PROJECT BRIEF

Information contained in this Project Brief identifies the project requirements and the consulting services required for this project.

The Project Brief is divided into three sections:

- **PROJECT REQUIREMENTS (PR)**
- **PROJECT ADMINISTRATION (PA)**
- **REQUIRED SERVICES (RS)**

PROJECT BRIEF

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APPENDIX PB-1: REPORT LIST FOR ST. ANDREWS LOCK AND DAM

PROJECT REQUIREMENTS

PR 1 PROJECT INFORMATION

PR 1.1 General

In accordance with the process specified for the Request for Proposals (RFP), Public Services and Procurement Canada (PSPC) intends to retain a structural engineering consulting firm in the capacity of Prime Consultant, supported by a multidisciplinary team of Sub-Consultants as necessary, for the provision of the services required for this project.

PR 1.2 Project Identification

Project Title:	St. Andrews Lock and Dam Bridge Deck Replacement
Location of the Project:	Lockport, Manitoba
PSPC Project Number:	R.097504.001
Client / User:	PSPC

PSPC Project Team:

Project Director:	TBD
Project Manager:	Kenton Thiessen
Design Manager:	Paul Lebrun
Contract Officer:	TBD

PR 1.3 Project Delivery Approach

The Prime Consultant, supported where necessary by a multidisciplinary team of Sub-Consultants, shall provide full professional engineering and technical services to review all of the related documentation, recommend further examination as required, preparation of design, construction tender documents, construction and contract administration including resident site services, cost, scheduling and project control, and risk management services for the complete replacement of the main span deck and the rehabilitation of the approach span decks of the St. Andrews Lock and Dam (SALD) Traffic Bridge.

The delivery of the Consultant services is anticipated to be a continuous process leading to the preparation of construction tender documents.

Implementation of this project shall be carried out under one (1) consultant contract and one (1) construction contract.

PR 1.4 Estimated Construction Costs

The Class “D” (Indicative) construction budget is estimated at $18.5M (2018 dollars) excluding taxes. The project shall respect the approved budget. It is the Consultant’s responsibility to manage the project’s scope within this budget. The Consultant shall provide detailed explanations and justifications if this budget should be exceeded.

PR 1.5 Project Schedule

Deliver the project in accordance with the project milestone listing identified below. Milestone dates provided are estimated, and the weeks from actual award of Contract should be integrated into the Project Schedule. During work, flexibility is very important in terms of accommodating unanticipated site requirements. The timelines indicated below include normal PSPC turnaround time which is specified in the Submission Review and Approval Process section.

Project Phase	Estimated Milestone Completion Date	Duration from Award of Contract	Task Duration
Estimated Consultant Contract Award	August 21, 2019		
Pre-Design	October 16, 2019	8 weeks	8 weeks
PSPC QA Review	November 6, 2019	11 weeks	3 weeks
Design Concept	December 18, 2019	17 weeks	6 weeks
PSPC QA Review	January 8, 2020	20 weeks	3 weeks
Design Development	March 4, 2020	28 weeks	8 weeks
PSPC QA Review	March 25, 2020	31 weeks	3 weeks
33% Construction Documents	May 6, 2020	37 weeks	6 weeks
PSPC QA Review	May 27, 2020	40 weeks	3 weeks
66% Construction Documents	July 8, 2020	46 weeks	6 weeks
PSPC QA Review	July 29, 2020	49 weeks	3 weeks
99% Construction Documents	September 9, 2020	55 weeks	6 weeks
PSPC QA Review	September 30, 2020	58 weeks	3 weeks
Tender Documents	October 21, 2020	61 weeks	3 weeks
Substantial Completion of Construction	September 2022	-	-
Final Completion (Final Inspection and Acceptance)	November 2022	-	-
Post Construction Deliverables	1 month past Final Completion date	-	-
Post Construction Warranty Evaluation	9 months past Final Completion date	-	-

Note that the above time allocations are meant to provide a preliminary time frame of major activities and milestones. The estimated duration periods may vary. In developing a detailed schedule, the Consultant shall find some activities are not interdependent and therefore can and shall be done concurrently.

The schedule supplied by the Consultant shall be more detailed and representative of the achievable delivery. After contract signature, the successful Consultant and PSPC shall agree to a final schedule which will prevail. In developing a detailed schedule, the Consultant shall find some activities are not interdependent and therefore can and shall be done concurrently.

During development of the construction documents and when the Class B estimate is finalized, PSPC shall seek "Project Approval" (PA) before tendering for implementation of the project. Upon receiving PA, PSPC shall use the plans and specifications produced to tender the construction project and select a general contractor who shall execute the construction contract.

Construction is estimated to start in May 2021. The project is estimated to be substantially completed by September 2022.

PR 2 INTRODUCTION AND BACKGROUND

PR 2.1 Overview

a) Location & Purpose

SALD is located in Lockport, Manitoba which is approximately 27 km downstream of Winnipeg on the Red River and approximately 44 km upstream of Lake Winnipeg. The SALD facility was constructed in the early 20th century to facilitate commercial navigation from Lake Winnipeg to the City of Winnipeg by drowning the Lister Rapids to a depth of 9 feet during the navigational season. Currently, it continues to perform this function to allow recreational boating.

b) General description of SALD Facility

Over time, transporting goods and services via waterways has changed and today, more goods and services are transported via major roadways and provincial highway networks. Today, SALD mainly services the Province of Manitoba as follows:

- Provincial transportation network (highway 44)
- Service the communities of St. Andrews and Lockport which are located in the immediate vicinity of SALD
- Tourist attraction known as a world class fishing destination.
- SALD is currently used as a water management facility and is required to maintain water levels at a regulated height for the City of Winnipeg and recreational boating, which also ensures the stability of real property values, stable economic development around the Red River, and stable water supply for firefighting purposes.

SALD has been recognized as historically significant at both the Provincial and National levels. On November 16, 1990, the dam and bridge were declared to be a National Historic Site by the Historic Sites and Monuments Board of Canada (this designation does not apply to the approach spans). The dam was designated as a National Historic Civil Engineering Site by the Canadian Society for Civil Engineering.

It is also recognized as a Historic Site of Manitoba.

The SALD facility consists of a six-sluice dam with concrete piers and historic caméré-curtain flow control equipment, a single navigation lock, a fish ladder, a working deck for the dam equipment, and a two-lane traffic bridge that includes a pedestrian sidewalk.

Other noteworthy environmental considerations that exist in close proximity to SALD include:

- Fish Protection Habitat Zone established by the Province of Manitoba which is located in close proximity to the fish ladder
- Under the Species at Risk Act, American White Pelicans as well as a few fish species have been identified to inhabit and congregate around SALD. As such, construction and operational activities around SALD should account for the needs of these animals.

c) Description of the SALD Traffic Bridge

The traffic bridge is comprised of the following three distinct structure types:

- An 89.9m steel through-truss west approach span;
- A 285.6m Main span deck truss (which houses the movable dam frames); and,
- A 73.2m steel bent east approach span.

A brief construction history of the traffic bridge is as follows:

- 1910: The structure, constructed by PSPC, was opened.
- 1949: The west approach was re-aligned to its current configuration.
- 1951: The main span deck was replaced.
- 1976: The east approach was rebuilt to the current grades.
- 1993: The west approach was replaced with the current galvanized steel through-truss and the west abutment was reconstructed to suit. At that time, repairs were made to the main span deck and the floor beams were modified. The east approach span deck was replaced, new expansion joints were provided, and a new sidewalk built. Approximately $26M.
- 1996-2009: The most easterly of the main truss spans (i.e. Span 7) was blast cleaned and then coated with Bridgecote. Minor repairs were undertaken over this period of time. Approximately $5.3M spread out over this period of time.
- 1998-1999: Main spans 1 through 6 inclusive were blast cleaned and received thermal-spray metallizing (85% zinc, 15 % aluminum). Approximately $8M.
- 2011: The traffic bridge load posting was decreased for a maximum GVW of 36 tonnes and the speed limit was restricted to 50 km/hr.

PR 2.2 Existing Conditions

The most recent Comprehensive Detailed Inspection (CDI) Report (by AECOM in 2017) indicates that the main span deck of the traffic bridge has come to the end of its service life and is in need of replacement and the approach spans require repairs in the near future. The most recent structural evaluation (by AE in 2015) confirmed that some members are under capacity and that the bridge must remain load posted.

- The expansion joints are inadequate with active leakage at many locations; this has been causing problems with the deck slabs and the bearing seats on top of the piers.
- The traffic deck slab condition varies from good (east approach) to inadequate (main spans) with numerous areas of delamination and spalls that expose reinforcing at the support locations. Temporary slab supports were installed in 2013.
- The traffic railings are in critically inadequate condition due to severe impact damage (likely from snow plows) leaving sections of rail unsupported.
- Some bearings are not working as intended. PSPC has commissioned a movement study to investigate.
- The structural steel coating, especially near the underside of the deck, is in need of replacement. PSPC has commissioned a study to investigate.
- Several members are under capacity and the bridge must remain load posted.

PR 3 PROJECT OBJECTIVES, ISSUES, CONSTRAINTS AND CHALLENGES

PR 3.1 Objectives

This section describes the end goals towards which the project is ordered. More detailed requirements of the project as described in subsequent sections of this document are all made in support of one or more of these objectives.

a) Health and Safety

The SALD Deck Replacement shall protect human life and health in the short and long terms.

b) Quality of Work and Longevity of the Structure

SALD Deck Replacement shall be of a high standard of quality, using recognized design principles and proven technologies, to achieve the anticipated service life described in PR 4.3.

c) Sustainable Development

The SALD Deck Replacement Project shall, throughout the implementation stages, routinely and consistently include the consideration of the environmental, economic, and societal effects at every decision-making point.

d) Good Stewardship

The SALD Deck Replacement shall minimize adverse environmental impacts and maximize beneficial improvements in the nearby aquatic and terrestrial environments.

e) Compliance

The SALD Deck Replacement shall comply to the latest versions of the Canadian Standards Association's (CSA) *Canadian Highway Bridge Design Code (CHBDC) and the latest version of the American Association of State Highway and Transportation Officials' (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications* as well as with internal PSPC policies for asset management.

f) Operation and Maintenance

The operation and maintenance of SALD Deck Replacement shall have minimum long-term costs and minimal adverse environmental impacts.

PR 3.2 Issues, Constraints and Challenges

This section describes external constraints and complicating factors that the Consultant will need to consider in delivering the project.

a) Time Constraints

The Consultant shall adhere to the following time constraints and those in section PR 1.5 Project Schedule:

- In-water construction and/or demolition activities cannot be done between September 1st and July 15. In-water activities must be completed between July 15 and September 1st.

b) Dam Operational Constraints

(1) Canal Operations—The Consultant shall phase the construction work so as to maintain canal operations at all times during construction.

(2) Dam Operations.—Water control decisions shall rest with PSPC at all times during construction and PSPC staff shall be able to operate the curtain dam throughout the project.

c) Minimizing Effect on Local Stakeholders

The Consultant shall implement the SALD Deck Replacement in a manner to ensure that work is carried out with minimal disturbance to the stakeholders who may be affected in different ways by the project.

Deliver the project using the best practices in support of client, user, and environmental respecting approved scope, quality, cost and time.

Local stakeholders include but may not necessarily be limited to:

- PSPC personnel involved in on-going operations of the SALD facility;
- First Nations, the municipalities, businesses and institutions located on either sides of the Red River;
- Manitoba Infrastructure;
- Parks Canada (heritage designation of the facility);
- Other users who depend on SALD as a traffic route across the Red River including, but not limited to: private commuters, public and private transit, transport vehicles, police services, emergency services; and,
- Local stakeholders who use the nearby fishing grounds or park space.

SALD Deck Replacement will impact the stakeholders at different times and for variable lengths of time.

d) Coordination with Federal and Provincial Governments and other Authorities Having Jurisdiction

The Consultant shall follow codes, regulations, by-laws and decisions of “Authorities Having Jurisdiction” as well as all applicable Provincial acts and regulations as per Federal government's ‘Good Neighbour’ policy; in cases of overlap, the most stringent shall apply. The Authorities Having Jurisdiction include those listed in PA 2; identify other jurisdictions appropriate to the project.

Transport Canada and Fisheries and Oceans Canada (DFO) are both federal authorities that will be

involved. The Consultant will be responsible to coordinate the work with these authorities, prepare draft applications for TC and DFO, and include required information from these authorities in the project documents.

The Manitoba Ministry of Infrastructure, and Manitoba Ministry of Sustainable Development will be involved during the design process, as these ministries are Authorities Having Jurisdiction for the project.

The Province of Manitoba environmental assessment requirements will need to be included.

e) Traffic Control during Construction Period

Give careful consideration to the effect that the project will have on general traffic, traffic management operations in communities on either side of the river, public and private transit operators, emergency services, police departments, cyclists, pedestrians, and other institutional and commercial operators in the vicinity of SALD, as well as the Manitoba Ministry of Infrastructure.

One traffic lane across the bridge must be maintained at all times. Pedestrian/cyclist access across the bridge must be maintained at all times. The traffic control system used during construction must allow emergency vehicles quick access across the bridge.

Study the construction staging with respect to the traffic requirements in order to provide construction delivery options that are acceptable to PSPC and to related stakeholders and users.

f) Constructability

Maximize the efficiency of the project by taking the constructability of the design into account. Constructability may be affected by the amount of work done in the field as opposed to shop controlled fabrication, customized construction as opposed to readily available products and practice, light weight as opposed to heavy weight components, area available for construction workers and equipment as opposed to a restricted work area, nearby traffic, ease of achieving composite action, and others.

g) Requirements Related to Demolition and Removals

The Consultant shall plan design such that demolition and removals can be carried out in a manner that optimizes health and safety, environmental protection, the principles of sustainable development and waste management, as well as careful and efficient coordination with all other site work. Dam Operations and Maintenance work is normally carried out on-site by PSPC personnel. It is anticipated that they will continue to do so over the course of this project. This project may not interfere with the normal operation of the Dam, and a logistics plan will be required to schedule the project phases. The Contractor will be required to work around PSPC Dam personnel during the program, which is anticipated to last for several months.

h) Time, Budget, and Scope Constraints

The Consultant shall deliver this project on time, on budget, and on scope.

i) Risk Management

The Consultant shall integrate risk management practices and processes into the project.

PR 4 TECHNICAL REQUIREMENTS

PR 4.1 Overview

The intent of this project is as follows:

- Replace the existing bridge deck of the main spans, including all longitudinal stringers;
- Complete localized deck repairs at both the East and the West approach spans;
- Waterproof and pave the entire deck;
- Remove the sidewalk, widen the approach deck spans and construct a new sidewalk along the length of the bridge;
- Replace bridge barriers, railings and roadway lighting;
- Reinforce structural steel to meet CHBDC and AASHTO LRFD; and,
- Recoat/repair structural steel that is normally inaccessible when the deck is in place;

After the project, the bridge structure will no longer be load posted. Work cannot impede normal operations of the dam.

PR 4.2 Scope of Services

The project requires Consultant services in each of the following general project phases and service areas:

Required Services:

a) Pre-design / Analysis of Project Requirements;

b) Design Concept

c) Design Development

d) Construction Documents

Optional Required Services:

e) Tender Call, Bid Evaluation and Construction Contract Award

f) Construction and Contract Administration

g) Resident Site Services during Construction

OPTIONAL REQUIRED SERVICES: The above services indicated as Optional Required Services are at the discretion of PSPC. Proceed only upon written authorization from Departmental Representative.

Specific and detailed service requirements are presented in the Required Services (RS) Sections of this document.

PR 4.3 Design Principles

The Consultant shall design the SALD Traffic Bridge:

a) the design and related construction shall ensure that during all phases of the construction contract, the safety and protection of people, the PSPC employees and of the structure itself is never compromised in any manner, considering that the existing structure remains in service during the construction.

b) to safely carry the loads specified by the *Canadian Highway Bridge Design Code and the Association of State Highway and Transportation Officials' (AASHTO) Load and Resistance Factor Design (LRFD)*

Bridge Design Specifications;

c) to have a minimum design service life of seventy-five (75) years. Do this through the use of corrosion-resistant materials (e.g. Zinc-coated reinforcing steel and other galvanized metals, etc.) Avoid details that will promote premature deterioration (e.g. mixing of dissimilar metals, improper drainage, etc.). At all times, use industry proven materials and details and avoid experimentation in details or materials.

d) to minimize future maintenance costs; and,

e) to incorporate, as much as possible, the PSPC sustainable development principles and goals, greening opportunities, heritage considerations, and address climate change

PR 4.4 Performance Requirements

a) Main Span Deck Requirements

1. Configuration

i. The main span deck will be completely removed, including longitudinal stringers, and replaced with a new wider deck.

ii. The new main span deck will be compliant with CHBDC/ASSHTO. Lane widths and shoulder widths will be designed to be as wide as site conditions will allow as close to Transportation Association of Canada guidelines as possible. New main span deck will have consistent width along its entire length.

iii. The new main span deck will have a wearing surface compatible with the deck material, including a waterproof membrane.

iv. The new main span deck will minimize the number of expansion joints along its length.

v. The new main span deck will be made of lightweight materials so as to not increase the dead load applied to the bridge.

vi. The new main span deck will have crash tested barriers.

vii. Deck replacement shall be executed so as to allow one lane of vehicular traffic to be open at all times. Vehicular traffic lane will be alternating so as to allow traffic in both directions.

2. Drainage

i. The deck shall be crowned to drain water to the shoulders.

ii. Drains will be extended below operations deck and angled so that water will not fall over bridge components.

b) Approach Span Deck Requirements

1. Configuration

i. Both the east and west approach span decks will be rehabilitated. Areas of delamination, spalling, cracking, and disintegration will be repaired.

ii. The rehabilitation of the approach span decks will include both the deck surface, deck soffit, and full depth repairs.

iii. The rehabilitation of the approach span decks will include a new riding surface, including waterproof membrane that is compatible with the chosen riding surface of the new main span deck.

iv. The expansion joints separating the approach spans from the new main span will be replaced.

v. The approach span will be widened so that the lane width and the shoulder width will be consistent across length of bridge. Width to be as close to Transportation Association of Canada guidelines as possible. Barrier walls are not to be offset along the bridge.

vi. The approach span rehabilitation will include new crash tested barriers.

vii. Transitions and minor widening of the approach roadway embankments.

2. Drainage

i. The deck shall be crowned to drain water to the shoulders.
ii. Drains will be extended below operations deck and angled so that water will not fall over bridge structure.

c) Sidewalk Requirements

1. Configuration

i. A new sidewalk shall be constructed along the length of the bridge. The new sidewalk will run along the north side of the traffic bridge, including assumed relocation to the north side of the West Approach Span through truss.
ii. The new sidewalk shall be compliant with CHBDC/AASHTO.
iii. The new sidewalk shall minimize the number of expansion joints along its length.
iv. The new sidewalk shall be constructed with lightweight materials so as to minimize the dead load applied to the bridge.
v. Users of the sidewalk shall be permitted to cross the bridge at all times. Temporary sidewalk shall be installed as required.

2. Drainage

i. Drainage shall be designed so as to collect runoff from the sidewalk surface and direct it away from the bridge. No runoff shall flow onto bridge structure.

d) Structural Steel Requirements

1. Configuration

i. Reinforce existing truss members as required so Traffic Bridge meets CHBDC/AASHTO loading requirements and load posting can be removed. Structural assessment to be completed by the Consultant.
ii. New structural steel will be coated using a coating system compatible with the existing coating system on the member being reinforced. Minimize field coating of new steel members wherever possible.
iii. Re-evaluate critical bridge components based on changes to dead loading of structure.

e) Structural Steel Coating Requirements

1. Configuration

i. Recoat structural steel members normally covered or blocked by bridge deck and perform localized coating repairs to steel members that have deteriorated coating in the area of work. Recoating shall be performed while bridge deck is removed and before new bridge deck is constructed in its place. Steel members are metalized and preliminary recommendations from third parties is to continue utilizing this coating system.
ii. Bridge recoating shall inhibit non-native substances from entering the surrounding environment.
iii. New coating system shall be bridge metalized coating similar to what was applied to main truss steel members. Metalized coating system shall be compatible with existing coating systems on surrounding structural steel.
iv. No materials from coating work is to enter the water stream.

f) Requirements for Signage

1. Configuration

i. Temporary construction signage shall meet standards outlined in Manitoba Traffic Control Manual. Temporary traffic signage shall be bilingual.
ii. Regulatory and warning signs shall meet standards of Manitoba Department of Infrastructure.

g) Lighting Requirements

1. Deck Lighting

i. Remove existing deck lighting during deck replacement. Reinstate deck lighting following construction of new bridge deck.
ii. Temporary deck lighting shall be provided to illuminate bridge deck during construction.
iii. Level of illumination: to Manitoba standard for roadway lighting.
iv. Commissioning: to comply with the commissioning PSPC Policy in accordance with the PSPC Commissioning Manual and guidelines (CP.1 to CP.13), November 2006 edition.

PR 4.5 Standards, Codes and Specifications

Standards, codes and specifications to be used for the design and construction of the asset shall be the latest edition of the following (including all amendments, supplements and revisions thereto). In case of conflict or discrepancy between codes and standards, the most stringent requirement shall apply.

a) **Bridge design**: the bridge design is to adhere to the most stringent requirements/highest demand of latest edition of the CAN/CSA S.06 Canadian Highway Bridge Design Code, the latest version of the American Association of State Highway and Transportation Officials' (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications, and Structures Design Manual, Manitoba Infrastructure and Transportation.

b) **Concrete design**: to the latest edition of the CAN/CSA A23.3 *Design of concrete structures, or (a).*

c) **Steel design**: to the latest edition of the CAN/CSA S16 *Design of steel structures or (a)*.

d) **Approach roads**: to *Geometric Design Guide for Canadian Roads*, published by Transportation Association of Canada.

e) **Electrical components**: to CSA C22.1-15 *Canadian Electrical Code Part I*

f) Use latest edition of the National Master Specification (NMS) templates and make appropriate project specific modification to suit needs of project. Note that NMS Templates generally require extensive deletion to remove extraneous and duplicate materials. When writing original material to go into the Templates, follow *National Master Specification User's Guide*, in particular be sure to use the directive style (imperative mood); this makes clear who is to do a particular action, minimizes words, and eases interpretation thus reducing chances of Contractor claims for extra work. Strive for short, clear, clean, logical specifications.

The Consultant has the option of using other design codes and is expected to incorporate new developments in engineering whenever these appear appropriate. Use of other codes must be in accordance with proper engineering practice is permitted only after receiving approval of submitted documented evidence of suitability of these other codes.

PR 4.6 Sustainable Development and Environmental Protection

The project is to be implemented in an environmentally responsible manner that balances environmental performance, social and cultural sustainability and conservation objectives.

The Real Property Branch (RPB) of PWGSC, has developed a Sustainable Development Strategy that sets out principles, goals and actions for integrating sustainable development principles into its policies and operations.

Throughout the evolution of the project, the Consultant's services and deliverables shall respect the following principles and goals of RPB's Sustainable Development Strategy:

a) To sustain our natural resources, by ensuring sustainable use of renewable resources and efficient use of non-renewable resources.

b) To protect the health of Canadians and of ecosystems, by managing the risks associated with toxic substances, by protecting representative areas, and by developing effective warning and adaptive response capability to both natural and human-caused disasters.

c) To meet our international obligations, by contributing to the protection of the ozone layer, the reduction of greenhouse gas emissions, and the conservation of biodiversity.

d) To improve our quality of life and well-being, by fostering improved productivity through environment efficiency, including environmentally friendly maintenance procedures and products, and by supporting innovation towards sustainable development.

e) To contribute to the prevention, reduction and, where possible, the elimination of negative impacts on humans and the environment in their land and marine / fresh water activities.

f) To contribute to the prevention, reduction and, where possible, the elimination of negative impacts of contaminated sites on humans and the environment.

g) To contribute to the use and promotion of more efficient, environmentally friendly alternative sources of energy.

h) To include the principle of life-cycle management in the analysis of project development options and design solutions.

i) To actively encourage and support the prevention, reduction and, where possible, the elimination of impacts of toxic or hazardous substances and wastes on human health.

j) To promote the conservation of renewable and non-renewable resources through appropriate waste management,

PR 4.7 Waste Management

Waste Management services involve the preparation and management of the following deliverables during the course of the project. Specific requirements regarding the preparation of these deliverables, and the project phase where they shall be submitted, are outlined in subsequent RS Sections.

a) **Designated Substance Report**.—identifying the types and locations of materials present at a site that are classified as hazardous or dangerous substances under the applicable regulatory regime and recommends procedures for proper handling or disposal.

b) **Waste Audit**.—determining the types and volumes of construction materials that shall be produced as surplus to the project.

c) **Waste Management Workplan (also known as Waste Diversion Workplan)**.—confirming the project targets set for reduction, reusing, and recycling, and describing the procedures to maximize the recovery and the value of those materials identified in the Waste Audit, including on-site practices, procedures and potential destinations for the materials recovered during construction.

d) **Waste Management Report**.—ensure that the Contractor documents the recovered construction materials to ensure that the results anticipated in the Waste Audit and the achievement of targets set in the Waste Management Workplan are realized to the highest degree possible and delivers a Waste Management Report which records the results at the end of the project.

PR 4.8 Doing Business with Public Works and Government Services Canada (PWGSC)

The PSPC document *Doing Business with PWGSC* is provided as an Appendix to this Request for Proposals and is an integral part of the definition of service requirements.

The document specifies the service standards, documentation and submission requirements, and policies that Consultant shall meet in the performance of services for this project, as well as the required electronic format for the final Tender Package.

All members of the Consultant Team shall be completely familiar with the applicable contents of that document and shall follow it during the project.

PR 5 CONSULTING EXPERTISE REQUIRED

The Consultant team for this project shall be capable of providing the following services:

a) Civil engineering – structural specialty in steel truss bridges

b) Civil engineering – traffic control specialty

c) Civil engineering – highway specialty

d) Electrical engineering – roadway lighting

e) Environmental effects evaluation assessment and monitoring specialists

f) Risk management specialist

g) O&M services (provided by various discipline specialists)

h) Cost planning, estimating, and control specialists

i) Time planning, construction staging, scheduling, and control specialist

PR 6 EXISTING DOCUMENTATION

PR 6.1 Existing Documentation Available to all Proponents

The following documentation is available to all proponents as reference material in the language it was written. Contact the Contract Authority identified on the Front Page in writing to request a digital copy:

a) Inspection reports:

- 2018 Approach Bridge Deck Testing and Assessment Report, AECOM
- 2018 General Inspection, AECOM
- 2017 Comprehensive Detailed Inspection of Traffic Bridge (including Traffic Bridge Deck Assessment Memo), AECOM
- 2015 Comprehensive Detailed Inspection of the Movable Dam, Associated Engineering

- 2015 Structural Evaluation of Traffic Bridge, Associated Engineering

b) 1993 New Concrete Bridge Deck, Rehabilitation of Existing Bridge, and Associated Works

c) 1991 Renovation – New West Approach Spans

d) 1991 Renovation – Roadway Bridge Rehabilitation

e) 1990 Structural Remedial Repairs

f) 1977 Guardrail Renovations

g) 1949 Improvements to Bridge

PR 6.2 Existing Documentation Available to the Successful Consultant

Additional documents shall be made available to the successful Consultant for reproduction at the Consultant's cost. A full list of reports and drawings on the SALD Complex is available in Appendix PB-1 to this Project Brief.

It is important to note that, the structure has been repaired and strengthened over time and features may have changed since original construction. The existing drawings and documents, including "as built" records, may not be accurate.

Documents are available only in the language in which they were written.

PROJECT ADMINISTRATION (PA)

PA 1 GENERAL REQUIREMENTS

PA 1.1 PSPC Project Manager

a) The Project Manager assigned to the project is the Departmental Representative.

b) The Departmental Representative is directly concerned with the project and responsible for its progress on behalf of PSPC.

c) The Departmental Representative is the liaison amongst and between the Consultant, PSPC, stakeholders, and PSPC IAM/EA Dams and Water Management Engineering).

d) PSPC administers the project and exercises continuing control over the project during all phases of development.

e) Unless directed otherwise by the Departmental Representative, the Consultant obtains all Federal and Provincial requirements and approvals necessary for Work.

PA 1.2 Lines of Communication

a) Unless otherwise directed by the Departmental Representative, conduct all project communication through the Departmental Representative only.

b) Direct communication between members of the PSPC Project Team on routine matters is required to enable the discussion and resolution of technical issues. However, no communication shall alter the terms of the project scope, budget or schedules unless directed in writing by the Departmental Representative.

PA 1.3 Media

a) Do not respond to requests for project related information or questions from the media. Direct such

inquires to the Departmental Representative.

PA 1.4 Project Response Time

a) Key personnel of the Consultant and Sub-Consultant and/or specialists shall be personally available, or have an acceptable substitute available, to attend meeting or respond to inquiries within one (1) working day.

PA 1.5 Project Progress Meetings

a) The Departmental Representative shall arrange and chair Project Progress Meetings. These shall be held generally every two (2) weeks throughout the entire project development and implementation period. Attendees will include the Proponent and sub-consultants, if any, and as required, PSPC Project Management team, and may include other stakeholders as required.

   Items shall include, without being limited to:

   - design progress and/or construction progress;
   - review and discuss results of studies;
   - project planning monitoring and control;
   - cost;
   - risk;
   - quality;
   - scope;
   - environment;
   - health and safety

b) Consultant shall attend the meetings, record the issues and decisions, as well as prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.

c) These meetings shall be held in the offices of PSPC in Winnipeg during design and on-site at SALD during construction.

PA 1.6 Other Meetings

a) The Departmental Representative shall arrange and chair a *Project Start Up Meeting* to be held in the offices of PSPC in Winnipeg. Details pertaining to this meeting are outlined in Section RS 2 - Pre-Design / Analysis of Project Requirements.

b) During the course of the project, as specifically outlined in the RS Sections, arrange and chair various meetings to cover other topics as these arise.

   At the discretion of the Departmental Representative, these meetings may be held instead of, or jointly with, the Project Progress Meetings.

c) On occasion, the Departmental Representative may be required to call urgent problem-solving meetings. The Consultant shall:

   - be available to attend such meetings, in the location specified by the Departmental Representative, within one (1) working day notice;
   - assist the Departmental Representative in organizing the meeting;
   - record the issues and decisions; and
   - prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.

PA 1.7 Language

Design deliverables and construction documents must be prepared in English.

PA 2 AUTHORITIES HAVING JURISDICTION

PA 2.1 Federal Government Authorities

The following are authorities having Federal Government jurisdiction over the project:

a) Public Services and Procurement Canada

- Contracting authority and project delivery
- Functional design requirements and standards
- IAM/EA Dams and Water Management Engineering for dam operations

b) Parks Canada

- heritage designation of the facility

c) Environment Canada

- Canadian Environmental Assessment Act
- Canadian Environmental Protection Act

d) National Building Code of Canada (NBCC)

- Building codes and standards

e) Transport Canada

- Navigable Waters Protection Act

f) Fisheries and Oceans Canada

- Fisheries Act

PA 2.2 Provincial, Municipal and Other Local Authorities

Although the Federal Government does not formally recognize jurisdiction at other levels of government, voluntary compliance with the requirement of these other Authorities is required unless otherwise directed by the Departmental Representative. Some of the requirements applicable to this project are listed below.

In some cases, the Federal government may defer to provincial and municipal authorities for specific regulations, standards and inspections. In areas of conflict, the Federal authority prevails.

a) Manitoba Department of Growth, Enterprise, and Trade

- Employment Standards
- Construction Health and Safety
- Workers Compensation

b) Manitoba Sustainable Development

- The Environment Act; C.C.S.M. c. E125
- The Waste Reduction and Prevention Act; C.C.S.M c. W40

c) Manitoba Department of Infrastructure

- Codes, standards for design, construction and maintenance of roads and bridges
- Regulations for road safety and traffic control

- Requirements of provincial environmental regulations for highway projects

d) Municipality/City Authorities

- Local Police and Emergency Services

d) Other

- Engineers & Geoscientists of Manitoba
- Manitoba Historical Society

With the assistance of the Departmental representative, identify Authorities Having Jurisdiction and endeavour to ensure that all design work meets or exceeds all codes, regulations and standards of these other authorities having jurisdiction.

Submit project documents to Authorities Having Jurisdiction for review during both the design and the preparation of construction documentation.

Complete negotiations, identify the cost of all required permits, and resolve all permit related issues before tender.

PA 3 SUBMISSIONS, REVIEWS AND APPROVALS

PA 3.1 General Submission Requirements for Project Deliverables

a) Unless otherwise specified, where deliverables and submissions include summaries, reports, cost estimates, schedules, drawings, plans, specifications, submit electronic copies in the following formats. Submit by hand or via courier two hard copies of the tender documents issued for 33%, 66%, 99%, tender and construction.

Deliverable	Software
Written reports and studies	Microsoft Word
Spreadsheets and budgets	Microsoft Excel
Presentations	Microsoft Powerpoint
Schedules	Microsoft Project
Drawings	AutoCad (*.dwg) version 2009 or later
Specifications	MS Word NMS
Web	Adobe PDF
Internet	HTML

b) Provide all electronic deliverables larger than 5MB via the Proponent’s file sharing web site.

c) Other forms and templates shall follow PSPC formats, which are available at the following web site: http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html

PA 3.2 Acceptance of Project Deliverables

a) While PSPC acknowledges the Consultant's obligations to meet project requirements, the project delivery process entitles PSPC to review work. PSPC reserves the right to reject undesirable or unsatisfactory work. The Consultant shall obtain Departmental Representative acceptances during each of the project phases.

b) Acceptances indicate that based on a general review of material for specific issues, the material is considered to comply with governmental and departmental objectives and practices, and that overall

project objectives are being satisfied.

c) The acceptance does not relieve the Consultant of professional responsibility for his work and compliance with the contract, and with all applicable codes, standards and regulations.

d) PSPC acceptances do not prohibit rejection of work, which is determined to be unsatisfactory at later phases of review. If progressive design development or time, cost, or risk updates or technical investigation reveals that earlier acceptances shall be withdrawn, the Consultant is responsible for re-designing work and re-submitting for acceptance at the Consultant's cost.

e) During each review period, maintain full production on the project, and revise documents as necessary and when review comments are received.

f) Comply with the approved submissions and direct Sub-consultants to coordinate their work in accordance with the approved submissions.

g) Obtain acceptances by stakeholders and other agencies and levels of government to supplement PSPC acceptances. Assist the Departmental Representative in securing all such acceptances and adjust all documentation as required by such Authorities when securing acceptance.

PA 3.3 Submission, Review and Approval Requirements

Work in progress at key stages shall be reviewed by the Departmental Representative, Senior Managers of PSPC, as well as other relevant departments and agencies, for the purposes of obtaining final decision authority. Number of re-submissions is as required until final acceptance.

Turn-around times for these reviews shall be as the following:

a) PSPC in-house Services (engineering disciplines, health & safety committee, environmental services)

- Expected Turnaround Time: approximately 3 weeks for each review;

b) Authorities Having Jurisdiction

- Expected Turnaround Time: approximately 4 to 12 weeks for each review;
- Note: Design will be ongoing while Authorities Having Jurisdiction review is underway;

Chart of Reviews and Approvals	**PSPC**		**Authorities Having Jurisdiction**	
	R	FA	I	A
RS 2 Pre-Design / Analysis of Project Requirements				
Detailed Project Schedule	x	x		
Pre-Design Report	x	x	x	
Indicative - Class ‘D’ Estimate	x	x		
RS 3 Design Concept				
Design Options	x	x		
Recommended Design Option	x	x	x	
Class ‘C’ Estimate(s)	x	x		
RS 4 Design Development				

Chart of Reviews and Approvals	PSPC		Authorities Having Jurisdiction	
Design Development Documents	x	x		
Class 'B' Estimate(s)	x	x		
RS 5 Construction Documents				
33% Construction Drawings	x	x		
66% Construction Drawings and Specs	x	x		
99% Construction Drawings and Specs	x	x	x	x
Class 'A' Estimate	x	x		
Final Construction Documents	x	x	x	x

R = Review FA = Final Acceptance I = Inform A= Acceptance

REQUIRED SERVICES (RS)

RS 1 GENERAL SERVICE REQUIREMENTS

The General Service Requirements identified in this Section apply to all other RS Sections in this document. Specific requirements (activities, deliverables, etc.) relating to these General Service Requirements at various stages of project development and implementation, are presented in each of the subsequent RS Sections.

RS 1.1 Risk Management

Risk management is an evolving process that will change over the life of the project as risks change throughout different project phases. These project risks are associated with development, technical, implementation, and/or management issues that can affect cost, quality, schedule and/or safety.

Provide support to the Departmental Representative in identifying, assessing and managing risks throughout the project life cycle.

Without being limited to the following, the Consultant shall:

a) review and build upon the project risk plan prepared by PSPC;

b) identify risks and determine which risks are likely to affect the project and document the characteristics of each;

c) qualify or quantify probability of risk event (Low, Medium, High) and their effect (Low, Medium, High);

d) develop risk responses including risk avoidance and/or mitigation measures;

e) implement risk avoidance and/or mitigation measures;

f) respond to changes in risk over the course of the project;

g) determine a cost allowance for each risk identified;

h) review and update the Risk Management Plan at each project development and implementation phase.

RS 1.2 Time Planning, Scheduling and Control

Approach scheduling as a continuous interactive process involving planning, action, measurement, evaluations and

revisions, throughout all stages of the project.

a) Time Planning, Scheduling and Control Specialist

The Consultant's project team shall include a fully qualified and experienced Time Planning, Scheduling and Control Specialist, with a demonstrated record of successful time management on large construction projects. The Time Planning, Scheduling and Control Specialist shall:

- be conversant with all aspects of time management including, but not limited to: planning, schedule development and analysis, progress monitoring and reporting, risk management and advisory services;
- follow good industry practices for schedule development and maintenance as recognized by the Project Management Institute (PMI).

b) Scope of Services

The Consultant shall:

- provide all Time Planning, Scheduling and Control services and associated deliverables in accordance with the requirements outlined in the Time Management section of the *Doing Business* document;
- prepare a Project Work Breakdown Structure, a major Milestones Schedule and a Detailed Project Schedule which, combined with Project Cash flow Projections, shall form the Project Baseline Plan against which Consultant is to monitor the progress of the overall project;
- incorporate the water control constraints (see PR 3.2) into the project schedule;
- during the course of the project, update the above documents as required by the Departmental Representative;
- provide a system for documentation and project control throughout the project for approval by the Departmental Representative;
- monitor and report on the progress of work by the Consultant Team during all stages of project development and implementation; and
- monitor and report on the progress of Work based on the schedule provided by the Contractor during the construction stage of the project.

Specific Time Planning, Scheduling and Control requirements relating to the various stages of project development and implementation, are presented in each of the subsequent RS Sections.

c) Monthly Progress Reports

Prepare and submit Monthly Progress Reports including the sections defined in the Time Management section of the *Doing Business* document:

- Executive Summary;
- Narrative Report;
- Variance Report;
- Criticality Report;
- Exception Report;
- Cost Report;
- Work Breakdown Structure;
- Activity List;
- Milestone List;
- Project Master Schedule with Cash Flow Projections; and
- Detailed Project Schedule.

The Monthly Progress Reports shall specifically identify:

- the progress of each activity to the date of the report;
- actual start and finish dates of all activities being monitored;
- all instances where deliverables and deadlines are not being met and an outline of remedial measures being taken;
- any scheduling and logic changes, both historic and planned;
- projections of progress and completion; and
- any potential delays, outstanding issues and concerns, along with options for dealing with any serious planning and scheduling issues.

RS 1.3 Cost Planning, Estimating and Control

Approach this as a continuous interactive process involving planning, action, measurement, evaluations and revisions, throughout all stages of the project.

a) Cost Planning, Estimating and Control Specialist

The Consultant's project team shall include a fully qualified and experienced Cost Planning, Estimating and Control Specialist, with a demonstrated record of successful cost management on large construction projects.

The Cost Planning, Estimating and Control Specialist shall be conversant with all aspects of construction cost estimating during the project phases including the use of Elemental Cost Analysis, Risk Analysis, Life Cycle Costing and Value Engineering/Management techniques.

b) Scope of Services

The Consultant shall provide interactive and continuous cost consulting services from the commencement of project design through to construction completion, including but not limited to:

- professional advice on all matters relating to cost planning, estimating and control;
- cost planning and cash flow projection linked to the project Work Breakdown Structure and Schedule;
- cost estimating including engineering, construction and Operation and Maintenance (O&M) costs, as well as risk allowances; and
- cost monitoring and cost reporting.

Specific cost planning, estimating and control requirements relating to the various stages of project development and implementation, are presented in each of the subsequent RS Sections.

c) Milestone Cost Reports

At each of the project milestones specified in this document, the Consultant shall provide a complete submission including the required Elemental Summaries, supported by all backup work sheets clearly detailing the process used in preparing the estimate.

The detailed work sheets shall be the prime basis on which estimates shall be reviewed by PSPC. Cost comparisons and cost reports identifying and explaining the differences between each succeeding cost estimate and their cost effect are also required.

A Milestone Cost Report shall contain:

- Project Estimate Summary;
- Elemental Estimate Summary;

- Basis for escalation, inflation and contingency calculations;
- Detailed measurement and pricing;
- Outline description of estimate basis;
- Description of information obtained and used in the estimate including the date received;
- Listing of notable inclusions;
- Listing of notable exclusions;
- Listing of items/issues carrying significant risk;
- Estimate Reconciliation with last submission and with Construction Cost Plan.

RS 1.4 Coordination within the Consultant's Integrated Team

Throughout all phases of the project, the Consultant shall:

a) Assume responsibility for coordinating the work of specialists and Sub-Consultants retained by the Consultant;

b) Ensure clear, accurate and ongoing communication of concept design, budget, and scheduling issues including changes as they relate to the responsibilities of all specialists and Sub-Consultants, from initial reviews to post-construction reports;

c) Co-ordinate the Consultant Team's input for updates to the existing PSPC Risk Management Plan for this project;

d) Co-ordinate the Quality Assurance process ensuring submissions of Sub-Consultants are complete and signed-off by the designated senior reviewer;

e) Review all documents produced by Consultant Team before submittal to Departmental Representative to ensure the interface between specialties is seamless and items crucial to the design have been neither omitted nor duplicated nor are any aspects of the submittal contradictory to each other; and

f) Ensure site inspectors attend all required meetings.

RS 2 PRE-DESIGN / ANALYSIS OF PROJECT REQUIREMENTS

RS 2.1 General Requirements

In this Phase, the Consultant shall:

a) Review, analyze and report on all aspects of the project requirements;

b) Review and analyze all available existing information;

c) Identify all additional information or studies that shall be needed to deliver the project;

d) Carry out specific site studies and technical investigations, described herein, in order to obtain essential information needed to complete the project;

e) Identify and verify all authorities having jurisdiction over the project, as well as all codes, regulations and standards that apply;

f) Develop a project work breakdown structure, a detailed project schedule and project cash flow projections for each stage of the project life cycle;

g) Develop updated indicative (Class 'D') construction cost estimate including risk allowances; and

h) Deliver a comprehensive Pre-Design Report covering all of the above elements.

The approved Pre-Design Report shall become the formal project work plan and shall be used throughout the

project to guide the delivery of services.

RS 2.2 Studies

The Consultant shall carry out the following Studies, which are deemed to be included in the scope of services for this project, and shall be included in the Consultant's price proposal for RS 2, as per details provided for each study. The studies and investigations started under RS 2 do not have to be completed prior to starting RS3.

The Studies shall be incorporated into the Detailed Project Schedule. The consultant is to complete the studies as part of the design process to be able to decide and confirm the design direction and incorporate the studies recommendations and findings in the design.

a) General Requirements for Studies and Deliverables

Deliverables shall conform to the following general requirements in addition to the specific requirements described for each Study described in sub-sections below.

1. Develop and submit, specific schedule for conducting the investigation and analysis for review and approval by the Departmental Representative before starting each Study.
2. Make all necessary arrangements, conduct complete field investigations, and start data analysis.
3. Produce a report on the findings and analyses for review. Structure reports as follows:
   - Executive Summary;
   - Scope of Work;
   - Method;
   - Analysis;
   - Results, which must include records of the field investigations;
   - Recommendations; and
   - Conclusions.
4. Finalize the investigation, the analyses and the report, as described above. Also, include all recommendations for adjustments to Project Requirements. Submit for review to the Departmental Representative with recommendations that should be considered in the design and incorporate accepted recommendations in the design.

b) 2019 Comprehensive Detailed Inspection

1. **Purpose**.—To carry out the 2019 Comprehensive Detailed Inspections of the Traffic Bridge and Moveable Dam at Saint Andrews Lock and Dam, and a general inspection of piers, and provide one report covering all components. Field work for the inspection shall be completed between September 1st and October 31st, 2019, and the final report will be delivered no later than March 31st, 2020
2. **Scope and Conditions**

   i) **Comprehensive Detailed Inspection of Traffic Bridge**

   - Carry out a comprehensive detailed inspection of the superstructures and substructures above water for their functional and physical defects as required in Section 1.1.1 to 1.1.2.1 under Part 2, Section 1 - Detailed Inspections, of the current PWGSC Bridge Inspection Manual (BIM).
   - This comprehensive inspection constitutes an in-depth, close-up, examination of all components of the structures including those that may require the use of specialized access equipment to view. The comprehensive detailed inspection shall be in accordance with the BIM Appendix A - Detailed Component Inspections.
   - Develop the Inspection Form and the MCR/PCR Forms as described in Appendix B of the current BIM.

- Record the type and extent of deterioration for every component of each element. Rate each component and reference it (e.g. to floor beams, to panel points etc.) such that it can be identified clearly from the report when preparing the contract documents for repairs or rehabilitation. Give each component a condition rating and a priority code based on the material condition and the performance condition of the component.
- Perform survey of all concrete surfaces by chain dragging of top horizontal surface and by hammer sounding of all other surfaces including soffits. Record all concrete defects such as delaminations, spalls, scaling, disintegration, cracking etc. comparing the defects found with the photos taken in 2018 of the same area.
- Inspect steel components in sufficient detail to assess overall section loss affecting the axial, bending and/or shear capacity of the component, as applicable.
- Record all relevant data in the inspection forms and complete them in accordance with Appendix B - Inspection Forms. Take colour photographs of all significant defects and typical details.
- Where component ratings have changed from previous inspections, provide descriptive text and photographs to fully support decision to modify component rating.
- The following is a summary list of the bridge components from BIM Appendix A that must be inspected.
  - ***Substructures and Superstructures***
    - Abutments, piers bearing seats, ballast walls, wingwalls and retaining walls (concrete and masonry elements)
    - Bearings and anchor bolts
    - Beams, floorbeams, stringers and girders
    - All primary structural members and connections for trusses
    - All secondary (bracing) members and connections
    - Piers, abutments and retaining walls
      - Visual inspection of these elements, sounding areas where delamination is suspected which are accessible without specialised access equipment.
    - Condition of paint systems
    - Condition of rivets, bolts, welds and pins in all members
    - Expansion and other deck joints
  - ***Deck and Roadway***
    - All joint systems
    - Bridge deck top surface (wearing surface), facia and soffit
    - Curbs, drains, sidewalk, barrier walls and railings system, light standards and sign support structures on the structure and at its approaches.
    - Roadway pavement, profile, drainage and geometry 50 meters from bridge.

ii) **Comprehensive Detailed Inspection of Moveable Dam**

- Carry out a comprehensive detailed inspection of the moveable components of the Dam in accordance with the 2010 DIM.
- A comprehensive inspection involves an in-depth, close-up, hands-on examination of all components of the structures including those which may require the use of specialized access equipment to view. Pay particular attention to elements that could reduce the structural capacity of the dam or of individual components thereof.
- The inspection must include, but need not be limited to, the following elements of the SALD

Dam:

- ***Structural components*** of flow control equipment: Inspect the following:
  - Caméré curtains
  - Main vertical girders of frames
  - Bracing members and connections
  - Top casting blocks at the operations deck level
  - Frame hangers and their supporting beams
  - Vertical, horizontal and diagonal bracing members in the frames
  - Thrust wedges
  - Catwalk
  - Operations platform and its hand railings.
- ***Mechanical components*** of flow control equipment:
  - Perform functional test (i.e. witness operation by PWGSC) and verify that all flow control equipment will operate under normal conditions. Note damage, misalignment or rubbing of moving parts; loose, broken, or missing fasteners; extent of lubrication.
  - Review all five cranes (one overhead crane, two curtain cranes, and two frame cranes) for general condition and good operation, and interview Damkeepers about their observations of the operation of these machines. *NOTE*: actual testing and certification of the mechanical and electrical equipment is outside the scope of the Inspection. However, include verification that the maintenance and testing of flow control equipment is being carried out by site staff and proper records are being kept.
  - Inspect all crane rails for misalignment and missing rail clips
  - Inspect suspension and lifting chains, shackles, and other rigging fittings (examine in detail a minimum of 10% of chains and their fittings, as selected by Damkeepers from those most likely to be problematic). Examine chain link-by-link, noting deformities, cracks, wear, and other defects. Take one section each of the lifting chains for the curtains and the frames and test to destruction to identify ultimate strength and recommend a safe working load.
- ***Electrical components*** of flow control equipment:
  - Electrician to inspect power supply to all cranes including receptacles on deck; note location and condition of junction box providing the power feed; and identify voltage, amperage, and phase for each crane's power supply
  - For each crane, note all information from (or photograph) nameplates on motor and gearbox and nameplates on all other components which have nameplates to photograph
  - Inspect controls for all cranes for correct operation
- ***Navigation lock*** components:
  - Inspect those portions of the lock walls visible from a barge during one lock cycle (i.e. from low water elevation to the wall coping elevation);
  - Inspect lock gates from low water elevation to the top of the lock gates; and,
  - Inspect those portions of the gate and valve operating machinery which are visible from the deck.
  - Lock gates, filling sluices, chamber walls, mitre gates and machinery, retaining walls
  - Wharves, docking bollards

iii) **Final Report** (one report covering both bridge and dam)

Draft and final *Comprehensive Detailed Inspection Report* to the format given in the 2010 BIM and the 2010 DIM.

Report should include the following minimum requirements:

- Provide an Executive Summary.
- Include MCR and PCR Forms in accordance with the BIM and DIM.
- Record and rate each primary component separately. Secondary components of similar type and condition may be grouped.
- The PCR of primary components shall accurately reflect the expected reduction in axial, shear and/or bending capacity of the component based on the observed deterioration.
- Assign Priority Codes to all defects found. Ensure comments clearly provide the basis for the rating (nature and extent of defect) and describe the recommended repair. Provide a brief summary of all recommended actions justifying the priority code.
- Provide an overall condition rating. Provide significant observations that justify the selected condition rating.
- Provide the Functional Condition Rating of the bridge and the justification for that rating.
- Highlight all changes to the condition rating and the priority codes since the last inspection.
- Provide colour photographs of the site in general and of the inspected structure and typical components and document all significant defects.
- Provide condition drawings illustrating the nature and extent of all defects noted in the survey of concrete elements. Start with the drawings from the 2018 report and update to show changes found in 2019. As a minimum, provide a plan view, an elevation view, and a cross-section view of each pier and abutment. Label components in the drawings with the same designation as used in the report.
- Provide a discussion on maintenance, repair, rehabilitation, replacement and additional investigation or study need for the structure, grouped into appropriate BIM and DIM Priority Codes.
- Provide class "D" cost estimates.
- Provide a 10-year management (inspection, maintenance, repair, and capital needs) plan for the bridge and for the dam, grouping the work into logical work packages.

c) 2020, 2021, and 2022 General Inspections

1. **Purpose**.—To carry out the 2020, 2021, and 2022 Annual General Inspection of the Traffic Bridge and Moveable Dam at Saint Andrews Lock and Dam and provide one report covering all components. Field work for inspection shall be completed between September 1st and October 31st,and the final report shall be delivered no later than March 31st of the following year.

2. **Scope and Conditions**

i) **Annual General Inspections of Traffic Bridge**

- Perform General Annual Inspection of the SALD Traffic Bridge as outlined in the PWGSC BIM.
    - For the purposes of this inspection, the bridge components of the "Traffic Bridge" inspection is as per 2019 inspection.

ii) **Annual General Inspections of Moveable Dam**

- Perform General Annual Inspection of the SALD Moveable Dam as outlined in the PWGSC

DIM.

- For the purposes of this inspection, the scope of the "Moveable Dam" inspection is as per 2019 inspection, with the following exceptions:.
  - Mechanical components:
    - Visually inspect a representative sample lifting chains, shackles and other rigging fittings on site.
    - Other testing not required.
  - No inspection required of electrical components:
- Inspection must include witnessing the raising of several curtains; ideally, schedule this part of the inspection to coincide with normal dam operations which see the curtains and frames raised in late October or early November (coordinate with Damkeepers).

iii) **Final Report**

Draft and final *Annual General Inspection Report* to the format given in the 2010 BIM and the 2010 DIM.

Report should include the same minimum requirements as for the 2019 inspection report.

d) Surveying

1. **Purpose**—Obtain all topographical information necessary in support of development of construction documents.
2. **Scope and Conditions**—PSPC shall provide existing information on the bridge profiles as available; this information may not be sufficient. For the purpose of bidding, assume that this work will be required, then:
   - Provide all necessary expertise, services and equipment and take full responsibility for the program to carry out survey investigations.
   - Develop and submit, for the Departmental Representative's review and approval, specific terms of reference, milestones and schedule for conducting the investigation and analysis.
     Provide the services of qualified land surveyors to supervise the field investigation, interpret and analyze the results, and make recommendations.
   - Produce a report on the findings and analyses including: an Executive Summary, Scope of Work, Methodology, Analysis, Results, Recommendations and Conclusions for discussion and review by PSPC. The report shall also include records of the field investigations.
   - Make all necessary arrangements, conduct complete field investigations, and start data analysis;
   - Finalize the investigation, the analyses and the report, as described above, including all recommendations for adjustments to Project Requirements.
   - Submit the report for review and approval.

e) Traffic Study

1. This Analysis has two key objectives:
   - Optimization of construction staging; and,
   - Identify measures to decrease adverse effect on traffic flow requirements;
2. Analyze if some traffic can be diverted to other bridges, by what detour routes and for which periods. Traffic scenarios that need to be investigated during the construction include:
   - Reduction to one vehicle traffic lane used as reversible lane during construction;
   - Reduction to one vehicle traffic lane as a one-way lane during construction;
   - Reduction to one lane for local/emergency traffic only; and,
   - Other scenarios, as appropriate, to identify best traffic management option.

3. The Consultant shall:
   - Gather the restrictions/conditions from the various related stakeholders and authorities;
   - Identify appropriate construction staging solutions based on stakeholder feedback;
   - Identify proper detour routes and signage to be implemented during construction by the general contractor.
4. Produce a report on the findings and analyses including: an Executive Summary, Scope of Work, Methodology, Criteria used, Analyses, Results, Recommendations and Conclusions for review by PWGSC and selected stakeholders. The report shall include tables, drawings, traffic count data and detour route maps as required to demonstrate the results.
5. Finalize the analysis and the report, as described above, including any recommendations for adjustments to Project Requirements;
6. Submit the report to the Departmental Representative for review and approval.

f) Deck and Sidewalk Replacement Study

1. This Study has three key objectives:
   - Analysis of various main span deck replacement materials;
   - Analysis of various sidewalk replacement materials; and,
   - Optimization of construction staging.
2. For the deck and sidewalk replacement options, provide for options considering replacement with materials such as: a partially filled steel grating, cast-in-place or pre-cast concrete deck, FRP deck with a solid core with or without stringers, open steel deck with wood decking, an orthotropic deck, etc.
   - During the project pre-planning stage, PWGSC assumed that the main span deck could be a partially filled steel grating and the sidewalk could be an FRP deck with wood core. The study's recommended materials do not have to be these two types.
3. For each type of material: analyse the effect of such material selection on the extent of works, the costs, appropriateness of materials, durability, schedule of implementation, constructability. Confirm that the traffic staging from the Traffic Study can be implemented with each type of deck material, and analyze the effect of the different dead weights on the supporting structure.
4. The study must be sufficiently detailed and precise to provide PSPC a clear decision for the deck and sidewalk materials.
5. Produce a report on the findings and analyses including: an Executive Summary, Scope of Work, Method, Criteria used, Analyses, Results, Recommendations, and Conclusions for review by PSPC. The report shall include tables, drawings, to demonstrate the recommendation.
6. Finalize the analysis and the report, as described above, including all recommendations for adjustments to Project Requirements;
7. Submit the report to the Departmental Representative for review and acceptance.

g) Approach Condition Study

1. **Purpose**: Determine extent of partial depth concrete repairs in both East and West Approach Spans.
2. This Study has three key objectives:
   - Determine extent of corrosion in top layer of reinforcing in concrete deck of both East and West Approach;
   - Complete Reinforcing Cover Survey on a grid over the deck of both East and West Approach Spans; and,
   - Execute Rapid Chloride Testing (RCT) over entire surface of both East and West Approach to determine extent of chloride penetration.

3. Determine extent of corrosion in top layer of reinforcement by means of test patches in the concrete deck.
   - Open three 0.6m x 0.6m test patches in each approach slab.
4. Complete reinforcing cover survey.
   - Create grid over both approach decks to accurately show location, size and depth of required partial depth concrete repairs
5. Perform RCT tests over entire deck surface to determine depth of chloride penetration.
   - RCT tests to be done in conjunction with reinforcing cover survey.
6. Submit the report to the Departmental Representative for review and approval.

RS 2.3 Scope and Activities

In addition to all of the Site Studies and Technical Investigations described in RS 2.2, and the ongoing project activities outlined in Sections PA and RS 1, the scope and activities for the Pre-Design / Analysis of Project Requirements Phase shall include the following:

a) Project Start Up Meeting

Within five (5) days after finalizing the agreement, the Departmental Representative shall arrange a Project Start Up Meeting which shall be held in Winnipeg, Manitoba.

The purpose of the meeting is to:

- introduce key stakeholders involved in the project which may include such people as:
  - PSPC Representatives (e.g. Project Manager, IAM/EA Dams and Water Management Engineering, IAM/EA Bridges and Transportation Structures , Design Manager, Asset Manager, Property and Facility Manager, Contracting Authority, etc.);
  - Consultant Representatives (e.g. key Consultant Team Members including Sub-Consultants, etc.);
  - Representatives from Authorities Having Jurisdiction (e.g. Other federal departments, provincial departments, municipalities, etc.);
- establish lines of authority, establish who will be reviewing deliverables and why, and describe lines of communication;
- confirm of all project requirements, objectives, issues, constraints and challenges to ensure that they are clearly defined and fully understood;
- confirm project scope of work and schedule, using as a starting point the project Work Breakdown Structure and the project Schedule contained in the Consultant's Proposal for this project;
- review and build upon the project Risk Management Plan prepared by PSPC; and
- review the project budget for verification that the costs are fair and reasonable.

The Consultant shall record decisions and prepare and distribute minutes within seventy-two (72) hours of the meeting.

b) Project Work Breakdown Structure

Within five (5) working days after the Project Start Up Meeting, the Consultant shall prepare and submit a detailed Project Work Breakdown Structure (PWBS) outlining deliverable-oriented groupings of project elements that organize and define total scope of work of the project, including all required reviews and approvals.

- The PWBS shall be developed in accordance with the requirements outlined in the *Doing Business* document and in PSPC's National Project Management System (NPMS). The NPMS can de found at:

http://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/index-eng.html

- The PWBS shall be developed through at least six (6) levels: Project, Stage, Phase, Process, Sub-Process and Activity/Work Package. Each descending level represents an increasingly detailed definition of project work.

c) Project Master Schedule and Cash Flow Projections

Within ten (10) working days after the Project Start Up Meeting, the Consultant shall prepare and submit a Project Master Schedule and Cash Flow Projections that account for all major project milestones and deliverables associated with each project phase.

- Unless specified otherwise in this Section, quantified days duration refers to working days, which is based on a five (5) day work week without including statutory holidays (i.e. approximately 250 working days per year).
- The original Project Master Schedule and Cash Flow Projections shall be "frozen" to provide an original Project Baseline against which the progress of the overall project shall be monitored.
- The Project Baseline may have to be revised as instructed by the Departmental Representative during the course of the project. All revised Project Baselines shall be reconciled with the original Project Baseline to ensure a continuous audit trail.

d) Detailed Project Schedule

Within twenty (20) working days after the Project Start Up Meeting, the Consultant shall prepare and submit a Detailed Project Schedule.

- The Detailed Project Schedule shall include, as a minimum, all Consultant activities, as well as all necessary reviews and approvals, throughout each and every phase of the project.
- The schedule shall include sufficient details to clearly demonstrate the sequence and interdependency of all activities and to provide a reasonable basis for progress monitoring and coordination all project activities.
- It is understood that, in initial versions of the Detailed Project Schedule, details pertaining to activities in later phases of the project shall have to be approximated. As work progresses and the scope of construction becomes more clearly defined, develop more detailed schedules and cash flows.
- Activities with no float, which form the "Critical Path" shall be calculated and clearly indicated on the logical network, as being a continuous series of activities through the project. No more than twenty-five (25) percent of the activities shall be critical, or near critical. Near critical is defined as float in the range of one (1) to five (5) working days.

e) Review of Existing Documentation

The Consultant shall:

- review and assess all available existing documentation related to the project;
- confirm that all necessary pre-design documentation required for this project is available and confirm that the information is still current;
- notify the Departmental Representative of all missing information needed to complete the project; and
- prepare and submit, for the review and approval of the Departmental Representative, a report on Review of Existing Documentation, including recommendations for adjustments to Project Requirements.

f) Analysis of Regulatory Requirements

The Consultant shall:

- confirm all regulatory or statutory requirements affecting the project and describe their potential effect on the project;
- identify all Authorities Having Jurisdiction over the project and confirm their technical and regulatory requirements, as well as their review and approval requirements at various project phases;
- Identify heritage considerations applicable to this work;
- confirm all applicable codes, regulations and standards that shall govern the design and the implementation of the project; and
- prepare and submit, for the review and approval of the Departmental Representative, a report on the Analysis of Regulatory Requirements.

g) Site Surveys and Inspections

In addition to the Studies described in RS 2.2, and without being limited to the following, the Consultant shall visit and inspect the project site and surrounding areas to:

- Conduct all necessary site inspections, surveys, measurements, evaluations, etc., to obtain additional detailed data required to supplement information contained in existing documentation;
- Become familiar with the site's geographical and hydrological features;
- Correlate the information contained in existing project documentation with actual on-site features and conditions;
- Verify information contained in PSPC's site plans and record all discrepancies or needed adjustments;
- Identify possible locations for setting up field offices and for mobilization and storage of construction materials and equipment;
- Verify the availability and capacity of local utility services that may have an effect on the project;
- Identify, at the earliest stage, potential traffic issues related to construction;
- Identify local issues and constraints that may affect the project;
- Identify issues and/or opportunities relating to environmental protection, sustainable development, or waste management, that may warrant further consideration; and
- Consult with local personnel with respect to site-specific performance issues and operational requirements.

In addition to the reports already described in RS 2.2, prepare and submit reports on the findings of these Site Surveys and Inspections, including recommendations for adjustments to Project Requirements.

h) Additional Site Studies and Investigations

During the course of Site Studies and Technical Investigations, the Review of Existing Documentation, and Site Surveys and Inspections, as described in previous sub sections, the Consultant may identify missing pertinent information needed to complete the project.

In such cases, the Consultant shall propose a work plan, terms of reference, schedule and cost estimates for conducting the necessary site studies and investigations to acquire and analyze the missing pertinent information. Also, provide an assessment of the risks to the project of not proceeding with the proposed studies and investigations.

This work would only be carried out if the Departmental Representative grants approval. Should such an approval be granted, the approved work and associated fees and disbursements would then be treated as an amendment to the Consultant contract and be processed accordingly.

i) Analysis of Project Requirements

The Consultant shall:

- Review, analyze and confirm all Project Requirements as outlined in this Project Brief including requirements relating to, but not limited to:
  - project objectives, issues, constraints and challenges;
  - design principles;
  - design and performance;
  - sustainable development;
  - environmental protection;
  - waste management;
  - O&M.
- Assess the results and findings of the following activities, when they become available, and make recommendations for adjustments to the Project Requirements in a report:
  - review of existing documentation;
  - analysis of Regulatory Requirements;
  - Site Surveys and Inspections;
  - Site Studies and Technical Investigations; and
  - additional Site Studies and Investigations, as applicable.
- Prepare and submit, for the review and approval of the Departmental Representative, a report on the review, analysis and confirmation of Project Requirements, including approved adjustments.
- The approved Project Requirements report, together with the approved report on the Analysis of Regulatory Requirements, shall form the basis for developing and confirming the criteria and parameters that shall govern the design and construction, as well as all other technical aspects of the project.
- It is understood that specific Project Requirements may require further adjustments as the project progresses and new pertinent information becomes available.

RS 2.4 Deliverables

Unless otherwise specified, all deliverables shall be provided in accordance with the requirements outlined in PA 3 - SUBMISSIONS, REVIEWS AND APPROVALS.

The Consultant shall prepare and submit the following deliverables:

a) Minutes of all project Progress Meetings, as per PA 1.5 and Other Meetings, as per PA 1.6;

b) Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3;

c) A complete record of decision of the Project Start Up Meeting as per RS 2.3 a);

d) A Project Work Breakdown Structure as per RS 2.3 b);

e) A Project Master Schedule and Cash Flow Projections as per RS 2.3 c);

f) A Detailed Project Schedule as per RS 2.3 d);

g) An updated project Risk Management Plan;

h) A report on the review of existing documentation including, but not limited to:

- a list of all documents that were reviewed;
- confirmation that all necessary pre-design documentation required for this project is available and confirmation that the information is still current and up-to-date;
- identification of all missing information that would be required to complete the project;
- recommendations for adjustments to Project Requirements, as a result of the review of existing

documentation.

i) A report on the analysis of regulatory requirements including, but not limited to:

- a list of all regulatory or statutory requirements affecting the project and a summary of their potential effect on the project;
- a list of all Authorities Having Jurisdiction over the project and description of their requirements in terms of reviews and approvals at various project phases;
- a list of all applicable codes, regulations and standards that shall govern the design and the implementation of the project.

j) A report on the findings of the Site Surveys and Inspections covering all the elements outlined in RS 2.3 g);

k) Reports and other deliverables as outlined for each study identified in RS 2.2;

l) For each additional site study and investigation (as applicable), that may be deemed necessary to acquire and analyze the missing pertinent information:

- a proposal including: a work plan, terms of reference, schedule and cost estimates for conducting the proposed site study and investigation. Also, an assessment of the risks to the project of not proceeding with the study and investigation;
- obtain the Departmental Representative's approval before proceeding with the study/investigation;
- specific requirements regarding scope, schedule and deliverables shall be confirmed by the Departmental Representative.

m) A report on project requirements, including, but not limited to:

- results of the review and analysis of all elements outlined in RS 2.3 i);
- listing and description of all recommendations regarding adjustments to Project Requirements, including those made as a result of other activities in RS 2.2 and RS 2.3;
- pertinent details of all approved recommendations for adjustments to Project Requirements;
- confirmation of Project Requirements, including approved adjustments.

n) Report on Consultant's Rebuttal to PSPC Quality Assurance Reviews including, but not limited to:

- review and analysis of comments provided by the PSPC Project Team;
- written response to all comments received, either explaining why comments are being challenged by the Consultant, or confirming how comments were addressed or incorporated into the work;

The Consultant shall also prepare and submit an integrated Pre-Design Report.

The Pre-Design Report shall consolidate the deliverables identified in RS 2 - PRE-DESIGN / ANALYSIS OF PROJECT REQUIREMENTS and shall be used as the benchmark project control document to monitor progress of the project. The report shall be used as a basis for monthly reporting of progress and shall require supplements and modifications to reflect changes in project parameters as may be identified and accepted throughout the project life cycle.

The Pre-Design Report shall contain the following;

- an Executive Summary;
- the approved Project Work Breakdown Structure;
- the approved Project Master Schedule / Cash Flow Projections;
- the approved Detailed Project Schedule;
- the approved updated Indicative, (Class 'D') Construction Cost Estimate;
- the approved updated project Risk Management Plan;

- key elements of the approved report on the Review of Existing Documentation;
- key elements of the approved report on the findings of the Analysis of Regulatory Requirements;
- key elements of the approved report on the Site Surveys and Inspections;
- key elements of the approved Final Report for each of the Site Studies and Technical Investigations;
- identification of possible Additional Site Study and Investigation that may be required, with overview of scope, schedule, risk and cost estimates;
- key elements of the approved Report on Project Requirements;
- key elements of the approved Construction Emergency Preparedness Plan;
- a summary of all Approved Changes in project scope, cost or schedule, including those that have resulted in amendments to the Consultant contract. Details to be provided on each change shall include, without being limited to:
  - description of change;
  - reason for change;
  - risk assessment;
  - date of approval;
  - effect on project scope, cost and schedule;
  - resulting approved amendment to the contract.

RS 3 DESIGN CONCEPT

RS 3.1 General Requirements

The Consultant shall obtain written authorization from the Departmental Representative before proceeding with the services related to the Design Concept

The Consultant shall review the approved Pre-Design Documents, develop and analyze options and prepare Concept Design Documents in sufficient detail to:

a) translate the Project Requirements into design criteria and parameters;

b) illustrate Design Concepts that optimize the achievement of all Project Requirements and of all design criteria and parameters;

c) develop alternative Construction implementation strategies, schedules and associated cost estimates;

d) recommend a preferred option to be developed further under RS 4 Design Development; and

e) prepare a Class “C” Construction cost estimate for the approved option.

RS 3.2 Scope and Activities

a) Design Criteria and Parameters

- Verify and confirm the ongoing validity of the approved Project Requirements Report and the approved Report on the Analysis of Regulatory Requirements, delivered in the RS 2 Pre-Design and Analysis of Project Requirements phase.
- Recommend adjustments to the Project Requirements that may be deemed necessary as the results of the Studies and Technical Investigations identified in RS 2 become available, or as other pertinent project related data becomes available.
- Revise the Project Requirements as required, to reflect approved adjustments.
- Based on the latest approved Project Requirements and confirmed Regulatory Requirements, Codes and Standards:

- develop and describe, with supporting background and technical justification, Design Criteria and Parameters that shall govern the design; and
- prepare and submit, for the Departmental Representative's review and approval, a detailed Report on Design Criteria and Parameters.

b) Design Option Development and Analysis

Identify, develop and analyze up to three (3) design options based on: the Pre-Design Documents, the approved Design Criteria and Parameters, the latest Project Requirements and all pertinent data obtained from Studies and Technical Investigations.

For each design option:

- Complete a detailed analysis and describe how the option responds to the latest approved Project Requirements, covering all elements listed in PR 3 & PR 4 including, but not limited to:
  - project objectives, issues, constraints and challenges;
  - design principles, criteria and parameters;
  - principles and goals of Sustainable Development;
  -
  - findings and recommendations from the various Site Studies and Technical Investigations, as they become available;
  - waste management requirements;
  - all applicable codes, regulations and standards.
- Describe and assess the proposed Construction Implementation Strategies associated with the design option, including such elements as: location and alignment of structure, mobilization, phased construction, demolition, traffic control, duration, field office and storage areas, etc.);
- Provide a construction schedule that reflects the proposed Construction Implementation Strategies and assess potential for changes to the overall project schedule;
- Identify and quantify potential risks associated with the options and recommend mitigation measures for each risk identified;
- Provide a breakdown of Class "D" (Indicative) estimated life-cycle costs for the option and quantify potential areas for risk related to overall project cost;
- Recommend one design option for further development complete with all supporting background and technical justification; and
- Prepare and submit a detailed Report on the Concept Design Option Development and Analysis covering all the points described above.

c) Approved Option

Once the preferred option has been selected and approved by PSPC, the Consultant shall further explore the option in sufficient detail to:

- provide a breakdown of Class "C" estimated life-cycle costs for the option and quantify risks which may affect overall project cost;
- provide additional details on the proposed Construction Implementation Strategies;
- identify specific critical design issues that shall have to be resolved in the design development, with broad recommendations on possible alternative solutions;
- provide additional details on the construction schedule and assess the potential for changes to the overall project schedule; and
- prepare and submit, for the Departmental Representative's review and approval, a detailed Report on Approved Concept Design Option covering all the points described above.

d) Other Required Activities

- Participate in all meetings outlined in PA 1.5 and 1.6, record the issues and decisions, as well as prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.
- Prepare and submit all required Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3.
- Prepare and submit a detailed Designated Substance Report meeting Manitoba requirements, including but not limited to consideration of concrete demolition dust and potential lead paint on structural steel members.
- Review and update, as required:
  - the Project Work Breakdown Structure;
  - the Detailed Project Schedule;
  - the Project Cost Estimates and Cash Flow Projections;
  - the Risk Management Plan; and
  - the Construction Emergency Preparedness Plan, as applicable.

RS 3.3 Deliverables

Unless otherwise specified, all deliverables shall be provided in accordance with the requirements outlined in PA 3 SUBMISSIONS, REVIEWS AND APPROVALS.

The Consultant shall prepare and submit the following deliverables for review and approval by the Departmental Representative.

a) Minutes of all project Progress Meetings, as per PA 1.5 and Other Meetings, as per PA 1.6;

b) Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3;

c) A report on updated Project Requirements, including, but not limited to:

- recommended adjustments to Project Requirements made during this phase;
- details of all approved adjustments to Project Requirements made during this phase;
- confirmation of the latest Project Requirements, including approved adjustments.

d) A detailed Report on Design Criteria and Parameters as per RS 3.2 a);

e) A detailed Report on the Concept Design Option Development and Analysis covering all the points described in RS 3.2 b);

f) A detailed Report on the Approved Concept Design Option containing a breakdown of Class “C” estimated life-cycle costs, Construction Implementation Strategies and covering all the points described in RS 3.2 d);

g) A detailed Designated Substance Report;

h) An updated Project Work Breakdown Structure;

i) An updated Detailed Construction and Project Schedules;

j) Updated Project Cost Estimates and Cash Flow Projections;

k) An updated Risk Management Plan;

l) An updated Construction Emergency Preparedness Plan, is applicable; and

m) a Report on the Consultant’s Rebuttal to PSPC Quality Assurance Reviews including, but not limited to:

- review and analysis of comments provided by the PSPC Project Team; and

- written response to all comments received, either explaining why comments are being challenged by the Consultant, or confirming how comments were addressed or incorporated into the work.

The Consultant shall also prepare and submit an integrated Design Concept Report for review and approval by the Departmental Representative.

The Design Concept Report shall update the Pre-Design Report, consolidate the deliverables identified in this Section and continue to be used as the benchmark control document to monitor progress of the project. The Design Concept Report shall also provide direction for the Design Development.

The Design Concept Report shall contain the following;

- an Executive Summary;
- the approved updated Project Work Breakdown Structure;
- the approved updated Detailed Construction and Project Schedules;
- the approved updated (Class 'C') Construction Cost Estimate;
- the approved updated Project Cost Estimates and Cash Flow Projections;
- the approved updated project Risk Management Plan;
- a summary of the approved updated Project Requirements, with brief explanation of changes made during this phase and an overview of key Design Criteria and Parameters;
- key elements of the approved Report on Concept Design Option Development and Analysis;
- key elements of the Detailed Report on the Approved Concept Design Option containing a breakdown of Class "C" estimated life-cycle costs and Construction Implementation Strategies;
- key elements of the approved Designated Substance Report; and
- key elements of the approved updated Construction Emergency Preparedness Plan, as applicable.

n) A summary of all changes approved in the RS 3 phase, regarding project scope, cost or schedule, including those changes that have resulted in amendments to the Consultant contract. Details to be provided on each change shall include, without being limited to:

- description of change;
- reason for change;
- risk assessment;
- date of approval;
- effect on project scope, cost and schedule;
- resulting approved amendment to the contract.

RS 4 DESIGN DEVELOPMENT

RS 4.1 General Requirements

The Consultant shall obtain written authorization from the Departmental Representative before proceeding with the services related to the Design Development.

Based on the approved Design Concept Documents, the Consultant shall further develop the design option selected for refinement at the Design Concept phase and produce Design Development Documents to describe the scope, quality and cost of the project in sufficient detail to:

a) Define the details of design components, systems and materials, for all applicable disciplines, and confirm

their compliance with codes, standards and all other Project Requirements;

b) Elaborate the details of construction implementation strategies (e.g. phased construction, demolition, traffic control, mobilization, duration, etc.);

c) Identify and assess potential risks, and recommend mitigation measures;

d) Facilitate the reviews, discussions and decisions relating to the design;

e) Develop a Substantive, Class "B" Construction cost estimate;

f) Support the Treasury Board Submission for Project Approval; and

g) Obtain necessary approvals from Departmental Representative to proceed to the development of Construction Documents.

RS 4.2 Scope and Activities

a) Design Development Work Breakdown Structure and Schedule

Prepare and submit, for the Departmental Representative's approval, a detailed Design Development Work Breakdown Structure and Schedule outlining:

- key activities, deliverables and milestones of the Design Development process, as outlined in the sub-sections that follow;
- key activities, sequence and targets for completing the design of the various major technical elements comprising this project, as described in RS 4.2 c), including all related detailed components, systems, materials and appurtenances; and
- the milestone dates and degrees of completion at which the Design Development

Documents shall be submitted for interim review and approval (at least at 50% stage).

b) Project Requirements / Design Criteria and Parameters

Verify and confirm the ongoing validity of the approved Project Requirements, including applicable Regulatory Requirements, Codes and Standards.

Recommend adjustments to the Project requirements that may be deemed necessary as the Design Development progresses, or as other pertinent project related data becomes available.

Revise the Project Requirements as required, to reflect approved adjustments.

Based on the latest approved Project Requirements and confirmed regulatory requirements, codes and standards:

- further develop, update as required and describe, with supporting background and technical justification, the Detailed Design Criteria and Parameters that shall govern the design development; and
- prepare and submit, for the Departmental Representative's review and approval, a Report on Detailed Design Criteria and Parameters.

c) Design Development Documents

Coordinate the design work of all relevant disciplines and prepare an integrated set of Design Development Documents, using an appropriate combination of drawings, specifications and narrative reports, which shall cover all of the activities and requirements outlined in the paragraphs that follow.

- Clearly describe and substantiate the details of all design components, systems, materials and

appurtenances associated with the various major technical elements comprising this project, including but not limited to:

- The Traffic Bridge Deck and Sidewalk;
- The Trusses and other Structural Steel members;
- Structural Steel Coating Repairs;
- Approaches to the structure including: Provincial Trunk Highway 44, municipal/private roads, sidewalks, bicycle paths, municipal and private utility services, landscaping, roadway lighting, signage, etc., and all necessary tie-ins and connections to local municipal/city/provincial networks; and,
- Environmental mitigation measures.

- Demonstrate how the design incorporates and responds to the latest approved Detailed Design Criteria and Parameters, and the latest approved Project Requirements covering all elements listed in PR 3 & PR 4 including, but not limited to:
  - project objectives, issues, constraints and challenges;
  - technical and performance requirements;
  - design principles, criteria and parameters;
  - all applicable codes, regulations and standards;
  - principles and goals of sustainable development;
  - findings and recommendations from the various Site Studies and Technical Investigations, as they become available;
  - waste management requirements;
  - O&M requirements;
- Demonstrate how the design incorporates and responds to Construction Implementation Strategies and Requirements including, but not limited to:
  - mobilization;
  - construction staging and scheduling, including lead times for special equipment, components and materials;
  - seasonal and environmental constraints;
  - demolition staging and duration;
  - dewatering (as applicable);
  - traffic control;
  - ongoing operation and functionality of existing assets;
  - construction site access, field office and storage areas.
- Develop and submit fully coordinated and integrated Design Development drawings at a sufficient level of detail to make design decisions and develop a Substantive Class “B” construction cost estimate.
- The Design Development drawings shall include all necessary sketches, plans, elevations, cross-sections and perspectives views to ensure effective graphical representation of all design features and Construction Implementation Strategies and Requirements.
- Ensuring that all design and construction elements, components, systems and materials included in the project are covered, and integrating all applicable disciplines: develop and submit lists and outlines of:
  - all applicable National Master Specifications (NMS) sections to be used; and,
  - any additional specification sections, not currently covered in the NMS, that shall have to be created (in NMS format) based on manufacturers’ technical information, on provincial specifications or on other information from a recognized technical authority.

- Describe and submit detailed technical information and support data relating to the Design Development including, but not limited to:
  - a description and explanation of technical and/or operational assumptions that may have been made, and based on which the design was developed;
  - design calculations and results of technical analyses;
  - design loads;
  - traffic control requirements;
  - dimensions, locations, alignments and sizes of all design components in sufficient detail to enable the design to be checked; and
  - proposed materials and products requiring approval, with all related manufacturers' technical literature and specifications.
- Provide a construction schedule that reflects the design and the proposed Construction Implementation Strategies and Requirements described in an earlier sub-section, and assess the potential for changes to the overall project schedule.
- Identify/quantify potential risks associated with the design and construction. Recommend risk mitigation measures.
- Provide a Substantive, Class "B" Construction Cost Estimate, with a cost breakdown, and quantify risks that may affect overall project cost.

d) Waste Management Audit and Workplan

In accordance with the guidelines described in the PSPC Environmentally Responsible Construction and Renovation Handbook:

- carry out a Waste Audit to identify the types and quantities of waste material that shall be produced during the project, as well as prepare and submit a Waste Audit Report;
- in collaboration with the Departmental Representative, confirm the project targets set for reduction, reusing and recycling; and
- prepare and submit for review and approval, a Waste Management Workplan (also known as Waste Diversion Workplan) including, but not limited to:
  - a list of materials from the Waste Audit identified for reuse; potential diversion options for each of these materials; and a summary of the weight and volume of materials that can be diverted to reuse;
  - a list of materials from the Waste Audit identified as recyclable, potential diversion options for each of these materials including the name, location and description of the market outlet, and a summary of the weight and volume of materials that can be diverted to recycling;
  - on-site practices and procedures to maximize the reuse and recovery of those materials identified in the Waste Audit; and
  - anticipated costs associated with handling and storage on-site (e.g. bin rental costs), transportation costs (delivery to market or disposal outlets), potential revenues from the sales of materials, etc.

The Consultant shall also review and update, as required, the Designated Substance Report.

e) Other Required Activities

- Participate in all meetings outlined in PA 1.5 and 1.6, record the issues and decisions, as well as prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.
- Prepare and submit all required Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3.

- Review and update, as required:
  - Project Work Breakdown Structure;
  - Detailed Project Schedule;
  - Project Cost Estimates and Cash Flow Projections;
  - Risk Management Plan;
  - Construction Water Management Plan and Construction Emergency Preparedness Plan, as applicable; and
  - Environmental Mitigation Measure Monitoring Program outlining the implementation and monitoring of environmental mitigation measures for projects near water.

RS 4.3 Deliverables

Unless otherwise specified, all deliverables shall be provided in accordance with the requirements outlined in PA 3 SUBMISSIONS, REVIEWS AND APPROVALS.

The Consultant shall prepare and submit the following deliverables for review and approval by the Departmental Representative:

a) Minutes of all project Progress Meetings, as per PA 1.5 and Other Meetings, as per PA 1.6;

b) Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3;

c) A Design Development Work Breakdown Structure and Schedule as per RS 4.2 a);

d) A report on updated Project Requirements as per RS 4.2 b) including, but not limited to:

- recommended adjustments to Project Requirements made during this phase;
- details of all approved adjustments to Project Requirements made during this phase; and
- confirmation of the latest Project Requirements, including approved adjustments.

e) A detailed Report on updated Detailed Design Criteria and Parameters, as per RS 4.2 b);

f) Design Development Documents covering all the points described in RS 4.2 c);

g) A specific report on Construction Implementation Strategies and Requirements covering the related points described in RS 4.2 c);

h) A Waste Audit Report and a Waste Management Workplan as per RS 4.2 d);

i) An updated Designated Substance Report;

j) An updated Construction Emergency Preparedness Plan, as applicable;

k) An Environmental Mitigation Measure Monitoring Program;

l) An updated Project Work Breakdown Structure;

m) Updated Detailed Construction and Project Schedules;.

n) A Substantive, Class “B” Construction Cost Estimate, with a cost breakdown;

o) An updated Project Cost Estimates and Cash Flow Projections;

p) An updated Risk Management Plan; and

q) A Report on the Consultant’s Rebuttal to PSPC Quality Assurance Reviews including, but not limited to:

- review and analysis of comments provided by the PSPC Project Team; and
- written response to all comments received, either explaining why comments are being challenged by the Consultant, or confirming how comments were addressed or incorporated into the work.

The Consultant shall also prepare and submit an integrated Design Development Report for review and approval by the Departmental Representative.

The Design Development Report shall update the Design Concept Report, consolidate the deliverables identified in this Section and continue to be used as the benchmark control document to monitor progress of the project.

The Design Development Report shall contain the following;

a) Executive Summary;

b) Approved updated Project Work Breakdown Structure;

c) Approved updated Detailed Construction and Project Schedules;

d) Approved Substantive, Class "B" Construction Cost Estimate;

e) Approved updated Project Cost Estimates and Cash Flow Projections;

f) Approved updated project Risk Management Plan;

g) A summary of the approved updated Project Requirements, with a brief explanation of changes made during this phase and an overview of key Design Criteria and Parameters;

h) Key elements of the approved Design Development Documents covering all the subjects outlined in RS 4.2 c);

i) Key elements of the approved report on Construction Implementation Strategies and Requirements;

j) Key elements of the approved Waste Audit Report and Management Workplan;

k) Key elements of the approved updated Designated Substance Report;

l) Key elements of the approved updated Environmental Mitigation Measure Monitoring Program;

m) Key elements of the approved updated Construction Emergency Preparedness Plan, as applicable; and

n) A summary of all changes approved in the RS 4 phase, regarding project scope, cost or schedule, including those changes that have resulted in amendments to the Consultant contract. Details to be provided on each change shall include, without being limited to:

- description of change;
- reason for change;
- risk assessment;
- date of approval;
- effect on project scope, cost and schedule;
- resulting approved amendment to the contract.

RS 5 CONSTRUCTION DOCUMENTS

RS 5.1 General Requirements

The Consultant shall obtain written authorization from the Departmental Representative before proceeding with the services related to the development of Construction Documents.

The objective of the Construction Documents phase is to translate the approved Design Development

Documents into construction drawings and specifications to guide and direct the Contractor and Sub-contractors in carrying out their work on the project.

The various stages of Construction Document preparation reflect the degree of completion of the documents and

are defined, in broad terms, as follow:

a) 33% complete: indicates that all technical aspects of the plans and specifications are coordinated and all drawings and specifications that are to be included in the tender package have been advanced to a state that they can submitted for a technical review;

b) 66% complete: indicates substantial technical development of the project and well-advanced plans, details, schedules, and specifications for all disciplines. All drawings and specifications are fully coordinated;

c) 99% complete: is the submission of complete Construction Documents ready for final technical reviews and approvals, and for submission to local authorities for permit purposes. All drawings and specifications are fully coordinated;

d) Final Submission: incorporates all revisions required in the 99% version and is intended to provide PSPC with complete Construction Documents for tender call.

RS 5.2 Scope and Activities

Scope and activities at the various stages of Construction Document preparation are very similar. The main differences between stages are the degree of completeness of the Construction Documents as described above.

a) Construction Documents at 33%, 66% and 99% Stages

The Consultant shall, for each stage of Construction Document preparation:

- Coordinate all disciplines and prepare integrated sets of construction drawings and specifications covering all disciplines;
- Submit drawings and specifications for PSPC review and approval, allowing 15 working days for this review;
- Attend up to two (2) technical and document production meetings per submission listed in section 5.1, that may be arranged by Departmental Representative or by the Consultant, for the review of Construction Documents; prepare minutes of the meetings and distribute copies to all participants, provide document demonstrating how PSPC comments were addressed for each review;
- Upon approval from the Departmental Representative, submit drawings and specifications, at appropriate stages, to Authorities Having Jurisdiction, for review and, as required, for approval. Report to the Departmental Representative comments received, approvals granted, and changes requested;
- Provide details and report on Construction Implementation Strategies including such elements as: mobilization, phased construction, demolition, traffic control, duration, field office and storage areas, etc.;
- Submit all recommended adjustments to Project Requirements. Update the Report on Project Requirements, as required, to reflect approved adjustments;
- Assess risks and update, as required, the Risk Management Plan;
- Provide updated Substantive Class “B” Construction Cost Estimates (33% and 66%);
- Provide Pre-tender Class “A” Construction Cost Estimates, with a cost breakdown (99%);
- Provide updated Project Cost Estimates and Cash Flow Projections;
- Provide updated Construction and Project Schedules;
- Prepare and submit written response to comments made by PSPC and by Authorities Having Jurisdiction on the submission reviews, and:
  - include clear indications on drawings and in specifications as to how comments were incorporated, in the subsequent submission; or

- in cases where comments are being challenged by the Consultant, provide an explanation of the reasons for the challenges.

b) Final Construction Documents

The Consultant shall:

- Prepare and submit Final Construction Documents, including:
  - complete sets of final drawings and specifications, signed and sealed by respective discipline specialists licensed in the province(s) where the project is being carried out; and
  - any appended technical reports (e.g. extracts from pre-design studies) that shall form part of the Construction Documents, signed and sealed by respective discipline specialists licensed in the province(s) where the work is being carried out.
- As required, submit Final Construction Documents to Authorities Having Jurisdiction for review and to obtain all necessary permits. Report to the Departmental Representative comments received, approvals granted, permits issued, and changes requested;
- Prepare and submit written response to comments made by PSPC and by Authorities Having Jurisdiction on the 99% reviews, and:
  - include clear indications on drawings and in specifications as to how comments were incorporated, in the Final Construction Documents; or
  - in cases where comments are being challenged by the Consultant, provide an explanation of the reasons for the challenges;

c) Additional Final Submission Requirements

As part of the Final Construction Document Submission, the Consultant shall also prepare and submit the following documents:

- Terms of Reference for a complete program of Field Quality Control Testing specifying the scope of work, method, type, number and frequency and estimated unit costs, as well as total estimated cost, for all testing that shall be required during construction;
- Minutes of all Progress Meetings, as per PA 1.5 and Other Meetings, as per PA 1.6;
- Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3;
- A final Report on updated Project Requirements, including, but not limited to:
  - recommended adjustments to Project Requirements made during this phase;
  - details of all approved adjustments to Project Requirements made during this phase;
  - confirmation of the latest Project Requirements, including approved adjustments.
- A final Report on updated Design Criteria and Parameters;
- Final updated Commissioning Documents for electrical work;
- Final updated Report on Construction Implementation Strategies;
- Updated Waste Audit Report and Waste Management Workplan;
- Updated Designated Substance Report;
- Updated Environmental Mitigation Measure Monitoring Program;
- Updated Construction Emergency Preparedness Plan, as applicable;
- Updated Project Work Breakdown Structure;
- Updated Detailed Construction and Project Schedules;
- Final Pre-tender Class “A” Construction Cost Estimate, with a cost breakdown;
- Updated Project Cost Estimates and Cash Flow Projections; and
- Updated Risk Management Plan.

RS 5.3 Deliverables

Unless otherwise specified, all deliverables shall be provided in accordance with the requirements outlined in PA 3 SUBMISSIONS, REVIEWS AND APPROVALS.

a) Construction Documents Submissions

Deliverables at the various stages of Construction Document preparation are very similar. The main differences between stages are the degree of completeness of the Construction Documents and of the related supporting documents and reports.

At each stage of Construction Document preparation, the Consultant shall prepare and submit for the Departmental Representative's review and approval:

- complete sets of fully coordinated and integrated construction drawings and specifications covering all disciplines. The documents shall be developed at a degree of completeness consistent with the submission stage and cover the requirements outlined in RS 5.2;
- all other related documents and reports, as outlined in RS 5.2; and

b) Construction Document Report

The Consultant shall also prepare and submit an integrated Construction Document Report for review and approval by the Departmental Representative.

The Construction Document Report shall update the Design Development Report, consolidate the deliverables identified in this Section and continue to be used as the benchmark control document to monitor progress of the project.

The Construction Document Report shall contain the following:

- Executive Summary;
- Approved updated Project Work Breakdown Structure;
- Approved updated Detailed Construction and Project Schedules;
- Approved Pre-tender, Class "A" Construction Cost Estimate, and cost breakdown;
- Approved updated Project Cost Estimates and Cash Flow Projections;
- Approved updated project Risk Management Plan;
- A summary of the approved updated Project Requirements, with a brief explanation of changes made during this phase and an overview of key Design Criteria and Parameters;
- Key elements of the approved updated Report on Construction Implementation Strategies;
- Key elements of the approved Waste Audit Report and Management Workplan;
- Key elements of the approved updated Designated Substance Report;
- Key elements of the approved updated Environmental Mitigation Measure Monitoring Program;
- Key elements of the approved updated Construction Water Management Plan and Construction Emergency Preparedness Plan, as applicable; and
- Summary of all changes approved in the RS 5 phase, regarding project scope, cost or schedule, including those changes that have resulted in amendments to the Consultant contract. Details to be provided on each change shall include, without being limited to:
  - description of change;
  - reason for change;
  - risk assessment;
  - date of approval;
  - effect on project scope, cost and schedule;
  - resulting approved amendment to the contract.

RS 6 TENDER CALL, BID EVALUATION AND CONSTRUCTION CONTRACT AWARD

RS 6.1 General Requirements

The Consultant shall obtain written authorization from the Departmental Representative before proceeding with the services related to Tender Call, Bid Evaluation and Construction Contract Award.

The purpose of this phase is to obtain and evaluate bids from qualified Contractors, and to award a contract for the construction of the project as per the Tender Documents and in accordance with Government Contract Regulations.

RS 6.2 Tender Call

The Consultant shall:

a) Assist the Departmental Representative in organizing and holding a site visit for the purpose of briefing potential bidders on the requirements of the construction contract;

b) Ensure that all Consultant's key project personnel, including the Resident Engineer, participate in the site visit;

c) Record questions and issues raised by bidders, as well as points of clarification and all responses provided;

d) Prepare and submit minutes of the site visit;

e) Advise the Departmental Representative in assessing the need for Addenda to address the questions and issues raised by bidders, and for required corrections or points of clarification;

f) Assess the effect that proposed Addenda may have on cost and schedule, and advise the Departmental Representative accordingly;

g) As required, prepare and submit the Addenda with recommendations, for the Departmental Representative's review; and

h) Assist the Departmental Representative in addressing and responding to technical inquiries that may have been submitted by bidders, in accordance with the requirements of the RFP, during the tender period.

RS 6.3 Bid Evaluation and Contract Award

In collaboration with all relevant disciplines, the Consultant shall:

a) Review and evaluate the following, and advise the Departmental Representative accordingly:

- technical aspects of the low bid;
- environmental impact and sustainability aspects of the bids;
- unit and/or lump sum costs proposed in the bids as compared against Class 'A' construction cost estimates and indicate if the bid is fair and reasonable;
- low bidder's experience and capability to undertake the full scope of work; and
- availability of adequate equipment to carry out Work.

b) Provide advice and assistance to the Departmental Representative regarding:

- any pre-award negotiations with the low bidder that may take place;
- revisions or adjustments to the Construction Documents, or to the scope of work, that may be required as a result of pre-award negotiations with the low bidder; and
- factors and considerations that would influence PSPC's decision as to whether or not to re-tender the

project.

RS 6.4 Deliverables

Unless otherwise specified, all deliverables shall be provided in accordance with the requirements outlined in PA 3 SUBMISSIONS, REVIEWS AND APPROVALS.

The Consultant shall prepare and submit the following deliverables for review and approval by the Departmental Representative.

a) Minutes of the site visit, as well a record of questions and issues raised by bidders during the site visit, as well as points of clarification and all responses provided;

b) Copies of all Addenda, with supporting documentation;

c) Copies of full notes on all inquiries during the bidding period;

d) A bid evaluation report summarizing the findings and recommendations covering the points outlined in 6.3 Bid Evaluation and Contract Award;

e) Revisions or adjustments to the Construction Documents made as a result of pre-award negotiations with the low bidder, or in case re-tendering is deemed necessary;

f) Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3;

g) Minutes of all project Progress Meetings, as per PA 1.5 and Other Meetings, as per PA 1.6; and

h) As required, an updated:

- Project Work Breakdown Structure;
- Project Cost Estimates and Cash Flow Projections;
- Detailed Project Schedule;
- Risk Management Plan;
- Environmental Mitigation Measure Monitoring Program;
- Waste Management Workplan and Designated Substance Report.

RS 7 CONSTRUCTION AND CONTRACT ADMINISTRATION

RS 7.1 General Requirements

The Consultant shall obtain written authorization from the Departmental Representative before proceeding with the services related to the Construction and Contract Administration.

a) The Consultant shall provide the full range of Construction and Contract Administration services required to ensure implementation of the project in compliance with the Contract Documents, and to direct and monitor all approved work changes during construction.

b) During the implementation of the project, the Consultant acts on the Departmental Representative's behalf to the extent outlined in the Consultant Contract, including this Project Brief document.

c) PSPC forms and templates to be used for the production of many documents required in this Section can be found at the following web site: http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html

RS 7.2 Construction Briefing Meeting

Within five (5) days of Construction Contract award, the Departmental Representative shall arrange and chair a

Construction Briefing Meeting which shall be held at a time and place to be determined by the Departmental Representative.

The purpose of the meeting is to:

a) Introduce and confirm the key functions of the stakeholders involved in the project which shall include the following participants:

- PSPC Representatives (e.g. Project Manager/Departmental Representative, COE Engineer/Design Manager, Property Manager, Asset Manager, Contracting Authority, etc.);
- Consultant Representatives (e.g. Resident Engineer, prime contact at Consultant Office, and Sub-Consultants / Specialists as required);
- Contractor (mandatory) and, as required, Subcontractors; and
- Representatives from Authorities Having Jurisdiction (e.g. Provincial departments, cities/municipalities, etc.), as requested by the Departmental Representative;

b) Confirm project objectives, issues, constraints and challenges to ensure that they are clearly defined, fully understood, and appropriately addressed during construction;

c) Review and discuss the Contractor's proposed Detailed Construction Schedule in conjunction with the latest approved Detailed Project Schedule and identify adjustments required to meet the project time objectives;

d) Identify and discuss construction related risks and adjust, as required, the overall project risk plan prepared by PSPC; and

e) Review and discuss the Contractor's proposed Construction Cost Breakdown in conjunction with the latest approved Project Cost Plan/Budget to verify that the proposed Construction Cost Breakdown is fair and reasonable.

The Consultant shall record decisions and actions to be taken, as well as prepare and distribute minutes to all participants within seventy-two (72) hours of the meeting.

RS 7.3 Construction Progress Meetings

The Consultant shall:

a) Arrange and chair Construction Progress Meetings, which shall be held every two (2) weeks throughout the entire project construction phase, and shall normally require the participation of the following parties:

- Consultant or member of Consultant's Resident Site Services Team (mandatory);
- Contractor (mandatory);
- Sub-contractors (if requested by Consultant or if invited by the Contractor with the agreement of the Consultant);
- Consultant Technical Expert and/or Sub-consultants (as required);
- Departmental Representative;
- Other PSPC Representatives (e.g. COE Design Manager, etc.), as required;
- Other Stakeholders may be identified by the Departmental Representative.

b) Verify and confirm the required meeting attendance with the Departmental Representative and ensure that appropriate meeting invitations, with all pertinent documents (e.g. agenda, documents to be reviewed and discussed, minutes from previous meeting, etc.), are sent well in advance to all who shall attend;

c) Hold the meetings in the Consultant's field office at the construction site. In cases where site office facilities at the construction site are not yet ready for holding meetings, the Consultant shall, at no extra cost to PSPC, make alternate arrangements to accommodate the meetings;

d) Ensure that agenda items for each Construction Progress Meeting include, without being limited to:

- review and approval of agenda;
- review and approval of previous minutes;
- progress on actions items from previous meetings;
- new business;
- construction schedule review and update;
- construction budget/cash flow review and update;
- changes: Contemplated Change Notices (CCN) in progress, approved Change Orders;
- status of shop drawings development and review;
- site instructions;
- environmental issues;
- health and safety.

e) Record decisions and actions to be taken, as well as prepare and distribute draft minutes to all participants within seventy-two (72) hours of the meeting.

RS 7.4 Time Planning, Scheduling and Control

The Consultant shall:

a) Within five (5) days of Construction Contract award, obtain from the Contractor a Detailed Construction Schedule;

b) Review the proposed Detailed Construction Schedule for conformity with the latest approved Detailed Project Schedule, identify discrepancies and risks that may affect the achievement of project time objectives, advise the Departmental Representative accordingly;

c) Submit, for the approval of the Departmental Representative, recommendations for:

- acceptance of the Contractor’s Detailed Construction Schedule; or
- adjustments that may be required to the Detailed Project Schedule; and/or
- adjustments that may be required to the Contractor’s Detailed Construction Schedule.

d) Instruct the Contractor to adjust the Detailed Construction Schedule, in accordance with the Departmental Representative’s directives, and to resubmit the schedule for review and approval;

e) Once the Contractor's Detailed Construction Schedule has been accepted by the Departmental Representative it shall form the basis for monitoring the progress of Work;

f) Monitor the progress of Work against the approved Detailed Construction Schedule, investigate and record discrepancies or delays, advise the Contractor in writing, and request that remedial action be taken;

g) Should Work continue to fall behind schedule, regardless of reason, immediately advise the Departmental Representative with recommendations to correct the situation;

h) Only the Department Representative may approve requests for Time Extensions; such approvals shall be issued in writing by PSPC; and

i) Produce and submit Monthly Progress Reports as specified in RS 1.2.

RS 7.5 Cost Planning, Estimating and Control

The Consultant shall:

a) Within five (5) days of Construction Contract award, obtain from the Contractor’s proposed Construction Cost Breakdown;

b) Review the Contractor's proposed Construction Cost Breakdown in conjunction with the latest approved Project Cost Plan/Budget to verify that the proposed Construction Cost Breakdown is fair and reasonable;

c) Identify discrepancies and risks that may affect the achievement of project budget objectives, advise the Departmental Representative accordingly;

d) Submit, for the approval of the Departmental Representative, recommendations for:

- acceptance of the Contractor's Construction Cost Breakdown; or
- adjustments that may be required to the Project Budget; and/or
- adjustments that may be required to the Contractor's Construction Cost Breakdown.

e) Instruct the Contractor to adjust the Construction Cost Breakdown, in accordance with the Departmental Representative's directives, and to resubmit the cost breakdown for review and approval;

f) Once the Construction Cost Breakdown has been approved by the Departmental Representative, it shall form the basis for monitoring construction budget/cash flow and evaluating the progress of Work;

g) Monitor budget, cash flow and the value of progress of work against the approved Construction Cost Breakdown; record discrepancies and overruns; and advise the Contractor in writing with a request that remedial action be taken;

h) Should Work continue to exceed approved Construction Cost Breakdown, for any reason, immediately advise the Departmental Representative with recommendations to correct the situation;

i) Provide cost advice during construction; and

j) Produce and submit the following cost control reports:

- Milestone Reports, as per RS 1.3 c);
- Monthly Cost Reports, as per RS 1.2 c); and
- Exception Reports, as per RS 1.2 c).

RS 7.6 Sub-Contractor Changes

The Consultant shall:

a) Verify that the Contractor is using only the Sub-contractors listed on the Tender Form;

b) Obtain the full list from Contractor no later than ten (10) working days after the award of the Construction Contract, review the list and advise the Departmental Representative accordingly;

c) Review all requests from the Contractor for changes of Sub-contractors, and submit recommendations to the Departmental Representative; and

d) Sub-contractor changes can only be authorized by the Departmental Representative. Changes are only considered when they involve no increase in cost and no reduction in product and service quality.

RS 7.7 Labour, Health and Safety Requirements

The Consultant shall:

a) Verify the Contractor's compliance with all applicable codes, bylaws and regulations specified in the Construction Contract and in this Project Brief, including, but not limited to:

- *Canada Labour Code* as administered by Human Resources and Skills Development Canada (HRSDC);
- Canada Occupational Safety and Health Regulations as administered by HRSDC;

- Provincial and Municipal safety laws and regulations;
- Fire safety provisions during construction in accordance with applicable FCC Standards.

b) Ensure that a copy of the Labour Conditions for the project is posted in a conspicuous place on site and that they remain on the site throughout the construction contract;

c) Review and verify that the Health and Safety plan is complete, posted and accessible to everybody on the site throughout the contract;

d) Verify that appropriate notices of project have been filed with the Workers Compensation Board of Manitoba, as applicable;

e) Verify that the Contractor has provided the Designated Substance Report to the Sub-contractors;

f) Facilitate inspections requested by Authorities Having Jurisdiction, and inform the Departmental Representative of such inspections and their results;

g) For all cases of non-compliance, instruct the Contractor in writing to take appropriate corrective action in a timely manner, and advise the Departmental Representative and the concerned Authorities Having Jurisdiction accordingly; and

h) Verify and confirm that all necessary corrective actions have been taken by the Contractor, provide written acknowledgment to the Contractor and advise the Departmental Representative and the concerned Authorities Having Jurisdiction accordingly.

RS 7.8 Environmental Requirements

The Consultant shall:

a) Verify that an Environmental Emergency Response Plan has been posted and is accessible;

b) Verify that all licenses, permits, and Certificates of Approval have been obtained and that all conditions contained therein are being complied with;

c) Verify compliance with environmental plans and reports, update if required during the course of the project, including monitoring and follow-up programs (baseline, at critical stages during Work and post-construction site reinstatement);

d) Record all environmental incidents, spills, releases of toxic substance, property damages, and remedial actions taken including notification of appropriate authorities;

e) Verify that a Waste Management Plan has been posted and is accessible to all site personnel;

f) Prepare and present a mandatory training session on the Waste Management Plan for all site personnel before starting construction work on site;

g) Convene update meetings, as required, to discuss progress and problems with the implementation of the Waste Management Plan;

h) Monitor the implementation and record the progress of the solid waste management plan for both hazardous and non-hazardous materials;

i) Verify that the facilities for solid waste management have been provided as determined by the Waste Management Plan and that appropriate signage has been posted and is visible;

j) Verify that security of collection area is adequate to prevent contamination of segregated waste; and

k) Prepare and submit for the Departmental Representative approval a Waste Management Report including, but not limited to:

- a summary of the key elements and targets of the Waste Management Plan;
- descriptions of difficulties encountered during the implementation of the Plan and of remedial measures taken;
- descriptions of the recovered construction materials during the course of the project; and
- an assessment of the degree to which the targets and anticipated results outlined in the Waste Audit and Waste Management Plan have been realized.

RS 7.9 Site Visits, Inspections and Testing

The Consultant shall:

a) Provide, when required, non-resident inspection and testing services to verify that all aspects of the construction work, electrical commissioning and related environmental remediation measures, are carried out in accordance with the requirements of the Contract Documents, this Project Brief and accepted construction procedures;

b) Ensure that all testing and inspections required in the contract documents, and in the list of quality control testing approved by the Departmental Representative, are conducted;

c) When construction contract is awarded, assist the Departmental Representative and the Contractor in briefing testing firms, to be hired by the Contractor, on required testing services, frequencies, quantities, distribution of reports, communication lines, etc.;

d) In cases where alternate or additional testing firms may be required, the method of selection of inspection services and testing laboratories shall be pre-approved and the final selection confirmed by the Departmental Representative;

e) Evaluate testing firm's invoices for services performed and make recommendations to the Departmental Representative regarding payment of invoices;

f) Establish a written understanding with the Contractor, and the Departmental Representative, as to what stages or aspect of Work are to be inspected before being covered up or before Work proceeding;

g) Verify that the Contractor has provided the agreed advance notice for portions of Work requiring testing and inspecting before being covered up or before continuing Work;

h) Provide the services of qualified personnel who are fully knowledgeable with technical, environmental and administrative requirements of project;

i) Ensure that the appropriate Consultant technical experts witness all factory and on-site testing, including testing during off-hours;

j) Carry out inspections of Work at intervals appropriate to determine if Work is in conformity with Construction Documents;

k) Ensure that materials and assemblies are tested, as required by the Construction Documents;

l) Inspect materials and prefabricated assemblies and components at their source or assembly plant, as may be necessary for the progress of the project;

m) Require tests of all material and construction on site that appears of doubtful quality or performance;

n) Advise the Contractor in writing of all work deficiencies and unapproved deviations from plans and specifications and request that appropriate remedial action be taken;

o) Report immediately to the Departmental Representative all cases where the Contractor either refuses or neglects to take corrective action in a timely manner;

p) Advise the Contractor in writing of all cases where tests have either not been carried out as required, or where test results do not meet specified requirements and request that appropriate remedial action be taken;

q) Notify the Departmental Representative if the test results do not meet the specified requirements or if the Contractor does not have the tests undertaken as required;

r) Immediately notify the Departmental Representative when tests fail to meet specified requirements and corrective work shall affect the project schedule;

s) Facilitate and accompany PSPC representatives who wish to inspect or visit the construction site, record all requirements, comments or instructions. Request that such requirements, comments or instructions be confirmed in writing by the PSPC representatives; and

t) Facilitate and accompany representatives of Authorities Having Jurisdiction who wish to inspect or visit the construction site, record all requirements, comments, or instructions. Request that such requirements, comments or instructions be confirmed in writing by the representatives of Authorities Having Jurisdiction.

RS 7.10 Interpretation and Clarification of Contract Documents

The Consultant shall:

a) Have the responsibility, and authority, to interpret the technical requirements of the Contract Documents;

b) Provide interpretation and clarifications of Plans and Specifications, as required in order that project not be delayed;

c) Provide, at the request of the Departmental Representative, additional detail drawings that may be required to properly clarify or interpret the Contract Documents;

d) Provide interpretations in writing and/or graphic format (as may be required), with reasonable promptness on the written request of either the Departmental Representative or the Contractor;

e) Provide the Departmental Representative with copies of all interpretation and clarification instructions given in writing, or graphically, to the Contractor;

f) Provide written findings within a reasonable time on all claims, disputes, and other matters in question between PSPC and the Contractor relating to the execution or performance of Work, or the interpretation of the Contract Documents; and

g) In case of claims or disputes, provide interpretations and findings consistent with the intent of the Contract Documents, showing partiality to neither the PSPC nor the Contractor.

RS 7.11 Construction Photographs

The Consultant shall:

a) Use photographs to supplement work progress records, including implementation of environmental mitigation measures. All photographs are to be digital with file names that identify the date and time of the photos;

b) Maintain a searchable index of all photographic records including at least: filename of the individual photographs, date of the photographs and a brief description; submit this after final acceptance;

c) Submit photographs and index updates using File Transfer Protocol (FTP), together with Monthly Progress Reports or payments, to the Consultant's Office and the Departmental Representative; and

d) Use video recordings as instructed by the Departmental Representative, particularly in cases when parts of completed work or construction techniques need to be documented.

RS 7.12 Shop Drawings

The Consultant shall:

a) Provide a list of all shop drawings to be submitted by the Contractor; track submissions and maintain an index, and provide regular updates during progress meetings;

b) Review and take other appropriate action upon Contractor's submittals such as shop drawings, product data, and samples, for conformance with the general design concept of Work as provided in the Construction Documents;

c) Ensure that the Contractor submits shop drawings with enough lead time so that Consultant and PSPC reviews, as well as all amendments and resubmission that may be required as a result of the reviews, can be done without adversely affecting the approved Construction Schedule;

d) Verify that all shop drawings have been reviewed and stamped "Checked and Certified Correct for Construction" by the Contractor before submission to the Consultant. ;

e) Review shop drawings and verify that they are clearly detailed and dimensioned and that Contractor is not proposing substitution of unacceptable construction or materials;

f) Return promptly to the Contractor rejected shop drawings, with clear indication of reasons for rejection, and ask the Contractor to amend and resubmit shop drawings for approval;

g) Return to the Contractor approved shop drawings stamped "reviewed" by the Consultant;

h) Ensure that the Contractor understands that review of Shop Drawings is aimed at verifying compliance with the general design only and that review by the Consultant shall not relieve the Contractor of responsibility for accuracy, quantities involved, or for meeting the requirements of the Construction Documents;

i) Submit one copy of all approved shop drawings. Ensure that shop drawings include the project number and are recorded in sequence; and

j) Provide on a weekly basis an up-to-date report from the shop drawing index indicating status of shop drawings (date submitted, date reviewed, date returned etc.).

RS 7.13 Construction Changes

The Consultant shall:

a) Not have authority to change Work or the price of the Contract. All changes which affect project cost, schedule or design concept require Departmental Representative approval in advance;

b) Advise the Departmental Representative of all potential changes to scope for the duration of the construction phase;

c) Provide a full description, justification, cost estimate, and recommendation in writing for Contemplated Change Notices;

d) Upon the Departmental Representative's approval of the contemplated change, obtain a detailed quotation from the Contractor including breakdown of costs for all labour and materials, as well as an implementation schedule for extra work;

e) Review Contractor's quotation and promptly recommend in writing acceptance or rejection;

f) Upon approval of the Contractor's quotation, prepare a Changer Order containing all pertinent details for the approval of the Department Representative, who shall then process the Change Order for issuance to the Contractor;

g) When Contemplated Change Notice is to be issued based on unit prices, keep accurate account of work done by recording dimensions, locations, and quantities;

h) Ensure that all changes, whether additions or deletions, including those not affecting the cost of the project, are covered by Change Orders in order to provide a complete record of variations from the original contract; and

i) Review changes or substitutions proposed by the Contractor regarding materials or equipment; liaise through Departmental Representative with PSPC IAM to assess compliance with the design intent and construction specifications and make recommendations of acceptance or rejection.

RS 7.14 Contractor's Progress Claims

Each month the Contractor shall submit a progress claim for work and materials as required in the Construction Contract. The Consultant shall:

a) Before formal submission of progress claims, evaluate the amounts owing to the Contractor based on the progress of Work and discuss with the Contractor;

b) Ensure that the Contractor has submitted the progress claims by completing and signing the following documents:

- Request for Construction Payment, including an appropriate Cost Breakdown and, as required, a Final Certification of Measurement; and
- Statutory Declaration.

c) In cases where the Contractor requests payment for materials or equipment delivered on site, but not yet incorporated in work:

- Confirm that materials or equipment have been stored in a secure area designated by the Departmental Representative and in accordance with environmental recommendations;
- obtain and verify a detailed list of materials/equipment with supplier's invoices showing price of each item;
- Include the above information in the progress claim; and
- As these materials and equipment become incorporated into Work, ensure that items in the Cost Breakdown are adjusted accordingly in subsequent Requests for Construction Payment.

d) If work is based on unit prices, measure and record the quantities for verification of monthly progress claims and the Final Certificate of Measurement;

e) Review the progress claim, make revisions if necessary, and certify value of work done and materials delivered, by signing the Request for Construction Payment;

f) Submit all duly signed progress claim for approval and processing in accordance with the terms and conditions of the Construction Contract; and

g) Submit with each progress claim:

- Monthly Progress Report, as per RS 1.2 c);
- Monthly Cost Report, as per RS 1.2 c); and
- Summary photographs of the progress of Work.

RS 7.15 Project Acceptance Board

The Consultant shall assist the Departmental Representative in setting up a Project Acceptance Board for Interim and Final Inspections of the project. The Board shall consist of, but not be limited to:

a) Departmental Representative;

b) PSPC Design Manager;

c) PSPC Asset Manager;

d) Consultant's Representative;

e) Resident Site Engineer from the Resident Site Services Team;

f) Sub-consultants Representatives, as applicable;

g) Contractor's Representative;

h) Sub-contractors' Representatives;

i) Other Stakeholders, as may be requested by the Departmental Representative.

RS 7.16 Substantial Performance (Interim) Inspection

The Consultant shall:

a) Inform the Departmental Representative when satisfied that the project is substantially completed;

b) Assist the Departmental Representative in organizing the Substantial Performance Inspection meeting and convening the Project Acceptance Board to the meeting;

c) Lead the Project Acceptance Board's inspection of Work and record all unacceptable and incomplete Work on a designated form;

d) Coordinate all performance verifications and testing of components and systems and record deficiencies;

e) Estimate the cost of correcting deficiencies and completing Work, including any work that shall be postponed for operational, climatic or environmental reasons, and request from the Contractor a work plan and a schedule for carrying out all corrective actions in a timely manner;

f) Review the Contractor's work plan and schedule and, if they are found acceptable, submit them; and

g) Monitor, inspect and report on the progress of actions against the approved workplan and schedule.

As appropriate, the Project Acceptance Board shall accept the project from the Contractor subject to the listed deficiencies and incomplete works being rectified by the Contractor.

RS 7.17 Certificate of Substantial Performance (Interim)

As a result of the Substantial Performance Inspection and in place of regular progress claim, PSPC makes payment to the Contractor on the basis of the Certificate of Substantial Performance (Interim). Payment requires completion and signing, by the parties concerned, of the following documents:

- Certificate of Substantial Performance (Interim), including an appropriate Cost Breakdown and, as required, a Final Certification of Measurement;
- Statutory Declaration (Interim); and,
- Certificate from the Workers Compensation Board of Manitoba.

The Consultant shall:

a) Prepare the Certificate of Substantial Performance (Interim);

b) Verify that all items are correctly stated and all required signatures are obtained;

c) Attach the approved work plan and schedule for correcting deficiencies and completing Work to the Certificate of Substantial Performance (Interim); and

d) Submit completed documents and all supporting documents.

RS 7.18 Final Inspection

The Consultant shall:

a) Inform the Departmental Representative when satisfied that all work under the contract has been completed, including all deficiency items identified at the Interim Inspection;

b) Assist the Departmental Representative in organizing the Final Inspection meeting and convening the Project Acceptance Board to the meeting;

c) Lead the Project Acceptance Board's inspection of Work and identify deficiencies to be corrected by the Contractor before final acceptance of Work can be granted;

d) Coordinate performance verifications and testing of components and systems that had been identified as deficient during the Interim Inspection; and

e) If everything is satisfactory at the time of the inspection, or once all deficiencies have finally been corrected, the Board confirms final acceptance of the project.

RS 7.19 Certificate of Completion (Final)

As a result of Final Inspection and in place of regular progress claim, PSPC makes payment to the Contractor on the basis of the Certificate of Completion (Final).

Payment requires completion and signing, by the parties concerned, of the following documents:

- Certificate of Substantial Performance (Final), including an appropriate Cost Breakdown and, as required, a Final Certification of Measurement;
- Statutory Declaration (Final); and,
- Certificate from the Workers Compensation Board of Manitoba.

The Consultant shall:

a) Prepare the Certificate of Completion (Final);

b) Verify that all items are correctly stated and all required signatures are obtained; and

c) Submit completed documents and all supporting documents.

RS 7.20 Take-over

The Consultant shall:

a) In collaboration with other Project Team members, advise the Departmental Representative on establishing the date of the official take-over of the project. The date of Certificate of Substantial Performance signifies commencement of the 12 month warranty period for work completed on the date the certificate, in accordance with the General Conditions of the construction contract;

b) Provide the Departmental Representative with original copy of Contractor's warranties for all materials

and work covered by an extended warranty or guarantee, according to the conditions of the specifications; and

c) Verify the completeness of Contractor's warranties and the extent of their coverage.

RS 7.21 As-Built and Record Drawings

The Consultant shall:

a) Following the take-over, obtain as-built marked-up hard copies and electronic copies from the Contractor;

b) Verify that As-Built Drawings:

- are complete and accurate;
- reflect actual post construction conditions and measurements;
- incorporate relevant data from approved shop drawings and installed component data; and
- show deviations in construction from the original contract drawings, including changes resulting from Change Orders or from on-site instructions.

c) Produce Record Drawings by incorporating As-Built information into project drawings; and

d) Prepare and submit, for the Departmental Representative’s approval a complete set of drawings, stamped and/or signed and sealed as required by the Province of Manitoba:

- As-Built Drawings;
- Final Shop Drawings; and
- Record Drawings.

RS 7.22 Warranty Reviews

a) General

- All work under the Construction Contract carries a minimum twelve (12) months warranty commencing on the effective date of the Certificate of Substantial Performance. Certain parts of the Work may have extended warranties as specified.
- The Contractor is responsible for correcting all defects in Work during the warranty period, except for damage caused by misuse, abuse or neglect by others.

b) Ten-month Warranty Inspection

Sixty (60) days before expiration of the warranty period, the Consultant and/or the Consultant’s Resident Site Services Team shall:

- Conduct a Ten-month Warranty Inspection of the project;
- Verify the integrity and performance of all constructed components and systems, to ensure that they continue to effectively meet the prescribed requirements;
- Review all warranty service call back work performed by the Contractor; and
- Identify and report deficiencies to the Departmental Representative and to the Contractor for corrective action.

c) Final Warranty Review

Just before the expiry of the warranty period, the Consultant and/or the Consultant’s Resident Site Services Team shall:

- Conduct a final warranty review with the Departmental Representative;

- Verify whether all deficiencies identified at the Ten-month Warranty Inspection have been corrected, and confirm outstanding work;
- Identify other deficiencies that might have developed since the Ten-month Warranty Inspection;
- Report all deficiencies to the Departmental Representative and to the Contractor for corrective action;
- Do a follow-up inspection when the Contractor has corrected all deficiencies; and
- Inform the Departmental Representative in writing when all deficiencies listed on the Final Warranty Review deficiency list have been corrected.

RS 7.23 Deliverables

Unless otherwise specified, all deliverables shall be provided in accordance with the requirements outlined in PA 3 SUBMISSIONS, REVIEWS AND APPROVALS.

The Consultant shall prepare and submit the following deliverables for review and approval by the Departmental Representative:

a) Minutes of the Construction Briefing Meeting, held as per RS 7.2, including a record decisions and actions to be taken;

b) Meeting Agenda, list of proposed participants and minutes Construction Progress Meetings, including a record decisions and actions to be taken, as per RS 7.3;

c) Copy of the Contractor’s Detailed Construction Schedule, along with comments and recommendations for either acceptance or for adjustments that may be required;

d) Copy of the Contractor’s proposed Construction Cost Breakdown , along with comments and recommendations for either acceptance or for adjustments that may be required;

e) Monthly Progress Reports as per RS 1.2 and all Cost Reports as per RS 1.3;

f) Environmental Requirements:

- progress report on the environmental mitigation monitoring and follow-up program, including details regarding environmental incident and remedial action taken;
- training session on the Waste Management Plan; and
- Waste Management Report as described in RS 7.8.

g) Site Visits, Inspections and Testing:

- recommendations regarding alternate or additional testing firms may be required, the method of selection of inspection services and testing laboratories;
- evaluation of testing firm's invoices for services performed and recommendations regarding payment of invoices;
- written notification of cases where:
  - Contractor does not have the tests undertaken as required;
  - tests fail to meet specified requirements;
  - Contractor either refuses or neglects to take corrective action in a timely manner; and
  - corrective work shall affect the project schedule.
- written reports from site visits including lists of persons involved.

h) Interpretation and Clarification of Contract Documents:

- additional detail drawings that may be required to properly clarify or interpret the Contract Documents;
- copies of all interpretation and clarification instructions given in writing, or graphically, to the

Contractor; and
- written interpretation and findings on all claims, disputes, and other matters in question between PSPC and the Contractor relating to the Construction Contract.

i) Shop Drawings:

- list of all shop drawings to be submitted by the Contractor and shop drawing index;
- one copy of all approved shop drawings, ensuring that shop drawings include the project number and are recorded in sequence; and
- up-to-date weekly reports from the shop drawing index indicating status of shop drawings (date submitted, date reviewed, date returned etc.).

j) Construction Changes:

- full description, justification, cost estimates and recommendation for Contemplated Change Notices;
- copy of Contractor’s detailed quotations for extra work, including cost breakdown and implementation schedule, along with recommendations to approve or reject; and
- Changer Orders, prepared as required, containing all pertinent details.

k) Contractor’s Monthly Progress Claims prepared and verified in accordance with RS 7.14, including all required supporting documents;

l) Substantial Performance (Interim) Inspection and Certificate:

- record all unacceptable and incomplete work;
- verified Contractor’s work plan and schedule for correcting deficiencies and completing Work;
- duly completed and signed Certificate of Substantial Performance (Interim); and
- all duly completed and signed supporting documents as per RS 7.17.

m) Final Inspection and Certificate of Completion:

- a record of all unacceptable and incomplete work;
- verified Contractor’s work plan and schedule for correcting deficiencies and completing Work;
- duly completed and signed Certificate of Completion (Final); and
- all duly completed and signed supporting documents as per RS 7.19.

n) a complete set of signed and sealed As-Built Drawings, Final Shop Drawings and Record Drawings;

o) Warranty Review:

- original copies of Contractor's warranties or guarantees, duly verified as to completeness and extent of coverage;
- deficiency list from Ten-month Warranty Inspection; and
- report on Final Warranty Review.

p) updates, as required, to:

- Project Work Breakdown Structure;
- Project Master Schedule and Cash Flow Projections;
- Detailed Project Schedule;
- Project cost estimates (engineering and construction); and
- Risk Management Plan.

RS 8 RESIDENT SITE SERVICES DURING CONSTRUCTION

RS 8.1 General Requirements

The Consultant shall obtain written authorization from the Departmental Representative before proceeding with the services related to the provision of Resident Site Services During Construction.

a) The Consultant shall provide full-time, Resident Site Services to inspect, co-ordinate and monitor all aspects of the site work, from the start of the project construction phase through the completion of construction, and to liaise with the Contractor, PSPC, the Consultant's office and other agencies as appropriate to the work.

b) Depending on the specific requirements of the project (e.g. hours of construction), the Consultant shall assign appropriate resources to properly cover the needs for full-time Resident Site Services.

c) Consultant personnel assigned to the provision of Resident Site Services shall be generally referred to as the Resident Site Services Team in this document.

d) Subject to mutual agreement with the Consultant, the Departmental Representative may require the Resident Site Services Team to carry out additional responsibilities.

e) Consultant remains accountable for all Construction Contract Administration services and deliverables, including Resident Site Services during Construction.

f) The following provides details on the roles and responsibilities of the Resident Site Services Team, which are essentially aimed at supporting the provision of services and deliverables outlined in RS 7 - CONSTRUCTION AND CONTRACT ADMINISTRATION.

RS 8.2 Qualifications, Experience and Knowledge

Personnel assigned to the Resident Site Services Team shall be fully qualified, experienced and knowledgeable in providing construction site supervision, inspection and monitoring on projects involving major civil engineering structures/assets.

The Consultant shall submit résumés, confirming the qualifications and experience of proposed Resident Site Services Team personnel, and obtain the approval of the Departmental Representative before assigning the personnel to the project.

Qualifications of the various Resident Site Services Team personnel shall be as in the following sub-sections.

a) Qualification and Experience

The Resident Engineer shall:

- Be a Professional Engineer licensed or eligible to be licensed, certified or otherwise authorized to provide the necessary professional engineering services to the full extent that may be required by provincial law in the province of Manitoba. Indicate current license or how they intend to meet the provincial licensing requirements;
- Have a minimum of ten (10) years of recent and pertinent experience in providing Resident Site Services during construction on projects involving assets similar to the one covered in this Project Brief;
- have spent at least five (5) of the above mentioned years in a lead role fully responsible for coordinating, assigning responsibilities, supervising and monitoring the work of a Resident Site Services Team; and
- have recent experience relating to the implementation and monitoring of environmental mitigation

measures for projects near water.

The Assistant Resident Engineer shall:

- Be a Professional Engineer licensed or eligible to be licensed, certified or otherwise authorized to provide the necessary professional engineering services to the full extent that may be required by provincial law in the province of Manitoba. Indicate current license or how he intends to meet the provincial licensing requirements;
- To be an intermediate level engineer, at minimum;
- The Specialist Engineer is not meant to be full-time team member during the construction. A Specialist Engineer can be called upon during specific construction activities requiring specific technical expertise to complete the Resident Site Services Team; and
- Have a minimum of Five (5) years of recent and pertinent experience, in providing Resident Site Services during construction on projects involving assets similar to the one covered in this Project Brief.

The Resident Inspector shall:

- Be a qualified Civil Engineering Technologist;
- Have a minimum of ten (10) years of recent and pertinent experience, under the supervision of a Professional Engineer, in providing Resident Inspection Services during construction on projects involving assets similar to the one covered in this Project Brief; and
- Have recent experience relating to the implementation and monitoring of environmental mitigation measures for projects near water.

The Assistant Resident Inspector shall:

- Be a qualified Civil Engineering Technologist;
- Have a minimum of five (5) years of recent and pertinent experience, under the supervision of a Professional Engineer, in providing Resident Inspection Services during construction on projects involving assets similar to the one covered in this Project Brief.

b) Knowledge

The Resident Site Services Team shall become thoroughly familiar with:

- requirements of Contract Documents including, but not limited to: plans, specifications, amendments, approved shop drawings, testing and quality control requirements, etc.;
- requirements outlined in this Project Brief;
- issues, constraints and challenges related to this project, as well as the agreed approach and method to deal with them;
- latest versions of the project and construction schedules;
- latest versions of the construction budgets and cash flows;
- approved list of quality control testing to be done, details of arrangements made with inspection and testing organizations;
- advance notice requirements to be provided by the Contractor for portions of Work requiring quality testing before being covered up or before continuing Work;
- authorities and key responsibilities of project team members and of other stakeholders including, but not limited to: the Departmental Representative, the PSPC Design Manager, the Consultant and Sub-consultants, the Contractor and Sub-contractors, the Asset Operators, etc.;
- Provincial and Municipal standards for the health and safety of construction workers;
- Conditions related to traffic management during construction;

- Conditions related to permits issued by authorities having jurisdiction or to agreements between them and PSPC; and
- Public safety response procedures related to bridges.

RS 8.3 Communication and Liaison

The Resident Site Services Team shall:

a) Ensure constant communication amongst the Departmental Representative, the Consultant's Office, the Contractor and Sub-contractors, the Regional Fire Commissioner, the Manitoba Labour & Regulatory Services, and other stakeholders, as requested by the Departmental Representative;

b) Communicate formally with the Contractor in writing only and immediately file copies of communications with the Departmental Representative, and the Consultant's Office;

c) Not deal directly on formal business with the Contractor's foreman or tradesmen, or interfere with progress of Work;

d) Have informal discussions about the project with Contractor and Sub-contractor personnel, only with the agreement of the Contractor,

e) Convey Consultant's Office clarifications or instructions regarding the required standards of workmanship to the Contractor;

f) Contact the Consultant's Office immediately when information or action is required that is beyond the Resident Site Services Team's levels of responsibility or authority (e.g. issues related to water levels, approvals of samples or shop drawings, interpretation of specific technical details, drawings and specifications, etc.;

g) Ensure that Departmental Representative and the Consultant's Office are notified promptly when key pieces and/or components of materials and equipment are delivered, so that necessary arrangements can be made for the appropriate inspection before installation;

h) Verify the Contractor's proposed scope of work, approach and schedule involving temporary or permanent connections into existing utility or operational systems; obtain approval in writing before Work being carried out;

i) Provide a prior notice of four (4) days for works requiring modifications to traffic flow.

RS 8.4 Construction Meetings

a) Construction Briefing Meeting

A member of the Resident Site Services Team shall participate in the Construction Briefing Meeting, as per RS 7.2.

b) Construction Progress Meeting

A member of the Resident Site Services Team shall participate in the Construction Progress Meetings, as per RS 7.3.

RS 8.5 Time and Cost Control

a) Time Planning, Scheduling and Control

The Resident Site Services Team shall:

- assist the Consultant for all services and deliverables associated with Time Planning, Scheduling and Control, throughout the entire project construction phase, as outlined in RS 7.4; and
- seek advice and assistance, as required, from the Consultant's Time Planning, Scheduling and Control Specialist.

b) Cost Planning, Estimating and Control

The Resident Site Services Team shall:

- assist the Consultant for all services and deliverables associated with Cost Planning, Estimating and Control, throughout the entire project construction phase, as outlined in RS 7.5; and
- seek advice and assistance, as required, from the Consultant's Cost Planning, Estimating and Control Specialist.

RS 8.6 Interpretation of the Contract Documents

The Resident Site Services Team shall:

a) Be generally responsible for providing on-site interpretation of Contract Documents and instructing the Contractor accordingly;

b) Obtain interpretation of Contract Documents from the Consultant's Office in cases where:

- Technical details or specifications are beyond the recognized capacity of the Resident Site Services Team; or
- The interpretation of the Resident Site Services Team is disputed by the Contractor.

c) Communicate in writing to the Contractor all interpretation of Contact Documents received from the Consultant's Office.

RS 8.7 Inspection and Testing

The Resident Site Services Team shall:

a) Provide full time inspection services to verify that all aspects of the construction work, and related environmental remediation measures, are carried out in accordance with the requirements of the Contract Documents, this Project Brief and accepted construction procedures;

b) Make observations and spot checks of the site work to determine whether work, materials and equipment conform with the contract documents and supplementary conditions;

c) Ensure that all testing and inspections required in the contract documents, and in the list of quality control testing approved by the Departmental Representative, are conducted;

d) Establish a written understanding with the Contractor, and the Departmental Representative, as to:

- what stages or aspect of Work are to be inspected before being covered up or before work proceeding; and
- which key submittals from the Contractor require review and approval of M&T COE.

e) Verify that the Contractor has provided the agreed advance notice for portions of Work requiring testing and inspecting before being covered up or before continuing Work;

f) Observe all testing and inspections, and report the results in the daily log and in the weekly reports, which are described further in RS 8.14 and RS 8.15;

g) Advise the Contractor in writing of all work deficiencies or unapproved deviations from plans and

specifications and request that appropriate remedial action be taken;

h) Report immediately, to the Consultant's Office and the Departmental Representative, all cases where the Contractor either refuses or neglects to take corrective action in a timely manner;

i) Advise the Contractor in writing of all cases where tests have either not been carried out as required, or where test results do not meet specified requirements and request that appropriate remedial action be taken;

j) Notify the Consultant's Office and the Departmental Representative if the test results do not meet the specified requirements or if the Contractor does not have the tests undertaken as required;

k) Arrange for the Consultant's technical specialists to make the periodic inspections required by the Consultant's contract, and for these inspections to be conducted at a time and in a manner that does not unduly impede the progress of Work;

l) Facilitate and accompany PSPC representatives who wish to inspect or visit the construction site, record and report to the Consultant's Office all requirements, comments or instructions issued by PSPC representatives. Request that such requirements, comments or instructions be confirmed in writing by the PSPC representatives;

m) Facilitate and accompany representatives of Authorities Having Jurisdiction who wish to inspect or visit the construction site, record and report to the Consultant's Office and the Departmental Representative all requirements, comments or instructions issued by the Authorities Having Jurisdiction. Request that such requirements, comments or instructions be confirmed in writing by the representatives of Authorities Having Jurisdiction;

n) Assist in the preparation of all deficiency reports, in collaboration with the Departmental Representative and Consultant's representatives, during Interim and Final Inspections, as well as in Warranty Reviews;

o) Be responsible for the measurement of all work to be done on a unit-cost basis; and

p) Ensure that the construction site health and safety plan is adhered to at all times during construction, record updates and changes as required.

RS 8.8 Review and Processing of Contractor's Submissions

The Resident Site Services Team shall:

a) Review all submissions (and re-submissions, as required) provided by the Contractor and provide comments to the Consultant's Office and the Departmental Representative, retaining a copy for record purposes;

b) Track progress of submittals required of the Contractor; review shop drawings as they become available; provide comments to the Consultant's Technical Specialists who shall be responsible for confirming approval of the shop drawings.

c) Verify that the materials delivered to site and the construction procedures being used are consistent with the approved shop drawings and that the Contractor is not proposing substitutions of unacceptable construction materials or methods; and

d) Report to the Consultant's Office and the Departmental Representative if materials and equipment are being incorporated into the project before the approval of associated shop drawings or samples.

Reviews by the Resident Site Services Team do not relieve the Consultant's technical specialists of professional responsibility for checking the work of the Contractor;

RS 8.9 Environmental Protection

The Resident Site Services Team shall:

a) Monitor the implementation and record the progress of Environment Mitigation Measures and Monitoring Program;

b) Contact the environmental specialist on Consultant Team for possible revisions to the Environment Mitigation Measures and Monitoring Program as may be required by changes during construction;

c) Monitor the implementation and record the progress of the solid waste management plan for both hazardous and non-hazardous materials; and

d) Record all environmental incident, spill, release of toxic substance, property damage and remedial actions taken including notification of appropriate authorities.

RS 8.10 Hazardous Construction Operations

The Resident Site Services Team shall:

a) Examine all site conditions and methods to be used by the Contractor when undertaking hazardous operations;

b) Verify that all necessary precautions and actions are taken by the Contractor to safeguard the life safety of the workers and to ensure the protection of property; in accordance with the Site Safety Plan;

c) When fully satisfied that all necessary precautions and actions are being taken, give written authorization, including all specific instructions and requirements, to the Contractor to proceed with the hazardous operations;

d) Have the written authority document countersigned by the Contractor to confirm the Contractor's agreement to all conditions, instructions and requirements, and keep the countersigned copy in the Site Records;

e) Inspect the areas where hazardous work is under way to ensure that the Contractor is maintaining the agreed safety standards. Infractions may result in the Resident Site Services Team having to issue a stop work order; and

f) Report all infractions, or work stoppage orders, in writing and verbally to the Consultant's Office and the Departmental Representative.

RS 8.11 Emergencies

a) In the case of emergencies where safety of persons or damage to property is concerned; or where work activities are endangered by the actions of the Contractor or the elements, the Resident Site Services Team shall:

- give immediate written notice to the Contractor of the possible hazard;
- contact the Consultant's Office and the Departmental Representative immediately for further instructions; and
- if necessary, stop work or give orders for necessary remedial action to protect the safety of workers or Crown property, followed up with written confirmation.

b) In the case of traffic-related or other types of public security emergency incidents, the Resident Site Services Team shall immediately contact local public security and emergency services, and follow their instructions.

RS 8.12 Changes in the Work

The Resident Site Services Team shall:

a) Not authorize or order change in Work which shall constitute a change in design or in the value of the contract except as directed in writing by the Departmental Representative;

b) Consider and evaluate suggestions or modifications proposed by the Contractor and immediately report these, with recommendations and comments, to the Consultant's Office and the Departmental Representative;

c) Assist the Consultant's Office in the evaluation of changes in Work, where knowledge of job conditions is required;

d) Monitor and record the progress of Contemplated Change Notices, quotations, reviews and issue dates of Change Orders; and

e) Where the Departmental Representative has granted written approval to proceed with work changes, pending issue of a Change Order, accurately record time and materials expended.

RS 8.13 Limitations

The Resident Site Services Team shall not:

a) Approve functionality of contractor-proposed systems or equipment;

b) Authorize or order deviations from the contract documents;

c) Conduct tests;

d) Approve shop drawings or samples;

e) Accept Work, or portions of Work, as being substantially or finally completed;

f) Enter into the area of responsibility of the Contractor's Field Superintendent; and

g) Stop work, except in cases of:

- infractions to established safety standards relating to hazardous construction operations, as per RS 8.10; or
- emergencies, such as those described in RS 8.11.

RS 8.14 Daily Log

The Resident Site Services Team shall keep a daily log recording such information as:

a) Weather conditions, particularly unusual weather relative to construction activities in progress;

b) Manpower on site and hours worked;

c) Major material and equipment deliveries;

d) Daily activities and major work done;

e) Start, stop or completion of activities;

f) Presence of inspection and testing firms, tests taken, results, etc.;

g) Unusual site conditions experienced;

h) Significant developments, remarks, etc.;

i) Special visitors on site;

j) Approvals given Contractor to undertake certain or hazardous works;

k) Environmental incidents;

l) Site instructions given to Contractor; and

m) Reports, instructions from Appropriate Authorities Response Actions.

The log is the property of the Resident Site Services Team. Submit copies of the log book, certified as copies, at the end of the project.

Copies of the log may be filed electronically at the option of the Consultant if the provenance can be proven.

RS 8.15 Weekly Reports

The Resident Site Services Team shall prepare and submit weekly reports for the Departmental Representative summarizing the daily log and including, but not limited to:

a) Work progress relative to schedule showing major activities commencing or completed during the week, as well as main activities currently in progress;

b) Up-to-date status of shop drawings (date submitted, date reviewed, date returned etc.);

c) Major deliveries of materials and/or equipment;

d) Description of site instructions given and of the effect the site instruction may have had on project cost and schedule or the environment;

e) Record of Contractor's acknowledgment of receipt of all site instructions;

f) Difficulties which may cause delays in completion, including weather related problems;

g) Materials and labour needed immediately;

h) Cost estimates of work completed and materials delivered (cost plus contracts);

i) Outstanding information or action required by Consultant or PSPC;

j) Details regarding Contractor’s work force;

k) Accidents on site;

l) Life safety or hazards caused by Work, the Contractor or his agents;

m) Photographs as detailed in RS 7.11; and

n) Weather incidents that affected progress of work that week (e.g. time and duration of storms or extreme cold).

RS 8.16 Construction Photographs

The Resident Site Services Team shall comply with the requirements regarding Construction Photographs as outlined in RS 7.11.

RS 8.17 Site Records

The Resident Site Services Team shall maintain orderly and updated files at the site for the use of PSPC Representatives, other Consultant team members, and him/her self. Site Records shall include, without being limited to:

a) Contract and tender Documents;

b) Latest approved construction progress schedule, as well as all previous versions and updates or amendments;

c) A reproduction of the original contract drawings 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;

d) Approved shop drawings, and shop drawings awaiting approval

e) Approved samples, and samples awaiting approval;

f) Site instructions and contractor's acknowledgment of receipt of all site instructions;

g) Contemplated Change Orders (CCN) and Change Orders;

h) Memoranda and other project correspondence;

i) Test results and deficiency reports;

j) Minutes of meetings;

k) Photographs; and

l) Names, addresses, telephone numbers (also home telephone numbers in case of emergencies) of key project personnel including, but not limited to:

- PSPC Departmental Representatives, COE Design Manager, Property Manager, etc.;
- Consultant Team Members including Sub-consultants;
- Contractor and Sub-contractor representatives;
- Local Police and Emergency Services;
- Other stakeholders as required.

RS 8.18 Site Security

a) Special precautions shall be taken at all times to prevent unauthorized entry to the site. The Resident Site Services Team is to ensure that all contractor-made openings and means of access, are firmly secured when the Contractor leaves the site.

b) The Resident Site Services Team shall liaise closely with the Consultant’s Office and the Departmental Representative on all security and/or safety problems that may arise due to the Contractor's operations.

APPENDIX PB-1

REPORT LIST FOR ST. ANDREWS LOCK AND DAM

Title	Author / Design Consultant	Date
2018 Approach Bridge Deck Testing and Assessment Report	AECOM	2019

Title	Author / Design Consultant	Date
2018 General Inspection	AECOM	2019
2018 Bridge Coating Assessment	AECOM	2019
2018 Bearing Monitoring Program	AECOM	2019
2017 Comprehensive Detailed Inspection of Traffic Bridge (including Traffic Bridge Deck Assessment Memo)	AECOM	March 28, 2018
2017 General Inspection of the Moveable Dam	AECOM	March 30, 2018
2017 Underwater Inspection of the Fixed Dam and Lock	Associated Engineering	November 6, 2018
2016 General Inspection of the Traffic Bridge	Associated Engineering	March 31, 2017
2016 General Inspection of the Moveable Dam	Associated Engineering	March 29, 2017
2016 Lighting and Electrical Upgrades	HDK Consulting Inc.	July 27, 2016
2015 Comprehensive Detailed Inspection of the Traffic Bridge	Associated Engineering	August 31, 2016
2015 Comprehensive Detailed Inspection of the Moveable Dam	Associated Engineering	April 29, 2016
2015 Structural Evaluation of Traffic Bridge	Associated Engineering	August 25, 2016

Title	Author / Design Consultant	Date
2015 Dam Safety Review	KGS Group	November 9, 2015
2013 Guardrail Repair and Upgrades	AECOM	October 8, 2013
2010 St. Andrews Lock and Dam Engineering Assets Assessment Heritage Value Report	URS Canada Corp. / Golder Associates Ltd.	October 8, 2010
2010 Updated St. Andrews Lock and Dam Traffic Report for the Socio-Economic Study – Origin Destination Survey	AECOM	November 2010
2008 Bridge Deck Testing and Assessment Report	AECOM	May 27, 2009
1993 New Concrete Bridge Deck, Rehabilitation of Existing Bridge, and Associated Works	Wardrop	1993
1991 Renovation – New West Approach Spans	Public Works Canada	1991
1991 Renovation – Roadway Bridge Rehabilitation	Public Works Canada	1991
1990 Structural Remedial Repairs	Wardrop	1990
1977 Guardrail Renovations	Bridge and Tank Western	1977
1967 Appraisal of St. Andrews Lock and Dam	T. Lamb, MacManus and Associates	June 1968

Title	Author / Design Consultant	Date
1949 Improvements to Bridge	J.C. Trueman	1949
1946 Straightening West Approach	Dominion Bridge Co. Ltd.	1946
1907 Original Construction Drawings	H.E. Vautelet	1907