

Parks Canada Agency

Grasslands National Park

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PD	C-01 COVER PAGE	2017.04.28
PD	C-02 LEGEND AND DRAWING INDEX	2017.04.28
PD	C-03 PLAN & PROFILE STA 0+000 TO STA 1+400	2017.04.28
PD	C-04 PLAN & PROFILE STA 1+400 TO STA 3+025	2017.04.28
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PD	C-12 GEOMETRIC TABLES AL01 – SCENIC ROAD	2017.04.28
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PD	C-20 MISCELLANEOUS DETAILS KIOSK AND GATE	2017.04.28
PD	C-21 MISCELLANEOUS DETAILS LIVESTOCK GUARD	2017.04.28

Reference Documents:

1. Detailed Impact Analysis: Badlands Scenic Viewpoint Road (September 29, 2016)
2. Parks Canada National Best Management Practices, (May 2015)
3. Heritage Impact Assessment of Sites Associated with Rock Creek Campground and The Badlands Scenic Drive – East Block of Grasslands Park – Final Report (Permit GRA-2016-21298) (April 2017)
4. Construction Signage Translation Database

Part 1 General**1.1 PRECEDENCE**

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specifications referenced in this Project Specification.

1.2 DEFINITIONS

- .1 Saskatchewan Government Ministry of Highways and Infrastructure is referred to as “MHI”. The MHI Standard Specification Manual can be found at the following location:
 - .1 <http://www.highways.gov.sk.ca/standard-spec/>
- .2 Changes in Definition, - The following changes in definitions have been made to the MHI Specifications:
 - .1 Engineer – The word “Engineer” shall mean the Departmental Representative or his duly appointed representative unless noted otherwise.
 - .2 Deputy Minister – The word “Deputy Minister” shall mean Parks Canada Agency unless noted otherwise.
- .3 “GNP”, “Park” or “The Park” shall refer to Grasslands National Park.
- .4 Environmental Surveillance Officer is referred to as “ESO”.
- .5 Any reference to “Parks Canada Agency”, “Parks Canada”, “PCA” or “The Owner”, shall refer to Parks Canada Agency and shall include any affiliate or sub group of Parks Canada.
- .6 Site means the areas
 - .1 On or within the limits of Construction as referenced on the Drawings or described in the Contract.
 - .2 Outside the limits of Construction, all roads, highways, pits, or quarries, used to complete the Work.
- .7 Work means the provision of all labour, services, material, and equipment as necessary, for the Contractor to complete and perform its obligations in accordance with the Contract.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- .1 In preparation for and during construction of this project, the Contractor shall review the requirements of Section 01 35 43 – Environmental Procedures to ensure the desired minimal adverse effects are achieved. The Departmental Representative and Parks Canada’s Environmental Surveillance Officer (ESO) will refer to Section 01 35 43 – Environmental Procedures in determining compliance.
- .2 All requirements noted within the Contract Documents shall be completed by the Contractor unless specifically stated otherwise.
- .3 Without limiting the scope of work, the work of this Contract generally comprises the following:
 - .1 Excavation and removal of existing material and road surfacing material and placing this material in new access road embankments or in stockpiles identified in the Contract Documents or as directed by the Departmental Representative;

- .2 Construction of a graveled surface access road using materials excavated from the Scenic Roadway, as well as existing stockpiles of surplus material from a separate project.
- .3 Excavation and removal of waste material and disposal of outside of the Park as specified in the Contract Documents;
- .4 Subgrade preparation including the supply and installation of geosynthetics in accordance with the Contract Documents;
- .5 Supply and installation of roadway sub-drains;
- .6 Supply and placement and compaction of granular sub-base and base materials in accordance with MHI Specifications;
- .7 The supply, mixing, and installation of MHI Type 3 Asphalt Concrete Pavement in GNP along the Scenic View Drive at locations identified in the Contract Documents or as directed by the Departmental Representative in accordance with MHI EPS Specifications. The use of Recycled Asphalt Pavement (RAP) is not permitted for this project;
- .8 Perform mix design for MHI Type 3 Asphalt Concrete Pavement using Asphalt Cement 150-200A penetration grade. Mix design is subject to acceptance by the Departmental Representative;
- .9 ACP thickness to be in accordance with the Contract Documents or as directed by the Departmental Representative. Maximum and minimum lift depths shall be in accordance with MHI specifications and depths shall be approved by Departmental Representative prior to the start of paving;
- .10 Supply and installation of traffic control including temporary traffic markings, signage, and other temporary construction facilities required for completion of the Work of the Project;
- .11 Supply and install permanent line markings at the completion of the work;
- .12 Installation of permanent signage, posts, hardware and concrete bases on site, as directed by Departmental Representative;
- .13 Miscellaneous Additional Work as directed by the Departmental Representative;
- .14 The Contractor will not be permitted to set up or operate any Asphalt or Crushing plants inside Grasslands National Park;
- .15 Where material or technical specifications for work covered under this Contract including any Change Orders are not available, the most recent version of the MHI – Standard Specifications shall apply unless directed by the Departmental Representative;

1.4 PROJECT LOCATION

- .1 The project is located in Grasslands National Park (GNP). The following are key locations relative to the project:
 - .1 Poverty Ridge: Southeast Area of GNP along Township Road 11, accessed from Highway 2.
 - .2 GNP East Block Access: At the East park boundary approximately 4.9 km North of Township Road 11 and 2.9 km West on existing access road.

- .3 Rock Creek Campground: West of the GNP East Block Access and North of Station 0+000 of the scenic road.
- .2 The Contractor is advised that the Badlands Scenic View Drive area contains natural plant life that are very sensitive and re-vegetation of these species is very difficult once the plants have been damaged. The Contractor shall proceed with caution at all times and shall not run equipment directly on the sensitive areas without protection previously approved by the Departmental Representative in place.

1.5 CONTRACT METHOD

- .1 Construct Work under combined price contract.

1.6 WORK BY OTHERS

- .1 The Contractor is advised that the following Work in the vicinity has been or will be contracted by Parks Canada:
 - .1 Rock Creek Campground
 - .2 Park Boundary Fence Upgrades – Multiple Locations
 - .3 Archaeology Dig
 - .4 Ongoing facility maintenance and wildlife management by Parks Canada staff within GNP.
- .2 The Contractor shall coordinate his operations with other contractors in the area as well as any Stakeholders in the area. No claims for any delays, lost profit or inconvenience will be entertained as a result of this coordination.

1.7 WORK SEQUENCE

- .1 The Contractor shall schedule work progress to allow Owner / Departmental Representative unrestricted access to inspect all phases of the Work.
- .2 The Contractor shall maintain fire and emergency access on the roadways at all times.
- .3 The Contractor shall prepare a meaningful bar chart or network diagram showing the proposed schedules of major work, which shall be submitted to the Departmental Representative **one (1) week prior to commencement of any work.**
- .4 The Contractor shall:
 - .1 Not start work within GNP prior to September 5, 2017 and shall only be allowed to start once all required submittals have been approved.
 - .2 Complete all work and cleanup of the area before October 30, 2017 (Contract Completion Date).
- .5 The Contractor shall be permitted to close segments of Badlands Scenic View Drive to the general visiting public between the North and South boundaries of the project site during paving operations as agreed with the Departmental Representative.
- .6 The Contractor shall limit road closures along Badlands Scenic View Drive to the segment(s) of roadway where active road rehabilitation is taking place. The remainder of Badlands Scenic View Drive shall remain open for shared use of the Contractor, Parks Canada Agency staff and the general visiting public.

1.8 CONTRACTOR USE OF PREMISES

- .1 The Contractor is not permitted to extract and process native material for the production of granular aggregate anywhere inside GNP unless specifically directed by the Departmental Representative.
- .2 The Contractor has use of site subject to above, Section 01 14 00 and Section 01 29 01 until Contract Completion date.
- .3 The Contractor shall limit use of premises for Work, for storage, and for access, to allow:
 - .1 Owner occupancy.
 - .2 Work by other Contractors.
- .4 The Contractor shall coordinate the use of the premises under direction of the Departmental Representative.
- .5 The Contractor shall obtain and pay for use of additional storage, disposal or work areas needed for operations under this Contract.
- .6 The Contractor and any Subcontractors shall obtain a business license from the GNP office at:
 - 101 Center Street
 - Val Marie
 - Saskatchewan
 - S0N 2T0prior to commencement of the contract.
- .7 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 the PCA Environmental Surveillance Officer (ESO) or as directed by the Departmental Representative.

1.9 OWNER FURNISHED ITEMS

- .1 None.

1.10 OWNER OCCUPANCY

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

1.11 CONSTRUCTION SIGNAGE

- .1 To be in accordance with Section 01 35 30.06 Special Procedures for Traffic Control.
- .2 No signs or advertisements, other than warning signs and alternate traffic movement signs, are permitted on site.
- .3 Signs and notices for safety and instruction shall be in both official languages. Signs shall be diamond grade and shall conform to CAN3-Z321.

- .4 The Contractor shall supply, install and maintain two (2) portable Changeable Message Signs with a minimum of three (3) lines with eight (8) characters per line, for the duration of the project. The signs shall be located at:
 - .1 Poverty Ridge;
 - .2 On the existing GNP access road as directed by the Departmental Representative.
- .5 The Changeable Message Signs shall become the property of PCA following the project, and shall remain in the Park.
- .6 The Contractor shall maintain approved signs and notices in good condition for duration of project, and remove or dispose the signs off-site upon completion of project or earlier as directed by the Departmental Representative (other than the Changeable Message Signs).
- .7 All temporary traffic control signs that are used for longer than one day shall be mounted on wood posts (other than Changeable Message Signs) that shall be secured at all times.
- .8 Signage shall be coordinated with other Contractors where necessary.

1.12 SETTING OUT OF WORK

- .1 The Departmental Representative will identify location of all work sites.
- .2 Departmental Representative will establish control points and provide a complete set of construction Drawings.
- .3 The Departmental Representative will supply a baseline for the entire length of the project at 30 m intervals. The Contractor shall be responsible for all other layout of work and replacement of baseline that may be damaged during the course of the project.
- .4 The Contractor shall:
 - .1 Provide Measurements for Payment (Quantity Surveys) for checking and acceptance by the Departmental Representative.
 - .2 Not permanently mark any infrastructure or feature during their setting out of the work. They shall fully remove any set out marks, markers, or their identifiers that they installed, prior to demobilizing from the Work Sites.
 - .3 Allow sufficient time for Departmental Representative to inspect items for measurements for payment.
- .5 Not damage geodetic benchmarks or control monuments unless authorized by Departmental Representative.
- .6 The Contractor shall provide at his own cost, any survey activities as required and including, but not limited to, the following:
 - .1 Layout for interim and final lane markings, including those for intersection treatments
 - .2 Re-establishing the start and finish of “No Passing Zones”, Passing Lanes or at new limits as directed by the Departmental Representative
 - .3 String line or other markings for the alignment or grade control of construction equipment
- .7 Temporary Pavement Marking, including layout and removal shall be considered incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”**, and no additional payment will be made for the duration of the Contract. The Contractor will not be

permitted to remove the temporary pavement marking until the final pavement markings have been installed to the satisfaction of the Contract and Departmental Representative.

- .8 Final Pavement Marking will be paid under **“Unit Price Item 5 – Pavement Marking”**.

Part 2 Products

- .1 To be in accordance with MHI Standard Specification Manual (latest edition).

Part 3 Execution

- .1 To be in accordance with MHI Standard Specification Manual (latest edition).

END OF SECTION

Part 1 General**1.1 ACCESS AND EGRESS**

- .1 Contractor vehicular access to the site shall be restricted to construction, emergency and maintenance vehicles for the duration of the contract.
- .2 Construction operations shall be conducted to cause minimal inconvenience to the public and to owners of adjoining property. Existing access to property shall be maintained as far as possible and if new access must be provided, every effort shall be taken to provide the new access before the existing access is removed. Contractor will be responsible for repairing any damage incurred, at the Contractor's cost.
- .3 The Contractor is responsible for the development and supply of construction access to the Work as approved by the Departmental Representative.

1.2 USE OF THE SITE AND FACILITIES

- .1 The Work Sites specified in the Contract shall only be used for the purposes of the Work.
- .2 The Work Site will be made available by the Owner to the Contractor for its non-exclusive use for the duration of the Work, unless otherwise provided in the Contract Documents. The Contractor shall include in the tender, payment to taxes properly levied by law (Federal, Provincial and Municipal) including the cost of any collection of permits and business licenses.
- .3 Parks Canada regulations prohibit anyone working within the Park from using public campground facilities except as specifically identified herein.
- .4 Water is not available within GNP. The Contractor shall not extract water from within the National Park. The Contractor shall be responsible for locating and hauling water into GNP as approved by the Departmental Representative.
- .5 Power is not available on site. The Contractor must supply power for offices, lights, tools, etc.
- .6 Office-tool trailer(s) may be set up at the Poverty Ridge in an area designated by the Departmental Representative. See Section 01 35 43 - Environmental Procedures.
- .7 Contractor shall maintain adequate drainage and siltation control at the Worksite.
- .8 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 his or her cost for the performance and inspection of the Work.
- .9 The Contractor shall provide sanitary facilities for work force in accordance with governing regulations and 01 35 43 Environmental Procedures. The Contractor shall post notices and take such precautions as required by local health authorities and keep area and premises in sanitary condition.
- .10 Any damage to the Work Site or campground caused by the Contractor shall be repaired by the Contractor at their expense prior to contract completion date or construction completion.

- .11 **The Contractor will not be permitted to set up an Asphalt or Crushing Plant within GNP.** Plant setup will be subject to Section 01 35 43 Environmental Procedures and Parks Canada Best Management Procedures (BMP).

1.3 WORKING TIMES

- .1 Work in GNP is permitted during daylight hours, from 07:00 to 19:00, Monday to Friday unless stipulated otherwise in the Contract Documents.
- .2 No Work will be permitted on Saturdays and Sundays unless prior written approval is granted by the Departmental Representative.
- .3 No hauling of material during inclement weather, or as directed by the Departmental Representative.
- .4 The Contractor will not be permitted to work during the period of any Saskatchewan 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:
- .5 Statutory and Civic Holidays:
- .1 Labour Day long weekend – From 19:00 Thursday August 31, 2017 to 07:00 Tuesday, September 5th, 2017.
- .2 Thanksgiving long weekend – From 19:00 Thursday, Oct 5, 2016 to 07:00 Tuesday, October 10, 2017.
- .6 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 Canada ESO regarding any localized wildlife concerns.
- .7 A Bird survey shall be conducted by PCA prior to the start of construction, and as needed during the project. Work will be restricted if critical life stages are observed adjacent to the project.

1.4 WORK CONDUCTED OVER OR ADJACENT TO WATERWAYS

- .1 All components of the Work shall be conducted in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan prepared for the project.
- .2 All components of the Work shall be conducted without equipment entering into wetlands, water bodies, or streams.
- .3 All waste materials from the Work shall be contained and collected in a manner to prevent any contact with the river valleys and waterways. All collected waste materials shall be disposed of in accordance with Section 01 35 43 - Environmental Procedures and the Environmental Protection Plan prepared for the project. The Contractor shall be responsible to provide waste containers that are weather and wildlife proof as needed.

1.5 ACCESS TO ADJACENT PROPERTIES

- .1 Construction operations shall be conducted so as to cause minimal inconvenience to the public and to owners of adjoining property. Existing access to property shall be

maintained as required and if new access must be provided, coordination with the landowner shall be required before the existing access is removed.

1.6 UTILITIES

- .1 The Contractor shall become familiar with all utilities and services adjacent to the Work and shall safeguard all infrastructure. The Contractor shall be responsible for cost of repair of any damage resulting from his operations.
- .2 The Contractor shall establish and maintain direct and continuous contact with the owners or operators of any Utilities which may interfere with the Work. The Contractor shall co-operate with them at all times and in all places of Work. The Contractor shall keep the Departmental Representative informed of all communications with the Utility companies and authorities.
- .3 The Contractor shall notify the Departmental Representative and the Utility companies at least seven (7) days in advance of any activities which may interfere with the operation of such Utilities.
- .4 Whenever working in the vicinity of Utilities, the Contractor shall locate such Utilities and expose those that may be affected by the Work in a manner that is acceptable to the utility owner, using hand labour if required.
- .5 The Contractor shall assess the possible impact of its operations on all Utilities that may be affected by its operations, and shall, in consultation with Utility owner(s), protect, divert, temporarily support or relocate, or otherwise appropriately treat such Utilities to ensure that they are preserved.
- .6 The Contractor shall immediately report any damage to Utilities to the Departmental Representative and to the Utility company or authority affected, and shall promptly undertake such remedial measures as are necessary at no additional cost to the Owner.

1.7 SURVEY OF EXISTING 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, buildings, structures, roads, walls, fences, slopes, sewers, culverts and landscaped areas.
- .3 The Departmental Representative may, but shall not be obligated to, survey and record the condition of the Work Site and of property on or adjoining the Work Site prior to the commencement of construction by the Contractor. If requested, the Departmental Representative will provide a copy of the survey records to the Contractor for reference.
- .4 Whenever supplied with survey records, the Contractor shall satisfy itself as to the accuracy and completeness of the survey records provided by the Departmental Representative for any area before commencing construction in that area.
- .5 Commencement of construction in any area shall be interpreted to signify that the Contractor has accepted such survey records as being a true record of the existing conditions prior to construction.

- .6 The provision of the records of a survey of existing conditions by the Departmental Representative shall in no way limit or restrict the Contractor's responsibility to exercise proper care to prevent damage to all property within or adjacent to the Work Site, whether all such property is covered by the survey or not.

1.8 ARCHAEOLOGICAL RESOURCES

- .1 As identified in the Detailed Impact Analysis known archaeological sites and others that have high archaeological potential are located within the construction limits. The Archaeological Overview Assessment (AOA), included in the DIA, provides a list of areas of archaeological concern.
- .2 The Contractor shall undertake the Works in accordance with the Archaeological Impact Assessment Letter of Clearance and AOA as described in Section 01 35 43 Environmental Procedures.

1.9 PROTECTION OF PERSONS AND PROPERTY

- .1 The Contractor shall comply with all applicable safety regulations of WorkSafe SK and the Workers Compensation Act of Saskatchewan including, but not limited to, Occupation Health and Safety Regulations and General Safety Regulations. Within the site, the Contractor has all the responsibilities of an "employer" under the *Workers Compensation Act* and the *Occupational Health and Safety Regulation* and is designated at the "Prime Contractor".
- .2 The Contractor shall comply with all applicable safety regulations of the Workers' Compensation Board of Saskatchewan (WCB) including, but not limited to, WCB's Industrial Health and Safety Regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.
- .3 The Contractor shall comply with Canada Labour Code, Canada Occupational Health and Safety 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.

1.10 USE OF PUBLIC AREAS

- .1 Off-road construction equipment will not be allowed on the existing Badlands Scenic View Drive roadway. Steel tracked equipment with cleats will not be allowed on pavement designated for future use. Asphalt, granular, embankment and excavation materials may be hauled on existing highway but this shall be by standard highway trucks not exceeding legal highway load limits.
- .2 Certified Flag persons shall be provided during mobilization and demobilization of construction site and when work vehicles are entering or exiting the work site or at any time when the existing access gate is not closed. Additional barricades shall be required to prevent public vehicles from entering the closed sections of the Badlands Scenic View Drive.

- .3 The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas. All vehicles and equipment leaving the Work Site and entering public roadways shall be cleaned of mud and dirt clinging to the body and wheels of the vehicle. All vehicles arriving at or leaving the Work Site and transporting materials shall be loaded in a manner which 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.

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

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

1.12 **SUBMITTALS**

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

1.13 **SUPERVISORY PERSONNEL**

- .1 When requesting a Preconstruction Meeting, in accordance with Section 01 31 00 Project Management and Coordination, the Contractor shall submit to the Departmental Representative confirmation of the names of the supervisory personnel and other key staff designated for assignment on the Contract.
- .2 At a minimum, the following personnel shall be included in the list:
 - .1 Contractor Manager
 - .2 Project Superintendent;
 - .3 Safety Representative;
 - .4 Quality Control Manager;
 - .5 Environmental Representative;
 - .6 Traffic Control Representative;

- .3 The above personnel shall perform the following duties:
- .1 Contractor Manager with full authority, as agent of the Contractor, to act on behalf of and legally bind the Contractor in connection with the Work and the Contract. The Contractor may, at its discretion, appoint one person as both Contractor Manager and Project Superintendent.
 - .2 The Project Superintendent shall be employed full time with full authority to supervise the Work, who shall be directly available to the Department Representative during all active periods of Work. Either they or their designated deputy shall be present on the Work Site each and every workday that Work is being performed, from the commencement of Work to Total Performance of the Work.
 - .3 The Project Superintendent shall nominate a Deputy Project Superintendent who shall have the authority of the Project Superintendent during the latter's absence.
 - .4 The Safety Representative shall possess a minimum of 2 years' construction safety supervisory experience. Their duties shall encompass all matters of safety activities from commencement of Work until the Total Performance of the Work.
 - .5 The Quality Control Representative shall be responsible for the development, implementation and execution of the Quality Management Plan and shall be the single point of contact for all quality related queries.
 - .6 The Traffic Control Representative shall be responsible for the development, implementation and execution of the Traffic Management Plan and shall be the single point of contact for all traffic control related queries.
 - .7 The Environmental Representative shall be responsible for the development, implementation and execution of the Environmental Protection Plan and shall be the single point of contact for all environmental related queries.

1.14 WASTE DISPOSAL

- .1 All surplus, unsuitable and waste materials shall be removed from the work site to approved sites outside GNP.
- .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.

1.15 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

- .1 Not used.

Project No. XXXX

Badlands Scenic View Drive
Roadway Improvements

Section 01 14 00
WORK RESTRICTIONS

Parks Canada Agency

Grasslands National Park

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Part 3 Execution

.1 Not used.

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 General Conditions.

1.2 PRIME COST SUM

- .1 Include in Contract Price a total **Prime Cost Sum of \$390,000.00.**
- .2 Do not include in the Contract Price, additional contingency allowances for products, installation, overhead or profit.
- .3 Prime Cost Sum provided for in the Lump Sum Price Table is not a sum due to the Contractor. Rather, payment will be made against it for miscellaneous work not included in the unit price table under the General Conditions of the Contract.
- .4 No interpretation of the items listed under Prime Cost Sum Allowances shall indicated that work will be included under the Prime Cost Sum. Items, tasks, and activities included in the Works elsewhere in the Contract, including Unit price and Lump Sum Items, shall be paid as indicated in those sections and not under the Prime Cost Sum.
- .5 Any and all additional work must be approved in writing by the Departmental Representative prior to commencement.
- .6 All expenditures must be substantiated with verified invoices and/or accepted daily extra work reports as noted in Measurement and Payment Procedures below.
- .7 Such work may include, but not be limited to:
 - .1 Supply and delivery of bituminous materials including asphalt prime, anti-stripping agent, and warm mix A/C admixtures;
 - .2 Supply and implementation of full depth reclamation additives;
 - .3 Additional supply and installation of asphalt concrete pavement;
 - .4 Crack filling, pot hole patching and other related minor asphalt repairs;
 - .5 Additional stripping, excavation and disposal of waste materials as directed by the Departmental Representative;
 - .6 Danger tree assessment and removal;
 - .7 Additional relocation or removal and disposal of existing signs, guardrail, guide posts and other miscellaneous items;
 - .8 Supply and installation of permanent signs (not construction signs);
 - .9 Removal and disposal or plugging of existing culverts;
 - .10 Additional supply and installation of lane markings;
 - .11 Supply and installation of specialty items at Day Use Areas including, but not limited to, dry toilets, picnic tables, and garbage bins;
 - .12 Additional survey resulting from changes made by the Departmental Representative;
 - .13 Relocation / protection of existing utilities, including payment of utility service provider costs;
 - .14 Utility Pole Relocation;

- .15 Additional remediation or removal and replacement of unsuitable or contaminated soils not described in the Contract documents;
- .16 Supply and installation of wildlife fencing;
- .17 Additional supply and installation of seeding;
- .18 Supply and installation of additional landscaping;
- .19 Additional supply and installation of Riprap;
- .20 Additional road structure repairs;
- .21 Additional drainage improvements; ditching; culvert repairs; and cleaning;
- .22 Sub-drainage not specified in the tender documents;
- .23 Additional supply and installation of precast concrete barrier;
- .24 Supply and installation of barrier drains;
- .25 Removal and reinstallation of existing crash attenuator;
- .26 Removal and disposal of existing guardrail or precast concrete barrier;
- .27 Additional supply and installation of Guide Posts;
- .28 Additional supply and installation of raised reflective road and barrier markers
- .29 Asphalt EPS unit price adjustments;
- .30 Additional installation of milled rumble strips;
- .31 Rehabilitation work in gravel pits;
- .32 Shoulder graveling;
- .33 Traffic control equipment additional to that which is required by the applicable regulations and standards.
- .34 Relocation of existing structures;
- .35 Supply and maintenance of Departmental Representative's office trailer; and
- .36 Miscellaneous work as directed by the Departmental Representative.
- .8 The Contract Price, and not Prime Cost Sum, includes Contractor's overhead and profit in connection with the Work.

1.3 MEASUREMENT PROCEDURES

- .1 Payment for Work under the **“Lump Sum Price Item 3 - Prime Cost Sum”** will be made using negotiated rates or by material, labour and equipment rates as per the following:
 - .1 Rental rates will be in accordance with current Saskatchewan Heavy Construction Association (SHCA) Rental Rate schedule, and will be all inclusive and fully operated.
 - .2 Vehicles (ie. Pickup trucks) will be paid either at daily rates as per the Saskatchewan Heavy Construction Association (SHCA) Rental Rate schedule, or by mileage using National Joint Council (NJC) rates. The Contractor will not be permitted to claim both daily rental and mileage rates.
 - .3 Hourly rental of equipment will be measured in actual working time and necessary travel time within project limits. Transportation time to and from site to be reimbursed only if equipment is used exclusively for additional work.

- .4 Equipment paid on standby will be paid on 50% of the relevant less operator rates to a maximum of 10hrs per day.
- .5 When based upon actual costs for additional works under Prime Cost Sum, payment will be based upon supplied invoices and other work records.
- .6 The Prime Contractor may apply a 10% mark-up to subcontractor or supplier invoices only, as accepted by the Departmental Representative. No mark-up will be allowed on relevant equipment and labour rates.
- .7 A claim for additional payment will be considered submitted when all required documentation has been received by the Departmental Representative.
- .8 The Departmental Representative's 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.

Part 2 Products

- .1 Materials and products shall be in accordance with the most current version of the Saskatchewan Government Ministry of Highways and Infrastructure Standard Specifications, or as directed by the Departmental Representative.

Part 3 Execution

- .1 Work shall be in accordance with the most current version of the Saskatchewan Government Ministry of Highways and Infrastructure Standard Specifications, or as directed by the Departmental Representative.

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, 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 PROCEDURES

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

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.1 DEFINITION OF OCCUPANCY**

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

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.2 MEASUREMENT AND PAYMENT PROCEDURES**

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

1.3 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.
 - .1 The design variance letter must be signed by both the Contractor's Representative and the Departmental Representative prior to performing the Work.
 - .2 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.

1.4 COORDINATION

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

1.5 PROJECT MEETINGS

- .1 **A mandatory pre-tender site meeting will be held onsite with the date, time and meeting location listed on Buyandsell.gc.ca. All Contractors submitting tenders for the work must be in attendance at the meeting.**
- .2 During the course of the Work, the Contractor shall attend weekly construction meetings as scheduled, chaired, and documented by the Departmental Representative.
- .3 The agenda will include among other things, general construction, payment, scheduling, risk, quality, environmental, and safety management items as well as any other reasonably requested by the parties.
- .4 The Contractor shall provide physical space and make arrangements for meetings at or near the Work Sites for all meetings that take place in relation to the Contract from their mobilization until their demobilization.
- .5 Meetings held outside of the time noted above (before mobilization or after demobilization) will either be held in the local PCA Field Unit offices, or at the Owner's site office, as notified by the Departmental Representative.
- .6 The Contractor will attend or otherwise ensure the attendance of their staff, subcontractors, consultants, suppliers, or other key parties all other meetings identified in the Contract or reasonably requested by the Departmental Representative in an effort to resolve specific issues as they may arise.
- .7 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.

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

1.2 CONSTRUCTION ORGANIZATION AND START-UP

- .1 Within seven (7) days after award of Contract, the Contractor shall request a Preconstruction meeting of Contract Representatives to discuss and resolve administrative procedures and responsibilities. Meeting shall be chaired by the Departmental Representative who will prepare the minutes of the meeting.
- .2 Senior representatives of the Owner, Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
- .3 Agenda to include following:
 - .1 Appointment of official representative of participants in Work.
 - .2 Schedule of Work, progress scheduling in accordance with Section 01 32 16.
 - .3 Schedule of submittals in accordance with Section 01 33 00.
 - .4 Requirements for temporary facilities, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.
 - .5 Site safety and security in accordance with Sections 01 14 00, 01 52 00 and 01 35 43.
 - .6 Quality Control in accordance with Section 01 45 00.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
 - .8 Owner-furnished materials.
 - .9 Monthly progress claims, administrative procedures, photographs, and holdbacks.
 - .10 Closeout procedures and submittals in accordance with Sections 01 77 00 and 01 78 00.
 - .11 Insurances and transcript of policies.
 - .12 Other business.
- .4 The Contractor shall comply with the Departmental Representative's allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.
- .5 During construction, the Contractor shall coordinate use of site and facilities through the 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 the 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 each of the following:
 - .1 Contract Drawings if part of tender
 - .2 Specifications
 - .3 Addenda

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

1.7 SUBMITTAL SCHEDULE

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

1.8 PROJECT SCHEDULES

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

1.9 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00.
- .2 The Contractor shall submit requests for payment for review, and for transmittal to the Departmental Representative. Payment request shall be on last day of the month.
- .3 The Contractor shall submit requests for interpretation of the Contract Documents, and obtain instructions through the Departmental Representative.
- .4 The Contractor shall process substitutions through the Departmental Representative.
- .5 The Contractor shall process change orders through the Departmental Representative.

1.10 CLOSEOUT PROCEDURES

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

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

Project No. XXXX

Badlands Scenic View Drive
Roadway Improvements

Section 01 31 00
PROJECT MANAGING AND
COORDINATION

Parks Canada Agency

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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 DEFINITIONS

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

1.3 REQUIREMENTS

- .1 The Contractor shall ensure the Project Schedule is practical and remains within specified Contract duration.
- .2 The Contractor shall 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 The Contractor shall 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 The Contractor shall plan to complete Work in accordance with prescribed Project Schedule.
- .5 The Contractor shall ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

- .6 The Contractor shall review, revise and resubmit schedule to comply with revised project schedule.
- .7 During progress of Work the Contractor shall revise and resubmit as directed by the Departmental Representative.
- .8 The Contractor shall include the requirements of Section 01 14 00 - Work Restrictions and Section 01 35 43 – Environmental procedures.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00.
- .2 The Contractor shall submit to the Departmental Representative within 10 working days of Award of Contract, Bar (GANTT) Chart as a Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative in accordance with 01 33 00 Submittal Procedures.
- .4 Project milestones form interim targets for Project Schedule.
- .5 Include in Project Schedule the Contractual dates under Section 01 11 00 Summary of Work.
- .6 The Contractor shall structure the schedule to allow orderly planning, organizing and execution of the Work as a Bar Chart (GANTT).
- .7 The Contractor shall revise impractical schedule and resubmit within 5 working days.
- .8 The accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

- .1 The Contractor shall develop a detailed Project Schedule derived from Master Plan.
- .2 The Contractor shall ensure detailed Project Schedule separately identifies the Work by area and station.
- .3 The Contractor shall ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Contract Award
 - .2 Obtaining Permits
 - .3 Pre-mobilization Submittals
 - .4 Mobilization
 - .5 Grubbing and stripping
 - .6 Surcharge
 - .7 Embankment construction
 - .8 Pavement construction
 - .9 Culvert removal and replacement
 - .10 Ditch works
 - .11 Asphalt paving
 - .12 Shouldering
 - .13 Barrier installation
 - .14 Traffic signage
 - .15 Line painting

- .16 Interim Inspection
- .17 Remediation of any noted deficiencies
- .18 Site Clean-up / Demobilization
- .19 Final Completion

1.6 PROJECT SCHEDULE REPORTING

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

1.7 PROJECT MEETINGS

- .1 The Contractor shall discuss the 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.
- .2 Meetings in accordance with 01 31 00 Project Management and Coordination.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

- .1 This work shall be incidental to contract and no payment shall be made for this item.

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 written acceptance of the submittal has been issued 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 Submittals must be accompanied by a completed Quality Control Checksheet in accordance with Section 01 45 00 prior to submission to Departmental Representative. This completed Quality Control Checksheet 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 accepted copy of each submission on site.

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

- .1 "Design and Build": The term "Design" refers to all detailed design activities (survey, investigation, drawings, specifications) based on general requirements contained in 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 an engineered design for proportioning materials in concrete or asphalt concrete pavement including all supporting test results, materials properties, that is acceptable to the Departmental Representative. **Asphalt mix design to be performed by a qualified member of the Association of Professional Engineers and Geoscientist who is licenced to practice in Saskatchewan, or by a qualified technician registered in Saskatchewan who has CCIL Asphalt Certification.**
- .4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of section under which adjacent items will be supplied and installed. Indicate cross-references to design drawings and specifications.
- .5 Allow fourteen (14) calendar days for Departmental Representative's review of each submission.
- .6 Adjustments made on shop drawings by the Departmental Representative are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Departmental Representative prior to proceeding with the Work.
- .7 Make changes in shop drawings as the Departmental Representative may require, consistent with the Contract Documents. When resubmitting, notify the Departmental Representative in writing of any revisions other than those requested.
- .8 The Contractor shall submit letter(s) of certification with all asphalt concrete mix designs.
- .9 The Contractor shall 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 mix design, product and sample.
 - .5 Other pertinent data.
- .10 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor,
 - .2 Supplier,
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with the Contract Documents.
 - .5 Details of appropriate portions of the Work as applicable:
 - .1 Fabrication,
 - .2 Performance characteristics,
 - .3 Standards.
- .11 After the Departmental Representative's review, distribute copies.

- .12 Submit one (1) electronic copy of the shop drawings or mix design for each requirement requested in the 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 mix designs by Departmental Representative is for the sole purpose of ascertaining conformance with the Contract requirements. This review shall not mean that Departmental Representative approves details of the design inherent in shop drawings, responsibility for that shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting the generality of the foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 **SAMPLES**

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

1.5 **CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, The Contractor shall submit their Workers' Compensation Board status.
- .2 The Contractor shall submit transcription of insurance immediately after award of Contract.

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

The Contractor shall submit the following plans and programs to the Departmental Representative for review a minimum of twenty (20) days prior to mobilization to the project site:

- .1 Project schedule, detailing the schedule of the workdays required from Contractor, subcontractors, suppliers and consultants to complete each activity of the project by road segment or location in order to meet stages specified in Section 01 11 00. In addition, for each activity critical elements that could impact

on the schedule are to be identified. Submission shall include both a paper copy of the schedule and an electronic copy in Microsoft Projects format.

- .2 List of subcontractors, suppliers and consultants, their role and their key personnel, including names and positions, addresses, telephone and cellular telephone.
- .3 Plan describing methods the Contractor will have to meet their responsibilities as the Prime Contractor for Safety and Traffic Control within the Work limits and to co-ordinate Work, traffic control, site access, safety, with other Contractors working in or adjacent to the Contract Work zone.
- .4 Contractor Chain of Command, listing key Contractor personnel, including for each name, position, qualification, experience, telephone and cellular telephone. The list shall include the names and telephone/cellular telephone for contact persons who are available on a 24-hour basis in the event of emergencies.
- .5 Work Plan, describing in detail for each activity by road segment and location, the Contractor's intended methods of construction, and materials, equipment and manpower use to meet stages specified in Section 01 11 00. The Work Plan has to be linked to the Project Schedule.
- .6 Quality Control Plan in accordance with Section 01 45 00 – Quality Control, including Quality Control checklist examples.
- .7 Traffic Management Plan, in accordance with the requirements of Section 01 35 00.06 - Special Procedures for Traffic Control.
- .8 Environmental Protection Plan (EPP) that meets the requirements of Section 01 35 43 – Environmental Procedures. Submission of EPP must allow 2 weeks for review by the Parks ESO, in accordance with Section 01 35 43 – Environmental Procedures.
- .9 Site Access and Detour Plans shall include but not be limited to, Engineered Drawings and procedures for accessing all areas of the Work or for proposed detours.
- .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. On site Contingency and Emergency Response Plan to address standard operation procedures to be implemented during emergency situations.
- .12 Contractor and any subcontractors to submit copy of their valid Parks Canada Business License.
- .13 Health And Safety Plan - The Contractor shall have a Certificate of Recognition (COR) 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 in accordance with Section 01 35 29.
- .14 The Contractor shall not begin any Work on Site until the Departmental Representative has provided a Notice to Proceed.

.3 Construction Phase Submittals

The Contractor shall submit the following documents on an ongoing basis during the project as required:

- .1 Monthly Progress Reports in accordance with Section 01 32 16.

- .2 Weekly Progress Reports that outline the detailed Work (Contractor, subcontractors, suppliers, consultants) completed to date as well as the anticipated Work to be performed for the following week on a day-by-day basis. Work to be linked to activities by road segment or location identified in project schedule and to provide information on materials, equipment and manpower. Also, alternate Work to be identified if Work or a portion of, proposed cannot be done due to weather, equipment breakdown, delays in delivery, etc. Weekly Progress Reports shall be submitted at the end of each week.
- .3 Quality Control Inspection Reports - The Contractor shall maintain a daily inspection report that itemizes the results of all Quality Control inspections conducted by the Contractor. The reports shall be 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 Weekly Progress Report.
- .4 “Design and Build” documents, Shop Drawings and Mix Designs - The Contractor shall submit all design drawings, shop drawings and mix designs required to fabricate and / or conduct the work a minimum fourteen (14) days prior to fabrication / production.
- .5 Progress Photographs:
 - .1 Format:
 - .1 Electronic: jpg files, minimum three (3) mega pixels.
 - .2 Submission requirements: one (1) set of electronic files.
 - .3 Identification: Name and number of project, description of photograph and date.
 - .4 Viewpoints: viewpoints determined by Construction Manager or Departmental Representative.
 - .5 Submission Frequency: prior to commencement of Work and weekly thereafter with progress statement, or as directed by Construction Manager or Departmental Representative.
 - .6 Submit all electronic pictures as part of closeout package.
 - .6 Submit an electronic copy of Contractor’s authorized representative’s work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
 - .7 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors immediately.
 - .8 Submit copies of incident and accident reports immediately.
- .4 Project Completion Submittals
 - .1 Record Drawings -The Contractor shall submit copies of all Contractor's Drawings revised as necessary to record all as-built changes to the Work and the Contractor shall submit a set of Contract Drawings clearly marked to record as-built changes to the Work.
 - .2 Quality Control Records – The Contractor shall submit a .pdf electronic file containing an itemized set of project quality control documentation.
 - .3 All other documents noted with the Specifications, and under Section 01 78 00.
- .5 The Contractor shall not construe the Departmental Representative’s authorization of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Authorization of the programs shall

not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal or Provincial regulations and this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor shall remain solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

- .6 The Departmental Representative may, at their sole discretion, withhold payment from the Contractor for Work completed until acceptable submittal documents have been provided by the Contractor to the Departmental Representative.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

- .1 Cost of Traffic Control, including temporary pavement marking, described in this Section 01 35 00.06, shall be considered incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”**, and no additional payment will be made for the duration of the Contract.
- .2 The Contractor shall receive payment for traffic management on a monthly basis prorated by the number of months working on site divided by the number of months on site identified on Contractor schedule, not to exceed the total lump sum bid price for Traffic Management.
- .3 Payment for traffic control will commence once the Contractor has implemented their accepted Traffic Management Plan and setup is accepted by the Departmental Representative.
- .4 Cost of keeping existing roadway, clean, free of pot holes while Contractor is on site shall be considered incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”**, and no additional payment will be made for the duration of the Contract.
- .5 Cost of snow removal required by the Contractor to complete the work identified in the Contract shall be considered incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”**, and no additional payment will be made for the duration of the Contract.

1.2 REFERENCES

- .1 The Contractor shall provide traffic control in accordance with current edition of:
 - .1 Saskatchewan Ministry of Highways and Infrastructure (MHI) - Traffic Control Devices Manual for Work Zones.
 - .2 Manual of Uniform Traffic Control Devices for Canada, (MUTCD) distributed by Transportation Association of Canada.

1.3 QUALITY CONTROL

- .1 All Quality Control by the Contractor.

1.4 GENERAL

- .1 The Contractor will not be permitted to remove the temporary pavement marking until the final pavement markings have been installed to the satisfaction of the Contract and Departmental Representative.
- .2 The Contractor shall develop and implement a Traffic Management Plan in accordance with the requirements of the current edition of the Saskatchewan Ministry of Highways and Infrastructure Standard – Traffic Control Devices Manual for Work Zones, except where specified otherwise. The Traffic Management Plan will include plans specific to each roadway for this project.
- .3 The Traffic Management Plan must duly consider the traffic volumes associated with the direction volume increases typically experienced on the lead up to weekends and/or special events. Adjustments to the TMP may be required at the request of the

Departmental Representative to mitigate delays in excess of the stipulated maximum 20 minutes.

- .4 The Contractor shall design, supply, erect, move and maintain all traffic control devices, signs, temporary pavement marking, and other safety measures and provide staff to ensure safe passage of all traffic from commencement of site work to date of acceptance by the Departmental Representative.
- .5 The Contractor shall supply, install and maintain two (2) portable Changeable Message Signs (CMS) with a minimum of three (3) lines with eight (8) characters per line, for the duration of the project. All CMS shall be in both English and French with equal space allotted to each. The signs shall be located at Poverty Ridge and the existing east access road as directed by the Departmental Representative. All cost associated with the supply, installation, maintenance and removal of the CMS will be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”. The signs shall become the property of PCA following the contract and shall remain onsite.**
- .6 All traffic and warning signs shall be either bilingual or of a symbolic or pictorial type. All signs are to be selected from the Construction Signage Translation Database provided in the Reference Documents.
- .7 All CMS messages are to be selected from the preapproved database provided and are to be bilingual as shown.
 - .1 Any signage requiring translation that is not shown in the standard translation reference documents must be approved by Parks Canada prior to fabrication.
- .8 All speed limits, traffic control and warning signs shall have an “NPC” adhesive sticker added to bottom right-hand corner. These stickers will be supplied by Parks Canada following the acceptance by the Departmental Representative of the Contractor’s TMP.
- .9 Temporary pavement marking used shall be acceptable to the Departmental Representative and in accordance with the current Ministry of Highways and Infrastructure Standard – Traffic Control Devices Manual for Work Zones.
- .10 All temporary pavement markings will be removed at the Contractor’s expense prior to the completion of the Contract.
- .11 Contractor shall have appropriate traffic control measures in place so that one lane of highway traffic are maintained through the work zone at all times when the roadway is open to the public.
- .12 The Contractor shall coordinate traffic management procedures with other Contractors working in the area.

1.5 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 Saskatchewan Ministry of Highways and Infrastructure Standard – Traffic Control Devices Manual for Work Zones, except where specified otherwise.
- .3 When working on an existing travelled way:
 - .1 Place equipment in a position presenting a minimum of interference and hazard to travelling public.
 - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.

- .3 Do not leave equipment on travelled way overnight.
- .4 The Contractor shall develop and have in place a completed Traffic Management Plan taking into account all hazards associated with paving operations on a busy highway and minimize risks to motorists prior to beginning Work. This plan shall be updated regularly in response to any incidents or changes in conditions, be they weather, work, traffic, or otherwise.
- .5 The Contractor shall coordinate roadway closures with the Departmental Representative to ensure that areas that are not being worked on remain open to the public. Emergency vehicles (i.e., ambulance, RCMP, Park Warden) shall be granted immediate passage at all times, even through closed sections of roadway.
- .6 Regardless of type of traffic control being used, when the roadway has not been closed, the maximum period of delay to public traffic shall be 20 minutes. Emergency vehicles (i.e., ambulance, RCMP, Park Warden) shall 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.
- .7 The Contractor shall provide competent flag persons, properly equipped, and trained satisfying Saskatchewan Regulations.
- .8 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.
- .9 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.
- .10 The Contractor shall maintain a dust free construction zone by means of cleaning and watering when required.

1.6

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 which requires road user response.
- .2 The Contractor shall supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in the Traffic Management Plan submitted by the Contractor and approved by the Departmental Representative. **All temporary signs that are used for longer than one day shall be mounted on wood or steel posts installed in the shoulder areas at locations accepted by the Departmental Representative.**
- .3 Place signs and other devices to standards and in locations recommended in the MHI Standard Traffic Control Devices Manual for Work Zones. Provide intermittent signage if work zones exceed 2.0 km in length.
- .4 Signs shall be wind resistant.
- .5 As situations on site changes, the Contractor shall update the Traffic Management Plan outlining signs and other devices required for the project and submit for the approval of the Departmental Representative.
- .6 The Contractor shall continually inspect and maintain traffic control devices in use by:
 - .1 Checking signs daily for legibility, damage, suitability and location and shall record this information on a sign log.
 - .2 Cleaning, repairing or replacing signs as required ensuring clarity and reflectance.

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

1.7 CONTROL OF PUBLIC TRAFFIC

- .1 Contractor shall provide competent flag persons, trained in accordance with, and properly dressed and equipped as specified in, MHI Standard Traffic Control Devices Manual for Work Zones:
 - .1 When public traffic is required to pass working vehicles or equipment, which block all or part of travelled roadway.
 - .2 When vehicles are entering or exiting Worksite access points.
 - .3 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.
 - .4 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .5 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .6 For emergency protection when other traffic control devices are not readily available.
 - .7 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .8 At each end of restricted sections where pilot cars are required.
- .2 Delays to public traffic due to Contractor's operators shall be a **maximum of 20 minutes** where the roadway has not been closed.
- .3 No stoppage of traffic will be allowed on Badlands Scenic View Drive for the periods listed in Section 01 14 00 – Work Restrictions.
- .4 During hours of darkness, the Contractor shall determine requirements but as a minimum, flag persons shall be additionally equipped with a red signal hand-light of sufficient brightness to be clearly visible to approaching traffic and flagging stations shall be illuminated by overhead lighting. Signs indicating hazardous conditions and signs requiring increased attention shall be marked with flashers.

1.8 OPERATIONAL REQUIREMENTS

- .1 The Contractor shall maintain existing conditions for traffic on Badlands Scenic View Drive throughout period of contract except that, when required for construction under contract and when measures have been taken as specified herein and approved by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:
 - .1 Speed limit reduced to 50 km/h in work zones in non-work periods.
 - .2 Speed limit reduced to 30 km/h in work zones in work periods.
- .2 The Contractor shall maintain existing conditions for traffic or pedestrians crossing right-of-way.
- .3 No stoppage of traffic shall be allowed during inclement weather or when hazardous road conditions are present; ice, snow, winter conditions unless previously approved by the Departmental Representative.

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Badlands Scenic View Drive
Roadway Improvements

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SPECIAL PROCEDURES
FOR TRAFFIC CONTROL
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Parks Canada Agency

Grasslands National Park

Part 2 Products
 .1 Not used.

Part 3 Execution
 .1 Not used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT 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 Safety Data Sheets (SDS) formerly known as Material Safety Data Sheets (MSDS).
- .3 Province of Saskatchewan, Occupational Health and Safety Act.

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 in accordance with this section and 01 33 00 – Submittal Procedures.

1.4 SAFETY ASSESSMENT

- .1 The Contractor shall perform a site specific safety hazard assessment related to project.

1.5 MEETINGS

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

1.6 REGULATORY REQUIREMENTS

- .1 The Contractor shall do Work in accordance with National Parks Act.

1.7 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with WorkSafe Saskatchewan (Occupational Health and Safety).

1.8 GENERAL REQUIREMENTS

- .1 The Contractor shall develop written site-specific Health and Safety Plan based on the hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce the plan until final demobilization from site. The Contractor's 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 corrections 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 the site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 The Contractor shall comply with the Saskatchewan Employment Act and all General Safety Regulations required in the Province of Saskatchewan.
- .2 The Contractor shall comply with Canada Labour Code, and 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 COORDINATOR

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

1.13 POSTING OF DOCUMENTS

- .1 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 any party or by the 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.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.1 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.

1.2 REFERENCES

- .1 Detailed Impact Analysis: Badlands Scenic Viewpoint Road (September 29, 2016)
- .2 Parks Canada National Best Management Practices, (May 2015)

1.3 SUBMITTALS

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

1.4 NATIONAL PARK REGULATIONS

- .1 The Contractor shall ensure that all work is performed in accordance with the ordinances, laws, rules and regulations set out in the Canada National Parks Act and Regulations.
- .2 The Contractor and any Subcontractors shall obtain a business license from the GNP office in Val Marie, SK prior to commencement of the Contract.
- .3 All Contractor's vehicles are required to display a vehicle work pass from Parks Canada. These permits may be obtained free of charge from the Departmental Representative, PCA Environmental Officer or at the Park Gate, once a business license has been obtained.

1.5 CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

- .1 Execution of the work is subject to the provisions within the *Canadian Environmental Assessment Act* (CEAA) Guidelines Order of 2003 and subsequent amendments.
- .2 Refer to the PCA Detailed Impact Analysis (DIA) for the Work included with this tender. The Contractor is required to implement all recommendations and mitigations, and follow all procedures and processes whether supply, construction, administration or otherwise as described in DIA.
- .3 The Contractor shall prepare their Environmental Protection Plan (EPP) to implement the mitigations identified in the DIA as a minimum but shall ensure that all environmental requirements under the Contract and associated with the Works are appropriately managed through their EPP process.
- .4 Where there is a discrepancy or inconsistency between the DIA and other documents, the DIA takes precedence over other documents.

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

1.6 START-UP AND ENVIRONMENTAL BRIEFING

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

1.7 ENVIRONMENTAL PROTECTION PLAN

- .1 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.
- .2 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.
- .3 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 DIA.
- .4 Spill Response and Erosion and Sedimentation Management Plans are to be included in the EPP, in accordance with this Section.
- .5 The Contractor shall submit the EPP in accordance with 01 33 00 – Submittal Procedures, yet **allow no less than 2 weeks for the review of their EPP** and shall address and respond to all comments raised during the review within a maximum of 2 weeks.

1.8 RESTRICTED ACTIVITY PERMITS

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

1.9 CONSTRUCTION SITE ACCESS AND PARKING

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

1.10 ACCIDENTAL FINDS

- .1 It is possible that a scattering of historic objects will be found within the Project limits. If significant features are encountered, stop Work in the immediate area, notify the Departmental Representative, take photographs of the findings and a GIS location reading.
- .2 Significant features include items such as:
 - .1 Structural remains, high artifact concentrations, tent platforms, log cribbing retaining features, human remains, marked trees and other various items.
 - .2 If unsure, contact the Departmental Representative immediately.
- .3 The Departmental Representative will notify the Contractor when Works can resume in the area.
- .4 Should any process or requirements regarding archeological matters listed in this Section contradict the DIA, the DIA shall take precedence.

1.11 PROTECTION OF WORK LIMITS

- .1 The Contractor shall ensure that workers and equipment do not trespass outside the project limits to the satisfaction of the Departmental Representative and the ESO.

1.12 EROSION CONTROL

- .1 Erosion control measures that prevent sediment from entering any waterway, water body or wetland in the vicinity of the construction site are a critical element of the project and shall be implemented by the Contractor.
- .2 If necessary, on-site sediment control measures shall be constructed and functional prior to initiating activities associated with the asphalt plant and the paving. 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. The Departmental Representative and ESO also will monitor erosion control performance.
- .4 The Contractor shall ensure that the site be secured against erosion during any periods of construction inactivity or shutdown.

1.13 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, fuel, lubricants, waterproofing agents, grout, cement, concrete finishing agents, hot poured rubber membrane materials, asphalt cement and sand blasting agents.
- .3 The containment, storage, security, handling, use, unique spill response requirements and disposal of empty containers, surplus product or waste generated in the use of any hazardous or toxic products shall be in accordance with all applicable federal and provincial legislation. Hazardous products shall be stored no closer than 100 metres from watercourses.
- .4 An impervious berm shall be constructed around fuel tanks and any other potential spill area. The berms shall be capable of holding 110% of tank storage volumes and shall be to the satisfaction of the Departmental Representative and the ESO before start-up. Measures such as collection/drip trays and berms lined with occlusive material such as plastic and a layer of sand, and double-lined fuel tanks can prevent spills into the environment.
- .5 The Contractor shall prevent blowing dust and debris by covering and/or providing dust control for temporary roads and on-site work by methods that are approved by the Departmental Representative or ESO.
- .6 The Contractor shall provide spill kits at re-fuelling, lubrication, and repair locations that will be capable of dealing with 110% of the largest potential spill and shall be maintained in good working order on the construction site. The ESO and Departmental Representative prior to project start-up must approve these spill kits. The Contractor and site staff shall be informed of the location of the spill response kit(s) and be trained in its use.

- .7 Timely and effective action shall be taken to stop, contain and clean-up all spills as long as the site is safe to enter. The Departmental Representative, the ESO and the Public Safety Officer (306-298-2166 ext 228) shall be notified immediately of any spill. If not available, Jasper Dispatch shall be contacted at (780-852-6155). Spill response cards will be distributed during the initial Environmental Briefing with basic instructions and phone numbers. 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.

1.14 **EQUIPMENT MAINTENANCE, FUELING AND OPERATION**

- .1 The Contractor shall ensure that all soil, seeds and any debris attached to construction equipment to be used on the project site shall be removed outside GNP and that all equipment is clean and in good working order before delivery to the work site.
- .2 Equipment fueling sites will be identified by the Contractor and approved by the Departmental Representative and the ESO. Except for chain saws, any fueling 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. Fueling personnel shall maintain presence at and immediate attention to the fueling operation.
- .4 Mobile fuel containers (e.g. slip tanks, small fuel carboys) shall remain in the service vehicle at all times. Protection and containment of approved fuel storage sites is addressed in 1.10.4 of Pollution Control above.
- .5 Equipment used on the project shall be fueled 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 GNP.
- .7 The Contractor shall ensure that all equipment is inspected daily for fluid/fuel leaks and maintained in good working order.
- .8 Fuel containers and lubricant products shall be stored only in secure locations specified by the Departmental Representative. Fuel tanks (including those on equipment) or other potentially deleterious substance containers shall be secured to ensure they are tamperproof and cannot be drained by vandals when left overnight in GNP. Alternatively, the Contractor may hire a security person employed to prevent vandalism.

1.15 **OPERATION OF EQUIPMENT**

- .1 Equipment movements shall be restricted to the 'footprint' of the construction area. The work limits shall be identified by stake and ribbon or other methods approved by the Departmental Representative. Unless authorized by the Departmental Representative,

activities beyond the work limits are not permitted. No machinery will enter, work in or cross over streams, rivers, wetlands, water bodies or watercourses, nor damage aquatic and riparian habitat or trees and plant communities. Some of the construction shall require working close to watercourses or water bodies. In these instances, the Contractor is to describe measures to be employed to ensure fugitive materials (e.g. rocks, soil, branches) and especially deleterious substances (e.g. chemicals) do not enter any watercourses, to the satisfaction of the Departmental Representative and ESO.

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

1.16 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. Contractor's staff shall receive basic training in early response to wildfire events during the "environmental briefing".
- .2 Water is not available within GNP. The Contractor shall be responsible for locating and hauling water into GNP from a source approved by the Departmental Representative.
- .3 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).
- .4 Construction equipment shall be operated in a manner and with all original manufacturer's safety devices to prevent ignition of flammable materials in the area.
- .5 Care shall be taken while smoking on the construction site to ensure that the accidental ignition of any flammable material is prevented. Fires or burning of waste materials is not permitted.
- .6 In case of fire, the Contractor or worker shall take immediate action to extinguish the fire provided it is safe to do so. The ESO, the Departmental Representative AND the **Fire Duty Officer (306-298-2166 ext 228)** shall be notified of any fire immediately. **If not available, Jasper Dispatch shall be contacted at (780-852-6155) or (1-877-852-3100).**
- .7 Fires or burning of waste materials is not permitted.

1.17 WILDLIFE

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

- .2 The Contractor shall avoid or terminate activities on site that attract or disturb wildlife and vacate the area and stay away from the immediate location if wildlife display aggressive behaviour or persistent intrusion. Extra care to control materials that might attract wildlife (e.g. lunches and food scraps) must be exercised at all times.
- .3 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. If the ESO or Departmental Representative are not available, Dispatch shall be contacted.
- .4 If an active bird nesting colony or a migration staging area is located within the construction area, no work shall be permitted in that area without the presence of the ESO and the Departmental Representative.

1.18 **RELICS AND ANTIQUITIES**

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

1.19 **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 GNP. These wastes shall be contained and removed in a timely and approved manner by the Contractor and workers, and disposed of at an appropriate waste landfill site located outside the park which has been approved by the Departmental Representative. 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. **High winds in the area require that all garbage receptacles are not prone to tipping in high winds.**
- .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 GNP. 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 weather 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. If neither can be reached, the Contractor/worker shall immediately contact Dispatch and report the details.

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

1.20 MISCELLANEOUS SITE MANAGEMENT CONTINGENCIES

- .1 The Contractor shall prepare an EPP which details how the work limits will 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.
- .2 A Contractor's office and work headquarters material laydown, equipment parking and storage area will be permitted at Poverty Ridge as directed by the Departmental Representative.
- .3 The Contractor shall provide toilets and maintain them in a clean and sanitary condition at Poverty Ridge. These facilities shall not be used for the disposal of anything but human body wastes.
- .4 The National Park Act regulations prohibit anyone working within GNP from using public campground facilities.
- .5 Removal and storage of snow shall be arranged with the ESO and the Departmental Representative.
- .6 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.
- .7 Security services at the construction site may be desirable or necessary during the contract, especially during quiet times. Fuel tanks or other potentially deleterious substance containers must be secured by the Contractor at their cost; to ensure they are tamperproof and cannot be drained by vandals.
- .8 Pets shall not be brought to or maintained at the construction site or worker's camp.

Part 2 Products

- .1 Not Used

Part 3 Execution

3.1 ASPHALT PLANT OPERATIONS AND PAVING

- .1 Trucks hauling asphalt mixture shall have tight, clean, smooth metal beds that have been sprayed with a minimum amount of thin oil to prevent the mixture from adhering and causing waste asphalt. The vehicle covers shall be securely fastened. Excess truck box lubricants such as light oil, detergent or lime solutions shall not be allowed to contaminate the mix, and shall be disposed of in an environmentally acceptable manner. Truck box lubricant application shall be carried out in a containment berm.
- .2 The asphalt plant must be equipped with pollution control devices in addition to, or in replacement of standard cyclone dust collectors, to effectively eliminate the emission of dust and smoke pollutants into the atmosphere. Use of secondary dust collection systems which require discharge of dust polluted water into natural drainage system will not be allowed. Regardless of requirements stated in above, asphalt plant operation must comply with all environmental pollution control regulations applicable in the plant area.

- .3 The Contractor shall be responsible for the purchase and the safe delivery/storage/handling of asphalt cement and emulsions to the asphalt plant site. Excess hot mix or reject asphalt shall be temporarily stored as directed by the Departmental Representative, and removed from GNP for proper recycling or disposal.
- .4 The Contractor shall ensure that there is enough room between the stockpiles and the asphalt plant for a loader in the event of a spill at the asphalt plant. A containment berm with an associated liner made of occlusive material (e.g. plastic of a thickness approved by the Departmental Representative) and covered with absorbent sand or clay shall be installed under the asphalt storage tank to ensure containment of 110% of the tank's capacity.
- .5 The Contractor may wish to protect containment/catchment areas and drip trays at the asphalt plant from rainfall since, if contaminated all of the collected water will have to be disposed of at the expense of the Contractor at an approved disposal facility.
- .6 Sites from which materials have been removed shall be restored to a neat and presentable condition upon the completion of the work.

3.2 CONSTRUCTION MATERIALS HANDLING AND ROAD CONSTRUCTION

- .1 During grade construction conducted close to any watercourse, water body or wetland methods shall be employed to ensure materials are not pushed, fall or are eroded into the water or wetlands. Work within a 30 metre buffer of waterways or wetlands requires the close oversight of the ESO and the Departmental Representative.
- .2 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.

3.3 PAVEMENT MARKING

- .1 Pavement marking shall be undertaken pursuant to standard methods applied in GNP for control of paint products, both in transport and handling. The Contractor will present a description of methods to be employed for transporting and controlling paint and hazardous products, application of paint, cleaning of equipment, containment and disposal of waste paint and cleaning products, etc. to the satisfaction of the Departmental Representative.

3.4 SPECIFIC CONCERNS RELATIVE TO EROSION CONTROL AND SEDIMENTATION

- .1 The Contractor shall prepare an Erosion and Sedimentation Management Plan for the components of this contract that are undertaken in proximity to watercourses, wetlands or riparian environments. This plan shall be to the satisfaction of the Departmental Representative and ESO. If sediment ponds are required, they shall be designed to settle all sediment particles 0.02 mm or larger. The ponds shall also be designed to handle 1:5 year storm events, with overflow spill capacity for 1:10 year storm events and emergency spillway capacity for 1:100 year storm events.
- .2 An important desired end result is to allow no release into watercourses of sediments in levels that are deleterious to fish or that would harmfully alter, disrupt, or destroy fish habitat. Similarly there is to be no sediment release into areas of vegetation growth or sensitive areas of sediments in levels that would adversely alter growing or hydraulic conditions. The target is 0 mg/L of TSS over background levels. The threshold is a

maximum instantaneous increase of 25 mg/L over background levels when background levels are <250 mg/L, or a maximum instantaneous increase of 10% over background levels when background levels are >250 mg/L. This threshold shall not be exceeded.

3.5 EXCAVATING AND PLACEMENT

- .1 Excavation will be undertaken according to the approved Grading Plan for the Right of Way.
- .2 Materials shall be placed at storage sites or on the grade without spillage outside the working limits. Any material inadvertently falling outside the work limits is to be removed promptly in a manner that does not damage trees or vegetation at that location.
- .3 All sediment control measures shall be implemented by the Contractor prior to the commencement of the work in the vicinity of water bodies, watercourses, and wetlands.
- .4 Special precautions may have to be taken during excavation in the vicinity of intermittent or active drainage channels. See "Specific Concerns".
- .5 If sediments enter watercourses during any excavation nearby or at its banks, the Contractor shall ensure that sediment levels in the waters of the river or creeks do not exceed specified limits and meet the "desired end result" limits outlined. See "Specific Concerns".
- .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 Departmental Representative.
- .7 Fisheries protection windows shall be observed for watercourse in this contract and will guide the timing of the work so that stream disturbance is prevented.
- .8 If a pump-out sump to dewater excavation sites will be required, the Contractor is to prepare an EPP which details how the dewatering shall be undertaken, to the satisfaction of the Departmental Representative and the ESO. Special attention is to be given to the environmental sensitivity of the discharge area, freezing conditions operation, overflow avoidance, decanting and settlement pond reclamation. Water containing suspended materials shall not be pumped into watercourses, drainage systems or on to land, except with the permission of the Departmental Representative and the ESO.

3.6 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. The Contractor shall prepare a plan for the installation of each culvert, a minimum one (1) week prior to doing the work for approval by the Departmental Representative and ESO.
- .2 The culverts shall be installed using best management practices for placement, including consideration of aquatic ecology.
- .3 It is preferable to install the culvert during periods of low discharge (e.g. during the fall). The use of sediment control measures may be necessary to ensure that excessive amounts of sediments do not enter watercourses.
- .4 It may be necessary to exclude fish from the immediate construction site while the culvert is being installed. If this practice is necessary, fish shall be salvaged from within the exclusion area, and construction should be carried out expediently to minimize the time spent working in the drainage.

3.7 FINE GRADING, TOPSOIL PLACEMENT, AND SEEDING

- .1 The Contractor shall be required to perform final shaping of cut slopes, fills and landscapes disturbed in the construction of the Works. These slopes shall be covered by stripped soil and chip compost materials and seeded, other procedures may be used if approved by the Departmental Representative. Environmental concerns related to these activities largely focus on erosion prevention and sediment control. The Contractor shall 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.
- .2 The Contractors shall present a seed mix to the Departmental Representative for review and approval prior to use. A typical native seed mix that PCA has indicated would be a good growing mix for the reclamation of bare soil in GNP is as follows:

Content by weight:

20 - 25% Western Wheatgrass (*Pascopyrum (agropyron) smithii*)

15 - 20% June Grass (*Koeleria cristata*)

5 - 10% Sandberg's Bluegrass (*Poa sandbergii*)

4 - 5% Western Porcupine Grass (*Stipa curtiseta*)

10 - 15% Needle and Thread Grass (*Stipa comata*)

25 - 46% Blue Grama Grass (*Bouteloua gracilis*)

3.8 CRUSHING

- .1 The Contractor shall be prepared for potential spills of fuels, lubricants or hydraulic fluid from the crusher using containment berms with associated occlusive liner of adequate thickness to ensure that these materials do not penetrate underlying soil materials down to the water table. In the event of a spill, the Contractor shall ensure timely and effective spill response.
- .2 The Contractor shall provide drip and spill containment for the crusher, cone, generators and other components where spills may occur (e.g. plastic lined dirt berms, collection/drip trays, double-walled fuel tanks). Spill response in a timely and effective manner in the event of a spill is mandatory. The measure chosen by the Contractor shall ensure containment of 110% of the capacity of the fuel tank, crankcase, etc.
- .3 Excavation, hauling and placing materials associated with a crushing operation shall be conducted within the approved footprint of the total crushing operation. Crushed materials shall be placed at the designated storage site located as identified by the Departmental Representative without spillage or raveling outside the limits of this location. Any material inadvertently falling outside the work limits is to be moved promptly to within the storage limits. Repair of damage outside the work limits will be at the complete expense of the Contractor.

3.9 SPECIFIC CONCERNS RELATIVE TO SENSITIVE SITES AND ACTIVITIES

- .1 Roadway construction and paving activity near streams, rivers, wetlands, water bodies or watercourses must be undertaken with care to prevent damage to aquatic and riparian habitat or associated tree and plant communities. A mobile spill kit, sized according to the equipment in the Contractor's operation, shall be kept at hand during construction at these sensitive sites in proximity to watercourses.
- .2 Known sensitive areas for species and archaeology have been included on the drawings, but may change during the course of the project.

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Grasslands National Park

END OF SECTION

Part 1 General

1.1 MEASUREMENT PROCEDURES

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

1.2 REFERENCES

- .1 Saskatchewan Ministry of Highways and Infrastructure Standard Specifications Manual
- .2 Saskatchewan Ministry of Highways and Infrastructure Standard Test Procedures Manual
- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A23.2-04, Methods of Test and Standard Practices for Concrete

1.3 QUALITY CONTROL PLAN

- .1 Contractor's quality control plan shall be in accordance with the Saskatchewan MHI Standard Specifications Manual.
- .2 Submittals in accordance with 01 33 00 – Submittals Procedures.

1.4 TESTING BY THE CONTRACTOR

- .1 Testing required to provide quality control to assure that the Work strictly complies with the Contract requirements shall include, but not be limited to:
 - .1 Testing all structural concrete, grout, reinforcing steel, asphalt concrete pavement, structural backfill, corrugated steel culverts, miscellaneous metals, concrete barriers, and all source acceptance testing; and
 - .2 All testing specified in the Contract Documents; and
 - .3 Any other testing required as a condition for deviation from the specified Contract procedures.
- .2 Testing proposed shall be based on testing requirements in the latest edition of the SK MHI Standard Specifications Manual in collaboration with current ASTM and CSA Standards or as stated below.
- .3 All Quality Control technicians are to be certified by Canadian Council of Independent Laboratories (CCIL) for testing asphalt, aggregates and concrete, as applicable to the testing requirements for that item of Work.
- .4 The Contractor shall be fully responsible and bear all costs for all quality control testing and shall conduct such testing in the following manner:
 - .1 Provide testing facilities and personnel for the tests and inform the Departmental Representative in advance to enable the Departmental Representative to witness the tests if it so desired;
 - .2 Notify the Departmental Representative when sampling will be conducted;
 - .3 Within one Day after completion of testing, submit test results to the Departmental Representative; and
 - .4 Identify test reports with the name and address of the organization performing all tests, and the date of the tests.
- .5 Approval of tested samples will be for characteristics or use named in such approval and shall not change or modify any Contract requirements.
- .6 Testing agencies, their inspectors, and their representatives are not authorized to revoke, alter, relax, enlarge or release any requirement of the Contract Documents, nor to approve or accept any part of the Work

- .7 The minimum frequency for Quality Control testing during embankment construction will be as follows:

CONSTRUCTION TYPE	TEST TYPE	MINIMUM FREQUENCY OF TESTS
Embankment construction with fine grained or granular soil	Standard Proctor by: ASTM D698	1 per change in material or 1 per week, whichever is more frequent
	Field density by: ASTM D1556 – Sand Cone ASTM D2167 – Balloon ASTM D2922 - Nuclear	1 per 1000 m ² per lift, spaced randomly across full width of embankment
	Proof Roll and or Rutting Test	As required by the Departmental Representative
Embankment construction with blasted rock or oversize granular	Field observation with daily field report; and a summary report signed and stamped by the Contractor's Engineer.	Full time during blasted rock placement
Road structure construction with granular materials	Standard Proctor by: ASTM D698	1 for each material type and 1 for each accepted change in material gradation.
	Field density by: ASTM D1556 – Sand Cone ASTM D2167 – Balloon ASTM D2922 - Nuclear	3 tests per 50 m per lift; on centreline and on lt and rt fog lines
	Proof Roll and or Rutting Test	As required by the Departmental Representative
Culvert Installation	Field Density	Minimum three per 300 mm lift per culvert, spaced through the length and depth of the culvert backfill

	ASTM Test	*Minimum Frequency
Tests During Aggregate Production	C 136, Dry Sieve Analysis of Aggregate	-Split Stockpiles: 1 for each stockpile for every 2 hours of production.
	Or	- One main stockpile: for every 300 tonnes.
	C 117 Sieve Analysis of Aggregates by Washing (Modified for Field Lab with drying done over a hotplate or similar heating element)	- Blend Sand: 1 for every 100 tonnes during stockpiling. - Natural filler: 1 for every 50 tonnes during stockpiling.
	D 5821 Determining the Percentage of Fractured Particles in Coarse Aggregate	Every second coarse aggregate sieve test
	C 117 Sieve Analysis of Aggregates by Washing (Modified for Field Lab)	1/shift on reduced sample obtained from combined samples from the crusher
Asphalt Products Tests	Tack and Prime	Mill certifications.
Tests during Asphalt Plant Mixing	C 136, Dry Sieve Analysis of Aggregate	1 of combined aggregate (off the belt) every 300 tonnes.
	C 556 & D 2216, Moisture Content	Aggregate: 2 tests/Lot Asphalt mix: 1 on first Sub-Lot and every second day.
	C 117 Sieve Analysis of Aggregates by Washing (Modified for Field Lab)	1/shift on reduced sample obtained from combined samples from the plant cold feed.

	D 5581 Resistance to Plastic Flow Using Marshall Apparatus	One set of three briquettes for 1,200 tonnes or Lot, whichever is less.
	D 6307 Asphalt Extraction, Ignition Method	One/Sub-Lot.
	D-5 Penetration of Bituminous Materials	One per Manufacturer's Batch. Samples should be taken for every 3000 tonnes of mix production.
	D 2171 Viscosity	Contractor's Option
	D 2041 Maximum Theoretical Density	One per sub-lot
Test During Asphalt Paving for Density Testing	AASHTO T 245-97 Resistance to Plastic Flow Using Marshall Apparatus	One 15 kg sample for every Sub-Lot or minimum 1/day for field testing.
	Core Samples	At start, two cores for each Sub-Lot. After rolling pattern established, only one core for each Sub-Lot. All Marshall mix cores to be a minimum of 100 mm diameter, Superpave mixes shall require minimum 150 mm diameter cores.

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

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

1.5 CONTRACTOR'S QUALITY CONTROL PROGRAM

- .1 The Contractor shall prepare a Quality Control Program. The purpose of the program shall be to ensure the performance of the Work in accordance with Contract requirements.
- .2 The Quality Control Program shall be described in a Quality Control Plan. The Contractor shall submit the Manual to the Departmental Representative for review in accordance with Section 01 33 00 - Submittal Procedures. The Manual shall develop a logical system for tracking and documenting the Quality Control of the Work. A systematic format and a set of procedures patterned on a recognized Quality Control Standard will be acceptable, subject to review by the Departmental Representative.
- .3 The Quality Control Plan shall include the following information:
 - .1 Distribution list, providing a list of names to whom the Manual shall be distributed;
 - .2 Title page, identifying the Contract, Contractor and copy number;
 - .3 Revision page, identifying the revision number and date of the Manual;
 - .4 Table of contents;
 - .5 Revision control, tabulating the revision number, date of revision, description of revisions and authorized signature;
 - .6 Details of measuring and testing equipment including methods and frequency of calibration;
 - .7 Purchasing details of all materials and equipment including procurement documents and vendor's Quality Control Program standards;

- .8 Procedures for inspection of incoming items, in-process inspection and final inspection and tagging of all supply items;
 - .9 Details of special processes as identified by the Departmental Representative, including qualifications of personnel and certification;
 - .10 Procedures for shipping, packaging and storage of materials;
 - .11 Procedures for maintaining quality records and Statements of Compliance, including filing and storage of documents for a period of one year after Completion of the Works;
 - .12 Details of any non-conformance, including identification and recording of deficiencies, tagging procedures for "HOLD" or "REJECT" items, and final disposition of non-conformance forms by the Quality Control Manager;
 - .13 Inspection and test checklists, including tabulated checklists describing all manufacturing and delivery activities such as Inspection or Test, frequency of tests, description of tests, acceptance criteria of tests, such as verification, witnessing or holding tests and sign-off by the Quality Control Manager and the Departmental Representative, if the Departmental Representative witnesses the tests; and
 - .14 Forms used to ensure the application of the inspection and test checklist requirements. These forms shall be identified in the checklists and describe all testing requirements for Contract Document compliance.
- .4 The Contractor shall appoint a full time qualified and experienced Quality Control Manager, 100% of their time dedicated to quality matters and who will report regularly to the Contractor's management at a level that shall ensure that Quality Control requirements are not subordinated to manufacturing, construction or delivery. The Quality Control Manager shall be empowered by the Contractor to resolve quality matter and shall be onsite for the duration of the Contract.
- .5 The Quality Control Plan shall include samples of all forms to be filled in by the Quality Control Inspectors. All forms shall be signed by the Quality Control Manager and submitted promptly to the Departmental Representative who will add its review signature.
- .6 An independent check of all Work shall be performed by the Contractor. The Contractor shall appoint Quality Control Inspectors to ensure compliance of products and workmanship with Contract requirements. The same personnel may not be used to perform a given task and to check the quality and accuracy of the task.
- .7 At completion of the Work a bound and itemized copy of all Quality Control documents and reports shall be prepared by the Contractor's Quality Manager and submitted to the Departmental Representative.

1.6 INSPECTION

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

- .4 Departmental Representative will order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.
- .5 The Departmental Representative will provide the Contractor with an Approval to Proceed document, after performing an audit and confirming all requirements are met, as stated in Section 01 71 00 - Examination and Preparation. The Approval to Proceed must be signed by the Departmental Representative and the Contractor's representative before proceeding to the next layer.

1.7 **INDEPENDENT INSPECTION AGENCIES**

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

1.8 **ACCESS TO WORK**

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

1.9 **PROCEDURES**

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

1.10 **NON-CONFORMANCES**

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

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

1.11 OPPORTUNITIES FOR IMPROVEMENT

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

1.12 REJECTED WORK

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

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

1.13 REPORTS

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

1.14 TESTS AND MIX DESIGNS

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

1.15 MILL TESTS

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

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

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

1.2 INSTALLATION AND REMOVAL

- .1 The Contractor shall provide construction facilities in order to execute work expeditiously.
- .2 The Contractor shall 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, the Contractor shall maintain such roads for duration of Contract and make good damage resulting from the 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 theft and 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.
- .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 the EPP.
- .2 The Contractor shall post notices and take such precautions as required by local health authorities. The Contractor shall keep the area and premises in sanitary condition.

1.8 CONSTRUCTION SIGNAGE

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

1.9 POWER & WATER

- .1 Water is not available within GNP. The Contractor shall be responsible for locating and hauling water into GNP as approved by the Departmental Representative.
- .2 Power is not available on site. The Contractor shall supply power for offices, lights, tools, etc.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

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

1.2 INSTALLATION AND REMOVAL

- .1 The Contractor shall provide temporary controls in order to execute Work expeditiously.
- .2 The Contractor shall remove from site all such work after use.

1.3 HOARDING

- .1 The Contractor shall provide barriers around trees and plants designated to remain. Protect these items from damage by equipment and construction procedures.

1.4 GUARDRAILS AND BARRICADES

- .1 The Contractor shall provide secure, rigid guard rails and barricades around deep excavations as required.

1.5 ACCESS TO SITE

- .1 The Contractor shall provide and maintain access roads, as may be required for access to, or around the Work.

1.6 PUBLIC TRAFFIC FLOW

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

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

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

1.2 REFERENCE STANDARDS

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 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, the 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 the Work shall be new, not damaged or defective, and of the best quality (compatible with specifications) for the purpose intended. If requested, the Contractor shall 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. The Contractor shall 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 the Contract Documents.
- .4 Unless otherwise indicated in specifications, the Contractor shall maintain uniformity of manufacture for any particular or like item throughout the Work.

1.4 AVAILABILITY

- .1 Immediately after signing Contract, the Contractor shall review the product delivery requirements and anticipate any foreseeable supply delays for any items. If delays in supply of products are foreseeable, the Contractor shall notify the Departmental Representative, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of the Work
- .2 In the event of failure to notify the Departmental Representative at commencement of the Work, and should it subsequently appear that the Work may be delayed for such lack of notification, the 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. The Contractor shall not remove items from packaging or bundling until required in the 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. The Contractor shall store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 The Contractor shall store sheet materials, lumber and miscellaneous metals on flat, solid supports and keep clear of ground. Sheet materials shall be sloped to shed moisture.
- .7 The Contractor shall store and mix paints in heated and ventilated room. The Contractor shall remove oily rags and other combustible debris from site daily. The Contractor shall take every precaution necessary to prevent spontaneous combustion.
- .8 The Contractor shall remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 The Contractor shall touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. The Contractor shall use touch-up materials to match original. The Contractor shall not paint over name plates.

1.6 TRANSPORTATION

- .1 The Contractor shall pay costs for transportation of products required in the performance of the 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. The Contractor shall not rely on labels or enclosures provided with products, but shall obtain written instructions directly from manufacturers.
- .2 The Contractor shall notify the Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that the Departmental Representative may establish a course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Departmental Representative to require the removal and re-installation at no increase in Contract Price or Contract Time.

1.8 QUALITY OF WORK

- .1 In accordance with 01 45 00 – Quality Control.
- .2 The Contractor shall ensure quality of the Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. The Contractor shall immediately notify the Departmental Representative if required Work is such as to make it impractical to produce required results.
- .3 The Contractor shall not employ anyone unskilled in their required duties. The Departmental Representative reserves right to require dismissal from site, workers deemed by the Departmental Representative to be incompetent or careless.

- .4 Decisions as to standard or fitness of quality of the 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 the Work. The Contractor shall maintain efficient and continuous supervision.
- .2 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 a minimum of 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. The Contractor shall coordinate adjacent affected Work as required.
- .2 The Contractor shall perform remedial work by specialists familiar with the materials affected. The Contractor shall perform this work in a manner to neither damage nor put at risk any portion of the 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.
- .4 The Contractor shall space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 The Contractor shall keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 PROTECTION OF WORK IN PROGRESS

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

Part 2 Products

- .1 Materials and products shall be in accordance with the most current version of the Saskatchewan Government Ministry of Highways and Infrastructure Standard Specifications, or as directed by the Departmental Representative.

Part 3 Execution

- .1 Work shall be in accordance with the most current version of the Saskatchewan Government Ministry of Highways and Infrastructure Standard Specifications, or as directed by the Departmental Representative.

END OF SECTION

Part 1 General

1.1 MEASUREMENT PROCEDURES

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

1.2 REFERENCES

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

1.3 QUALIFICATIONS OF SURVEYOR

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

1.4 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.

1.5 SUBMITTALS

- .1 On request of Departmental Representative, the Contractor shall submit documentation to verify accuracy of layout work.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

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

1.2 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 in accordance with Section 01 35 00.07 – Special Procedures for Traffic Control.
- .4 The Contractor shall keep the roadway clean in accordance with Section 01 35 00.07 – Special Procedures for Traffic Control.
- .5 The Contractor shall make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 The Contractor shall provide any on-site weather proof containers required for collection of waste materials and debris.
- .7 The Contractor shall remove waste material and debris from site at end of each working day.
- .8 The Contractor shall dispose of waste materials and debris off site. Any landfill or waste disposal location or company must be approved by the Departmental Representative prior to the disposal of material.
- .9 The Contractor shall store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .10 The Contractor shall provide adequate ventilation during use of volatile or noxious substances.
- .11 The Contractor shall use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12 The Departmental Representative and Environmental Surveillance Officer may, at their total discretion, require the Contractor to suspend work activities until such a time as the Work Site is cleaned and debris, waste, and animal attractants are satisfactorily managed. The Contractor shall do as requested at their cost and no claim for time or additional costs will be accepted.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed, the Contractor shall remove surplus products, tools, construction machinery and equipment not required for performance of the remaining Work.
- .2 Prior to final review, the Contractor shall remove surplus products, tools, construction machinery and equipment.
- .3 Remove waste products and debris including that caused by the Owner, Departmental Representative, or other Contractors.

- .4 The Contractor shall remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative.
- .5 The Contractor shall make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 The Contractor shall dispose of waste materials and debris off site. Any landfill or waste disposal location or company must be approved by the Departmental Representative prior to the disposal of material.
- .7 The Contractor shall inspect finishes, and ensure specified workmanship and operation.
- .8 The Contractor shall remove dirt and other disfiguration from exterior surfaces.
- .9 The Contractor shall sweep and wash clean paved areas.
- .10 The Contractor shall clean drainage systems.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

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

1.2 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: The 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 the Departmental Representative in writing of the satisfactory completion of the Contractor's Inspection and that required corrections have been made.
 - .2 The Contractor shall then request the Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: The Departmental Representative and the Contractor will perform inspection of the Work to identify obvious defects or deficiencies. The Contractor shall correct the Work accordingly.
- .3 Completion: The Contractor shall submit a written certificate that the following has been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, The Contractor shall request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

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

1.2 CLOSEOUT SUBMITTALS

- .1 The Contractor shall provide the following documents and information to the Departmental Representative prior to them being eligible for Final Completion as detailed in Section 01 77 00.

1.3 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, the Contractor shall maintain at the site for Departmental Representative one record copy of each of the following:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 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 Specification. Each document shall be labeled with "PROJECT RECORD" in neat, large, printed letters.
- .4 The Contractor shall maintain record documents in clean, dry and legible condition. Record documents shall not be used for construction purposes.
- .5 The Contractor shall keep record documents and samples available for inspection by the Departmental Representative.

1.4 RECORDING ACTUAL SITE CONDITIONS

- .1 The Contractor shall record information on set of black line opaque drawings, or in a set of the Specifications depending what the information may be.
- .2 The Contractor shall record information concurrently with construction progress. The Contractor shall not cover or conceal Work until the required information is recorded.
- .3 The Contractor shall legibly mark each item to record actual construction on the Contract Drawings and shop drawings including but not limited to:
 - .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 The Contractor shall submit a final site survey report 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 a Table of Contents listing.
- .2 The Contractor shall list subcontractors, suppliers, and manufacturers, with name, address, and telephone number of the 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 the Owner's permission, The Contractor shall leave the date of the beginning of the warranty until the Date of Substantial Performance is determined by the Departmental Representative.
- .5 The Contractor shall verify that documents are in proper form, contain full information, and are notarized.
- .6 The Contractor shall co-execute or seal submittals when required.
- .7 The Contractor shall retain warranties and bonds until time specified for submittal.

Part 2 Products

- .1 Not used.

Part 3 Execution

- .1 Not used.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

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

1.2 REFERENCES

- .1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92-637.
- .2 National Fire Code of Canada 1995.
- .3 Transportation of Dangerous Goods Act (TDG Act) 1992, (T-19.01).
- .4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/85-77, SOR/85-585, SOR/85-609, SOR/86-526).

1.3 DEFINITIONS

- .1 Dangerous Goods: Product, substance, or organism that is specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulations.
- .2 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .3 Hazardous Waste: Any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .4 Workplace Hazardous Materials Information System (WHMIS): A Canada-wide system designed to give employers and workers information about hazardous materials used in the workplace. Under WHMIS, information on hazardous materials is to be provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by a combination of federal and provincial laws.

1.4 SUBMITTALS

- .1 The Contractor shall submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Retain current Material Safety Data Sheet (MSDS) for each hazardous material required on site. Submit MSDS to Departmental Representative upon request.
- .3 The Contractor shall submit a hazardous materials management plan to the Departmental Representative that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.5 STORAGE AND HANDLING

- .1 The Contractor shall coordinate the storage of hazardous materials with the Departmental Representative and abide by requirements for labelling and storage of materials and wastes.
- .2 The Contractor shall store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
- .3 The Contractor shall store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.

- .4 All explosives shall be mixed outside of the Park and delivered to the site. No storage of explosives shall be allowed within the National Parks.
- .5 The Contractor shall observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.
- .6 The Contractor shall abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
 - .6 Store hazardous materials and wastes in a secure storage area with controlled access.
 - .7 Maintain a clear egress from storage area.
 - .8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.
 - .9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.
 - .10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .7 The Contractor shall ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
- .8 The Contractor shall report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

1.6 **TRANSPORTATION**

- .1 The Contractor shall transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .2 If exporting hazardous waste to another country, the Contractor shall ensure compliance with federal Export and Import of Hazardous Waste Regulations.
- .3 If hazardous waste is generated on site the Contractor shall:
 - .1 Coordinate transportation and disposal with Departmental Representative.
 - .2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.
 - .3 Use only a licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
 - .5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

- .6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.
- .7 Provide a photocopy of all shipping documents and waste manifests to Departmental Representative.
- .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Departmental Representative.
- .9 Report any discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

Part 2 Products

2.1 MATERIALS

- .1 The Contractor shall only bring on site the quantity of hazardous materials required to perform Work.
- .2 The Contractor shall maintain MSDS in proximity to where the materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 DISPOSAL

- .1 The Contractor shall dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines at a location approved by the Departmental Representative.
- .2 The Contractor shall recycle hazardous wastes for which there is an approved, cost effective recycling process available.
- .3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.
- .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited. The Contractor shall dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
- .6 The Contractor shall minimize generation of hazardous waste to maximum extent practicable and shall take necessary precautions to avoid mixing clean and contaminated wastes.
- .7 The Contractor shall identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
 - .1 Hazardous wastes recycled in manner constituting disposal.
 - .2 Hazardous waste burned for energy recovery.
 - .3 Lead-acid battery recycling.
 - .4 Hazardous wastes with economically recoverable precious metals.

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 Parks Canada Exterior Signage Standards and Guidelines (latest edition)
- .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.
- .22 Saskatchewan Ministry of Highways – Work Zone Traffic Control Devices Manual

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Measurement and Payment Procedures for supplying, loading, hauling and installation of regulatory signs, hazard markers, posts and bases will be based on each complete unit 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 the applicable item of **“Unit Price Item 9 – Traffic Signage.”**
- .2 Removal and disposal of existing signs and posts being replaced, and filling the holes, will be incidental to the Work.
- .3 Temporary Traffic Control required for this Work as outlined in the Contractor’s approved Traffic Management Plan shall be incidental to **“Lump Sum Price Item 2 - Traffic Accommodation”** and no separate payment will be made to the Contractor
- .4 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 - Mobilization / Demobilization”**, and no 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 **WASTE MANAGEMENT AND DISPOSAL**

- .1 The Contractor shall separate and recycle waste materials in accordance with Section 01 35 43 - Environmental Procedures and Section 02 61 33 Hazardous Materials where applicable.
- .2 The Contractor shall divert unused metal and/or plastic materials to a recycling facility approved by the Departmental Representative. Disposal of waste and/or recycling is incidental to the Work and no additional payment will be made.

Part 2 Products

2.1 **MATERIALS**

- .1 The Contractor is responsible for supplying all materials associated with the installation of signage.
- .2 Traffic signs, posts and bases shall be supplied and installed in accordance with MHI Work Zone Traffic Control Devices Manual.

Part 3 Execution

3.1 **INSTALLATION**

- .1 In accordance with MHI Work Zone Traffic Control Devices Manual.
- .2 The Contractor shall load, haul and install 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 the Contract Documents.
 - .3 Concrete bases: Excavate one hole for the concrete base at the location and depth as per the Contract Documents. 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 in accordance with MHI Work Zone Traffic Control Devices Manual.
 - .5 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.
 - .6 The Contractor is responsible for hauling all materials to and from each work site.
 - .7 Landscape so the top of the base is flush or 50 mm above finished grade.
 - .8 Remove all excess material from site, including boulders larger than 100 mm.
 - .9 All signs are to be covered until the Departmental Representative advises to uncover.

- .10 The Contractor is to place NPC/PNC stickers (provided by the Departmental Representative) on all signs as indicated by the Departmental Representative.
- .11 Payment for this item shall be based on the number of signs installed and shall include all material, labour and equipment required to satisfactorily complete this item of work.

3.2 **REMOVAL AND SALVAGE**

- .1 The Contractor shall carefully dismantle and salvage the post, aluminum and steel materials.
- .2 The Contractor shall deliver salvaged materials to a site determined by the Departmental Representative. All damaged signs and posts shall be hauled to a recycling facility accepted by the Departmental Representative. Hauling, disposal and/or recycling is incidental to the Works and no additional payment will be made.
- .3 The Contractor shall fill holes with gravel and compact the gravel until the hole is full.

3.3 **REMOVAL AND REINSTALL**

- .1 The Contractor shall carefully dismantle and stockpile posts, bases and aluminum signs.
- .2 Damaged posts, signs or bases to be replaced by the Contractor at the Contractor's expense.
- .3 Damaged signs, posts and bases shall be hauled to recycling facility outside of the Parks. Hauling, disposal and/or recycling is incidental to the Works and no additional payment will be made.
- .4 Fill holes with gravel and compact.
- .5 Reinstall signage as per drawings or as directed by the Departmental Representative.

3.4 **REMOVE AND DISPOSE**

- .1 Signage, posts and bases or foundations are to be removed and disposed of outside of the Parks. Disposal is considered incidental to the item and no additional payment will be made.
- .2 Fill holes with gravel and compact.

3.5 **CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers, in accordance with 01 74 11 - Cleaning

END OF SECTION

Part 1 General**1.1 DESCRIPTION**

- .1 This item consists of the excavation and disposal of all materials in conformity with the lines, grades and dimension indicated on the drawings and as directed by the Departmental Representative and includes:
 - .1 Stripping of topsoil and placement in stockpiles at Poverty Ridge or windrowed onsite as directed by the Departmental Representative.
 - .2 Roadway, and ditching excavation.
 - .3 Construction of roadway ditches, embankments, permanent access and connecting roads, approaches, entrances, day use areas, berms, approved haul roads and other earthworks necessary for the construction of the road.
 - .4 Removal and disposal of unsuitable materials from excavations.
 - .5 Excavation and placement elsewhere in the roadway or ditch of road base materials, or the removal offsite of excess road base material.
 - .6 Ditch regrading work.
 - .7 Transportation of excavated materials.
 - .8 Finishing of top surfaces and slopes.
 - .9 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 The quantity of Topsoil Stripping that payment will be made shall be the area in square metres measured in its original position from cross sections in areas of stripping or at the stockpile location(s) before and after placement. Payment will be made under **“Unit Price Item 2a – Roadway and Drainage Excavation – Stripping of Topsoil and Placement in Stockpile”** and shall include cost of excavating, hauling and stockpiling the topsoil.
- .2 The quantity of Excavation Common and Embankment that payment will be made shall be the volume in cubic metres measured in its original position from cross sections in areas of excavation or at the disposal location before and after excavation or placement. Payment will be made under **“Unit Price Item 2b – Roadway and Drainage Excavation – Excavation Common and Embankment”** and shall include cost of excavating, hauling, placement and compaction of embankment material at locations identified in the Contract Documents. Compaction and conditioning of subgrade for construction of the roadway embankment shall be considered incidental to the works.
- .3 The quantity of excavation installed onsite and sourced from existing stockpiles within GNP for which payment will be made shall be the volume in cubic metres measured in its final, compacted position from cross sections taken after placement and compaction. Payment will be made under **“Unit Price Item 2c – Roadway and Drainage Excavation – Excavation Stockpile”** and shall include cost of excavation, hauling, placement, and compaction of material at locations identified in the Contract Documents. Compaction and conditioning of subgrade for construction of the roadway embankment shall be considered incidental to the works.

- .4 The quantity of Unsuitable Material Excavation for which payment will be made shall be the volume in cubic metres. Payment will be made under **“Unit Price Item 2d — Roadway and Ditch Excavation –Excavation and Offsite Disposal”** and shall include cost of excavating, hauling, and disposal of unsuitable material in accordance with the Contract Documents and as directed by the Departmental Representative.
- .5 The Departmental Representative will take initial cross sections after clearing, grubbing, and stripping or full depth reclamation is completed and immediately prior to excavation of material to be incorporated into work. Cross sections will be taken again after excavation work is completed.
- .6 No overhaul will be paid for this Work.
- .7 Obtaining, maintaining, reclamation of a disposal site outside of GNP and all incidentals associated with the removal and disposal of waste material is included for under this item and no separate payment will be made.
 - .1 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”**, and no additional payment will be made.
 - .2 Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no separate payment will be made to the Contractor.
 - .3 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
 - .4 No measurement or payment will be made for:
- .8 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 the Contractor’s negligence.
- .9 If overcut, no payment will be made for filling an area back to grade.
- .10 Construction and removal of detours.
- .11 Loading hauling, placing and compaction of boulders less than 1.5 cubic metres into large embankments.
- .12 Scarifying or benching existing slopes or existing road surfaces.
- .13 Removing non-compliant material previously placed by the Contractor.
- .14 Watering, drying or compacting.
- .15 Proof rolling.
- .16 Compaction of material (150 mm) below subgrade horizon in areas of cut.
- .17 Finishing.
- .18 Material or other Quality Control testing (compaction testing).

1.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
- .2 ASTM D698-00a, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,000 ft-lbf/ft³) (600 kN-m/m³)
- .3 MHI Standard Specification Manual (Latest Edition)

1.4 DEFINITIONS

- .1 Rock Excavation: excavation of:

- .1 Material from solid masses of igneous, sedimentary or metamorphic rock that, prior to removal, was integral with parent mass. Material that cannot be ripped with reasonable effort from Caterpillar D9L or equivalent to be considered integral with parent mass.
- .2 Boulder or rock fragments measuring 1.5 cubic metres or more in volume.
- .2 Excavation Common: Excavation of materials that are not Rock Excavation or Stripping.
- .3 Embankment: Material derived from usable excavation and placed above original ground or stripped surface.
- .4 Unsuitable Material: Material unsuitable for embankment, embankment foundation or material surplus to requirements.
- .5 Topsoil: Material passing a 100 mm sieve 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 in accordance with 01 45 00 – Quality Control.

1.6 **WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 35 43 - Environmental Procedures.

Part 2 Products

2.1 **MATERIALS**

- .1 Embankment materials require acceptance by Departmental Representative.
- .2 The Contractor shall provide material test certificates to the Departmental Representative for consideration.
- .3 Material used for embankment shall be in conformance with MHI Specifications and not to contain more than 3% organic matter by mass, frozen lumps, weeds, sod, roots, logs, stumps or other unsuitable material.
 - .1 Material deemed unsuitable for the embankment construction may be placed as directed by the Departmental Representative between the toe of the embankment and the right-of-way boundary or in other areas as designated by the Departmental Representative. If no on-site waste areas are designated, then the unsuitable material shall be removed and disposed outside of the National Park at the Contractor's expense. Any such material subsequently placed in an embankment, without the approval of the Departmental Representative, shall be removed and disposed of, as directed by the Departmental Representative, and no payment will be made for the removal or haul of such unsuitable material from the embankment.

Part 3 Execution**3.1 COMPACTION EQUIPMENT**

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

3.2 WATER DISTRIBUTORS

- .1 Apply water with equipment capable of uniform distribution.

3.3 EXCAVATING

- .1 General:
 - .1 Notify the Departmental Representative when unsuitable materials are encountered and remove to depth and extent as approved by the Departmental Representative.
 - .2 Subcut below subgrade elevation in cut sections only as approved by the Departmental Representative. Compact top 150 mm below subcut to minimum 98% maximum dry density, ASTM D698 (AASHTO T99). Replace with acceptable embankment material and compact.
 - .3 Treat ground slopes, where subgrade is on transition from excavation to embankment, at grade points in accordance with the Drawings.
 - .4 The dimensions of the excavations and embankments shall be, in accordance with the typical sections accompanying these specifications, but the dimensions of any or all excavations and embankments may be increased or decreased at any time by the Departmental Representative as conditions and circumstances may determine.
- .2 Drainage:
 - .1 Maintain profiles, crowns and cross slopes to provide good surface drainage at all times.
 - .2 Provide ditches as work progresses to provide drainage.
 - .3 Ensure positive drainage is maintained when completing ditch regrading work.

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 indicated in the Contract Documents.
- .2 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.
- .3 Do not place material that is frozen or place material on frozen surfaces except in areas authorized.
- .4 Maintain crowned surface during construction to ensure ready run-off of surface water.
- .5 Drain low areas before placing materials.
- .6 Place and compact to full width in layers not exceeding 300 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.

- .7 Payment quantities will be calculated on Neat Line basis; overbuild will not be paid.

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 200mm 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.
- .2 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 98% maximum dry density, ASTM D698 (AASHTO T99). Top 300 mm of subgrade to be compacted to 100% maximum dry density, ASTM D698 (AASHTO T99).
- .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 PROOF ROLLING

- .1 Proof roll using a loaded (maximum legal load) tandem truck with tires inflated to normal operation pressures.
- .2 Proof roll subgrade.
- .3 Make sufficient passes with proof roller to subject surface to three separate passes of loaded tire. Departmental Representative to determine level of proof rolling.
- .4 Where proof rolling reveals areas of defective subgrade:
- .1 Remove subgrade material to depth and extent as directed by the Departmental Representative.
- .2 Backfill excavated subgrade with approved common excavation material and compact in accordance with Section 31 24 13 - Roadway and Drainage Excavation.
- .3 Where proof rolling reveals areas of defective subgrade, remove and replace in accordance with the appropriate sections. Removal of defective subgrade material shall be the Contractor's responsibility.

3.7 **FINISHING**

- .1 Shape entire roadbed to within 15 mm of design elevations but shall not be 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.

3.8 **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 Measurement and Payment for geogrid shall be made per square metres of geogrid supplied and installed to the satisfaction of the Departmental Representative. Payment shall be made under **“Unit Price Item 3a – Triaxial Geogrid (Tensar TX 160 or Approved Equivalent)”** and will include all materials, labour, and equipment necessary to complete the Work.
- .2 Measurement and Payment for Non-Woven Geotextile shall be made per square metres supplied and installed to the satisfaction of the Departmental Representative. Payment shall be made under **“Unit Price Item 3b – Non-Woven Geotextile (Nilex 4535 or Approved Equivalent)”** and will include all materials, labour, and equipment necessary to complete the Work.
- .3 The supply and installation of additional geotextiles if required by the Departmental Representative shall be measured and paid under **“Lump Sum Price Item 3 – Prime Cost Sum”** and will include all materials, labour, and equipment necessary to complete the Work.
- .4 No allowance shall be made for seams and overlaps.

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.
- .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/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .4 MHI Standard Specifications Manual

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 01 33 00 – Submittal Procedures for each type of geotextile used on the project.
 - .1 Minimum length of 2 m of roll width of geotextile.
 - .2 Minimum of 1 m seam with at least 300 mm of geotextile on both sides of seam.
- .3 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 Triaxial geogrid shall meet or exceed the specifications of Tensar TX 160 Geogrid or approved equivalent.
- .2 Nonwoven geotextile shall meet or exceed the specifications of Nilex 4535 Non Woven Geotextile or approved equivalent.

Part 3 Execution

3.1 INSTALLATION

- .1 Place geotextile material by unrolling onto graded surface in orientation, manner and locations indicated and retain in position with Pins.
 - .1 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
 - .2 Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.

- .3 Overlap each successive strip of geotextile 600 mm over previously laid strip.
- .4 Pin successive strips of geotextile with securing pins at 3m intervals.
- .2 Protect installed geotextile material from displacement, damage or deterioration before, during and after placement of material layers.
- .3 Replace damaged or deteriorated geotextile to approval of Departmental Representative.
- .4 Install as per manufacturers specifications.

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 geosynthetics.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

- .1 Quantity of MHI Type 33 Granular Base Course that payment will be made shall be the number of tonnes supplied and incorporated into Work and accepted by the Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of work. Payment will be under **“Unit Price Item 1a – Granular Materials – MHI Type 33 Granular Base Course”**.
- .2 Quantity of MHI Type 105 Traffic Gravel that payment will be made shall be the number of tonnes supplied and incorporated into the Work and accepted by the Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of work. Payment will be under **“Unit Price Item 1b – Granular Materials – MHI Type 105 Traffic Gravel”**.
- .3 Quantity of MHI Type 115 Granular Backfill that payment will be made shall be the number of tonnes supplied and incorporated into Work and accepted by the Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of work. Payment will be under **“Unit Price Item 1c – Granular Materials – MHI Type 115 Granular Backfill”**.
- .4 Quantity of MHI Type 116 Granular Backfill that payment will be made shall be the number of tonnes supplied and incorporated into the Work and accepted by the Departmental Representative, and shall include all labour, equipment and material required to satisfactorily complete this item of work. Payment will be under **“Unit Price Item 1d – Granular Materials – MHI Type 116 Granular Backfill”**.
- .5 Supply, loading, hauling, placing, compacting, and conditioning by wetting / drying will be incidental to the Work.
- .6 No overhaul will be paid for this Work.
- .7 Supply, installation, maintenance and calibration of weight scales and a scale house by the Contractor shall be considered incidental to the Contract and no additional measurement will be made for payment.
- .8 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”**, and no additional payment will be made.
- .9 Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .10 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C117-95, Standard Test Methods for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C131-96, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

- .3 ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .4 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).
- .5 ASTM D1557-00, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000ft-lbf/ft³) (2,700kN-m/m³).
- .6 ASTM D1883-99, Standard Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
- .7 ASTM D4318-00, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
- .2 MHI Standard Specification Manual (Latest Edition).

1.3 **QUALITY CONTROL**

- .1 All Quality Control testing by the Contractor in accordance with 01 45 00 – Quality Control.
 - .1 Contractor to provide material samples to the Departmental Representative prior to works commencing for Quality Assurance purposes.

1.4 **WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 35 43 - Environmental Procedures.

Part 2 Products

2.1 **MATERIALS**

- .1 MHI Type 33 Granular Base Course materials shall be supplied by the Contractor in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).
- .2 MHI Type 105 Traffic Gravel shall be supplied by the Contractor in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).
- .3 MHI Type 115 Granular Backfill shall be supplied by the Contractor in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).
- .4 MHI Type 116 Granular Backfill shall be supplied by the Contractor in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).

Part 3 Execution

3.1 **PLACING AND COMPACTION**

- .1 Contractor to place and compact MHI Type 33 Granular Base Course in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).
- .2 Compact to density of not less than 100% corrected maximum dry density in accordance with ASTM D 698.

- .1 Contractor to place MHI Type 105 Traffic Gravel in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).
- .2 Contractor to place and compact MHI Type 115 Granular Backfill in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).
- .3 Contractor to place and compact MHI Type 116 Granular Backfill in accordance with Saskatchewan Highways and Transportation Standard Specification Manual (Latest Edition).

3.2 ACCEPTANCE PARAMETERS

- .1 The Contractor shall not proceed with paving or otherwise covering a section of Granular Base Work until the underlying work is accepted by the Departmental Representative. Acceptance will be based on the following:
- .2 Finished base surface to be within plus or minus 10mm of established grade and cross section but not uniformly high or low.
- .3 **Rut Resistance** – Any aggregate supplied must, in addition to meeting the gradation requirements specified, not rut 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 600kPa. Any aggregate which does rut shall be removed and replaced, or blended with suitable aggregates, to meet both the gradation requirement and the rut resistance requirement
- .4 **Proof Rolling and Stabilizing Base Course** – Before acceptance, each compacted course of base course aggregate shall receive one complete coverage by the tires of 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.
- .5 Any areas where rutting or displacement occurs shall be either excavated or replaced and proof rolled or stabilized by the addition of suitable blending material incorporated uniformly into the base to the satisfaction of the Departmental Representative.
- .6 The supply, load, haul, placing, proof rolling, and mixing of such stabilizing aggregates as necessary to correct deficiencies in aggregate stability shall be incidental to the Work for Base aggregates. Blending may be performed at the pit or quarry or on the highway in a manner acceptable to the Departmental Representative.

3.3 PROTECTION

- .1 Maintain finished base in condition conforming to this Section until succeeding material is applied or until acceptance by Departmental Representative.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

- .1 The supply, delivery and application of prime and tack coat will be will not be measured separately and will be considered to be incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**.
- .2 Preparation of base surface for prime or asphalt surface for tack application will be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**.
- .3 Temporary Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item 2 - Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .4 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 - Mobilization / Demobilization”**, and no 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.

1.2 REFERENCES

- .1 Saskatchewan Ministry of Highways Standard Specification Manual (latest edition)
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM D140 01, Standard Practice for Sampling Bituminous Materials.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 16.1 M89, Cutback Asphalts for Road Purposes.
 - .2 CAN/CGSB 16.2 M89, Emulsified Asphalts, Anionic Type, for Road Purposes.

1.3 SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit two 1 L samples of asphalt prime proposed for use in new, clean, air tight sealed, wide mouth, bottles made with plastic, to Departmental Representative, at least 2 weeks prior to commencing work.
- .3 Sample asphalt prime coat materials in accordance with ASTM D140.
- .4 Provide access on tank truck for Departmental Representative to sample asphalt material to be incorporated into Work, in accordance with ASTM D140.

1.4 QUALITY CONTROL

- .1 In accordance with Section 01 45 00 – Quality Control.
- .2 Upon request from Departmental Representative, submit manufacturer's test data and certification that asphalt prime material meets requirements of this Section.

1.5 DELIVERY, STORAGE AND HANDLING

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

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 43 – Environmental Procedures.
- .2 Divert unused asphalt materials to facility capable of recycling materials.

Part 2 Products**2.1 MATERIAL**

- .1 Asphalt material: to CAN/CGSB 16.1 grade: RM 20, MC 30, MC 250. CAN/CGSB 16.2 grade: SS 1.
- .2 Sand blotter: clean granular material passing 4.75 mm sieve and free from organic matter or other deleterious materials.
- .3 Water: clean, potable, free from foreign matter.

2.2 EQUIPMENT

- .1 Pressure distributor to be:
 - .1 Designed, equipped, maintained and operated so that asphalt material can be:
 - .2 Maintained at even temperature.
 - .3 Applied uniformly on variable widths of surface up to 5 m.
 - .4 Applied at controlled rates from 0.2 to 5.4 L/m² with uniform pressure, and allowable variation from any specified rate not exceeding 0.1 L/m².
 - .5 Distributed in uniform spray without atomization at temperature required.
 - .6 Equipped with meter registering metres of travel per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.
 - .7 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.
 - .8 Equipped with easily read, accurate and sensitive device that registers temperature of liquid in reservoir.
 - .9 Equipped with accurate volume measuring device or calibrated tank.
 - .10 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
 - .11 Equipped with nozzle spray bar, with operational height adjustment.
 - .12 Cleaned if previously used with incompatible asphalt material.

Part 3 Execution**3.1 APPLICATION**

- .1 Obtain Departmental Representative's acceptance of granular base surface and authorization to apply before applying asphalt prime.
- .2 Cutback asphalt:
 - .1 Heat asphalt prime to a temperature for pumping and spraying as recommended by the supplier.

- .2 Apply asphalt prime to granular base at rate recommended by the supplier and accepted by the Departmental Representative.
- .3 Apply on dry surface unless otherwise directed by Departmental Representative.
- .3 Anionic emulsified asphalt:
 - .1 Dilute asphalt emulsion with clean water at 1:1 ratio for application.
 - .2 Mix thoroughly by pumping or other method approved by Departmental Representative.
 - .3 Apply diluted asphalt emulsion at rate recommended by the supplier and approved by the Departmental Representative.
 - .4 Apply diluted asphalt emulsion on damp surface unless otherwise directed by Departmental Representative.
- .4 Apply asphalt prime only on unfrozen surface.
- .5 Do not apply prime when air temperature is less than 10 degrees C or when rain is forecast within 2 hours.
- .6 Paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt prime material.
- .7 Where traffic is to be maintained, treat no more than one half width of surface in one application.
- .8 Prevent overlap at junction of applications.
- .9 Do not prime surfaces that will be visible when paving is complete.
- .10 Apply additional material to areas not sufficiently covered as directed by Departmental Representative.
- .11 Keep traffic off primed areas until asphalt prime has set.
- .12 Permit prime to set before placing asphalt paving.

3.2 USE OF SAND BLOTTER

- .1 If asphalt prime fails to penetrate within 24 hours, spread sand blotter material in amounts required to absorb excess material.
- .2 Allow sufficient time for excess prime to be absorbed.
- .3 Apply second application of sand blotter as required.

END OF SECTION

Part 1 General**1.1 MEASUREMENT PROCEDURES**

- .1 The supply, delivery and application of prime and tack coat will be will not be measured separately and will be considered to be incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**.
- .2 Preparation of base surface for prime or asphalt surface for tack application will be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**.
- .3 Temporary Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item 2 - Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .4 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 - Mobilization / Demobilization”**, and no 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.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM D140-01, Standard Practice for Sampling Bituminous Materials.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-16.2-M89, Emulsified Asphalts, Anionic Type, for Road Purposes.
- .3 Saskatchewan Ministry of Highways and Infrastructure (MHI)
 - .1 Specification #4000 Specifications for Asphalt Prime, Tack and Flush Coat.
 - .2 For information related to the MHI specifications please see the following website; <http://www.highways.gov.sk.ca/business> - Standards and Specifications Manual

1.3 SUBMITTALS

- .1 The Contractor shall submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 The Contractor shall submit two - 1 L samples of material proposed for use in new, clean, airtight, sealed, wide mouth bottles made with plastic to Departmental Representative, at least 2 weeks prior to beginning Work.
 - .2 The Contractor shall sample material to ASTM D140 and the Saskatchewan Standard Test Procedures Manual.
 - .3 The Contractor shall provide access on the tank truck for the Departmental Representative to sample the asphalt material to be incorporated into Work, in accordance with ASTM D140.

1.4 QUALITY CONTROL

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

- .1 Upon request by Departmental Representative, the Contractor shall submit the manufacturer's test data and certification that the material meets the requirements of this Section.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 In accordance with 01 61 00 - Common Product Requirements.
 - .1 The Contractor shall deliver, store and handle materials in accordance with ASTM D140.
 - .2 The Contractor shall maintain and restore asphalt storage area after the project.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 The Contractor shall separate waste materials for reuse and recycling in accordance with Section 01 35 43 - Environmental Procedures and with the Waste Reduction Work Plan.
 - .1 The Contractor shall divert unused asphalt materials to a facility capable of recycling such materials.

Part 2 Products

2.1 MATERIALS

- .1 The Contractor shall use SS-1 anionic emulsified asphalt.
- .2 Water shall be clean, potable, and free from foreign matter.

2.2 EQUIPMENT

- .1 The pressure distributor shall be designed, equipped, maintained and operated so that all requirements of the MHI Standard Specification 4000 are met, and asphalt material can be:
 - .1 Maintained at even temperature.
 - .2 Applied uniformly on variable widths of surface up to 5 m.
 - .3 Applied at readily determined and controlled rates from 0.2 to 5.4 L/m² with uniform pressure, and with an allowable variation from any specified rate not exceeding 0.1 L/m².
 - .4 Distributed in uniform spray without atomization at temperature required.
 - .5 Equipped with meter, registering metres of travel per minute, visibly located to enable truck driver to maintain constant speed required for application at specified rate.
 - .6 Equipped with pump having flow meter graduated in units of 5 L or less per minute passing through nozzles and readily visible to operator. Pump power unit to be independent of truck power unit.
 - .7 Equipped with an easily read, accurate and sensitive device which registers temperature of liquid in reservoir.
 - .8 Equipped with accurate volume measuring device or calibrated tank.
 - .9 Equipped with nozzles of same make and dimensions, adjustable for fan width and orientation.
 - .10 Equipped with nozzle spray bar, with operational height adjustment.
 - .11 Cleaned if previously used with incompatible asphalt material.

Part 3 Execution**3.1 APPLICATION**

- .1 The Contractor shall adhere to all requirements of the MHI Standard Specification 4000.
- .2 The Contractor shall obtain the Departmental Representative's approval before applying asphalt tack coat.
- .3 The Contractor shall apply asphalt tack coat only on clean and dry surface.
- .4 The Contractor shall dilute the asphalt emulsion with water at 1:1 ratio for application.
- .5 The Contractor shall mix thoroughly by pumping or other method accepted by Departmental Representative.
- .6 The Contractor shall apply the asphalt tack coat evenly to pavement surface at rate as directed by Departmental Representative, of 0.5 L/m² plus or minus 0.2 L/m².
- .7 The Contractor shall paint contact surfaces of curbs, gutters, headers, manholes and like structures with thin, uniform coat of asphalt tack coat material.
- .8 The Contractor shall apply asphalt tack coat only on unfrozen surface, where the surface temperature is greater than 2 degrees Celsius.
- .9 The Contractor shall evenly distribute localized excessive deposits of tack coat by brooming as directed by Departmental Representative.
- .10 Where traffic is to be maintained, the Contractor shall treat no more than one half of width of surface in one application.
- .11 The Contractor shall keep traffic off tacked areas until asphalt tack coat has set.
- .12 The Contractor shall re-tack contaminated or disturbed areas as directed by the Departmental Representative.
- .13 The Contractor shall permit the asphalt tack coat to set before placing asphalt pavement.

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 Saskatchewan Ministry of Highways and Infrastructure (MHI);
 - .1 Specification 4112 – End Product Specification for Asphalt Concrete.
 - .2 Standard Test Procedures Manual
 - .3 Specifications for Manufactured Materials
 - .4 For information related to these specifications please refer to the following website; <http://www.highways.gov.sk.ca/business> - Standard Specification Manual

1.2 DESCRIPTION

- .1 Work shall consist of supplying, hauling, and placement of a MHI Type 3 Hot Mix Asphalt Concrete Pavement leveling course and a top lift overlay at locations along the Badlands Scenic View Drive, GNP as directed by the Departmental Representative.
- .2 All quality control testing shall be completed by the Contractor. Payments for Quality Control shall be considered incidental to the bid item **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**.
- .3 Quality Assurance testing will be completed by the Departmental Representative.

1.3 MEASUREMENT PROCEDURES AND UNIT PRICE ADJUSTMENTS

- .1 Accepted asphalt concrete pavement will be measured in tonnes. Payment shall be compensation in full for supply of asphalt concrete mix including all materials, supply and application of tack coat, processing, plant mixing, loading, hauling, paver laying, compacting, finishing surface, raking, interim lane marking, quality control testing, safety, and maintenance. Payments shall be made accordingly under **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**
- .2 Supply of paving aggregates shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”** and no additional payment will be measured for payment.
- .3 Supply, installation and maintenance and calibration of weight scales, scale house and scale operator at the Plant by the Contractor shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”** for the asphalt placed and no additional payment will be made.
- .4 The Contractor shall prepare and submit a mix design to the Departmental Representative prior to commencing paving operations in accordance with Section 01 33 00 – Submittals and Section 01 45 00 – Quality Control. Preparing asphalt mix designs (including anti-stripping test) shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”** for the type of asphalt placed and no additional payment will be made. EPS pay adjustments will be made as described in 1.3.7 below.
- .5 The movement of equipment and crew, shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”** for the type of asphalt placed. A move is defined as the Contractor moving equipment and crew to the next section to pave after having completed, in its totality, the previous section.
- .6 There is no Overhaul payment under this contract.

- .7 Applicable EPS payment adjustments (additions or subtractions as applicable) shall be applied in accordance MHI Specification 4112.8.2 Pay Adjustments. Payments shall be made under **“Lump Sum Price Item 3 - Prime Cost Sum”**.
- .8 Supply of anti-stripping agents if required and accepted by the Departmental Representative, shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**.
- .9 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”** and no additional payment will be made.
- .10 Traffic Control required for this Work shall be incidental to “Lump Sum Item 2 -Traffic Accommodation” and no separate payment will be made to the Contractor.
- .11 Removal and reinstallation of existing guide posts shall be considered incidental to **“Unit Price Item 4 – Asphalt Concrete Pavement (EPS)”**. Guide posts damaged by the Contractor shall be replaced by the Contractor at no cost.
- .12 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor
- .13 Diesel fuel cost adjustment will not apply to this project and shall not be paid for.

1.4 **WASTE MANAGEMENT AND DISPOSAL**

- .1 The Contractor shall separate waste materials for reuse and recycling in accordance with Section 01 35 43 - Environmental Procedures.
- .2 The Contractor shall divert asphalt waste materials to a facility capable of recycling such materials outside of the park.

Part 2 Products

2.1 **MATERIALS**

- .1 Materials used shall be in accordance with MHI Standard Specifications Manual for Highway Construction, Specification #4112 – End Product Specification for Asphalt Concrete.
- .2 Asphalt Concrete Pavement shall be MHI Type 3 using 150 – 200A asphalt cement, combined in a hot mix plant as hereinafter specified, placed and compacted to the specified density on a prepared surface in conformity to the lines, grades, dimensions and cross-sections as directed by the Departmental Representative.
- .3 The Contractor shall perform mix design for MHI Type 3 Asphalt Concrete Pavement using Asphalt Cement 150 – 200A. Mix design is subject to acceptance by the Departmental Representative.

Part 3 Execution

3.1 **QUALITY CONTROL**

- .1 Contractor is responsible for all Quality Control required in accordance with SK MHI Standard Specifications (latest edition).
- .2 Contractor is to provide a full time Road Checker during all times of asphalt placement that shall be responsible for providing a daily Road Checker’s Summary in accordance with SK MHI Standard Specifications (latest edition).

- .3 The Road Checker's Summary shall be provided to the Departmental Representative no less than 24 hrs after the relevant shift end.
- .4 To assist in the Road Checker's role, the Contractor shall layout and stake stations at the appropriate intervals to achieve the desired accuracy throughout the Work Site. All survey and marking stakes shall be removed prior to completion of the Works.

3.2 **WORK METHODOLOGY**

- .1 ACP placement:
 - .1 Asphalt concrete mix shall not be placed when the air temperature is below 4° C, or when rain is forecasted.
 - .2 Asphalt concrete mix shall be placed only on clean, dry, and unfrozen surfaces.
- .2 Full depth sections shall be paved with the following minimum lifts:
 - .1 Two lifts of 50 mm each for a finished structure of 100 mm of asphalt.
- .3 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment shall be made to the Contractor.

3.3 **EQUIPMENT, PLANT AND MIXING REQUIREMENTS**

- .1 Execution of the Work shall be in accordance with MHI Standard Specifications Manual for Highway Construction – Specification 4112 – End Product Specification for Asphalt Concrete
- .2 The Contractor will not be permitted to setup an asphalt plant within GNP.
- .3 The asphalt plant used on this project, regardless of location, shall be a minimum of 200 tonne per hour production plant, equipped with a dry bag system for pollution control, in addition to, or in replacement of standard cyclone dust collectors, to effectively eliminate emissions of dust and smoke pollutants into the atmosphere. Use of secondary dust collection systems, requiring discharge of dust polluted water into settling ponds or drainage system will not be permitted. In addition, the Asphalt plant must comply with all environmental pollution control regulations applicable in the asphalt plant area. The plant operator must make daily inspections of the emission control components, to ensure proper working order and provide the most recent stack monitoring results for viewing by the Departmental Representative or his designate.

3.4 **CLEANING**

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 CAN/CGSB-1.5-M99 Low Flash Petroleum Spirits Thinner.
- .2 CGSB1-GP-12C-83 Standard Paint Colours.
- .3 CGSB1-GP-71-83 Method of Testing Paints and Pigments.
- .4 CAN/CGSB 1.74-01 Alkyd Traffic Paint.
- .5 U.S. FED-STD-595B, 1989 – Colours Used in Government Procurement.
- .6 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
- .7 Material Safety Data Sheets (MSDS)

1.2 SAMPLES

- .1 The Contractor shall submit samples in accordance with Section 01 33 00 - Submittal Procedures. All samples shall be in accordance with CGSB1-GP-71.
- .2 The Contractor shall submit the following material sample quantities at least 4 weeks prior to commencing work to the Departmental Representative:
 - .1 Two samples of each type of paint.
 - .2 One sample of glass beads.
- .2 The Contractor shall label all samples with the name of project and its location, the paint manufacturer's name and address, the name of the paint, CGSB specification number and formulation number and batch number.

1.3 MEASUREMENT FOR PAYMENT

- .1 Temporary Pavement Marking including supply of paint and reflective glass beads in accordance with Section 01 35 00.06 - Special Procedures for Traffic Control shall be considered incidental to “Lump Sum Price Item 2 – Traffic Accommodation” and will not be measured for payment.
- .2 Final line painting shall be measured in linear meters along the centre of the paint line regardless of width or line-gap ratio and payment shall be considered full compensation for all equipment, labour, and materials required to complete the Work as one coat of paint. Double center lines are to be measured as one line. Payment will be made under “Unit Price Item 5 - Pavement Marking”
- .3 Traffic Control required for this Work shall be incidental to “Lump Sum Price Item 2 – Traffic Accommodation” and no separate payment will be made to the Contractor.
- .4 Mobilization and demobilization required for this Work shall be incidental to “Lump Sum Price Item 1 – Mobilization / Demobilization” and no 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 shall be made to the Contractor

Part 2 Products**2.1 MATERIALS**

- .1 Paint:

- .1 To CGSB 1.74-2001-CAN/CGSB, alkyd traffic paint.
- .2 Colour: to FED-STD-595B, yellow 33538 and white 37925.
- .3 Upon request, Departmental Representative will supply a qualified product list of paints applicable to work. Qualified paints may be used but Departmental Representative reserves right to perform further tests.
- .2 Thinner: to CAN/CGSB-1.4-2000.
 - .1 Glass beads:
 - .2 Overlay type: to CGSB1-GP-74M.

2.2 **SUPPLY, STORAGE AND HANDLING**

- .1 Storage and handling shall meet the requirements of Section 01 35 43 - Environmental Procedures and Section 02 61 33 - Hazardous Materials.
- .2 The Contractor shall make all arrangements for the supply and delivery of paint and glass beads and shall provide the Departmental Representative with records of all materials received and/or returned, on a daily basis.
- .3 The Contractor shall provide, maintain and reclaim all material storage sites.
- .4 No paint formulation shall be diluted or mixed with a different formulation or with any other material, without the specific approval of the Departmental Representative.
- .5 The Contractor shall take all necessary steps to prevent contamination of the materials. Paint shall be protected from freezing.
- .6 The Contractor shall be responsible for the proper clean-up of waste or spilled material, and the proper disposition of containers.

Part 3 Execution

3.1 **TEMPORARY MARKINGS**

- .1 Depending on the work, permanent pavement markings must be destroyed or covered by work such as paving, sealcoating, milling, crack sealing, etc. Where it is not practical to replace the permanent markings the same day, some form of temporary delineation must be provided. First priority should be given to directional dividing lines and second priority to lane lines and other markings. If work is progressing rapidly, it may be desirable to install temporary pavement markings periodically throughout the day. Temporary markings may consist of paint with glass bead, preformed adhesive backed tape, road studs, "L" shaped flexible reflectorized markers etc. A marking of a type which will necessitate pavement damage by its removal should not be used on a final pavement lift. Davidson or "L" shaped flexible markers are the only practical marking for sealcoating work and milled pavement; attaching with nails if necessary on rough surfaces. Where for any reason temporary markings cannot be installed, temporary delineation devices should be used, at a minimum to separate traffic travelling in opposite directions.
- .2 Temporary directional dividing lines, and lane lines formed with paint or plastic shall be 10 cm wide, at least 50 cm long, and separated by gaps not exceeding 8 m. Two yellow markings side by side and approximately 10 cm apart are required wherever passing is prohibited in either direction. Stop lines should be approximately 30 cm wide and pavement arrows at least one third the size of standard arrows. Temporary pavement markings and raised marking devices shall be reflectorized and display the same colour by night as by day and shall also be the same colour as the permanent markings which they replace.

- .3 Raised plastic devices such as reflective road studs or Davidson flexible reflectorized markers, etc., may be used to supplement or be used in place of temporary pavement markings. Where used with paint marks, these raised devices should be installed immediately downstream of every fourth 50 cm dash or approximately 26 m apart. When used without temporary pavement markings, they should also be installed approximately every 26 m. Regardless of the above maximum spacing, raised markers should be installed frequently enough so that a minimum of four individual markers of four pairs of side-by-side markers are visible from any given point.
- .4 The Contractor shall supply and place temporary line markings on newly constructed hard surfaces (pavement, hot-in-place recycled pavement, sealcoat, etc.) throughout the project, re-establishing centreline and all lane-dividing lines prior to being opened to traffic, and shall maintain such markings until the earlier of the Actual Completion Date or the date permanent markings have been placed. Temporary line markings are not required for lane edge lines (fog lines) unless otherwise directed.
- .5 Centerline of undivided highway shall be marked throughout as “no passing” unless otherwise directed by the Departmental Representative.
- .6 Painted temporary lines are not permitted on the final surface.

3.2 PERMANENT MARKINGS

- .1 Marking shall be in accordance with the design drawings. All layout markings shall be done with white or yellow centreline paint which will be clearly visible after exposure to all Site conditions for a minimum period of two (2) months past the Actual Completion Date.
- .2 Key control points shall be marked at their design location within tolerances of ± 50 mm transversely and ± 100 mm longitudinally. Longitudinal tolerances for intermediate points, when required, are ± 10 m.
- .3 Equipment Requirements
 - .1 Paint applicator to be an approved pressure type mobile distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut-off.
 - .2 Distributor to be capable of applying reflective glass beads as an overlay on freshly applied paint.
- .4 Condition of Surfaces
 - .1 Pavement surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials.
- .5 Application
 - .1 Pavement markings to be laid out by Contractor after confirming with the Departmental Representative that there are to be no changes.
 - .2 Apply paint only when air temperature is above 10°C, wind speed is less than 60 km/h and no rain is forecast within next 4 h.
 - .3 Apply traffic paint evenly at rate of 3 m²/L.
 - .4 Do not thin paint.
 - .5 Paint lines to be of uniform colour and density with sharp edges.
 - .6 Thoroughly clean distributor tank before refilling with paint of different colour.
 - .7 Apply glass beads at rate of 200 g/m² of painted area immediately after application of paint.

.6 Tolerance

- .1 Paint markings to be within plus or minus 12 mm of dimensions indicated.
- .2 Remove incorrect markings as directed by the Departmental Representative

3.3 **TRAFFIC CONTROL**

- .1 In accordance with Section 01 35 00.06 and Contractor's accepted Traffic Management Plan.

3.4 **QUALITY CONTROL INSPECTION PLAN**

- .1 The Contractor is responsible for quality control inspection in accordance with Section 01 45 00 – Quality Control throughout every stage of the work to ensure that materials and workmanship comply with the requirements of this specification.
- .2 The Contractor shall develop and submit a Quality Control Inspection Program (QCIP) that addresses all the elements that affect the quality of the line painting including, but not limited to:
 - .1 Paint Application Rates.
 - .2 Glass Bead Application Rates.
 - .3 Pavement Surface and Atmospheric Conditions.
 - .4 Line Widths, Line Lengths and Space Lengths.
- .2 The Contractor shall maintain records of QCIP data, complaints from the public, and other details relevant to the Work and shall provide these records to the Departmental Representative daily.

3.5 **HIGHWAY OPERATION**

- .1 Highway operation shall be in accordance with the Contractor's approved Traffic Management Plan and shall meet the following requirements:
- .2 General
 - .1 Painting shall be carried out during hours of daylight between ½ hour after sunrise and ½ hour before sunset.
 - .2 Operation of the painting truck against the flow of traffic will not be permitted.
 - .3 Loading glass beads or paint onto the painting truck is not permitted on a roadway surface.
- .3 Operation of Companion Vehicles
 - .1 When the roadway to be painted is open to public traffic, the Contractor shall operate a crash attenuator vehicle and a pilot vehicle in conjunction with the painting truck during the painting of all longitudinal lines. Companion vehicle operators shall not attempt to control traffic from inside the vehicle.
 - .2 The actual operating parameters of the companion vehicles will be determined by the Contractor to safely accommodate traffic and will be based on site specific conditions such as sight distances, highway geometrics and traffic patterns and volumes. Typical operating parameters are as follows:
 - .3 The crash attenuator vehicle shall be equipped with a crash attenuator that meets National Cooperative Highway Research Program, Report 350 Test Criterion. Test Level 3 for 100 km/hr. The vehicle shall follow behind the painting truck at a distance of 50 to 400 m.

- .4 The pilot vehicle shall be driven in the same travel lane as the paint machine, following it at a constant distance of approximately two kilometers.
- .5 The crash attenuator vehicle, pilot truck and the painting truck are to display the same message at all times. The painting truck and the companion vehicles shall be equipped with a two-way radio for communication and overhead revolving beacon with an amber lens of a minimum 180 mm high and 180 mm wide.

3.6 **PROTECTION OF COMPLETED WORK**

- .1 The Contractor shall protect all pavement markings until dry.

3.7 **CLEANING**

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

END OF SECTION

Part 1 General**1.1 REFERENCES**

- .1 Alberta Transportation Standard Specifications for Highway Construction (Edition 15, 2013)
 - .1 Specification 2.13 – Livestock Guards
 - .2 Specification 5.21 – Supply of Livestock Guards

1.2 MEASUREMENT PROCEDURES

- .1 Quantity of Livestock Guards for which payment will be made shall be the number of completed gates incorporated into the Work and accepted by the Departmental Representative and shall include all labour, equipment and material required to satisfactorily complete this item of work. Payment will be under **“Unit Price Item 10 – Supply and Install Livestock Guards.”**
- .2 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 – Mobilization / Demobilization”**, and no additional payment will be made.
- .3 Traffic Control required for this Work shall be incidental to **“Lump Sum Price Item – Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .4 All fencing removals, adjustments, supply and installations required adjacent to the Livestock Guards will be incidental to the work and will not be measured for payment.

1.3 QUALITY CONTROL

- .1 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer’s installation instructions and manufacturer’s warranty requirements.

Part 2 Products**2.1 LIVESTOCK GUARDS**

- .1 Supply of livestock guards shall be in accordance with the type, dimensions, and materials as shown in the Drawings and in accordance with AT Specifications for Highway Construction (Edition 15, 2013). Livestock guards shall be fabricated using new or used quality material as specified, be painted with one coat of oil alkyd type primer, and shall meet the requirements of the Canadian General Standards Board (CGSB) Spec. 1-GP-166M. Weathered steel, which does not require paint, is also acceptable.
- .2 Supply of fencing shall be in accordance with the type, dimensions and materials as shown in the Drawings.

Part 3 Execution**3.1 INSTALLATION**

- .1 Installation of livestock guards shall be in accordance with the type, dimensions, and materials as shown in the Drawings and in accordance with AT Specifications for Highway Construction (Edition 15, 2013), and in the Drawings.

3.2 **CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers in accordance with Section 01 74 11 – Cleaning.

END OF SECTION

Part 1 General**1.1 DESCRIPTION**

- .1 Materials and installation of standard manufactured catalogue items such as waste containers, benches, tables, campsite furnishings.
- .2 Constructed small structures made using standard building techniques.

1.2 SUBMITTALS

- .1 Submit samples of paint colours for all products and materials. Client to be provided a minimum of 7 days to review paint colours.
- .2 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Indicate dimensions, sizes, assembly, anchorage and installation details for each furnishing specified.
- .5 Provide maintenance data for care and cleaning of site furnishings for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Entry Kiosk:
 - .1 Measurement: Measurement shall be made by count of number installed on site.
 - .2 Payment: The price shall include shop drawings, supply and installation of all work and materials incidental thereto, with the exclusion of the signage element. Signage will be supplied and installed by Parks Canada staff. Payment will be under “**Unit Price Item 9 g) – Supply and Install Kiosk.**”

Part 2 Products**2.1 ENTRY KIOSK**

- .1 Acceptable Lumber Materials in Contact with Ground:
 - .1 Use Code: 4.1
 - .2 Product Group: D
 - .3 Lumber: SPF
 - .4 Preservative: CA
 - .5 Method: Incised
- .2 Acceptable Lumber Materials not in Contact with Ground:
 - .1 Use Code: 3.2
 - .2 Product Group: C
 - .3 Lumber: SPF
 - .4 Preservative: CA
 - .5 Method: Non incised
- .3 Metal Wall System:
 - .1 Prefinished Wall Sheet, exposed to exterior.
 - .1 Profile: Tradition 100-4, with I-style ribs at 400 mm spacing.

- .2 Panel: Z275 galvanized (zinc coated) sheet steel conforming to ASTM A653M structural quality Grade 230 having a nominal core thickness 0.76mm (0.030").
- .4 Clip System:
 - .1 Thermally responsive clips to be fabricated from a minimum of 0.91 mm (.036") steel, with minimum Z275 galvanized coating designed to accommodate expansion and contraction of the roof sheet.
 - .2 Wall Fasteners: As specified by manufacturer.
- .5 Snap Cap:
 - .1 Provide 25 mm high snap caps for full length of the panel and retained by panel clips, fabricated from Z275 galvanized (zinc coated) sheet steel conforming to ASTM A653M structural quality Grade 230 having a minimum nominal core thickness 0.61mm (0.024"). Finish and colour to match sheet.
- .6 Accessories:
 - .1 Closures: Foam and metal closures to suit profiles selected, to manufacturer's recommendations.
 - .2 Sealants: In accordance with manufacturer's recommendation.

Part 3 Execution

- .1 Install furnishing true, plumb, anchored, and firmly supported, as indicated.
- .2 Touch up damaged finishes to approval of Parks Representative.

END OF SECTION

Part 1 General**1.1 MATERIAL SUPPLIED BY DEPARTMENTAL REPRESENTATIVE**

- .1 Topsoil to be native organic soils stripped from the Contract work area.

1.2 MEASUREMENT AND PAYMENT PROCEDURES

- .1 Topsoil placement and finishing will be measured by the square metre as measured in its final position acceptably installed to a 100 mm depth within the areas indicated on the IFC 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 strip, stockpile or windrow, screen stripping material, prepare the finished grade, load, haul from stockpiles, place, fine grade, and prepare the topsoil materials for planting in accordance with the requirements of the Contract Documents and direction of the Departmental Representative. Payment will be made under **“Unit Price Item 6 – Topsoil Placement”**.
- .2 **Payment for stripping will be made in accordance with Section 31 24 13 - Roadway and Drainage Excavation.**
- .3 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.
- .4 Payment for testing of topsoil to be paid under **“Lump Sum Price Item 3 - Prime Cost Sum”**.
- .5 Payment for supply and application of soil amendments will be paid under **“Lump Sum Price Item 3 – Prime Cost Sum”**.
- .6 Traffic Control shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no additional payment will be made.
- .7 Mobilization and demobilization required for this Work shall be incidental to **“Lump Sum Price Item 1 Mobilization/ Demobilization”** and no additional payment will be made.

1.3 REFERENCES

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Canadian Council of Ministers of the Environment
 - .1 PN1340-[2005], Guidelines for Compost Quality.
- .3 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.4 DEFINITIONS

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

1.5 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.

1.6 QUALITY CONTROL

- .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 - Construction Progress Schedules.

1.7 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products**2.1 TOPSOIL**

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

2.2 SOIL AMENDMENTS

- .1 **The use of fertilizer will not be permitted within GNP.**

2.3 SOURCE QUALITY CONTROL

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

Part 3 Execution**3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL**

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

3.2 PREPARATION OF EXISTING GRADE

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

3.3 PLACING AND SPREADING OF TOPSOIL / PLANTING SOIL

- .1 Place topsoil after Departmental Representative has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 100 mm.
- .3 Spread topsoil as indicated to following minimum depths after settlement.
 - .1 100 mm for seeded areas.
- .4 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.4 FINISH GRADING

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage.
 - .1 Prepare loose friable bed by means of cultivation and subsequent raking.
 - .2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.
 - .3 Leave surfaces smooth, uniform and firm against deep footprinting.

3.5 **ACCEPTANCE**

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

3.6 **SURPLUS MATERIAL**

- .1 Dispose of materials, except topsoil not required, outside of the National Park.

END OF SECTION

Part 1 General**1.1 DESCRIPTION OF WORK**

- .1 The work covered by this specification shall consist of: hydraulically seeding in the areas within the limits of construction, or as designated by the Departmental Representative.

1.2 MEASUREMENT FOR PAYMENT

- .1 Hydraulic Seeding will be measured by the hectare acceptably installed and resulting in full grass growth, 75% germination and growth of specified seed mixture, within the dimensions indicated on the Drawings or as approved by the Departmental Representative. Payment for hydraulic 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 paid under “Unit Price Item 7 –Hydraulic 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 1 – Mobilization / Demobilization”, and no additional payment will be made.
- .5 Traffic Control required for this Work shall be incidental to “Lump Sum Price Item 2 – Traffic Accommodation” and no separate payment will be made to the Contractor.
- .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.

1.3 SUBMITTALS

- .1 Product Data
- .2 Submit product data in accordance with Section 01 33 00 – Submittal Procedures.
- .3 Provide product data for:
 - .1 Seed
 - .2 Mulch
 - .3 Tackifier/Soil Stabilizer
- .4 Submit in writing to Departmental Representative in accordance with Section 01 33 00 - Submittals prior to commencing work:
 - .1 Volume capacity of hydraulic seeder in litres.
 - .2 Amount of material to be used per tank based on volume.
 - .3 Number of tank loads required per hectare to apply specified slurry mixture per hectare.

1.4 QUALITY CONTROL

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

1.5 MATERIAL DELIVERY, HANDLING AND STORAGE

- .1 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.
- .2 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.

Part 2 Products**2.1 SEED**

- .1 Seed shall be Certified Canada No. 1 Grade quality seed varieties, in accordance with the Canadian Seeds Act and Regulations, and having a minimum purity of 97% and germination of 75%. Seed shall be free of impurities and disease.

The Contractors shall present a seed mix to the Departmental Representative for review and approval prior to use. A typical native seed mix that PCA has indicated would be a good growing mix for the reclamation of bare soil in GNP is as follows:

Content by weight:

20 - 25% Western Wheatgrass (*Pascopyrum (agropyron) smithii*)
15 - 20% June Grass (*Koeleria cristata*)
5 - 10% Sandberg's Bluegrass (*Poa sandbergii*)
4 - 5% Western Porcupine Grass (*Stipa curtisetia*)
10 - 15% Needle and Thread Grass (*Stipa comata*)
25 - 46% Blue Grama Grass (*Bouteloua gracilis*)

- .2 Seeding rate to be 35 kg/ha for mechanical or broadcast seeding and 100 kg/ha for hydraulic seeding.
- .3 Seed tags to be retained and given to the Departmental Representative.
- .4 Seed mix shall be free of Scentless Chamomile, Downy Brome and Canada Thistle.

2.2 FERTILIZER

- .1 **The use of fertilizer will not be permitted within GNP.**

2.3 WATER

- .1 Water shall be free of impurities that would inhibit germination and growth.

2.4 SOIL STABILIZER/TACKIFIER

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

2.5 MULCH

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

Part 3 Execution**3.1 GENERAL**

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

3.2 HYDRAULIC SEEDING

- .1 The following application rates are the minimum required for hydraulic seeding:
 - .6 Parks Canada Blend Seed: 100 kg/hectare
 - .7 Mulch: 500 kg/hectare
 - .8 Soil Stabilizer/tackifier: Soil Master WR 1300 L/hectare
 - .9 Water: 30,000 L minimum
- .2 The Contractor shall measure quantities of materials by weight, or weight calibrated Contractor to calculate and submit applicable area of coverage per tank load of slurry in accordance with Section 01 33 00 – Submittal Procedures
- .3 Contractor shall physically stake and identify limits of tank coverage prior to seeding to the satisfaction of Departmental Representative.

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

3.3 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Establishment period is a minimum of four months of continuous growing season. Growing season shall not to be divided by winter.
- .2 The Contractor shall repair and reseed dead or bare spots, as directed in these specifications to Departmental Representative's satisfaction, to allow establishment of seed prior to acceptance. In the case of erosion, the Contractor shall be compensated at the specified unit rates for reseeding.
- .3 For areas of poor seed germination and growth, as determined by the Departmental Representative, the soil shall be scarified or re-cultivated as directed by the Departmental Representative, and seeding and fertilizing undertaken as specified. This work is incidental to the contract.

3.4 CONSTRUCTION COMPLETION ACCEPTANCE

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

3.5 MAINTENANCE DURING WARRANTY PERIOD

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

3.6 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers in accordance with Section 01 74 11 – Cleaning.

END OF SECTION

Part 1 General**1.1 MEASUREMENT**

- .1 Supply and installation of perforated sub-drain culverts shall be measured per linear meter of sub-drain supplied and installed and shall include all labour, materials and equipment required to complete the work to the satisfaction of the Departmental Representative. Payment for Sub-Drain Supply and Installation will be made under **“Unit Price Item 8a – Pipe Culverts – Supply and Install Perforated Drain Pipes”**.
- .2 Supply and installation of corrugated steel pipe (CSP) culverts shall be measured per linear meter of culvert supplied and installed and shall include all labour, materials and equipment required to complete the work to the satisfaction of the Departmental Representative. Payment for CSP Culvert Supply and Installation will be made under **“Unit Price Item 8b – Pipe Culverts – Supply and Install 600mm Dia. CSP”**.
- .3 Excavation shall be paid for under **“Unit Price Item 2 – Roadway Excavation and Drainage”**.
- .4 Back fill material for sub-drains shall be paid under **“Unit Price Item 1d – Granular Materials – MHI Type 116 Granular Filter Material”**. Refer to Section 32 11 24 for payment details.
- .5 Back fill material for CSP culverts shall be paid under **“Unit Price Item 1c – Granular Materials – MHI Type 115 Granular Filter Material”**. Refer to Section 32 11 24 for payment details.
- .6 Native material excavated during culvert removal (if suitable) shall be used for culvert backfill above the pipe zone. Payment for placement, compaction, and conditioning of material by wetting or drying shall be considered incidental to **“Unit Price Item 2 – Roadway Excavation and Drainage”**.
- .7 Supply and installation of Riprap shall be measured and paid for under **“Lump Sum Price Item 3 – Prime Cost Sum”**.
- .8 Traffic Control during the survey, layout and construction of the culverts shall be incidental to **“Lump Sum Price Item 2 – Traffic Accommodation”** and no separate payment will be made to the Contractor.
- .9 Mobilization and demobilization shall be incidental to the work and no additional payment will be made.
- .10 Environmental mitigations required in accordance with Section 01 35 43 – Environmental Procedures, for the Work in this Section shall be incidental to the contract and no separate payment will be made to the Contractor.
- .11 Culvert installation must be coordinated with embankment, pavement and associated road construction activities. No payment will be made for re-excavation of embankment material required to install culverts.
- .12 No separate measurement will be made for couplings, fittings or end sections.

1.2 REFERENCES

- .1 CSA G401 01, Corrugated Steel Pipe Products.
- .2 CSA-B182.8-02, Profile Polyethylene Storm Sewer and Drainage Pipe and Fittings.
- .3 Saskatchewan Ministry of Highways Standard Specifications (latest edition).

1.3 SUBMITTALS

- .1 In accordance with 01 33 00 – Submittal Procedures.
 - .1 Submit manufacturer's test data and certification.
 - .2 Provisions for staged construction shall be shown in the shop drawings, including any temporary support required.
 - .3 Certification to be marked on pipe.

1.4 STORAGE AND HANDLING

- .1 In accordance with 01 61 00 Common Product Requirements.
 - .1 Handle and store pipe products in a manner to avoid damage, alteration, deterioration and soiling.
 - .2 Store pipes on a clean and flat surface.
 - .3 Where the material supplied is damaged, the Contractor shall immediately separate nested sections of the plate or pipe to facilitate more detailed inspection. Culvert material designated by the Departmental Representative as unacceptable, due to damage or failure to meet specified requirements, shall be immediately repaired or replaced by the Contractor.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 43 - Environmental Procedures.
 - .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .2 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
 - .3 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products**2.1 PERFORATED DRAIN PIPE**

- .1 Perforated Drain Pipe to be 150mm Polypipe Perforated pipe as per drawings or Nilex Multiflow or approved equivalent.

2.2 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.
- .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 S6-06.
- .7 Design Live Load CL-800.

2.3 GRANULAR BEDDING AND BACKFILL

- .1 The Contractor shall supply all granular material. No Parks Canada Pits or Owner furnished items are available or provided for the works.

2.4 RIPRAP

- .1 Riprap material shall be in accordance with Saskatchewan MHI Standard Specification 6000 – Specification for Hand Placed, Grouted, and Random Rip-Rap.

Part 3 Execution**3.1 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 3 m of the existing culvert end shall be removed as directed by the Departmental Representative. Thoroughly clean and flush the existing pipe, excavating 1 metre back from present exposed end, cutting off damaged sections of exposed end and painting remaining end with a high zinc dust oxide paint and supplying and placing a joint sealant.

3.2 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 95% maximum 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.

3.3 LAYING CORRUGATED STEEL PIPE CULVERTS

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

3.4 JOINTS: CORRUGATED STEEL CULVERTS

- .1 Match corrugations of coupler with pipe sections before tightening.
 - .1 Insert and tighten bolts.
 - .2 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.

- .3 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.

3.5 BACKFILLING

- .1 Backfill around and over culverts as indicated 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% maximum 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 scour protection at the culvert ends as shown on the Drawings.

3.6 TRENCHING EXISTING PAVEMENT STRUCTURES

- .1 Where trenches are cut into existing pavement structures, backfill will match the existing materials and thickness.

3.7 CULVERT EXTENSIONS

- .1 Extensions to existing culverts shall be as noted on drawings.

3.8 CULVERT/STRUCTURE REMOVAL

- .1 Culvert removal shall be as indicated on Drawings or as directed by the Departmental Representative and shall include disposal of sections to a suitable disposal facility located outside of the National Park.

3.9 PERFORATED PIPE INSTALL

- .1 Install as per manufacturers direction and as per the drawings.

END OF SECTION