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Engineering Services

# TERMS OF REFERENCE

## Road Improvement Project, East Block Grasslands National Park (GNP)

For;  
Parks Canada Agency(PCA)  
Site Location:  
Grasslands National Park  
Saskatchewan

PWGSC Project # R.075061.001

Version 3 – June 11, 2015



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## 1 PROJECT DESCRIPTION

### 1.1 GENERAL

#### 1.1.1 SERVICES

- .1 Public Works and Government Services Canada (PWGSC) requires the services of a Civil engineering firm experienced in highway, hydraulic, hydrologic, structural engineering, geotechnical and paving materials design and construction, acting in the capacity of the coordinating engineer of record, together with a multi-disciplinary team of sub-consultants for the provision of service required for this project.

#### 1.1.2 THE PWGSC GENERAL PROCEDURES AND STANDARDS DOCUMENT (GP&S)

- .1 The Terms of Reference (TOR) document must be used in conjunction with the GP&S, as the two documents are complimentary.
- .2 The TOR describes project-specific requirements, services and deliverables while the GP&S document outlines with minimum standards and procedures common to all projects.
- .3 In the case of a conflict between the two documents, the requirements of the TOR override the GP&S Document.

#### 1.1.3 PROJECT INFORMATION

Project Information	
Project Title:	Road Improvement Project
Project Location:	East Blocks of the Grasslands National Park
User Department:	Parks Canada Agency (PCA)
User Department Representative:	Michael Caswell, Asset Manager III
PWGSC Project Manager	Mustak Sarwer
PWGSC Project Number:	R.075061.001
PWGSC Contracting Officer:	Hank Bartkiewicz

### 1.2 BACKGROUND INFORMATION

#### 1.2.1 NEED & GOALS

- .1 PCA wishes to establish a “Million Dollar View Parkway” within the East Block of the relatively new Grasslands National Park and upgrade other existing roads within the East Block of GNP and Public Works Government Services Canada (PWGSC) requires the services of a Consultant to prepare design options with cost estimates, complete the detailed design of the preferred option, prepare a construction tender package with Class A Cost Estimate and provide non-Resident and Resident engineering services during construction.
  - .1 See Figure 1 for general location of the two blocks to GNP
  - .2 See Figure 3 for General Corridor for the Million Dollar View Parkway
  - .3 See Figure 4 for the South Portion of the Proposed Parkway and potential location of Viewpoints and split one way sections of the Parkway;
  - .4 See Figure 5 for samples of the conceptual layout of the Viewpoints.
  - .5 See attached Key Plan showing the locations of the East Block of GNP in Southern Saskatchewan.



### 1.2.2 USER DEPARTMENT

- .1 The User Department referred to throughout the TOR is PCA (Parks Canada Agency).
- .2 PCA's Mission
  - .1 To protect and present nationally significant examples of Canada's natural and cultural heritage, and foster Public understanding, appreciation and enjoyment in ways that ensure the ecological and commemorate integrity of these places for present and future generations.

### 1.2.3 EXISTING CONDITIONS

- .1 The main characteristics of the site are:
  - .1 Rolling terrain with some brush cover.
  - .2 In the recent past the land had been fenced off and mainly utilized for cattle grazing.
- .2 AADT is estimated to be in the 200 to 250 vpd range.
- .3 The "Million Dollar View" Parkway will be closed to the Public during the Winter months.
- .4 The other roads open to the Public year around.
- .5 Maximum Size/Type of Vehicle using the roadways:
  - .1 Parkway will be RV's and Tour buses.
  - .2 Cattle liners and RV's use the other roads.

### 1.2.4 CONSTRAINTS AND CHALLENGES

- .1 The Consultant will be required to become familiar with the project site and obtain local information as required.
- .2 As the work is in a National Park all care and attention must be made to minimize impact on the local flora, fauna and First Nations cultural resources.
- .3 All Work must comply with good Surveying and Design Practises and Standards for Roadways.
- .4 All Work must comply with good Geotechnical and Materials Engineering Practises and Standards.
- .5 All Work must comply with good Hydrologic and Hydraulic Engineering Practises and Standards.
- .6 All site visits must be arranged through the Departmental Representative.
- .7 The construction on the project site will be performed during the full operation of the facilities. Project phasing must be planned to ensure that disruption to the daily operation of the facilities is kept to a minimum and delays to the Travelling Public kept to a minimum.
- .8 Threat to the Public Safety kept to a minimum.
- .9 Environmental conditions must be kept under control during all phases of the work.
- .10 The project scope must be tailored to meet the User Department's budget and Schedule. Diligent cost estimating, scheduling and cost control is required. Time is of an essence.

### 1.2.5 PROJECT DELIVERY APPROACH

- .1 This project will use a design-bid-build approach.



## **1.3 SUMMARY OF DESIGN WORK**

### **1.3.1 GENERAL**

- .1 The design intent of the project is to provide roadways and associated features that:
  - .1 Are effective and efficient;
  - .2 Meets current Codes, Standards and guidelines;
  - .3 Optimizes performance of the system;
  - .4 Are designed for ease of maintenance;
  - .5 Are aesthetically pleasing and harmonious with its environment;
  - .6 Minimize long-term maintenance costs through provision of suitable corrosion prevention and durability features;
  - .7 Use industry proven materials and avoidance of experimental materials; and
  - .8 Is cost effective considering both initial cost and operation & maintenance costs over a life cycle of 25 years.

### **1.3.2 ENVIRONMENTAL/SUSTAINABLE DEVELOPMENT**

- .1 Sustainability
  - .1 Minimize impact on terrain, vegetation and cultural features.
  - .2 Maximize the salvage and re-use of existing materials
  - .3 Reduce existing instances of erosion and disturbance of important habitats like wetlands;
  - .4 Ensure measures to capture and/or slow run off from the roadway (particularly salt and sand) into stream and lakes exist or are created.
  - .5 Reduce the encroachment of non-native species along the roadway.
  - .6 Develop a reasoned approach to clearing or rehabilitating vegetation as appropriate to minimize the need for salt application, improve sight lines.
  - .7 Reduce potential for wildlife collisions and conserve habitat where possible.
  - .8 Develop opportunities for improving stream flow (culvert improvement and/or replacement).
- .2 Environmental Assessment
  - .1 PCA has established Critical Habitat areas and Environmental Protection Order Areas within GNP.
  - .2 Any proposed waste/unsuitable disposal areas within the National Park must be approved by PCA.
  - .3 Any proposed borrow sources for embankment material must be approved by PCA.
  - .4 No burying or burning of brush is permitted within the National Park.
  - .5 The Consultant is to complete an Environmental Impact Analysis of any proposed design options and identify appropriate mitigation measures with Cost estimates.

## **1.4 OBJECTIVES**

### **1.4.1 GENERAL GOALS**

- .1 Achieve an efficient, enduring, sustainable and economically viable project, appropriate for its use and place, through leadership and integration of innovation and technical excellence in the course of the life cycle for the new construction.  
Meet (at minimum) the following design objectives:



- .1 Respect the natural environment and the historic context of the site;
- .2 Meet or exceed the requirements of current Codes, Standards and guidelines.
- .3 Fully integrate all components and systems including civil, transportation, geotechnical, and structural design,
- .4 Provide an integrated design and construction process involving:
  - .1 Interdisciplinary collaboration, including all stakeholders as may be identified, design professionals, constructors and authorities having jurisdiction.
  - .2 The agreed upon design principles and decision making protocols.
- .5 Consider the User Department's changing needs and future uses to create solutions that are flexible and that are able to evolve over time;
- .6 Design for ease of maintenance with systems that can be accessed and easily repaired and/or replaced during the building's life cycle;
- .7 Ensure good quality design to generate savings in subsequent operation and maintenance costs;
- .8 Design to resilience to severe weather;

## **1.5 SUMMARY OF SERVICES AND QUALIFICATIONS**

### **1.5.1 GENERAL**

- .1 Goals – Surveys
  - .1 A LIDAR (Light Detection and Ranging) survey of a general corridor for the “Million Dollar View” parkway will be performed by Others and the information will be provided to the Consultant in digital format (ASCII and ACAD) for use in preparing design options for the Parkway.
  - .2 The Consultant is to conduct additional ground surveys based on the preferred roadway centreline option to ensure more accurate x-sections and quantity take-offs can be created during the Detailed Design Phase and preparation of tender documents and Class A Cost Estimate.
  - .3 Enough ground points are to be surveyed such that a Digital Terrain Model (DTM) can be created with appropriate breaklines and from there accurate one (1) m contour interval drawing(s) can be produced with existing drainage patterns clearly defined as well as the existing roadtop and any other manmade features such as signs, utilities, culverts, bridges, retaining walls etc.
- .2 Goals – Roadway and Geotechnical Design Intent and Performance.
  - .1 The Design intent of the Project is to provide a section of roadway that:
    - .1 Meet current Codes, standards and guidelines.
    - .2 Has minimum movement/cracking or other distresses in the road.
    - .3 Have minimum maintenance/repair effort and cost requirements for a 25 year design life.
    - .4 Traffic can safely and efficiently travel through this section of roadway.
    - .5 Positive drainage is provided
    - .6 Limits the impact on the environment and is aesthetically pleasing
    - .7 Use industry proven materials and avoid experimental materials or products.
- .3 Goals – Bridge and Bridge Culvert Design
  - .1 Design intent of these structures:



- .1 Meet the National Bridge Design Code.
- .2 Adequate flow capacity provided for 1/100 year flood event.
- .3 Minimum design life for structure is 75 years.
- .4 Minimum repair/maintenance required throughout design life of the structure(s).
- .5 Only industry proven materials or products are used.
- .4 Sustainability
  - .1 Minimize impact on terrain, vegetation and waterways.
  - .2 Maximize the salvage and re-use of existing materials.
- .5 Environmental Assessment
  - .1 Prior to clearing any brush and creating access trails for surveys and/or Geotechnical testing equipment, approval from the PCA is required.
  - .2 Any proposed borrow or waste/surplus disposal areas within the National Park must be approved by PCA.

### 1.5.2 CONSULTANT TEAM

- .1 The prime consultant will provide a full consulting team including the following consultant services and specialties:
  - .1 Expertise and current relevant experience in:
    - .1 Topographic Survey Specialist
    - .2 Geotechnical Engineer
    - .3 Roadway Geometric Design Specialist
    - .4 Roadway Geometric Construction Specialist
    - .5 Paving Design Specialist
    - .6 Hydrology and Hydraulic Engineer
    - .7 Cost Estimator
    - .8 Environmental Specialist
    - .9 Landscape Architect

### 1.5.3 ENGINEERING WORK

- .1 Engineering Services will include:
  - .1 Review of overall terrain conditions through air photo interpretation and review of the LIDAR survey information.
  - .2 Review of existing drawings and reports; Geotechnical and Climatic conditions
  - .3 Site visits to familiarize the Consultant with all conditions of the site that may impact the Survey work and the Geotechnical field investigation and design recommendations.
  - .4 Conduct a geotechnical field investigation program, collect representative soil samples and perform laboratory testing of the samples to determine physical and engineering properties of the in situ soils. Install any required Geotechnical instrumentation in the field.
  - .5 Survey all drilled boreholes and test pit locations and Geotechnical Instrumentation.
  - .6 Complete ground surveys of the preferred Parkway centreline option chosen and provide survey data in ASCII format with descriptor lists. All survey points to



have a Northing, Easting and Geodetic Elevation with an appropriate Descriptor. Surveys to UTM – NAD 83 coordinates.

- .7 Provide in ACAD format a 1:1000 Scale Drawing(s) showing 1m contours, drainage patterns, roadway ditch, shoulders and centreline, plus any other manmade features.
- .8 Provide a report on the Geotechnical Investigation and make recommendations.
- .9 Prepare a Preliminary Design Report with recommended options, provide Class C cost estimate for all options.
- .10 Upon acceptance of a preferred option, the Consultant to conduct ground surveys, finalize the design, update cost estimates to Class A and provide a Final Design Development Report.
- .11 Upon acceptance of the Final Design Development Report prepare a tender package, assist in the tendering process and upon award of the Construction contract provide non-resident and resident on site engineering support services.

## 1.6 SCHEDULE

### 1.6.1 GENERAL

- .1 The project is to be delivered, ready for acceptance in accordance with the project milestones identified below.
- .2 Completion dates shown are relative to an assumed start date of Sep 03, 2015. Prepare a Project Schedule, in accordance with the milestone list.

### 1.6.2 ANTICIPATED MILESTONE DATES

Project Phase	Milestone Completion Date
Consultant Contract award	Sep 03, 2015
Conduct site visit, collect and review existing information, prepare a proposed Geotechnical investigation program.	Within two weeks of award.
Perform Geotechnical Investigation field work, laboratory testing and provide Draft Geotechnical Report with Recommendations.	Within six weeks of award
Preliminary Engineering Design Report Phase	Within nine weeks of award
Draft Detailed Design Report Package	Within fifteen weeks of award
Final Detailed Design Report Package	Within Eighteen weeks of award
50% Tender Document Submission	Within twenty-one weeks of award
99% Tender Document Submission	Within twenty-four weeks of award
Final (100%) Tender Document Submission	Within twenty-seven weeks of award
RPC Tender Processing	Feb 2016





Tender Closing	March 2016
Tender Award	March, 2016
Construction Start	May 2016
Substantial Completion	Oct 2016
Warranty Inspection	August 2017
Final Completion (Final Inspection and Acceptance upon completion of any deficiencies and submission of all deliverables)	Oct 2017
Project Closeout	Nov 2017

## 1.7 COST

### 1.7.1 CONSTRUCTION BUDGET

- .1 The construction estimate does not include Project Management fees, administration costs, consultant fees, Risk Allowance, Escalation or GST and is in 'Budget-Year (Current)' dollars.
- .2 The construction cost is estimated to be \$ 5,300,000.

## 1.8 EXISTING DOCUMENTATION

### 1.8.1 AVAILABLE FOR THE CONSULTANT

- .1 Copies of all pertinent documentation will be made available to the Consultant.
- .2 LIDAR survey information by Others will be provided as it becomes available to PWGSC.
- .3 Contour drawings in ACAD of other areas surveyed previously for potential viewpoints within the "Million Dollar View" Parkway corridor.
- .4 List of PCA survey monuments in UTM co-ordinates.
- .5 "An Archaeological Assessment of Day Use Development on the Dawson Property (East Block), Grasslands National Park", Sharon Thomson, November 2008, Parks Canada, Winnipeg
- .6 "Emergency Order for the Protection of the Greater Sage-Grouse", Published by the Minister of Justice, September 29, 2014.

### 1.8.2 DISCLAIMER

- .1 Reference information will be available in the language in which it is written.
- .2 The documentation may be unreliable and is offered, "as is" for the information of the Consultant.

## 1.9 CODES, ACTS, STANDARDS, REGULATIONS

- .1 A listing of Codes, Acts, Standards and Guidelines potentially applicable to this project are contained in the GP&S Document.
- .2 The Authorities Having Jurisdiction (AHJ) on this project are:
  - .1 The local AHJs;
  - .2 Canada Labour Canada;
  - .3 Treasury Board of Canada
  - .4 Canada Occupational Health and Safety Regulations



- .5 The National Parks Act
- .6 Canadian Environmental Assessment Act 2012
- .7 Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads
- .8 The Current Provincial Departmental of Infrastructure and Transportation Design Standards.
- .9 National Bridge Code for Canada
- .10 American Society for Testing and Materials (ASTM).
- .11 In the event of a conflict between codes, Acts and Standards, the more stringent shall take precedence.
- .3 The Consultant must identify, analyze and design the project in accordance with the requirements of all AHJs and all applicable Codes, Acts, Standards and Guidelines and Legislation.
  - .1 The applicability of various Codes, Acts, Standards and Guidelines listed in the GP&S document arise out of direct and indirect references in documents which apply to Federal buildings, such as the Canada Labour Code.
  - .2 The consultant team must be fully versed with the legislation and requirements that are unique to Federal Government infrastructure in Canada.
  - .3 The consultant team must be fully versed with the legislation and requirements that are unique to Federal Government projects tendered through Public Works & Government Services Canada.

## 2 REQUIRED SERVICES

### 2.1 GENERAL REQUIREMENTS

#### 2.1.1 SERVICES

- .1 Preliminary Engineering Design Service including field surveys, geotechnical investigation, hydrologic\hydraulic studies, and environmental studies; to provide a Preliminary Engineering Design Report:
- .2 Detailed Design Development Service
- .3 Provide construction tender documents for review at 50% , 99% and 100% completion stages:
- .4 Tender Services - to assist the Departmental Representative:
- .5 Non-resident Construction Support Service:
- .6 Resident Construction Service:
- .7 Commissioning Service:
- .8 Post Construction Service.

### 2.2 PROJECT REVIEW AND APPROVAL

#### 2.2.1 GENERAL

- .1 Comply with all applicable laws and regulatory requirements as required by the General Conditions of the Contract.

#### 2.2.2 FEDERAL GOVERNMENT

- .1 The federal authorities having jurisdiction over this project are:
  - .1 HRSDC for fire prevention engineering services and life safety;



- .2 User Department for project program review;
- .3 PWGSC; and

### **2.2.3 REVIEWS, APPROVALS AND PRESENTATIONS**

- .1 Each submission at each stage of the project is subject to reviews by, the Departmental Representative, the User Department site personnel, the User Department technical experts and the PWGSC Architectural and Engineering Centre of Expertise (A&ECOE) group.
- .2 For the A&ECOE review at each stage:
  - .1 Review submissions to be posted on Buzzsaw in PDF format;
  - .2 Expected turnaround time for reviews is two (2) weeks;
  - .3 The consultant team will receive review comments in the form of an editable MS Word document or MS Excel document;
  - .4 The consultant shall provide a single coordinated written response to the comments.

## **2.3 PRELIMINARY ENGINEERING DESIGN SERVICE**

### **2.3.1 GENERAL**

- .1 The Consultant Team will review and analyze all available project information, consult with the Departmental and User Department Representatives, collect additional data and deliver a comprehensive Preliminary Engineering Design Report.
- .2 The Preliminary Engineering Design Report will consolidate the Scope of the Preliminary Engineering activities , provide recommendations, Class C construction cost estimate(s), updated overall project schedule to the completion of 99% tender document stage and will be utilized as the benchmark project control document to monitor progress of the project.

### **2.3.2 SCOPE AND ACTIVITIES**

- .1 The Consultant Team will review and analyze all available existing material related to the project.
- .2 Review and analyse the project requirements identified in the ToR including any amendments.
- .3 Identify and verify all Authorities Having Jurisdiction (AHJ) over the codes, regulations and standards that apply to the project especially the PCA concerns to minimize impact on terrain, waterways, clearing of trees and brush and clean-up of any survey stakes/markers/test pits, etc.
- .4 Identify and analyze all Codes, Acts, Standards and Guidelines that apply to this project.
- .5 Visit the site and consult with Departmental Representative and User Department Representatives.
- .6 Identify all additional information that will be needed to deliver the project
- .7 Prepare and submit a "Geotechnical Field Investigation Plan" outlining proposed locations of drill holes and/or test pits, piezometers, Slope Indicators, access trail(s), signage/traffic safety plan, method of clean-up, proposed schedule of work and type of equipment .
- .8 Geotechnical Investigation and Recommendations:
  - .1 GENERAL:



- .1 The objective of the Geotechnical Investigation is to collect enough information on the in situ material within the study corridor to determine the physical and engineering properties of the various materials encountered and make recommendations.
- .2 The Consultant must obtain written authorization/approval of the "Geotechnical Field Investigation Plan" from the Departmental Representative before proceeding with Field work and subsequent Laboratory testing of samples collected.
- .2 Field Work and Laboratory Testing
  - .1 The Scope of Work listed below is not considered exhaustive and modifications will be considered. All revisions or modifications to the Scope of Work must be justified by the Proponent and approved by PWGSC prior to implementing.
  - .2 Study Corridor for Geotechnical – to be determined in consultation with PCA and PWGSC after a site visit to the GNP by the Consultant and its geotechnical, roadway design specialists, but it will be within the corridor identified for the LIDAR survey by Others. See attached Figure 1
  - .3 Test Pitting and sampling is required to determine the physical and engineering properties of the in situ soils. Consultant to propose the extent and type of testing but normally test pits are excavated and sampled every 200 to 300m of a proposed alignment or at any obvious change in soil types. Any potential borrow sources should be tested at this time as well. All test pits shall be logged on site with emphasis on recording soil conditions and depth of groundwater encountered. Disturbed samples representative of in-situ soil gradation shall be taken at each significant change in soil strata or otherwise at one (1) m intervals. Samples shall be packaged and stored so that moisture content determinations of in-situ conditions can be undertaken. Representative Colour Digital pictures of each test pit and the material excavated are to be taken. Upon completion of sampling all test pits are to immediately filled back in, no spoil piles are to be left.
  - .4 Piezometers and Slope Indicators – Consultant to recommend location and type if any are required. Ensure seal of standpipe at surface is secure to prevent surface water from flowing into the hole and unauthorized access is prevented.
  - .5 The Geotechnical Consultant is to record the location of all test holes in UMT – NAD 83 coordinates and the geodetic elevation of the existing ground surface at the top of the test holes. Wooden markers/lath shall be left in the field indicating the location of the test pits and the test pit number. No separate payment will be made for this work, but will be considered incidental to other pay items.
  - .6 Excavators are to be capable of reaching to a 4m depth and equipped to cause minimum damage to the existing terrain.
  - .7 A qualified Geotechnical Technician or Engineer shall be provided to supervise investigation; supervise drilling and/or test pitting and collect samples; ensure that detailed logs of drilling and/or pitting and field testing are prepared; and ensure that all test samples are tagged & bagged correctly; pictures taken. Geotechnical Person shall advise PWGSC representative of



- any potential concerns that may be identified from drilling and/or test pitting which may require additional holes and/or sampling.
- .8 Storage, identification, transport and subsequent Laboratory testing of samples shall be carried out. Laboratory Testing shall consist of visual laboratory identification, determination of moisture content, sieve analysis, and Atterberg Limits. An enough Laboratory testing shall be performed to confirm visual field classification and likely strengthens of the soil type(s)/horizons encountered and potential for corrosion.
  - .9 Payment for Laboratory Testing will be for each test performed. Storage and transportation costs considered incidental.
- .3 Geotechnical Reporting and Recommendations
- .1 Provide a Geotechnical Report detailing the investigation methodology, its findings and recommendations for roadway and culverts.
  - .2 Note the Geotechnical Investigation Report will be made available to future construction Contractors to assist them in preparing a tender for work.
  - .3 Geotechnical Investigation Report with Recommendations shall as a minimum contain:
    - .1 Drill hole and/or test pit logs, laboratory testing results, plan of test hole/pits /piezometers/slope indicators locations
    - .2 A separate section if required to cover analysis and recommendations to improve stability of cut and fill slopes, control groundwater, prevent excessive settlement of embankments, structures within the study corridor.
    - .3 A section discussing the suitability of existing material for roadway construction, excavation methodology, rip ability of rock if any, shrinkage/swelling factors, frost heave potential, recommended Asphaltic Concrete pavement structure including crushed gravels for a road top with a 25 year design life, potential for corrosion of steel culverts and any other issues relating to highway construction.
- .9 Environmental Impact Analysis and Proposed Mitigation Methods
- .1 The Consultant is to complete an Environmental Impact Analysis of any proposed design options and identify appropriate mitigation measures with Cost estimates.
- .10 Preliminary Engineering Design Report.
- .1 For Parkway:
    - .1 Based on the survey information collected, the Geotechnical Investigation Report, Environmental Analysis and the designated standards for the Parkway; the Consultant to submit and have approved a draft Preliminary Engineering Design Report showing the proposed highway alignment, location/arrangement of major structures, vertical alignment, confirming design standards/elements, typical design template used to calculate preliminary quantities, options if any, preliminary construction cost estimates (Class C). If options presented recommend a preferred option with engineering reasoning for the chose. Identify any additional studies/data collection that may be required to complete the detailed design.
  - .2 For Road Assessment of other Existing Roads



- .1 Provide a brief description with a plan showing the roads inspected and highlight/describe any areas where there are issues with:
  - .1 Soft/unstable roadbed and/or backslopes
  - .2 Insufficient roadtop width, poor sight lines, oversteep sideslopes, horizontal curves too tight, inadequate drainage, etc.
  - .3 Existing culverts or other drainage structures in poor condition.
- .2 Provide recommendations with Class C cost estimates to address the issues identified.
- .3 Provide a "Survey Action Plan" to conduct ground surveys along the preferred option alignment for the Parkway and for any areas if necessary to complete design of recommendations to rectify the issues identified with other Existing Roads.
- .4 Provide an updated overall Project Schedule.

### 2.3.3 DELIVERABLES

- .1 "Geotechnical Field Investigation Plan":
  - .1 The proposed "Geotechnical Field Investigation Plan" to contain:
    - .1 Drawing showing proposed location of drill holes and/or test pits, piezometers, Slope Indicators, and access trails.
    - .2 Necessary sections to document and present the items listed in the Scope and Activities section,
    - .3 Updated Overall Project schedule.
  - .2 Final "Geotechnical Field Investigation Plan" with a written response to any comments on Draft.
- .2 Deliverables – Geotechnical Report
  - .1 An ACAD Drawing showing the location of all test holes drilled and the placement of the Slope Indicators and Piezometers.
  - .2 A detailed soils log sheets shall be prepared for each test hole and information and data provided shall be descriptive or factual in nature i.e. "auger refusal", "cohesionless", "rock", "moisture content above Plastic Limit".
    - .1 Each individual soils log sheet shall be provided in a separate electronic ACAD drawing file format or individual DXF format drawing files.
  - .2 Geotechnical Investigations and Recommendations Report.
    - .1 Report content as per the GP&S document.
    - .2 Necessary sections to document and present the items listed in the "Scope and Activities" section above.
    - .3 Report to be provided in electronic PDF format with all pictures in colour. In addition, the Consultant is to provide six (6) print copies of the report. Each individual soils log sheet shall be provided in a spate electronic ACAD drawing file format or individual DXF format drawing files..
- .3 Deliverables – Environmental Impact Analysis and Proposed Mitigation Methods
  - .1 A Draft Environmental Impact Analysis and Proposed Mitigation Methods report that will contain at a minimum:
    - .1 An Executive Summary;





- .2 Necessary sections to document and present the items listed in the Scope and Activities section;
  - .3 Class C cost estimates for Mitigation methods.
- .2 Final Environmental Impact Analysis and Proposed Mitigation Methods report with a written response to any comments on Draft.
- .3 Draft and Final Reports are to be provided in PDF electronic format and all pictures in colour. In addition, the Consultant is to provide six (6) print copies of the report.
- .4 Deliverables – Preliminary Engineering Design Report
  - .1 A Draft Preliminary Engineering Report that will contain at a minimum:
    - .1 An Executive Summary;
    - .2 Necessary sections to document and present the items listed in the Scope and Activities section;
    - .3 Class C cost estimate; and
    - .4 An Updated schedule.
  - .2 Final Preliminary Engineering Report with a written response to comments.
  - .3 Draft and Final Reports are to be provided in PDF electronic format and all pictures in colour. In addition, the Consultant is to provide six (6) print copies of the report.
- .5 Deliverables – “Survey Action Plan”
  - .1 Proposed “Survey Action Plan” to conduct a ground survey along the preferred option alignment for the Parkway and for any areas if necessary to complete design of recommendations to rectify the issues identified with other Existing Roads. Survey Action Plan to contain at a minimum:
    - .1 Drawing showing proposed limits of surveys, minor clearing areas if any and proposed access points.
    - .2 Necessary sections to document and present the items listed in the Scope and Activities section.
    - .3 Updated Overall Project schedule
  - .2 Final “Survey Action Plan” with a written response to any comments on Draft.

## **2.4 DETAILED DESIGN DEVELOPMENT SERVICE**

### **2.4.1 GENERAL**

- .1 The object of this phase is to further develop the design option selected for refinement at the completion of the Preliminary Engineering Design Report phase.
- .2 The Consultant to prepare Design Development documents, which consist of drawings and other documents to describe the scope, quality, quantities and cost of the project in sufficient detail to facilitate design approval, confirm code compliance and meets User Requirements and to obtain authorization to prepare the construction documents.
- .3 The Consultant must obtain written authorization from the Departmental Representative before proceeding with developing the Construction Documents.

### **2.4.2 SCOPE AND ACTIVITIES**

- .1 Upon approval of a “Survey Action Plan” complete ground surveys.
  - .1 Ground Surveys and Post Processing:



.1 GENERAL:

- .1 The objective for the Topographic Survey is to collect enough ground elevation to accurately describe the lay of the land, drainage patterns and location/type of any man-made features within the vicinity of the preferred alignment option for the Parkway and other areas of interest. This information is to be used to determine practical/effective location for roadway(s) and associated features.
- .2 The Consultant must obtain written authorization/approval of the "Survey Action Plan" from the Departmental Representative before proceeding with Field Work and subsequent Activities.

.2 Surveys:

- .1 Ground points are to be accurately surveyed and described in the identified Study Corridor such that a DTM can be created with appropriate breaklines and x-sections created at 20m station intervals along any proposed centreline.
- .2 Conduct a digital topographical survey including all utilities using Total Station or GPS units as follows
- .3 Control is to be produced using the UTM grid system and geodetic mean sea level datum for all survey positioning. The horizontal datum is to be NAD 83. Tie in Total Station survey with a minimum of three (3) geodetic monuments and clearly indicate them on survey drawings. Provide ASCII format file containing information in the following order for each survey point: Point number, Northing, Easting, Elevation, and description (as required to identify specific items, abbreviations are acceptable if code table for abbreviations is provided).
- .4 Indicate and define Grid North UTM, and True North relative angles.
- .5 All traverses will be closed and balanced. Process horizontal control data using rigorous least squares adjustment program.
  - .1 Accuracy for Secondary Control Points used for surveys shall be to second order:
    - .1 Horizontal shall be less than  $r = 5(d + 0.2)$  where "r" is in cm & "d" is distance in km.
    - .2 Vertical shall be less than  $\pm 8\text{mm times } \sqrt{k}$ . where "k" is distance in km.
- .6 All surveys shall be carried out with a minimum of 2 people.
- .7 All signage and safety measures identified in the Consultant's Safety plan to be in place before surveys commence.
- .8 Keel or paint marker shall be used to mark all survey stakes. Failure to properly mark survey stakes shall be corrected at Proponents expense.
- .9 For all topographic surveys the maximum distance between X-section stations will be 20m. On rock outcrops the maximum distance shall be 5 m. At X-section station no shot shall be more than 5 m apart. On rolling terrain Proponent shall take enough shots to accurately define ground surface.





- .10 Feature data shall be picked up in chains or strings i.e. right highway shoulder surveyed in a longitudinal progression and no shots farther than 20m apart.
- .11 Consultant to use PWGSC point descriptors for data pick up.
- .12 Cross Section accuracy shall be:
  - .1 In bush areas, all elevations shall be within  $\pm 0.1$  m of correct elevation.
  - .2 In open ground, all elevations shall be within  $\pm 0.05$  m of correct elevation.
  - .3 On Highway, Parking Lot and Bridge Surfaces, all elevations shall be within  $\pm 0.01$  m of correct elevation.
- .13 Proponent shall take notes (paper or electronic) that sufficiently describe the features and the anomalies listed below.
  - .1 Proponent will tie into survey the X,Y,Z coordinates and record in survey notes any and all features or anomalies observed while surveying. These features or anomalies may include and shall not be limited to the following:
    - Landslides
    - Debris
    - Avalanche runs or
    - Tree lines
    - Cultivated fields
    - Rock outcrops
    - Swamps
    - Standing water
    - Log jams
    - Beaver dams
    - Scarp lines
    - Paths or trails adjacent to R.O.W.
    - Test holes/pits
    - Fences lines
    - Gravel pits and
    - Buildings
    - Road side barriers
    - Iron pins and monuments
    - Structures
    - Utilities
    - Water flowing from slope
    - Stockpiles
    - Access Roads
    - Signs
    - Piezometers
    - Slope Indicators
- .14 Culverts: pick up both the inlet and outlet inverts, if culvert bottom is partially filled over by soil or debris take shot both on top of culvert and top of fill debris, include in notes the diameter, observed structural condition, direction of flow, depth of water at inlet and outlet at time of surveys and estimated high water level, create plan & profile of drainage course 50m either side, type of culvert i.e. wooden box; riveted; corrugated steel pipe.
- .15 Bridges & Large Drainage Structures: pick up enough points to accurately define overall shape and profile of structure, water course; pick up and describe road approach barriers, create plan & profile of drainage course 100 m upstream and 100m downstream, indicate direction of flow, approximate depth of water in drainage course at time of survey, estimated high water level, identify location and elevation of top of both stream banks as well as stream bottom, description of stream or river bed (i.e., gravel, rock, silt), describe velocity of water course (fast or slow), describe any scouring; silting; shift in channel and identify edge of stream bank. Digital pictures properly logged as

areas

deposits



to view location/direction to be provided of stream up and downstream of the structure.

- .1 On the bridge deck itself need the shots at centreline, white shoulder line(s) and at the bridge deck adjacent to the barrier face. Also, need an enough shots on the traffic side face of the barrier to accurately describe the shape of the barrier – i.e. usually there is vertical face at the bottom of the barrier before it starts to slope away from the traffic side. So also need a shot at top of the vertical face and one at top of the barrier slope. If there are any bridge deck drains - location, elevation, size, etc to be recorded.
  - .2 Locations of bridge deck joints are to be picked up and labelled as well as start point and end points of any approach slabs.
  - .3 If there is any evidence of water ponding on the road surface or bridge deck, the extent/depth of ponding/dip to be picked up.
  - .16 Road Surface: pick up surface edges, centre line, describe surface type i.e. gravel, etc and condition.
  - .17 For any guiderail sections the start and end points of guiderail to be recorded/identified and at x-section stations include shots of the road surface at the front (traffic) side of the guiderail and backside, plus one on top of the guiderail. Note type of guiderail shall also be recorded and if w-beam or box beam types provide information on type/size of post and average spacing between posts.
  - .18 Pick up and describe any unusual items that may impact roadway and associated features design such as graves, historic structures, archaeological sites, etc.
  - .19 Three (3) semi-permanent survey monuments are to be installed such they are in sight of each other and in locations that will not interfere /be damaged by roadside maintenance activities. UTM – NAD 83 co-ordinates as well as true Geodetic Elevations will be determined for each of these monuments to second order accuracy. Location and values of each of these monuments will be clearly shown on the electronic ACAD drawing file.
- .2 The Consultant shall:
- .1 Develop the Design for the Parkway and provide drawings in sufficient detail to clearly identify the site, all the elements in the design, required environmental mitigation measures and accurate quantities can be established.
    - .1 The “Million Dollar View” Parkway to meet the following design criteria:

.1 Design Speed	= minimum 60km/h
.2 Curvature – Minimum Radius	= 135m
.3 Maximum Superelevation rate	= 6%
.4 Vertical Curves – minimum k Values	– Sag = 17, Crest = 18
.5 Gradient – Max %	= 8%
.6 Surface Type	= Hot-mix Asphaltic Concrete
    - Pavement
    - .7 Lane Width = 3.5m |    - .8 Paved Shoulder Width = 0.3m |



- .9 Ditch Width minimum = 3.5m
- .10 Ditch Depth minimum from Subgrade shoulder = 0.15m
- .11 Pavement Structure including Crushed Gravels = Consultant to recommend
- .12 very flat sideslopes and backslopes = 6:1 where required/possible
- .2 For Culverts < 3m in span:
  - .1 Headwater to Diameter of pipe < 1 for a 1/100 flood event
  - .2 Design life of culvert materials > 50 years
- .3 For Bridges or Bridge-culverts ≥ 3m span:
  - .1 Design to the National Bridge Code
  - .2 Sized to handle 1:200 year flood event
  - .3 Design Life of structure ≥ 75 years
- .4 Guiderail is to be to Provincial standards and warrants.
- .2 Prepare a Class "A" Cost Estimate, update the Project schedule and the risk analysis and identify any conflicts and/or items that will need to be addressed with respect to scope, quality, schedule, cost, source of material.
- .3 Analyse the constructability of the Project and advise on the construction phasing process and duration.
- .4 Provide outline of the specifications which will apply to the various elements of the design.

#### 2.4.3 DELIVERABLES

- .1 Ground Surveys
  - .1 Deliverables from GPS/Total Station Survey:
    - .1 Electronic copy of RAW data file
    - .2 Electronic copy of processed RAW file with PWGSC descriptors and the Northing, Easting, and Elevation for each point.
    - .3 Electronic or hard copy of survey notes including descriptor code list
    - .4 Survey Precision Quality Report
  - .2 Deliverable from Total Station Survey:
    - .1 Electronic copy of RAW data file with PWGSC descriptors and the Slope distance, Horizontal and Vertical angles for each point.
    - .2 Electronic copy of processed RAW file with PWGSC descriptors and the Northing, Easting, and Elevation for each point.
    - .3 One hard copy of traverse survey showing backsight and foresight points, height of instrument, height of targets, horizontal and vertical angles, and slope distance.
    - .4 One hard copy of calculations for balancing traverse points.
    - .5 One hard copy of level loop and balancing calculations for control points
    - .6 Electronic copy (ASCII) and hard copy of control points showing Northing, Easting, and Elevation.
    - .7 Electronic or hard copy of survey notes including descriptor code list used.



- .3 Electronic ACAD Drawing file to be produced regardless of the type of survey method employed to collect the required field data.
  - .1 Prepare a 1:1000 scale AutoCAD drawing of all survey points. Each point to have appropriate survey data attached (i.e. northing, easting, elevation, description).
    - .1 Join like features (e.g. edge of pavement, building sides, pavement crown, ditch or swale edge, ditch or swale centre-line, etc.) with lines and Indicating break lines for features.
    - .2 Logically assemble and label like features/object data. Annotate by colour and group by layer in the CAD file. Ensure each data point has its associated Point number annotated. Topographical data points and benchmarks are to be placed on exclusive drawing layers. Provide legend describing each point type Description code.
    - .3 Provide contour lines at maximum 1.0 metre intervals to indicate topographical features on the 1:1000 scale drawings based on the grid elevation data.
    - .4 Surveyed area is to be mapped into a single CAD file only. The CAD file is not to be broken down into separate sub-files joined by match lines. Use 'ground' coordinates to create the file.
    - .5 Provide drawing in UTM Ground Coordinates; indicate BMs and scale factor used to calculate Ground Coordinates.
    - .6 Do not use drawing level 0 (zero).
    - .7 Clearly indicate geodetic monuments and secondary control monuments on the drawing.
    - .8 From the survey files create a "Topographic Survey Plan(s) at 1:1000 scales which displays the following:
      - .1 True North arrow, UTM co-ordinate grid, 1.0m contour lines, manmade features such as culverts, signs, drill holes, highway centreline, edge of pavement, ditch lines, survey monuments, cracks in pavement, edge of tree line, utilities, bridges, approach road intersections, etc with appropriate Legend, note date of field surveys.
      - .2 Provide six (6) hard copies of the "Topographic Survey Plan(s) as well as an editable electronic file in ACAD format.
  - .2 Design Development Report:
    - .1 Consultant is to prepare and submit a Design Development Report, for review and acceptance by the Departmental Representative.
    - .2 Prepare Design Development documents to illustrate the design of the Project in sufficient detail to obtain authorization to commence the preparation of Construction Documents.
    - .3 Drawings to be in accordance with Section 2.11 Drawings of the GP&S Documents
- .3 The Draft Design Development Report will contain at a minimum
  - .1 An Executive Summary
  - .2 Necessary sections to document and present the items listed in the Scope and Activities section,



- .3 Engineering Calculations confirming the suitability/adequacy of design elements chosen and long term stability of Highway cut/fill slopes can be achieved.
- .4 Final Design Development Report with a written response to comments.
- .5 Draft and Final Reports are to be provided in PDF electronic format and all pictures in colour. In addition, the Consultant is to provide six (6) print copies of the report.

## **2.5 TENDER DOCUMENT DEVELOPMENT SERVICE**

### **2.5.1 GENERAL**

- .1 The objective of this stage is to translate the Detailed Design findings into construction drawings and specifications for the purpose of tendering.
- .2 The Consultant must obtain written authorization from the Departmental Representative before proceeding with Construction Documents.

### **2.5.2 SCOPE AND ACTIVITIES**

- .1 The Consultant shall:
  - .1 Create construction documents in accordance with the General P&S Document;
  - .2 Design according to the budget and schedule;
    - .1 Non-compliances will require revisions to the contract documents.
  - .3 Update the cost estimates;
    - .1 Provide a cost breakdown by unit rate and/or trade for review of bids and comparison with the successful Contractor's cost breakdown.
  - .4 Update the overall project schedule;
  - .5 Establish a quality control process for the construction and contract administration stage.

### **2.5.3 DELIVERABLES**

- .1 50% complete Construction Documents.
  - .1 A Class "A" Estimate
  - .2 An updated project schedule
  - .3 Construction Drawings
    - .1 Drawings should reflect 50% completeness with all Plan, Elevation, Details, and Sections shown.
  - .4 Specifications
    - .1 Proposed Unit Price table
    - .2 Index to specifications
    - .3 Draft Division 1 and Technical Sections.
- .2 99% complete Construction Documents, fully coordinated as if ready for tender.
  - .1 This submission incorporates all revisions required by the review of the previous submission.
  - .2 The Consultant shall submit documents to the PWGSC Departmental Representative.
  - .3 The submittal shall include:
    - .1 A Class "A" Estimate
    - .2 A unit price table,
    - .3 An updated project schedule



- .4 Construction Drawings
  - .1 Drawings should reflect 99% completeness with a complete design without any unfinished details.
- .5 Complete Specifications.
  - .1 Specifications should be complete with all sections and thoroughly coordinated with the Drawings.
- .6 Response to PWGSC written comments of previous submittal.
- .3 Final (100%) Construction Documents ready for tendering
  - .1 This submission incorporates all revisions required by the review of the previous submission.
  - .2 The Consultant shall submit documents to the Departmental Representative, HRSDC, local municipality, or any other Authority having jurisdiction.
  - .3 The submittal shall include:
    - .1 An updated Class 'A' cost estimate.
    - .2 A unit price table,
    - .3 An updated project schedule
    - .4 Construction Drawings & Specifications
      - .1 As per the General P&S Document..
    - .5 Response to PWGSC written comments of previous submittal
    - .6 Advise the Departmental Representative of all issues raised by other officials and all Consultants' responses.
  - .4 The Consultant must confirm in writing that:
    - .1 The documents are ready to be issued for tender;
    - .2 The checklist in the GP&S Document has been reviewed in concert with the requirements of the Consultant Agreement; and
    - .3 A full review and coordination of the Contract Documents are complete and in accordance with professional standard of care.

## **2.6 TENDER SERVICE**

### **2.6.1 GENERAL**

- .1 The object of this phase is to support the Departmental Representative with the tender.
- .2 The Contract Authority for this project is the Real Property Contracting branch (RPC) of PWGSC.

### **2.6.2 SCOPE AND ACTIVITIES**

- .1 When requested, the Consultant will be required to;
  - .1 Provide the Departmental Representative with information required by bidders to interpret construction documents.
  - .2 Prepare addenda, in response to all questions within two (2) business days during the bidding period and submit to Departmental Representative,
  - .3 Attend pre-tender site visits,
  - .4 During Bid Review and Analysis, assist the Departmental Representative, as required, by analyzing and reviewing the submitted bid.



## **2.7 CONSTRUCTION SUPPORT SERVICE (NON-RESIDENT)**

### **2.7.1 GENERAL**

- .1 The object of this phase is to support the Departmental Representative with the construction phase and ensure the quality, budget and schedule of the project.

### **2.7.2 SCOPE AND ACTIVITIES**

- .1 The Consultant shall:
  - .1 Provide monthly field reviews and as required to fulfil the Consultant's professional obligations to monitor the construction activities throughout the construction period and keep *Departmental Representative* informed of work progress,
    - .1 Reject unsatisfactory work,
    - .2 Provide written reports.
  - .2 Authorize special tests, inspections and minor works that do not impact project cost and schedule,
    - .1 Provide the Departmental Representative with all material specifications, mixes and tests outside the scope of the Contractor.
  - .3 Review shop drawings and provide copies to the Departmental Representative
  - .4 Review and comment on the Contractor's schedule,
  - .5 Interpret contract documents as required and provide any additional drawings or specifications required to clarify, interpret or supplement Construction Documents,
  - .6 Review, comment and make recommendations on various documents such as Contractor's Progress Claims and updated schedules,
  - .7 Provide timely technical advice,
  - .8 Recommend the amounts owing to the Contractor based on work progress,
  - .9 Assist the Departmental Representative to prepare Certificate of Substantial Completion and provide sign-off,
  - .10 For Changes to the work:
    - .1 Assist the Departmental Representative to prepare CCN's and COs, to be issued by the Departmental Representative.
  - .11 For Cost Estimating Services:
    - .1 Evaluate change orders; claims, work completed and cash flow.
    - .2 After issue of contract provide details for evaluating the project's cost performance
  - .12 For Scheduling Services:
    - .1 Review contractor's monthly schedule report and report findings and recommendations to PWGSC for further discussion with the Contractor.
  - .13 Permits
    - .1 Assist the Contractor and provide required documentation in order to obtain the building permit.

## **2.8 RESIDENT CONSTRUCTION SERVICE (ON SITE)**

### **2.8.1 GENERAL**

- .1 The purpose of this phase is to represent the Departmental Representative on site during construction and to inspect, co-ordinate, measure for payment and monitor





all aspects of the work during construction of the project, and liaise with the Contractor, Public Works and Government Services Canada and other agencies as appropriate to the work.

## 2.8.2 SCOPE AND SERVICES

- .1 The Consultant will be required to provide resident inspection services for the period of construction and for other times periods as directed by the Departmental Representative.
  - .1 Consultant is to provide a survey crew when necessary to make measurements for monthly progress payments and for final payment.
- .2 The Consultant Resident Site representative is responsible for providing resident inspection for all aspects of the Project, maintaining daily records of all construction work placed. He is to ensure constant communication amongst the Departmental Representative, Design Consultant, Contractor, and the Provincial Department of Labour.
- .3 The Consultant Resident Site representative shall:
  - .1 Be directly responsible to the Consultant.
  - .2 Become thoroughly familiar with the Contract documents and be aware of all Provincial and Municipal standards for the health and safety of construction workers
  - .3 Comply with Parks Canada Agency regulations, policies and requirements;
  - .4 Become thoroughly familiar with the requirements of the Consultant's Terms of Reference and Project responsibilities of Others, which relate to his/her services.
- .4 Specific Duties and Responsibilities
  - .1 Provide full time resident inspection, co-ordination and monitoring during the construction work and be responsible to the consultant. In addition, the Departmental Representative may delegate additional responsibilities subject to Consultant's agreement
  - .2 Maintain daily records of all construction work placed and ensure constant communication amongst Departmental Representative, the Contractor, and the appropriate Parks Canada Agency Representative.
  - .3 Co-ordinate and direct an assistant as approved by the Departmental Representative.
  - .4 In case of emergencies, the Consultant Resident Site representative is empowered to stop the work or
  - .5 Give orders to protect the Safety of the workers or Crown property.
- .5 Inspection and Reporting
  - .1 The Consultant Resident Site representative shall inspect all phases of the work in progress, for the purpose of bringing to the attention of the Contractor, after checking with the Consultant, and Departmental Representative any discrepancies between the work, the contract documents and accepted construction procedures. He shall keep a daily log of such inspections and shall issue a weekly written report to the Consultant, both for distribution, in the form directed. The Resident Site representative shall make any other reports or surveys as may be requested by the Departmental Representative through the Consultant.
- .6 Interpretation of the Contract Documents





- .1 Interpretation of the contract documents shall be the responsibility of the Consultant. The Consultant may, however, have the Resident Site representative provide him with information regarding job conditions and may require him to relay day-to-day instructions to the contractor. It shall be the duty of the Resident Site representative to assist the Consultant and further inform the Consultant of any anticipated problems, which may delay the progress of the work. The method of relaying such information shall be determined by the Consultant.
- .7 Changes in the Work
  - .1 The Resident Site representative shall not authorize or order any change in the work, which will constitute a change in design or in the value of the contract except as delegated by the Departmental Representative. The Consultant may call upon the Resident Site representative to assist in the evaluation of changes in the work, where knowledge of job conditions is required
- .8 Communications & Liaison
  - .1 The Resident Site Representative shall:
    - .1 Convey the Consultant's instructions regarding the required standards of workmanship to the Contractor(s)
    - .2 For Specifications confer and obtain guidance on these findings with the Consultant. The matter is then to be brought to the attention of the Contractor's Superintendent. Although informal discussions with Sub-trade Superintendents are usually permissible, (but only with the agreement of the Contractor), the Resident Site representative should not deal directly with foreman or tradesmen, or interfere with the progress of the work
    - .3 Communicate formally with the contractor via memorandum form only. When this form is issued, the Resident Site representative must immediately file copies with PWGSC and the Consultant
    - .4 Contact the Consultant immediately when it is apparent that information or action is required of the Consultant, e.g. general instructions, clarifications, sample of shop drawing approvals, requisitions, contemplated change orders, site instructions, details, drawings, etc
    - .5 Accompany PWGSC representatives on inspections and report to the Consultant requirements, comments or instructions of the PWGSC's forces. Note that the Resident Site Representative should encourage such requirements, comments or instructions to be provided to him in writing
    - .6 Consider and evaluate any suggestions or modifications to the documents advanced by the Contractor and immediately report these to the Consultant with comments
    - .7 Ensure that the Departmental Representative and the Consultant are notified promptly when key pieces and/or components of materials and equipment are delivered, so that these parties can arrange for the appropriate personnel to have an opportunity to inspect same prior to installation.
- .9 Daily Log
  - .1 The Resident Site Representative shall keep a daily log recording:
    - .1 Weather conditions, particularly unusual weather relative to construction activities in progress
    - .2 Major material and equipment deliveries
    - .3 Daily activities and major work done;



- .4 Start, stop or completion of activities;
  - .5 Presence of inspection and testing firms, tests taken, results, etc;
  - .6 Unusual site conditions experienced;
  - .7 Significant developments, remarks, etc;
  - .8 Communications with the Contractor;
  - .9 Special Visitors on site;
  - .10 Authorities given contractor to undertake certain or hazardous works;
  - .11 Traffic Collisions or reports of damage to private vehicles passing through work area.
  - .12 Environmental incident(s);
  - .13 Reports, instructions Appropriate Authorities Response Actions
    - .1 Note: The log is the personal property of the Resident Site representative. Copies of the logbook, certified as copies, are to be provided to PWGSC and consultant at the end of the project.
  - .14 Representative digital photographs in colour to be taken and logged daily as to date, time of day, location, type of activity represented in the photo.
- .10 Weekly Records
- .1 The Resident Site representative shall prepare weekly reports for the Consultant in the form directed:
    - .1 Progress relative to schedule;
    - .2 Major activities commencing or completed during the week; main activities now in progress;
    - .3 Major deliveries of materials and/or equipment;
    - .4 Difficulties which may cause delays in completion;
    - .5 Materials and labour needed immediately
    - .6 Cost estimates of work completed and materials delivered;
    - .7 Outstanding information or action required by Consultant or Departmental Representative
    - .8 Work force;
    - .9 Weather;
    - .10 Remarks;
    - .11 Accidents/collisions on site;
    - .12 Environmental incident(s)
    - .13 Life safety hazards caused by the work, the Contractor or its agents.
- .11 Site Records
- .1 The Resident Site representative shall maintain orderly and updated files at the site for the use of the Departmental Representative, Consultant and himself as follows:
    - .1 Contract and Tender Documents;
    - .2 Approved Shop Drawings;
    - .3 Approved Samples;
    - .4 Samples;
    - .5 Site Instructions;



- .6 Site specify safety plan provided by the Contractor;
  - .7 Contemplated Change Orders;
  - .8 Change Orders;
  - .9 Memoranda;
  - .10 Test and Deficiency Reports;
  - .11 Correspondence and Minutes of Meetings;
  - .12 Names, addresses, telephone numbers of Departmental Representatives, Consultant and all Contractors, sub-trades key personnel associated with the contract; including home telephone numbers in case of emergencies;
  - .13 In addition, the Resident Site representative shall maintain an updated progress schedule.
  - .14 A reproduction of the of the original contract drawings shall be carefully preserved and shall be kept marked up to date with all addenda, change orders, site instructions, details, as-built conditions, etc., issued subsequent to the award of the contract.
- .12 Inspection of the Work
- .1 The Resident Site representative shall make on site observations and spot checks of the work to determine whether the work, materials and equipment conform to the contract documents and supplementary conditions. The Site consultant's representative shall advise the Contractor of any deficiencies or unapproved deviations via memorandum and report immediately to the Consultant and PWGSC Construction Representative any of these on which the Contractor is tardy or refuses to correct.
  - .2 The Resident Site representative shall arrange for the Consultant's Geotechnical Engineer to make the periodic inspections required by the Consultant's contract, and for these inspections to be made timely with respect to the progress of the work.
  - .3 The Resident Site representative shall also report if materials and equipment are being incorporated into the project prior to approval of relative shop drawings or samples.
  - .4 The Resident Site representative shall assist in the preparation of all deficiency reports, interim, preliminary, and final, in collaboration with the PWGSC and Consultant's representatives.
  - .5 The Resident Site representative shall be responsible for the measurement of all work to be done on a unit-cost basis.
- .13 Site Meetings
- .1 The Resident Site representative shall attend all job-site meetings
- .14 Inspection and Testing
- .1 The Resident Site representative must see that the tests and inspections required by the contract documents are conducted, and should observe these tests and report the results in the daily log;
  - .2 The Consultant must be notified if the test results do not meet the specified requirements, or if the Contractor does not have tests undertaken as required.
- .15 Emergencies
- .1 In case of emergency where safety of persons or property is concerned or work is endangered by the actions of the Contractor or the elements, to safeguard the



interests of PWGSC, the Resident Site representative shall give immediate written notice to the Contractor of the possible hazard. He shall further, if necessary, stop the work or give orders for remedial work, and contact the Consultant immediately for further instruction.

.16 Limitations

.1 The Resident representative shall not:

- .1 Authorize deviations from the contract documents.
- .2 Conduct tests.
- .3 Approve shop drawings or samples.
- .4 Advise the user-client in any matter without obtaining guidance from the Consultant
- .5 Accept any work or portions of the Project
- .6 Enter into the area of responsibility of the Contractor's Field Superintendent.
- .7 Stop the work unless convinced that an emergency exists as noted above.

.17 Hazardous Construction Operations

- .1 It is the duty of the Resident Site representative to examine all site conditions and methods to be used by the Contractor undertaking hazardous operations.
- .2 Give written authority to undertake hazardous operations to the Contractor, when fully satisfied that all necessary precautions and acts have been taken by the Contractor to safeguard the life safety of the workers and travelling Public and Crown property. Written authority shall be countersigned by the Contractor to acknowledge that the latter is aware of the Resident Site representative's instructions and requirements and both parties will retain copies of the authority document signed mutually by them
- .3 The Resident Site representative shall inspect the areas where hazardous work is under way to ensure that the Contractor is maintaining the agreed safety standards. Any infractions may result in the Resident Site representative stopping the work. All infractions, or work stoppages ordered shall be reported in writing and verbally to the Consultant and PWGSC Construction Supervisor.

.18 Site Security

- .1 Site security is the ultimate responsibility of the Contractor, Resident Site Representative to observe/record measures undertaken by the Contractor.
- .2 The Resident Site representative will liaise closely with the Consultant and PWGSC Departmental Representative on all security and/or safety problems that may arise due to the contractor's operations.

.19 Site Surveys

- .1 The Consultant is required to acquire all the necessary site survey information necessary to complete the project and to calculate quantities for payment.

.20 Additional Services

- .1 Additional Services, if required, shall be as described elsewhere in the Agreement and shall be determined in the manner set out in the "Calculation of Fees" and "Agreement Particulars" clauses.

.21 Site Office

- .1 Site Office and basic furniture shall be provided by the Contractor, Consultant to provide the Resident Site representative with all necessary equipment, vehicle,



tools, office supplies including computer, phones, camera, etc to conduct his duties and responsibilities.

### 2.8.3 DELIVERABLES

- .1 Weekly written reports
- .2 Memorandum issued to the Contractor.
- .3 Other reports or surveys as may be requested by the Departmental Representative.
- .4 A copy of the Site Representatives Daily log with digital photos.

## 2.9 POST CONSTRUCTION SERVICE

### 2.9.1 GENERAL

- .1 The purpose of this phase is to support the Departmental Representative in obtaining all final documents required for project close out.

### 2.9.2 SCOPE AND ACTIVITIES

- .1 Project Close-out Services
  - .1 Revise documentation to reflect all changes, revisions and adjustments after completion of commissioning
  - .2 Prepare record drawings and specifications based on Contractor's and Resident Site Representative's as-builts;
  - .3 Assist the Departmental Representative to prepare the Final Certificate of Completion and provide sign-off.
  - .4 Participate in Lessons Learned workshops if requested
- .2 Warranty Services
  - .1 Monitor and certify rectification of deficiencies before expiry of warranties
  - .2 Monitor environmental and life safety system checks to be carried out by Contractor/O&M staff before expiration of warranties.
  - .3 Sign off on the Final Completion of the construction contract,
  - .4 Participate in warranty inspections with *Departmental Representative* and Contractor
  - .5 Provide warranty deficiency list,
  - .6 Provide Final Warranty Review report.

### 2.9.3 DELIVERABLES

- .1 Warranty Deficiency List
- .2 Final Certificate
- .3 As-Built and Record Drawings and As-Built Specifications.
- .4 Sign-off on Warranty

## 3 PROJECT ADMINISTRATION

### 3.1 GENERAL

- .1 In addition to adhering to the general project administration requirements contained in section 3 of the GP&S document, the Consultant shall comply with the project specific requirements in this section.;



### **3.1.2 LANGUAGE**

- .1 No variation

### **3.1.3 MEDIA**

- .1 No variation

### **3.1.4 PROJECT MANAGEMENT**

- .1 No variation

### **3.1.5 LINES OF COMMUNICATION**

- .1 No variation

### **3.1.6 MEETINGS**

- .1 An on site familiarization meeting.
- .2 Monthly meetings during the Preliminary and Design development stage at GNP.
- .3 Monthly meetings on site during construction stage.
- .4 One meeting on site for the Substantial Completion Inspection
- .5 One meeting on site just before the end of the Warranty Period.

### **3.1.7 CONSULTANT RESPONSIBILITIES**

- .1 No variation

### **3.1.8 PWGSC RESPONSIBILITIES**

- .1 No variation

### **3.1.9 USER DEPARTMENT RESPONSIBILITIES**

- .1 No variation

### **3.1.10 REVIEW AND APPROVAL BY PROVINCIAL AND MUNICIPAL AUTHORITIES**

- .1 No variation

### **3.1.11 BUILDING PERMITS AND OCCUPANCY PERMITS**

- .1 No variation

### **3.1.12 TECHNICAL AND FUNCTIONAL REVIEWS**

- .1 No variation



## FIGURES

- Figure 1      Regional Setting for Grasslands National Park
- Figure 2      General Corridor for Million Dollar View Parkway, GNP, Saskatchewan
- Figure 3      South Portion of the Million Dollar View Parkway, GNP
- Figure 4      Conceptual Layout of Viewpoints along the Million Dollar View Parkway