide cut sheet reports to the Departmental Representative for all stages of road construction to demonstrate that the defined construction tolerances have been achieved before advancing to the next stage.

.6 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.

.7 Contractor to provide cut sheet reports for all layers of road template to prove they meet the Contract tolerances. 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.

.8 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 Submit name and address of Surveyor to Departmental Representative.

.2 On request of Departmental Representative, submit documentation to verify accuracy of field engineering work.

.3 On request of Departmental Representative, submit survey data.

.4 Submit certificate signed by surveyor certifying those elevations and locations of completed Work that conform to the Contract Documents.

Part 2 Products

.1 Not Used.

Part 3 Execution

3.1 CROSS SECTIONS

.1 Not used.

3.2 STAKING REQUIREMENTS

Survey Layout	Maximum Interval	Product
Grading – Subgrade	20 m.	One stake at each side of the subgrade, showing station, offset and grade at the stake location and one at each break point.
Culverts	Inlet and outlet.	One stake at each end of the culvert, plus an offset line, showing invert elevation and station.

END OF SECTION

01 74 11 CLEANING

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

.1 This work shall be incidental to 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. Do not burn waste materials on site.

.3 Clear snow and ice in accordance with Section 01 35 31 – Special Procedures for Traffic Control

.4 Keep roadway clean in accordance with Section 01 35 31 – Special Procedures for Traffic Control

.5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.6 One bear proof container will be provided by Parks Canada. Contractor to provide any additional on-site bear proof containers they require for collection of waste materials and debris.

.7 Remove waste material and debris from site at end of each working day.

.8 Dispose of waste materials and debris off site.

.9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.10 Provide adequate ventilation during use of volatile or noxious substances.

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

.12 The Departmental Representative and Environmental Surveillance Officer may, at their total discretion, require the Contractor to suspend work activities until such a time as the Work Site is cleaned and debris, waste, and animal attractants are satisfactorily managed. The Contractor shall do as requested at their cost and no claim for time or additional costs will be accepted.

.13 Maintain excavation and trenches free of debris and waste.

1.3 FINAL CLEANING

.1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.3 Remove waste products and debris including that caused by Owner or other Contractors.

.4 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.6 Inspect finishes, and ensure specified workmanship and operation.

.7 Remove dirt and other disfiguration from exterior surfaces.

.8 Sweep and wash clean paved areas.

.9 Remove all construction debris and accumulated dirt from completed drainage systems; manholes; catch basins; and all piping.

Part 2 Products

.1 Not Used.

Part 3 Execution

.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 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 Substantial Performance Inspection.

.2 Departmental Representative's Substantial Performance 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 Construction Completion Inspection.

.4 Construction Completion Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

Part 2 Products

.1 Not Used.

Part 3 Execution

.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 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 Construction Completion as detailed in Section 01 77 00 – Closeout Procedures.

1.3 AS-BUILTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Change Orders and other modifications to the Contract.
- .5 Reviewed shop drawings, product data, and samples.
- .6 Field test records.
- .7 Inspection certificates.
- .8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

1.4 RECORDING ACTUAL SITE CONDITIONS

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

.2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.3 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

- .1 Field changes of dimension and detail.
- .2 Changes made by change orders.

.3 Details not on original Contract Drawings.

.4 References to related shop drawings and modifications.

.4 Specifications: legibly mark each item to record actual construction, including:

.1 Changes made by Addenda and change orders.

1.5 FINAL SURVEY

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

1.6 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

Part 2 Products

.1 Not Used.

Part 3 Execution

.1 Not Used.

END OF SECTION

02 81 01 HAZARDOUS MATERIAL

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

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

1.2 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).

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

.2 Retain current Material Safety Data Sheet (MSDS) for each hazardous material required on site. Submit MSDS to Departmental Representative upon request.

1.5 STORAGE AND HANDLING

.1 Coordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.

.4 All explosives must be mixed outside of the Park and delivered to the site. No storage of explosives shall be allowed within the National Parks.

.5 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.

.6 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

.1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.

.2 Label containers of hazardous materials and wastes in accordance with WHMIS.

.3 Store hazardous materials and wastes in containers compatible with that material or waste.

.4 Segregate incompatible materials and wastes.

.5 Ensure that different hazardous materials or hazardous wastes are not mixed.

.6 Store hazardous materials and wastes in a secure storage area with controlled access.

.7 Maintain a clear egress from storage area.

.8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.

.9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.

.10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.7 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.8 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

1.6 TRANSPORTATION

.1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.

.3 If hazardous waste is generated on site:

.1 Coordinate transportation and disposal with Departmental Representative.

.2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.

.3 Use only a licensed carrier authorized by provincial authorities to accept subject material.

.4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept the material.

.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide a photocopy of all shipping documents and waste manifests to Departmental Representative.

.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Departmental Representative.

.9 Report any discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

Part 2 Products

2.1 MATERIALS

.1 Only bring on site the quantity of hazardous materials required to perform Work.

.2 Maintain MSDSs in proximity to where the materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 DISPOSAL

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.

.3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

END OF SECTION

03 30 00 CAST-IN-PLACE CONCRETE

Part 1 General

1.1 DESCRIPTION

.1 This item consists of the concrete finishing works required to complete the Inlet and Outlet headwalls indicated on the drawings and as directed by the Departmental Representative.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

.1 Payment under **"Unit Price Item 1 – Cast-In-Place Concrete Finishing"** will be measured in square meters of concrete surface patched, finished and accepted by the Departmental Representative and shall include full compensation for all costs of labour, materials, equipment, tools, formwork, falsework, embedded metallic and non-metallic materials, access, environmental requirements, safety requirements, submittals, and associated Works required for the construction of all cast-in-place concrete finishing.

.1 Concrete placed beyond dimensions indicated will not be measured for payment.

.2 Supply and installation of steel reinforcing bars, joint sealers, anchors rods, nuts, washers, and anchor rod grouting will not be measured but considered incidental to work.

.3 No deductions will be made for volume of concrete displaced by reinforcing steel, structural steel, ducts, voids, fillets scoring and chamfers.

.2 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.

.3 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.

.4 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the Contract and no separate payment shall be made to the Contractor.

1.3 REFERENCES

.1 Abbreviations and Acronyms:

.1 Portland Cement: hydraulic cement, blended hydraulic cement (XXb - b denotes blended) and Portland-limestone cement.

.2 Type GU, GUb and GUL - General use cement.

.3 Type MS and MSb - Moderate sulphate-resistant cement.

.4 Type MH, MHb and MHL - Moderate heat of hydration cement.

.5 Type HE, HEb and HEL - High early-strength cement.

.6 Type LH, LHb and LHL - Low heat of hydration cement.

.7 Type HS and HSb - High sulphate-resistant cement.

.8 Fly ash:

.1 Type F - with CaO content less than 15%.

.2 Type CI - with CaO content ranging from 15 to 20%.

.3 Type CH - with CaO greater than 20%.

.9 GGBFS - Ground, granulated blast-furnace slag.

.2 Reference Standards

.1 ASTM International.

.1 ASTM C260 Specification for Air-Entraining Admixtures for Concrete.

.2 ASTM C309 Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.3 ASTM C494 Specification for Chemical Admixtures for Concrete.

.4 ASTM C1017/C1017M, Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.

.5 ASTM D412, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

.6 ASTM D624, Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.

.7 ASTM D2240, Standard Test Method for Rubber Property – Durometer Hardness

.8 ASTM D1751 Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).

.9 ASTM D1752, Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.

.10 ASTM F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.3 CSA International

.1 CAN/CSA-A3000, Cementitious Materials Compendium.
(Consists of A3001, A3002, A3003, A3004 and A3005)

.2 CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction.

.3 CAN/CSA-G40.20/G20.21, General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature, and test samples taken as per the PART 3 – FIELD QUALITY CONTROL.

.3 MSDS in accordance with Section 01 35 29 – Health and Safety Requirements and Section 01 35 43 – Environmental Procedures.

1.5 QUALITY CONTROL

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

.2 Provide Departmental Representative with valid and recognized certificate from plant delivering concrete, in accordance with Section 01 33 00 – Submittal Procedures.

.1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.

.2 Ensure testing laboratory and personnel are certified to CSA A283.

.3 In accordance with Section 01 33 00 – Submittal Procedures, provide proposed quality control procedures for review by Departmental Representative on following items:

.1 Hot weather concrete.

.2 Cold weather concrete.

.3 Curing.

.4 Finishes.

.5 Formwork removal.

.6 Joints.

.4 Quality Control Plan: provide written report to Departmental Representative verifying compliance that concrete in place meets performance requirements of concrete as established in PART 2 - PRODUCTS.

1.6 DELIVERY, STORAGE AND HANDLING

.1 In accordance with Section 01 61 00 - Common Product Requirements.

.2 Concrete hauling time: deliver to site of Work and discharged within 120 minutes' maximum after batching.

.3 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative and concrete producer as described in CSA A23.1/A23.2.

.4 Deviations to be submitted for review by Departmental Representative.

.5 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.Products

Part 2 Products

2.1 DESIGN CRITERIA

.1 Performance: to CSA A23.1/A23.2, and as described in MIXES of PART 2 -PRODUCTS.

.2 Concrete color to be used is "INTERSTAR Pigments, admixtures & fibers" color code: NR-5790R (Black Onyx) (application rate, 1 Bag (2%) based on the weight of cementitious materials. Or as approved by the Departmental Representative.

2.2 PERFORMANCE CRITERIA

.1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established by Departmental Representative and provide verification of compliance as described in QUALITY CONTROL of PART 1 - GENERAL.

2.3 MATERIALS

.1 Portland Cement: to CSA A3001, Type GU.

.2 Blended hydraulic cement: Type GUb to CSA A3001.

.3 Supplementary cementing materials: with maximum 25% fly ash replacement, by mass of total cementitious materials to CSA A3001.

.4 Water: to CSA A23.1.

.5 Aggregates: to CSA A23.1/A23.2.

.6 Admixtures:

.1 Air entraining admixture: to ASTM C260.

.2 Chemical admixture: to ASTM C494. Departmental Representative to approve accelerating or set retarding admixtures during cold and hot weather placing.

.7 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA A23.1/A23.2.

.1 Compressive strength: 20 MPa at 48 hours, 45 MPa at 28 days.

.2 Net shrinkage at 28 days: maximum 0.01 %.

.8 Curing compound: to CSA A23.1/A23.2.

.9 Premoulded joint fillers:

.1 Bituminous impregnated fiber board: to ASTM D1751.

.10 Epoxy Grout: as indicated.

.11 Elastomer: as indicated.

.12 Steel Laminae: as indicated.

.13 Anchor Rods and Anchor Bolts: as indicated.

.14 Concrete sealers:

.1 Sikagard SN-40 Lo-VOC (or approved equivalent)

2.4 MIXES

.1 Performance Method for specifying concrete: to meet Departmental Representative performance criteria to CSA A23.1/A23.2.

.1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as in Quality Control Plan.

.2 Provide concrete mix to meet following plastic state requirements:

.1 Uniformity: as required by CSA A23.1/A23.2.

.2 Workability: free of surface blemishes, loss of mortar, colour variations, and segregation.

.3 Provide concrete mix to meet following hard state requirements:

.1 Durability and class of exposure: C-XL.

.2 Compressive strength at 28 days age: 45 MPa minimum.

.3 Intended application: CIP culvert section, culvert collars, portion of headwalls and new concrete facing for headwalls (using form liners)

.4 Aggregate size 20 mm maximum.

.4 Provide quality management plan to ensure verification of concrete quality to specified performance.

.5 Concrete supplier's certification: both batch plant and materials meet CSA A23.1 requirements.

Part 3 Execution

3.1 PREPARATION

.1 Obtain the Departmental Representative's acceptance before placing concrete.

.1 Provide 24 hours' notice prior to placing of concrete.

.2 Place concrete reinforcing in accordance with Section 03 20 00 – Concrete Reinforcing.

.3 During concreting operations:

.1 Development of cold joints not allowed.

.2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.

.4 Pumping of concrete is permitted only after acceptance of equipment and mix by Departmental Representative.

.5 Ensure reinforcement and inserts are not disturbed during concrete placement.

.6 Prior to placing of concrete obtain the Departmental Representative's acceptance of proposed method for protection of concrete during placing and curing.

.7 Protect previous Work from staining.

.8 Clean and remove stains prior to application for concrete finishes.

.9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.10 In locations where new concrete is dowelled to existing work, drill holes in existing concrete.

.1 Place steel dowels of deformed steel reinforcing bars and pack solidly with epoxy grout to anchor and hold dowels in positions as indicated.

.11 Do not place load upon new concrete until authorized by Departmental Representative.

3.2 INSTALLATION/APPLICATION

.1 Cast-in-place concrete work in accordance with CAN/CSA-A23.1/A23.2.

.2 Sleeves and inserts.

.1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by Departmental Representative.

.2 Where approved by Departmental Representative, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.

.3 Sleeves and openings greater than 100 x 100 mm not indicated must be reviewed by Departmental Representative.

.4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from Departmental Representative before placing of concrete.

.5 Confirm locations and sizes of sleeves and openings shown on drawings.

.6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.

.3 Anchor rods:

.1 Set anchor rods to templates in co-ordination with appropriate trade prior to placing concrete.

.2 Grout anchor rods in preformed holes or holes drilled after concrete has set only after receipt of written approval from Departmental Representative.

.1 Formed holes: 100 mm minimum diameter.

.2 Drilled holes: 25 mm minimum diameter larger than bolts used.

.3 Protect anchor rod holes from water accumulations, snow and ice build-ups.

.4 Set rods and fill holes with shrinkage compensating grout.

.4 Grout using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

.5 Finishing and Curing.

.1 Finish concrete to CSA A23.1/A23.2 unless noted otherwise.

.2 Schedule:

.1 Culvert End Section and Portions of Headwalls not using form liners– smooth form finish.

.2 Top surface of Headwalls and Concrete Collars - ordinary surface finish.

.3 Use procedures as reviewed by Departmental Representative or those noted in CSA A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.

.6 Joint fillers:

.1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Departmental Representative.

.2 When more than one piece is required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.

.3 Locate and form construction and expansion joints as indicated.

.4 Install joint filler.

3.3 FIELD QUALITY CONTROL

.1 Site tests: conduct tests as follows in accordance with Section 01 45 00 – Quality Control and submit report as described in Sub-Section 1.4 - Action And Informational Submittals.

.1 Concrete pours.

.2 Slump.

.3 Air content.

.4 Compressive strength at 7 and 28 days.

.5 Air and concrete temperature.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Contractor to CSA A23.1/A23.2.

.1 Ensure testing laboratory is certified to CSA A283.

.3 Ensure test results are distributed for discussion at pre-pouring concrete meeting between testing laboratory and departmental representative.

.4 Take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

.5 Non-destructive methods for testing concrete: to CSA A23.1/A23.2.

.6 Inspection or testing by the Departmental Representative will not augment or replace Contractor quality control nor relieve Contractor of their contractual responsibility.

3.4 PROTECTION

.1 Protection and curing for concrete placed between October 01 and May 01 shall comply with following requirements in addition to cold weather requirements of CSA A23.1/A23.2.

.1 Protect concrete with windproof shelter of canvas or other material to allow free circulation of inside air around fresh concrete.

.2 Do not let walls of shelter touch formwork.

.3 Provide sufficient space for removal of formwork for finishing.

.4 Use heating equipment approved by Departmental Representative.

.5 Vent products of combustion outside protective shelter: equipment to be capable of keeping inside air at constant temperature sufficiently high to maintain concrete at following curing temperatures:

.2 For initial 3 days: minimum temperature of 15 degrees C, maximum of 27 degrees C at concrete surfaces.

.3 For concrete headwalls and footings: cure at 10 degrees C for additional 4 days.

.1 Keep concrete surfaces continually moist while protected.

.4 Unformed surfaces: cure with burlap and water.

.1 Place two layers of damp burlap on surface of concrete.

.2 Overlap each strip by minimum 75 mm and secure against displacement by wind.

.3 Maintain burlap in place and keep thoroughly wet for seven days after placement.

.5 Formed surfaces:

.1 No additional curing will be required if formwork is left in place for seven days or more.

.2 If formwork removed in less than seven days, cure in manner specified for unformed surfaces for remainder of seven (7) calendar day period.

.6 During curing period, only uncover areas needed for finish treatment. Re-cover and continue curing.

3.5 CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

31 05 10 CORRECTED DRY DENSITY FOR FILL

Part 1 General

1.1 SUMMARY

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

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C127-[04], Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.

.2 ASTM D698-[00ae1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).

.3 ASTM D1557-[02e1], Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).

.4 ASTM D4253-[00], 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 =(D1xD2) / ((F1 x D2) + (F2 x D1)).

.2 D = (F1 x D1) + (0.9 x D2 x 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.

.1 For free draining aggregates, determine D1 (maximum dry density) to ASTM D4253 wet method when directed by Departmental Representative.

Part 2 Products

.1 Not Used.

Part 3 Execution

.1 Not Used.

END OF SECTION

31 24 13 ROADWAY AND DRAINAGE EXCAVATION

Part 1 General

1.1 REFERENCES

.1 BC MoTI Standard Specifications for Highway Construction (Latest Edition).

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

.1 ASTM D698-12e2, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft^3) (600 kN-m/m^3).

1.2 DESCRIPTION

.1 This item consists of the excavation and disposal of all materials in conformity with the lines, grades and dimension indicated on the drawings and as directed by the Departmental Representative and includes:

.1 Excavation on both sides of the Precast Concrete Culvert as per approved drawings.

.2 Removal and disposal of unsuitable materials from excavation, embankment and borrow area.

.3 Loading, hauling of borrow material as specified by the Departmental Representative.

.4 Backfill of common material around the precast concrete culvert as per approved drawings.

.5 Handling and transportation of excavated materials.

.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.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

.1 Roadway and Drainage Excavation:

.1 The Quantity of Excavation for which payment will be made shall be the volume in cubic metres measured in its original position from cross sections taken by Departmental Representative in areas of excavation. Payment will be made under **"Unit Price Item 2a – Roadway and Drainage Excavation – Type D Excavation"** and shall include cost of excavating, hauling, temporary stockpiling, placing, backfill and compacting material within the limits of construction.

.2 The quantity of Waste material deemed by the Departmental Representative as waste and/or surplus for which payment shall be made will be the volume in cubic metres. Payment will be made under **"Unit Price Item 2b – Roadway and Drainage Excavation – Haul to Waste"** and shall include cost of loading, hauling, temporary stockpiling, and disposal of material outside of the Parks or as directed by the Departmental Representative.

.3 The quantity of backfill for which payment will be made shall be the volume in cubic metres measured as placed after compaction taken by Departmental Representative in areas of backfill. Payment will be made under **"Unit Price Item 2c – Roadway and Drainage Excavation – Type D Stockpiled Backfill"** and shall include cost of excavating, hauling, temporary stockpiling, placing, backfill and compacting material within the limits of construction.

.4 The quantity of Type D – Borrow for which payment will be made shall be the neat line volume in cubic metres calculated from stripped surface cross sections compared to the design sub-grade surface taken by Departmental Representative in areas of fill. Payment will be made under **"Unit Price Item 2d – Roadway and Drainage Excavation – Type D Borrow"** and shall include cost of loading, hauling, placing and compacting suitable material for the construction of the roadway embankment in accordance with the Contract Documents.

.1 Borrow material sourcing is as described under Part 2 Products of this Section 31 24 13 – Roadway and Drainage Excavation.

.2 Cleanup of the borrow material site will be considered incidental to the Work.

.5 Repair of the joint wrap will not be measured for payment directly, rather it shall be considered incidental to item **"Unit Price Item 2 – Roadway and Drainage Excavation".**

.1 All joint wraps are to be considered damaged. The number of joint wraps to be repaired shall be determined by the Departmental Representative following the excavation.

.6 Backfill and compacting will not be measured for payment directly, rather it shall be considered incidental to items **"Unit Price Item 2 – Roadway and Drainage Excavation"** and **"Unit Price Item 2c – Roadway and Drainage Excavation – Type D Stockpiled Backfill"** and **"Unit Price Item 2d – Roadway and Drainage Excavation – Type D Borrow".**

.7 Removal and Disposal of the Existing Concrete Median Barriers will be paid under **"Lump Sum Item 5 – Remove and Dispose Barriers"**

.8 Separating of organic material from non-organic material and stockpiling, as directed by the Departmental Representative, is considered incidental to the Work and no additional payment will be made.

.9 The Contractor shall take care not to contaminate suitable surplus materials with waste materials. Waste materials shall be disposed of outside of the Parks.

.10 Written approval to proceed must be given by the Departmental Representative prior to sub-excavation for the removal of waste material(s).

.11 No overhaul will be paid for this Work.

.12 Only material acceptable to the Department Representative shall be used in the construction of backfilling and incorporated into the work.

.2 Mobilization and demobilization required for this Work shall be incidental to **"Lump Sum Price Item 1 – Mobilization / Demobilization"** and no additional payment will be made.

.3 Traffic Control required for this Work shall be incidental to **"Lump Sum Price Item 2 – Traffic Accommodation"** and no separate payment will be made to the Contractor.

.4 Payment for additional Borrow material if deemed necessary by the Departmental Representative will be made under **"Lump Sum Price Item 3 – Prime Cost Sum"**

.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

.6 No separate measurement payment will be made for:

.1 Excavating unnecessarily beyond lines established by Departmental Representative, with exception of unavoidable slide material. Do not measure slide material, when such slides are attributable to negligence.

.2 If overcut, no payment will be made for filling an area back to grade.

.3 Loading hauling, placing and compaction of boulders less than 1.5 m3 into large embankments.

.4 Scarifying or benching existing slopes or surfaces.

.5 Removing unsuitable material from embankment attributable to negligence.

.6 Watering, drying or compacting.

.7 Compaction of material (150 mm) below subgrade horizon in areas of cut.

.8 Finishing.

1.4 DEFINITIONS

.1 Type A – Solid Rock:

.1 All forms of "solid rock in place" occurring in masses, ledges, seams or layers of enough hardness to require breaking by continuous drilling and blasting before excavation and removal.

.2 Detached masses of rock or boulders individually containing a volume of 2.0 m^3 or more.

.2 Type D - Common: excavation of materials that are not of Type - A Excavation or Stripping.

.3 Borrow: Suitable material obtained from specified location as directed by the departmental representative and placed as embankment material or for other portions of work.

.4 Stripping: excavation of organic material covering original ground.

.5 Embankment: material derived from useable excavation and placed above original ground, excavated /trenched location or stripped surface.

.6 Waste Material: material unsuitable for embankment, embankment foundation or material surplus to requirements.

.7 Topsoil: material passing a 100 mm sieve and capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

1.5 QUALITY CONTROL

.1 Regulatory Requirements:

.1 Adhere to regulations of authority having jurisdiction.

.2 Adhere to Provincial and National Environmental requirements when potentially toxic materials are involved.

.2 All Quality Control testing by the Contractor.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 The Contractor shall separate and recycle waste materials in accordance with Section 01 35 43 - Environmental Procedures.

.2 Waste shall be disposed of outside the Park or as directed by the Department Representative.

Part 2 Products

2.1 MATERIALS

.1 Backfill materials require acceptance by Departmental Representative.

.2 Backfill materials must meet the BC MoTI Standard Specification for Highway Construction Section 201 – Latest Edition.

.3 Material used for backfill not to contain more than 3% organic matter by mass, frozen lumps, weeds, sod, roots, logs, stumps or other unsuitable material.

.4 Borrow material:

.1 Obtained from sources as indicated or as designated by Departmental Representative.

.1 2650m3 of Borrow material will be provided to the contractor, with haul distance anticipated to be 7 kilometers from the site location (One Way).

.1 This material must be used prior to extracting material from Settler's Pit.

.2 The remaining Type D material for borrow may be excavated from Settlers Pit, as directed by the Departmental Representative.

.5 Joint Wrap Repair:

.1 All damaged culvert joints are to be repaired with two layers of 600mm wide woven geotextile filter fabric centred over exterior joint and glued to concrete surface as shown of the Construction Drawings.

Part 3 Execution

3.1 SITE PREPARATION/PROTECTION

.1 Ensure all work is in accordance with Section 01 35 43 – Environmental Procedures.

.2 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 29 - Health and Safety Requirements, Health and Safety Act for the Province of British Columbia.

.3 Remove obstructions from surfaces to be excavated within limits indicated.

.4 Ensure excavation will be protected against flooding and damage due to surface runoff.

.5 Keep excavations free of water while Work is in Progress. Dispose of water to approved collection, or runoff areas and in a manner not detrimental to PCA property or portion of the Work completed or under construction.

3.2 EXCAVATION

.1 Survey data from the previous part of the project will be provided to the Contractor. However, for collecting more survey data for excavation operation, the Departmental Representative must be informed at least seven days in advance.

.2 The dimensions of the excavations shall be, in accordance with the Drawings, 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.

.3 Subcut below subgrade elevation in cut sections only as approved by the Departmental Representative. Compact top 300 mm below final subgrade elevation to minimum 98% Standard Proctor Density and within ±2% of the Optimum Moisture Content, ASTM D698-12e2 (AASHTO T99). Replace with acceptable embankment material and compact.

.4 Contractor is responsible to ensure all OH&S regulations are satisfied.

.5 Borrow Excavation:

.1 Obtain embankment materials, in excess of what is available from cut areas, from designated borrow areas.

.2 Departmental Representative to designate extent of borrow areas and allowable depth of excavation.

.3 Remove waste and stripping material from borrow pits to designated locations.

.4 Slope edges of borrow areas to minimum 3:1 and provide drainage as directed.

.5 Trim and leave borrow pits in condition to permit accurate measurement of material removed.

3.3 BACKFILL

.1 Do not proceed with backfilling operations until completion of following:

.1 Departmental Representative has inspected and approved the excavation.

.2 Break material down to sizes suitable for compaction and mix for uniform moisture to full depth of layer.

.3 Embankment material shall be placed in successive uniform layers not exceeding 150 mm in compacted thickness up to the grades indicated.

.4 Each layer shall be brought to its required degree of compaction throughout its entire width before successive layers are placed.

.5 Use hand operated plate type vibratory or other suitable hand tampers in areas not accessible to rollers or compactors.

.6 Compact each layer to minimum 98% SPD (Standard Proctor Density), ASTM D698-12e2 within ± 2 % of the OMC, except the top lift shall be compacted to 100% SPD.

.7 Add water or dry as required to bring moisture content of materials to the specified level required to achieve specified compaction.

.8 Backfilling around installations:

.1 Place bedding and structural backfill material as specified in the Drawings.

.2 Place layers simultaneously on both sides of the installed Work to equalize loading. Difference not to exceed 150mm.

.3 Do not use heavy equipment within 600 mm of the structures.

3.4 FINISHING

.1 Shape top of backfill to ensure that no low points exist and to provide drainage

.2 Remove rocks over 150 mm in dimension from final surface elevation.

END OF SECTION

31 32 19 GEOTEXTILES

Part 1 General

1.1 REFERENCES

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

- .1 ASTM D4491-99a, Standard Test Methods for water Permeability of Geotextiles by Permittivity.
- .2 ASTM D4595-86 (2001), Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
- .3 ASTM D4716-01, Test Method for Determining the (In-Plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
- .4 ASTM D4751-99a, 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.
- .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/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.4 Aggregate Operators Best Management Practices Handbook for British Columbia Volume 2 Best Management Practices April 2002 – Silt Fence.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

.1 The supply and installation of Geotextiles including but not limited to woven and non-woven geotextiles, silt fences and turbidity or floating silt curtains will not be measured directly for payment and shall be considered incidental to the unit price items.

1.3 SUBMITTALS

.1 The Contractor shall submit samples in accordance with Section 01 33 00 - Submittal Procedures of each type of geotextile used.

.2 Submit to Departmental Representative following samples at least (21) calendar days prior to beginning Work for type of geotextile used on the project.

.1 Minimum length of 2 m of roll width of geotextile.

.2 Minimum of 1m seam with at least 300mm of geotextile on both sides of seam.

1.4 DELIVERY, STORAGE AND HANDLING

.1 During delivery and storage, the Contractor shall protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 The Contractor shall separate and recycle waste materials in accordance with Section 01 35 43 – Environmental Procedures.

.2 The Contractor shall remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Unused geotextiles to be removed from the Parks at the Contractor’s expense.

Part 2 Products

2.1 MATERIAL

.1 Both Woven and Non-woven geotextiles shall meet or exceed the requirements specified in the design drawings.

.2 Silt Fencing:

.1 Consisting of non-woven geotextile with manufactured seams as resistant as the geotextile material itself. The geotextile shall be in one piece.

.2 Stakes to be natural wood, minimum 1.5m in length, sized to withstand peak flows.

.3 Turbidity or Floating Silt Curtain:

.1 Consisting of a heavy duty woven fabric with top loops connected to floats and bottom loops woven through a 5mm diameter heavy metal chain.

.2 Length of silt curtain to be sufficient to fully contain the work area.

.3 Height of silt curtain to be sufficient to adjust to variable water levels while maintaining continuous contact with the watercourse bed.

.4 Mark floating surface of curtain with yellow buoys as determined by Departmental Representative.

Part 3 Execution

3.1 INSTALLATION

.1 Geotextiles:

.1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with pins at 1m interval or as recommended by the manufacturer of the geotextile material.

.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 1000 mm over previously laid strip.

.5 Pin overlaps of successive strips of geotextile using 6 mm diameter steel pins fitted with washers and spaced at 1 m intervals along the overlaps.

.6 Anchor the ends of the non-woven geotextile filter fabric by digging a 300 mm deep trench, inserting the end of the non-woven geotextile filter fabric and backfilling with compacted soil.

.7 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.

.8 Replace damaged or deteriorated geotextile to the satisfaction of the Departmental Representative.

.9 Place material / Riprap in accordance with Sections 31 37 00 - Riprap

.10 Install as per manufacturers Specifications.

.2 Silt Fence:

.1 Excavate a trench approximately 100mm wide and 100mm deep along the line of stakes and upslope of the barrier.

.2 When standard strength filter fabric is used, apply a wire fencing to support the fabric. Fasten the fence securely to the upslope side of the posts using heavy-duty wire staples, tie wires or hog rings. Attach the filter fabric to the fencing material with tie wires, plastic zip straps or hog rings.

.3 When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such cases the filter fabric is stapled or wired directly to the posts.

.4 The trench is then to be backfilled, and soil compacted over the filter fabric.

.5 If a silt fence is to be constructed across a ditch line or swale, the barrier should be of sufficient length to eliminate end flow, and the plan configuration should resemble an arc of horseshoe with the open ends oriented upslope.

3.2 CLEANING

.1 The Contractor shall remove construction debris from Project site and dispose of at an approved location outside of the Park and in accordance with 01 74 11 – Cleaning.

.2 Silt fences and filter barriers are to be removed once the upslope area has been permanently stabilized.

.3 Removed and unused geotextiles to be removed from the Parks at no additional cost to the Contract.

3.3 PROTECTION

.1 Vehicular or construction traffic shall not be permitted directly on geotextile.

END OF SECTION

31 37 00 RIPRAP

Part 1 General

1.1 REFERENCES

.1 BC MoTI Standard Specifications for Highway Construction (latest edition).

1.2 MEASUREMENT AND PAYMENT PROCEDURES

.1 The quantity of placed Riprap that will be measured for payment shall be the number of cubic metres measured in place and accepted in the completed work, and shall include all labour, equipment and material to satisfactorily complete this item as specified.

.2 Payment for the supply and placement of BC MoTI Class 10 Riprap will be made under **"Unit Price Item 3a – Supply and Install Riprap – BC MoTI Class 10"**. Riprap Material to be placed in accordance with the Drawings and to the satisfaction of the Departmental Representative.

.3 Payment for the supply and placement of BC MoTI Class 250 Riprap will be made under **"Unit Price Item 3b – Supply and Install Riprap – BC MoTI Class 250".** Riprap Material to be placed in accordance with the Drawings and to the satisfaction of the Departmental Representative.

.4 Excavation, preparation of Riprap base, geotextiles, and any other related materials will be considered incidental to the work.

.5 Surveying of existing Riprap is incidental to the Work and no additional payment will be made.

.6 Testing of Riprap is considered incidental to the Work and no additional payment will be made.

.7 Mobilization and demobilization required for this Work shall be incidental to **"Lump Sum Price Item 1 – Mobilization / Demobilization"**, and no additional payment will be made.

.8 Traffic Control required for this Work shall be incidental to **"Lump Sum Price Item 2 – Traffic Accommodation"** and no separate payment will be made to the Contractor.

.9 Preservation and care of water within the project limit throughout the duration of construction will be paid under **"Lump Sum Price Item 4 – Preservation of Water Course"**. The payment will include meeting all environmental and contractual obligations.

.10 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.

1.3 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove materials defined as hazardous or toxic and dispose of outside of the Parks.

.3 Divert leftover riprap rocks as approved by Departmental Representative. Disposal and/or recycling, including hauling, will be considered incidental to the Work.

Part 2 Products

2.1 STONE

.1 Hard, dense stone with relative density not less than 2.65, free from seams, cracks or other structural defects, to meet following Class for use intended:

- .1 Only non-acid generating and non-metal leaching rock is suitable.
- .2 Riprap will be obtained from suitable sourced from outside the Parks. The Contractor will be responsible for sorting of riprap and delivering to the sites where riprap is required.
- .3 Riprap for Culvert inlet / outlet, energy dissipation pool and downstream weir:
  - .1 BC MoTI Class 10 Riprap
  - .2 BC MoTI Class 250 Riprap

2.2 GEOTEXTILE FILTER

.1 Both Woven and Non-woven geotextiles shall meet or exceed the requirements specified in the design drawings. If the Contractor wishes to propose an alternate non-woven geotextile, the approval is subject to the discretion of the Department Representative.

Part 3 Execution

3.1 INSTALLATION OF RIPRAP

.1 Conduct survey of existing riprap for the required work as per approved drawings

.2 Contractor shall do the layout for placement of riprap.

.3 Riprap is to be placed on slopes at inlet and outlet of the culvert as per approved drawings

.4 Place Geotextile, as applicable, in accordance with Section 31 32 19.01 Geotextiles.

.5 Manage existing riprap and install the remaining to achieve the required levels as per approved drawings.

.6 Fine grade area where riprap is to be placed, to a uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.

.7 Place riprap (by machine or by hand) to thickness and details as indicated on the approved drawings or as agreed to by the Departmental Representative.

.8 Place stones in manner accepted by Departmental Representative to secure surface and create a stable mass or to match existing Streambed. On slopes, place larger stones at bottom of slopes.

.9 Place stones at outlet in manner to achieve the required shape and level of the dissipation pool as per approved drawings or as agreed to by the Departmental Representative.

.10 All geotextiles are to be fully covered with no exposure following riprap placement.

END OF SECTION

32 11 20 SUB-BASE AGGREGATES

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

.1 Quantity of structural backfill for which payment will be made shall be the number of tonnes incorporated into Work and accepted by Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of work. If no weigh scales are available, the end area method of volumetric calculation will be used with a conversion factor of 2.2 tonnes/m3. Payment will be under **"Unit Price Item 4a – Sub-Base Aggregates – Supply and Install 50mm WGB".**

.1 The supply and installation of Geotextiles as indicated on the drawings including but not limited to woven and non-woven geotextiles, geo-grid, silt fences, and geosynthetic berms will not be measured directly for payment and shall be incidental to the work.

.2 Scarifying and recompacting the top 150mm to 98% maximum density of the existing structural backfill materiel will be considered incidental to the Work.

.3 Supplying, loading, hauling, placing, compacting, and conditioning by wetting or drying will be incidental to the Work.

.4 No overhaul will be paid for this Work.

.5 Supply, installation and maintenance and calibration of weight scales and a scale house by the Contractor shall be considered incidental to the contract and no additional payment will be measured for payment.

.6 Mobilization and demobilization required for this Work shall be incidental to **"Lump Sum Price Item 1 – Mobilization / Demobilization"**, and no additional payment will be made.

.7 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.

.8 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.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C117-95, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C131-96, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

.3 ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.4 ASTM D422-63(1998), Standard Test Method for Particle-Size Analysis of Soils.

.5 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft3) (600kN-m/m3).

.6 ASTM D1557-00, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft3) (2,700kN-m/m3).

.7 ASTM D1883-14, Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils.

.8 ASTM D4318-00, 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 BC MoTI Standard Specifications for Highway Construction – Latest Edition

.4 AT – Standard Specifications for Highway Construction (latest edition)

1.3 SUBMITTALS

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

.2 Material samples provided to the Departmental Representative (14) calendar days prior to works commencing.

.3 Sieve analysis to be provided to Departmental Representative (14) calendar days prior to works commencing.

1.4 QUALITY CONTROL AND QUALITY ASSURANCE

.1 All Quality Control and quality assurance testing by the Contractor in accordance with Section 01 45 00 – Quality Control.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

.2 Divert unused structural backfill material as directed by Departmental Representative.

Part 2 Products

2.1 MATERIALS

.1 Crushed 50mm WGB material to be supplied by the Contractor from outside the Park. AT Designation 2 Class 40 base aggregate is considered a suitable replacement for the 50mm WGB specified.

Part 3 Execution

3.1 PLACING

.1 Load, haul and place material after temporary backfill has been excavated.

.2 Construct granular sub-base to depth and grade in areas indicated on the drawings.

.3 Ensure no frozen material is placed.

.4 Place material only on clean compacted surface, free debris.

.5 Begin spreading material on crown line or high side of one-way slope.

.6 Place granular materials using methods that do not lead to segregation or degradation.

.7 For spreading and shaping material, use spreader boxes having adjustable templates or screeds that will place material in uniform layers of required thickness.

.8 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.

.9 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.10 Remove and replace portion of layer in which material has become segregated during spreading.

3.2 COMPACTION

.1 Compaction equipment to be capable of obtaining required material densities.

.2 Compact to density of not less than 98% maximum dry density in accordance with ASTM D1557 and ±1% of the Optimum Moisture Content.

.3 Shape and roll alternately to obtain smooth, even and uniformly compacted subgrade.

.4 Apply water as necessary during compaction to obtain specified density.

.5 Dry as necessary to obtain specified density.

.6 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers.

.7 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.3 SITE TOLERANCES

.1 Finished surface to be within +/-10 mm of the established grade and cross section but not uniformly high or low.

3.4 PROTECTION

.1 Maintain finished surface in condition conforming to this section until succeeding base is constructed, or until granular subbase is accepted by Departmental Representative.

END OF SECTION

35 01 40.92 PRESERVATION OF WATER COURSES

Part 1 General

1.1 MEASUREMENT AND PAYMENT PROCEDURES

.1 Preservation and care of water within the project limit throughout the duration of construction will be paid under **"Lump Sum Price Item 4 – Preservation of Water Course"**. The payment will include meeting all environmental and contractual obligations as noted in this document and engineering drawings.

1.2 ENVIRONMENTAL REQUIREMENTS

.1 Activities which involve Work within or near waterways should first be co-ordinated with the Departmental Representative and must always follow applicable legislation/regulations and the Contractor's Environmental Protection Plan (EPP) which is outline in Section 01 35 43 – Environmental Procedures.

.2 Design temporary care of water measures as described in the Work Plan including cofferdams, sumps, pumping systems, pipelines, channels, flumes, drains and other protective and dewatering and water diversion works to permit construction of the Work in the dry.

.3 Ensure the work plan includes handling of groundwater rainstorm runoff, snow, snowmelt, and ice that may enter the Work areas.

.4 Ensure a dewatered condition for operation of equipment within watercourses.

.5 Install stabilized entrances at equipment access points to dewatered watercourses.

.6 All site equipment shall use bio-based or biodegradable hydraulic fluid for works.

.7 Use rubber tracked machinery when working on watercourse bed material.

.8 Keep all approved activities within the wetted perimeters to an absolute minimum

.9 Design and construct temporary crossings to minimize environmental impact to watercourse.

.10 Dumping excavated fill, waste material, or debris in watercourse or wetland is prohibited.

.11 Contractor is responsible to provide turbidity monitoring by a QEP for all work within and near waterways.

Part 2 Products

2.1 MATERIALS

.1 Silt Fencing and Turbidity or Floating Silt Curtain in accordance with Section 31 32 19 – Geotextiles.

.2 Pumps:

.1 The inlet and outlet of pumps and hoses for use in-water to be screened to prevent aquatic fauna from entering the equipment.

.2 Have at Site at all times, at least one standby pump for each category of pump being used for dewatering and water diversion activities.

.3 Provide standby power sufficient for operation of all required dewatering and water diversion equipment

Part 3 Execution

3.1 GENERAL

.1 Provide, operate, and maintain all necessary cofferdams, channels, flumes, drains, well points, wells, sumps, pumps, pipelines, and other temporary diversion and protection works.

.2 Provide, operate, and maintain all cold weather protective works including enclosures, insulation, and heating systems.

.3 Have at the Site at all times, at least one standby pump for each category of pump being used for care of water.

.4 Provide standby power sufficient for operation of all required care of water equipment.

.5 Inspect care of water pump and pipeline systems at regular intervals not exceeding 12 hours and verify that the pumps are operating, there is sufficient fuel, and cold weather protection is adequate. If required, decrease the time interval between inspection check to correspond with the type and nature of weather and the work in progress, to the satisfaction of the Departmental Representative.

.6 Repair damage to any part of the Work caused by water, snow, or ice due to failure of the care of water measures. Perform additional excavations and fill placement made necessary by water, snow, or ice.

.7 When no longer required, remove cofferdams, sumps, channels, drains, and other protective, dewatering, and temporary diversion works and finish to a leveled and neat condition as directed by the Departmental Representative.

3.2 EXISTING CONDITIONS

.1 Maintain existing flow pattern in natural watercourse systems.

3.3 SITE CLEARING AND PLANT PROTECTION

.1 Temporary Erosion and Sedimentation Control:

.1 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 approved Erosion and Sedimentation Management Plan.

.2 Inspect, repair, maintain and report weekly on condition of erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls once disturbed areas have been restored and stabilized.

.2 Minimize disturbance to vegetated buffer zones and protect trees and plants on site and adjacent properties where indicated.

.3 Existing saturated logs along base of shoreline to be disturbed to be collected and secured within a floating boom system. Logs to remain saturated at all times. Upon completion of

watercourse alterations, reinstate logs along base of slope in a manner similar to existing conditions.

.4 Wrap trees and shrubs adjacent to construction work, storage areas and trucking lanes in burlap.

.5 Protect roots of designated trees to dripline or as instructed Departmental Representative during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

.6 Leave roots mass and stumps in place.

.7 Maintain temporary erosion and pollution control features installed under this contract.

3.4 RECOVERY OF AQUATIC FAUNA

.1 To minimize impacts on aquatic fauna, during installation of water isolation techniques, use a combination of netting and loud noises or vibrations to scare any trapped fish, reptiles or amphibians towards a temporary opening. Once completed, close off the opening.

.2 Once the aquatic work area is secured, the isolated area of water is to be electrofished to remove any remaining aquatic fauna.

.3 Captured aquatic fauna to be placed back in the active river flow or moved to a similar habitat outside the work area.

.4 Protect edges of work area to prevent the reintroduction of reptiles and amphibians to the work area.

3.5 DRAINAGE

.1 Inspect, repair and maintain all dewatering and water diversion equipment and systems during construction until completion of the Works.

.2 Repair damage to any part of the Work caused by water, snow, or ice due to failure of dewatering and water diversion measures. Perform additional excavations and fill placement made necessary by water, snow, or ice.

.3 Pumping water containing suspended materials into watercourse is prohibited.

.4 Establish rock chute spillways to accommodate safe surface water entry to watercourse as directed by Departmental Representative.

.5 Install drop pipe inlet system if required as directed by Departmental Representative.

3.6 REMOVAL OF SEDIMENT CONTROL MEASURES

.1 Sediment control measures to remain in place at all times during the work in order to catch and filter any run-off from the worksite before it reaches the watercourse.

.2 Measures to remain in place until the growth of seed, sod or other surface cover is sufficient to retain sediments from being mobilized in runoff.

.3 Method of removal of sediment control measures to be submitted for approval by Departmental Representative.

.4 For in-water sediment control measures, allow minimum 1 day for settlement of suspended sediments before removal.

3.7 SITE RESTORATION

.1 Establish vegetated buffer zones with suitable vegetation to minimum 3m along edge of watercourse banks as determined by Departmental Representative.

.2 Coordinate with PCA regarding restoration of creek banks.

.3 Control stream bank erosion in lower section of watercourse with irregular shaped rip rap underlain with filter fabric as specified in Section 31 32 19.01 - Geotextiles.

.4 Control stream bank erosion in upper section of watercourse by planting suitable vegetation as directed by Departmental Representative.

.1 Ensure stabilization of exposed soils occurs within 5 days of completion of watercourse works.

END OF SECTION