Public Services and Procurement Canada

Requisition No: _____

DRAWINGS & SPECIFICATIONS

For:
Erosion Repairs
Emergency Pier Scour Protection-Racing River Bridge km 641.1
Project No.: R.122128.002
Emergency Embankment Stabilization Liard River km 780.0
Project No.: R.117668.001

Alaska Highway, British Columbia August 2021

APPROVED BY:

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Acting Regional Manager- Architectural and Engineering Services — Date

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Real Property Services Branch, Professional and Technical Services, Pacific Region
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August 25 2021

END OF SECTION

LIST OF DRAWINGS

Drawing Number	Drawing Title
C01	Cover Sheet
C02	Racing River Bridge km 641.1 – General Arrangement and Riprap Details
C03	Liard River km 780 – General Arrangement
C04	Liard River km 780 – Sections 1 of 2
C05	Liard River km 780 – Sections 2 of 2

APPENDICES

Appendix	Description
A	Document Management
B	Project Specific Health and Safety Plan Template *Note: The Project Specific Health and Safety Plan Template is provided to assist the Contractor. PSPC takes no responsibility for the completeness of this template. The Contractor is responsible for verifying that all required information is provided in their Project Specific Health and Safety Plan.*
C	Category 2 Traffic Management Plan Template *Note: The Category 2 Traffic Management Plan Template is provided to assist the Contractor. PSPC takes no responsibility for the completeness of this template. The Contractor is responsible for verifying that all required information is provided in their Traffic Management Plan.*
D	On-site Construction Start-up Form
E	Progress Payment Submittal Form
F	Measurement for Payment Survey Details Form
G	General Contractor & Sub-Contractor Construction Equipment List
H	Environmental Protection Plan (EPP) – Checklist
I	Relevant Environmental Publications
J	Environmental Overview Assessment – Racing River Bridge Pier Erosion Repair KM 641.1, Alaska Highway, British Columbia
K	Environmental Overview Assessment – Liard River Erosion Control Work KM 780 Alaska Highway, British Columbia

REFERENCE DOCUMENTATION

Manual of Standard Traffic Signs & Pavement Markings, BC Ministry of Transportation and Highways – September 2000
Available online at: http://www.th.gov.bc.ca/publications/eng_publications/electrical/most_pm.pdf

BC Ministry of Transportation and Infrastructure, Traffic Management Manual for Work on Roadways – 2020 Office Edition and applicable Amendments available at time of tender closing.
Available online at:
https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/traffic-engineering-safety/trafficmanagementmanual

2016 Standard Specifications for Highway Construction, BC Ministry of Transportation and Infrastructure – July 1, 2016 – Volume 1 and 2 and applicable Amendments available at time of tender closing.
Available online at:
http://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/standard-specifications-for-highway-construction

BC Ministry of Transportation and Infrastructure, Recognized Product List.
Available online at:
http://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/recognized-products-list

Public Works and Government Services Canada – Acquisition Forms
Available online at:
http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html

Canadian Construction Association, COVID-19 – Standardized Protocols for All Canadian Construction Sites, Version 5, May 26, 2020
Available online at:
https://www.cca-acc.com/wp-content/uploads/2020/06/CCA-COVID-19-Standardized-Protocols-for-All-Canadian-Construction-Sites-05-26-20.pdf

WorkSafeBC Construction and COVID-19 Safety
Available online at:
https://www.worksafebc.com/en/about-us/covid-19-updates/covid-19-industry-information/construction

PART 1 - GENERAL

1.1 Codes, Bylaws, Standards

.1 Perform work to current Codes, Construction Standards and Bylaws, including Amendments up to the TENDER closing date.

.2 Perform work in accordance with the Canadian Highway Bridge Design Code CAN/CSA S6-19, and other indicated Codes, Construction Standards, and/or any other Code or Bylaw of local application.

.3 Comply with applicable local by laws, rules and regulations enforced at the location concerned.

.4 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.

.5 In any case of conflict or discrepancy, the most stringent requirements shall apply.

1.2 Contract Documents

.1 The Contract documents, drawings and specifications are intended to complement each other, and to provide for and include everything necessary for the completion of Work.

.2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work.

1.3 Other Contracts

.1 Other Contractors may be working in the area while this contract is in progress. It is recommended that the Bidder visit the site prior to submission of tender to satisfy themselves of the nature of site conditions and the extent of work required.

.2 Cooperate with other Contractors and Agencies in carrying out their respective works and carry out instructions from Departmental Representative.

1.3 Other Contracts (Cont'd)

.3 Coordinate work with that of other Contractors and Agencies. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor or Agency, report promptly to the Departmental Representative, in writing, anything which may interfere with proper execution of this Work.

1.4 Division of Specifications

.1 The specifications are subdivided in accordance with the current 6-digit National Master Specifications System.

.2 A division may consist of the work of more than 1 subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment and services required to complete the work rests solely with the Contractor.

.3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

1.5 Time of Completion

.1 The following completion dates shall apply to this contract:

.1 All Work under this Contract shall be complete by November 15, 2021. If there are resonable grounds to extend the completon date, the Departmental Representative, at it's sole discretion, may consider an extension to the contract.

.2 All work under this Contract must be completed in accordance with the requirements specified in Section 1.14 Work Schedule.

.3 Refer to Section 01 35 43 - Environmental Protection for related timing related restrictions.

1.6 Summary of Work

.1 The work should be represented as "Erosion Repairs Emergency Pier Scour Protection-Racing River Bridge Km 641.1, Emergency Embankment Stabalization Liard River Km 780.0" located on the Alaska Highway in Northern British Columbia.

For reference, Dawson Creek is at Km 0, Fort St. John is at approximately Km 75, Fort Nelson is at approximately Km 455, and Watson Lake is at approximately Km 986 on the Alaska Highway.

.2 Work under this Contract general includes, but is not limited to, the following services

- .1 General Requirements:
  - .1 Project management including Project Meetings, Progress Reporting, Health and Safety,
  - .2 Contract Submittals
  - .3 Traffic Control
  - .4 Quality Management
  - .5 Environmental protection including preparation and implementation of an Environmental Protection Plan (EPP)
  - .6 Survey for construction layout, quantities for payment, and as-built documentation.
- .2 Installation of riprap protection at the center pier of Racing River Bridge (km 641.1):
  - .1 Earthworks including excavation and salvage of existing bed material, and backfill,
  - .2 Protection of the bridge structure including monitoring of the pier,
  - .3 Riprap supply and installation of Class 2000 kg riprap including salvage of existing riprap and geotextiles supply and install.
- .3 Installation of riprap highway protection Liard River (km 780.0):
  - .1 Earthworks including minor clearing, topsoil stripping, excavation and trimming of slopes, hauling and stockpiling of material off site (location provided by PSPC), topsoil placement, and hydroseeding,
  - .2 Riprap supply and installation including, use of riprap on site (provided by PSPC), supply and placement of Class 500 kg riprap, and geotextiles supply and install.
  - .3 Supply and install fiber rolls.

.3 Unless specifically stated otherwise, the Work is to include the furnishing of all labour, materials, equipment, and services necessary to complete the Work. The intent is that the Contractor provides a complete Job.

1.7 Owner Supplied Materials

.1 PSPC is providing Riprap materials from the Wood Creek Quarry (Km 650 of the Alaska Highway) for this project. Various sizes of Riprap may be available for use by the Contractor as Riprap. The Contractor will be responsible for sorting through and stockpiling rock and selecting the appropriate rock size (see Section 31 37 00 - Riprap for more details).

1.8 Use of Owner Pits

.1 The Contractors use of PSPCs gravel pits and quarries as listed elsewhere within the specifications for the purposes of extraction /manufacture of granular materials and rock, and disposal / stockpiling of excavated material shall be subject to the following:

- .1 Other Contractors may be working in the gravel pits and quarries completing similar or different types of work. Coordination with these other Contractors may be required.
- .2 Laydown areas for equipment and stockpiles may be restricted due to other works ongoing or the existing size of the gravel pits and quarries.
- .3 The Contractor is responsible for providing all equipment required to excavate, manufacture (as necessary), load, and haul the material from PSPCs gravel pits and quarries and maintenance yards.
- .4 The security of equipment parked and material manufactured and stockpiled in the gravel pits and quarries along with the safety of the Contractors personnel remain the Contractors responsibility.
- .5 If PSPCs gravel pits and quarries are equipped with a vehicle gate, the Departmental Representative will provide the Contractor with a gate key upon commencement of the onsite work. The Contractor shall be responsible for locking the vehicle gate anytime the Contractors personnel have vacated the gravel pits and quarries (regardless of duration).
- .6 The Contractor shall be responsible for maintaining access roads into the gravel pits and quarries and for haul roads required to access the aggregate sources for the duration of the project. At a minimum maintaining and developing access may include grading and snow removal. At the conclusion of the works, all access roads and haul roads shall be left in a condition equal to or better than when work started.

1.9 Adverse Work Conditions

.1 Works may need to be temporally shut down during high flow, heavy rain events, or other adverse weather conditions. The works may be stopped by the following processes:

- .1 The Contractor with approval from the Departmental Representative shall suspend works should adverse weather conditions affect the Contractors ability to achieve the contract specifications for quality of work.
- .2 The Contractors Environmental Monitor, with approval from the Departmental Representative, may suspend work should they feel it is not possible to achieve the environmental requirements due to adverse weather conditions.
- .3 The Departmental Representative may suspend works should they feel that it is not possible to achieve the environmental requirements, or the contract specifications for quality of work due to adverse weather conditions.

.2 Regardless of who suspends the work, the Contractor will be responsible for maintaining the site and protecting the works throughout the suspension period to ensure the site is in an acceptable condition safe to the public.

.3 The Contractor shall account for the possibility of not being able to complete work due to high water flows or adverse weather conditions in the construction schedule and in the unit prices. No payment for temporary work stoppages due to high water flows or adverse weather conditions will be made.

1.10 Special Instructions

.1 Existing structures, signs, utilities, Bituminous Surface Treatment (BST), culverts, cut & fill slopes, ditches, bridges, street furniture, geotechnical monitoring instruments, and all other structures, services, piping or equipment within the limits of work shall be properly protected from any injury or damage, direct or indirect. Any damage that is caused as a result of the operations of the Contractor shall be repaired and made good at the Contractors expense to the satisfaction of the Departmental Representative.

1.10 Special Instructions (Cont'd)

.2 For Racing River Bridge (Km 641.1), the Contractor shall monitor and document the vertical angle of the pier on a daily basis while riprap removal and placement is being done. Measurements shall be with a digital level, taken at three locations along the length of the pier. Any movement over time should be immediately reported to the Departmental Representative. In addition, the Contractor shall notify the Departmental Representative at least a week before exacavation so that the underside of the pier can be inspected.

1.11 Survey

.1 The Contractor shall be responsible for all layout surveys to complete the work per the design lines and grades, survey of construction for measurement for payment (see Section 01 29 00 - Payment Procedures), and Section 1.29 As-Built Documents All surveys shall achieve the following:

.1 Be completed / collected to an accuracy of +/- 0.02 m horizontal and +/- 0.02 m vertical or better and shall be referenced /tie into the survey control points /coordinate system as shown on the Contract Drawings.

.2 Use industry standards, methods, equipment, and the survey requirements of Section 01 29 00 - Payment Procedures, and other approaches (if necessary) as preapproved by the Departmental Representative.

.2 All layout surveys, quantity surveys, and as-built surveys shall be considered incidental to the work and will not be measured for payment.

.3 The Contractor shall utilize a qualified surveyor acceptable to the Departmental Representative to perform all the required surveying on the project. Submit the name and address of surveyor to the Departmental Representative upon request.

.4 Prior to starting on-site construction work, complete a check of the survey control point coordinates and elevations provided by the Departmental Representative. Provide results to the Departmental Representative for review and acceptance. If deemed necessary by the Departmental Representative, design adjustments may be made by the Departmental Representative to suit the findings of the monument survey checks.

1.11 Survey (Cont'd)

.5 Establish working control points based on survey control points provided. The control points should be protected. If destroyed, the Contractor shall reestablish the survey control point(s) at their expense.

.6 Establish / layout the proposed alignment(s) and grades using paint lines and survey stakes based on survey control points and working points provided.

.7 The Departmental Representative may elect to verify surveys. Verification of the survey by the Departmental Representative does not abdicate the Contractors responsibility for the correctness and accuracy of the survey.

.8 Maintain a complete, accurate log of control and survey work as it progresses. On request of the Departmental Representative, submit documentation to verify the accuracy of the field engineering work.

.9 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, bridges, structures, roads, , slopes, culverts and landscaped areas.

.10 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 a survey is undertaken and if requested by the Contractor, the Departmental Representative will provide a copy of the survey records to the Contractor for reference.

.11 Whenever supplied with survey records, the Contractor shall satisfy itself as to the accuracy and completeness of the survey records provided by the Departmental Representative for any area before commencing construction in that area. Commencement of construction in any area shall be interpreted to signify that the Contractor has accepted such survey records as being a true record of the existing conditions prior to construction.

1.11 Survey (Cont'd)

.12 The provision of the records of a survey of existing conditions by the Departmental Representative shall in no way limit or restrict the Contractors 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.

1.12 Contractors Responsibility

.1 Give all required Notices and comply with all local, provincial, and federal laws, bylaws, ordinances, rules, regulations, codes, and orders relating to the Work which are or come in force during the Performance of the Work.

.2 Coordinate all the Work and provide all labour, materials, equipment, and services necessary for delivery, storage, handling, protection, installation, removal, inspection, and replacement or maintenance as required to provide a complete Project.

1.13 Hours of Work

.1 Notify Departmental Representative of all after hours work, including weekends and holidays.

1.14 Work Schedule

.1 Carry on work as follows:

.1 Within 5 working days after Contract award, provide a phasing bar chart and a schedule showing anticipated progress stages and final completion of the Work within the time period required by the Contract documents. Indicate the following:

.1 Submission of shop drawings.

.2 Commencement and completion of Work of each section of the specifications or drawings as outlined.

.3 Final completion date within the time period required by the Contract documents.

.2 No changes shall be made to the approved Schedule without prior authorization from the Departmental Representative.

.3 Interim reviews of work based on the schedule will be conducted as decided by the Departmental Representative and the schedule shall be updated by the Contractor throughout the duration of the Contract to reflect actual progress of the work.

1.15 Cost Breakdown

.1 Before submitting the first request for a progress payment, submit a breakdown of the Contract lump sum amounts in detail as directed by the Departmental Representative and aggregating the total Contract price.

1.16 Documents

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

- .1 Contract drawings.
- .2 Contract specifications.
- .3 Addenda to Contract documents.
- .4 Copy of reviewed work schedule.
- .5 Change orders.
- .6 Other modifications to Contract.
- .7 Field test reports.
- .8 Manufacturers installation and application instructions.
- .9 One set of record drawings and specifications for as-built purposes.
- .10 Current construction standards of workmanship listed in technical Sections.
- .11 Project Safety Plan.
- .12 Environmental Protection Plan (EPP) including environmental permits.

1.17 Regulatory Requirements

.1 Obtain and pay for Building Permit, Certificates, Licenses, and other permits required by regulatory municipal, provincial or federal authorities to complete the work if needed.

.2 Provide inspection authorities with plans and information required for issue of acceptance certificates.

.3 Furnish inspection certificates in evidence that the work installed conforms with the requirements of the authority having jurisdiction.

1.18 Contractor

.1 Use of site:

- .1 Complete access for execution of work.
- .2 Assume responsibility for assigned premises for performance of this work.
- .3 Be responsible for coordination of all work activities on site.

1.18 Contractor (Cont'd)

.2 Perform work in accordance with Contract documents. Ensure work is carried out in accordance with indicated phasing.

.3 Do not unreasonably encumber site with material or equipment.

1.19 Examination

.1 Examine site and be familiar and conversant with existing conditions likely to affect work.

.2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims.

1.20 Existing Utilities

.1 Where work involves breaking into or connecting to existing services, carry out work at times directed by the authorities having jurisdiction.

1.21 Location of Equipment and Fixtures

.1 Location of equipment, fixtures, and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures, and distribution systems to provide minimum interference and maximum usable space, and in accordance with manufacturers recommendations for safety, access and maintenance.

.3 Submit field drawings or shop drawings to indicate the relative position of various services and equipment when required by the Departmental Representative and/or as specified.

1.22 Setting Out

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Assume full responsibility for dimensions, spacings, overall fit with field components.

.3 Provide devices needed to lay out and construct work.

1.22 Setting Out (Cont'd)

.4 Supply all access as required to facilitate Departmental Representatives inspection of work.

1.23 Quality of Work

.1 Ensure that quality workmanship is performed through use of skilled workers, under supervision of qualified journeyman.

.2 The workmanship, erection methods, and procedures to meet minimum standards set out in the applicable codes and standards.

.3 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

1.24 Works Coordination

.1 Coordinate work of subtrades:

- .1 Designate one person to be responsible for review of Contract documents and shop drawings and managing coordination of Work.

.2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.

- .1 Provide each subcontractor with complete plans and specifications for Contract, to assist them in planning and carrying out their respective work.
- .2 Develop coordination drawings when required, illustrating potential interference between work of various trades and distribute to affected parties.
  - .1 Identify on coordination drawings, structural elements, services lines, rough-in points, and indicate location of services entrance to site.
- .3 Facilitate meetings and review coordination drawings. Ensure subcontractors agree and sign off on drawings.
- .4 Record and distribute minutes of each meeting.
- .5 Plan and coordinate work in such a way to minimize quantity of service line offsets.
- .6 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes upon request.
- .7 Coordinate and plan for all necessary road closures ahead of time.

1.24 Works Coordinations (Cont'd)

.3 Work cooperation:
- .1 Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.
- .2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent delays.
- .3 Ensure disputes between subcontractors are resolved.

.4 Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractors failure to coordinate Work.

.5 Maintain efficient and continuous supervision.

1.25 Review of Data Samples

.1 In accordance with Section 01 33 00 - Submittal Procedures, submit the requested product data, MSDS sheets, and samples indicated in each of the technical Sections.

.2 Allow sufficient time for the following:
- .1 Review of product data.
- .2 Review of re-submission.
- .3 Ordering of approved material and/or products.

1.26 Project Meetings

.1 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

1.27 Testing and Inspections

.1 Particular requirements for inspection and testing to be carried out by a testing service or laboratory approved by the Departmental Representative are specified in Section 01 45 00 - Quality Control.

.2 The Contractor will appoint and pay for the services of the testing agency or testing laboratory as specified, and where required for the following:
- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .2 Inspection and testing performed exclusively for Contractors convenience.

1.27 Testing and Inspections (Cont'd)

.2 (Cont'd)

.3 Tests specified to be carried out by the Contractor under the Departmental Representatives supervision.

.3 Where tests or inspections by a designated testing laboratory reveal work is not in accordance with the Contract requirements, Contractor shall pay costs for additional tests or inspections as the Departmental Representative may require to verify acceptability of corrected work.

.4 Contractor shall notify Departmental Representative 5 working days in advance of planned testing.

.5 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.6 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Departmental Representative.

.7 The Departmental Representative may require, and pay for, additional inspection and testing services not included here (Clause 1.23).

.8 Provide Departmental Representative with 2 copies of testing laboratory reports and mill tests and certificates of compliance as soon as they are available.

1.28 As-Built Documents

.1 As work progresses, maintain accurate records to show all deviations from the Contract documents. Note on as-built specifications, drawings, and shop drawings as changes occur.

1.29 Cleaning

.1 Conduct daily cleaning and disposal operations. Comply with local ordinances and anti-pollution laws.

1.30 Environmental Protection

.1 Refer to section 01 35 43 - Environmental Procedures for additional requirements.

1.30 Environmental Protection (Cont'd)

.2 Do not dispose of waste or volatile materials into water courses.

.3 Ensure proper disposal procedures in accordance with all applicable regulations.

1.31 Additional Drawings

.1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract documents.

.2 Upon request, Departmental Representative may furnish up to a maximum of 6 sets of Contract documents for use by the Contractor at no additional cost. Should more than 6 sets of documents be required the Departmental Representative will provide them at additional cost.

1.32 System of Measurement

.1 The metric system of measurement (SI) will be employed on this Contract.

1.33 Familiarization with Site

.1 Before submitting tender, visit the Project site to become familiar with all conditions likely to affect the cost of the Work.

1.34 Submission of Tender

.1 Submission of a tender is deemed to be confirmation of the fact that the Tenderer has analyzed the Contract documents and inspected the site and is fully conversant with all conditions.

1.35 Measurement and Payment

.1 There will be no measurement for work covered in this Section.

.2 Payment for work covered in this Section will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Mobilization, Demobilization and General Conditions of Contract

.1 Payment of 25% of the Lump Sum Amount for the Mobilization, Demobilization, and General Conditions of Contract item shall be authorized when the Contractor has provided a Construction Schedule and Work onsite has commenced to the satisfaction of the Departmental Representative. Payment of 60% of the Lump Sum shall be made as a series of monthly payments, calculated on the basis of the expected schedule. If the Work falls behind or gets ahead of schedule, these payments will be adjusted accordingly. Payment of the remaining 15% shall be authorized when the Work is completed, and the site is cleaned-up to the satisfaction of the Departmental Representative.

.2 Payment of only 10% of the total tender price shall be scheduled as outlined above if the amount bid for mobilization and demobilization is greater than 10%. Payment of the remainder of the amount shall be authorized when the site is cleaned to the satisfaction of the Departmental Representative.

.3 Payment includes but is not limited to Submittals, Progress Reporting, Survey, Site Access, Traffic Control, Health and Safety, Quality Control, Temporary Utilities, Construction Facilities, Vehicle Access and parking, Temporary Barriers, Cleaning, and Waste Management.

1.2 Environmental Protection

.1 Payment will be prorated based on the total work done compared to the total Contract Value.

.2 Refer to section 01 35 43 - Environmental Procedures for requirements including, but not limited to, preparation and implementation of the Environmental Protection Plan (EPP).

.3 Payment will be under the Lump Sum Amount for the Environmental Protection of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

PART 2 - RACING RIVER BRIDGE, km 641.1

2.1 Riprap - Class 2000 kg

.1 MEASUREMENT: There will be no measurement for the work in this Section.

.2 PAYMENT: Will be made under the Lump Sum amount for the Riprap - Class 2000 kg Contract. Payment shall include but is not limited to the complete preparation of the area, excavation, grading, material and installation cost for the riprap, material and installation cost for supply and placement of the geotextile, clearing of work area after installation, and any ancillary work. Payment for riprap beyond the thickness shown on the drawings shall not be considered unless previously approved by the Departmental Representative.

PART 3 - LIARD RIVER, km 780

3.1 Riprap - Class 500 kg

.1 MEASUREMENT: Based on the surveyed in-place volume of rock accepted by the Departmental Representative. Payment will be made based on the surveyed area of riprap placed in square meters multiplied by the design rock thickness. Payment for riprap beyond the thickness shown on the drawings shall not be considered unless previously approved by the Departmental Representative.

.2 PAYMENT: Will be made on the basis of the Unit Price per cubic meter bid for Riprap - Class 500 kg. Payment shall include but is not limited to complete preparation of the slope, excavation, grading, material, sorting, hauling, cleaning, and installation cost for the riprap, material and installation cost for supply and placement of the geotextile, clearing of work area after installation, and any ancillary work.

3.2 Riprap - Class 2000 kg (On-Site)

.1 MEASUREMENT: Based on the surveyed in-place volume of rock accepted by the Departmental Representative. Payment will be made based on the surveyed area of riprap placed in square meters multiplied by the design rock thickness. Payment for riprap beyond the thickness shown on the drawings shall not be considered unless previously approved by the Departmental Representative.

.2 PAYMENT: Will be made on the basis of the Unit Price per cubic meter bid for Riprap - Class 2000 kg (on-site). Payment shall include but is not limited to complete preparation of the slope, excavation, grading, material, sorting, hauling, cleaning, and installation cost for the riprap, material and installation cost for supply and placement of the geotextile, clearing of work area after installation, and any ancillary work.

3.3 Fiber Rolls

.1 MEASUREMENT: Based on the surveyed in-place length of Fiber Rolls accepted by the Departmental Representative. Payment will be made based on the surveyed length of Fiber Rolls placed in lineal meters.

.2 PAYMENT: Based on the unit price per lineal meter of Fiber Rolls placed. Payment shall include supply and installation of the Fiber Rolls, and any ancillary work.

3.4 Hydraulic Seeding

.1 MEASUREMENT: Based on the surveyed in-place area of Hydraulic Seeding accepted by the Departmental Representative. Payment will be made based on the surveyed area of Hydraulic Seeding placed in square meters.

.2 PAYMENT: Based on the unit price per square meter of Hydraulic Seeding placed. Payment shall include supply and installation of Hydraulic Seeding, and any ancillary work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Coordination of Work with work by others under administration of Departmental Representative.

.2 Scheduled preconstruction and progress meetings.

1.2 Description

.1 Coordination of progress schedules, submittals, use of sites, temporary utilities, construction facilities, and construction Work, with progress of work by others under instructions of Departmental Representative.

1.3 Construction Progress Meetings and Project Meetings

.1 The Departmental Representative will schedule and administer project meetings as deemed necessary throughout progress of the Work.

.2 Agenda to include, but not limited to, the following:

- .1 Review and approval of minutes of previous meeting.
- .2 Review of Work progress since previous meeting.
- .3 Field observations, problems, conflicts.
- .4 Problems that impede construction schedule.
- .5 Review of off-site fabrication delivery schedules.
- .6 Corrective measures and procedures to regain projected schedule.
- .7 Revision to construction schedule.
- .8 Progress schedule, during succeeding work period.
- .9 Review submittal schedules: expedite as required.
- .10 Maintenance of quality standards.
- .11 Review proposed changes for effect on construction schedule and on completion date.
- .12 Other business.

.3 The Contractor shall provide physical space and make arrangements for meetings.

.4 The Departmental Representative will record minutes, including significant proceedings and decisions, identify action by parties, and set time and date for next progress meeting.

1.3 Construction Progress Meetings and Project Meetings (Cont'd)

.5 The Departmental Representative will reproduce and distribute copies of minutes within ten (10) working days after each meeting and transmit to meeting participants, affected parties not in attendance, and Contractor.

1.4 Construction Organization and Start-Up

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representatives and senior representatives of the Contractor, major Subcontractors (if applicable), field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Agenda to include, but not limited to, the following:

- .1 Site specific health and safety requirements.
- .2 Appointment of official representative of participants in Work.
- .3 Schedule of Work, progress scheduling in accordance with Section 01 32 17 - Construction Progress and Reporting.
- .4 Schedule of submission of shop drawings, samples, colour chips, etc. in accordance with Section 01 33 00 - Submittal Procedures.
- .5 Requirements for temporary facilities, storage sheds, utilities, etc. in accordance with Section 01 51 00 - Temporary Utilities.
- .6 Delivery schedule of specified equipment in accordance with Section 01 32 16 - Construction Progress and Reporting.
- .7 Site security in accordance with Section 01 52 00 - Construction Facilities.
- .8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .9 Take-over procedures, acceptance, and warranties in accordance with Section 01 77 00 - Closeout Procedures.
- .10 Monthly progress claims, administrative procedures, photographs, and holdbacks.
- .11 Appointment of inspection and testing agencies or firms in accordance with Section 01 45 00 - Quality Control.
- .12 Insurances and transcript of policies.
- .13 Other business.

1.4 Construction Organization and Start-Up (Cont'd)

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

.6 During construction, coordinate use of sites and facilities with Departmental Representative.

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

1.5 Schedules

.1 Submit preliminary construction progress schedule in accordance with Section 01 32 16 -Construction Progress Reporting to Departmental Representative coordinated with Departmental Representative's project schedule.

.2 After review, revise and resubmit schedule to comply with revised project schedule.

.3 During progress of Work, provide updated Construction Progress Schedule on a monthly basis with the Request for Process Payment.

1.6 Submittal

.1 Submit request for payment for review, and for transmittal to Departmental Representative.

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

.3 Deliver closeout submittals for review and preliminary inspections, for transmittal to Departmental Representative.

1.7 Closeout Procedures

.1 Notify Departmental Representative when work is considered ready for Substantial Performance, in accordance with Section 01 77 00 - Closeout Procedure.

.2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.

1.7 Closeout Procedures (Cont'd)

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

1.8 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for Mobilization, Demobilization and General Conditions of the Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Schedule, form, and content.

.2 Staged construction.

.3 Scheduled revisions.

.4 Critical path scheduling.

1.2 Definitions

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Actual Finish Date (AF): point in time that Work actually ended on activity.

.3 Actual Start Date (AS): point in time that Work actually started on activity.

.4 Bar Chart (Gantt chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars.

.5 Baseline: original approved plan (for Project, work package, or activity), plus or minus approved scope changes.

.6 Completion Milestones: they are firstly Substantial Performance and secondly Project Completion.

.7 Constraint: applicable restriction that will affect performance of Project. Factors that affect activities can be scheduled.

.8 Control: process of comparing actual performance with planned performance, analyzing variances, evaluating possible alternatives, and taking appropriate corrective action as needed.

.9 Critical Activity: any activity on a critical path. Most commonly determined by using critical path method.

1.2 Definitions (Cont'd)

.10 Critical Path: series of activities that determines duration of Project. In deterministic model, critical path is usually defined as those activities with float less than or equal to specified value, often zero. It is longest path through Project.

.11 Critical Path Method (CPM): network analysis technique used to predict Project duration by analyzing which sequence of activities (which path) has least amount of scheduling flexibility (least amount of float).

.12 Data Date (DD): date at which, or up to which, Project's reporting system has provided actual status and accomplishments.

.13 Duration (DU): number of work periods (not including holidays or other non-working periods) required to complete activity or another Project element. Usually expressed as workdays or work weeks.

.14 Early Finish Date (EF): in critical path method, earliest possible point in time on which uncompleted portions of activity (or Project) can finish, based on network logic and schedule constraints. Early finish dates can change as Project progresses and changes are made to Project plan.

.15 Early Start Date (ES): in critical path method, earliest possible point in time on which uncompleted portions of activity (or Project) can start, based on network logic and schedule constraints. Early start dates can change as Project progresses and changes are made to Project Plan.

.16 Finish Date: point in time associated with activity's completion. Usually qualified by one of following: actual, planned, estimated, scheduled, early, late, baseline, target, or current.

.17 Float: amount of time that activity may be delayed from its early start without delaying Project finish date. Float is mathematical calculation and can change as Project progresses and changes are made to Project plan. This resource is available to both PSPC and Contractor.

.18 Lag: modification of logical relationship that directs delay in successor task.

.19 Late Finish Date (LF): in critical path method, latest possible point in time that activity may be completed without delaying specified milestone (usually Project finish date).

1.2 Definitions (Cont'd)

.20 Late Start Date (LS): in critical path method, latest possible point in time that activity may begin without delaying specified milestone (usually Project finish date).

.21 Lead: modification of logical relationship that allows acceleration of successor task.

.22 Logic Diagram: see Project network diagram.

.23 Master Plan: summary-level schedule that identifies major activities and key milestones.

.24 Milestone: significant event in Project, usually completion of major deliverable.

.25 Monitoring: capture, analysis, and reporting of Project performance, usually as compared to plan.

.26 Near-Critical Activity: activity that has low total float.

.27 Non-Critical Activities: activities which when delayed, do not affect specified Contract duration.

.28 Project Control System: fully computerized system utilizing commercially available software packages.

.29 Project Network Diagram: schematic display of logical relationships of Project activities. Always drawn from left to right to reflect Project chronology.

.30 Project Plan: formal, approved document used to guide both Project execution and Project control. Primary uses of Project plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines. Project plan may be summary or detailed.

.31 Project Planning: development and maintenance of Project Plan.

.32 Project Planning, Monitoring, and Control System: overall system operated by Departmental Representative to enable monitoring of Project Work in relation to established milestones.

1.2 Definitions (Cont'd)

.33 Project Schedule: planned dates for performing activities and planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy project objectives. Monitoring and control process involve using project schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.34 Quantified Days Duration: working days based on 5-day work week, discounting statutory holidays.

.35 Risk: uncertain event or condition that, if it occurs, has positive or negative effect on Project's objectives.

.36 Scheduled Finish Date (SF): point in time that Work was scheduled to finish on activity. Scheduled finish date is normally within range of dates delimited by early finish date and late finish date.

.37 Scheduled Start Date (SS): point in time that Work was scheduled to start on activity. Scheduled start date is normally within range of dates delimited by early start date and late start date.

.38 Start Date: point in time associated with activity's start, usually qualified by one of following: actual, planned, estimated, scheduled, early, late, target, baseline, or current.

.39 Work Breakdown Structure (WBS): deliverable-oriented grouping of project elements that organizes and defines total Work scope of Project. Each descending level represents increasingly detailed definition of Project Work.

1.3 System Description

.1 Construction Progress Schedule (Project Time Management): describes processes required to ensure timely completion of Project. These processes ensure that various elements of the Project are properly coordinated. It consists of planning, time estimating, scheduling, progress monitoring, and control.

.2 Planning: this is the most basic function of management, that of determining presentation of action, and is essential.

1.3 System Description (Cont'd)

.2 (Cont'd)

.1 It involves focusing on objective consideration of future, and integrating forward thinking with analysis; therefore, in planning, implicit assumptions are made about future so that action can be taken today.

.2 Planning and scheduling facilitates accomplishment of objectives and should be considered a continuous interactive process involving planning, review, scheduling, analysis, monitoring and reporting.

.3 Ensure that the planning process is iterative and results in generally top-down processing with more detail being developed as planning progresses, and decisions concerning options and alternatives are made. This implies progressively more reliability of scheduling data. Detail Project schedule is used for analysis and progress monitoring.

.4 Ensure project schedule efficiencies through monitoring.

.1 When activities begin on time and are performed according to estimated durations without interruptions, original Critical Path will remain accurate. Changes and delays will, however, create an essential need for continual monitoring of Project activities.

.2 Monitor progress of Project in detail to ensure integrity of Critical Path, by comparing actual completions of individual activities with their scheduled completions, and review progress of activities that has started but are not yet completed.

.3 Monitoring should be done sufficiently often so that causes of delays are immediately identified and removed if possible.

.5 Project monitoring and reporting: as Project progresses, keep team aware of changes to schedule, and possible consequences. In addition to Bar Charts and CPM networks, use narrative reports to provide advice on seriousness of difficulties and measures to overcome them.

.6 Narrative reporting begins with statement on general status of Project followed by summarization of delays, potential problems, corrective measures and Project status criticality.

1.4 CPM Requirements

.1 Ensure Master Plan and Detail Schedule are practical and remain within specified Contract duration.

1.4 CPM Requirements (Cont'd)

.2 Master Plan and Detail Schedule deemed impractical by Departmental Representative are revised and resubmitted for review.

.3 Acceptance of Master Plan and Detail Schedule showing scheduled Contract duration shorter than specified Contract duration does not constitute a change to the Contract. Duration of Contract may only be changed through bilateral Agreement.

.4 Consider Master Plan and Detail Schedule deemed practical by Departmental Representative, showing Work completed in less than specified Contract duration, to have float.

.5 First Milestone on Master Plan and Detail Schedule will identify start Milestone with an "ES" constraint date equal to Award of Contract date.

.6 Calculate dates for completion milestones from Plan and Schedule using specified time periods for Contract.

.7 Substantial Completion with "LF" constraint equal to calculated date.

.8 Calculations on updates to be such that if early finish of Interim Certificate falls later than specified Contract duration then float calculation to reflect negative float.

.9 Delays to non-critical activities, those with float may not be basis for time extension.

.10 Do not use float suppression techniques such as software constraints, preferential sequencing, special lead/lag logic restraints, extended activity times or imposed dates other than required by Contract.

.11 Allow for and show Master Plan and Detail Schedule adverse weather conditions normally anticipated. Specified Contract duration has been predicated assuming normal amount of adverse weather conditions.

.12 Provide necessary crews and manpower to meet schedule requirements for performing Work within specified Contract duration. Simultaneous use of multiple crews on multiple fronts on multiple critical paths may be required.

1.4 CPM (Cont'd)

.13 Arrange participation on and off site of subcontractors and suppliers, as required by Departmental Representative, for purpose of network planning, scheduling, updating and progress monitoring. Approvals by Departmental Representative of original networks and revisions do not relieve Contractor from duties and responsibilities required by Contract.

.14 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.

1.5 Submittals

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

.2 Submit to Departmental Representative Project Control System for planning, scheduling, monitoring, and reporting of project progress.

.3 Submit Project Control System to Departmental Representative for review; failure to comply with each required submission, may result in progress payment being withheld.

.4 Include costs for execution, preparation, and reproduction of schedule submittals in bid documents.

.5 Submit letter ensuring that schedule has been prepared in coordination with major Subcontractors, if applicable.

.6 Submit Project planning, monitoring, and control system data as required by Departmental Representative in following form:

- .1 Files in original scheduling software and PDF formats containing schedule and cash flow information, labelled with data date, specific update, and person responsible for update.
- .2 Master Plan Bar Chart.
- .3 Construction Detail schedule Bar Chart.
- .4 Listing of project activities including milestones and logical connectors, networks (sub-networks) from Project start to end. Sort activities by activity identification number and accompany with descriptions. List early and late start and finish dates together with durations, codes and float.

1.5 Submittals (Cont'd)

.6 (Cont'd)

.5 Criticality report listing activities and milestones with up to 5 days total float used as first sort for ready identification of critical or near critical paths through entire project. List early and late starts and finishes dates, together with durations, codes and float for critical activities.

.6 Progress report in early start sequence, listing for each trade, activities due to start, underway, or finished. List activity identification number, description and duration. Provide columns for entry of actual start and finish dates, duration remaining and remarks concerning action required.

.7 Within ten working days after each March 31 and September 30 occurring between commencement of Work and final completion, and within ten working days after final completion, provide to Departmental Representative:

.1 Statement of total person days of labour used on site in performance of Contract, including labour provided under subcontracts.

.2 Estimate of total value in dollars of material delivered to site and installed, including material provided and installed under sub-contracts.

1.6 Quality Assurance

.1 Use experienced personnel, fully qualified in planning and scheduling, to provide services from start of construction to Final Certificate, including Commissioning.

1.7 Project Meetings

.1 Meet with Departmental Representative within 5 working days of Award of Contract date, to establish Work requirements and approach to project construction operations.

1.8 Work Breakdown Structure

.1 Prepare construction WBS within 15 working days of Award of Contract date. Develop WBS through at least five levels: project, stage, element, sub-element and work package.

1.9 Project Milestones

.1 Project milestones form targets for both Master Plan and Detail Schedule of CPM construction network system. Include:

- .1 Mobilization on-site.
- .2 Start and end dates for all work phases and in-water works.
- .3 Interim completion before winter shutdown.
- .4 Re-mobilization for completion of work.
- .5 Substantial Performance of the works.
- .6 Completion of all site works.
- .7 Final Project Completion.

1.10 Master Plan

.1 Structure and base CPM construction networks system on WBS coding in order to ensure consistency throughout Project.

.2 Prepare comprehensive construction Master Plan (CPM logic diagram) and dependent Cash Flow Projection within 15 working days of finalizing Agreement to confirm validity or alternates of identified milestones.

- .1 Master Plan will be used as baseline.
  - .1 Revise baseline as conditions dictate and as required by Departmental Representative.
  - .2 Departmental Representative will review and return revised baseline within 10 work days.

.3 Reconcile revisions to Master Plan and Cash Flow Projections with previous baseline to provide continuous audit trail.

.4 Initial and subsequent Master Plans will include:

- .1 File containing schedule and cash flow information, clearly labelled with data date, specific update, and person responsible for update.
- .2 Bar chart identifying coding, activity durations, early/late and start/finish dates, total float, completion as percentile, current status and budget amounts.
- .3 Network diagram showing coding, activity sequencing (logic), total float, early/late dates, current status and durations.
- .4 Actual/projected monthly cash flow: expressed monthly and shown in both graphical and numerical form.

1.11 Detail Schedule

.1 Structure and base CPM construction networks system on WBS coding in order to ensure consistency throughout Project.

1.11 Detail Schedule (Cont'd)

.2 Prepare comprehensive construction Master Plan (CPM logic diagram) and dependent Cash Flow Projection within 15 working days of finalizing Agreement to confirm validity or alternates of identified milestones.

.1 Master Plan will be used as baseline.

.1 Revise baseline as conditions dictate and as required by Departmental Representative.

.2 Departmental Representative will review and return revised baseline within 10 work days.

.3 Reconcile revisions to Master Plan and Cash Flow Projections with previous baseline to provide continuous audit trail.

.4 Initial and subsequent Master Plans will include:

.1 File containing schedule and cash flow information, clearly labelled with data date, specific update, and person responsible for update.

.2 Bar chart identifying coding, activity durations, early/late and start/finish dates, total float, completion as percentile, current status and budget amounts.

.3 Network diagram showing coding, activity sequencing (logic), total float, early/late dates, current status and durations.

.4 Actual/projected cash flow: expressed monthly and shown in both graphical and numerical form.

.5 Provide detailed project schedule (CPM logic diagram) within 15 working days of Award of Contract date showing activity sequencing, interdependencies and duration estimates. Include listed activities as follows:

.1 Shop drawings.

.2 Samples.

.3 Approvals.

.4 Procurement.

.5 Construction.

.6 Installation.

.7 Site works.

.8 In-water works.

.9 Testing.

.10 Shutdown or closure activity.

.11 Commissioning and acceptance.

.6 Detail CPM schedule to cover in detail minimum period of 6 months beginning from Award of Contract date with each activity duration approximately 3 to 15 days.

1.11 Detail Schedule (Cont'd)

.6 (Cont'd)

.1 Show remaining activities for CPM construction network system up to Final Certificate and develop complete detail as project progresses.

.2 Detail activities completely and comprehensively throughout duration of project.

.7 Relate Detail Schedule activities to basic activities and milestones developed and approved in Master Plan.

.8 Clearly show sequence and interdependence of construction activities and indicate:

.1 Start and completion of all items of Work, their major components, and interim milestone completion dates.

.2 Activities for procurement, delivery, installation and completion of each major piece of equipment, materials and other supplies, including:

.1 Time for submittals, resubmittals and review.

.2 Time for fabrication and delivery of manufactured products for Work.

.3 Interdependence of procurement and construction activities.

.3 Include sufficient detail to assure adequate planning and execution of Work. Activities should generally range in duration from 3 to 15 workdays each.

.9 Provide level of detail for project activities such that sequence and interdependency of Contract tasks are demonstrated and allow co-ordination and control of project activities. Show continuous flow from left to right.

.10 Ensure activities with no float are calculated and clearly indicated on logical CPM construction network system as being, whenever possible, continuous series of activities throughout length of Project to form "Critical Path".

.11 Insert Change Orders in appropriate and logical location of Detail Schedule. After analysis, clearly state and report to Departmental Representative for review effects created by insertion of new Change Order.

1.12 Review of the Construction Detail Schedule

.1 Allow 10 working days for review by Departmental Representative of proposed construction Detail Schedule.

.2 Upon receipt of reviewed Detail Schedule make necessary revisions and resubmit to Departmental Representative for review within 5 working days.

.3 Promptly provide additional information to validate practicability of Detail Schedule as required by Departmental Representative.

.4 Submittal of Detail Schedule indicates that it meets Contract requirements and will be executed generally in sequence.

1.13 Compliance with Detail Schedule

.1 Comply with reviewed Detail Schedule.

.2 Proceed with significant changes and deviations from scheduled sequence of activities that cause delay, only after receipt of review by the Departmental Representative.

.3 Identify activities that are behind schedule and causing delay. Provide measures to regain slippage.

.1 Corrective measures, at no additional cost, may include:

.1 Increase of personnel on site for effected activities or work package.

.2 Increase in materials and equipment.

.3 Overtime work and additional work shifts.

.4 Submit to Departmental Representative, justification, project schedule data, and supporting evidence for approval of extension to Contract completion date or interim milestone date when required. Include as part of supporting evidence:

.1 Written submission of proof of delay based on revised activity logic, duration and costs, showing time impact analysis illustrating influence of each change or delay relative to approved contract schedule.

.2 Prepared schedule indicating how change will be incorporated into the overall logic diagram. Demonstrate perceived impact based on date of occurrence of change and include status of construction at that time.

1.13 Compliance with Detail Schedule (Cont'd)

.4 (Cont'd)

.3 Other supporting evidence requested by Departmental Representative.

.4 Do not assume approval of Contract extension prior to receipt of written approval from Departmental Representative.

.5 In event of Contract extension, display in Detail Schedule that scheduled float time available for work involved has been used in full without jeopardizing earned float.

.1 Departmental Representative will determine and advise Contractor number of allowable days for extension of Contract based on project schedule updates for period in question, and other factual information.

.2 Construction delays affecting project schedule will not constitute justification for extension of contract completion date.

1.14 Progress and Reporting

.1 On ongoing basis, Detail Schedule on job site must show "Progress to Date". Arrange participation on and off site of subcontractors and suppliers, as, and when necessary, for purpose of network planning, scheduling, updating, and progress monitoring. Inspect Work with Departmental Representative at least once per Project to establish progress on each current activity shown on applicable networks.

.2 Update and reissue project Work Breakdown Structure and relevant coding structures as project develops and changes.

.3 Detailed Schedule Update is to occur on a monthly basis in conjunction with submission of Request for Progress Payment.

.4 Do not automatically update actual start and finish dates by using default mechanisms found in project management software.

.5 Submit to Departmental Representative copies of updated Detail Schedule.

.6 Requirements for progress monitoring and reporting are basis for progress payment request.

1.14 Progress and Reporting (Cont'd)

.7 Submit written report at least once per Project based on Detail Schedule, showing Work to date performed, comparing Work progress to planned, and presenting current forecasts. Report must summarize progress, defining problem areas and anticipated delays with respect to Work schedule, and critical paths. Explain alternatives for possible schedule recovery to mitigate any potential delay. Include in report:

- .1 Description of progress made.
- .2 Pending items and status of: permits, shop drawings, Change Orders, possible time extensions.
- .3 Status of Contract completion date and milestones.
- .4 Current and anticipated problem areas, potential delays and corrective measures.
- .5 Review of progress and status of Critical Path activities.

1.15 Progress Photographs

.1 Provide digital photographs with dates and descriptions with progress reports. Relate dates and descriptions to photo file names in a separate text file.

.2 Viewpoints: determined by Departmental Representative.

.3 Frequency: with progress statement, at completion of each construction stage, and as directed by Departmental Representative.

1.16 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Molibization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

PART 2 - PRODUCTS

2.1 Not Used

1. Not used.

PART 3 - EXECUTION

3.1 Not Used

1. Not used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 This section includes but is not limited to the following:

- .1 Product data.
- .2 Samples.
- .3 Waste Management Work Plan.
- .4 Environmental Protection Plan (EPP).
- .5 Traffic Management Plan.
- .6 Health and Safety Plan.
- .7 Certificates and transcripts.
- .8 Quality Testing Reports.
- .9 Quality Control Plan.

1.2 Administrative

.1 Submit to Departmental Representative submittals listed for review.

- .1 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 Use the PSPC CentralCollab system for submissions if requested by the Departmental Representative.

.2 Work affected by submittal shall not proceed until review is complete.

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

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

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated, and identified as to specific project will be returned without being examined and shall be considered rejected.

1.2 Administrative (Cont'd)

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

.7 Verify field measurements and affected adjacent Work are coordinated. Contractor to become familiar with all conditions likely to affect the cost of the Work before submission of their Tender documents.

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

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

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

1.3 Product Data

.1 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.2 Delete information not applicable to project.

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

.4 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 product data sheets are rejected, noted copy will be returned and resubmission of corrected data sheets, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 Product Data (Cont'd) .5 The review of product data sheets by Departmental Representative is for sole purpose of ascertaining conformance with general concept. This review shall not mean that Departmental Representative approves detail design inherent in product data sheets, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in product data sheets or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for co-ordination of Work of all sub-trades.

1.4 Progress Photographs .1 Submit progress photographs in accordance with Section 01 32 16 - Construction Progress and Reporting.

1.5 Survey and Testing Reports .1 Submit certified survey and quality testing reports with progress reports.

1.6 Quality Control Plan .1 Prepare and submit to Departmental Representative for review and approval of a Quality Control Plan including but not limited to:

- .1 Quality control processes and procedures.
- .2 Quality control reporting and frequency.
- .3 Testing companies and agencies employed to provide materials testing.
- .4 Frequency and types of testing.
- .5 Verification of materials and installation procedures, including but not limited to structural steel, bolts, welds, paint.
- .6 Dimension checks of pre-fabricated and site-fabricated elements.

1.7 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 PSPC Update on Asbestos Use

.1 Effective April 1, 2016, all Public Services and Procurement Canada (PSPC) contracts for new construction and major rehabilitation will prohibit use of asbestos-containing materials.

1.2 COVID-19

.1 All contractors shall follow Canadian Construction Association COVID-19-Standardized Protocols for All Canadian Construction Sites, Provincial Regulations and Federal Site Specific Guidelines.

1.3 References

.1 Government of Canada.
- .1 Canada Labour Code - Part II (as amended)
- .2 Canada Occupational Health and Safety Regulations. (as amended)

.2 National Building Code of Canada (NBC): (as amended)
- .1 Part 8, Safety Measures at Construction and Demolition Sites.

.3 The Canadian Electrical Code (as amended)

.4 Canadian Standards Association (CSA) as amended:
- .1 CSA S269.2-2016 Access Scaffolding for Construction.
- .2 CSA S269.1-2016 Falsework for Construction Purposes.
- .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.
- .4 CSA Z1006-16 Management of Work in Confined Spaces.
- .5 CSA Z462-18 Workplace Electrical Safety Standard
- .6 CSA Z797-18 Code of Practice for Access Scaffold

.5 National Fire Code of Canada 2015 (as amended)
- .1 Part 5 - Hazardous Processes and Operations and Division B as applicable and required.

.6 American National Standards Institute (ANSI): (as amended)
- .1 ANSI/ASSP A10.3-2020, Construction and Demolition Operations Safety Requirements for Powder-Actuated Fastening Systems

1.3 References (Cont'd)

.7 Province of British Columbia:
- .1 Workers Compensation Act Part 3-Occupational Health and Safety. (as amended)
- .2 Occupational Health and Safety Regulation (as amended)

1.4 Related

.1 Refer to the following current NMS sections as required:
- .1 Section 01 11 55 - General Instructions

1.5 Workers

.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.6 Compliance with Regulations

.1 PSPC may terminate the Contract without liability to PSPC where the Contractor, in the opinion of PSPC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.7 Submittals

.1 Work affected by submittal shall not proceed until review is complete.

.2 Submit the following:
- .1 Organizations Health and Safety Plan.
- .2 Site Specific Safety Plan or Health and Safety Plan (SSSP or HASP)
- .3 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .4 Copies of incident and accident reports.

1.7 Submittals (Cont'd)

.2 (Cont'd)

.5 Complete set of Material Safety Data Sheets (SDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.

.6 Emergency Response Procedures.

.3 The Departmental Representative will review the Contractor's Site-Specific Safety Plan or Health and Safety Plan (SSSP/HASP) and emergency response procedures and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

.4 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

.5 Submission of the Site-Specific Safety Plan or Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

.1 Be construed to imply approval by the Departmental Representative.

.2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.

.3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.8 Responsibility

.1 Assume responsibility as the Prime Contractor for work under this contract.

.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 and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 Health and Safety Coordinator

.1 Assign a competent and qualified Health and Safety Coordinator who shall:

- .1 Be responsible for completing all health and safety training and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to preform work.
- .2 Be responsible for implementing, daily enforcing, and monitoring the Site-Specific Safety Plan (SSSP) or Health and Safety Plan (HASP).
- .3 Be on site during execution of work.
- .4 Have minimum two (2) years of site-related working experience.
- .5 Have working knowledge of the applicable occupational safety and health regulations.

1.10 General Conditions

.1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

- .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
- .2 Secure site at nighttime or provide security guard as deemed necessary to protect site against entry.

1.11 Project/Site Conditions

.1 Work at site will involve contact with:

- .1 Multi-employer work site.

.2 Federal employees and general public.

.3 Energized electrical services.

.4 Working from heights.

.5 Hazards - PSPC Preliminary Hazard Assessment included as an Appendix to Specifications.

1.12 Utility Clearances

.1 The Contractor is solely responsible for all the utility detection and clearances prior to starting work.

.2 The Contractor will not rely solely upon the Reference Drawings or other information provided for Utility locations.

1.13 Regulatory Requirements

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.14 Work Permits

.1 Obtain specialty permit(s) related to project before start of work.

1.15 Filing of Notice

.1 The General Contractor is to file Notice of Projects with Provincial authorities prior to commencement of work. (All construction projects require a Notice of Work)

.2 Provide copies of all notices to the Departmental Representative.

1.16 Site Specific Health and Safety Plan

.1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

.2 Prepare and comply with the Site Specific Safety Plan (SSSP) or Health and Safety Plan (HASP) based on the required hazard assessment, including, but not limited to, the following:

.1 Primary requirements:

- .1 Contractor's safety policy.
- .2 Identification of applicable compliance obligations.
- .3 Definition of responsibilities for project safety/organization chart for project.

1.16 Site Specific Health and Safety Plan (Cont'd)

.2 (Cont'd)

.1 (Cont'd)

.4 General safety rules for project.

.5 Job-specific safe work procedures.

.6 Inspection policy and procedures.

.7 Incident reporting and investigation policy and procedures.

.8 Occupational Health and Safety Committee/Representative procedures.

.9 Occupational Health and Safety meetings.

.10 Occupational Health and Safety communications and record keeping procedures.

.11 COVID-19 Protocols and Procedures.

.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

.3 List hazardous materials to be brought on site as required by work. SDS required for all products.

.4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

.5 Identify personal protective equipment (PPE) to be used by workers.

.6 Identify personnel and alternates responsible for site safety and health.

.7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

.4 Revise and update the Site-Specific Safety Plan (SSSP) and/or Health and Safety Plan (HASP) as required and re-submit to the Departmental Representative.

.5 Departmental Representative's review: the review of Site Specific Safety Plan and/or Health and Safety Plan by Public Services and Procurement Canada (PSPC) shall not relieve the Contractor of responsibility for errors or omissions in final Site Specific Safety Plan and/or Health and Safety Plan of responsibility for meeting all requirements of construction and Contract documents and legislated requirements.

1.17 Emergency Procedures

.1 List standard operating procedures and measures to be taken in emergency situations. Include an emergency response and emergency evacuation plan and emergency contacts (ie. names/telephone numbers) of:

- .1 Designated personnel from own company.
- .2 Regulatory agencies applicable to work and as per legislated regulations.
- .3 Local emergency resources.
- .4 Departmental Representative.
- .5 A route map with written directions to the nearest hospital or medical clinic.

.2 Include the following provisions in the emergency procedures:

- .1 Notify workers and the first-aid attendant of the nature and location of the emergency.
- .2 Evacuate all workers safely.
- .3 Check and confirm the safe evacuation of all workers.
- .4 Notify the fire department or other emergency responders.
- .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
- .6 Notify Departmental Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:

- .1 Work at high angles.
- .2 Work in confined spaces or where there is a risk of entrapment.
- .3 Work with hazardous substances.
- .4 Underground work.
- .5 Work on, over, under or adjacent to water.
- .6 Workplaces where there are persons who require physical assistance to be moved.

.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

.5 Revise and update emergency procedures as required and re-submit to the Departmental Representative.

.6 Contractors must not rely solely upon 911 for emergency rescue in a confined space, working at heights, etc.

1.18 Hazardous Products

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS 2015) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Safety Data Sheets (SDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:

- .1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable SDS and WHMIS 2015 documents as per Section 01 11 55.
- .2 In conjunction with Departmental Representative schedule to carry out work during "off hours".
- .3 Provide adequate means of ventilation in accordance with Section 01 51 00.
- .4 The contractor shall ensure that the product is applied as per the manufacturer's recommendations.
- .5 The contractor shall ensure that only pre-approved products are brought onto the work site in an adequate quantity to complete the work.

1.19 Asbestos Hazard

.1 Carry out any activities involving asbestos in accordance with current applicable Federal and Provincial Regulations.

.2 Removal and handling of asbestos will be in accordance with current applicable Provincial/Federal Regulations.

1.20 PCB Removals

.1 Mercury-containing fluorescent tubes and ballasts which contain polychlorinated biphenyls (PCBs) are classified as hazardous waste.

.2 Remove, handle, transport and dispose of as indicated in Division 2 specifications.

1.21 Removal of Lead-Containing Paint

.1 All paint containing TCLP lead concentrations above 5 ppm are classified as hazardous.

.2 Carry out demolition and/or remediation activities involving lead-containing paints in accordance with current applicable Provincial/Territorial Regulations.

.3 Work with lead-containing paint shall be completed as per Provincial and Federal Regulations.

.4 Dry scraping/sanding of any materials containing lead is strictly prohibited.

.5 The use of Methylene Chloride based paint removal products is strictly prohibited.

.6 The existing bridge shall be assumed to contain lead paint.

1.22 Electrical Safety Requirements

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.

- .1 Before undertaking any work, coordinate arc flash protection, required energizing and de-energizing of new and existing circuits with Departmental Representative.
- .2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.23 Electrical Lockout

.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

.2 Prepare the lockout procedures in writing, listening step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.

1.23 Electrical Lockout (Cont'd)	.3	Keep the documents and lockout tags at the site and list in a logbook for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.
1.24 Overloading	.1	Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.
1.25 Falsework	.1	Design and construct falsework in accordance with CSA S269.1.
1.26 Scaffolding	.1	Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA S269.2, CSA Z797 and B.C Occupational Health and Safety Regulations (as amended).
1.27 Confined Spaces	.1	Carry out work in compliance with current Provincial/Territorial regulations.
1.28 Devices	.1	Use powder-actuated devices in accordance with ANSI A10.3 (as amended) only after receipt of written permission from the Departmental Representative.
1.29 Fire Safety and Hot Work	.1	Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.
	.2	Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.
	.3	Hot work permits are a mandatory requirement for any hot work activities.

1.30 Fire Safety Requirements

.1 Store oily/paint-soaked waste products, empty containers and materials subjected to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada (as amended).

.3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from Departmental Representative is required prior to any gas or diesel tank being brought onto the work site.

1.31 Fire Protection and Alarm System

.1 Fire protection and alarm systems shall not be:
- .1 Obstructed.
- .2 Shut off.
- .3 Left inactive at the end of a working day or shift.

.2 Do not use fire hydrants, standpipes or hose systems for purposes other than firefighting.

.3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

1.32 Unforeseen Hazards

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.33 Posted Documents

.1 Post legible versions of the following documents on site:
- .1 Site Specific Safety Plan (SSSP) or Health and Safety Plan (HASP).
- .2 Sequence of work.
- .3 Emergency procedures.
- .4 Site drawings showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
- .5 Notice of Project.

1.33 Posted Documents (Cont'd)

.1 (Cont'd)

.6 Floor plans or site plans. Must be posted in a non-inmate access area and locked up when not being used.

.7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.

.8 Workplace Hazardous Materials Information System (WHMIS 2015) documents.

.9 Material Safety Data Sheets (SDS).

.10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

.11 All Hazardous Material and Substance Reports including Lab Analysis.

.2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

.3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.34 Meetings

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.35 Correction of Non-Compliance

.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/Subcontractors will be responsible for any costs arising from such a "stop work order".

1.36 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Related Sections

.2 Definitions

.3 Measurement Procedures

.4 Regulatory Overview

.5 Submittals

.6 Environmental Effects Evaluation

.7 Site Access and Parking

.8 Protection Work Limits

.9 Erosion Control

.10 Pollution Control

.11 Equipment Maintenance, Fueling and Operation

.12 Operation and Equipment

.13 Managing Invasive Plant Vegetation

.14 Fire Prevention and Control

.15 Wildlife

.16 Relics and Antiquities

.17 Waste Materials Storage and Removal

.18 Wastewater Discharge Criteria

.19 Camp Wastewater Discharge Criteria

1.1 Section Includes (Cont'd)

.20 Drainage

.21 Site Cleaning and Plant Protection

.22 Blasting

.23 Environmental Protection Supplies

.24 Notification

.25 Environmental Monitoring

1.2 Related Sections

.1 Section 01 33 00 - Submittal Procedures

.2 Section 02 61 33 - Hazardous Waste Materials

1.3 Definition

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

.3 Environmental Protection Plan: is prepared by Contractor and describes in writing all the environmental protection and mitigation measures that will be applied throughout the life of the Project by the Contractor to avoid or minimize the potential effects on the environment associated with the Project.

.4 Wetted Perimeter: area of stream where water is currently running or pooled.

1.3 Definition (Cont'd)

.5 In-stream Work: any work performed below the high-water mark, either within or above the Wetted Perimeter of any Fisheries Sensitive Zone.

.6 Fisheries Sensitive Zone: in-stream aquatic habitats and out of stream habitat features such as side channels, wetlands, and riparian areas.

.7 Invasive plants: are any alien plant species that have the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems. Invasive plants have the capacity to establish quickly and easily on both disturbed and un-disturbed sites, and can cause widespread negative economic, social and environmental impacts.

.8 Noxious weeds: are invasive plants that have been designated under the BC Weed Control Act. This legislation imposes a duty on all land occupiers to control a set list of identified invasive plants. See www.agf.gov.bc.ca/cropprot/noxious.html.

.9 Riparian area - for a stream, the 30m strip on both sides of the stream, measured from the high water mark, (b) for a ravine less than 60 m wide, a strip on both sides of the steam measured from the high water mark to a point that is 30 m beyond the top of the ravine bank, and for a ravine 60 m wide or greater, a strip on both sides of the stream measured from the high water mark to a point that is 10 m beyond the top of the ravine bank (Riparian Areas Regulation).

.10 Species at risk: a species that has been defined as at risk [of extirpation] by either the federal or provincial government.

.11 Timing windows: periods when human activities are least likely to cause damage to species and ecosystems.

.12 Culturally Modified Trees (CMTs): a CMT is a tree that has been altered by aboriginal people as part of their traditional use of the forest. For more information please see the Handbook for the Identification and Recording of Culturally Modified Trees prepared by the Archaeology Branch B.C. Ministry of Business, Tourism and Culture.

1.3 Definition (Cont'd)

.12 (Cont'd)

.1 Qualified Environmental Professional (QEP): Individuals that may act as QEPs under the Riparian Areas Protection Regulation are defined under Section 21 of the regulation. The QEP must be acting under their professional associations code of ethics and subject to the organizations disciplinary action. QEPs may hold the following designations: Agrologist, Applied technologist or technician, Professional biologist, Professional engineer, Professional forester, Professional geoscientist or Registered forest technologist. QEPs can conduct assessments as individuals or together with other qualified environmental professionals. They must have an area of expertise that is recognized in the regulation as one that is acceptable for the purpose of providing all or part of an assessment report for the particular development proposal that is being assessed. They will only be considered a QEP for that portion of the assessment that is within their area of expertise, as identified in the regulation.

1.4 Measurement Procedures

.1 Preparation and implementation of the Environmental Protection Plan (EPP) in accordance with this Section 01 35 43 - Environmental Protection. Payment will be in accordance with Section 01 29 01.

1.5 Regulatory Overview

.1 PSPC considers this project to be emergency work required to protect critical infrastructure and public safety. A notification will be sent to The Department of Fisheries and Oceans and the BC Ministry of Environment using the Environmental Overview Assessment (EOA) and Drawings for each site provided with this document. The Contractor shall review the EOAs and comply with all mitigation measures. The Contractor will be required to work under the emergency work order of permitting is not received before the start of construction.

.2 Comply with all applicable environmental laws, regulations and requirements of Federal, Provincial, and other regional authorities, and acquire and comply with such permits, approvals and authorizations as may be required.

.3 Comply with and be subject to those permits and approvals obtained from Departmental Representative to conduct the Work.

1.5 Regulatory Overview (Cont'd)

.4 Pay specific attention to the most current version of the Migratory Birds Convention Act and BMPs surrounding species at risk within project limits.

.5 Pay specific attention to the most current version of the provincial BC guidelines under Northeast Region: Terms and Conditions and Instream Timing Windows.

.6 Pay specific attention to most current version of the provincial BC ENV guidelines in Standards and Best Practices for the protection of Caribou, birds, bats and herptiles.

.7 Pay specific attention to most current version of the ENV Develop with Care Northeast Region Guidelines.

.8 Where works are anticipated in proximity to watercourses, pay specific attention to the most current version of the BC Water Quality Guidelines for the protection of Aquatic Life.

1.6 Submittals

.1 The Contractor is required to prepare an Environmental Protection Plan (EPP) in accordance with Section 01 33 00 - Submittal Procedures. The EPP should include all relevant environmental impacts/issues at the site as indicated by the completion of the EPP Checklist. Prior to commencing construction activities or delivery of materials to site, submit the EPP (See Appendices for Checklist) for review and approval by the Departmental Representative. The EPP will require the Contractor to carefully think through the entire project, including identifying what activities as works will be occurring, both generally and at specific sites, and by what methods. The Environmental Protection Plan shall be completed by a P.Biol or RPBio, or other qualified professional, and shall, at a minimum include the following:

- .1 The specifics of a detailed monitoring program. This includes details and rational concerning sampling locations, timing, duration, and methods, and identification of the person(s) who will be carrying out the monitoring program.
- .2 The process and protocol for ensuring that supervisors and individual staff employed by the Contractor are very clear on which environmental standards need to be achieved, how they will be achieved, and establishing how the Contractor will ensure that this is successfully occurring.

1.6 Submittals (Cont'd)

.1 (Cont'd)

.3 Erosion, drainage, and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with the requirements of the applicable ENV Approval or Notification for instream work or under ENV guidelines, and all other applicable regulations including the requirements of these specifications.

.4 Drawings should show locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of any excess or spoil materials including methods to control runoff and to contain materials on-site.

.5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.

.6 Winter shutdown plan details and procedures for each site.

.7 Water Diversion Plan if required for the Work.

.8 Site Restoration Plan.

.9 Spill Control and Response Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.12 Invasive Plants Management Plan that limits the introduction of invasive plant via seed or runners, provides early detection and eradication of small patches of invasive plants, maintains desired plant communities through good management, the revegetating disturbed sites with desired plants and, Evaluates the effectiveness of prevention efforts and adapting plans for the following year.

.13 Outline the avoidance, mitigate measures and Best Management Practices which the Contractor will undertake and implement to ensure compliance with the environmental regulations applicable to the project.

1.6 Submittals (Cont'd)

.1 (Cont'd)

.14 The procedures for stopping the work and implementing changes to the construction methods should the Contractor not be achieving the environmental requirements as outlined in these specifications.

.15 The procedures for stopping work should the Contractor encounter archaeological anomalies or human remains.

.2 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.7 Environmental Effect Evaluation

.1 N/A.

1.8 Site Access and Parking

.1 The Contractor shall review both short and long-term access requirements with the Departmental Representative, both at the start-up and on an on-going basis. In consultation with the Departmental Representative, the contractor shall formulate an agreement for worker transportation to and from the work site and where workers shall park their private vehicles. Generally, personal vehicles shall be parked at least 15 meters 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.

.3 Access through the west side channel to the pier location shall use non-erodible materials that will not harm the aquatic environment, and that can be completely removed after construction. Equipment shall not cross through any un-isolated or unprotected watercourse.

1.9 Protection of Work Limits

.1 The Contractor shall include in the Environmental Protection Plan (EPP) details on the work limits, how these 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.

1.10 Erosion Control

.1 Erosion control measures that prevent sediment from entering any waterway, water body or wetland in the vicinity of the construction site are a critical element of the project and shall be implemented by the Contractor.

.2 If winter shutdown is required erosion control shall be in place before the site is shut down to prevent erosion in the spring.

.3 All applicable on-site sediment control measures shall be constructed and functional prior to initiating activities associated with the construction activities. The Contractor shall prepare an Erosion Control Plan, to be part of the EPP, to the satisfaction of the Departmental Representative.

.4 The regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. If the design of the control measures is not functioning effectively, they are to be replaced. The Departmental Representative will monitor the Contractors erosion control performance.

.5 Erosion control measures must be in compliance with both Federal and Provincial legislation. Contractors should be referencing the provincial ENV Standards and Best Practices for the protection of Caribou, birds and bats.

1.11 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 meters to any surface water.

1.11 Pollution Control (Cont'd)

.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 in accordance with all applicable federal and provincial legislation. The EPP shall include a list of products and materials to be used or brought to the construction site that are considered or defined as hazardous or toxic to the environment. Such products include, but are not limited to, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement and sand blasting agents.

.3 The containment, storage, security, handling, use, unique spill response requirements and disposal of empty containers, surplus product or waste generated in the use of any hazardous or toxic products shall be in accordance with all applicable federal and provincial legislation. Hazardous products shall be stored no closer than 100 meters from any surface water.

.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. If fuel tanks larger than 250L are present within a berm, the contained area should have a holding capacity equal to 125% of the capacity of the largest tank. 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, bridge decks and on-site work such as rock drilling and blasting by methods that are approved by the Departmental Representative. The contractor will install a catchment system so debris from barrier removal and replacement is captured before entering the watercourse.

.6 The Contractor shall provide industry approved spill kits, to the satisfaction of the Departmental Representative, 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 Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in its use.

1.11 Pollution Control (Cont'd)

.7 Storage and maintenance facilities should have Medical Safety Data Sheets (MSDS) for any hazardous substances, emergency contact list and emergency response and spill-reporting procedures.

.8 Timely and effective actions shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. The Departmental Representative and environmental monitor shall be notified immediately of any spill as well as the Provincial Emergency Program (1-800-663-3456) and any other provincial authorities. Basic instructions and phone numbers shall be part of the Contractors EPP.

.9 In the event of a major spill, the Contractor shall prioritize the cleanup and all other work shall be stopped, where appropriate, and personnel devoted to spill containment and clean up as quick as possible.

.10 The costs involved in a major spill incident (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 pre-spill condition to the satisfaction of the Departmental Representative and all relevant inspection agencies (ENV/DFO authorities).

1.12 Equipment Maintenance, Fueling and Operation

.1 The Contractor shall ensure that all soil, seeds and any debris attached to construction equipment to be used on the project site shall be removed (e.g. power washing, wheel wash etc.) before delivery to the work site.

.2 Equipment fuelling sites will be identified by the Contractor to the satisfaction of the Departmental Representative. Any fuelling closer than 100 meters to any surface water (streams, wetlands, water bodies or watercourses) including above waterbodies shall require discussion and prior agreement with the Departmental Representative.

.3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than 30 meters from any surface water. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain a presence at with immediate attention to the fuelling operations.

1.12 Equipment Maintenance, Fueling and Operation (Cont'd)

.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 1.11.4 of Pollution Control.

.5 Equipment use on the project shall be fuelled with E10, and low sulphur diesel fuels at only approved areas, and shall conform to local emission requirements. Equipment should also only use biodegradable hydraulic fluid; The Contractor is to ensure that unnecessary idling of the vehicles is avoided.

.6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations satisfactory to the Departmental Representative. Waste lubrication product (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. or anywhere within the work area.

.7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working condition. Any equipment that develops a leak should be immediately removed and not allowed to work within or above any watercourses. Before commencing work, all equipment should be steam-cleaned to remove oil, grease and other substances deleterious to aquatic life.

.8 Equipment left on-Site overnight should be equipped with a drip tray.

.9 Fuel containers and lubricant products shall be stored only in secure locations to the satisfaction of the Departmental Representative. Fuel tanks or other potential deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals when left overnight. Alternatively, the Contractor may hire a security person employed to prevent vandalism.

1.13 Operation of Equipment

.1 Equipment movements shall be restricted to the work limits. The work limits shall be identified by stake and ribbon or other methods to the satisfaction of the Departmental Representative.

1.13 Operation of Equipment (Cont'd)

.2 For Liard River, no machinery will enter, work in or cross over streams, rivers, wetlands, water bodies or watercourse, nor damage aquatic and riparian habitat or trees and plant communities.

.3 Where construction activities require working close to surface water, the Contractor is required to describe measures to be employed to ensure fugitive materials (e.g. rocks, soil, branches) and especially deleterious substances (e.g. chemicals) does not enter any surface water areas.

.4 The Contractor shall instruct workers to prevent pushing, placement, raveling, storage or stockpiling of any materials (e.g. slash, rock, fill or top soils) in the trees bordering the right-of-way or into surface water.

.5 When, in the opinion of PSPC, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond the designated work area, the Contractor shall be responsible, at his or her expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc. to the satisfaction of the Departmental Representative.

.6 Restrict vehicle movements to the work limits.

.7 Workers vehicles are to remain within the construction footprint.

1.14 Managing Invasive Plant Vegetation

.1 Keep equipment clean and avoid parking, turning around or staging equipment in known invasive species infested areas, or mow prior to use that will require addressing in an invasive plant management plan provided by the contractor and approved by the QEP.

.2 Wash equipment prior to mobilization to site.

.3 Minimize unnecessary disturbance of roadside aggregates or soil, and retain desirable roadside vegetation whenever possible.

.4 Where possible, begin mowing or brushing in invasive plant free areas and end in infested areas.

.5 Where possible, use only clean fill material from an invasive plant free source.

1.14 Managing Invasive Plant Vegetation (Cont'd)

.6 Whenever possible, re-seed with grass mixtures that are free of weeds, locally adapted, non-invasive, and quick to establish. Spread seed in the early spring or late fall to ensure successful establishment.

.7 Evaluate the effectiveness of prevention efforts and adapting plans for the following year.

1.15 Fire Prevention and Control

.1 A fire extinguisher shall be carried and available for use on each machine and at locations within the project footprint in the event of fire. Basic firefighting equipment recommended (e.g. a water truck; minimum 2276 litres with 150m of fire hose and a pump capable of producing 172.3 kPa 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 Contractors staff. Contactors staff shall receive basic training in early response to wildfire events during the environmental briefing.

.2 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. An area, sufficiently away from any flammable materials, shall be designated as the smoking area.

.4 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. The Departmental Representative shall be notified of any fire immediately as well as the applicable Provincial Authorities. Basic instruction and phone numbers will be provided on-site by the Contractor and will be discussed in the project start-up meeting.

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

.6 Where fires or burning is permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved. Restore, clean and return to new condition stained or damaged Work.

.7 Provide supervision, attendance and fire protection measures as directed.

1.16 Wildlife

.1 Avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from bears, cougars, wolves, elk, buffalo or moose that display aggressive behavior or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.

.2 Notify the Departmental Representative immediately about dens, litters, nests, roosts, carcasses (road kills), bear activity or encounters on or around the site or crew accommodations. Other wildlife related encounters are to be reported within 24 hours.

.3 Due to Project location and bridge structures, there is potential for various bird species to visit the site and use the bridge or surrounding area as a nesting site. Provincial Wildlife Act and all amendments need to be followed and reviewed. By default, protection of nests includes the protection of the trees and the bridge (or structure) itself containing the nest. The Provincial Wildlife Act protects all active nests during the breeding season which can begin in February through to August 15. The breeding bird window for the project area is referred to nesting zone B6 starting late April to mid-August and should be confirmed with local regulators before scheduling Project activities.

.4 For the protection of birds and bats, prior to Project activities commencing, a Qualified Environmental Professional (QEP) should determine as to whether or not the bridge is occupied by either bats or birds. If confirmed by a QEP, active nests should have a buffer zone applied by the QEP with a corresponding management plan.

.5 Within the EPP there should guidance documents, BMPs guidelines and mitigation measures to avoid death of fish or the harmful alteration, disruption or destruction of fish habitat (HADD).

1.17 Relics and Antiquities

.1 Artifacts, relics, antiquities, and items of historical interest such as cornerstones, commemorative plaques, inscribed tablets and any objects found on the work site that may be considered artifacts shall be reported to the Departmental Representative immediately. The Contractor and workers shall wait for instruction before proceeding with their work.

1.17 Relics and Antiquities (Cont'd)

.2 All historical or archaeological objects found on the Project site are protected under Federal and Provincial Acts and regulations. The Contractor and workers shall protect any articles found and request direction from the Departmental Representative.

1.18 Waste Materials Storage and Removal

.1 The Contractor and workers shall dispose of hazardous wastes in conformance with the applicable federal and provincial regulations and should be part of the EPP.

.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. 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 work area.

.4 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials where possible.

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

1.19 Wastewater Discharge Criteria

.1 Any waste water discharged to the ground will conform to the discharge requirements set out in the provincial Water Act, or per any Permit obtained for this Project. Any suspect contaminated wastewater or groundwater should be contained and tested for potential contaminants to determine appropriate measures of discharge or removal.

.2 Contractor must obtain approval from the provincial Water Act Officer prior to discharging any treated wastewater.

1.20 Camp Wastewater Discharge Criteria

.1 Camp wastewater will be released onto the ground at a location that is a minimum of 30 meters from natural drainage courses and 100 meters from fish bearing waters and conform to the discharge requirements set out in the provincial Water Act or applicable Permits.

.2 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.

.3 Treat all camp wastewater to conform to the discharge requirements set out in the Water Act Permit.

.4 No direct discharge is allowed to wetland or surface waters.

.5 Contractor must obtain approval from the Water Act Officer prior to discharging treated wastewater.

1.21 Drainage and Disposal

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water. Management of drainage should be part of the EPP.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements such as the provincial Water Act.

.4 Where required, water quality should be tested for potential contaminants (turbidity) and the results compared to the BC Water quality Guidelines for aquatic life.

.5 Provide an erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

1.21 Drainage and Pumping (Cont'd)

.6 Submit an Erosion, Sediment and Drainage Control Plan to Departmental Representative for review and approval prior to commencing Work in fisheries sensitive areas or in areas that may affect fisheries sensitive areas and specifically address the protection of water bodies, water courses, and the following:

- .1 Details of grading Work to prevent surface drainage into or out of Work areas.
- .2 Details of erosion control works and materials to be used, including the deployment of silt fencing, potential bridge netting and other relevant ESC during construction and excavation activities.
- .3 Details of isolation procedures and methods for instream work. Use non-erodable materials for isolation that will not harm the aquatic environment, and that can be completely removed after construction.
- .4 Work Schedule including the sequence and duration of all related Work activities.
- .5 The treatment of site runoff to prevent siltation of watercourses.
- .6 Dewatering procedures for excavated materials including silt removal procedures prior to discharge.
- .7 Stabilizing procedures during excavation.
- .8 Maintenance of filters and sedimentation traps.

.7 Any dewatering activities will be released onto the ground at a location that is a minimum of 30 meters from natural drainage courses and 100 meters from fish bearing waters.

.8 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.

1.22 Site Clearing and Plant Protection

.1 Protect trees and plants on site and adjacent properties where indicated.

.2 Wrap in burlap, trees and shrubs adjacent to construction Work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

1.22 Site Clearing and Plant Protection (Cont'd)

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Departmental Representative.

.6 Vegetation clearing should be conducted outside of the least-risk timing window for nesting birds , as per federal Nesting Zone B6.

.7 The Contractor should be aware that BC has culturally modified trees (CMTs) that are protected under the Heritage Act. If a CMT is encountered, stop work immediately and contact the Departmental Representative.

1.23 Environmental Protection Supplies

.1 Comply with federal and provincial fisheries and environmental protection legislation, including preventing the loss or destruction of fish habitat, and minimizing the impact of sedimentation, siltation or otherwise causing a degradation in water quality.

.2 Provide a minimum of 30 m or more and as required of polypropylene silt fence (typical height of 0.9 m) and the necessary stakes for installation. This will be used as necessary to prevent sediment transport into water bodies.

.3 Provide a minimum of 50 lineal meters or more and as required of 200 mm diameter hydrophobic, sorbent booms. This will be used as necessary to prevent the migration of hydrocarbons.

.4 Supply, transport, install and maintain erosion, sediment and drainage controls necessary to complete the Work in accordance with the requirements of Departmental Representative.

.5 At the completion of construction, dispose of used silt fence off-site as non-Hazardous Waste. Dispose of used absorbent boom in accordance with Section 02 61 33 - Hazardous Waste Material.

.6 Unused Erosion, Sediment and Drainage Control supplies will remain the property of Departmental Representative until the completion of the Contract.

1.23 Environmental Protection Supplies (Cont'd)

.7 Provide inventory of environmental protection supplies prior to mobilization

1.24 Notification

.1 Departmental Representative will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, etc.

.2 Contractor: after receipt of such notice, shall inform Departmental Representative of proposed corrective action and take such action for 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.

1.25 Environmental Monitoring

.1 At a minimum the environmental monitoring shall be completed by P.Biol, RPBio, or Qualified Environmental Professional (QEP). If a QEP completes the monitoring, the QEP must work under the direction of the P.Biol or RPBio who completes the Environmental Protection Plan.

.2 The monitoring program must be anticipatory and responsive to construction practices or environmental changes, reflecting the site-specific conditions, level of sensitivity of the receiving environment, potential adverse effects, and level of environmental risk. Submitted documents regarding the proposed monitoring program should clearly identify how monitoring will adhere to this approach.

.3 The monitoring program shall satisfy all regulatory requirements and terms of these specifications. The onus is on the Contractor to monitor and ensure compliance, to identify arising problems, and to subsequently take responsibility and all necessary measures in response.

END OF SECTION

PART 1 - GENERAL

1.1 Quality Control Plan

.1 Prepare and submit to Departmental Representative for review and approval a Quality Control Plan in accordance with Section 01 33 00 - Submittal Procedures, prior to project startup.

1.2 Basis of Payment

.1 No separate payment will be made for quality assurance and testing. Include quality assurance and testing in all work as part of total contract amount.

1.3 Inspection

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

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

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

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

1.4 Independent Inspection Agencies

.1 Appoint and pay for services of third-party Independent Quality Control and Quality Assurance testing laboratory and field staff including as follows:

1.4 Independent Inspection Agencies (Cont'd)

.1 (Cont'd)

.1 Where specified in the text of these specifications, including but not limited to:

.2 Onsite and laboratory testing.

.3 Inspection and testing required by laws, ordinances, rules, regulations, or orders of public authorities.

.4 Inspection and testing performed exclusively for Contractor's convenience.

.5 Mill tests and certificates of compliance.

.6 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.

.7 Additional tests specified in the following paragraph.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

.3 Provide equipment and access as required for executing inspection and testing by appointed agencies.

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

.5 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 Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.5 Access to Work

.1 Allow inspection/testing agencies access to Work and off-site manufacturing and fabrication plants.

.2 Cooperate to provide reasonable facilities for such access.

1.6 Procedures

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

1.6 Procedures (Cont'd)

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials onsite. Provide sufficient space to store test samples.

1.7 Rejected Work Evaluation

.1 Remove defective Work, whether result of poor workmanship, use of defective products, or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

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

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

1.8 Reports

.1 Submit 4 copies of inspection and test reports to Departmental Representative with all progress reports or, generally, as reports become available.

.2 Provide copies to Subcontractor of Work being inspected or tested and to manufacturer or fabricator of material being inspected or tested.

1.9 Test

.1 Submit all test certificates as required of specification Sections.

1.10 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Temporary utilities.

1.2 Installation and Removal

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

.2 Remove from site all such work after use.

1.3 Water Supply

.1 Provide continuous temporary supply of potable water for construction use, if applicable.

.2 Remove or decommission temporary water supply facilities upon completion of project.

1.4 Sanitary Facilities

.1 Provide sanitary facilities for construction use.

.2 Remove or decommission temporary sanitary facilities upon completion of project.

1.5 Temporary Power and Light

.1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools and for construction use.

.2 Arrange for connection with appropriate utility company. Pay all costs for installation maintenance and removal.

.3 Provide and maintain temporary lighting throughout project, if applicable.

1.6 Temporary Communication Facilities

.1 Provide and pay for temporary telephone necessary for own use.

1.7 Fire Protection

.1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations, and bylaws.

.2 Burning rubbish and construction waste materials is not permitted onsite.

1.8 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Construction aids.

.2 Office and sheds.

.3 Parking.

.4 Project Identification.

1.2 Installation and Removal

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from all sites all such facilities after use.

1.3 Scaffolding

.1 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, and temporary stairs as necessary to carry out Work.

1.4 Hoisting

.1 Provide, operate, and maintain hoists and cranes required for moving of workers, materials, and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists and cranes shall be operated by qualified operators.

1.5 Site Storage/Loading

.1 Confine Work and operations of employees to only that which is required by the Contract Documents.

.2 Do not unreasonably encumber premises with products.

1.5 Site Storage/Loading (Cont'd)

.3 Do not load or permit to load any part of Work with a weight or force that will endanger the Work. Special consideration & planning is required so that the posted limit on the existing bridge is not exceeded and that the maximum loads on the new bridge as specified in the Contract Documents is not exceeded.

1.6 Construction Access and Parking

.1 Parking will be permitted onsite provided it does not impede public traffic.

.2 Provide and maintain adequate access to project site.

.3 Build and maintain temporary roads as required to complete the work.

.4 If authorized to use existing roads for access to project sites, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads. Provide snow removal within the project limits during period of Work.

1.7 Sanitary Facilities

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

.2 Post notices and take such precautions as required by local health authorities.

1.8 Construction Signage

.1 Direct requests for approval to erect a Consultant/Contractor signboard to Departmental Representative. Wording shall be in both official languages.

.2 Signs and notices for health, safety, traffic control, instruction, etc. shall be in both official languages. See Sections 01 35 33 - Health and Safety, and 01 35 00 - Traffic Control, of these Specifications for more information.

.3 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

1.9 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 References.

.2 Requirements.

.3 Submittals.

.4 Temporary Access Roads.

.5 Temporary Staging Area.

.6 Traffic Control.

.7 Measurement and Payment.

1.2 References

.1 BC Ministry of Transportation and Infrastructure:
- .1 2020 Standard Specifications for Highway Construction.
- .2 2020 Traffic Management Manual for Work on Roadways.

1.3 Requirements

.1 Section 01 55 00 addresses general requirements for temporary vehicle movement, site access, staging area and parking not incorporated into the final or permanent work, as well as traffic control during construction. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein.

.2 During progress of the Work, make adequate provision to accommodate normal traffic along onsite roads immediately adjacent to or crossing the Works so as to minimize inconvenience to site operations.

.3 Give minimum 48 hours notice or as otherwise required by Departmental Representative to local police, fire departments, emergency services, and site operations staff prior to beginning construction on roadways and comply in all respects with their requirements.

1.3 Requirements (Cont'd)

.4 Inform Departmental Representative where access is affected at least 24 hours in advance of proposed road closures.

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

1.4 Submittals

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

.2 Contractor to submit a Traffic Management Plan and a Construction Staging Plan to the Departmental Representative for review and approval prior to construction. Both shall conform to the specifications listed in Section 194 of BC MoT's Standard Specifications for Highway Construction.

1.5 Temporary Parking

.1 Parking is permitted within the contractor's work area.

.2 Parking for off-hour vehicles area allowed within the temporary staging area.

1.6 Traffic Control

.1 Comply with requirements of the "Traffic Control Manual for Work on Roadways", published by the British Columbia Ministry of Transportation, for regulation of vehicle and pedestrian traffic or use of roadways upon or over which it is necessary to carry out work or haul materials or equipment.

.2 Regulate traffic in general accordance with requirements for uninterrupted access to all parts of this site except where specified otherwise and in compliance with specific requirements stipulated herein.

.3 Provide and maintain access to corridors specified on Contract Drawings or required by Departmental Representative.

1.6 Traffic Control (Cont'd)

.4 Single lane alternating traffic (SLAT) will be permitted. Do not close any lanes of road without prior approval of the Departmental Representative. Before re-routing traffic erect suitable signs and devices as approved by the Departmental Representative. Ensure a smooth riding surface during work.

.5 Keep travelled way well graded, free of potholes and of sufficient width that required number of lanes of traffic may pass.

.6 When directed by Departmental Representative, provide well graded, graveled detours or temporary roads to facilitate passage of traffic around restricted construction area. Provide and maintain signs and lights and maintain roadway.

.7 When working on travelled way:

- .1 Place equipment in such position as to present a minimum of interference and hazard to the travelling public.
- .2 Keep equipment units as close together as working conditions will permit and preferably on same side of travelled way.
- .3 Do not leave equipment on travelled way overnight.

.8 Traffic Control Informational and Warning Devices:

- .1 Meet with Departmental Representative prior to commencement of work to prepare list of signs and other devices required for project.
- .2 Provide and maintain signs and other devices required to indicate construction activities or other temporary and unusual conditions resulting from project work which may require road user response.
- .3 Supply and erect signs, delineators, barricades and other miscellaneous warning devices in accordance with Departmental Representative requirements.
- .4 Place signs and other devices in additional locations as appropriate or as directed by the Departmental Representative.
- .5 Continually maintain traffic control devices in use by:
  - .1 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
  - .2 Removing or covering signs which do not apply to conditions existing from day to day.

.9 Control of Traffic Using Flaggers:

1.6 Traffic Control (Cont'd)

.9 (Cont'd)

.1 Provide flag persons, trained and properly equipped for the following situations:

.1 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic signal system is not in use.

.2 When workers or equipment are employed on travelled way.

.3 Where temporary protection is required while other traffic control devices are being erected or taken down.

.4 For emergency protection when other traffic control devices are not readily available.

.5 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

.10 Provide and maintain suitable detours or temporary access routes for pedestrian traffic, complete with suitable warning and advisory signs.

.11 Maintain existing conditions for traffic throughout period of contract expect 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 may be restricted.

.12 The Category 2 Traffic Control Plan shall be stamped by a Professional Engineer registered in the province of British Columbia.

.13 All traffic management for work zones shall conform to "Section 194 - Traffic Management for Work Zones" as specified in BC MoT's Standard Specifications for Highway Construction.

1.7 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Barriers.

.2 Environmental Controls.

.3 Traffic Controls.

1.2 Installation and Removal

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

.2 Remove from all sites all such work after use.

1.3 Protection for Trees

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

.2 Replace any trees designated for saving in kind that are damaged during construction.

1.4 Guard Rails and Barricades

.1 Provide as required by governing authorities.

1.5 Dust Tight Screens

.1 Provide dust tight screens partitions to localize dust generating activities, and for protection of workers, finished areas of Work, and public.

.2 Maintain and relocate protection until such work is complete.

1.6 Access to Site

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

1.7 Public Traffic Flow

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

1.8 Fire Routes

.1 Maintain access to property for use by emergency response vehicles.

1.9 Protection for Off-site and Public Property

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.10 Protection of Structure Finishes

.1 Provide protection for finished and partially finished structure finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.11 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Product/Material and Equipment

.1 Use NEW products/material and equipment unless otherwise specified.

.2 Use products of one manufacturer for material and equipment of the same type or classification unless otherwise specified.

.3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.4 Remove and replace damage caused to any existing product or part of infrastructure at own expense and to satisfaction of Departmental Representative.

.5 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.

.6 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in Work.

.7 Prevent damage, adulteration, and soiling of products during delivery, handling, and storage. Immediately remove rejected products from site.

.8 Store products in accordance with suppliers' instructions.

.9 Store products subject to damage from weather in weatherproof enclosures.

.10 Touch-up damaged finished surfaces to Departmental Representative's satisfaction.

.11 Remove and replace damaged products during installation at own expense and to satisfaction of Departmental Representative.

1.2 Quality of Products

.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 will be rejected regardless of previous inspections.

- .1 Inspection does not relieve responsibility, but is precaution against oversight or error.
- .2 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Retain purchase orders, invoices, and other documents to prove that all products utilized in this Contract meet the requirements of the specifications. Produce documents when requested by the Departmental Representative.

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

.5 Unless otherwise indicated in the Specifications, maintain uniformity of manufacture for any particular or like item throughout the site.

1.3 Availability of Products

.1 Immediately upon 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 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 the work.

1.3 Availability of Products (Cont'd)

.3 In 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.

1.4 Manufacturer's Instruction

.1 Unless otherwise indicated in Specifications, install or erect products in accordance with manufacturer's instructions.

.1 Do not rely on labels or enclosures provided with products.

.2 Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between Specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.5 Contractor

.1 Products are specified by "Prescriptive" specifications: select any product meeting or exceeding specifications.

.2 Products specified under "Acceptable Products": select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.

.3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.

.4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Products. Alternative products may be considered provided full technical data is received in writing by Departmental Representative.

1.5 Contractor (Cont'd)

.5 When products are specified by a referenced standard or by Performance specifications, upon request of Departmental Representative obtain from manufacturer an independent laboratory report showing that the product meets or exceeds the specified requirements.

1.6 Substitution After Contract Award

.1 No substitutions are permitted without prior written approval of the Departmental Representative.

.2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution.

.3 Proposals will be considered by the Departmental Representative if:

- .1 products selected by tenderer from those specified are not available;
- .2 delivery date of products selected from those specified would unduly delay completion of Contract, or
- .3 alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.

.4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the Project. Pay for design or drawing changes required as result of substitution.

.5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

1.7 Transportation

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

1.8 Quality of Work

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

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

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

1.9 Coordination

.1 Ensure cooperation of workers during Work. Maintain efficient and continuous supervision.

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

1.10 Remedial Work

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

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

1.11 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

PART 2 - PRODUCTS

2.1 Acceptable Products

.1 Submit product data sheets for all manufactured products used in the Work to Departmental Representative for review in accordance with Section 01 33 00 - Submittal Procedures.

.2 Use best quality products.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Progressive cleaning.

.2 Final cleaning.

1.2 Project Cleanliness

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from sites at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials onsite.

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

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 Remove all waste products and debris.

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

1.4 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Waste Management Workplan including Waste Audit, Waste Reduction Workplan and Demolition Waste Audit.

1.2 Definitions

.1 Waste Management Coordinator (WMC): Designate individual who is in attendance onsite full-time. Designate, or have designated individuals from each Subcontractor to be responsible for waste management related to their trade and for coordinating activities with WMC.

.2 Waste Audit (WA): Relates to projected waste generation. Involves measuring and estimating quantity and composition of waste, reasons for waste generation, and operational factors that contribute to waste.

.3 Waste Reduction Workplan (WRW): Written report that addresses opportunities for reduction, reuse, or recycling of materials.

.4 Materials Source Separation Program (MSSP): consists of a series of ongoing activities to separate reusable and recyclable waste materials into material categories from other types of waste at point of generation.

1.3 Documents

.1 Maintain at the job site one copy of following documents:
.1 Waste Management Workplan.

1.4 Use of Site and Facilities

.1 Locate waste, refuse, recycling, etc. containers in locations to facilitate deposit of materials without hindering daily operations.

.2 Locate separated materials in areas which minimize material damage.

1.5 Submittal

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

1.5 Submittal (Cont'd)

.2 Prepare and submit the following submittals within 14 days of the Award of Contract:

.1 Submit 3 copies of completed Waste Management Workplan (WMW).

.3 Provide Departmental Representative with receipts indicating quantity of material delivered to landfill.

.4 Provide Departmental Representative with receipts indicating quantity and type of materials sent for recycling.

1.6 Waste Management Workplan

.1 Structure WMW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.2 Describe management of waste.

.3 Identify opportunities for reduction, reuse, and/or recycling (3Rs) of materials.

.4 Post workplan or summary where workers at site are able to review its content.

1.7 Waste Processing Sites

.1 Provide waste processing sites as applicable within the Province of British Columbia to Departmental Representative within 14 days of the Award of Contract.

1.8 Disposal of Wastes

.1 Burying of rubbish and waste materials is prohibited unless approved by Departmental Representative at off-site locations obtained by the Contractor.

.2 Burning of rubbish and waste materials is prohibited unless permitted by British Columbia Ministry of Forests. Permit to be obtained by the Contractor.

.3 Disposal of waste volatile materials, mineral spirits, oil, paint thinner, etc. into waterways or by dumping onsite is prohibited.

1.9 Storage and Handling

.1 Store, materials to be reused, recycled, and salvaged in locations obtained by the Contractor and accepted by Departmental Representative.

.2 Unless specified otherwise, materials for removal become Contractor's property.

1.10 Scheduling

.1 Coordinate work with other activities at site to ensure timely and orderly progress of the Work.

1.11 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

PART 3 - EXECUTION

2.1 Application

.1 Do work in compliance with the WMW.

.2 Implement MSSP for waste generated on Project in compliance with approved methods and as approved by Departmental Representative.

.3 Materials must be immediately separated into required categories for reuse or recycling.

.4 Materials in separated condition: collect, handle, store onsite, and transport off-site to an approved and authorized recycling facility.

.5 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

2.2 Cleaning

.1 Remove tools and waste materials on completion of work, and leave work area in clean and orderly condition.

.2 Cleanup work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

2.3 Diversion of Materials

.1 Create a list of materials to be separated from the general waste stream and stockpiled in separate containers, to the approval of the Departmental Representative and consistent with applicable fire regulations.

- .1 Mark containers.
- .2 Provide instruction on disposal practices.

.2 Onsite sale of salvaged, recovered, reusable, recyclable, etc. materials is not permitted.

PART 1 - GENERAL

1.1 Section Includes

.1 Administrative procedures preceding preliminary and final reviews of Work.

1.2 Inspection and Declaration

.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

- .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
- .2 Request Departmental Representative's Inspection.

.2 Departmental Representative's Review: Departmental Representative and Contractor will perform review of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.

.3 Completion: submit written certificate that the following have been performed:

- .1 Work has been completed and inspected for compliance with Contract Documents.
- .2 Defects have been corrected and deficiencies have been completed.
- .3 Work is complete and ready for Final Review.

.4 Final Review: when items noted above are completed, request final review of Work by Departmental Representative. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request another review.

.5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Warranty Periods: date of Departmental Representative's acceptance of submitted declaration of Substantial Performance shall be date of commencement for warranty period.

1.2 Inspection and Declaration (Cont'd)

.7 Final Payment: When Departmental Representative considers final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request final review.

.8 Payment of Holdback: After issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with General Conditions.

1.3 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 35 43 - Environmental Procedures

1.2 References

.1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92637.

.2 National Fire Code of Canada 2015.

.3 Transportation of Dangerous Goods Act (TDG Act) 1992, (T19.01).

.4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/8577, SOR/85585, SOR/85609, SOR/86526).

1.3 Definition

.1 Dangerous Goods: Product, substance, or organism that specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulation.

.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 Submit to Departmental Representative current Material Safety Data Sheet (MSDS) for each hazardous material required prior to bringing hazardous material on site.

.3 Submit hazardous materials management plan to Departmental Representative that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.5 Storage and Handling

.1 Coordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labeling 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 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.

.5 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 that 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 form storage area.

1.5 Storage and Handling (Cont'd)

.5 (Cont'd)

.8 Store hazardous materials and wastes in a manner and location that shall 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.

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

.7 Report spills or accidents immediately to Departmental Representative and the ESO. 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 this 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.

1.6 Transportation (Cont'd)

.3 (Cont'd)

.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 the Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

1.7 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Payment will be under the Lump Sum Amount for the Mobilization, Demobilization and General Conditions of Contract item and such payment shall be full compensation for all labour, equipment and materials necessary to complete the Work.

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 treatment facilities.

3.1 Disposal (Cont'd)

.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.

.6 Dispose of hazardous wastes in a timely fashion in accordance with applicable provincial regulations.

END OF SECTION

PART 1 - GENERAL

1.1 References

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM C 88/C 88M-18, Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
- .2 ASTM C 136/C 136M-19, Method for Sieve Analysis of Fine and Coarse Aggregate.
- .3 ASTM C 117-17, Test Method for Material Finer than 0.075 mm Sieve in Mineral Aggregates by Washing.
- .4 ASTM D 1557, Specification for Test Methods for Aggregate Mixtures using 10 lb (4.54 kg) Rammer and 18 inch (457 mm) Drop.
- .5 ASTM D 698-12e2, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m^3)
- .6 ASTM D 2487-17e1, Classification of Soils for Engineering Purposes (Unified Soil Classification System.
- .7 ASTM D 5434-12, Standard Guide for Field Logging of Subsurface Explorations of Soil and Rock.

.2 Canadian Standards Association (CSA International)
- .1 CSA-A23.1-19/A23.2-19, Concrete Materials and Methods of Concrete Construction.

1.2 Regulations

.1 Protect slopes and banks and perform all work in accordance with Federal, Provincial and Municipal regulations whichever is more stringent.

.2 Not later than one week before backfilling or filling, provide test results from the approved testing firm certifying the suitability of the chosen material.

.3 Do not begin backfilling or filling operations until material has been approved for use by the Departmental Representative.

.4 Not later than 48 hours before backfilling or filling with approved material, notify the Departmental Representative.

1.2 Regulations (Cont'd)

.5 Before commencing work, conduct, with the Departmental Representative, condition survey of existing structures, trees and other plants, lawns, fencing, service poles, wires, rail tracks and paving, survey benchmarks and monuments which may be affected by work.

1.3 Buried Services

.1 Before commencing work verify the location of all buried services on and adjacent to the site.

1.4 Protection

.1 Protect excavations from freezing.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative's approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage unless approved by the Departmental Representative.

.5 Protect buried services that are required to remain undisturbed.

.6 Midden shall not be disturbed without prior written approval from the Departmental Representative.

- .1 Contractor's personnel may be required to attend pre-disturbance archaeological site meeting prior to any excavation work.
- .2 Excavation work shall be carried out in concert with archaeological monitoring by specialist consultant retained by the Departmental Representative and First Nations Representative.

1.5 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 Earthworks will be considered incidental to the applicable Riprap items for each site.

PART 2 - PRODUCTS

2.1 Materials

.1 Common excavation materials from site including embankment and streambed gravel.

- .1 Furnish all necessary materials, at a minimum furnish:
- .2 6 mil minimum plastic sheeting for base of any stockpiles;
- .3 8 mil plastic sheeting for covering of contaminated soil in any stockpiles.

.2 Gravel to be composed of inert, durable material, reasonably uniform in quality and free from soft or disintegrated particles. In absence of satisfactory performance records over a five-year period for particular source of material, soundness to be tested according to ASTM test procedure C-88 or latest revised issue. Maximum weight average losses for course and fine aggregates to be 30% when magnesium sulphate is used after five cycles.

.3 All crushed gravel when tested according to ASTM C-136 and ASTM C-117, or latest revised issue, to have a generally uniform gradation and conform to following sieve must have one or more fractured faces. Determination of the Ministry of Transportation and Highways' Specification I-11, Fracture Count for Coarse Aggregate, Method "A", which determines fractured faces by count. The Plasticity Index for crushed gravel to not exceed 6.0.

.4 Native material is workable soil free of organic or foreign matter; obtained within limits of Contract may be deemed native material if it is approved by the Departmental Representative. Native material may be reused only if tested and approved by the Departmental Representative. Native material is not acceptable if it is contaminated or impracticable to control its water content or compact to specified density.

PART 3 - EXECUTION

3.1 Site

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.2 Excavation

.1 All excavated soil under this contract shall be treated as potentially contaminated soil. Excavate, handle and store excavated soil as per this Section and other related sections.

.2 Topsoil stripping

- .1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.
- .2 Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil.
- .3 Begin topsoil stripping of areas as directed by Departmental Representative after area has been cleared of brush, weeds, grasses and removed from site.
- .4 Strip topsoil to depths as directed by Departmental Representative.
  - .1 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- .5 Stockpile in locations as directed by Departmental Representative.
  - .1 Stockpile height not to exceed 2 m.
- .6 Disposal of unused topsoil is to be in an environmentally responsible manner but not used as landfill.
- .7 Protect stockpiles from contamination and compaction.

.3 Excavate as required to carry out work, in all materials met. Do not disturb soil or rock below design surfaces.

- .1 If the structure foundation becomes exposed excavation shall stop immediately. The Departmental Representative shall be contacted for direction on how to proceed.
- .2 Notify Departmental Representative when excavations are complete.

3.3 Backfilling

.1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by the Departmental Representative.

.2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.

3.3 Backfilling (Cont'd)

.3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.

.4 Compaction: place backfill and compact to following Modified Proctor densities in compliance with ASTM D 1557. (All densities in compliance with ASTM D 1557).
- .1 Slopes to minimum 95%.
- .2 Use caution in pipe zone to ensure no damage to pipe.

.5 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.

.6 Against foundations (except as applicable to trenches and under slabs and paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.

3.4 Contaminated Midden Containing Material

.1 Potentially Contaminated and Midden Containing Soil
- .1 There has been unknown contamination in the project area. The Contractor shall take appropriate measures per this Section for excavation work if contaminated soil is encountered.
- .2 Contaminated/Midden Material Removal
  - .1 Excavation
    - .1 As per direction from Departmental Representative.
  - .2 Dewatering
    - .1 Surface water shall be diverted to prevent entry into the excavation. Dewatering shall be limited to that necessary to assure adequate access, a safe excavation, prevent the spread of contamination, and to ensure that compaction requirements can be met.
  - .3 Contaminated/Midden Containing Soil Handling
    - .1 Soil Segregation
      - .1 Excavate known or suspect material and place in stockpile at storage area designated by Departmental Representative. In no case will the material be transported off site before laboratory analysis has been received and excavated materials have been characterized for disposal.
      - .2 As per direction from Departmental Representative.

3.4 Contaminated Midden Containing Material (Cont'd)

.1 (Cont'd)

.2 (Cont'd)

.2 Soil Testing

.1 Testing of excavated soil will be performed by the Contractor. Soil will be assessed for indications of contamination and will be classified as confirmed contaminated soil, special waste soil, or uncontaminated soil.

.2 The Contractor will dispose of the excavated soil material after testing is completed, according to applicable rules and regulations.

3.5 Grading

.1 Grade so that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by the Departmental Representative.

3.6 Shortage and Handling

.1 Supply all necessary fill to meet backfilling and grading requirements and with minimum and maximum rough grade variance.

.2 At Liard River, dispose of surplus aggregate material and soils off site at the Mould Creek pit at a location designated by the Departmental Representative. It is estimated that approximately 7,000 m3 of surplus material will require disposal.

.3 Dispose of waste organic material off site at a location approved by the Departmental Representative.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Geotextiles.

1.2 Measurement Procedures and Payment

.1 Installed non-woven geotextile material placed under Riprap shall be considered incidental to the supply and installation of the Riprap and no additional payment shall be made.

.2 Installed fiber rolls in accordance with Section 01 29 01 - Methods of Measurement and Payment.

1.3 Related Sections

.1 Section 31 00 99 - Earthworks for Minor Works.

.2 Section 31 37 10 - Riprap.

1.4 References

.1 American Society for Testing and Materials (ASTM).

- .1 ASTM D 4491-99a (2009), Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
- .2 ASTM D 4595-09, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method. ASTM D 4716-08, Standard Test Method for Determining the (In-Plane) Flow Rate Per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
- .3 ASTM D 4751-04, Standard Test Method for Determining Apparent Opening Size of a Geotextile.

.2 Canadian General Standards Board (CGSB).

- .1 CAN/CGSB-4.2 No. 11.2-2004, Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
- .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
  - .1 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.

1.4 References (Cont'd)

.2 (Cont'd)

.2 (Cont'd)

.2 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.

.3 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.

.4 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.

.5 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

.3 CSA International.

.1 CSA G40.20/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.4 Ontario Provincial Standard Specifications (OPSS).

.1 OPSS 1860-November 2010, Material Specification for Geotextiles.

1.5 Action and Informational Submittals

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

.2 Product Data: Submit manufacturer's instructions, printed product literature and data sheets for geotextiles and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Submit to Departmental Representative 2 copies of mill test data and certificate at least 1 weeks prior to start of Work, and in accordance with Section 01 33 00 - Submittal Procedures.

.4 If requested by the Departmental Representative, submit to Departmental Representative samples at least 1 weeks prior to beginning Work for each type of geotextile used on the project.

1.6 Delivery, Storage and Handling

.1 Deliver, store and handle in accordance with Section 01 61 10 - Product Requirements and manufacturer's specifications.

.2 Storage and Handling Requirements:

1.6 Delivery, Storage and Handling (Cont'd)

.2 (Cont'd)
- .1 Store materials in accordance with manufacturer's recommendations in clean, dry and well ventilated area.
- .2 Store and protect geotextiles from direct sunlight and UV rays.
- .3 Replace defective or damaged material with new.

.3 Packaging Waste Management: Remove for return or reuse of pallets, crates, padding and packaging materials as specified in Waste Management Plan Section and Section 01 74 19 - Waste Management and Disposal.

1.7 Measurement and Payment

.1 There will be no measurement for the work in this Section.

.2 For Racing River (km 641.1), payment will be under the Lump Sum Amount for the Riprap - Class 2000 kg Contract item placed as per the drawings.

.3 For Liard River (km 780.0), payment will be made based on unit price per cubic meters of riprap placed as per the drawings.

PART 2 - PRODUCTS

2.1 Materials

.1 Geotextile: Nonwoven synthetic fiber fabric supplied in rolls.
- .1 Should be composed of minimum 85% polypropylene by mass with inhibitors added to base plastic to resist deterioration by UV and heat exposure.

.2 Minimum physical properties for nonwoven geotextile:
- .1 Grab Strength: 650 N
- .2 Elongation (Failure): 50%
- .3 Puncture Strength: 275 N
- .4 Burst Strength: 2.1 MPa
- .5 Trapezoidal Tear: 250 N

.3 Securing pins and washers: to CSA G40.21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m2 to ASTM A 123/A 123M.

2.1 Materials (Cont'd)

.4 Factory seams: sewn in accordance with manufacturer's recommendations.

.5 Fiber roll supplied in rolls. Fiber roll must be a premanufactured roll filled with rice or wheat straw, wood excelsior, or coconut fiber. Fiber roll must be covered with biodegradable jute, sisal, or coir fiber netting secured tightly at each end and must be 200 to 250 mm in diameter and at least 1.6 kg/m. Fiber roll must have a minimum functional longevity of 1 year.

PART 3 - EXECUTION

3.1 Examination

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for geotextile material installation in accordance with manufacturer's written instructions.

- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 Installation

.1 Place geotextile free of tension stress, folds, wrinkles and creases.

.2 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.

.3 Overlap successive strips of geotextile in the direction of flow.

- .1 Minimum fabric lap:
  - .1 Non-woven geotextile: 300 mm.

.4 Pin strips of geotextile as indicated by the manufacturer.

.5 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material.

3.2 Installation (Cont'd)

.6 After installation, cover with overlying layer within 4 hours of placement.

.7 Replace damaged or deteriorated geotextile to approval of Departmental Representative.

.8 Fiber/straw rolls.

.1 Should be installed along the embankment slopes in accordance with manufactures recommendations (Alberta Transportation BMP #38) at locations shown on the drawings and as determined or staked by the Departmental Representative.

.2 The rolls shall have a diameter between 200 mm and 250 mm and be staked with 450 mm or 600 mm long wood stakes at one metre on center spacing. Rolls must be installed in a trench with a depth of 1/3 to 1/2 the diameter of the rolls and the ends of adjacent straw rolls shall be snugly abutted to each other. All areas shall be covered with topsoil prior to installing the rolls. Seeding is to be done after installation of the rolls.

3.3 Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Site Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Site Cleaning.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 Protection

.1 Vehicular traffic not permitted directly on geotextile.

.2 Riprap to be placed gently over geotextiles to prevent damage.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Riprap.

1.2 Measurement Procedures and Payment

.1 In accordance with Section 01 29 01 - Methods of Measurement and Payment.

1.3 Related Sections

.1 Section 31 00 99 - Earthworks for Minor Works.

.2 Section 31 32 19 - Geotextiles.

1.4 Waste Management and Disposal

.1 In accordance with Section 01 74 19 - Waste Management and Disposal.

.2 Divert left over geotextiles to local plastic recycling facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 Stone

.1 Rock should meet Class 2000 kg and Class 500 kg riprap requirements as per the 2020 Standard Specifications for Highway Construction, published by the British Columbia Ministry of Transportation.

.2 Stone should be hard with relative density no less than 2.65, free of seam, cracks and structural defects, and meeting the following size distribution for use intended:

.1 Gradation requirements for Class 2000 kg and Class 500 kg riprap shown on drawings.

.3 Riprap that does not meet the required specification should not be used without the written permission of the Departmental Representative.

2.2 Geotextile

.1 In accordance with Section 31 32 19 - Geotextiles.

PART 3 - EXECUTION

3.1 Materials

.1 The Contractor shall salvage all existing riprap on site that meets Class 2000 kg and Class 500 kg requirements for re-use. Salvaged riprap shall be stockpiled separately and be approved by the Departmental Representative prior to placement.

.2 For Liard River (km 780.0), there is an existing rock stockpile immidiately south of the site that shall be used as Modified Class 2000 kg Riprap and shall be installed as shown on the drawings.

3.2 Placing

.1 Where riprap is to be placed on slopes, excavate trench at toe of slope to dimensions as indicated on drawings.

.2 Fine grade area to be protected with riprap to uniform, even surface. Fill depressions with excavated material and compact to provide firm bed.

.3 Place geotextile on prepared surface in accordance with Section 31 32 19 - Geotextiles and as indicated on drawings. Avoid puncturing geotextile. Vehicular traffic over geotextile not permitted.

.4 Place riprap to thickness and details as indicated on the drawings.

.5 Place stones in manner approved by Departmental Representative to secure surface and create a stable mass.

.6 All rock shall be cleaned before installation.

.7 Riprap shall be placed carefully so that rocks do not fall into the watercourse. Any rocks that fall into the watercourse shall be left in place at the discretion of the Departmental Representative.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 Section 01 33 00 Submittal Procedures.

.2 Section 01 35 43 Environmental Procedures.

1.2 Measurement Procedures

.1 There will be no measurement for the work in this section.

1.3 Payment

.1 Payment will be included under the Unit Price amount for the Riprap - Class 2000 kg (on-site) and Class 500 kg of Contract item for Liard River (km 780.0) and such payment shall be full compensation for all preparation and finished grading.

1.4 References

.1 Agriculture and Agri-Food Canada
- .1 The Canadian System of Soil Classification, Third Edition, 1998.

.2 Canadian Council of Ministers of the Environment
- .1 PN1340-2005, Guidelines for Compost Quality.

.3 U.S. Environmental Protection Agency (EPA)/Office of Water.
- .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.5 Action and Informational Submittals

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

.2 Quality control submittals:
- .1 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in PART 2 - SOURCE QUALITY CONTROL.

1.5 Action and Informational Submittals (Cont'd)

.2 (Cont'd)

.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 Quality Assurance

.1 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 11 55 - General Instructions.

1.7 Waste Management and Disposal

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

.2 Divert unused soil amendments from landfill to official hazardous material collections site approved by Departmental Representative.

.1 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 Topsoil

.1 Topsoil for seeded areas: mixture of particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth. Re-use of stripping is expected to be adequate for topsoil placement. Importing topsoil is not anticipated to be required.

.1 Soil texture based on The Canadian System of Soil Classification, to consist of 20 to 70 % sand, minimum 7 % clay, and contain 2 to 10 % organic matter by weight.

.2 Contain no toxic elements or growth inhibiting materials.

.3 Finished surface free from:

.1 Debris and stones over 50 mm diameter.

.2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.

2.1 Topsoil (Cont'd)

.4 Consistence: friable when moist.

2.2 Soil Amendments

.1 Fertilizer:
- .1 Fertility: major soil nutrients present in following amounts:
- .2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
- .3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.
- .4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.
- .5 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
- .6 Ph value: 6.5 to 8.0.

.2 Peat moss:
- .1 Derived from partially decomposed species of Sphagnum Mosses.
- .2 Elastic and homogeneous, brown in colour.
- .3 Free of wood and deleterious material which could prohibit growth.
- .4 Shredded particle minimum size: 5 mm.

.3 Sand: washed coarse silica sand, medium to course textured.

.4 Organic matter: compost Category A, in accordance with CCME PN1340, unprocessed organic matter, such as rotted manure, hay, straw, bark residue or sawdust, meeting the organic matter, stability and contaminant requirements.

.5 Limestone:
- .1 Ground agricultural limestone.
- .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.

.6 Fertilizer: industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

2.3 Source Quality Control

.1 If required, testing of topsoil will be carried out by testing laboratory designated by Departmental Representative.

.1 Soil sampling, testing and analysis to be in accordance with Provincial standards.

PART 3 - EXECUTION

3.1 Temporary Erosion and Sediment 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 requirements of authorities having jurisdiction, sediment and erosion control drawings, sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 Preparation of Grade

.1 Verify that grades are correct.

.1 If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Departmental Representative.

.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.

.3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.

.1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.

.2 Remove debris which protrudes more than 75 mm above surface.

.3 Dispose of removed material off site.

3.2 Preparation of Grade (Cont'd)

.4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm.

.1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.3 Placing and Spreading of Topsoil/Planting Soil

.1 Place topsoil after Departmental Representative has accepted subgrade.

.2 Spread topsoil in uniform layers not exceeding 150 mm.

.3 For sodded areas keep topsoil 15 mm below finished grade.

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

3.4 Finish Grading

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

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

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

.1 Leave surfaces smooth, uniform and firm against deep foot printing.

3.5 Acceptance

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

3.6 Surplus Material

.1 Dispose of materials except topsoil not required off site.

3.7 Cleaning

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

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

END OF SECTION

PART 1 - GENERAL

1.1 Administrative Requirements

.1 Scheduling:

.1 Schedule hydraulic seeding using grass mixtures and mixtures containing Certified Canada No. 1 as per items listed below.

.1 Schedule hydraulic seeding to coincide with preparation of soil surface.

.2 All seeding shall be done during calm weather and on soil that is free of frost, snow and standing water, when seasonal conditions are likely to ensure successful germination and continued growth of all species of seed in the grass mix.

.3 Schedule hydraulic seeding using grass mixtures after frost has left ground and before June 15th or between September 1st and October 15th. Note that unanticipated variances in weather may require that alternate dates be considered.

1.2 References

.1 Canada Seed Act.

.2 British Columbia Landscape Standard, 6th edition, 2001.

1.3 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.

.2 Seed shall be packed and delivered in original containers clearing showing:

.1 Name of supplier
.2 Analysis of seed mixture
.3 Percentage of pure seed
.4 Year of production
.5 Net weight (mass)
.6 Date and location of bagging

1.4 Action and Informational Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for seed, mulch, tackifier, fertilizer, liquid soil amendments and micronutrients.

.2 Submit copies of WHMIS MSDS in accordance with Section 01 35 33 - Health and Safety Requirements 01 35 43 - Environmental Procedures.

.3 Submit in writing 7 days prior to commencing work:

.1 Volume capacity of hydraulic seeder in litres.

.2 Amount of material to be used per tank based on volume.

.3 Number of tank loads required per hectare to apply specified slurry mixture per hectare.

.4 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

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

1.5 Warranty

.1 Contractor hereby warrants that seeding will remain free of defects in accordance with General Conditions, but for 24 months.

.1 End-of-warranty inspection will be conducted by Departmental Representative.

1.6 Measurement and Payment

.1 In accordance with Section 01 29 01 - Methods of Measurement and Payment.

PART 2 - PRODUCTS

2.1 Materials

.1 Seed: "Canada pedigreed grade" in accordance with Government of Canada Seeds Act and Regulations.

2.1 Materials (Cont'd)

.1 (Cont'd)

.1 Grass seed for all seeded lawn areas shall meet the requirements of the Canada Seed Act for Certified Canada No. 1 Seed

.1 Mixture composition:

.1 30% Creeping Red Fescue
.2 20% Slender Wheatgrass
.3 10% Alsike Clover
.4 10% Timothy
.5 10% Canada Bluegrass
.6 15% Smooth Brome Grass
.7 5% Sheep Fescue

.2 Mulch: specially manufactured for use in hydraulic seeding equipment, non-toxic, water activated, green colouring, free of germination and growth inhibiting factors with following properties:

.1 Type I mulch:

.1 Made from wood cellulose fibre.
.2 Organic matter content: 95% plus or minus 0.5%.
.3 Value of pH: 6.0.
.4 Potential water absorption: 900%.

.2 Type II mulch:

.1 Made from newsprint, raw cotton fibre and straw, processed to produce fibre lengths of 15 mm minimum and 25 mm maximum. Greater proportions of ingredients to be straw.

.2 Tackifier: water soluble vegetable carbohydrate powder.

.3 Water: free of impurities that would inhibit germination and growth.

.4 Fertilizer:

.1 The type, formulation and rate of application of fertilizer shall be as recommended by the laboratory soil specialist on the basis of tests of the growing medium.

.5 Inoculants: inoculant containers to be tagged with expiry date.

PART 3 - EXECUTION

3.1 Examination

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for hydraulic seeding in accordance with manufacturer's written instructions.
  .1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 Protection of Existing Conditions

.1 Protect structures, signs, guide rails, fences, plant material, utilities and other surfaces not intended for spray.

.2 Immediately remove any material sprayed where not intended as directed by Departmental Representative.

3.3 Preparation of Surfaces

.1 Do not perform work under adverse field conditions such as wind speeds over 10 km/h, frozen ground or ground covered with snow, ice or standing water.

.2 Fine grade areas to be seeded free of humps and hollows.
  .1 Ensure areas are free of deleterious and refuse materials.

.3 Cultivated areas identified as requiring cultivation to depth of 25 mm.

.4 Ensure areas to be seeded are moist to depth of 150 mm before seeding.

.5 Obtain Departmental Representative's approval of grade and topsoil depth before starting to seed.

3.4 Preparation of Slurry

.1 Ensure seed is placed under supervision of certified Landscape Planting Supervisor.

.2 Hydraulic seeding equipment:
- .1 Slurry tank.
- .2 Agitation system for slurry to be capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and/or mechanical agitation method. Capable of seeding by 50 m hand operated hoses and appropriate nozzles.
- .3 Tank volume to be certified by certifying authority and identified by authorities "Volume Certification Plate".

.3 Apply slurry uniformly, at optimum angle of application for adherence to surfaces and germination of seed.
- .1 Using correct nozzle for application.
- .2 Using hoses for surfaces difficult to reach and to control application.

.4 Blend application 300 mm into adjacent grass areas or sodded areas to form uniform surfaces.

.5 Re-apply where application is not uniform.

.6 Remove slurry from items and areas not designated to be sprayed.

3.5 Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 35 43 - Environmental Procedures.
- .1 Leave Work area clean at end of each day.
- .2 Keep pavement and area adjacent to site clean and free from mud, dirt, and debris at all times.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 35 43 - Environmental Procedures.
- .1 Clean and reinstate areas affected by Work.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 35 43 - Environmental Procedures.
- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 Cleaning (Cont'd)

.3 (Cont'd)

.2 Divert unused fertilizer from landfill to official hazardous material collections site.

3.6 Protection

.1 Protect seeded areas from trespass until plants are established.

.2 Remove protection devices as directed by Departmental Representative.

3.7 Maintenance During Establishment Period

.1 Ensure maintenance is carried out under supervision of certified Landscape Maintenance Supervisor.

.2 Perform following operations from time of seed application until acceptance by Departmental Representative.

.3 Grass Mixture:

.1 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.

.2 Mow grass to 60 mm whenever it reaches height of 100 mm. Remove clippings which will smother grass offsite.

.3 Fertilize seeded areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles; water in well.

.4 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.

.5 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.

3.8 Acceptance

.1 Seeded areas will be accepted by Departmental Representative provided that:

.1 Plants are uniformly established. Seeded areas are free of rutted, eroded, bare or dead spots.

.2 Areas have been mown at least twice.

.3 Areas have been fertilized.

3.8 Acceptance (Cont'd)

.2 Areas seeded in fall will achieve final acceptance in following spring, one month after start of growing season provided acceptance conditions are fulfilled.

3.9 Maintenance During Warranty Period

.1 Perform following operations from time of acceptance until end of warranty period:

- .1 Repair and reseed dead or bare spots to satisfaction of Departmental Representative.
- .2 Mow areas seeded, remove clippings that will smother grassed areas, offsite.
- .3 Fertilize seeded areas in accordance with fertilizing program.

END OF SECTION