

Project No. 1932-04

SPECIFICATIONS – Issued for Tender

For:
Highway 19 Flood Damage Reinstatement
Riding Mountain National Park, MB

Date of Issue: July 25, 2022

PART 1 **GENERAL****1.1** **SEAL AND SIGNATURE**

.1

| DISCIPLINE | SEAL / SIGNATURE / DATE |
|------------|-------------------------|
| Civil | |

PART 2 **PRODUCTS****2.1** **NOT USED****PART 3** **EXECUTION****3.1** **NOT USED****END OF SECTION**

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REFERENCE DOCUMENTS

- .1 Pre-approved Routine Impact Assessments (PRIA) - Roads and Related Infrastructure (English), 2019.
- .2 Évaluation d'impact courante préapprouvée - Évaluation d'impact courante préapprouvée - ENLÈVEMENT DE LA VÉGÉTATION (French), 2019.
- .3 Riding Mountain National Park 2022 Highway 19

LIST OF DRAWINGS

| REV | DWG | TITLE | DATE |
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| 0 | C000 | COVER PAGE | 25 July, 2022 |
| 0 | C001 | PROJECT LOCATION PLAN, KEY PLAN, DRAWING INDEX & LEGEND | 25 July, 2022 |
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| 0 | C202 | TYPICAL CULVERT GRADING TIE-IN DETAILS | 25 July, 2022 |
| 0 | C301 | TYPICAL CULVERT REMOVAL ENVIRONMENTAL CONSTRUCTION STAGING CONCEPT | 25 July, 2022 |
| 0 | C302 | CHECK DAM & FISH STOP NET DETAILS | 25 July, 2022 |
| 0 | C303 | BEAVER DECEIVER DETAIL | 25 July, 2022 |

PART 4 **GENERAL****4.1** **PROJECT LOCATION**

- .1 The project is located in Riding Mountain National Park, Manitoba. Construction work is on Highway 19 at the following location: Hwy 19 Km 0 to 29.1.
- .2 Other key locations along Hwy 19 include:
 - .1 South park gate of RMNP: Hwy 10 – km 0.5.
 - .2 Parks Canada Maintenance Compound – km 2.8.
 - .3 Junction of Hwy 10 and Hwy 19: Hwy 10 – km 6.5.
 - .4 Junction of Hwy 10 and Hwy 19: Hwy 19 – km 0.00.
 - .5 Swanson Creek Culvert Location: Hwy 19 – km 12.8.
 - .6 Junction of Rolling River Road and Hwy 19: Hwy 19 – km 15.4.
 - .7 East park gate of RMNP: Hwy 19 – km 29.1.
 - .8 North park gate of RMNP: Hwy 10 – km 53.2.

4.2 **WORK COVERED BY CONTRACT DOCUMENTS**

- .1 The project work consists of roadway rehabilitation along Highway 19 (Km 0 to Km 29.1) which includes but not limited to:
 - .1 The work has been divided into the following segments:
 - .1 Segment 1: 1+620 to 1+670.
 - .2 Segment 2: 4+600 to 4+750.
 - .3 Segment 3: 5+500 to 5+540.
 - .4 Segment 4: 15+330 to 15+365.
 - .5 Segment 5: 15+500 to 15+570.
 - .6 Segment 6: 16+150 to 16+350.
 - .7 Segment 7: 16+880 to 16+920.
 - .8 Segment 8: 17+430 to 17+580.
 - .9 Segment 9: 18+650 to 18+800.
 - .10 Segment 10: 19+700 to 19+830.
 - .11 Segment 11: 20+120 to 20+160.
 - .12 Segment 12: 21+920 to 22+100.
 - .13 Segment 13: 22+420 to 22+480.
 - .14 Segment 14: 23+650 to 23+750.
 - .15 Segment 15: 24+050 to 24+300.
 - .16 Segment 16: 24+300 to 24+700.
 - .17 Segment 17: 24+700 to 25+050.
 - .18 Segment 18: 25+050 to 25+550.
 - .19 Segment 19: 26+700 to 26+900.
 - .20 Segment 20: 27+000 to 27+050.

- .21 Segment 21: 27+480 to 28+000.
 - .22 Segment 22: 28+020 to 28+120.
 - .23 Segment 23: 28+200 to 28+350.
 - .24 Segment 24: 28+600 to 28+800.
-
- .2 Excavation, removal, and disposal of the existing roadway and ditch material.
 - .3 Excavation, removal, and disposal of the existing Corrugated Steel Pipe Culverts (CSP) (varies Dia.) as per roadway segments.
 - .4 Supply and installation of a new Corrugated Steel Pipe Culverts (CSP's) along Hwy 19.
 - .5 Supply, haul and placement of Rip-Rap.
 - .6 Reinstatement roadway structure and positive drainage along the roadway corridor.
- .2 Major scope items include: traffic management, utility coordination, roadway drainage and excavation, temporary signage, removal of existing CSP culvert, shoring, supply and installation of new CSP culverts, supply and installation of geogrid and geotextile, supply and install Rip-Rap, bedding and structural backfill, topsoil placement/ grading, seeding/revegetation and final site cleanup.
- .3 Without limiting the scope of work, the Work for this Contract generally comprises of the following but not limited to:
- .1 Highway 19 Road Repair and Improvements:
 - .1 Mobilization and demobilization for the project work.
 - .2 Strip organic material as designated in the contract documents, screen and stockpile this material alongside the right-of-way outside the cut / fill slopes, as directed by the Departmental Representative. The Contractor is advised that there is limited storage area for this material. Stripping and salvage of organic may need to be completed in Two lifts to separate material.
 - .3 Installation and maintenance of temporary barriers and supply and installation of temporary traffic control and other temporary construction facilities required for completion of the Work.
 - .4 Provide temporary water management/creek diversion as required for completion of the Work under this Contract.
 - .5 Remove and dispose of existing CSP culverts outside of the Parks as shown on the Drawings and as directed by the Departmental Representative.
 - .6 Excavation of embankment material.
 - .7 Separate and dispose unsuitable material outside of the Park or as directed by the Departmental Representative.
 - .8 Prepare sub-grade and proof-roll to the required standards.
 - .9 Supply, sort, load, haul and place Rip-Rap materials as shown on the Drawings and as directed by the Departmental Representative.
 - .10 Supply, load, haul, place and compact structural backfill materials:
 - .1 50mm Minus (Limestone);
 - .2 25mm Minus (Limestone);
 - .3 Traffic Gravel, Class A.

- from an approved source outside of the National Park. Geotextile shall be wrapped around the structural backfill including bedding material.
- .11 Divert water as necessary in accordance with the approved Environmental Protection Plan.
 - .12 Supply and maintain traffic signage, regulatory signage, construction signage, and traffic control (as per Parks Canada and MIT Standard Construction Specifications – 200 – Traffic Control).
 - .13 Placement of screened topsoil, Mechanical seeding on finished slopes as shown on the Drawings and as directed by the Departmental Representative.
 - .14 Supply and install Beaver deceivers as shown on the Drawings and as directed by the Departmental Representative.
 - .15 Supply and install permanent erosion and sediment control measures as directed by the Departmental Representative.
- .2 Miscellaneous Additional Work as directed by the Departmental Representative.
- .4 The Contractor will not be permitted to set up crushing plant within the National Park.
- .5 In preparation for and during construction of this project, an “Environmental Protection Plan” (EPP) is to be prepared by the Contractor to meet the requirements of Section 01 35 43 – Environmental Procedures to ensure minimal adverse effects. The Contractor’s EPP must be approved by Parks Canada Agency (PCA) prior to the commencement of construction. The Departmental Representative and Parks Canada’s Environmental Surveillance Officer (ESO) will refer to the approved EPP in determining compliance with the plan and contract specifications. The EPP will form part of the contract.
- .6 The Contractor is responsible for sourcing water required for the Works and may be required to obtain it from outside of the National Park. Accessing local water sources within Parks can be coordinated through the Departmental Representative and the ESO but will require the Contractor to obtain a Restricted Activity Permit (RAP) and to adhere to all conditions contained therein.

4.3 CONTRACT METHOD

- .1 Construct Work under combined price contract.

4.4 WORK BY OTHERS

- .1 Where it is necessary that work is to proceed in areas of this project common to both the Contractor and forces of others, the Contractor shall cooperate with the other Contractors and the Departmental Representative in reviewing their construction schedules and sharing their workspace, and shall coordinate their operations with the other Contractors, including traffic management and construction staging. Construction coordination meetings may be required and will be chaired by the Departmental Representative at a location to be determined at the time of the pre-construction meeting; key contractor personnel will be required to attend. No claims for any delays or inconvenience will be entertained.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to the Departmental Representative, in writing, any defects which may interfere with proper execution of Work.
- .3 The pits mentioned in the Contract Documents are operational pits and are used by many contractors and Parks Canada. The Contractor shall cooperate with the other users of the pits, including co-

ordination and identification of a site Prime Contractor. Acting as prime contractor if required in any PCA pit will be considered incidental to the contract.

4.5 PRECEDENCE

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

4.6 DEFINITIONS

- .1 "RMNP" means Riding Mountain National Park of Canada.
- .2 "ESO" means Environmental Surveillance Officer.
- .3 "RAP" means Restricted Activity Permit.
- .4 Watercourse is as defined in the National Parks Act.
- .5 Site means the areas on or within the limits of Construction as referenced on the Drawings and/or described in the Contract Documents.
- .6 Work means the provision of all labour, services, material, and equipment as necessary, for the Contractor to complete and perform its obligations in accordance with the Contract.

4.7 WORK SEQUENCE

- .1 Schedule work progress to allow Owner / Departmental Representative unrestricted access to inspect all phases of the Work.
- .2 Work within RMNP shall only be allowed to start once all required submittals have been approved.
- .3 Co-ordinate Work with other Contractors / Departmental Representatives doing maintenance, survey / testing work.
- .4 Works may need to be temporally shut down during high flow, heavy rain events, or 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 the stream water level or adverse weather conditions adversely affect the Contractors ability to achieve the contract specifications for quality of work.
 - .2 The Contractor's Environmental Monitor with approval from the Departmental Representative may suspend work should they feel it not be possible to achieve the environmental requirements due to the high flows or adverse weather conditions.
 - .3 The Departmental Representative may suspend instream works should it be felt that it is not possible to achieve the environmental requirements or the Contract Specifications for quality of Work due to the high flows or adverse weather conditions.
- .5 Regardless of who suspends the Work, the Contractor will be responsible for maintaining the site and protecting the works throughout the suspension period.
- .6 The Contractor shall account for the possibility of not being able to complete work due to high flows or adverse weather conditions in the construction schedule and in the unit prices. No payment for temporary Work stoppages due to high flows or adverse weather conditions will be made.
- .7 The Contractor shall not be permitted to close sections of any roadway to the general visiting public during Work operations unless approved by the Departmental Representative.

4.8 CONTRACTOR USE OF PREMISES

- .1 The Contractor is not permitted to extract and process native material for the production of granular aggregate anywhere inside the Park.
- .2 Contractor has unrestricted use of site subject to 1.9 below, Section 01 14 00 – Work Restrictions and Section 01 29 01 – Site Occupancy, until Contract Completion date.
- .3 Contractor shall limit use of premises for Work, for storage, and for access, to allow:
 - .1 Owner occupancy.
 - .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.
 - .3 Contractor shall coordinate use of premises under direction of the Departmental Representative.
 - .4 Contractor shall obtain and pay for use of additional storage or work areas needed for operations under this Contract.
 - .5 The Contractor and any subcontractors shall obtain a business licence and vehicle work passes in accordance with Section 01 35 43 – Environmental Procedures
 - .6 All Contractor's business and private vehicles are required to display a vehicle work pass from Parks Canada.

4.9 OWNER OCCUPANCY

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

4.10 CONSTRUCTION SIGNAGE

- .1 No signs or advertisements, other than warning signs, are permitted on site.
- .2 Signs and notices for safety and instruction shall be in both official languages. Signs shall be diamond grade and shall conform to CAN/CSA-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project and dispose of off-site on completion of project or earlier if directed by the Departmental Representative.
- .4 All temporary traffic control signs that are used for longer than one day shall be mounted on wood posts.
- .5 Signage shall be coordinated with other Contractors.

4.11 SETTING OUT OF WORK

- .1 The Department Representative will identify location of the work site. The Contractor will be responsible for all other layout of the work.
- .2 The Contractor is responsible for the accurate layout of all temporary and final lines at the work sites in this contract.
- .3 Departmental Representatives will establish control points and provide the following:

- .1 Set of Construction Drawings.
- .2 List of control monuments including coordinates and elevations.
- .3 Measurements for Payment (Quantity Surveys) and volumes by the average end method.
- .4 Contractors to:
 - .1 Set additional control points as necessary.
 - .2 Set all work stakes necessary to complete work.
 - .3 Allow sufficient time for Departmental Representative to take measurements for payment.
 - .4 Not damage geodetic benchmarks or control monuments unless authorized by Departmental Representative.
- .5 No separate payment will be made for setting out work, unless Departmental Representative adjusts alignment in field and additional survey costs are incurred. Payment for additional survey required due to changes by Departmental Representative to be paid for as part of Prime Cost Sum in accordance with Section 01 21 00 - Allowances.

PART 5 **PRODUCTS****5.1** **NOT USED****PART 6** **EXECUTION****6.1** **NOT USED**

END OF SECTION

PART 1 **GENERAL****1.1** **SPECIAL REQUIREMENTS**

- .1 Highway 19 is currently closed to public traffic due to the flood damage with some segments are inaccessible by vehicle. Construction traffic access shall be as follows:
 - .1 Access from the West km 0 to km 5.5.
 - .2 Access from the East km 29.1 to km 17.5.
 - .3 Access from Rolling River Road from km 5.5 to 16.9.
- .2 In-water work is prohibited during the spring spawning season of April 1st to June 15th.
- .3 Plan operations to restrict heavy haul on Highway 19 during the spring thawing season. Discussions with the Departmental Representative will be required to determine when road is in suitable condition for hauling operations.
 - .1 Abide by seasonal weight restrictions issued by RMNP.
 - .1 Highway 19 is generally limited to a maximum vehicle weight of a ¾ ton truck until late spring.
 - .2 Restrict loads to 20 cubic yards for tandem axles trucks and 25 cubic yards for tri-axle trucks outside of seasonal weight restrictions.
 - .3 Grade and maintain all roadways used for hauling operations within RMNP boundary and obtain necessary approvals for roads outside RMNP jurisdiction.
 - .4 Repair all damage to roadways used for hauling operations within RMNP at no additional cost to contract.
 - .5 Priority to opening the road to public traffic from Km 0 to Km 15.4 should be assigned.

1.2 **ACCESS AND EGRESS**

- .1 Provide for safe pedestrian and vehicular traffic for the duration of the construction.
- .2 Design, construct and maintain "access to" and "egress from" work areas, including stairs runways, ramps, or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations. This is considered incidental to the work and will not be paid for separately.

1.3 **USE OF THE SITE AND FACILITIES**

- .1 The Work Site specified in these specifications shall only be used for the purposes of the Work. The Work Site will be made available by Parks Canada to the Contractor for its non-exclusive use for the duration of the Work, unless otherwise provided in the Contract Documents.
- .2 While the Work Sites are under the Contractor's control, the Contractor shall be entirely responsible for the security of the Work Sites and of the Work, and for the security of the Work of other Contractors located on the Work Sites
- .3 Office-tool trailer for contractor operational requirements may be set up at within the project limits or as directed by the Departmental Representative. See Section 01 35 43 – Environmental Procedures.
 - .1 Trailers may not be used for staff accommodation at any time.
- .4 Contractor shall maintain adequate drainage at the Work Site.

- .5 The Contractor shall keep the Work Site clean and free from accumulation of waste materials and rubbish regardless of source. Snow shall be removed by the Contractor as necessary and at their cost for the performance and inspection of the Work.
- .6 The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and the Environmental Procedures for this project. The Contractor shall post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.
- .7 Any damage to the Work Site caused by the Contractor shall be repaired by the Contractor at its expense.
- .8 The Contractor may work seven days per week subject to the following restrictions:
 - .1 Working hours are from 06:00 AM to 10:00 PM, Monday to Sunday.
- .9 No hauling of material during inclement weather.
- .10 The Contractor will not be permitted to work during the period of any Manitoba statutory holiday long weekend, including one day prior to and one day following. The Contractor will not be permitted to work during the following Civic Holidays or long weekends unless prior written approval is granted by the Departmental Representative:
 - .1 From 7:00 PM Thursday, to 7:00 AM Tuesday.
- .11 Pets shall not be brought to or maintained at the construction site.
- .12 The Contractor will not be permitted to adversely impact wildlife or vegetation during critical life stages (breeding, nesting, rearing, and migration) unless prior written approval is granted by the Departmental Representative. The Contractor shall consult with the Departmental Representative and the Parks ESO regarding any localized wildlife concerns.

1.4 WORK CONDUCTED OVER AND ADJACENT TO WATERWAYS

- .1 All components of the Work shall be conducted in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan prepared for the project.
- .2 All components of the Work shall be conducted without heavy equipment entering into wetlands, water bodies, or streams and as per approved procedures of Parks Canada.
- .3 All waste materials from the Work shall be contained and collected in a manner to prevent any contact with the river valleys and waterways. All collected waste materials shall be disposed of in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan prepared for the project.
- .4 The Contractor is responsible for the development and supply of construction access to the Work as approved by the Departmental Representative.

1.5 UTILITIES

- .1 Whenever working in the vicinity of Utilities, the Contractor shall locate such Utilities and expose those that may be affected by the Work, using hand labour as required. The Contractor is responsible for notifying all utility companies and complete all locates as needed prior to starting the work. All costs for utility locates shall be incidental to the Work. The Contractor shall notify the Departmental Representative should utilities be located in areas other than those shown on the Drawings and await

instructions from the Departmental Representative before proceeding with work in the vicinity of such encountered services and utilities.

- .2 The Contractor shall be responsible for cost of repair of any damage to utilities resulting from their operations.
- .3 If it is determined by the Departmental Representative that Utilities affected by the permanent Work will be relocated by Other Contractors, the Contractor shall co-operate and coordinate as required with Other Contractors engaged in Utility relocation operations on the Work Site and all costs shall be incidental to the Work.
- .4 The Contractor shall establish and maintain direct and continuous contact with the owners or operators of any Utilities that may interfere with the Work. The Contractor shall co-operate with them at all times and in all places of Work. The Contractor shall keep the Departmental Representative informed of all communications with the Utility companies and authorities.
- .5 The Contractor shall notify the Departmental Representative and the Utility companies at least **Fourteen days** in advance of any activities that may interfere with the operation of such Utilities.
- .6 The Contractor shall assess the possible impact of its operations on all Utilities that may be affected, and shall, in consultation with Utility owner(s), protect, divert, temporarily support or relocate, or otherwise appropriately treat such Utilities to ensure that they are preserved.
- .7 The Contractor shall immediately report any damage to Utilities to the Departmental Representative and to the Utility Company or authority affected and shall promptly undertake such remedial measures. No additional payment will be made to the Contractor for this.

1.6

SURVEY OF EXISTING PROPERTY CONDITIONS

- .1 Submission of tender is deemed to be confirmation that the Contractor has inspected the site and is conversant with all conditions affecting execution and completion of work.
- .2 The Contractor shall regularly monitor the condition of the Work 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, structures, roads, walls, fences, slopes, sewers, culverts and landscaped areas. No additional payment will be made to the contractor for this.
- .3 The Departmental Representative may, but shall not be obligated to, survey and record the condition of the Work Site and of property on or adjoining the Work Site prior to the commencement of construction by the Contractor. If requested, the Departmental Representative will provide a copy of the survey records to the Contractor for reference.
- .4 Whenever supplied with survey records, the Contractor shall satisfy itself as to the accuracy and completeness of the survey records provided by the Departmental Representative for any area before commencing construction in that area.
- .5 Commencement of construction in any area shall be interpreted to signify that the Contractor has accepted such survey records as being a true record of the existing conditions prior to construction.
- .6 The provision of the records of a survey of existing conditions by the Departmental Representative shall in no way limit or restrict the Contractor's responsibility to exercise proper care to prevent damage to all property within or adjacent to the Work Site, whether all such property is covered by the survey or not.

1.7 PROTECTION OF PERSONS AND PROPERTY

- .1 The Contractor shall comply with all applicable safety regulations of the Workers Compensation Act including, but not limited to, Occupational Health and safety Regulations and General Safety Regulations. With the Site, the Contractor has all responsibilities of an "employer" under the Workers Compensation Act and the Occupational Health and Safety Regulation and is designated as the "Prime Contractor". Other contractors may be working within the limits of construction of this project.
- .2 Comply with all applicable safety regulations.
- .3 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- .4 The Contractor shall take all necessary precautions and measures to prevent injury or damage to persons and property on or near the Work Site.
- .5 The Contractor shall promptly take such measures as are required to repair, replace or compensate for any loss or damage caused by the Contractor to any property or, if Parks Canada so directs, shall promptly reimburse to Parks Canada the costs resulting from such loss or damage.
- .6 It is the responsibility of "Prime Contractor" to ensure safe work practices as per industry standards and all above mentions codes, acts and regulations of all site personnel including sub-contractors.

1.8 USE OF PUBLIC AREAS

- .1 Flag persons shall be provided when vehicles are entering or exiting Work Site access points and when vehicles are entering or exiting gravel pits in the National Park.
- .2 The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas. All vehicles and equipment leaving the Work Site and entering public roadways shall be cleaned of mud and dirt clinging to the body and wheels of the vehicle. All vehicles arriving at or leaving the Work Site and transporting materials shall be loaded in a manner that will prevent dropping of materials or debris on the roadways and, where contents may otherwise be blown off during transit, such loads shall be covered by tarpaulins or other suitable covers. Spills of materials in public areas shall be removed or cleaned immediately by the Contractor at no cost to the Owner. All activities shall be in accordance with Section 01 35 43 – Environmental Procedures and the Environmental Protection Plan prepared for the project.
- .3 In dry season and dusty condition, the contractor must sprinkle water regularly in the construction zone to keep the dust suppressed. No additional payment will be made to the contractor for this.

1.9 USE OF PITS AND QUARRIES OUTSIDE THE NATIONAL PARKS

- .1 When the Contractor is supplying material from a pit or quarry outside of the National Parks the Contractor is responsible for all permits and approvals. Pit or quarry development and reclamation must be in accordance with local and provincial regulatory requirements.
- .2 When the Contractor is disposing of stripping, unsuitable, or surplus material in a pit or other disposal sites outside of the National Parks, the Contractor is responsible for all permits and approvals. Disposal site or pit development and reclamation must be in accordance with local and provincial regulatory agency requirements.
- .3 The Contractor shall bear and pay all costs, fees, and royalties for pits, quarries, or disposal sites, outside of the National Parks.

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

1.10 SUPERVISORY PERSONNEL

- .1 Within five days after award notification, the Contractor shall submit to the Departmental Representative confirmation of the names of the supervisory personnel and other key staff designated for assignment on the Contract.
- .2 The following personnel shall be included in the list:
 - .1 Construction Project Manager.
 - .2 Project Superintendent.
 - .1 Deputy/ Alternate Project Superintendent.
 - .3 Health and Safety Representative.
 - .4 Quality Control Representative.
 - .5 Environmental Representative.
 - .6 Traffic Control Supervisor.
- .3 The above personnel shall perform the following duties:
 - .1 Construction Project Manager with full authority, as agent of the Contractor, to act on behalf of and legally bind the Contractor in connection with the Work and the Contract. The Contractor may, at its discretion, appoint one person as both Contractor Manager and Project Superintendent.
 - .2 The Project Superintendent shall be employed full time and shall be present on the Work Site each and every workday that Work is being performed, from the commencement of Work to Total Performance of the Work.
 - .3 The Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence.
 - .4 The Health and Safety Representative shall possess safety experience in general construction. Duties shall encompass all matters of safety activities from commencement of Work until the Total Performance of the Work.
 - .5 The Quality Control Representative shall be responsible for implementation and record keeping for all aspects of project quality control. The Quality Control Representative shall be the Departmental Representative's single point of contact for project quality control.
 - .6 The Environmental Representative shall be responsible for the development implementation and execution of the Environmental Protection Plan and shall be the single point of contact for all environmental related queries.
 - .7 The Traffic Control Supervisor shall be responsible for the implementation of the approved Traffic Management Plan (TMP) and ensuring general conformance of all traffic control operations and devices.

1.11 MEETINGS

- .1 The Work includes attending meetings between the Contractor and the Departmental Representative. The meetings will be called and chaired by the Departmental Representative as required. The Contractor shall be represented at such meetings to the satisfaction of the Departmental Representative.
- .2 The Departmental Representative will schedule an initial meeting to be held on site after award notification. Senior representatives of the Owner, Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
- .3 The Contractor will be requested to assemble site staff and sub-contractors for an environmental briefing. The briefing shall be of approximately 1 hour in duration and held at initial project start-up. **The Contractor shall ensure that all current project staff are in attendance.** The Departmental Representative and the Contractor will co-operate in setting the most appropriate time and place for the briefing. Subsequent to the initial environmental briefing, additional briefings will be arranged for new project staff and sub-contractors within 48 hours of reporting for duty on the project.
 - .1 All subsequent new staff brought onto the project will be required to attend a briefing coordinated with the Departmental Representative.
- .4 Cost of attending the above meetings shall be considered incidental to the Unit Price items and no additional payment will be made.

1.12 WASTE DISPOSAL

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

1.13 WORK STOPPAGE

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

PART 2 PRODUCTS**2.1 NOT USED****PART 3 EXECUTION****3.1 NOT USED****END OF SECTION**

PART 1**GENERAL****1.1 PRIME COST SUM**

- .1 Included in Contract Price a total Prime Cost Sum of **\$50,000.00**
- .2 Do not include in the Contract Price, additional contingency allowances for products, installation, overhead or profit.
- .3 Prime Cost Sum (PCS) provided for in the Lump Sum Arrangement Table is not a sum due to the Contractor. Rather, payment will be made against it for miscellaneous work not included in the unit price table under the General Conditions of the Contract.
- .4 All work completed under PCS requires written approval from the Departmental representative. No payment will be made to the contractor for work completed without prior written approval from the Departmental Representative.
- .5 It is the Contractor's sole responsibility to advise the Departmental Representative if the agreed upset limit of the work will exceed the agreed upon amount and no claim against the Owner shall be brought forward after the completion of the work.
- .6 Such work may include, but not be limited to:
 - .1 Additional clearing, grubbing, trimming, stripping, materials, mechanical seeding or landscaping, ditching, and shoulder gravelling,
 - .2 Additional excavation, loading, hauling, crushing, stockpiling, and placing of aggregate materials or Rip-Rap;
 - .3 Additional earthworks, slope / roadway stabilization including the use of geotextiles.
 - .4 Additional relocation or removal and disposal of existing signs, guide posts and other miscellaneous items;
 - .5 Additional removal, disposal, plugging, or debris removal of existing culverts;
 - .6 Additional supply and installation of culverts;
 - .7 Additional supply and installation or reinstallation of permanent signs (not construction signs);
 - .8 Additional survey resulting from changes made by the Departmental Representative;
 - .9 Additional road structure repairs;
 - .10 Additional remediation or removal and replacement of unsuitable or contaminated soils not described in the contract documents;
 - .11 The addition of soil amendments or topsoil imported from outside of the Parks;
 - .12 Supply and installation of guide posts;
 - .13 Sub-drainage not specified in the Tender Documents;
 - .14 Additional minor brushing and tree removal within project site limits;
 - .15 Additional ditching and drainage improvements;
 - .16 Providing facilities for Owner (Office or Lab Trailer);
 - .17 Supply and implementation of full depth reclamation additives;
 - .18 Supply and installation of wildlife fencing;
 - .19 Additional supply and installation of Rip-Rap as directed by the Departmental Representative;

- .20 Relocation of existing structures;
 - .21 Additional ditch cleaning and maintenance;
 - .22 Additional supply and placement of borrow material;
 - .23 Miscellaneous work as directed by the Departmental Representative.
- .7 The Contract Price, and not Prime Cost Sum, includes Contractor's head office overhead and profit in connection with the Work.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Expenditures under the Prime Cost Sum will be authorized in accordance with procedures provided in General Condition (GC) 6, "Delays and Changes in the Work", and "Allowable Costs for Contract Changes Under General Condition (GC) 6.4.1"
- .2 Payment for Work under the "**Lump Sum Price Item - Prime Cost Sum**" will be made using negotiated rates or by material, labour and equipment rates as per the following:
 - .1 Hourly equipment rates will be as per the current Manitoba Heavy Construction Association (MHCA) rates.
 - .2 Hourly rental of equipment will be measured in actual working time and necessary travel time within project limits.
 - .3 Transportation time to and from site will be reimbursed only for equipment used exclusively for additional work.
 - .4 Equipment paid on standby will be paid on 50% of the relevant Less Operator rates to a maximum of 10 hrs per day.
 - .5 The Contractor may apply a 10% mark-up to subcontractor or supplier invoices only, as approved by the Departmental Representative. No mark-up will be allowed on relevant equipment and labour rates.
 - .6 A claim for additional payment will not be considered submitted until all required documentation has been received, reviewed, and approved by the Departmental Representative.
 - .7 The Departmental Representative's signature on extra work reports is an agreement to the hours worked that day. Labour and equipment rates are to be reviewed by the Departmental Representative against the appropriate accepted rates when submitted for payment.
 - .1 The Contractor shall submit extra work reports to the Departmental Representative within 24 hours of the day of extra work.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

END OF SECTION

PART 1 **GENERAL****1.1** **DESCRIPTION**

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

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

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

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

END OF SECTION

PART 1 **GENERAL****1.1** **PRECEDENCE**

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

1.2 **DEFINITION OF OCCUPANCY**

- .1 Occupancy:
- .1 The Contractor shall be permitted to lease and occupy sites when working in RMNP, free of charge from the date of award of the contract up to and including completion date of construction.
- .2 The Contractor's occupancy of the sites identified in Contract will be deemed to have ended, when all of the following conditions are met to the satisfaction of Parks Canada:
- .1 All the work identified under this Contract, has been completed.
- .2 All sites are cleaned up and any outstanding deficiencies for the work identified under this Contract have been addressed to the satisfaction of the Departmental Representative.
- .3 Contractor has removed from Parks Canada property all trailers, equipment and materials and sites have been cleaned-up to the satisfaction of the Departmental Representative.
- .3 Until and unless, the Contractor gets any communication in writing from the Departmental Representative that all three conditions (above) are met, and that the Contractor's occupancy of the site is ended, the construction site will be deemed in Contractor's occupancy.

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

END OF SECTION

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 **CHANGES TO DESIGN**

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

1.3 **COORDINATION**

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

1.4 **PROJECT MEETINGS**

- .1 The Contractor shall attend weekly project meetings throughout progress of Work and provide information as determined by the Departmental Representative.
- .2 Meetings shall be chaired by the Departmental Representative who will prepare the minutes of the meetings.
- .3 The Contractor shall attend pre-installation meetings, when specified in specifications and when required to coordinate related or affected Work and provide information, as determined by the Departmental Representative.
- .4 The Contractor shall provide physical space and make arrangements for reliable phone access for meetings.

1.5 **CONSTRUCTION ORGANIZATION AND START-UP**

- .1 Within seven (7) days after, the Contractor shall request a meeting of Contract Representatives to discuss and resolve administrative procedures and responsibilities. Meeting shall be chaired by the Departmental representative who will prepare the minutes of the meeting.
- .2 Senior representatives of the Owner, Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
- .3 Agenda to include following but not limited to:
 - .1 Appointment & acceptance of official representative of participants in Work.
 - .2 Schedule of Work, progress scheduling in accordance with Section 01 32 16.07 - Progress Schedules.

- .3 Schedule of submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .4 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
- .5 Site safety and security in accordance with Section 01 14 00 – Work Restrictions, Section 01 52 00 – Construction Facilities and Section 01 35 43 – Environmental Procedures.
- .6 Quality Control in accordance with Section 01 45 00 – Quality Control.
- .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .8 Owner-furnished materials and or Contractor supply.
- .9 Monthly progress claims, administrative procedures, photographs, and holdbacks.
- .10 Closeout procedures and submittals in accordance with Section 01 77 00 - Closeout Procedures and Section 01 78 00 – Closeout Submittals.
- .11 Insurances and transcript of policies.
- .12 Other business.
- .4 The Contractor shall comply with Departmental Representative's allocation of mobilization areas of site, for field offices and sheds, and for access, traffic, and parking facilities.
- .5 During construction, the Contractor shall coordinate use of site and facilities through Departmental Representative's procedures for intra-project communications: submittals, reports and records, schedules, coordination of Drawings, recommendations, and resolution of ambiguities and conflicts.
- .6 The Contractor shall comply with instructions of the Departmental Representative for use of temporary utilities and construction facilities.
- .7 The Contractor shall coordinate field engineering and layout work with the Departmental Representative.

1.6 ON-SITE DOCUMENTS

- .1 The Contractor shall maintain at job site, one copy of each of the following:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings, and product analysis or test results.
 - .5 Change Orders.
 - .6 Other Modifications to Contract.
 - .7 Manufacturer's Installation and Application Instructions.
 - .8 Environmental Protection Plan & any relevant environmental documents.
 - .9 Quality Control Plan and field test reports.
 - .10 Traffic Management Plan.
 - .11 Safety Plan.
 - .12 WHMIS (MSDS Sheets shall be maintained at location of product use).
 - .13 Copy of approved Work schedule and most recent updated schedule.
 - .14 Labour conditions and wage schedules.

- .15 Equipment rate schedule and applicable versions of the relevant rate guides.
- .16 Applicable current editions of municipal regulations and by-laws.
- .17 Equipment/Machinery inspection and fitness certificate.
- .18 Equipment/Machinery operator's permits.
- .19 Restricted activity permits.
- .20 Business License.

1.7 SUBMITTAL SCHEDULE

- .1 The Contractor shall prepare and submit a schedule of the required submissions and the date the submissions will be made. Include columns for Actual Date of Submission, Review Comments Received, Final Submission and Final Acceptance Received in accordance with Section 01 33 00 – Submittal Procedures.
- .2 The Owner will not be responsible for any construction delays resulting from delays in submission acceptance if the submittal dates shown in the Submittal Schedule are not achieved.

1.8 PROJECT SCHEDULES

- .1 The Contractor shall submit preliminary construction progress schedule in accordance with Section 01 32 16.07 – Progress Schedules to Departmental Representative coordinated with Owner's project schedule.
- .2 After review, revise and resubmit schedule to comply with revised project schedule.
- .3 During progress of Work, revise and resubmit as directed by the Departmental Representative.
- .4 In addition to the project schedule, submit weekly schedules to the Departmental Representative showing Work planned for the following week on a day by day basis.

1.9 CONSTRUCTION PROGRESS MEETINGS

- .1 During course of Work and prior to project completion, the Contractor shall schedule weekly progress meetings.
- .2 The Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance. Meetings shall be chaired by the Departmental representative who will prepare the minutes of the meetings.
- .3 Agenda to include, but not limited to, the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review environmental issues.
 - .3 Review Traffic Control and Emergency Response Protocol issues.
 - .4 Review site safety and security issues.
 - .5 Review issues with Prime Contractor and co-ordination with other contractors.
 - .6 Review of Work progress since previous meeting.
 - .7 Discuss field observations, problems, and conflicts.
 - .8 Review off-site fabrication delivery schedules.
 - .9 Review submittal schedules: expedite as required.
 - .10 Corrective measures and procedures to regain projected schedule.

- .11 Revisions to construction schedule.
- .12 Review Weekly Progress schedule, during succeeding work period.
- .13 Review of quality reports since previous meeting.
- .14 Review construction budget: Progress payments, variances from contract.
- .15 Other business.

1.10 SUBMITTALS

- .1 The Contractor shall submit product data in accordance with Section 01 33 00 – Submittal Procedures for review and compliance with Contract Documents.
- .2 The Contractor shall submit requests for payment for review, and for transmittal to Departmental Representative. Payment request on last day of the month.
- .3 The Contractor shall submit requests for interpretation of Contract Documents and obtain instructions through Departmental Representative.
- .4 The Contractor shall process substitutions through Departmental Representative.
- .5 The Contractor shall process change orders through Departmental Representative.
- .6 The Contractor shall deliver closeout submittals for review and preliminary inspections, for transmittal to Departmental Representative.

1.11 CLOSEOUT PROCEDURES

- .1 The Contractor shall notify the Departmental Representative when the Work is considered ready for Substantial Performance.
- .2 The Contractor shall accompany the Departmental Representative on a preliminary inspection to determine items listed for completion or correction (deficiencies).
- .3 The Contractor shall comply with the Departmental Representative's instructions for correction of items of Work listed in executed certificate of Substantial Performance.
- .4 The Contractor shall notify the Departmental Representative of completion of the deficiencies list when the work as determined in the Departmental Representative's final inspection has been completed.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

END OF SECTION

PART 1 **GENERAL****1.1** **PRECEDENCE**

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

1.2 **DEFINITIONS**

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

1.3 **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.4 **REQUIREMENTS**

- .1 Ensure the Project Schedule is practical and remains within specified Contract duration.
- .2 Ensure all the Work required for the Contract is identified in the Project Schedule. Refer to Section 01 11 00 – Summary of Work for a potential list of activities.
- .3 Include an allowance in the schedule for Work performed and paid for as Prime Cost Sum. Refer to Section 01 21 00 – Allowances for a list of activities.
- .4 Plan to complete Work in accordance with prescribed Project Schedule.

- .5 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .6 Prepare the schedule using critical path analysis techniques, showing resource loading. Identify tasks that lie on the critical path. Show total float for all activities.
- .7 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.
- .8 Include the requirements of Section 01 14 00 – Work Restrictions and Section 01 35 43 – Environmental Procedures.

1.5 SUBMITTALS

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

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work.
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan. The Project Schedule must have critical path, resource loaded and major milestone.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows but not limited to:
 - .1 Award.
 - .2 Permits.
 - .3 Submittals:
 - .1 Project Schedule having Critical Path, Resource Loading and Major Milestones.
 - .2 List of subcontractors, suppliers and Departmental Representative.
 - .3 Contractor Chain of Command including Sub-Contractors and Departmental Representative.
 - .4 Prime Contractor / co-ordination with other Contractors Plan.
 - .5 Work Plan including temporary creek management/diversion plan.
 - .6 Construction Staging
 - .7 Environmental Protection Plan.
 - .8 Traffic Management Plan, review, and implementation.
 - .9 Site access / Detour Plan.
 - .10 Emergency Response Protocol.

- .11 Site Specific Health and Safety Plan, incl. MSDS sheets.
- .12 On site Contingency and Emergency Response Plan.
- .13 Survey Plan.
- .14 Quality Control Plan.
- .15 Shop Drawings.
- .16 Concrete / Asphalt Mix Designs, and product analysis or test results.
- .17 Indigenous Business Plan monthly report.
- .4 Mobilization
- .5 Work Activities:
 - .1 Survey, layout and staging preparation;
 - .2 Construction staging;
 - .3 Traffic accommodation;
 - .4 Clearing, grubbing and stripping;
 - .5 Excavation;
 - .6 Placement of geotextile;
 - .7 Placement and compaction of culvert bedding material (50mm minus);
 - .8 Placement and compaction of granular structural backfill (50mm minus);
 - .9 Placement of Class 50 Rip-Rap as per Drawings;
 - .10 Removal existing CSP culvert/s;
 - .11 Placement and compaction of backfill around new CSP culvert/s;
 - .12 Placement and compaction of roadway sub base (50mm Minus)
 - .13 Placement and compaction of roadway base course (25mm Minus);
 - .14 Reinstallation of existing signs;
 - .15 Placement of topsoil;
 - .16 Seeding;
 - .17 Additional work as required or directed by the Departmental representative.
- .6 Quality Control.
- .7 Interim Inspection.
- .8 Site Clean Up / Demobilization.
- .9 Project Substantial Completion and Final Completion dates.

1.8 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on monthly basis and as requested by the Departmental Representative, reflecting activity changes and completions, as well as activities in progress.
- .2 Provide weekly Progress Reports that identify completed work and Work planned for the following week in accordance with Section 01 33 00 – Submittal Procedures.
- .3 Include, as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule in accordance with Section 01 31 00 Project Management and Coordination.

PART 2 PRODUCTS**2.1 NOT USED****PART 3 EXECUTION****3.1 NOT USED****END OF SECTION**

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 **ADMINISTRATIVE**

- .1 The Contractor shall submit to the Departmental Representative all submittals listed for review. The submissions shall be prompt and in orderly sequence so as to not cause a 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 Work affected by submittals shall not proceed until review is complete and approval has been given by the Departmental Representative.
- .3 The Contractor shall present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .5 The Contractor shall review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of the Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.
- .6 The Contractor shall notify the Departmental Representative in writing at the time of submission, identifying any deviations from requirements of the Contract Documents stating reasons for deviations.
- .7 The Contractor shall verify the field measurements and affected adjacent Work is consistent.
- .8 The Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 The Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 The Contractor shall keep one reviewed copy of each submission on site.

1.3 **"DESIGN AND BUILD", SHOP DRAWINGS, PRODUCT DATA AND MIX DESIGNS**

- .1 "Design and Build": The term "Design" refers to all detailed design activities (survey, investigation, drawings, specifications) based on general requirements contained in these specifications and shown on the drawings. "Build" refers to construction of Contractor's detailed design after design has been reviewed by the Departmental Representative. Contractor's responsibility for error and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .2 The term "Shop Drawings" means Drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided by the Contractor to illustrate details of a portion of Work.
- .3 The term "Mix Design" means engineered design for proportioning materials in concrete or asphalt concrete pavement including all supporting test results, materials properties and Departmental Representative's letter of recommendation.

- .4 The Design must indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of section under which adjacent items will be supplied and installed. Indicate cross-references to design drawings and specifications.
- .5 The Contractor shall allow for fourteen (14) calendar days for Departmental Representative's review of each submission.
- .6 Adjustments made on Shop drawings by the Departmental Representative are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Departmental Representative prior to proceeding with the Work.
- .7 Make changes in shop drawings as the Departmental Representative may require, consistent with the Contract Documents. When resubmitting, notify the Departmental Representative in writing of any revisions other than those requested.
- .8 Submit letter(s) of certification with all product analysis or test results.
- .9 Accompany submissions with a transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product analysis or test results, product sample.
 - .5 Other pertinent data.
- .10 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor
 - .2 Supplier
 - .3 Manufacturer
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with the Contract Documents.
 - .5 Details of appropriate portions of the Work as applicable:
 - .1 Fabrication
 - .2 Performance characteristics,
 - .3 Standards.
- .11 After the Departmental Representative's review, distribute copies.
- .12 Submit one (1) electronic copy of the shop drawings or product analysis or test results for each requirement requested in the Specification Sections and as requested by the Departmental Representative.

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

1.4 SAMPLES

- .1 Material samples to be provided as outlined in the Contract Documents and as requested by the Departmental Representative.
- .2 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .3 Deliver samples prepaid to Departmental Representative's site office or to a location as directed by the Departmental Representative.
- .4 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .5 Where colour, pattern or texture is criterion, submit full range of samples.
- .6 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of work, state such in writing to Departmental Representative prior to proceeding with work.
- .7 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .8 Reviewed and accepted samples will become standard of workmanship and material against which installed work will be verified.

1.5 CERTIFICATES AND TRANSCRIPTS

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

1.6 REQUIRED CONTRACTOR SUBMITTALS**.1 General:**

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

.2 Pre-Mobilization Submittals:

- .1 The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of submittals in writing. Submit the following plans and programs to the Departmental Representative for review a minimum of fourteen (14) days prior to mobilization to the project site:
- .1 Project schedule, detailing the schedule of the workdays required from Contractor, subcontractors, suppliers and consultants to complete each activity of the project by location in order to meet stages specified in Section 01 11 00 – Summary of Work. In addition, for each activity critical elements that could impact on the schedule are to be identified. Submission shall include both a paper copy of the schedule and an electronic copy in Microsoft Projects format. The project schedule must have critical path and major milestones.
 - .2 List of subcontractors, suppliers and consultants, their role and their key personnel, including names and positions, addresses, telephone, cellular telephone and/or pager numbers. The Contractor should also submit resume of lead designated staff.
 - .3 Plan describing methods the Contractor will have to meet his responsibilities as the Prime Contractor for Traffic Control in the Work zone.
 - .4 Contractor Chain of Command, listing key Contractor personnel, including for each name, position, qualification, experience, telephone, cellular telephone and/or pager numbers. The list shall include the names and telephone/cellular telephone/pager numbers for contact persons who are available on a 24-hour basis in the event of emergencies.
 - .5 Work Plan, describing in detail for each activity by location, the Contractor's intended methods of construction, and materials, equipment and manpower he will use to meet stages specified in Section 01 11 00 – Summary of Work. The Work Plan must be linked to the Project Schedule.
 - .6 Quality Control Plan in accordance with Section 01 45 00 – Quality Control.
 - .7 Traffic Management Plan, in accordance with the requirements of Section 01 55 26 –Traffic Control.
 - .8 Environmental Protection Plans (EPP) and Environmental Construction Operations Plans (ECO Plans) that shall meet the requirements of Section 01 35 43 – Environmental Procedures.
 - .9 Site Access and Detour Plans. It shall include, but not be limited to, engineered Drawings and procedures for accessing all areas of the Work or for proposed detours.
 - .10 Survey Plan describing the Contractor's intended methods of surveying during this project.

- .11 Contractor shall develop an "Emergency Procedures Protocol" in consultation with Parks Canada. Parks Canada will supply the Contractor with a template with contact names and numbers to be used for this purpose.
- .12 Health and Safety Plan - The Contractor shall have a Certificate of Recognition (COR) or Registered Safety Plan (RSP) including a site-specific Health and Safety Plan acceptable to the Departmental Representative. The Contractor shall implement and maintain the Health and Safety Plan during the Work. Health and Safety Plan must include:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety/organization chart for project.
 - .4 Site specific hazard assessment and mitigation plan.
 - .5 General safety rules for project.
 - .6 Job specific safe work procedures.
 - .7 Inspection policy and procedures.
 - .8 Incident reporting and investigation policy and procedures.
 - .9 Occupational Health and Safety meetings.
 - .10 Occupational Health and Safety communications and record keeping procedures.
 - .11 Results of safety and health risk or hazard analysis for site tasks and operation.
 - .12 Submit copies of Material Safety Data Sheets (MSDS).
 - .13 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.
 - .14 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.
- .2 **The Contractor shall not begin any site Work until the Departmental Representative has authorized acceptance of the submittals in writing.**
- .3 The Contractor shall submit a copy of the filed Notice of Project with Provincial authorities and provide a copy to the Departmental Representative.
- .3 **Construction Phase Submittals:**
 - .1 Monthly Progress Reports in accordance with Section 01 32 16.07 – Progress Schedules.
 - .2 Weekly Progress Reports that outline the detailed Work (Contractor, subcontractors, suppliers, consultants) completed to date as well as the anticipated Work to be performed for the following week on a day-by-day basis. Work to be linked to activities by location identified in project schedule and to provide information on materials, equipment and manpower. Also, alternate Work to be identified if proposed Work or a portion thereof cannot be done due to weather, equipment breakdown, delays in delivery, etc.
 - .3 Quality Control Inspection Reports - The Contractor shall maintain a daily inspection report that itemizes the results of all Quality Control inspections conducted by the Contractor. The

reports shall be made available for review by the Departmental Representative upon request. A summary of all Quality Control inspections conducted to date shall be submitted by the Contractor with each request for payment.

- .4 Contractor shall submit all Design Drawings, Shop Drawings, product analysis or test results required to fabricate and / or conduct the work a minimum 14 days prior to fabrication / production.
- .5 Progress Photographs:
 - .1 Formats: Electronic - jpg files, minimum three (3) mega pixels.
 - .2 Submission requirements: One (1) set of electronic files.
 - .3 Identification: Name and number of project, description of photograph and date.
 - .4 Viewpoints: viewpoints determined by Construction Manager or Departmental Representative.
 - .5 Submission Frequency: prior to commencement of Work and weekly thereafter with progress statement, or as directed by Construction Manager or Departmental Representative.
 - .6 Submit memory stick with all electronic pictures as part of closeout package.
- .6 Submit an electronic copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
- .7 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .8 Submit copies of incident and accident reports.

.4 Project Completion Submittals:

- .1 Record Drawings -The Contractor shall submit copies of all Contractor's Drawings revised as necessary to record all as-built changes to the Work and the Contractor shall submit a set of Contract Drawings clearly marked to record as-built changes to the Work.
- .2 Quality Control Records – The Contractor shall submit a bound and itemized set of project quality control documentation.
- .5 The Contractor shall not construe the Departmental Representative's authorization of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Authorization of the programs shall not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal or Provincial regulations and this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor shall remain solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.
- .6 The departmental Representative may, at their sole discretion, withhold full payment or partial payment from the Contractor for Work until acceptable submittal documents have been provided by the Contractor to the Departmental Representative.

PART 2 **PRODUCTS**

2.1 **NOT USED**

PART 3 **EXECUTION**

3.1 **NOT USED**

END OF SECTION

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 **REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Manitoba:
 - .1 The Workplace Safety and Health Act and Regulations.

1.3 **SUBMITTALS**

- .1 The Contractor shall make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 The Contractor shall submit site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work.
- .3 Health and Safety Plan must include:
 - .1 Contractor's safety policy.
 - .2 Identification of applicable compliance obligations.
 - .3 Definition of responsibilities for project safety / organization chart for project.
 - .4 General safety rules for project.
 - .5 Job specific safe work procedures.
 - .6 Inspection policy and procedures.
 - .7 Incident reporting and investigation policy and procedures.
 - .8 Occupational Health and Safety meetings.
 - .9 Occupational Health and Safety communications and record keeping procedures.
 - .10 Results of site specific safety hazard assessment.
 - .11 Results of safety and health risk or hazard analysis for site tasks and operation.
 - .12 The Contractor shall submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
 - .13 The Contractor shall submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .14 The Contractor shall submit copies of incident and accident reports.
 - .15 The Contractor shall submit copies of Material Safety Data Sheets (MSDS) to Departmental Representative.
 - .16 The Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within ten (10) days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within five (5) days after receipt of comments from Departmental Representative.

- .17 The Departmental Representative's review of Contractor's final Health and Safety plan does not relieve the Contractor of Occupational Health and Safety Prime Contractor responsibilities.
- .18 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .19 The Contractor shall address standard operating procedures to be implemented during emergency situations through an on-site Contingency and Emergency Response Plan.
- .20 Equipment/Machinery inspection and fitness certificate
- .21 Equipment/Machinery operator's permits.

1.4 FILING OF NOTICE

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

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

- .1 The Contractor shall schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Parks Canada recognizes that federal Occupational Health and Safety legislation places specific responsibilities upon Parks Canada as owner of the work place. In order to meet those requirements, Parks Canada has implemented a contractor safety regime to ensure roles and responsibilities assigned under Part II of the Canada Labour Code and the Canada Occupational Health and Safety Regulations are implemented and observed when involving contractor(s) to undertake work in Parks Canada work places, including on Parks Canada property.
- .3 After contract award and prior to commencement of any work under the contract, the Project Manager will hold a health and safety meeting with the Contractor. At this meeting, the Contractor is required to complete and sign an Attestation to certify the Contractor will comply with the requirements set out in the Attestation and the terms and conditions of the contract.
- .4 A copy of the "Attestation and Proof of Compliance with Occupational Health and Safety (OHS)" form is part of the Invitation to Tender package.

1.7 REGULATORY REQUIREMENTS

- .1 The contractor shall perform Work in accordance with National Parks Act.

1.8 GENERAL REQUIREMENTS

- .1 The Contractor shall develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 The Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

- .1 The Contractor shall act as the Prime Contractor in all matters relating to Occupational Health and Safety. They shall conduct their work and make all such arrangements necessary to allow them to be accepted as such by the relevant Provincial Authorities
- .2 The Contractor shall 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 The Contractor shall comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 The Contractor shall comply with Occupational Health and Safety Regulations, Manitoba.
- .2 The Contractor shall comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 UNFORESEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or conditions occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

1.12 HEALTH AND SAFETY REPRESENTATIVE

- .1 The Contractor shall employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with roadway construction.
 - .2 Have completed or enrolled in an Occupational Health and Safety certificate program.
 - .3 Have working knowledge of occupational safety and health regulations.
 - .4 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .5 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .6 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.13 POSTING OF DOCUMENTS

- .1 The Contractor shall ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction and in consultation with Departmental Representative.

1.14 CORRECTION OF NON-COMPLIANCE

- .1 The Contractor shall immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 The Contractor shall provide the Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 The Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 WORK STOPPAGE

- .1 The Contractor shall give precedence to safety and health of public and site personnel and protection of the environment over cost and schedule considerations for Work, as shall be included in the Contractor's Health and Safety Plan.

PART 2 PRODUCTS**2.1 NOT USED****PART 3 EXECUTION****3.1 NOT USED****END OF SECTION**

PART 1**GENERAL****1.1 DESCRIPTION**

- .1 Work in this Section includes the implementation of all site specific Environmental Protection Plans (EPP) and Erosion and Sediment Control Plans (ESC) supplied by the Departmental Representative including; materials, equipment, and labour to carry out all commitments in those plans; and monitoring and maintenance required to continually meet those commitments through project completion.

1.2 PRECEDENCE

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

1.3 MEASUREMENT AND PAYMENT PROCEDURES

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

1.4 SUBMITTALS

- .1 The Contractor is required to prepare an Environmental Protection Plan (EPP) in accordance with this Section 01 35 43 – Environmental Procedures and Section 01 33 00 – Submittal Procedures.
- .2 The EPP will include how the Contractor will manage all environmental risks and implement all recommended mitigations identified in the “Parks Canada National Best Management Practices” (BMP) as well as other environmental requirements in the specifications.

1.5 NATIONAL PARK REGULATIONS

- .1 The Contractor shall ensure that all Work is performed in accordance with the ordinances, laws, rules and regulations set out in the Canada National Parks Act and Regulations.
- .2 The Contractor and any sub-contractors shall obtain a business license from a Parks Canada Administration Office, prior to commencement of the Contract. The business license must be valid for the Park in which the Work is occurring.
- .3 All Contractor's business and private vehicles are required to display a vehicle work pass from Parks Canada. These permits may be obtained free of charge from PCA Administration Office once a business permit has been obtained.

1.6 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

- .1 Execution of the work is subject to the provisions within the Impact Assessment Act (2019) and subsequent amendments.
- .2 The contractor is required to prepare an EPP before commencing construction activities or delivery of materials to site. The EPP shall be prepared and certified by a Qualified Environmental

Professional (QEP) (such as Professional Biologist or Professional Agrologist) and in accordance within Parks Canada Environmental Procedures.

- .3 Failure to comply with or observe environmental protection measures as identified in these specifications may result in the work being suspended pending rectification of the problems.
- .4 Refer to the environmental requirements noted in the PRIA's, Direction for Permitted Users conducting water-related activities in RMNP included with this tender. The Contractor's EPP is to include these requirements as a minimum.

1.7 START-UP AND ENVIRONMENTAL BRIEFING

- .1 All staff employed at the construction site will be subject to an approximately one hour briefing regarding their individual and collective responsibilities to ensure avoidable adverse environmental impact does not arise from their activities and personal choices. Employees must attend this briefing before beginning their work at the site. Each employee, having received the briefing, will be issued a certification sticker to be displayed on their helmet. It is recognized that new employees may join the Contractors' work force after the initial round of "Environmental Briefing". In that case and as required, subsequent "Environmental Briefings" can be presented as numbers warrant, by arrangement with the ESO through the Departmental Representative. Also, some sub-trades may be present at the site for a short time, to perform once-only duties. In these cases, the "Environmental Briefing" will be replaced by the Contractor explaining the environmental sensitivity of the work location to the sub-trade worker(s), and reviewing highlights of personal conduct expected, with reference to a one-page briefing summary to be provided to the Contractor by the ESO. A copy of this summary will be provided to each sub-trade worker joining the work force at the site.
- .2 Parks Canada may have an ESO attending the site to monitor the construction activity for conformance with the EPP. The ESO or alternate designated Parks Canada staff member will present the "Environmental Briefing". The ESO's main duties are to monitor the progress of the construction on an on-going basis to ensure compliance with environmental protection measures, and to provide guidance through the Departmental Representative, in the event of unanticipated environmental problems. Although the ESO has authority to enforce National Parks Act violations, direction to the Contractor will be the duty of the Departmental Representative.
- .3 The ESO is not to act as a daily environmental monitor but shall check activities with the approved EPP to ensure compliance, at their discretion. The Contractor's QEP (Qualified Environmental Professional) shall be responsible for ensuring all activities are conducted in accordance with the approved environmental documents.

1.8 ENVIRONMENTAL PROTECTION PLAN

- .1 The EPP is to be prepared and certified by a Qualified Environmental Professional. Certification by a QEP is considered incidental to the Work and no additional payment will be made.
- .2 Changes and/or revisions to the EPP may be required by the ESO as the Work progresses and more information becomes available. No additional payment will be made for changes and/or revisions to the EPP.
- .3 The Contractor's EPP will detail how the work limits shall be marked and what procedures will be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Departmental Representative and the ESO.

- .4 The EPP will include how the Contractor will manage all environmental risks and specify site-specific details for implementing mitigation or achieving mitigation outcomes identified in the PRIAs.
 - .1 The Contractor's EPP shall address specific instream works separately under a stand-alone section.
 - .2 The Contractor's EPP shall address wildlife concerns including bear awareness and response plan under a stand-alone section.
- .5 Spill Response and Erosion and Sedimentation Management Plans are to be included in the EPP, in accordance with this Section.
- .6 QEP resumes are to be included in the EPP for Departmental Representative and ESO review.
- .7 The Contractor shall submit the EPP in accordance with Section 01 33 00 – Submittal Procedures yet allow no less than 2 weeks for the review of their EPP and shall address and respond to all comments raised during the review within a maximum of 1 week.

1.9 RESTRICTED ACTIVITY PERMITS

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

1.10 CONSTRUCTION SITE ACCESS AND PARKING

- .1 The Contractor shall review both short and long-term construction access requirements with the Departmental Representative, both at start-up and on an ongoing basis. In consultation with the Departmental Representative, the Contractor shall formulate an agreement for worker transportation to and from the work sites and where workers shall park their private vehicles. Generally, personal vehicles shall be parked at least 10 metres distance from any watercourse.
- .2 The Contractor shall ensure that the environment beyond the work limits is not negatively impacted or damaged by workers' vehicles or construction machinery and shall instruct workers so that the "footprint" of the project is kept within defined boundaries.

1.11 ACCIDENTAL FINDS

- .1 It is possible that a scattering of historic objects will be found within the Project limits. If significant features are encountered, stop Work in the immediate area, notify the Departmental Representative, take photographs of the findings and a GIS location reading. No additional payment will be made to the contractor for any delays.
- .2 Significant features include items such as:
 - .1 Structural remains, high artifact concentrations, tent platforms, log cribbing retaining features, human remains, marked trees and other various items.
 - .2 If unsure, contact the Departmental Representative immediately.
- .3 The Departmental Representative will notify the Contractor when Works can resume in the area.

1.12 RELICS AND ANTIQUITIES

- .1 Artifacts, relics, antiquities and items of historical interest such as cornerstones, commemorative plaques, inscribed tablets and similar objects found on the work site shall be reported to the ESO or the Departmental Representative immediately. The Contractor and workers shall wait for instructions before proceeding with their work.
- .2 If significant features are encountered, stop Work in the immediate area, notify the Departmental Representative immediately, take photographs of the findings and a GIS location reading. If unsure of significance, contact the Departmental Representative immediately. The Departmental Representative will notify the Contractor when Works can resume in the area.
- .3 All historical or archaeological objects found in the Parks are protected under the National Parks Act and Regulations and are the property of Parks Canada. The Contractor and workers shall protect any articles found and request direction from the ESO or the Departmental Representative.

1.13 PROTECTION OF WORK LIMITS

- .1 The Contractor is to prepare an EPP that details how the work limits shall be marked and what procedures will be employed to ensure trespass outside these limits does not occur, to the satisfaction of the Departmental Representative and the ESO.

1.14 EROSION CONTROL

- .1 Erosion control measures that prevent sediment from entering waterway at the construction site are a critical element of the project and shall be implemented by the Contractor, this may include the need to place Hydraulic Erosion control products.
- .2 On-site sediment control measures shall be constructed and functional prior to initiating activities required for the work. The Contractor shall prepare an Erosion Control Plan to the satisfaction of the Departmental Representative and the ESO.
- .3 The regular monitoring and maintenance of all erosion control measures shall be the responsibility of the Contractor. If the design of the control measures is not functioning effectively they are to be repaired, remediated, or replaced. The Departmental Representative and ESO will also monitor erosion control performance.
- .4 The contractor shall be responsible to secure against erosion during any periods of construction inactivity or shutdown.

1.15 POLLUTION CONTROL

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

1.16 EQUIPMENT MAINTENANCE, FUELLING AND OPERATION

- .1 The Contractor shall ensure that all soil, seeds and any debris attached to construction equipment to be used on the project site shall be removed (e.g. power washing) outside the Parks before delivery to the work site.
 - .1 All equipment may be subject to an inspection by the Departmental Representative and ESO prior unloading onsite.

- .2 Equipment fuelling sites will be identified by the Contractor and approved by the Departmental Representative and the ESO. Except for chain saws, any fuelling closer than 100 metres to any streams, wetlands, water bodies or waterways shall require the authorization and oversight of the Departmental Representative.
- .3 Diesel and gasoline delivery vehicles, including bulk tankers shall be parked more than 100 metres from any streams, wetlands, water bodies or watercourses. Gravity fed fuel systems are not allowed. Manual or electric pump delivery systems shall be used. Fuelling personnel shall maintain presence at and provide immediate attention to the fuelling operation.
- .4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times. Protection and containment of approved fuel storage sites is addressed in # 4 of Pollution Control above.
- .5 Equipment used on the project shall be fuelled with E10, and low sulfur diesel fuels and shall conform to local emission requirements. The Contractor is to ensure that unnecessary idling of vehicles is avoided.
- .6 Oil changes, lubricant changes, greasing and machinery repairs shall be performed at locations approved by the ESO or the Departmental Representative. Waste lubrication products (e.g. oil filters, used containers, used oil, etc.) shall be secured in spill-proof containers and properly recycled or disposed of at an approved facility. No waste petroleum, lubricant products or related materials are to be discarded, buried or disposed of in borrow pits, turnouts, picnic areas, viewpoints, etc., anywhere within National Parks.
- .7 All site equipment shall use bio-based or biodegradable hydraulic fluid for works. Costs shall be considered incidental to works.
- .8 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order. If any equipment is found to have fluid/fuel leaks the leaks are to be contained and cleaned up immediately and the piece of equipment shall be repaired or removed from site.
- .9 Fuel containers and lubricant products shall be stored only in secure locations specified by the Departmental Representative. Fuel tanks or other potentially deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals when left overnight in National Parks. Alternatively, the Contractor may hire a security person employed to prevent vandalism. The access gates to the pits shall be locked at the end of each working day and during extended periods when the pit is not being used. The Contractor is to ensure that workers are briefed on proper 'daisy-chain' use of locks to ensure no other contractor or Parks Canada Highways are locked out.

1.17 OPERATION OF EQUIPMENT

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

especially deleterious substances (e.g. chemicals) do not enter any watercourses, to the satisfaction of the Departmental Representative and ESO.

- .3 The Contractor shall instruct workers to prevent pushing, placement, raveling, storage or stockpiling of any materials (e.g. slash, rock, fill or topsoil) in the trees bordering the right-of-way or into watercourses or water bodies.
- .4 When, in the opinion of Parks Canada, negligence on the part of the Contractor results in damage or destruction of vegetation, or other environmental or aesthetic features beyond the designated work area, the Contractor shall be responsible, at their expense, for complete restoration including the replacement of trees, shrubs, topsoil, grass, etc., to the satisfaction of the Departmental Representative and ESO.
- .5 The Contractor shall restrict vehicle movements to work limits.
- .6 Workers private vehicles are to remain within the construction footprint, or as directed by the Departmental Representative.

1.18 FIRE PREVENTION AND CONTROL

- .1 A fire extinguisher shall be carried and available for use on each machine and at locations within the plant in the event of fire. Basic firefighting equipment recommended (e.g. a water truck; minimum 500 Imperial gallons with 500 feet of fire hose and a pump capable of producing 45 psi water pressure at the nozzle, three shovels, two pulaskis, and two five gallon backpack pumps) shall be maintained at the construction site at a location known and easily accessible to all the Contractors' staff.
- .2 A water truck may be necessary and will depend on the timing of the contract (e.g. – not required during winter or snow covered conditions).
- .3 Construction equipment shall be operated in a manner and with all original manufacturers' safety devices to prevent ignition of flammable materials in the area.
- .4 Care shall be taken while smoking on the construction site **only at designated smoking areas** to ensure that the accidental ignition of any flammable material is prevented. There will be zero tolerance for smoking outside of designated areas.
- .5 In Case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. Parks Canada Dispatch shall be notified immediately of any fire and can be contacted at a phone number provided in the Preconstruction Meeting. Following notification of Parks Canada Dispatch, the Departmental Representative and the ESO shall be notified.
- .6 Fires or burning of waste materials is not permitted.

1.19 WILDLIFE AND FISH

- .1 During the Environmental Briefing all personnel shall be instructed by the ESO on procedures to follow in the event of wildlife appearance near or within the work site and any other wildlife concerns.
- .2 The Contractor shall avoid or terminate any activities on site that attract or disturb wildlife and vacate the area and stay away from the immediate location if wildlife including bears, cougars, wolves, deer, elk or moose display aggressive behaviour or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. disposal and storage of lunches, food scraps, lubricants and oils) must be exercised at all times.

- .1 Workers may require bear spray to be carried at all times following development of the Site Specific Health and Safety Plan.
- .3 The Contractor shall notify the ESO and Departmental Representative immediately about dens, litters, nests, carcasses (road kills), bear activity or encounters on or around the site or crew accommodation. Other wildlife-related encounters are to be reported within 24 hours.
- .4 A qualified environmental professional (QEP) shall be present during works that may directly or indirectly impact fish and/or fish habitat, including any fish salvage activities. The QEP shall also monitor the diversion of flows during and post construction for potential fish stranding. A written report detailing all salvaged fish will be required as part of this work.

1.20 WASTE MATERIALS STORAGE AND REMOVAL

- .1 The Contractor and workers shall dispose of hazardous wastes in conformance with the Environmental Contaminants Act and applicable provincial regulations while observing the Code of Good Practice for Management of Hazardous and Toxic Wastes at Federal Establishments.
- .2 All wastes originating from construction, trade, hazardous and domestic sources, shall not be mixed, but will be kept separate.
- .3 Construction, trade, hazardous waste and domestic waste materials shall not be burned, buried or discarded at the construction site or elsewhere in the Parks. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers and disposed of at an appropriate waste landfill site located outside the parks. Construction waste storage containers, provided by the Contractor, shall be emptied by the Contractor when 90% full. Waste containers will have lids, and waste loads shall be covered while being transported.
- .4 A concerted effort shall be made by the Contractor and workers to reduce, reuse and recycle materials.
- .5 All efforts to prevent wildlife from obtaining food, garbage or other domestic wastes shall be made by the Contractor and contract staff while undertaking their work in the Parks. Such wildlife attractants shall not be stored at the work site overnight. Lunches, coolers and food products, including waste food products, shall be securely stored away from access by animals. Daily removal of food scraps, food wrappers, pop cans or other attractive products to bear proof containers is mandatory.
- .6 The Contractor and workers shall immediately report any circumstances related to food/garbage (e.g. overflowing container or strong smell) and wildlife to the ESO or the Departmental Representative.
- .7 Sanitary facilities, such as a portable container toilet, shall be provided by the Contractor and maintained in a clean condition.

1.21 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 Contractor's office, work headquarters, material laydown, equipment parking and storage area will be in locations approved by Parks Canada and the Departmental Representative with the goal of minimizing impacts to visitor experience and safety, motorists, wildlife and water quality.
- .2 The National Park Act regulations prohibit anyone working within the Parks from using public campground facilities.
- .3 Removal and storage of snow shall be arranged with the ESO and the Departmental Representative.

- .4 The Contractor shall control blowing dust and debris generated from the construction site by means such as covering or wetting down dry materials and rubbish. Dust control measures for temporary access roads may also have to be initiated.

1.22 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Department Representative in writing of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Take corrective action only after receipt of written approval from the Departmental Representative in non-emergency circumstances.
- .3 Departmental Representative may issue a stop work order until satisfactory corrective action has been taken.
- .4 No time extensions granted, or equitable adjustments allowed to Contractor for such suspensions.
- .5 No additional payment will be made for the corrective work.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- .1 The Contractor shall ensure that the substrate or riparian area of streams, rivers or watercourses, whether open water or frozen over shall not be disturbed by tracked, wheeled or self-propelled equipment, (e.g. a skidder or truck).
- .2 The Contractor shall take all measures to ensure that trees do not fall into streams, rivers, wetlands or water bodies or outside the clearing limits. Generally, work within a 30 metres buffer of watercourses, water bodies or wetland requires the close oversight of the ESO or the Departmental Representative.
- .3 Trees inadvertently felled into streams, rivers, watercourses or outside the clearing limits shall be removed by means so as not to damage the substrate or any standing trees left outside the clearing limits. Machinery shall not go outside the clearing limits, or into streams, rivers, watercourses or water bodies to remove felled trees.
- .4 Logs and other salvage materials are to be transported to and placed at the storage site without spread of debris or damage to other standing trees or landscape resources outside the marked clearing or storage limits. They shall not be skidded through wetlands, waterways or water bodies.
- .5 During the grubbing component, stumps, roots, imbedded logs and other non-soil debris shall be pulled and shaken free of loose soil and rocks before being transported for disposal.
- .6 No slash clearing, pickup or grubbing shall occur outside of the designated area or within 1 metre of the drip line of existing forest.

- .7 Existing areas of vegetation disturbed as a result of this contract shall be rehabilitated using approved topsoil from the park and a native grass seed mix as specified in Section 32 92 19.13 – Mechanical Seeding.
- .8 No clearing of rare plant species, if present, may occur without authorization and the acquisition of appropriate permits (e.g. SARA). Clearing of vegetation requires a Restricted Activity Permit.
- .9 In water works shall be monitored by the Contractor's Qualified Aquatic Environmental Specialist (QAES) in accordance with the Canadian Water Quality Guidelines for the Protection of Aquatic Life - Total Particulate Matter (Canadian Council of Ministers of the Environment - CCME 2002).

3.2 STRIPPING

- .1 A contingency plan for control of dust generated from the construction site shall be prepared, with materials availability arranged in the event of their need. In the event of a work program shutdown during inclement weather erosion control of bared soils or excavated materials stockpiles will be required. The Contractor's EPP will describe measures to be implemented in such a circumstance.
- .2 Stripping close to any watercourse, water body or wetland shall employ methods to ensure materials are not pushed, are not eroded and do not fall into the water or wetlands. Generally, work within a 30 metre buffer of waterways or wetlands requires the close oversight of the ESO and the Departmental Representative.
- .3 No stripping shall occur outside of the designated area or within 1 metre of the drip line of existing forest.
- .4 Stripped soil (including fine forest litter) materials shall be placed and stored at locations and in amounts and form as instructed by the Departmental Representative, for later reclamation use on graded slopes. Stripping piles may require erosion control, sedimentation protection or stabilization, depending on the location and anticipated duration of storage. At the Departmental Representatives direction, the Contractor shall prepare a plan for management of each stripping pile.

3.3 MATERIAL LOADING, HAULING, PLACEMENT AND GRADE BUILDING

- .1 During grade construction conducted close to any watercourse, water body or wetland methods shall be employed to ensure materials are not pushed, are not eroded and do not fall into the water or wetlands. Generally, work within a 30 metre buffer of waterways or wetlands requires the close oversight of the ESO and the Departmental Representative.
- .2 No grade building shall occur outside of the designated area or within 1 metre of the drip line of existing forest. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location. Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location.

3.4 EXCAVATING AND PLACEMENT

- .1 Excavation will be undertaken according to the Design Drawings.
- .2 All sediment control measures shall be implemented by the Contractor prior to the commencement of the work in the vicinity of water bodies, watercourses, and wetlands.

- .3 Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location.
- .4 Special precautions may have to be taken during excavation in the vicinity of intermittent or active drainage channels. See 3.10 - Specific Concerns Relative to Erosion Control and Sedimentation of this Section 01 35 43 – Environmental Procedures.
- .5 If sediments enter watercourses during any excavation nearby or at its banks, the Contractor's QAES shall ensure that sediment levels in the waters of the river or creeks do not exceed specified limits and meet the “desired end result” limits outlined. See 3.9 - Specific Concerns Relative to Erosion Control and Sedimentation of this Section 01 35 43 – Environmental Procedures.
- .6 Placement of Rip-Rap and backfill at creeks shall be undertaken without contacting the watercourse or wetted margins of the stream, unless approved by the ESO and Departmental Representative.
- .7 If a pump-out sump to dewater excavation sites is required, the **Contractor is to prepare the details of how the dewatering shall be undertaken as part of the EPP** to the satisfaction of the Departmental Representative and the ESO. Special attention is to be given to the environmental sensitivity of the discharge area, freezing conditions operation, overflow avoidance, decanting and settlement pond reclamation. Water containing suspended materials shall not be pumped into watercourses, drainage systems or on to land, except with the permission of the Departmental Representative and the ESO.

3.5 WATER EXTRACTION AND DISTRIBUTORS

- .1 Backflow prevention is required on all water trucks.
- .2 All water trucks and water extraction equipment must be thoroughly cleaned prior to entering any Park. Proof of cleaning may be requested by the Departmental Representative and ESO for verification.
- .3 Extraction of water within any National Park requires a RAP. Should the Contractor require/request a water source the Departmental Representative, in consultation with the ESO may approve a RAP and give direction as to a location to be used. Specific intake measures are required when water is approved to be withdrawn from open watercourses.
- .4 Care must be taken by the Contractor to ensure extracted water does not enter another water body, other than the initial source of extraction.
- .5 ESO may require water trucks to be cleaned prior to moving between sites within the Parks to mitigate the risk of cross-contamination of water bodies.

3.6 CULVERT INSTALLATION

- .1 All culverts shall be installed using best management practices for working in or near water that will result in a minimum amount of sedimentation and damage to the riparian area of the watercourse.
- .2 The culverts shall be installed using best management practices for placement, including consideration of aquatic ecology.
- .3 The CSP's must be installed during periods of low discharge as specified in Section – 01 14 00 Work Restrictions and Drawings. The use of sediment control measures may be necessary to ensure that excessive amounts of sediments do not enter watercourses.

3.7 FINE GRADING, TOPSOIL PLACEMENT AND SEEDING

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

3.8 REROUTING CHANEL FLOW INTO NEW CULVERT

- .1 During rerouting the channel flow into the new CSP's, sediment traps and barriers will be placed to capture silt and deleterious material.
- .2 Removal of existing CSP culverts will be started and completed from the downstream of the culvert. Sumps and filters will be kept ahead of the work to intercept and trap drainage silt.

3.9 SPECIFIC CONCERNS RELATIVE TO EROSION CONTROL AND SEDIMENTATION

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

3.10 BASIC IMPACT ANALYSIS MITIGATION MEASURES

- .1 In addition to the Parks Canada National Preapproved Routine Impact Assessment Roads and Related Infrastructure that will be followed for the Project, the following Project specific mitigation measures shall be followed. Mitigation measures are incorporated into the Project and implemented to avoid or reduce potential adverse effects the Project may have on the environment and cultural resources. If there is any conflict between BMPs and those project-specific mitigations listed below, the project-specific mitigations shall take precedence.
 - .1 Air and Noise
 - .1 Open fires and burning are prohibited.
 - .2 Vehicles will not be left idling.
 - .3 Carpooling to site will be used whenever possible to reduce emissions.
 - .4 Dust control methods (i.e., watering roads) will be employed during construction of the Project to limit wind erosion.
 - .5 Construction activities will occur during hours designated by PCA.
 - .6 Machines will be kept in good working order and comply with applicable provincial and federal requirements.
 - .7 Heavy equipment will be outfitted with mufflers to dampen noise.
 - .2 Soils and Landforms
 - .1 Equipment and materials laydown areas will be restricted to existing cleared surfaces where possible, reducing the potential for soil disturbance and erosion. Any new laydowns areas will require approval from ESO. All laydown areas will be clearly delineated and marked.

- .2 When feasible, transporting equipment and material will be postponed during adverse weather or wet ground conditions to mitigate rutting, admixing, and compaction.
 - .3 Upper soil materials and organic material (containing seed bank and propagules) will be salvaged for replacement during reclamation.
 - .4 Upper soil materials and organic material will be stripped carefully to a selected depth to reduce admixing.
 - .5 Soil material replacement will be completed when the soil condition is suitable (i.e., dry condition) to be evenly spread over disturbed areas.
 - .6 Seeding to take place within 2 weeks maximum of completion of excavation and/or embankments
 - .1 Seed bed must be prepared a maximum 2 days prior to the seed being placed.
 - .7 Bare soil areas, particularly steep or long slopes, areas upgradient of water bodies, or areas located within drainage ditch networks should be covered with topsoil and seeded in a timely manner to promote vegetation cover and to prevent erosion of surface soils. Any additional erosion control measures should be put in place to prevent sediment from entering a watercourse.
 - .8 The EPP will include an Erosion and Sediment Control Plan that will be designed so that landscape features outside of the Project footprint will not be negatively affected or altered.
- .3 Water Quality and Quantity
- .1 Contractors will identify equipment laydown, vehicle fueling locations and equipment maintenance plans for approval by ESO when working near bodies of water.
 - .2 All equipment that could potentially be in contact with water (i.e. water tanks, hoses, nozzles, couplings, discharge/uptake equipment, new culverts) are to undergo an inspection by the ESO to evaluate the potential for equipment to be a vector for aquatic invasive species.
 - .3 Water brought onto site for construction purposes should be sourced from a location approved by the ESO prior to arrival on site.
 - .4 No water is to be extracted from a local stream, river or other water body within a National park without approval from the ESO.
 - .5 On site sanitary facilities will be kept in clean order at all times, and will not be located within 30 m of a watercourse or water body.
 - .6 All erosion control measures will be in place prior to starting work in the vicinity of rivers, waterbodies, watercourses, and wetlands or other identified sensitive habitats.
 - .7 To the extent practical, existing surface drainage patterns will be maintained in the Project area.
 - .8 Disturbances to wetland and drainage edges will be minimized to the extent possible.
 - .9 To the extent practical, construction in wetlands will be scheduled to occur under dry or frozen ground conditions.

- .10 Any extra workspace required near drainage edges will be separated from the top of bank by a minimum of 30 m.
- .11 Water pumping during isolation and dewatering of work areas shall be discharged onto stable surfaces (e.g. well-vegetated areas, rocks, sand bags, tarps, and settling ponds) in a manner that does not cause erosion of soils nor sedimentation of the watercourse. If this is not possible, use filter bags or other appropriate sediment filtering devices and energy dissipaters.
- .12 The pump intake will be screened and elevated to minimize the pumping of sediment.
- .13 Hoses and pumps of sufficient length and capacity to maintain downstream flows will be used and will be in good working order to transfer water as required.
- .14 If dam and pump methods are required for isolation, pump capacity should be calculated to include 150% of the average expected watercourse flow rates for the proposed construction period.
- .15 Use temporary diversion berms or other methods, as required, to regulate drainage from construction areas.
- .16 Salvaged materials and will be stored away from waterbodies and watercourses above the high-water mark.
- .17 Erosion and sediment control measures shall be inspected and maintained daily during construction and at a regular interval until exposed soils are stabilized against erosion through vegetation growth or other means.
- .18 Sites will be secured against erosion during any periods of construction inactivity or shutdown.
- .19 Erosion and sediment control measures will not be removed until there is unlikely to be further erosion.
- .20 Weather forecasts shall be regularly monitored for extreme weather conditions during the construction period when exposed soils have not been fully stabilized.
- .21 Construction activities will be reduced or stopped during heavy precipitation events. Heavy precipitation events are those considered hindering access and clearing activities, causing rutting and compaction of soils and those which may cause a threat of local flooding.
- .22 A visual inspection of the worksite shall be conducted, during and after each heavy rainfall event, for signs of erosion, and implement appropriate mitigation measures if required.
- .23 Additional sediment control and erosion control materials must be onsite and readily available in the event of a sudden and heavy rainfall event or the forecast of such event.
- .24 Equipment will be inspected for leaks and structural integrity prior to use on the Project, and inspections will be recorded. Any detected leaks will be addressed immediately.
- .25 Spill abatement kits will be kept on-site at all times and included in each motorized vehicle and for every piece of on-site equipment. All site personnel will be trained in the use of spill abatement kits.
- .26 All work-site activities will be conducted in a manner that minimizes the potential for spills or leaks, including the regular inspection and maintenance of machinery

- and equipment, and providing spill containment structures for onsite fuel and oil storage, if applicable.
- .27 All fuel and hazardous materials must be stored at least 100 m away from streams, wetlands, waterbodies or waterways.
- .4 Fish and Fish Habitat
- .1 Canada National Parks Act and Regulations and PCA PRIAs will be followed to reduce or avoid negative effects on fish and fish habitats.
- .2 Fisheries and Oceans Canada (DFO) Measures to Avoid Causing Harm to Fish and Fish Habitat will be applied (DFO 2016).
- .3 The reduced-risk timing windows for spawning fish: June 30 to September 15.
- .5 Vegetation
- .1 Vegetation outside the clearing limits is not to be disturbed.
- .2 Stumps should be left in place when near stream banks to provide bank and surface stability and wildlife habitat. Stumps will be cut as close to the ground as possible.
- .3 The Project will avoid known listed plants as much as possible.
- .4 An observation of the provincially S3S4 ranked tall coneflower (1 individual) at approximately 2+700 appears to be immediately adjacent to the proposed work area. The areas containing these species will be delineated for avoidance as deemed necessary. If avoidance is not feasible, consultation with PCA will be completed prior to removal of these plants to determine the importance of these plants and identify appropriate mitigation.
- .5 If a listed plant species is encountered that was not expected, appropriate mitigation will be applied prior to further construction activities.
- .6 Construction equipment shall be inspected for invasive species by ESO prior to arriving on site. A minimum of 48 hours' notice for inspection is required.
- .7 All equipment and vehicles must arrive on site clean and are free of noxious weeds and soils. All equipment and vehicles should be cleaned regularly, with additional attention to movement between sites to minimize spread of weeds.
- .8 To prevent the spread of noxious weeds, soils, seeds, and debris attached to clothing, footwear, and equipment will be removed outside of RMNP prior to arrival at the work site. Attention should be paid to footwear, undercarriages, wheels, and blade/buckets.
- .9 All construction material sources (e.g., fill) will either have a certificate of weed analysis or approved by a Parks Canada representative.
- .10 Disturbed areas will be revegetated with an appropriately selected certified weed-free native seed mix, as soon as practical following construction, preferably as soon as an area is graded and finished and before the next rain event.
- .11 Equipment will be inspected for leaks and structural integrity prior to use on the Project, and inspections will be recorded. Any detected leaks will be addressed immediately.
- .12 Spill abatement kits will be kept on-site at all times and included in each motorized vehicle and for every piece of on-site equipment. All site personnel will be trained in the use of spill abatement kits.

.6 Wildlife and Wildlife Habitat

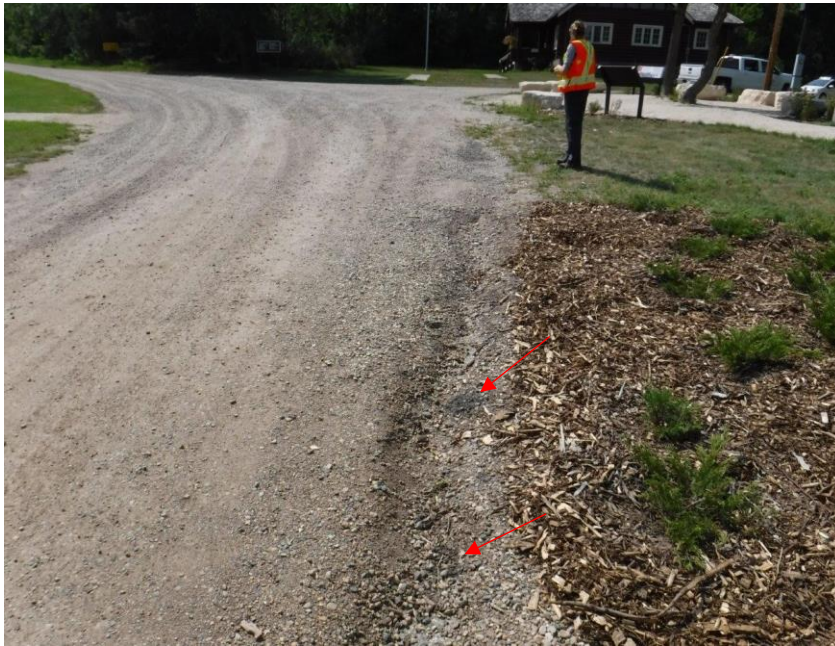
- .1 The areas outside of the cleared limits is not to be disturbed.
- .2 Northern leopard frog, a species listed as Special Concern under the *Species at Risk Act*, was detected at 17 different locations along Highway 19. Additional locations may be identified at overwintering sites during the fall visual survey. Although there are no provincial activity restrictions defined, federal guidelines state a year-round, 400 m setback at confirmed breeding and overwintering sites should be adhered to during roadworks. Given that this setback is year-round and will restrict completion of Project activities in these areas, a management plan including mitigation measures such as but not limited to, construction timing, pre-construction survey, isolated work area, amphibian salvage, sediment and erosion control will be developed to allow roadworks to be completed through these sensitive areas. It should be noted Km 17.5 is one of these identified areas.
- .3 If a northern leopard frog, a mass emergence of frogs, or a mass migration event is observed in an area, Project activities should be avoided within and across this particular area in order to avoid northern leopard frog injury and mortality. Project activities can continue after frogs are no longer present.
- .4 Clearing of vegetation will be completed outside of the breeding bird window (approximately April 19 to August 29), whenever possible. If vegetation removal is proposed within this window, a migratory bird nesting survey must be completed by a qualified biologist and a mitigation plan would be required to avoid the inadvertent harming, killing, disturbance or destruction of migratory birds, nests and eggs (incidental take), supporting compliance with the Migratory Birds Convention Act and provincial acts and regulations. If an active nest is found, the vegetated area will be left intact with a suitable sized setback of shrubs/trees around it. The size of the protected, no-disturbance setback is species dependent and will be determined by a QEP and/or ESO. The setback area will remain undisturbed until the young have fledged and left the area.
- .5 All Project personnel should be made aware of the potential presence of *Species at Risk Act* listed species and how to identify them. If species are speculated or found to be potentially present in an area, Project activities should be halted and the QEP and/or ESO should be consulted.
- .6 If an active roost (e.g. bats) or den (e.g., fox, bear, etc.) of any species is found, work will be halted and the QEP and/or ESO will be contacted and a management plan will be determined, including establishing a nodisturbance zone and the area remaining undisturbed until the roost or den is no longer considered active.
- .7 All workers will receive training/orientation for wildlife awareness, including the non-feeding of wildlife, and no littering policies.
- .8 Speed limits shall be strictly enforced to reduce potential of wildlife vehicle interactions and incidental take of wildlife.
- .9 Equipment and vehicles will yield the right-of-way to wildlife.
- .10 Food wastes will be collected in suitable receptacles that limit attraction or impacts to wildlife.

- .11 Hydrocarbon products are a wildlife attractant (particularly for bears) and therefore should be stored in wildlife-proof containers.
- .12 Littering and feeding of wildlife will be prohibited.
- .13 Recyclable and waste hazardous materials will be stored on-site in appropriate containers to prevent exposure and shipped off-site to an approved facility.
- .14 Daily removal from the Park and off-site disposal of food scraps, food wrappers, pop cans, domestic waste, cigarette butts and other potential wildlife attractants is mandatory. Storage of these items while on the work site will be in a closed, container or located within work vehicles (not the bed of the truck). Existing Parks Canada waste receptacles will not be used for disposal of such wastes without prior approval from Parks Canada. Incidents involving wildlife accessing garbage or attractants will be reported immediately to Parks Canada.
- .7 Visitor Experience
 - .1 Construction activities will occur during hours designated by PCA.
 - .2 Vegetation removal will be minimized as much as possible to maintain aesthetics.
 - .3 Appropriate signage will be erected and traffic directing personnel will be used where required.
 - .4 Road and/or lane closures will be staged and operated to limit traffic delay through construction zones to minimize disruption to road users.
 - .5 Access to all facilities and recreational areas will be maintained throughout Project construction. Should the Contractor require the use of a trailhead for equipment storage or parking they must submit a request to the Departmental Representative.
 - .6 Project activities will follow applicable local and provincial traffic regulations.
 - .7 Good housekeeping practices will be employed and maintained through the duration of the Project activities.
 - .8 All litter, garbage, and other debris generated by the Project will be collected and transported to approved disposal locations or facilities.
 - .9 All construction equipment will be maintained so they operate at optimal performance to reduce noise and air emissions.
 - .10 Disturbed areas will be recontoured and reclaimed to a stable profile to permit existing land uses.
- .8 Cultural Resources
 - .1 Construction related activities, including vehicular travel and equipment operation, will be restricted to the current Highway 19 footprint and inside the previously established boundaries of clearing, staging or stockpiling areas.
 - .2 No disturbance or work will be permitted around cultural resources that have been identified; their locations will be communicated to the contractors and/or marked to ensure they are not disturbed.
 - .1 See photos below noting identified cultural resources.
 - .3 Due care must be taken to avoid any incidental impact to the East Gate feature (50K-5) within the East Gate Registration Complex NHSC.

- .4 Grading of Highway 19 (the Norgate Road) within the East Gate Registration Complex NHSC area must not exceed the depth or width of the original road grade.
- .5 Feature 20K-2018-F2 near km 0+600 will be flagged and avoided by ditching and any other ground disturbing activity.
- .6 Feature 20K-2018-F3 near km 0+745 will be flagged and avoided by ditching and any other ground disturbing activity.
- .7 Historical borrow pit 20K103-2018-F2 near km 12+760 will be flagged and avoided by ditching and any other ground disturbing activity.
- .8 If any of the above features cannot be avoided by ground disturbing activities, the PCA Terrestrial Archaeology Section will be notified, and may choose to examine these (under snow-free conditions) to determine if any additional cultural artifacts or features are present. Additional mitigation may be required prior to the onset of ground disturbing activities in these locations, subject to decision by the PCA Terrestrial Archaeology Section.
- .9 If accidental discovery of a significant feature or cultural resource is encountered (e.g., log cabin foundations, tent platforms, log cribbing retaining features, archaeological features or concentrations of artefacts), PCA will be notified and the Accidental Finds Protocol will be followed.
- .10 If a cultural or historical resource is encountered, documentation will be required and the artefacts shall be left in place.
- .11 Workers will not collect any cultural or historical resources.
- .12 Any changes to the proposed plans will be submitted to the PCA Terrestrial Archaeology Representative for review.



Photograph 1 – View west along Highway 19 (Norgate Road; 50K0-8) through the East Gate of the East Gate Registration Complex NHSC (50K0-5), toward Whirlpool Warden Station (50K0-11).



Photograph 2 – View west of degrading asphalt exposed below current gravel road grade, Highway 19 / Norgate Road (50K0-8).

END OF SECTION

PART 1 **GENERAL****1.1** **REFERENCES**

- .1 American Society for Testing and Materials International (ASTM):
 - .1 ASTM C117 – [13], Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136 / C136M – [14], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM C131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .4 ASTM D698 – [12e2], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³)).
 - .5 ASTM D3665 – [12], Standard Practice for Random Sampling of Construction Materials
 - .6 ASTM D4318 – [10e1], Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - .7 ASTM D5821 – [13], Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate.
 - .8 ASTM D6938 – [15], Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.3 **TESTING BY THE CONTRACTOR**

- .1 The Contractor shall perform all Quality Control testing required to assure that the Work strictly complies with the Contract requirements. This shall include, but not be limited to:
 - .1 All testing specified in the Contract Documents;
 - .2 Any other testing required as a condition for deviation from the specified Contract procedures.
- .2 The Contractor shall be fully responsible and bear all costs for all quality control testing and shall conduct such testing in the following manner:
 - .1 Provide testing facilities and personnel for the tests and inform the Departmental Representative in advance to enable the Departmental Representative to witness the tests if so desired;
 - .2 Notify the Departmental Representative when sampling will be conducted;
 - .3 Within one Day after completion of testing, submit test results to the Departmental Representative; and
 - .4 Identify test reports with the name and address of the organization performing all tests, and the date of the tests.
- .3 Approval of tested samples will be for characteristics or use named in such approval and shall not change or modify any Contract requirements.

- .4 Testing agencies, their inspectors, and their representatives are not authorized to revoke, alter, relax, enlarge or release any requirement of the Contract Documents, nor to approve or accept any part of the Work.
- .5 The minimum frequency for Quality Control testing during embankment construction will be as follows:

| CONSTRUCTION TYPE | TEST TYPE | MINIMUM FREQUENCY OF TESTS ¹ |
|-------------------------------|--|---|
| Subgrade (Roadway Embankment) | ASTM D698, Standard Test Method for Laboratory Compaction | 1 per material source or as directed by the Departmental Representative when soil characteristics change |
| | ASTM D6938, Density of Soil and Soil-Aggregate in Place by Nuclear Methods | 1 test per 40 m for each lift randomly left and right of centreline or as directed by the Departmental Representative |
| | Proof Roll | As required by the Departmental Representative |
| | Test Strip | 1 per material, if required by the Departmental Representative |
| Granular Backfill | ASTM C136/C136M, Sieve Analysis ASTM C117, Percent Fines | 1 each per 1,000 cu. metres or as directed by the Departmental Representative when characteristics change |
| | ASTM D698, Standard Test Method for Laboratory Compaction | 1 per material source and/or as directed by the Departmental Representative when characteristics change |
| | ASTM D6938, Density of Soil and Soil-Aggregate in Place by Nuclear Methods | 3 tests per lift on granular backfill or as directed by the Departmental Representative |
| Traffic Gravel | ASTM C136/C136M, Sieve Analysis ASTM C117, Percent Fines ASTM D5821, Percentage of Fractured Particles | 1 each per 1,000 tonnes or as directed by the Departmental Representative when characteristics change |
| | ASTM C131, Los Angeles Abrasion | 1 each per aggregate source |

¹ QC frequencies may be decreased subject to effectiveness of Contractor QC program and with written approval from Departmental Representative.

- .6 Perform all other quality control and quality control testing as per technical specification sections. Where frequencies are not specified in the technical specification sections, as mutually agreed

between the Departmental Representative and the Contractor as necessary to ensure conformance with the specified quality requirements.

1.4 CONTRACTOR'S QUALITY CONTROL PROGRAM

- .1 The Contractor shall prepare a Quality Control Program. The purpose of the program shall be to ensure the performance of the Work in accordance with Contract requirements.
- .2 The Quality Control Program shall be described in a Quality Control Manual. The Contractor shall submit the Manual to the Departmental Representative for review in accordance with Section 01 33 00 – Submittal Procedures. The Manual shall develop a logical system for tracking and documenting the Quality Control of the Work. A systematic format and a set of procedures patterned on a recognized Quality Control Standard will be acceptable, subject to review by the Departmental Representative.
- .3 The Quality Control Manual shall include the following information:
 - .1 Distribution list, providing a list of names to whom the Manual shall be distributed;
 - .2 Title page, identifying the Contract, Contractor and copy number;
 - .3 Revision page, identifying the revision number and date of the Manual;
 - .4 Table of contents;
 - .5 Revision control, tabulating the revision number, date of revision, description of revisions and authorized signature;
 - .6 Details of measuring and testing equipment including methods and frequency of calibration;
 - .7 Purchasing details of all materials and equipment including procurement documents and vendor's Quality Control Program standards;
 - .8 Procedures for inspection of incoming items, in-process inspection and final inspection and tagging of all supply items;
 - .9 Details of special processes as identified by the Departmental Representative, including qualifications of personnel and certification;
 - .10 Procedures for shipping, packaging and storage of materials;
 - .11 Procedures for maintaining quality records and Statements of Compliance, including filing and storage of documents for a period of one year after Completion of the Works;
 - .12 Details of any non-conformance, including identification and recording of deficiencies, tagging procedures for "HOLD" or "REJECT" items, and final disposition of non-conformance forms by the Quality Control Manager;
 - .13 Inspection and test checklists, including tabulated checklists describing all manufacturing and delivery activities such as Inspection or Test, frequency of tests, description of tests, acceptance criteria of tests, such as verification, witnessing or holding tests and sign-off by the Quality Control Manager and the Departmental Representative, if the Departmental Representative witnesses the tests; and
 - .14 Forms used to ensure the application of the inspection and test checklist requirements. These forms shall be identified in the checklists and describe all testing requirements for Specification compliance.
- .4 The Contractor shall appoint a full time qualified and experienced Quality Control Manager, 100% of his time dedicated to quality matters and who will report regularly to the Contractor's management at a level that shall ensure that Quality Control requirements are not subordinated to manufacturing,

construction or delivery. The Quality Control Manager shall be empowered by the Contractor to resolve quality matters.

- .5 The Quality Control Manual shall include samples of all forms to be filled in by the Quality Control Inspectors. All forms shall be signed by the Quality Control Manager and submitted promptly to the Departmental Representative who will add its review signature.
- .6 An independent check of all Work shall be performed by the Contractor. The Contractor shall appoint Quality Control Inspectors to ensure compliance of products and workmanship with Contract requirements. The same personnel may not be used to perform a given task and to check the quality and accuracy of the task.
- .7 At completion of the Work a bound and itemized copy of all Quality Control documents and reports shall be prepared by the Contractor's Quality Manager and submitted to the Departmental Representative.

1.5 INSPECTION

- .1 Allow the Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, access to such Work shall be allowed whenever it is in progress.
- .2 The Contractor shall 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 the Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, the contractor shall uncover such Work, have inspections or tests satisfactorily completed and make good such Work. No additional payment will be made to the contractor for uncovering and re-covering of such work.
- .4 The Departmental Representative will order any part of Work to be examined if Work is suspected to not be in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, the contractor shall correct such Work and pay cost of examination and correction.

1.6 INDEPENDENT INSPECTION AGENCIES

- .1 After conducting the required inspection and testing, if the Departmental Representative needs more inspections or tests through engaging Independent Inspection/Testing Agencies, the Cost of such services will be borne by Departmental Representative.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .3 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. The contractor shall correct defects and irregularities as advised by the Departmental Representative at no cost to the Departmental Representative.

1.7 ACCESS TO WORK

- .1 The Contractor shall allow inspection / testing agencies access to Work, off-site manufacturing and fabrication plants.
- .2 The Contractor shall co-operate to provide reasonable facilities for such access.

1.8 PROCEDURES

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

1.9 NON-CONFORMANCES

- .1 A Non-Conformance can relate to any item within the Contract including but not limited to: materials testing, lines and levels, products, design-build items, traffic accommodation, quality control, environmental, health and safety, and other general procedural matters including communication protocols.
- .2 Contractor's Internal Non-Conformance Report (NCR):
 - .1 Should the Contractor's QC reporting indicate that the Work is not in conformance, the Contractor's QC Manager shall issue an internal Non-Conformance Report (NCR) to the Contractor, with a copy to the Departmental Representative, including a response time.
 - .2 The Contractor shall then respond to the QC Manager, with a copy to the Departmental Representative, with respect to the NCR, within the specified time, with proposed resolutions and corrective actions. The Contractor and/or the QC Manager shall consult with the Departmental Representative on the resolutions.
 - .3 The Departmental Representative will accept or reject the proposed resolution and corrective action proposal.
 - .4 Payment for the Work itself may be withheld until the NCR issue is resolved.
- .3 Owner Issued NCR:
 - .1 Should the Quality Assurance reporting indicate that the Work is not in conformance, the Departmental Representative will issue to the Contractor a NCR, including a response time.
 - .2 The Contractor shall then respond to that NCR, within the specified time, with proposed resolutions and corrective actions.
 - .3 The Departmental Representative will accept or reject the proposed resolution and corrective action proposal.
 - .4 Assurance testing and inspection will be performed to determine if the corrective action has provided an acceptable product. Acceptance and rejection will continue until the Departmental Representative determines that a quality product has been achieved.
 - .5 Payment for the Work itself may be withheld until the NCR issue is resolved.
- .4 The Completion Certificate will not be issued if there are any unresolved Non-Conformance Reports.
- .5 Appealing an NCR:
 - .1 If the Contractor disputes the validity of a finding in an NCR, the Contractor may file an appeal with the Departmental Representative. The Departmental Representative and the Contractor Representative will use all reasonable efforts to refine the area of dispute and to resolve the determination of conformance with the Contract.
 - .2 If the Departmental Representative and the Contractor Representative cannot come to a mutually agreeable resolution, the Work that is the subject of the Non-Conformance Report shall be re-evaluated by an independent third-party, selected by the Departmental Representative in consultation with the Contractor, at a test frequency equivalent to twice

that specified in the Contract or to such other frequency as may be mutually agreed between the Departmental Representative and the Contractor.

- .3 If the appeal testing confirms the non-conformance determination, all appeal testing costs will be borne by the Contractor. If the appeal testing shows that the Work did in fact meet the requirements of the Contract, all appeal testing costs will be borne by the Owner.

1.10 REJECTED WORK

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

1.11 REPORTS

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

1.12 MILL TESTS

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

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

END OF SECTION

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 **INSTALLATION AND REMOVAL**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.3 **SITE STORAGE / LOADING**

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

1.4 **CONSTRUCTION PARKING**

- .1 The Contractor shall provide and maintain adequate access and parking at the project site in areas approved by the Departmental Representative.
- .2 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.5 **SECURITY**

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

1.6 **EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 The Contractor shall provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials at a location as per the Direction of the Departmental Representative.
- .2 The Contractor shall locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.7 **SANITARY FACILITIES**

- .1 The Contractor shall provide sanitary facilities for work force in accordance with governing regulations, ordinances and these specifications.

- .2 The Contractor shall post notices and take such precautions as required by local health authorities.
- .3 The Contractor shall keep the worksite and various laydown areas in sanitary condition.
- .4 The Health and Safety Representative must inspect the sanitary facilities once a week and submit the report to Departmental Representative.

1.8 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning and traffic control signs, are permitted on site.
- .2 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN3-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

PART 2 PRODUCTS**2.1 NOT USED****PART 3 EXECUTION****3.1 NOT USED****END OF SECTION**

PART 1 **GENERAL****1.1** **PRECEDENCE**

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

1.2 **REFERENCES**

- .1 Manitoba Infrastructure and Transportation (MIT)
 - .1 MIT, Standard Construction Specifications – 200 – Traffic Control
 - .2 MIT, Work Zone Traffic Control Manual (latest edition).
- .2 Transportation Association of Canada (TAC)
 - .1 Manual of Uniform Traffic Control Devices for Canada (MUTCD) (latest edition).

1.3 **MIT - TRANSPORTATION STANDARD**

- .1 Comply with MIT Standard Construction Specifications – 200 – Traffic Control
 - .1 Level III Traffic Control
 - .1 Gateway assemblies are not required.
- .2 This Section 01 55 26 –Traffic Control takes precedence over any contradictory statements made within any of the referenced MIT Specifications sections.

1.4 **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Cost of Traffic Control, described in this Section 01 55 26 –Traffic Control, shall be considered incidental to contract and no additional payment shall be made.

1.5 **GENERAL**

- .1 The Contractor shall develop a Traffic Management Plan (TMP) in accordance with MIT, Standard Construction Specifications – 200 – Traffic Control (Latest Edition). The TMP will include plans specific to each detour / staging and access point required for this project. The TMP will be submitted to Departmental Representative for review and approval at least 14 days prior to mobilising.
- .2 After approval, the contractor will implement the Traffic Management Plan (TMP) in accordance with MIT, Standard Construction Specifications – 200 – Traffic Control. The TMP will include plans specific to each detour and access point required for this project.
- .3 The Contractor shall design, supply, erect, move and maintain all traffic control devices, signs, temporary pavement marking, any other safety measures and provide staff to ensure safe passage of all traffic from commencement of site work to date as per approved TMP and of acceptance by the Departmental Representative.
- .4 All traffic and warning signs shall be either bilingual or of a symbolic or pictorial type. If bilingual signs are used, the English and French message shall be of equal letter size and at the same elevation, with English on left and French on right. Assistance in translation of construction and warning signs to French may be obtained from Parks Canada.

- .5 All temporary road markings and traffic signs must be maintained by the contractor to the required standards as determined by the departmental representative. No additional payment will be made to the contractor for this work.
- .6 The Contractor shall coordinate traffic management procedures with other Contractors working in the area.

1.6 QUALITY CONTROL

- .1 All Quality Control shall be performed by the Contractor.

1.7 PROTECTION OF PUBLIC TRAFFIC

- .1 The Contractor shall comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 The Contractor shall carry out traffic regulation in accordance with the current edition of the MIT, Standard Construction Specifications – 200 – Traffic Control, except where specified otherwise.
- .3 The Contractor shall develop and have in place a completed Traffic Management Plan taking into account all hazards associated with construction operations on a busy highway and minimize risks to motorists prior to beginning Work. This plan shall be updated regularly in response to any incidents or changes in conditions, be they weather, work, traffic, or otherwise.
- .4 Highway 19 is likely to remain closed while reinstatement work is underway. This would allow the Contractor to install culverts in full length to reduce or eliminate any joints.

If a section of road is open to public usage, a minimum of one travelling lane 4 m wide shall be maintained by the Contractor always to provide for safe movement of traveling public through the work area. The Contractor shall submit a TMP to the Departmental Representative for review and acceptance prior to commencement of work.

- .1 Short closures may be allowed by the Departmental Representative for some activities as long as the delay to motorists does not exceed 15 minutes.
- .5 Regardless of type of traffic control being used, maximum period of delay to emergency traffic shall not be more than 15 minutes. Emergency vehicles (i.e., ambulance, RCMP, Park Warden) must be granted immediate passage at all times. The Departmental Representative reserves the right to reduce delay time for public traffic at times when specified delay results in excessive backup of public traffic.
- .6 The Contractor shall provide competent, certified and properly equipped flag persons.
- .7 The Contractor shall also provide competent supervision and/or contract personnel as required during non-working hours to ensure that safety flares, flashing beacons, signs, lights, etc. are in proper working order.
- .8 The Departmental Representative will monitor the traffic control measures and may require modifications of these measures from time to time to achieve satisfactory traffic flow, safety of traveling public and coordination with adjacent contracts.
- .9 The Contractor shall maintain a dust free construction zone by means of cleaning and watering when required. Keep travelled way clean, free of pot holes.
- .10 At paved detours and at access points, the Contractor shall:

- .1 Have a posted speed limit with appropriate signage, temporary pavement marking, roadside barriers and other safety features necessary.
- .2 Keep areas clean and free of pot holes, failures, and rutting.
- .3 Provide and maintain temporary markings.
- .11 Provide competent supervision and/or contract personnel as required during non-working hours to ensure that safety flares, flashing beacons, signs, lights, etc., are in proper working order.
- .12 The contractor shall comply with all work restrictions specified in Section 01 14 00 - Work Restrictions.

1.8 INFORMATIONAL AND WARNING DEVICES

- .1 The Contractor shall provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work that requires road user response.
- .2 The Contractor shall supply, and erect signs, delineators, barricades and miscellaneous warning devices as specified in the TMP submitted by the Contractor and approved by the Departmental Representative.
- .3 Signs shall be wind resistant.
- .4 As situation on site changes, Contractor to update his Traffic Management Plan outlining signs and other devices required for the project and submit for the approval of the Departmental Representative.
- .5 The Contractor shall continually inspect and maintain traffic control devices in use by:
 - .1 Checking signs daily for legibility, damage, suitability and location.
 - .2 Cleaning, repairing or replacing signs as required ensuring clarity and reflectance.
 - .3 Removing or covering signs that do not apply to conditions existing from day to day or time to time.

1.9 CONTROL OF PUBLIC TRAFFIC

- .1 The Contractor shall provide competent flag persons, trained in accordance with, and properly dressed and equipped as specified in, Manitoba Infrastructure and Transportation - Work Zone Traffic Control Manual:
 - .1 When public traffic is required to pass working vehicles or equipment, that block all or part of travelled roadway.
 - .2 When vehicles are entering or exiting Work Site access points.
 - .3 When vehicles are entering or exiting gravel pits in the park.
 - .4 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.
 - .5 When workers or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .6 Where temporary protection is required while other traffic control devices are being erected or taken down.

- .7 For emergency protection when other traffic control devices are not readily available.
- .8 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
- .9 At each end of restricted sections where pilot vehicles are required.
- .2 Delays to public traffic due to Contractor's operators: maximum 15 minutes.
- .3 No stoppage of traffic will be allowed for the periods listed in Section 01 14 00 – Work Restrictions.
- .4 During hours of darkness, Contractor shall determine requirements but as a minimum, traffic control personnel shall be additionally equipped with a red signal hand-light of sufficient brightness to be clearly visible to approaching traffic and flagging stations shall be illuminated by overhead lighting. Signs indicating hazardous conditions and signs requiring increased attention shall be marked with flashers.

1.10 OPERATIONAL REQUIREMENTS

- .1 Maintain existing conditions for traffic throughout period of Contract except that, when required for construction under Contract and when measures have been taken as specified herein and approved by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:
 - .1 A schedule for all full work zone closures required must be provided to the Departmental Representative at least two (2) weeks in advance of the planned closure. Approval is at the discretion of PCA and the contractor is advised full closure approvals are rare.
 - .2 There may be restrictions to accommodate special events within the National Parks. PCA will provide one (1) weeks' notice of any upcoming restrictions.
 - .3 The Department Representative reserves the right to stop work in the case of excessive traffic delays.
 - .4 Provide the Departmental Representative with construction advisories for posting and update advisories regularly to reflect the current and planned construction activities and highway closures. A minimum of 7 days' notice is required for changes to the accepted TMP.
- .2 Maintain existing conditions for traffic crossing right-of-way.
- .3 No stoppage of traffic shall be allowed during inclement weather conditions.
- .4 At no time should traffic queue lengths extend beyond project signage. If the queue length starts approaching the project signage limits the contractor shall immediately stop all work to resume traffic flow.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

END OF SECTION

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.2 **REFERENCE STANDARDS**

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

1.3 **QUALITY**

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

1.4 **AVAILABILITY**

- .1 Immediately after signing contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify to the Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In the event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

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

1.6 TRANSPORTATION

- .1 The Contractor shall pay costs of transportation of products required in performance of Work.

1.7 MANUFACTURER'S INSTRUCTIONS

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

1.8 QUALITY OF WORK

- .1 The Contractor shall 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 The Contractor shall not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative whose decision is final.

1.9 CO-ORDINATION

- .1 The Contractor shall ensure cooperation of workers in laying out Work.
- .2 Maintain efficient and continuous supervision.
- .3 The Contractor shall be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

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

1.11 REMEDIAL WORK

- .1 The Contractor shall 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 The Contractor shall perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 FASTENINGS

- .1 The Contractor shall provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 The Contractor shall prevent electrolytic action between dissimilar metals and materials.
- .3 The Contractor shall use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

1.13 PROTECTION OF WORK IN PROGRESS

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

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

END OF SECTION

PART 1 **GENERAL****1.1** **REFERENCES**

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

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.3 **QUALIFICATIONS OF SURVEYOR**

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

1.4 **SURVEY REQUIREMENTS**

- .1 The Departmental Representative shall identify the location of all work sites.
- .2 The Contractor shall be responsible for all other survey and layout work identified in the Contract documents and as required to complete the works including but not limited to:
 - .1 Establishing lines and levels, locate and layout, by instrumentation;
 - .2 Staking for grading, cut and fill;
 - .3 Staking for slopes and top of embankment, bedding, backfill, sub-base course, base course, and centerline for paving;
 - .4 Establishing culverts, invert elevations, and concrete barrier locations;
 - .5 Layout for interim and final lane markings and rumble strips, including those for intersection treatments;
 - .6 Re-establishing the start and finish of "No Passing Zones", Passing Lanes or at new limits as directed by the Departmental Representative;
 - .7 Re-establishing Reference Survey Control Points that are in danger of being damaged or destroyed;
 - .8 Establishing final design / grading elevations and locations as per the direction of the Departmental Representative.
 - .9 String line or other markings for the alignment or grade control of construction equipment.
- .3 The Contractor's detailed survey layout for construction shall include a complete base-line displaying project stationing at 20 m intervals suitable for referencing test locations and for purposes of measurement for payment.
- .4 The Contractor is responsible for the accurate layout of all painted lines, and concrete barriers for the Traffic Detour for Culvert Works and to re-establish all existing painted lines and concrete barriers after Work is completed.
- .5 Survey Accuracy:
 - .1 All survey work shall be tied into the existing Control Monument Network with grid coordinates in UTM Zone 11 NAD 83. Departmental Representative will provide information on Control Points.

- .2 All traverses will be closed and balanced. All level loops and traverses will be tied into the Control Monument Network.
- .3 Secondary Control Points will be tied into and relative to Control Monument Network. Accuracy for Control Point surveys shall be to second order:
 - .1 Horizontal shall be less than $r = 5(d+0.2)$ where "r" is in cm and "d" is in km
 - .2 Vertical shall be less than $0.008 \times k$ where k is distance in kilometres.
- .4 Staking accuracy shall be at least:
 - .1 In bush areas, all elevations shall be within 0.1m of correct elevation.
 - .2 In open ground, all elevations shall be within 0.05 m of correct elevation.
 - .3 On highway surface, all elevations shall be within 0.01 m of correct elevation
- .6 The Contractor shall provide cut sheet reports to the Departmental Representative for all stages of road construction to demonstrate that the defined construction tolerances have been achieved.
- .7 The Departmental Representative will complete quality assurance construction survey measurements to verify grades and alignment, interim survey re-measurements for excavation limits and final neat line measurements to verify payment quantities for completed works.

1.5 SURVEY REFERENCE POINTS

- .1 Existing base horizontal and vertical control points will be provided by the Departmental Representative.
- .2 The Contractor shall locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .3 The Contractor shall make no changes or relocations without prior written notice to Departmental Representative.
- .4 The Contractor shall report to Departmental Representative when reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
- .5 Require surveyor to replace control points in accordance with original survey control.

1.6 RECORDS

- .1 The Contractor shall maintain a complete, accurate log of control and survey work as it progresses.
- .2 The Contractor shall record locations of maintained, re-routed and abandoned service lines.

1.7 SUBMITTALS

- .1 The Contractor shall submit the name and address of Surveyor to Departmental Representative.
- .2 On request of Departmental Representative, the Contractor shall submit documentation to verify accuracy of field engineering work along with a certificate signed by surveyor certifying those elevations and locations of completed Work conform to the Contract Documents.
- .3 On request of Departmental Representative, submit survey data.

PART 2 **PRODUCTS**

2.1 **NOT USED**

PART 3 **EXECUTION**

3.1 **NOT USED**

END OF SECTION

PART 1 **GENERAL****1.1** **PRECEDENCE**

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

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.3 **PROJECT CLEANLINESS**

- .1 The Contractor shall maintain the Work in tidy condition, free from accumulation of waste products and debris, including that caused by the Owner, Departmental Representative, or other Contractors.
- .2 The Contractor shall remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. No burning of waste materials on site is permitted.
- .3 The Contractor shall clear snow and ice from access to work areas during active construction periods and when access to environmental protection facilities is required outside active construction times.
- .4 The Contractor shall make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 The Contractor shall provide any on-site bear proof containers required for collection of waste materials and debris.
- .6 The Contractor shall remove waste material and debris from site at end of each working day.
- .7 The Contractor shall dispose of waste materials and debris outside of the National Park at an appropriate landfill or disposal facility.
- .8 The Contractor shall store volatile waste and food left-over in covered metal containers, and remove from premises at end of each working day.
- .9 The Contractor shall provide adequate ventilation during use of volatile or noxious substances.
- .10 The Contractor shall use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 The contractor should remove nails, rebar pieces, any sharp-edge construction material immediately and store or dispose of it at an approved location.

1.4 **FINAL CLEANING**

- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .3 The Contractor shall remove waste products and debris including that caused by Owner or other sub-contractors.
- .4 The Contractor shall remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

- .5 The Contractor shall make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 The Contractor shall inspect finishes and ensure specified workmanship and operation.
- .7 The Contractor shall remove dirt and other disfiguration from exterior surfaces.
- .8 The Contractor shall sweep and wash clean paved areas.
- .9 The Contractor shall clean drainage systems.
- .10 The Contractor shall ensure machinery, tools and equipment are cleaned as required to prevent movement of invasive plant species within the project area and before leaving for the project area.

PART 2 **PRODUCTS****2.1** **NOT USED****PART 3** **EXECUTION****3.1** **NOT USED****END OF SECTION**

PART 1 **GENERAL****1.1** **PRECEDENCE**

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

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

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

1.3 **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 The Contractor shall notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 The Contractor shall then request Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform an inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly. No additional payment will be made to the contractor for rectification of defects and deficiencies.
- .3 Completion: The Contractor shall submit a written certificate that following have been performed:
 - .1 All work has been completed and inspected for compliance with Contract Documents.
 - .2 All defects have been corrected and deficiencies have been completed.
 - .3 All work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, the Contractor shall request a final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative, the Contractor shall complete the outstanding items and request re-inspection.

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

END OF SECTION

PART 1**GENERAL****1.1 PRECEDENCE**

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

1.2 MEASUREMENT AND PAYMENT PROCEDURES

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

1.3 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Environmental Protection Plan
 - .8 Inspection certificates.
 - .9 Manufacturer's certificates.
- .2 The Contractor shall store record documents and samples in field office apart from documents used for construction.
- .3 The Contractor shall label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 The contractor shall maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 The Contractor shall keep record documents and samples available for inspection by Departmental Representative.

1.4 RECORDING ACTUAL SITE CONDITIONS

- .1 The Contractor shall record information on set of black line opaque Drawings and in copy of the Project Manual.
- .2 The Contractor shall record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Contract Drawings and shop drawings: the contractor shall legibly mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders.

- .3 Details not on original Contract Drawings.
- .4 References to related shop drawings and modifications.
- .4 The Contractor shall legibly mark each item to record actual construction in the Specifications including but not limited to:
 - .1 Changes made by Addenda and change orders.

1.5 FINAL SURVEY

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

1.6 WARRANTIES AND BONDS

- .1 The Contractor shall separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 The Contractor shall list subcontractors, suppliers, and manufacturers, with name, address, and telephone number of responsible principal.
- .3 The Contractor shall obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- .4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 The Contractor shall verify that documents are in proper form, contain full information, and are notarized.
- .6 The Contractor shall co-execute submittals when required.
- .7 The Contractor shall retain warranties and bonds until time specified for submittal.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

END OF SECTION

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Payment for the removal, storage and reinstallation of existing signs and posts required as part of specified work will be considered incidental to the Contract and no further payment will be made.
- .2 Payment for the supply and installation of new signs and utility markers requested by the Departmental Representative will be made under **“Lump Sum Price Item – Prime Cost Sum”**.
- .3 Payment for the removal and disposal of existing signs and posts including filling holes and other will be made under **“Lump Sum Price Item – Prime Cost Sum”** or as requested by the Department Representative.
- .4 Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item – Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .5 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item – Mobilization / Demobilization”**, and no additional payment will be made.
- .6 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor.

1.2 **REFERENCES**

- .1 Parks Canada Exterior Signage Standards and Guidelines (March 2007)
- .2 ASTM A276-91a, Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
- .3 ASTM B209M-92a, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .4 ASTM B210M-92a, Specification for Aluminum-Alloy Drawn Seamless Tubes.
- .5 ASTM B211M-92a, Specification for Aluminum and Aluminum-Alloy Bar, Rods and Wire.
- .6 CAN/CSA-G40.21-M92, Structural Quality Steels.
- .7 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .8 CAN/CSA-O80 Series-M89, Wood Preservation.
- .9 CSA O121-M1978, Douglas Fir Plywood.
- .10 CSA W47.2-M1987, Certification of Companies for Fusion Welding of Aluminum.
- .11 CGSB1-GP-12c-65, Standard Paint Colours:
- .12 CAN/CGSB-1.28-M89, Alkyd, Exterior House Paint.
- .13 CAN/CGSB-1.59-M89, Alkyd, Exterior Gloss Enamel.
- .14 CAN/CGSB-1.94-M89, Xylene Thinner (Xylol).
- .15 CAN/CGSB-1.99-92, Exterior and Marine Phenolic Resin Varnish.
- .16 CAN/CGSB-1.104-M91, Semigloss Alkyd Air Drying and Baking Enamel.
- .17 CAN/CGSB-1.132-M90, Zinc Chromate Primer, Low Moisture Sensitivity.
- .18 CGSB 1-GP-189M-78, Primer, Alkyd, Wood, Exterior.

- .19 CGSB 31-GP-3M-88, Corrosion Preventive Compound, Cold Application, Soft Film.
- .20 CGSB 62-GP-9M-80, Prefabricated Markings, Positionable, Exterior, for Aircraft Ground Equipment and Facilities.
- .21 CGSB 62-GP-11M-78, Marking Material, Retroreflective, Enclosed Lens, Adhesive Backing.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Divert unused metal and/or plastic materials to recycling facility approved by Departmental Representative.
- .3 Damaged signs and posts from any removals to be transported to recycling facility approved by the Departmental Representative.

PART 2 PRODUCTS

2.1 MATERIALS

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

PART 3 EXECUTION

3.1 INSTALLATION

- .1 The Contractor shall load, haul and install Contractor supplied single post and aluminum signs and bases in the following manner:
 - .1 The Contractor is responsible for locating power / telephone / gas lines / services / utilities at all proposed sign locations.
 - .2 The Contractor is responsible for layout and measurements to ensure signs are installed as per Drawings and as directed by the Departmental Representative.
 - .3 Concrete bases: Excavate one hole for the concrete base at the location and depth provided by the Departmental Representative. Using some of the excavated material, level and compact bottom of hole. Place base with one side parallel to the edge of asphalt and level. The top of the base is to be flush or 1" above finished grade.
 - .4 Adjust the post height by using a pipe cutter or cut off saw. All post cuts will be determined in the field by the Contractor. The Contractor will measure existing elevations at each site and calculate the cuts needed.
 - .5 Assemble the signs on the forks on the ground. Slide forks onto posts and place the cap.
 - .6 Drill 1 hole in base sleeves and posts for ½ " bolts, as shown in the detail sheet and as verified by the Departmental Representative, and shim to plumb if necessary.
 - .7 Bases must be perfectly plumbed. Vertical and horizontal tolerances for the base are 0.075m. Tolerance for the plumb of the posts is 0.01 m per 1.0 m or 1/4" on a two-foot carpenters level. Tolerances for the signs are 0.075 m for distance from asphalt and 0.075 m for height above white line.
 - .8 The Contractor is responsible for hauling all materials to and from each work site.

- .9 Landscape so the top of the base is flush or 25 mm above finished grade.
- .10 Remove all excess material from site, including boulders larger than 100 mm.
- .11 All signs are to be covered until the Departmental Representative advises to uncover.

3.2 REMOVAL AND SALVAGE

- .1 The Contractor shall carefully dismantle and salvage posts, and aluminum signs where possible.
- .2 Deliver salvaged materials to Rogers Pass Compound or other locations as directed by Departmental Representative.
- .3 Damaged signs and posts shall be hauled to recycling facility approved by the Departmental Representative.
- .4 Fill holes with gravel and compact

3.3 CLEANING

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

END OF SECTION

PART 1 **GENERAL****1.1** **SUMMARY**

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

1.2 **REFERENCES**

- .1 American Society for Testing and Materials (ASTM):
- .1 ASTM C127-[04], Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.
 - .2 ASTM D698-[00ae1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - .3 ASTM D1557-[02e1], Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - .4 ASTM D4253-[00], Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.3 **DEFINITIONS**

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

PART 2 **PRODUCTS****2.1** **NOT USED****PART 3** **EXECUTION****3.1** **NOT USED****END OF SECTION**

PART 1 **GENERAL****1.1** **RELATED REQUIREMENTS**

- .1 Section 01 35 43 – Environmental Procedures.
- .2 Section 31 23 33.01 – Excavating, Trenching and Backfilling.

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Clearing and grubbing quantities for payment will be paid under “**Unit Price Item – Clearing and Grubbing**” and will be measured based on the area in horizontal (2D) hectares of land acceptably cleared, grubbed, processed, and debris disposed of, according to these Specifications, and shall include all labour, equipment and material to satisfactorily complete this item of work.
- .2 The extent of grubbing shall be in accordance with the Drawings and as directed by the Departmental Representative. The Contractor shall not commence work on this activity until approval to proceed has been granted.
- .3 No overhaul will be paid for this work.
- .4 Conducting preclearance nest surveys by a Qualified QEP shall be considered incidental to the work and no additional payment shall be made. This is required until approximately August 29th.
- .5 Mobilization and demobilization required for this Work shall be incidental to “**Lump Sum Price Item – Mobilization / Demobilization**”, and no additional payment will be made.
- .6 Environmental mitigations, including but not limited to bird sweeps required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the Contract and no separate payment will be made to the Contractor.

1.3 **DEFINITIONS**

- .1 Flush cutting consists of cutting trees, stumps or vegetative growth to within 100 mm of the ground, leaving the root structure undisturbed and disposing of felled trees, previously uprooted trees, stumps and clearing wood debris as specified.
- .2 Clearing consists of cutting trees and brush vegetative growth to within 300 mm of the ground and disposing of felled trees, previously uprooted trees, stumps, and clearing wood debris as specified.
- .3 Grubbing consists of excavation and disposal of stumps and roots to not less than specified depth below existing ground surface or as Directed by the Departmental Representative.

1.4 **QUALITY CONTROL**

- .1 All Quality Control testing by the Contractor in accordance with Section 01 45 00 – Quality Control.

1.5 **PROTECTION**

- .1 The Contractor shall prevent damage to trees, natural features, bench marks, existing pavement, water courses and root systems of trees that are to remain.
- .2 The Contractor shall repair any damaged items to approval of Departmental Representative.
- .3 The Contractor shall replace any trees designated to remain, if damaged, as directed by Departmental Representative.

PART 2 **PRODUCTS****2.1** **NOT USED****PART 3** **EXECUTION****3.1** **PREPARATION**

- .1 Prior to commencing any activity, the Contractor will be required to first obtain a Restricted Activity Permit (RAP) in consultation with PCA and the Departmental
- .2 Representative as per Section 01 35 43 – Environmental Procedures. The Contractor shall not commence work on this activity until approval to proceed has been granted.
- .3 Pre-clearance nest surveys to be conducted in accordance with Section 01 35 43 – Environmental Procedures. Pre-clearance nest surveys shall be completed by the Contractor's QEP.
- .4 Inspect site and verify with Departmental Representative, items designated to remain.

3.2 **CLEARING**

- .1 Clear as per contract and specifications and as directed by Departmental Representative by cutting trees and vegetative growth.
- .2 Cut off branches and cut down trees overhanging area cleared as per site requirement and as directed by Departmental Representative. No extra payment will be made for this.
- .3 Cut off unsound branches on trees designated to remain as per site requirement and as directed by Departmental Representative. No extra payment will be made for this.
- .4 All clearing shall be felled in such a manner that surrounding vegetation is preserved along the construction limits. Stumps remaining within 3.0 metres of cleared perimeter are to be cut flush with ground and vegetative mat left undisturbed.

3.3 **GRUBBING**

- .1 Grub out stumps and wood debris including roots and embedded logs to not less than 200 mm below ground surface.
- .2 Grubbing ripper teeth depth shall be kept as shallow as possible to minimize contamination of topsoil with subsoils. This may require individual ripping of stumps in some locations. In addition, while removing stumps, roots or embedded logs, the Contractor shall shake them on site to remove as much soil as possible.

3.4 **REMOVAL AND DISPOSAL**

- .1 All waste shall be removed from the National Parks at an appropriate facility. Loading, hauling and all tipping fees shall be considered incidental and shall not be considered for payment.

3.5 **FINISHED SURFACE**

- .1 In areas of grubbing, leave the ground surface in condition suitable for stripping of topsoil to approval of Departmental Representative.
- .2 In areas of flush cutting, leave stumps cut flush with ground elevation and root structure undisturbed.

3.6

CLEANING

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

END OF SECTION

PART 1 **GENERAL****1.1** **DESCRIPTION**

- .1 This item consists of the excavation and disposal or replacement of all materials in conformity with the lines, grades and dimension indicated on the Drawings and as directed by the Departmental Representative and includes:
- .1 Stripping of organic material.
 - .2 Roadway and culvert excavation.
 - .3 Construction of roadway ditches, embankments, widening of roadway berms, channel realignment and other earthworks necessary for the removal of the existing CSP culverts and installation of the new CSP culverts.
 - .4 Removal and disposal of unsuitable materials from excavation and embankment.
 - .5 Transportation and disposal of excavated materials.
 - .6 Finishing of top surfaces and slopes.
 - .7 Maintenance of the work set forth under this section in a finished condition until any portion thereof has been accepted as completed by the Departmental Representative.

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Stripping and Placement in Stockpiles:
- .1 The quantity of stripping materials for which payment will be made shall be the volume in cubic metres measured in its original position from cross-sections taken before and after stripping. Payment will be made under **“Unit Price Item – Excavating, Trenching and Backfilling – Stripping and Placement in Stockpiles”**.
 - .2 Stripped materials shall not be contaminated by other materials. If contamination does occur the Department Representative at his discretion may require clean topsoil be imported from an approved source and contaminated materials be disposed of at the Contractor's expense.
 - .3 Stripping material is to be stockpiled within the limits of the Work, or other location (s) as directed by the Departmental Representative.
 - .4 Hauling and stockpiling is incidental to the work and no additional payment will be made.
 - .5 No overhaul will be paid for this Work.
- .2 Roadway and Drainage Excavation:
- .1 The Quantity of Excavation Common for which payment will be made shall be the volume in cubic metres measured in its original position from cross sections taken by Departmental Representative in areas of excavation. Payment will be made under **“Unit Price Item – Excavating, Trenching and Backfilling – Type D Excavation”** and shall include cost of excavating, hauling, temporary stockpiling, re-handling, placing and compacting material between construction limits for construction, CSP removal, channelling, and roadway widening. The reusable material identified as part of common by the Departmental representative will be incorporated into the project and no additional payment for re-handling will be made. Incorporation of the native material (backfilling, compacting, grading) will be considered incidental to the Work. Stockpiling of the material onsite or offsite will be incidental to the Work and no additional payment will be made.

- .2 If the Contractor's work plan results in re-excavation of a portion of backfill material placed for the new culverts in order to remove the old culverts no payment for the volume of re-excavated will be made.
- .3 The quantity of Waste Excavation of material deemed by the Departmental Representative as waste and/or surplus for which payment shall be made will be the volume in cubic metres measured in its original position from cross sections taken by Departmental Representative in areas of excavation. Payment will be made under **"Unit Price Item – Excavating, Trenching and Backfilling – Type D Haul to Waste"** and shall include cost of excavation, loading, hauling, temporary stockpiling, and disposal of material outside the National Park or as directed by the Departmental Representative. No payment will be made to the contractor for double handling.
- .4 Separating of organic material from non-organic material and stockpiling, as directed by the Departmental Representative, is considered incidental to the Work and no additional payment will be made.
- .5 The Contractor shall take care not to contaminate suitable surplus materials with waste materials.
- .6 Written approval to proceed must be given by the Departmental Representative prior to sub-excavation for the removal of waste material(s).
- .7 No overhaul will be paid for this Work.
- .8 Only material acceptable to the Department Representative shall be used in the construction of backfilling and incorporated into the work.
- .9 Written Approval to Proceed must be obtained from the Departmental Representative prior to sub-excavation for the removal of unsuitable material(s).
- .10 The survey, layout, storage, labour, equipment, and material required for the Work is considered incidental and no additional payment will be made.
- .3 Mobilization and demobilization required for this Work shall be incidental to **"Lump Sum Price Item – Mobilization / Demobilization"** and no additional payment will be made.
- .4 Traffic Control required for this Work shall be incidental to **"Lump Sum Price Item – Traffic Accommodation"** and no separate payment will be made to the Contractor.
- .5 Payment for Borrow material if deemed necessary by the Departmental Representative will be made under **"Lump Sum Price Item – Prime Cost Sum"**.
- .6 Payment for Type 'A' Excavation of material deemed by the Departmental Representative as rock will be made under **"Lump Sum Price Item – Prime Cost Sum"**.
- .7 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor.
- .8 No separate measurement payment will be made for:
 - .1 Excavating unnecessarily beyond lines established by Departmental Representative, with exception of unavoidable slide material. Do not measure slide material, when such slides are attributable to negligence.
 - .2 If overcut, no payment will be made for filling an area back to grade.
 - .3 Loading hauling, placing and compaction of boulders less than 1.5 m³ into large embankments.

- .4 Scarifying or benching existing slopes or surfaces.
- .5 Removing unsuitable material from embankment attributable to negligence.
- .6 Watering, drying or compacting.
- .7 Proof rolling or other compaction testing deemed suitable by the departmental representative.
- .8 Compaction of material (150 mm) below subgrade horizon in areas of cut.
- .9 Finishing.

1.3 REFERENCES

- .1 Manitoba Infrastructure and Transportation (MIT)
 - .1 MIT, Standard Construction Specifications
- .2 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM D698-12e2, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft³) (600 kN-m/m³).

1.4 DEFINITIONS

- .1 Type A – Solid Rock:
 - .1 All forms of "solid rock in place" occurring in masses, ledges, seams or layers of sufficient hardness to require breaking by continuous drilling and blasting before excavation and removal.
 - .2 Detached masses of rock or boulders individually containing a volume of 2.0 m³ or more.
- .2 Type D - Common: excavation of materials that are not of Type - A Excavation or Stripping.
- .3 Borrow: Suitable material obtained from locations outside the limits of construction cut and placed as embankment material or for other portions of work.
- .4 Stripping: excavation of organic material covering original ground.
- .5 Embankment: material derived from useable excavation and placed above original ground, excavated /trenched location or stripped surface.
- .6 Waste Material: material unsuitable for embankment, embankment foundation or material surplus to requirements.
- .7 Topsoil: material passing a 100 mm sieve and capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

1.5 QUALITY CONTROL

- .1 Regulatory Requirements:
 - .1 Adhere to regulations of authority having jurisdiction when blasting is required.
 - .2 Adhere to Provincial and National Environmental requirements when potentially toxic materials are involved.
- .2 All Quality Control testing by the Contractor.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 The Contractor shall separate and recycle waste materials in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Waste shall be disposed of at suitable offsite disposal facility or stockpiled within the Parks if directed by the Departmental Representative.

PART 2 PRODUCTS**2.1 MATERIALS**

- .1 Embankment materials require acceptance by Departmental Representative.
- .2 Embankment fill materials must meet the MIT, Standard Construction Specifications – Latest Edition.
- .3 Material used for embankment not to contain more than 3% organic matter by mass, frozen lumps, weeds, sod, roots, logs, stumps or other unsuitable material.
- .4 Borrow material:
 - .1 No borrow sources are available to the Contractor within the Parks.
 - .2 The Contractor shall provide material testing certificates to the Department Representative for consideration.

PART 3 EXECUTION**3.1 SITE PREPARATION / PROTECTION**

- .1 Ensure all work is in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Maintain sides and slopes of excavations in safe condition by appropriate methods and in accordance with Section 01 35 29.06 – Health and Safety Requirements, Health and Safety Act for the Province of Manitoba.
- .3 Remove obstructions from surfaces to be excavated within limits indicated on the Drawings.
- .4 Protect natural and man-made features that are required to be salvaged or remain undisturbed.
- .5 Ensure excavation will be protected against flooding and damage due to surface runoff.
- .6 Keep excavations free of water while Work is in Progress. Dispose of water to approved collection, or runoff areas and in a manner not detrimental to PCA property or portion of the Work completed or under construction.
- .7 Protect all existing and proposed utilities during excavation and backfilling operations.

3.2 STRIPPING OF TOPSOIL

- .1 Commence topsoil stripping of areas on acceptance by the Departmental Representative after clearing and grubbing debris have been removed from these areas.
- .2 Strip topsoil to depths as verified by the Departmental Representative. Do not mix topsoil with subsoil. Stripping depth is estimated to be on average 100 mm.

- .3 Contractor to screen stripping material to 100 mm max size prior to placement in stockpile. Stockpile on site as directed by the Departmental Representative and protect from erosion. Load, haul and dispose screen waste material outside the Parks, or as directed by the Departmental Representative.

3.3 EXCAVATION

- .1 Advise Departmental Representative at least seven days in advance of excavation operations for initial cross sections to be taken.
- .2 Notify the Departmental Representative when waste materials are encountered and remove to depth and extent as approved by the Departmental Representative. Dispose of such material outside the national park or as directed by departmental Representative.
- .3 The dimensions of the excavations shall be, in accordance with the Drawings, but the dimensions of any or all excavations and embankments may be increased or decreased at any time by the Departmental Representative as conditions and circumstances may determine.
- .4 Subcut below subgrade elevation in cut sections only as approved by the Departmental Representative. Compact top 300 mm below final subgrade elevation to minimum 100% Standard Proctor Density, ASTM D698-12e2 (AASHTO T99). Replace with acceptable embankment material and compact.
- .5 Contractor is responsible to ensure all OH&S regulations are satisfied.
- .6 Drainage:
 - .1 Maintain profiles, crowns and cross slopes to provide good surface drainage at all times.
 - .2 Provide temporary ditching to control drainage throughout the construction.
- .7 Rock excavation:
 - .1 Notify the Departmental Representative when material appearing to conform to classification for rock is encountered, to enable measurements to be made to determine volume of rock. Provide 24 hours notification.
 - .2 Rocks shall be excavated either by manual scaling, machine scaling or using hydraulic splitter. Subgrade shall be constructed to a true and uniform surface as to line and grade preparatory to application of culvert bedding material.

3.4 EMBANKMENTS

- .1 This item consists of the construction of the subgrade in embankments and cuts to the lines, grades, cross-sections and dimensions shown on the drawings:
 - .1 Scarify or bench existing slopes in side hill or sloping sections to ensure proper bond between new materials and existing surfaces. Method used to be subject to prior approval of the Departmental Representative.
 - .2 Do not place material that is frozen nor place material on frozen surfaces except in areas authorized.
 - .3 Maintain crowned surface during construction to ensure ready run-off surface water.
 - .4 Drain low areas before placing materials.
 - .5 Place and compact to full width in layers not exceeding 200 mm loose thickness. The Departmental Representative may authorize thicker lifts if specified compaction can be

achieved and if material contains more than 25% by volume stone and rock fragments larger than 100 mm.

.2 Rock Embankments:

- .1 Place to full width in layers of sufficient depth to contain maximum sized rocks, but in no case is layer thickness to exceed 0.6 m.
- .2 Distribute rock material to fill voids with smaller fragments to form compact mass.
- .3 Fill surface voids at design elevation with rock spalls or selected material to form earth-tight surface.
- .4 The Contractor may place rock embankments during freezing conditions provided compaction equipment of sufficient size to break large rock particles is used and all snow and ice is removed from fill surface.
- .5 The Departmental Representative has no preference for which embankments are constructed with rock fill.

.3 Deductions from excavation will be made for overbuild of embankments.

3.5 SUBGRADE COMPACTION

- .1 Break material down to sizes suitable for compaction and mix for uniform moisture to full depth of layer.
- .2 Embankment material shall be placed in successive uniform layers over the entire area as follows:
 - .1 Material containing less than 25 percent by volume of stones larger than 100 mm shall be placed in 200 mm compacted layers.
 - .2 Material containing 25 percent or more by volume of stones larger than 100 mm shall be placed in layers not exceeding the maximum size of the stones. Stones larger than 100 mm shall not be placed within 150 mm of the subgrade elevation.
 - .3 In embankments composed principally of material obtained from rock cuts, the larger stones shall be carefully distributed, and the interstices filled with smaller stones and other material to form a compact mass. Such embankments shall be constructed in layers not exceeding 1 metre. The placing of individual rocks and boulder exceeding 1.0 metres in least dimension will be permitted provided they are carefully distributed and the interstices filled with finer material to form a dense and compact mass. Each layer, before starting the next, shall be levelled and smoothed with suitable equipment. Hauling and spreading equipment shall be operated over the full width of each layer.
- .3 Each layer shall be brought to its required degree of compaction throughout its entire width before successive layers are placed.
- .4 Compact each layer to minimum 95% SPD (Standard Proctor Density), ASTM D698-07e1 except the top lift shall be compacted to 100% SPD.
- .5 Add water or dry as required to bring moisture content of materials to level required to achieve specified compaction.
- .6 For rock placed as fill, compact with large steel wheeled or tracked equipment of sufficient size to break larger particles. Compact until rock fill is stable under compaction equipment and all voids are filled.

3.6 BACKFILLING

- .1 Do not proceed with backfilling operations until completion of following:
 - .1 Departmental Representative has inspected and approved installations.
 - .2 Departmental Representative has inspected and approved construction of below finish grade.
 - .3 Departmental Representative has monitored the proof roll, inspected the subgrade, and approved the subgrade prior to backfill placement.
- .2 Break material down to sizes suitable for compaction and mix for uniform moisture to full depth of layer.
- .3 Embankment material shall be placed in successive uniform layers not exceeding 150mm in compacted thickness up to the grades indicated.
- .4 Each layer shall be brought to its required degree of compaction throughout its entire width before successive layers are placed.
- .5 Use hand operated plate type vibratory or other suitable hand tampers in areas not accessible to rollers or compactors.
- .6 Compact each layer to minimum 98% SPD (Standard Proctor Density), ASTM D698-12e2 within $\pm 2\%$ of the OMC
- .7 Add water or dry as required to bring moisture content of materials to the specified level required to achieve specified compaction.
- .8 Backfilling around installations:
 - .1 Place bedding and structural backfill material as specified in the Drawings.
 - .2 Place layers simultaneously on both sides of the installed Work to equalize loading. Difference not to exceed 150mm.
 - .3 Do not use heavy equipment within 600 mm of the structures.

3.7 PROOF ROLLING

- .1 Proof rolling shall be completed while the subgrade or fill being tested is unfrozen.
- .2 Proof rolling shall be performed in the presence of Department Representative.
- .3 Use a 15 to 60 tonne smooth-drum compactor with pneumatic wheels or a truck loaded at approximately 10 tonnes per axle and a minimum tire pressure of 550 kPa.
- .4 Ground speed: 4 km/hr (recommended); 8 km/hr (maximum).
- .5 Completely cover the work with proof rolling equipment. One coverage means that every point of the proof rolled surface has been subjected to the tire pressure of a loaded wheel.
- .6 Less rigorous procedure may be acceptable under certain conditions subject to acceptance by the Department Representative.
- .7 The Surface of the grade under the action of proof roller shall be observed, noting visible deflection and rebound of the surface, and formation of crack pattern in the prepared subgrade/compacted surface.
- .8 Subgrade Failure:

- .1 Subgrade shall be considered failed under the following conditions:
 - .1 Permanent rutting of 25 mm or greater;
 - .2 Elastic rebound in excess of 25 mm with cracking greater than 5 mm.
 - .3 Lateral movement greater than 20 mm.
 - .4 Unsatisfactory inspection as determined by Department Representative.
- .2 If any part of the area indicates more distress than other parts, the cause shall be investigated jointly by the Department Representative and contractor.
- .3 Areas of soft, rutted or displaced materials detected shall be repaired and proof rolled again in the presence of Department Representative. The repair may include:
 - .1 Subcut the soft/wet soils, replace with suitable fill material and compact to 98 % of the SPD within ± 2 % of the OMC at Contractor's expense;
 - .2 Bridging with non-woven geotextile and bi-axial geogrid at Contractor's expense, subject to approval by the Department Representative, if subcut is deeper than 1 m.

3.8 FINISHING

- .1 Shape entire roadbed to within 100 mm of design elevations without being uniformly high or low.
- .2 Round top of back slope as shown on the Drawings.
- .3 Remove rocks over 150 mm in dimension from slopes and ditch bottoms.
- .4 Trim between constructed slopes and edge of clearing to provide drainage.

3.9 PROTECTION

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

END OF SECTION

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 The supply and installation of Geogrid shall be measured in the number of square meters placed in accordance with the Drawings or as Directed by the Departmental Representative and paid under **“Unit Price Item - Geotextile Soil Stabilization - Geogrid”**
 - .1 Overlapping of material in accordance with the Drawings or manufactures recommendations shall not be measured.
- .2 The supply and installation of Non-Woven Geotextile for use as roadway stabilization shall be measured in the number of square meters placed in accordance with the Drawings or as Directed by the Departmental Representative and paid under **“Unit Price Item - Geotextile Soil Stabilization - Non-Woven Geotextile”**.
 - .1 Overlapping of material in accordance with the Drawings or manufactures recommendations shall not be measured.
- .3 The supply and installation of all other Geotextiles including but not limited to woven and non-woven geotextiles (for placement under Rip-Rap), silt fences, turbidity or floating silt curtains and geosynthetic berms will not be measured directly for payment and shall be considered incidental to the unit price items.

1.2 **REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM):
 - .1 ASTM D4491-99a, Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D4595-86(2001), Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D4716-01, Test Method for Determining the (In-Plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
 - .4 ASTM D4751-99a, Standard Test Method for Determining Apparent Opening Size of a Geotextile.
 - .5 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) coatings on Iron and Steel Products.
- .2 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-4.2 No. 11.2-M89 (April 1997), Textile Test Methods - Bursting Strength - Ball Burst Test (Extension of September 1989).
 - .2 CAN/CGSB-148.1, Methods of Testing Geotextiles and Complete Geomembranes.
 - .3 No.2-M85, Methods of Testing Geosynthetics - Mass per Unit Area.
 - .4 No.3-M85, Methods of Testing Geosynthetics - Thickness of Geotextiles.
 - .5 No.6.1-93, Methods of Testing Geotextiles and Geomembranes - Bursting Strength of Geotextiles Under No Compressive Load.
 - .6 No.7.3-92, Methods of Testing Geotextiles and Geomembranes - Grab Tensile Test for Geotextiles.
 - .7 No. 10-94, Methods of Testing Geosynthetics - Geotextiles - Filtration Opening Size.

- .3 Canadian Standards Association (CSA International):
 - .1 CAN/CSA-G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .4 Manitoba Infrastructure and Transportation (MIT)
 - .1 MIT, Standard Construction Specifications - 1295 - Supply and Installation of Geotextile Fabric (latest edition)

1.3 SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit to Departmental Representative following samples in accordance with Section 01 33 00 – Submittal Procedures for each type of geotextile used on the project:
- .3 Minimum length of 2 m of roll width of geotextile.
- .4 Minimum of 1 m seam with at least 300 mm of geotextile on both sides of seam.
- .5 Submit to Departmental Representative 4 copies of mill test data and certificate in accordance with Section 01 33 00 – Submittal Procedures.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with the EPP.
- .4 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 PRODUCTS

2.1 MATERIAL

- .1 Geogrid:
 - .1 Shall be Tensar - Biaxial Geogrid BX1200 or approved equivalent. The contractor shall submit any proposed alternate product for approval to the Departmental Representative.
- .2 Non-Woven Geotextiles
 - .1 Shall be Mirafi H2Ri or approved equivalent. The contractor shall submit any proposed alternate product for approval to the Departmental Representative.
- .3 Silt fences and turbidity or floating silt curtains shall be in accordance with Section 35 01 40.92 - Preservation of Water Courses.

PART 3 **EXECUTION****3.1** **INSTALLATION**

- .1 Geotextile Requirements for Culvert installation and Rip-Rap placement:
 - .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with pins at 1m interval or as recommended by the manufacturer of the geotextile material.
 - .2 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
 - .3 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
 - .4 Overlap each successive strip of geotextile 1000mm over previously laid strip.
 - .5 Pin overlaps of successive strips of geotextile using 6 mm diameter steel pins fitted with washers and spaced at 1 m intervals along the overlaps.
 - .6 Anchor the ends of the non-woven geotextile filter fabric by digging a 300mm deep trench, inserting the end of the non-woven geotextile filter fabric and backfilling with compacted soil.
 - .7 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
 - .8 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
 - .9 Place and compact Rip-Rap in accordance with Section 31 37 00 - Rip-Rap.
 - .10 Install as per manufacturers specifications.
- .2 Silt Fence / Turbidity or Floating Silt Curtains / Geosynthetic Berms:
 - .1 Install as per the manufacturer's instructions and recommendations.

3.2 **CLEANING**

- .1 In accordance with Section 01 74 11 – Cleaning.
- .2 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner and in accordance with Section 01 35 43 – Environmental Procedures.

3.3 **PROTECTION**

- .1 Vehicular traffic not permitted directly on geotextile.

END OF SECTION

PART 1 **GENERAL****1.1** **REFERENCES**

- .1 Manitoba Infrastructure and Transportation (MIT)
- .1 MIT, Standard Construction Specifications - 1297 - Stone Rip-Rap

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 The quantity of supplying, testing, hauling, and placing Rip-Rap that will be measured for payment shall be the number of cubic metres measured in place and accepted in the completed Work, and shall include all labour, equipment and material to satisfactorily complete this item as specified.
- .2 Payment for supplying, testing, loading, hauling, and placement of Rip-Rap for Ditch blocks will be made under "**Unit Price Item - Rip-Rap – Class 350 MIT**". Rip-Rap Material to be placed in accordance with the Drawings and to the satisfaction of the Departmental Representative.
- .3 Payment for supplying, testing, loading, hauling, and placement of Rip-Rap for Culvert end treatments will be made under "**Unit Price Item - Rip-Rap – Class 450 MIT**". Rip-Rap Material to be placed in accordance with the Drawings and to the satisfaction of the Departmental Representative.
- .4 No overhaul will be paid for this Work.
- .5 Excavation, preparation of Rip-Rap base, geotextiles, willow staking and any other related materials will be considered incidental to the Work.
- .6 Testing of Rip-Rap is considered incidental to the Work and no additional payment will be made.
- .7 Mobilization and demobilization required for this Work shall be incidental to "**Lump Sum Price Item – Mobilization / Demobilization**" and no additional payment will be made.
- .8 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the Contract and no separate payment will be made to the Contractor.

1.3 **WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Remove materials defined as hazardous or toxic and dispose of outside of the Parks.
- .3 Divert leftover geotextiles to recycling facility as approved by Departmental Representative. Disposal and/or recycling, including hauling is incidental to the Work.

PART 2 **PRODUCTS****2.1** **MATERIAL**

- .1 Hard, dense with relative density not less than 2.65, free from seams, cracks or other structural defects, to meet following Class for use intended:
 - .1 Only non-acid generating and non-metal leaching rock is suitable.

- .2 The Contractor will be responsible for sorting, loading and hauling of Rip-Rap and placement.
- .3 Class of Rip-Rap to be used is as follows and as directed by the Departmental Representative:
 - .1 Manitoba Infrastructure and Transportation (MIT)
 - .1 Class 350.
 - .2 Class 450.

2.2 GEOTEXTILE FILTER FABRIC

- .1 Geotextile: in accordance with Section 31 32 19 - Soil Stabilization.

PART 3 EXECUTION

3.1 INSTALLATION OF RIP-RAP

- .1 Contractor shall do the layout for placement of Rip-Rap.
- .2 Where Rip-Rap is to be placed on slopes, excavate trench at toe of slope to dimensions as indicated.
- .3 Place Geotextile, as applicable, in accordance with Section 31 32 19 - Soil Stabilization.
- .4 Fine grade area where Rip-Rap is to be placed, to a uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.
- .5 Place Rip-Rap by machine to thickness and details as indicated or as agreed to by the Departmental Representative taking care to not damage willow staking or geotextile.
- .6 Place stones in manner accepted by Departmental Representative to secure surface and create a stable mass or to match existing Streambed. On slopes, place larger stones at bottom of slopes.
- .7 Hand Placing Rip-Rap:
 - .1 Use larger stones for lower courses and as headers for subsequent courses.
 - .2 Stagger vertical joints and fill voids with rock spalls or cobbles.
 - .3 Finish surface evenly, free of large openings and neat in appearance.

END OF SECTION

PART 1 **GENERAL****1.1** **REFERENCES**

- .1 ASTM International
 - .1 ASTM C117-[04], Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .3 ASTM C136-[06], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.2-[M88], Sieves, Testing, Woven Wire, Metric.
- .3 Manitoba Infrastructure and Transportation (MIT)
 - .1 MIT, Standard Construction Specifications – 910 – Traffic Gravel.
 - .1 This section (32 15 40) takes precedence over any contradictory statements made within any of the referenced MIT Specifications sections.

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Quantity of backfill for which payment will be made shall be the number of tonnes of Crushed Rock, 50mm Minus (Limestone) incorporated into the Work as per the Drawings and accepted by the Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of Work. If no weigh scales are available, the end area method of volumetric calculation will be used with a conversion factor of 2.2 tonnes/m³. Payment will be under **“Unit Price Item – Crushed Stone Surfacing – Crushed Rock, 50mm Minus (Limestone)”**.
- .2 Quantity of backfill for which payment will be made shall be the number of tonnes of Crushed Rock, 25mm Minus (Limestone) incorporated into the Work as per the Drawings and accepted by the Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of Work. If no weigh scales are available, the end area method of volumetric calculation will be used with a conversion factor of 2.2 tonnes/m³. Payment will be under **“Unit Price Item – Crushed Stone Surfacing – Crushed Rock, 25mm Minus (Limestone)”**.
- .3 Quantity of surfacing gravel for which payment will be made shall be the number of tonnes of Class “A” Traffic gravel incorporated into the Work as per the Drawings and accepted by the Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of Work. If no weigh scales are available, the end area method of volumetric calculation will be used with a conversion factor of 2.2 tonnes/m³. Payment will be under **“Unit Price Item – Crushed Stone Surfacing – Traffic Gravel, Class “A”**.
- .4 No separate payment for:
 - .1 Supply, installation, maintenance and calibration of weigh scales and a scale house.
 - .2 Supply and application of water to achieve compaction.
 - .3 Scarifying roadway, incorporating, compaction, levelling and finish grading aggregate surfacing.
 - .4 Material used to repair failures caused by the Contractor’s construction equipment or activities, or due to faulty workmanship.

- .5 Material placed outside of the limits of the design cross-section.

1.3 SUBMITTALS

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

PART 2 **PRODUCTS**

2.1 MATERIALS

- .1 Crushed Rock, 50mm Minus (Limestone):

- .1 Material in accordance with the following requirements:

- .1 Quarried Limestone consisting of hard, dense and durable particles free from lay lumps, cementation, organic material, frozen material and other deleterious materials. The addition of supplementary granular material to a quarried material will not be permitted.
- .2 Gradations to be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.2.

- .3

| Sieve Designation | % Passing |
|-------------------|-----------|
| 50 mm | 100 |
| 19 mm | 0 - 50 |

- .4 Los Angeles degradation: to ASTM C131. Max. % loss by weight: 40
- .5 Crushed particles: 100% of particles by mass within the following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C136.

- .6

| Passing | | Retained on |
|---------|----|-------------|
| 50 mm | to | 4.75 |

- .2 Crushed Rock, 25mm Minus (Limestone):

- .1 Material in accordance with the following requirements:

- .1 Quarried Limestone consisting of hard, dense and durable particles free from lay lumps, cementation, organic material, frozen material and other deleterious materials. The addition of supplementary granular material to a quarried material will not be permitted.
- .2 Gradations to be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.2.

- .3

| Sieve Designation | % Passing |
|-------------------|-----------|
| 25 mm | 100 |
| 19 mm | 80 -100 |

| | |
|----------|---------|
| 9.5 mm | 50 - 85 |
| 4.75 mm | 35 - 70 |
| 2.36 mm | 25 - 50 |
| 1.18 mm | 15 - 35 |
| 0.300 mm | 5 - 20 |
| 0.075 mm | 0 - 5 |

- .4 Los Angeles degradation: to ASTM C131. Max. % loss by weight: 40
- .5 Crushed particles: 100% of particles by mass within the following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C136.

.3 Traffic Gravel, Class "A":

.1 Material in accordance with the following requirements:

- .1 Crushed stone, gravel or sand consisting of hard durable particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
- .2 Gradations to be within limits specified when tested to ASTM C117 and ASTM C136. Sieve sizes to CAN/CGSB-8.2.

.3

| Sieve Designation | % Passing |
|-------------------|-----------|
| 19 mm | 100 |
| 12.5 mm | 75 - 90 |
| 4.75 mm | 45 - 70 |
| 0.425 mm | 10 - 35 |
| 0.075 mm | 8 - 15 |

- .4 Los Angeles degradation: to ASTM C131. Max. % loss by weight: 45
- .5 Crushed particles: minimum 35% of particles by mass within the following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C136.

.6

| Passing | | Retained on |
|---------|----|-------------|
| 19 mm | to | 4.75 |

PART 3

EXECUTION

3.1 PREPARATION

- .1 Strip topsoil, grass and other organic material a minimum 150 mm back from the shoulder of the roadway.
- .2 Scarify the existing roadway to a depth of 75mm for its full width or excavate to depth shown on Drawings or as directed by Departmental Representative.

- .1 If corduroy is encountered while scarifying or excavating roadway, reduce depth as directed by Departmental Representative.

- .3 Repair of soft areas:

- .1 Correct soft areas by removing defective material to depth and extent directed by Departmental Representative in accordance with Section 31 23 16 – Excavation & Embankment.

3.2 PLACING

- .1 Load, haul and place aggregate after sub-grade surface is inspected and accepted by Departmental Representative.

- .2 Placing:

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

- .3 Crushed Rock, 50mm Minus (Limestone):

- .1 Placing:

- .1 Place Crushed Rock, 50mm Minus (Limestone) material on the prepared road top in accordance with the Drawings.

- .4 Crushed Rock, 25mm Minus (Limestone):

- .1 Placing:

- .1 Place Crushed Rock, 25mm Minus (Limestone) material on the prepared road top in accordance with the Drawings..

- .5 Traffic Gravel, Class “A”:

- .1 Placing:

- .1 Place Traffic Gravel, Class “A” material on the prepared road top in accordance with the Drawings.
 - .2 Blade and shape over full width of road top to obtain smooth, even and uniformly graded surface with sufficient cross-slope to prevent water ponding.

- .6 Temporary Erosion and Sedimentation Control:
 - .1 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .2 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 COMPACTION

- .1 Compaction equipment to be capable of obtaining required material densities.
- .2 Compact to density not less than 98% Standard Proctor density in accordance with ASTM D1557.
- .3 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
- .4 Apply water as necessary during compacting to obtain specified density.
- .5 Dry as necessary to obtain specified compaction.
- .6 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Departmental Representative.
- .7 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.4 PROOF ROLLING

- .1 Base Course must not rut or deflect when proof rolled with a truck having a 9-tonne single axle dual tire or 17 tonne tandem axle group with dual tires with a tire pressure of 600 kPa. Each compacted course of base course aggregate shall receive one complete coverage by the tires of a truck as specified.
- .2 Proof roll Base Course. If use of non-standard proof rolling equipment is approved, Departmental Representative to accept level of proof rolling.
- .3 Where proof rolling reveals areas of defective Base Course / Gravel fill or subgrade:
 - .1 Remove material to depth and extent as directed by Departmental Representative.
 - .2 Backfill excavated subgrade with suitable Common material and compact in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.
 - .3 Replace material and compact in accordance with the Contract Documents.
- .4 All associated Works, including replacing defective material with new materials in accordance with the appropriate Sections is to be done at the Contractor's cost.

3.5 SITE TOLERANCES

- .1 Finished base surface to be within +/- 10 mm of established grade and cross section but not uniformly high or low.

3.6 PROTECTION

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

END OF SECTION

PART 1 **GENERAL****1.1** **REFERENCES**

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

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Payment for stripping will be made in accordance with Section 31 23 33.01 - Excavating, Trenching and Backfilling.
- .2 Topsoil placement and finishing will be measured by the cubic metre, as measured in original position (from stockpiles) acceptably placed within the areas indicated on the Drawings or as approved by the Departmental Representative. Payment for topsoil placement shall be full compensation for all labour, equipment, materials and incidentals required to load and haul from stockpiles, place, fine grade, and prepare the topsoil materials for planting in accordance with the requirements of the Contract Document and direction of the Departmental Representative. Payment will be made under **"Unit Price Item – Topsoil – Topsoil Placement and Grading"**.
- .3 Payment for hauling topsoil back to site will be considered incidental to **"Unit Price Item – Topsoil – Topsoil Placement and Grading"**.
- .4 All costs associated with providing proof that the topsoil is not contaminated and meets the requirements outlined in the Contract Documents shall be incidental to **"Unit Price Item – Topsoil – Topsoil Placement and Grading"**.
- .5 Payment for supply and application of soil amendments will be paid under **"Lump Sum Price Item – Prime Cost Sum"** if required.
- .6 Mobilization and demobilization required for this Work shall be incidental to **"Lump Sum Price Item Mobilization / Demobilization"** and no additional payment will be made.
- .7 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the Contract and no separate payment will be made to the Contractor.

1.3 **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.

1.4 QUALITY ASSURANCE

- .1 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 31 00 - Project Managing and Coordination and Section - 01 32 16.07 – Progress Schedules.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for 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.
- .3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 PRODUCTS

2.1 MATERIAL SUPPLIED BY OWNER

- .1 Topsoil to be native organic soils stripped and screened from the Contract Work area and stockpiled onsite or as directed by the Departmental Representative.

2.2 TOPSOIL

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

2.3 SOURCE QUALITY CONTROL

- .1 Advise Departmental Representative of sources of topsoil and manufactured topsoil to be utilized with sufficient lead time for testing.
- .2 Contractor is responsible for amendments to supply topsoil as specified.
- .3 Soil testing by recognized testing facility for PH, P and K, and organic matter.
- .4 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 SEDIMENTATION CONTROL**

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of sediment and erosion control drawings, sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.
- .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 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as directed by Departmental Representative after area has been cleared of brush weeds and grasses and removed from site.
- .2 Strip topsoil to depths as directed by Departmental Representative.
- .3 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- .4 Stockpile in locations as directed by Departmental Representative.
- .5 Protect stockpiles from contamination and compaction.

3.3 PREPARATION OF EXISTING GRADE

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

3.4 PLACING AND SPREADING OF TOPSOIL / PLANTING SOIL

- .1 Place topsoil after Departmental Representative has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 100 mm.

- .3 Spread topsoil as indicated to following minimum depths after settlement or as directed by the Departmental Representative.
 - .1 50mm for seeded areas.
 - .2 600mm for shrub beds.
- .4 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.5 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 loose and roughed, uniformly smooth with no visible footprints.

3.6 ACCEPTANCE

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

3.7 SURPLUS MATERIAL

- .1 Dispose of materials as directed by Departmental Representative.

END OF SECTION

PART 1**GENERAL****1.1 DESCRIPTION**

- .1 The work covered by this specification shall consist of mechanically seeding in the areas as shown on the Drawings or as designated by the Departmental Representative.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Mechanical Seeding will be measured by the square meter of the types of acceptably installed seed mixtures from surface measurements taken and computed by the Departmental Representative. Payment for mechanical seeding shall be full compensation for all labour, equipment, materials and incidentals required to place the materials in accordance with the requirements of the Specifications, Drawings and direction of the Departmental Representative. Payment shall be made under “**Unit Price Item – Mechanical Seeding**”.
- .2 Areas of blending into existing landscape will not be measured for payment.
- .3 Maintenance is incidental and will not be paid for separately.
- .4 Mobilization and demobilization required for this Work shall be incidental to “**Lump Sum Price Item – Mobilization / Demobilization**”, and no additional payment will be made.
- .5 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the Contract and no separate payment will be made to the Contractor.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 31 00 - Project Management and Coordination.
- .2 Scheduling:
 - .1 Schedule seed installation to coincide with the preparation of soil surface.
 - .2 Schedule seed installation when frost is not present in the ground.

1.4 REFERENCE STANDARDS

- .1 Seeds Regulations (C.R.C., c. 1400)
- .2 Seeds Act (R.S.C., 1985, c. S-8)

1.5 SUBMITTALS

- .1 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.
 - .1 Seed Certificates must be submitted to the Departmental Representative prior to purchasing.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

- .1 Certificates to be reviewed and approved by the Departmental Representative and the ESO prior to purchase of seed.

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

1.6 MATERIAL DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Use all means necessary to protect all materials before, during and after installation. Provide adequate protection to materials that may deteriorate if exposed to weather.
- .3 Replace defective or damaged materials with new.
- .4 Seed to be stored in dry weatherproof place and shall be protected from damage by heat, rodents and other causes. Deliver and store grass seed in original packages with label indicating:
 - .1 Analysis of seed mixture;
 - .2 Percentage of pure seed by weight;
 - .3 Year of production;
 - .4 Net mass, and
 - .5 Date tagged and location.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials.

1.8 WARRANTY

- .1 For seeding as itemized in Products Section 2.1 - Seed Mixes, the warranty period is 12 months.
- .2 Contractor hereby warrants that seeding will remain free of defects, for 1 full growing season, providing adequate maintenance has been provided.
- .3 End-of-warranty inspection will be conducted by the Departmental Representative.

PART 2 PRODUCTS

2.1 SEED MIXES

- .1 Seed shall be minimally Certified Canada No. 1 Grade quality seed varieties, in accordance with the Canadian Seeds Act and Regulations, and having a minimum purity of 95% and germination of 80% with a combination of purity and germination that provide a Pure Living Seed of 80%. Seed must be certified "native" or be an "ecovar".
 - .1 Mixture composition:
 - .1 30% Fringed Brome (*Bromus ciliates*)
 - .2 25% Canadian Wild Rye (*Elymus canadensis*)
 - .3 20% Awned Wheatgrass (*Elymus trachycaulus* ssp. *Subsecundus*)
 - .4 20% Hairy Wild Rye (*Elymus innovates*)

- .5 5% Tufted Hairgrass (*Deschampsia caespitosa*)
- .2 Seed tags to be retained and given to the Departmental Representative.
- .3 Seed must not be a "cultivar".
- .4 Seed mix shall be free of impurities, disease and invasive or non-native plants including but not limited to Scentless Chamomile, Downy Brome, Smooth Brome and Canada Thistle.
- .2 The contractor is to confirm availability of all seed mixtures. It is the contractor's responsibility to notify the Departmental Representative if any seed mixtures are unavailable and provide proposed alternate seed mixture a minimum of 14 days prior to installation for review and acceptance by the Departmental Representative and ESO.
- .3 Free of impurities that would inhibit germination and growth.
- .4 In packages individually labelled in accordance with "Seeds Regulations" and indicating the name of the supplier.
- .5 Source seed from producers as close as possible.

2.2 WATER

- .1 Use in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Free of impurities that would inhibit germination and growth.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections are acceptable for mechanical seeding 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 with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 SEED AREA PREPARATION

- .1 Do not perform work under adverse field conditions as determined by Departmental Representative.
- .2 Remove and dispose of weeds mechanically. Chemical vegetation control will require prior approval from the Departmental Representative. Verify that grades are correct. If discrepancies occur, notify Departmental Representative and commence work when instructed by Departmental Representative.
- .3 Fine grade surface free of humps and hollows to smooth, even grade, to elevations indicated to tolerance of plus or minus 15mm, surface draining naturally.
- .4 Ensure topsoil is loose and friable.
- .5 Fine graded surface to be approved by Departmental Representative immediately prior to seeding.

3.3 SEED PLACEMENT

- .1 Seed all disturbed areas as directed by the Departmental Representative and areas identified on the plans.
- .2 Seed within 2 weeks after completion of excavation and/or embankment.
 - .1 Seed in stages if necessary.
- .3 Seed areas outside of the plan limits as directed by the Departmental Representative or the ESO. These areas will generally be in ditches completed in past years that have seen poor germination.
- .4 For mechanical seeding:
 - .1 Mechanical landscape drill seeder ("Brillion" type or equivalent) which accurately places seed at specified depth and rate and rolls in single operation.
 - .2 Use equipment and method acceptable to Departmental Representative.
 - .3 Consolidate mechanically seeded areas by rolling area if soil conditions warrant or if directed by Departmental Representative with equipment approved by Departmental Representative immediately after seeding.
- .5 For manual seeding:
 - .1 Use manually operated drop seeder ("Cyclone" type or equivalent).
 - .2 Use manually operated, water ballast, landscaping type, smooth steel drum roller. Ballast as directed by Departmental Representative.
 - .3 Use equipment and method acceptable to Departmental Representative.
 - .4 Sow half of required amount of seed in one direction and remainder at right angles as applicable.
 - .5 Incorporate seed by harrowing in cross directions with chain harrows or as approved by Departmental Representative or ESO.
- .6 On cultivated surfaces, sow seed uniformly at rate of:
 - .1 10.0 kg/hectare for mechanical seeding.
 - .2 30.0 kg/hectare for manual seeding.
- .7 Blend applications 150 mm into adjacent grass areas to form uniform surfaces.

3.4 CLEANING

- .1 Clean equipment in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Keep area adjacent to site clean and free from mud, dirt, and debris at all times.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
 - .1 Clean and reinstate areas affected by Work.
 - .2 Upon completion remove surplus materials, rubbish, tools and equipment.
- .4 Waste Management: separate waste materials for reuse and recycling.

- .1 Remove recycling containers and bins from the site and dispose of materials at an appropriate facility.

3.5 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Ensure maintenance is carried out under supervision of certified Contractor.
- .2 Perform following operations from the time of seed application until acceptance by Consultant:
- .3 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
- .4 Repair and reseed dead or bare spots to allow the establishment of seed prior to acceptance.
- .5 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.
 - .1 Chemical vegetation control will require prior approval from the Departmental Representative.

3.6 FINAL ACCEPTANCE

- .1 Seeded areas will be accepted by Departmental Representative (Landscape Architect) provided that:
 - .1 Areas are uniformly established free of rutted, eroded, bare or dead spots and extent of weeds apparent in the grass is acceptable.
- .2 Areas seeded in fall will be accepted in following spring, one month after the start of growing season provided acceptance conditions are fulfilled.

3.7 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform the following operations from the time of acceptance until the end of warranty period.
 - .1 Water seeded area to maintain optimum soil moisture level for the continued growth of grass. Control watering to prevent washouts.
 - .2 Repair and reseed dead or bare spots to satisfaction of Consultant.
 - .3 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.
 - .4 Chemical vegetation control will require prior approval from the Departmental Representative.

END OF SECTION

PART 1 **GENERAL****1.1** **REFERENCES**

- .1 ASTM International:
 - .1 ASTM A742-[13], Standard Specification for Steel Sheet, Metallic Coated and Polymer Precoated for Corrugated Steel Pipe.
 - .2 ASTM A929-[17], Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process for corrugated Steel Pipe.
 - .3 ASTM C117-[04], Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
 - .4 ASTM C131-[06], Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - .5 ASTM C136-[06], Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .6 ASTM D4318 – [10e1], Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 - .7 ASTM D698-[07e1], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft; (600 kN-m/m;)).
- .2 Manitoba Infrastructure and Transportation:
 - .1 Comply with MIT Standard Construction Specifications – 400 – Culverts.
 - .2 MIT, Standard Construction Specifications – 910 – Traffic Gravel.
- .3 CSA-G401-01 Corrugated Steel Pipe Products.
- .4 CSA-B182.8-02 Profile Polyethylene Storm Sewer and Drainage Pipe and Fittings.

1.2 **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Remove and Dispose of the Corrugated Steel Pipe (CSP) culvert:
 - .1 The quantity of the CSP culvert that will be measured for payment shall be the number of linear metres removed and disposed of outside of the National Parks, regardless of the culvert depth. Payment will be made under **“Unit Price Item – Pipe Culverts - Remove and Dispose Existing CSP Culvert”** and shall include all labour, equipment, and material to satisfactorily complete the work.
 - .2 All Work including, but not limited to; trench slope stabilization, necessary backfilling/compaction with common material, loading, hauling and unloading the CSP Culvert to disposal location will not be measured directly for payment but shall be considered incidental to **“Unit Price Item – Pipe Culverts - Remove and Dispose Existing CSP Culvert”**.
- .2 Supply and Installation of CSP Culverts:
 - .1 The quantity of CSP culverts that will be measured for payment shall be the number of linear metres of the types and sizes supplied, assembled, installed and accepted by the Departmental Representative, and shall be inclusive of all costs of labour, materials, equipment to satisfactorily complete this item as specified, regardless of the culvert depth. A culvert marker shall be installed at each end of a culvert. Payment will be made under:

- .1 **“Unit Price Item – Pipe Culverts – Supply and Install CSP Culvert (750mm Dia.)”.**
 - .2 **“Unit Price Item – Pipe Culverts – Supply and Install CSP Culvert (1000mm Dia.)”.**
 - .3 Payment for non nonwoven geotextile material shall not be measured but considered incidental to the contract.
 - .4 Payment for culvert markers shall not be measured but considered incidental to the contract.
- .3 Measurement and Payment Procedures for supplying, loading, hauling and installation of Beaver Deceivers (with 100 mm by 100 mm welded wire mesh) will be based on the number of beaver deceivers supplied and installed according to the Contract Documents, and shall include all labour, equipment and material to satisfactorily complete this item of work. Payment will be made under **“Unit Price Item – Pipe Culverts – Supply and Install Beaver Deceiver”**
- .4 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item – Mobilization / Demobilization”**, and no additional payment will be made.
- .5 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the Contract and no separate payment will be made to the Contractor.

1.3 SUBMITTALS

- .1 In accordance with Section 01 33 00 – Submittal Procedures.
- .2 Provisions for staged construction shall be shown in the shop drawings, including any temporary support required.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations.
 - .2 Store and protect pipes from damage.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities, outside of the National Parks.

- .3 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative, outside of the National Parks.

PART 2 **PRODUCTS**

2.1 CORRUGATED STEEL PIPE

- .1 Corrugated steel pipe: to CSA-G401.
- .2 Culverts to be annular or spiral with annular ends. Coupling bands to be two piece annular bolted with minimum width of nine corrugations.
- .3 Minimum wall thickness to be 2.0 mm.
 - .1 Or greater in accordance with manufactures recommendations in the specific installed conditions.
- .4 Corrugations to be 68 mm x 13 mm.
- .5 For all exposed culvert ends, 4:1 mitred end sections will be required.
- .6 Design Code CHBDC S6-14.
- .7 Design Live Load BCL-625.

2.2 GRANULAR BEDDING AND BACKFILL

- .1 Manitoba Infrastructure and Transportation - Crushed Rock, 50mm Minus (Limestone) Material for pipe bedding to be supplied by the Contractor from outside the Park. Compacted to 98% of maximum dry density.

2.3 NON-WOVEN GEOTEXTILE

Geotextile shall be installed in accordance with Section 31 32 19 - Soil Stabilization

2.4 RIP-RAP

- .1 Rip-Rap shall be installed in accordance with Section 31 37 00 – Rip-Rap.

2.5 BEAVER DECEIVER

- .1 Beaver deceiver with 100mm by 100mm welded wire mesh, steel studded T posts 14, and gauge tie wire to be installed or as directed by the Departmental Representative.

PART 3 **EXECUTION**

3.1 METHODOLOGY

- .1 Contractor to verify site conditions and safety requirements prior to starting work.
- .2 Traffic control and staging to be in accordance with Section 01 55 26 – Traffic Control.
- .3 Pipe culvert removal works cannot commence until approved by the Departmental Representative.
- .4 If required, additional permits for pipe culvert works will be provided by Parks Canada at the request of the Contractor.

3.2 CULVERT / STRUCTURE REMOVAL

- .1 Culvert removal shall be as indicated on IFC Drawings and shall include disposal of sections to a suitable disposal facility outside of the National Parks.

3.3 BEDDING

- .1 Dewater excavation, as necessary, to allow placement of culvert bedding in dry condition.
- .2 Place minimum thickness of 300 mm of approved granular material on bottom of excavation and compact to minimum 98% Standard Proctor density to ASTM D698.
- .3 Shape bedding to fit lower segment of pipe exterior so that width of at least 50% of pipe diameter is in close contact with bedding and to camber as indicated or as directed by Departmental Representative, free from sags or high points.
- .4 Place bedding in unfrozen condition.

3.4 LAYING CORRUGATED STEEL PIPE CULVERTS

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

3.5 JOINTS: CORRUGATED STEEL CULVERTS

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

3.6 BACKFILLING

- .1 Backfill around and over culverts as indicated in the Contract Documents or as directed by Departmental Representative.
- .2 Place granular backfill material, in 150 mm layers to full width, alternately on each side of culvert, so as not to displace it laterally or vertically.
- .3 Compact each layer to 98% Standard Proctor density to ASTM D698 taking special care to obtain required density under haunches. Hand tamp where necessary to obtain compaction.
- .4 Protect installed culvert with minimum 900 mm cover of compacted fill before heavy equipment is permitted to cross. During construction, width of fill, at its top, to be at least twice diameter or span of pipe and with slopes not steeper than 2H:1V.
- .5 Place backfill in unfrozen condition.
- .6 Place Rip-Rap in accordance with Section 31 37 00 – Rip-Rap.

3.7 CUT ENDS

- .1 All exposed ends of CSP culverts to have sloped end sections conforming to roadside slope, by cutting culvert with mechanical saw.
- .2 All cut edges shall be made smooth by grinding so that all the burrs are removed. Any damaged galvanizing shall be restored by zinc metallizing in accordance with CSA G401.
- .3 Where an existing culvert is extended, up to 2 m of the existing culvert end shall be removed as directed by the Departmental Representative.
- .4 Cutting of culvert ends to the satisfaction of the Departmental Representative is considered incidental to the Work and no additional payment will be made.

3.8 BEAVER DECEIVERS

- .1 Beaver dams that are required to be removed to facilitate culvert or beaver deceiver installation shall be removed under the direction of the ESO.
 - .1 Beaver dams are to be removed in such a way as to release water slowly, in 20 cm increments.

END OF SECTION

PART 1 **GENERAL****1.1** **MEASUREMENT AND PAYMENT PROCEDURES**

- .1 Preservation and care of water within the project limit throughout the duration of construction will be paid under “**Lump Sum Price Item – Preservation of Water Course**”. The payment will include meeting all environmental and contractual obligations as noted in this document and engineering drawings.
 - .1 **25% of Lump Sum** payment to be paid when Environmental Protection Plan (EPP) has been implemented and accepted by the ESO and the Departmental Representative.
 - .2 An additional **50% of Lump Sum** will be paid when existing culvert has been removed completely and water course has been acceptably diverted into the new culvert.
 - .3 The remainder of the Lump Sum to be paid when work is complete Environmental Protection measures have been removed from site and site cleaned and left in condition to the satisfaction of the Departmental Representative and all other Agencies having Jurisdiction.

1.2 **ENVIRONMENTAL REQUIREMENTS**

- .1 Timing:
 - .1 Minimize duration of in-water work.
 - .2 Conduct instream work during periods of dry or low flow, to further reduce the risk to fish and fish habitat, and to allow for instream work to be isolated.
 - .3 Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.
 - .4 Conduct instream work in the least risk window June 30th to September 15th. Retain a qualified environmental professional to be consulted as additional mitigation measures may be required where fish are present.
- .2 Operation of Machinery:
 - .1 Material, equipment and machinery should arrive at the site washed, free of fluid leaks and clean of foreign materials (i.e. invasive species and noxious weeds).
 - .2 Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
 - .3 All equipment will operate from outside the active channel or from within an isolated area.
 - .4 Wash, refuel and service machinery and store fuel and other materials for the machinery at least 100 m away from the watercourse to prevent any deleterious substances from entering the water.
 - .5 Refueling and fuel storage should occur further than 100 m from any watercourse or drainage feature. Fueling stations will be isolated in case of spills, through methods such as berms and an impermeable lining.
 - .6 Containment measures must be sufficient to contain at least 120% of the material.
 - .7 An emergency spill kit shall be kept on site at all times.
 - .8 A contingency plan in the case of sediment release and fuel or oil spills should be developed that includes procedures for containment, absorption, removal and reporting. All spills will

be reported to Parks Canada at 204-848-7264 and the Manitoba Conservation Emergency Response Program at 1-204-944-4888 within 24 hours of the occurrence.

- .9 Remove construction materials from site upon completion of the Project.

.3 Erosion and sediment control:

- .1 Develop and implement a site-specific Erosion and Sediment Control Plan prior to the commencement of the project.
- .2 Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear.
- .3 Install effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
 - .1 Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.
 - .2 Repairs to erosion and sediment control measures and structures if damage occurs.
 - .3 Removal of erosion and sediment control materials once site is stabilized.
- .4 Develop measures for managing water flowing onto the site, as well as water being pumped/diverted from the
- .5 site such that sediment is filtered out prior to the water entering a waterbody. For example, pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.
- .6 Develop measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.
- .7 Install site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required.

.4 Riparian vegetation removal and re-vegetation:

- .1 Design and construct approaches to the waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.
- .2 Establish an appropriate vegetative buffer (i.e., set-back) from the high water mark and locate temporary workspaces outside the buffer.
- .3 Clearing of riparian vegetation should be minimized and remain within the marked construction limits. Use existing trails or roads wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
- .4 Do not use herbicides for clearing or maintenance of riparian vegetation unless approved by DFO.
- .5 If soil is removed from within the riparian zone, topsoil should be stockpiled separately and re-used since it contains native seed and root fragments from perennial wetland grasses and wetland plants, and re-use of the riparian soil will facilitate re-vegetation of that area.
- .6 Disturbed areas will be re-vegetated with an appropriate weed-free native grass seed mix.
- .7 Do not fertilize in the immediate vicinity of a watercourse unless approved by DFO.

- .5 Excavation:
 - .1 Minimize the removal of natural woody debris, rocks, sand or other materials from the banks, the shoreline or the bed of the waterbody below the ordinary high water mark. If material is removed from the waterbody, set it aside and return it to the original location once construction activities are completed.
 - .2 If excavated materials are to be used, store above the high water mark until they can be backfilled.
 - .3 Restore bed and banks of the waterbody to their original contour and gradient; if the original gradient cannot be restored due to instability, a stable gradient should be restored.
 - .4 If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank/shoreline and natural stream/shoreline alignment.
- .6 Isolation:
 - .1 Site isolation means and methods is the responsibility of the Contractor:
 - .1 Isolation methods could include sediment curtain, cofferdams, steel sheet piles, or diversion channels.
 - .2 Isolation method will be clean and free of debris and capable of accommodating 1 in 5 year flood events.
 - .3 Non- earthen material shall be used to construct the isolation.
 - .2 Downstream flow should be maintained at all times during site isolation.
 - .3 Retain a qualified environmental professional to ensure appropriate protocols are applied, and applicable permits for relocating fish are obtained and to capture any fish trapped within an isolated/enclosed area at the work site and safely relocate them to an appropriate location in the same waters. Fish may need to be relocated again, should flooding occur on the site A fish salvage should be performed, by a qualified environmental professional, in accordance with the conditions of the Research and Collection Permit obtained from Parks Canada.
 - .4 If a pump is used during dewatering or to allow continued flow of water around the work, intakes should be sized and screened to prevent fish entrapment and debris blockage; it should follow the Freshwater Intake End-of-Pipe Fish Screen Guidelines (DFO, 1995).
 - .5 Allow for sediment to settle within the isolation prior to the removal of the structure.
- .7 Activities which involve Work within or near waterways should first be co-ordinated with the Departmental Representative and the contractors QEP shall be onsite for such work. The contractor must always follow applicable legislation/regulations and the Contractor's Environmental Protection Plan (EPP) which is outlined in Section 01 35 43 – Environmental Procedures.
- .8 Design temporary care of water measures as described in the Work Plan including cofferdams, sumps, pumping systems, pipelines, channels, flumes, drains and other protective and dewatering and water diversion works to permit construction of the Work in the dry.
- .9 Ensure the work plan includes handling of groundwater, rainstorm runoff, snow, snowmelt, and ice that may enter the Work areas.
- .10 Ensure a dewatered condition for operation of equipment within watercourses.
- .11 Install stabilized entrances at equipment access points to dewatered watercourses.

- .12 All site equipment shall use bio-based or biodegradable hydraulic fluid for works. Costs shall be considered incidental to works.
- .13 Use rubber tracked machinery when working on watercourse bed material.
- .14 Keep all approved activities within the wetted perimeters to an absolute minimum
- .15 Use borrow material from watercourse beds only after receipt of written approval from Departmental Representative.
- .16 Design and construct temporary crossings to minimize environmental impact to watercourse.
- .17 Dumping excavated fill, waste material, or debris in watercourse or wetland is prohibited.

1.3 SUBMITTALS

- .1 Provide temporary water management / damming plan /creek diversion plan in accordance with Section 01 33 00- Submittal Procedures and 01 32 16.07 - Construction Progress Schedules Bar (GANTT) Chart.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Silt Fencing:
 - .1 Consisting of non-woven geotextile with manufactured seams as resistant as the geotextile material itself. The geotextile shall be in one piece.
 - .2 Stakes to be natural wood, minimum 1.5m in length, sized to withstand peak flows.
- .2 Turbidity or Floating Silt Curtain:
 - .1 Consisting of a heavy duty woven fabric with top loops connected to floats and bottom loops woven through a 5mm diameter heavy metal chain.
 - .2 Length of silt curtain to be sufficient to fully contain the work area.
 - .3 Height of silt curtain to be sufficient to adjust to variable water levels while maintaining continuous contact with the watercourse bed.
 - .4 Mark floating surface of curtain with yellow buoys as determined by Departmental Representative.
- .3 Pumps (If required):
 - .1 The inlet and outlet of pumps and hoses for use in-water to be screened to prevent aquatic fauna from entering the equipment.
 - .2 Have at Site at all times, at least one standby pump for each category of pump being used for dewatering and water diversion activities.
 - .3 Provide standby power sufficient for operation of all required dewatering and water diversion equipment

PART 3 **EXECUTION****3.1** **GENERAL**

- .1 Provide, operate, and maintain all necessary cofferdams, channels, flumes, drains, well points, wells, sumps, pumps, pipelines, and other temporary diversion and protection works.
- .2 Provide, operate, and maintain all cold weather protective works including enclosures, insulation, and heating systems.
- .3 Have at the Site at all times, at least one standby pump for each category of pump being used for care of water.
- .4 Provide standby power sufficient for operation of all required care of water equipment.
- .5 Inspect care of water pump and pipeline systems at regular intervals not exceeding 12 hours and verify that the pumps are operating, there is sufficient fuel, and cold weather protection is adequate. If required, decrease the time interval between inspection check to correspond with the type and nature of weather and the work in progress, to the satisfaction of the Departmental Representative.
- .6 Repair damage to any part of the Work caused by water, snow, or ice due to failure of the care of water measures. Perform additional excavations and fill placement made necessary by water, snow, or ice.
- .7 When no longer required, remove cofferdams, sumps, channels, drains, and other protective, dewatering, and temporary diversion works and finish to a leveled and neat condition as directed by the Departmental Representative.

3.2 **EXISTING CONDITIONS**

- .1 Maintain existing flow pattern in natural watercourse systems.
- .2 In natural systems maintain existing riffle pool and step pool patterns.

3.3 **SITE CLEARING AND PLANT PROTECTION**

- .1 Temporary Erosion and Sedimentation Control:
 - .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to approved Erosion and Sedimentation Management Plan.
 - .2 Inspect, repair, maintain and report weekly on condition of erosion and sedimentation control measures during construction until permanent vegetation has been established.
 - .3 Remove erosion and sedimentation controls once disturbed areas have been restored and stabilized.
- .2 Minimize disturbance to vegetated buffer zones and protect trees and plants on site and adjacent properties where indicated.
- .3 Existing saturated logs along base of shoreline to be disturbed to be collected and secured within a floating boom system. Logs to remain saturated at all times. Upon completion of watercourse alterations, reinstate logs along base of slope in a manner similar to existing conditions.
- .4 Wrap trees and shrubs adjacent to construction work, storage areas and trucking lanes in burlap.

- .5 Protect roots of designated trees to dripline or as instructed Departmental Representative during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .6 Leave roots mass and stumps in place.
- .7 Maintain temporary erosion and pollution control features installed under this contract.

3.4 RECOVERY OF AQUATIC FAUNA

- .1 The contractors QEP shall be responsible to minimize impacts on aquatic fauna, during installation of water isolation techniques, use a combination of netting and loud noises or vibrations to scare any trapped fish, reptiles or amphibians towards a temporary opening. Once completed, close off the opening.
- .2 Once the aquatic work area is secured, the isolated area of water is to be electrofished to remove any remaining aquatic fauna.
- .3 Captured aquatic fauna to be placed back in the active river flow or moved to a similar habitat outside the work area. A report detailing the results of the fish salvage should be provided by the contractors QEP within seven days of completing the work.
- .4 Protect edges of work area to prevent the reintroduction of reptiles and amphibians to the work area.

3.5 DRAINAGE

- .1 Inspect, repair and maintain all dewatering and water diversion equipment and systems during construction until completion of the Works.
- .2 Repair damage to any part of the Work caused by water, snow, or ice due to failure of dewatering and water diversion measures. Perform additional excavations and fill placement made necessary by water, snow, or ice.
- .3 Pumping water containing suspended materials into watercourse is prohibited.
- .4 Establish rock chute spillways to accommodate safe surface water entry to watercourse as directed by Departmental Representative.
- .5 Install drop pipe inlet system as directed by Departmental Representative.

3.6 REMOVAL OF SEDIMENT CONTROL MEASURES

- .1 Sediment control measures to remain in place at all times during the work in order to catch and filter any run-off from the worksite before it reaches the watercourse.
- .2 Measures to remain in place until the growth of seed, sod or other surface cover is sufficient to retain sediments from being mobilized in runoff.
- .3 Method of removal of sediment control measures to be submitted for approval by Departmental Representative.
- .4 For in-water sediment control measures, allow minimum 1 day for settlement of suspended sediments before removal.

3.7**SITE RESTORATION**

- .1 Attempt to replicate the original watercourse bed grades and materials upon completion of the new channel works.
- .2 Establish vegetated buffer zones with suitable vegetation to minimum 3m along edge of watercourse banks as determined by Departmental Representative.
- .3 Plant non-invasive, locally native or naturalized vegetation natural to area, suitable for application without requirement for fertilizers, pesticides and other chemicals.
- .4 Control stream bank erosion in lower section of watercourse with irregular shaped Rip-Rap underlain with filter fabric as specified in Section 31 37 00 - Rip-Rap.
- .5 Control stream bank erosion in upper section of watercourse by planting suitable vegetation as directed by Departmental Representative.
 - .1 Ensure stabilization of exposed soils occurs within 5 days of completion of watercourse works.

END OF SECTION

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