

# Terms of Reference

Union Bridge Rehabilitation &  
Hull Causeway Widening



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# **1 DESCRIPTION OF PROJECT**

## **1.1 SUMMARY OF WORK**

Public Works and Government Services Canada (PWGSC) will be undertaking the rehabilitation of the Chaudière Crossing. The scope of this Terms of Reference (ToR) is limited only to the Widening of the Hull Causeway (Gatineau, Quebec) and rehabilitation of the Union Bridge (Ottawa, Ontario).

The services of a Construction Manager are required to ensure the project is delivered on schedule, within the construction budget, and to the level of quality required.

In general, the scope of this contract for Construction Management includes Services and Construction. Services are defined as consisting of Pre-Construction Services, Construction Services and Post-construction Services. Services are described in sections 4.1 to 4.6. Construction includes performance of Division 1 work and other non-specialized tasks when and if approved by the DR.

The summary of work includes:

- 1- General repair and rehabilitation of the Union Bridge, located on the Chaudière Crossing between Ottawa, Ontario and Gatineau, Quebec; The work generally includes the structural rehabilitation of the bridge and approaches, and the installation of new District Thermal Heating pipes on the bridge.
- 2- Widening of the Hull Causeway, located on the Chaudière Crossing between Ottawa, Ontario and Gatineau, Quebec; The work generally includes the widening of the bridge and approaches, and the installation of new Hydro Quebec, Bell Canada, Portage Power water main and sanitary lines.

Refer to Appendix 1 for detailed Summary of Work (Section 01 11 00).

## **1.2 TERMINOLOGY AND ACRONYMS**

Defined terms, acronyms and abbreviations used in these Terms of Reference are capitalized and defined in Appendix A and B.

## **1.3 BACKGROUND INFORMATION**

### 1.3.1 Union Bridge and Hull Causeway

#### Union Bridge

The Union Bridge is part of the Chaudière Crossing, one of five interprovincial crossings between the cities of Ottawa, Ontario and Gatineau, Québec. It serves as an important urban transportation link being one of only two official truck routes between the two cities. It is a 71.5 m long single span steel through truss with an exposed concrete deck. Constructed in 1919, the Union Bridge has thus been in service for nearly 100 years. While the bridge has seen a number of rehabilitations in the past, several steel and concrete components are at the end of their useful lives and therefore require repair or replacement.

The latest 2017 Comprehensive Inspection Report emphasizes that a significant number of steel repairs need to be carried within a one-year timeframe to ensure that the load carrying capability of the structure can be maintained. Consequently, the inception stage of this project was started in the fall of 2017 to allow for detail design during 2018-2019 and construction in the following year. In early 2020, a strategic level decision was made to purposely delay the construction until 2021 so as to combine the work with that of the Hull Causeway widening project. The intent of the delay is to minimize traffic impacts in the area.



Figure 1 – Union Bridge

The current Structural Condition Rating is 3 (poor); the rating is primarily driven by the advanced section loss affecting the stringers, floor beams and the truss members located in the splash zone. The concrete deck was constructed without waterproofing membrane or sacrificial wearing surface and exhibits defects indicating an advanced state of deterioration. The ballast walls are severely deteriorated creating a significant risk of approach failures.

The current Functional Condition Rating is 3 (poor); the rating is primarily driven by the substandard vertical clearance and by the guiderail and railing system not meeting current crash test standards.

### **Hull Causeway**

The Hull Causeway is a 91.4 m long three span structure, spanning the Ottawa River downstream from the Portage Power Hull No.1 generation station. It carries one sidewalk. The simply supported spans are supported on four substructure components including a reinforced concrete abutment at the north end, two steel transverse trusses acting as intermediate piers, and a reinforced concrete pier which has been converted into the south abutment.



Figure 2 – Hull Causeway

The overall width of the structure is 11.9m and the roadway width between concrete barriers is 9.0m. The 2.0m wide sidewalk is separated from traffic by a concrete parapet wall with a steel twin handrail.

The structure is in fair condition (rating of 4 out of 6 based on the PSPC bridge inspection manual), with the rating primarily driven by minor work required to primary components and a scour problem at the north abutment.

The current functional rating of the bridge is rated in good condition (rating of 5 out of 6

based on the PSPC bridge inspection manual), due to minor variations from current standards on approach geometry.

The scope includes the widening of the Hull Causeway bridge deck by 2.0m to carry one lane of traffic with a dedicated cyclist lane in each direction and, the realignment of the Chaudière Crossing between Union Bridge and Hull Causeway by eliminating the left turn lane to Portage Power Hull 1 power station;

### **1.3.2 Site Information**

<b>Location of the Project</b>	Union Bridge: Booth Street, Ottawa Hull Causeway: Eddy Street, Gatineau
<b>PWGSC Project Number</b>	Union Bridge Rehabilitation: R.92597 Hull Causeway Widening: R.095392
<b>Client</b>	Public Services and Procurement Canada (PSPC) Real Property Services Branch (RPS) Infrastructure Asset Management (IAM)
<b>Departmental Representative</b>	Senior Project Manager, Hernan Viscasillas
<b>Contracting Authority</b>	Real Property Contracting Officer, Nabil Boujenoui

### **1.3.3 Prime Consultant**

PWGSC has retained Parsons as the Prime Consultant (PC) to provide Engineering Services for the Project. The PC has undertaken detailed inspections and prepared detailed design documents at the level of 99%. The PC is expected to reach 100% of the detailed design Construction Documents (Drawings and Specifications) following the final review by CM and PSPC. The PC also acts as the Environmental Consultant (EC) for this project.

### **1.3.4 Stakeholders**

The following are the main partners and stakeholders of this project:

Partners:

- Algonquin First Nation: land claims on or around site.
- National Capital Commission (NCC): main federal urban planner with a mission to enhance natural and cultural character of the capital
- City of Ottawa: responsible for roadway to the south of Union Bridge (Booth Street)
- City of Gatineau: responsible for roadway to the north of Union Bridge (Eddy Street)
- Ministry of Transportation Ontario (MTO): responsible for roadway to the south of Union Bridge (Booth Street)
- Ministère des transports du Québec (MTQ) : responsible for roadway to the north of Union Bridge (Eddy Street)

Stakeholders:

- Public users (motorists, cyclists, pedestrians): impacted by traffic lane and/or sidewalk reductions/closures
- Société de transport de l'Outaouais (STO) : Gatineau transit agency not currently operating over the bridge, but may be affected by traffic impacts due to lane reductions/closures
- OC Transpo: Ottawa transit agency operating several bus routes over the crossing will be impacted by traffic lane reductions/closures
- Portage Power previously Energy Ottawa: operates hydroelectric generating stations adjacent to the bridge and has sanitary and water mains on the Hull Causeway
- Hydro Quebec: operates hydroelectric generating stations adjacent to the bridge
- Zibi Development: major land owner and developer around the site
- Bell Canada

#### 1.4 ESTIMATED CONSTRUCTION COST

The total construction cost estimate for the Union Bridge rehabilitation and the Hull Causeway widening is \$17,033,000. This amount excludes taxes, risk allowance, professional fees, Construction Management costs, overhead and profit, but includes bonding and insurance, permits, and site office costs.

Estimated construction cost is broken down as follows:

Demolition/removals works including general works and contingency	\$2,820,000
Structural steel works including general works and contingency	\$6,713,000
Site earthworks including general works and contingency	\$600,000
Roadways/Concrete works including general works and contingency	\$4,300,000
Pedestrians/Cyclists Improvement works including general works and contingency	\$1,400,000
Electrical/Utilities works including general works and contingency	\$1,200,000

#### 1.5 PROJECTS SCHEDULE

The CM is required to work closely with the DR and PC to develop a logical and realistic schedules that allows for Project constraints, such as public access, surrounding active construction work, etc. Accordingly, the CM and its Subcontractors are required to be able to adjust their level of effort over the progression of the Project to overcome constraints and maximize opportunities.

Project Milestones	Schedule

<i>Design Completion</i>	May 2021
<i>CM Contract Award</i>	May 2021
<i>Construction Start</i>	June 2021
<i>Construction End (certificate of final completion)</i>	September 2022

## **2 PROJECT IMPLEMENTATION**

With the support of the CM, the Project implementation strategy is to optimize critical decision making to prioritize the design and interim approvals, allowing construction to start early and in a streamlined sequence.

Because of the requirement for careful construction sequencing to minimize disturbance to traffic and with a wide range of trades working in a congested environment, the Construction Manager will need to execute construction with well planned, progressive release of work packages.

### **2.1 PROJECT DELIVERY MODEL**

This Project will use a construction management delivery model to implement the Work. The PC will develop the entire design drawings and specifications and the CM will use this information to develop and tender separate Design Packages (DPs). The CM is required to define the scope and sequencing of DPs to the DR and PC, for the PC to plan their tasks and activities accordingly. The CM is required to, when requested by the DR, carry out fast track project delivery, using multiple, simultaneous Design Packages. The CM is required to consider overall Project requirements, ranking and prioritizing the packages on the Critical path.

The CM must implement the Work of the Project through a holistic and coordinated process, and the sequential tendering and construction of multiple DPs. The CM is to provide an experienced, on-site team for the duration of the Project. The CM and the PC's on-site personnel are to have the authority, ability and capacity to respond to evolving situations, daily if necessary, in order to coordinate and integrate ongoing construction operations with the design production.

### **2.2 DESIGN COORDINATION**

Successful design prioritization, coordination and integration with construction operations, which are planned at the site, are primary requirements for the Project. The PC will coordinate and integrate all functional, technical, and operational requirements into the design of the Project.

The CM is required to collaborate with the PC throughout the review of the 100% construction documents, providing suggestions and recommendations for alternative materials, construction sequencing, physical constructability and tenderability of the Projects' scope. These collaboration and integration processes require an ongoing synergy of Project Team skills to manage Project costs, always remaining within the approvals prescribed.

### **2.3 DESIGN PACKAGE AND TENDER STRATEGY**

Tendering by the CM of all Subcontracts is required to coincide with the completion of each DP. The CM must prequalify Subcontractors and suppliers for the purposes of implementing Work.

Below is a preliminary list of Work categories that the CM will have to expand or further

subdivide as appropriate to the Project scope. The preliminary Work categories include:

- a) Structural (steel fabrication and erection; reinforced concrete work, temporary works and falsework, steel coating, etc);
- b) Abatement and demolition;
- c) Power and no-power piping,
- d) Electrical;
- e) Utilities relocation and/or replacement (Bell, Hydro Quebec, Power Portage)

The CM is required to split DPs into tender packages as required in order to optimize the Project schedule.

The CM is required to take a lead role to identify all submissions and their timing in order for the PC to prioritize their efforts.

## **2.4 GENERAL DELIVERABLES**

Where submissions include summaries, reports, Drawings, Specifications, presentations and schedules, the CM is required to provide an electronic copy in editable native format and Portable Document Format (PDF), unless otherwise specified.

### **2.4.1 Acceptable Electronic Format**

Electronic format will mean:

<b>Deliverable</b>	<b>Acceptable Format</b>
Written reports and studies	MS Word
Spreadsheets and budgets	MS Excel
Presentations	MS PowerPoint and/or MS Visio
Drawings	DWG (such as Autodesk Auto CAD) and PDF
Schedules	Microsoft Project, Primavera P6 or newer
Change management and daily logs	MS Word
Organizational Charts	Adobe Illustrator or MS Visio
National Master Specifications (NMS)	MS Word

## **2.4.2 Writing Style**

The CM is required to use a writing style that presents information in a logical, objective, clear and concise manner. CM is required to write reports so that the reviewer can easily locate references and respond to related information contained in the report. Reports must include the following sections:

- a) A cover page indicating the project title, nature of the report, CM's Contract number and author name, PWGSC Contract name and reference number and date.
- b) A table of contents;
- c) An executive summary;
- d) An introduction;
- e) A methodology section explaining the methods and tools used, such as weightings, comparative analysis;
- f) A conclusion or synopsis; and
- g) Appendices containing supporting material referenced in the report, supplementary and supporting information.

## **2.4.3 Report Content**

The CM is required to:

- a) Ensure that the executive summary is an accurate and complete summary of the report following an identical structure, including only key points, results and recommendations;
- b) Use an organizing system, such as MS Word Document Map, for ease of reference and cross-referencing;
- c) Use correct grammar including complete sentences to avoid ambiguity and facilitate translation when required. The use of technical terms, industry jargon and cryptic phrasing must be avoided;
- d) Be efficiently written with only essential information included in the body of the report and supporting information in an appendix, if required; and
- e) Analyze and ensure all relevant correspondence against accepted goals, objectives and the requirements identified in these Terms of reference.

## **2.5 APPROVALS**

### **2.5.1 Authorities Having Jurisdiction - Federal**

A list of authorities and their federal jurisdiction is included below.

<b>Federal Authority</b>	<b>Jurisdiction</b>
Public Works and Government Services Canada	Project expenditure authority and Contract approvals
Fisheries and Oceans Canada (DFO)	Ottawa River
Environment and Climate Change Canada (ECCC)	Environnemental Compliance Management Program (ECMP)
The National Capital Commission (NCC)	The National Capital Area

### **2.5.2 Authorities Having Jurisdiction - Other**

A list of other authorities and their jurisdiction is included below. This Project will have to comply with the jurisdictional requirements of other authorities. The CM is required to observe codes, regulations, by-laws, and decisions of all authorities having jurisdiction. In the case of overlap, the CM is required to apply the most stringent requirement. All Work must comply with the applicable Ontario construction health and safety Acts and Regulations, in addition to the related Canada Occupational Safety and Health Regulations.

<b>Provincial Authority</b>	<b>Jurisdiction</b>
Ministry of Labour (MOL)	Employment Standards; Construction Safety; Designated Substance Management; Workers Compensation; and Ontario Construction Health and Safety Acts and Regulations.
CNESST	Commission des normes, de l'équité, de la santé et de la sécurité du travail
Ministry of the Environment (MOE)	Environmental Protection Act: 3R Regulations; and Disposal of designated substances, including asbestos, lead, etc.
Ministère de l'Environnement et de la Lutte contre les changements climatiques	Water Resource Protection Act; and Sustainable development Act

Municipal Authority	Jurisdiction
City of Ottawa	Planning and Design Submissions for Information; Demolition and Plumbing Permits and Inspections; Fire safety, equipment, and access for fire-fighting equipment; Construction permits. Traffic management and traffic signals
Ville de Gatineau	Planning and Design Submissions for Information; Demolition and Plumbing Permits and Inspections; Fire safety, equipment, and access for fire-fighting equipment; Construction Permits. Traffic management and traffic signals.

### 2.5.3 Federal and Provincial Authorities

As defined in the Impact Assessment Act 2019, PWGSC is a Responsible Authority. PWGSC will fulfill its obligations as a Responsible Authority to safeguard the environment through dutiful public consultation and Project designs, construction, and operations.

In support of PWGSC, and to meet PWGSC's Responsible Authority obligations, the:

- a) PC will facilitate and participate in any discussion or negotiation required to obtain project approvals with federal and provincial authorities and ensure that the technical and legal compliance of project designs follow the said approvals and conditions; and
- b) The CM is required to ensure that all Work and construction operations comply with said approvals and conditions.

All communication with federal and provincial authorities must be through the DR. The DR will deal with federal and provincial approval fees on a case-by-case basis and may request the CM to pay such fees as a disbursement to the Contract.

### 2.5.4 Municipal Authorities

On behalf of PWGSC, the PC will prepare and provide to the CM all documentation for approval by municipal authorities. The CM is required to manage the construction permit application process itself. All communication with the municipal authority related to permits and permit payment must be through the CM. The CM is required to engage the PC and together participate in any discussion or negotiation necessary to obtain permits and assist in resolving issues before the tender of each Design Package.

## 2.6 SECURITY OF INFORMATION

The CM and any entity or person contracted by or employed by the CM must not discuss

issues pertaining to the Project including, but not limited to, the Project's layout, design, content and security provisions, except as they relate to the direct provisions of services under this Contract. CM personnel and Subcontractors must not publish pictures or videos of any portion of the Work in progress without written permission from the DR.

## **2.7 LOCAL OFFICE**

The CM must use a local office as a base of operation to provide all administrative management services required in this Contract. The local office must be fully operational for the start of the Contract and remain as such throughout the duration of the Contract. The local office location is to allow the Contractor to satisfy all of the operational requirements of the Contract.

## **3 OBJECTIVES**

The CM is required to consider the following objectives in the review of the 100% construction documents and implementation of Project.

### **3.1 COLLABORATIVE PROJECT DELIVERY**

Develop a common vision for the Project through collaborative delivery approach. Deliver the Project with integrated design and construction solutions to a high standard of design. Provide balanced solutions to all Project elements and challenges.

### **3.2 PROJECT CONTROL**

Deliver the Project within the limits of its authorized funding. Organize, prioritize and deliver the Project within the established time limits, permitting the full use and function as intended, proactively prioritizing Work and managing its resources to achieve the prescribed milestones. Maximize opportunities and minimize risk while substantiating the viability and cost and time benefits of design and construction choices.

### **3.3 QUALITY**

Deliver the Project to meet the quality standards required for the ongoing operation of bridge services. Ensure the technical performance of all components and systems must be tested against the intended design performance and the design life-cycle analyses. Observe codes, regulations, by-laws, and decisions of authorities having jurisdiction. Observe national model Codes, Acts, and Standards. Identify other jurisdictions appropriate to each project and include those jurisdictional requirements into the project.

### **3.4 HEALTH AND SAFETY**

Deliver the Project and the related Work processes in order to prove the full protection of health and safety regulations, and to ensure the health and safety of all workers as the Constructor. Responsibly deliver and adhere to the provisions identified in the applicable federal and provincial Acts and Regulations, and provide such provisions to all persons

working within and/or visiting the construction site.

### **3.5 SUSTAINABLE DEVELOPMENT**

Deliver the Project using integrated design principles addressing sustainable development. Employ strategies to address the environmental, economic and societal social values and their impact on every Project decision.

### **3.6 INDIGENOUS ENGAGEMENT**

To meet the Government of Canada's objectives of encouraging Indigenous socio-economic development through federally funded opportunities, the Project must look at meaningful and timely indigenous inclusion in the project.

The CM must Support this indigenous inclusion initiative via its Indigenous Benefits Plan (IBP), refer to section 8.19 *Final Indigenous Benefits Plan (IBP)*.

## **4 CONSTRUCTION MANAGEMENT REQUIRED SERVICES**

Working in collaboration with the DR and PC, the CM is required to support the scope definition for the Projects using value for money principles, balancing the need for capital investment while maintaining asset life cycle, always considering the perspective of Canadians at large.

The following sections outlines CM's Work for the Project.

### **4.1 GENERAL REQUIREMENTS**

The Construction Manager as an expert in matters of construction will provide strategic advisory services to Public Works and Government Services Canada (PWGSC) and the Prime Consultant throughout the implementation of the Work as well as the Required Services outlined in this section.

### **4.2 PROJECT RESPONSE TIME**

It is a requirement of this project that the key personnel of the Construction Manager (all site superintendents and project managers) are personally available to attend meetings or respond to inquiries promptly. During the project, the Construction Manager's Key Personnel shall be:

- 1) Available to attend meetings and respond to inquiries within one working day notice
- 2) Able to respond to emergencies within one (1) hour, including those occurring during off-hours and on weekends/holidays.

### **4.3 SUMMARY OF SERVICES**

PWGSC will contract with the Construction Manager to deliver the following services including, but not limited to those listed in the table below. Project Management Services are required throughout all phases of the contract including Pre-Construction Services, Construction and Post Construction Services.

Project Management Services	Construction Services
Advisory and support services	Function as Constructor including coordinating and directing Subcontractors retained by the Construction Manager, ensuring the continuous safety management and protection of the Site and the general public near the Site,
Project Administration	Subcontract construction Work using competitive bidding processes, with prequalification when warranted, as outlined in these Terms of Reference. Manage the subcontractors
Work Packaging	Pre-purchase key materials as needed  Self-perform Division 1 work and other non-specialized tasks as required and if approved by the DR.
Cost Management	
Time Management (Scheduling)	
Risk Management  Develop and continuously maintain a risk management matrix.	
Scope Control and Management	
Quality Control & Quality Assurance	
Site logistics coordination	

The chart below shows the expected phasing of the Services provided by the CM, as well as the associated Monthly Fixed Fee breakdown.

	2021												2022											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
CM Award					■																			
Substantial completion																		■						
Final Completion and turn over																						■		
Pre-Construction Services					■																			
Construction Services						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
Post-Construction Services																						■	■	
Monthly Fixed Fee breakdown																								
MF#1 (1 months)					■																			
MF#2 (13 months)						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
MF#3 (3 months)																						■	■	

## 4.4 PRE CONSTRUCTION SERVICES

### 4.4.1 COST SERVICES

Cost control requirements are a major driver for the Union Bridge and Hull Causeway project. Planning and controlling cost is a continuous interactive and iterative process involving planning, action, measurement, evaluations and revision.

Construction Manager shall provide a Cost Estimator who is fully conversant with all aspects of construction cost estimating. The Construction Manager's Cost Estimator must be completely conversant with local construction economy and market conditions.

The Prime Consultant's Cost Estimator is responsible for costing and cost control services during the 100% design review. The Construction Manager shall provide costing and cost control services from the completion of the design through to the completion of the Project as detailed below.

- 1) Submit a Class A estimate for each tender package issue and consolidate within overall construction estimate.
- 2) Submit monthly cost reports.
- 3) Establish a cost control program in accordance with PWGSC requirements. Prepare and keep an updated projected cash flow for the Project, based upon reconciled estimates.
- 4) Within the limits of the Estimated Construction Cost, establish estimates for Work packages. Submit to the Departmental Representative for review. Update and refine the estimates for the approval of the Departmental Representative. The intent is to ensure that at all times during the Project, a comprehensive construction estimate is in place which includes all aspects of the Project, even those which are not fully developed and/or which have not yet been assigned to any specific Work package.
- 5) Co-operate and coordinate all budget and estimating information with the Prime Consultant's Cost Specialist.
- 6) Reconcile estimates with estimates from the PC Cost Specialist.
- 7) Discuss with the Departmental Representative and the Prime Consultant's Cost Specialist such matters as inflation, trade settlements, market conditions, risk contingencies and the like. Such discussions shall be considered to form part of the cost

estimating process. Document allowances arising as part of the cost estimates.

- 8) Review all information provided and visit the Work as required throughout the course of Project in order to become knowledgeable and familiar with the Site conditions, Site access, on-Site progress, etc. Analyze local labour and material supply conditions, local bidding practices and competition, in order to establish pricing levels. This reconnaissance activity is required to be detailed in the monthly reports.
- 9) Inform the Departmental Representative and Prime Consultant in writing immediately of any project specific issues arising. Recommend actions to ensure the Project remains within the estimated Construction Cost.
- 10) Incorporate into cost estimating process and cost estimates a broad range of cost techniques, especially the following:
  - a) Risk Analysis: All construction estimates (except the final pre-tender estimate) shall include and identify design, estimating, inflation escalation and currency exchange risk allowances as are deemed necessary in light of the current information available.
  - b) Cash Flow: Provide and maintain an accurate monthly cash flow for the Work, based upon the Project Schedule and the current estimate at each stage. The Construction Manager shall have the ability to forecast project expenditures to end of each fiscal year. The Construction Manager shall implement an effective system to ensure the yearly forecasts (and variances) are as accurate as possible. Accurate yearly expenditures forecasting is a key component to the cost services deliverables. The cash flow expenditures shall be detailed and broken down with key line items as agreed with the Departmental Representative for a monthly review. The forecast shall provide an accurate status of each tendered package and identify any potential variations.

In addition to the cost estimating and cost control services related to Class-level estimates described above, the CM will also be responsible, through the appropriate allocation of resources, for providing cost control services for changes made during construction. This includes negotiating with the CM's subcontractors for change requests and managing cost changes to maintain the budget.

The Construction Manager shall:

- 1) Complete Class A estimates for each tender package issue and consolidate within overall construction estimate.
- 2) Prepare a draft cost report and submit to the Departmental Representative for review and acceptance within 6 weeks of contract award to establish the content and format of the monthly reports going forward. Revise as required incorporating comments of the Departmental Representative. The draft report will include the initial breakdown of the construction budget identifying a budget for each Work package with a breakdown by Division, the Construction Management fees and a single separate line for the construction contingency. A second draft report broken down by Division will also be provided for review and acceptance of PWGSC. The draft reports shall incorporate a system of Earned Value Management using the cost estimate established at the 100% construction documents stage as the Baseline for future reporting on costing.

- 3) Submit a monthly report outlining the costing activities during the previous month, highlighting any areas of concern and new information received etc., along with forecast and proposed construction estimate revisions and changes to construction contingencies. Include, as separate cost categories, the Construction Manager's fixed fee and percentage fee. Include an explanation of variance between the actual cost and forecasted cost. The monthly report shall conform to the format approved by the Departmental Representative.
- 4) Each monthly report shall be based on the previous report and will provide the Departmental Representative with up to date information on all aspects of the construction estimate and the Construction Manager's fees. Indicate all costs committed and expended to date. Identify for each Work package broken down by Division, the original estimate amount, the contract amount, the contingency, the breakdown and total of approved Expenditure Authorities (EA), estimated amounts on Supplemental Instructions (SI), the revised contract amount, the total additional cost forecasted and the cost to complete the Project. Total additional cost forecasted shall include all SIs and all EAs in process and approved. The Construction Manager shall be prepared to sequence work with PWGSC funding approval. No acceptance or approval by PWGSC, whether expressed or implied shall be deemed to relieve the Construction Manager of its professional or technical responsibility for the Construction Manager's estimates and monthly reports. Neither does acceptance of an estimate by PWGSC in any way abrogate the Construction Manager's responsibility to maintain the Estimated Construction Cost throughout the life of the Project and to recommend corrective action should the lowest acceptable bid, for any Work package, differ significantly from the approved estimate.
- 5) The monthly costing report from the Construction Manager will contain as a minimum:
  - a) Narrative including inclusions and exclusions.
  - b) Elemental or other format Estimate Summary.
  - c) Estimate Back-up Detail.
  - d) Basis for escalation, inflation and contingency calculations.
  - e) Detailed measurement and pricing included back-up for any work carried out on a time and material basis.
  - f) Outline description of estimate basis.
  - g) Description of information obtained and used in the estimate.
  - h) Listing of notable exclusions; listing of items/issues carrying significant risk;
  - i) Reconciliation against last submission.

- j) Cash Flow updates.
- k) An exception section including sufficient description and cost detail to clearly identify:
  - i) Scope Change: Identifying the nature, reason and total cost impact of all identified and potential Project scope changes affecting the Estimated Construction Cost.
  - ii) Cost overruns and under runs: Identifying the nature, the reason and the total cost impact of all identified and potential cost variations.
  - iii) Options enabling a return to the Estimated Construction Cost: Identifying the nature and potential cost effects of all identified options proposed to return the Project within Estimated Construction Cost.
  - iv) Contingency management report
- l) Cost of forecasted final subcontract amounts
- m) Summary identifying committed & uncommitted funding
- n) List of change notices for each subcontract
- o) List of change orders for each subcontract
- p) Earned Value Management reporting in numeric and graphic format
- q) Any other relevant information

#### **Forecasting of Expenditures**

When submitting monthly reports, accurate forecasting shall be of prime importance. Accuracy, predictability and stability of the forecast, both multiyear as well as monthly within the current year, cannot be overstated.

#### **4.4.2 TIME SERVICES**

Schedule requirements are another major driver for the Union Bridge and Hull Causeway projects. Planning and scheduling is a continuous interactive and iterative process involving planning, action, measurement, evaluations and revision.

The Construction Manager shall employ an experienced Scheduler fully conversant with all aspects of project planning, scheduling and construction sequencing. The scheduling resource must use the latest version of Microsoft Project software or Primavera 6. The scheduling resource in collaboration with the CM's Project Manager and Superintendent will play a major role in the development and monitoring of the Construction schedule. The Construction Manager shall provide scheduling services from award of the Contract, through construction and commissioning, including the warranty period.

The Construction Manager shall:

- 1) Review the current project schedules prepared by the PC and develop a comprehensive construction schedule for all the activities including monitoring and regular updates per Section 01 32.16.16 of the Specifications.
- 2) Monitor, update and maintain the overall Project Schedule for the duration of the Project. A master schedule is required within 6 weeks from Contract award for review and acceptance.

- 3) Following consultation with the Project Team, incorporate the sequence and timing of the required basic program decisions, including design time, documentation, bid calls, bid evaluations, subcontract awards and on-Site construction activities and commissioning into the Schedule. The Construction Manager shall also revise, monitor, update and submit the Project Schedule by end of each month for review.
- 4) Finalize the Project Schedule for the approval of the DR requirements for each Work package. Break down the Schedule into individual networks and tasks for each package of Work in the Project. Indicate the sequence and timing for the construction operations and the milestone completion dates for the Work packages.
- 5) Identify items or processes where long lead times are required and that could jeopardize the Project. Pre-purchase items (material, machinery, equipment, supplies) and implement procurement methodologies to ensure timely delivery to meet the Schedule and cash flow requirements. Assess the risk to the Project Schedule for late deliveries.

### **Time Services Deliverables**

The Construction Manager shall:

- 1) Prepare, revise, monitor and update a detailed schedule in accordance with the Scheduling Specification.
- 2) Respond to comments from the Departmental Representative and update the Schedule accordingly.

Upon review and acceptance of the Schedule, monitor changes to the Schedule bi-weekly or more often when required, and submit written monthly reports to the DR on deviations from the Baseline schedule including analysis of the root causes with a mitigation strategy to maintain the project schedule.

### **4.4.3 RISK MANAGEMENT SERVICES**

The Construction Manager shall provide support to the Departmental Representative in identifying risks throughout the Project life cycle, providing input and assessment of the Project risk plan. Provide the Departmental Representative written comment on the Project risk plan at each stage of the Project.

The Construction Manager shall:

- 1) Prepare and maintain a construction-specific risk registry.
- 2) Review, comment and advise on the PWGSC risk management plan using the CM risk registry.
- 3) Advise on project risks specific to the project and recommend mitigation options to the Departmental Representative.
- 4) Identify and implement methodologies aimed at mitigating and minimizing the impact of construction activities on neighbouring traffic.
- 5) Identify risks that are no longer relevant.
- 6) Implement a claims avoidance program.
- 7) Provide a narrative update of Project risks in each monthly report.

#### **4.4.4 QUALITY CONTROL**

##### **Definitions**

Quality control is set of activities whose purpose is to ensure that all quality requirements are being met. This is defect detection, and is done by testing. Quality Control is mainly an inspection function. Quality assurance is an audit function.

##### **Quality Control Services**

The primary responsibility for construction quality control remains with the Construction Manager. The Work must meet the design and operational intent and criteria. The Construction Manager's continuous adherence to quality management of the entire construction process throughout all aspects of construction is of the utmost importance. The significance of this issue cannot be overstated.

The Construction Manager shall:

- 1) Develop a Quality Management System to ensure that the specified quality standards for the Project are achieved. This shall be done in collaboration with the PC through its Quality Assurance Plan.
- 2) Be responsible for ensuring that the Construction Manager's Subcontractors adhere to:
  - a) Best industry practices and standards following the requirements of the Construction Documents.
  - b) Professional conduct in all phases of the project, employing best practices for budget, schedule, quality, and scope management.
- 3) Work cooperatively to:
  - a) Adopt good project delivery processes such as Risk Management and advising on methods to obtain best value,
  - b) Ensure that all Health, Security and Sustainable Development issues are properly adhered to.
- 4) Actively document non-compliances. Monitor and follow-up on the Work. Do not rely solely upon the Prime Consultant to document non-compliance with the design, but rather take a leading role in managing the Subcontractors and their Work, establishing a quality management database to ensure all construction issues, observations and reports are recorded and closed out, completely and correctly, to the approval of the Departmental Representative.
- 5) Establish, monitor, update and report on a quality management database specific to this Project. Inputs to the database will come from PWGSC, the Prime Consultant team, the Construction Manager's team daily Site observations, etc, and Output from the database will go to Subcontractors and suppliers, and as required, the Prime Consultant and the Departmental Representative. All quality issues are to be addressed promptly, to ensure the pace of construction is maintained without the need for rework of the Work.
- 6) Develop a Quality Incident Protocol for incidents arising from any inspection that indicates a project deficiency.

## **Quality Control Deliverables**

The Construction Manager shall prepare and submit to the Departmental Representative (within five (5) weeks of award of contract) a Quality Control Plan including, but not limited to:

- 1) Description of internal controls.
- 2) Frequency of QC checks.

## **4.4.5 CONSTRUCTION MANAGER'S HEALTH AND SAFETY PLANNING AND IMPLEMENTATION**

### **Construction Manager's Responsibilities**

The Construction Manager shall assume the role of "Constructor" as defined in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects 213/91 (Revised Statutes of Ontario, 1990 Chapter O.1, as amended) for the work in Ontario and the role of "Principle Contractor" as defined by the Quebec in An Act Respecting Occupational Health and Safety (Chapter S-2.1) and a Safety Code for the Construction Industry (Chapter S-2.1, r.4) to be fully responsible for ensuring compliance with the respective OSHA and their associated regulations for all aspects of Project's construction Health and Safety regulation for the work taking place in Ontario and with the *Code de Sécurité pour les travaux de construction* of the Act *Loi sur la santé et Sécurité et Sécurité au travail* (Chapitre S-2.1) for the work happening in the province of Quebec.

- 1) Further, the Construction Manager shall comply with and enforce the requirements of:
  - a) The Workplace Hazardous Materials Information System (WHMIS 2015) regarding use, handling, storage and disposal of hazardous materials, as well as, labelling and the provision of Safety Data Sheets (SDS) as per the applicable acts and regulations.
    - i) Ensure that all designated hazardous materials are properly treated, handled and stored;
    - ii) Ensure that workers' exposure to fumes is within acceptable health and safety limits;
    - iii) Ensure that temporary ventilation or protection, as required for products utilized, is properly provided;
    - iv) Ensure that construction dust is controlled such that workers and occupants are not adversely impacted by dust from construction activities;
    - v) Ensure that shop-drawing submissions include Manufacturers Standard Data (MSD) Sheets.
- 2) In addition the Construction Manager shall:
  - a) Provide a traffic control plan including loading/unloading zones, road restrictions, etc.
  - b) Provide a hoarding plan that meets PWGSC and NCC requirements.
  - c) Provide a pedestrian traffic plan.

- d) Ensure the full health and safety protection afforded under the applicable health and safety acts and regulations to all visitors to the site, including workers, staff, contractors and the general public.
- e) Implement a safety program on site.
- f) Provide appropriate safeguards to ensure safe protection and security of materials and holdings on the site.
- g) Provide the Services of Site Safety Officers as required to document Site conditions throughout the implementation of the Project.
- h) Provide site specific occupational health and safety orientation sessions to all workers and visitors.
- i) Give precedence to safety and health of public and Site personnel and protection of environment over cost and schedule considerations for Work.
- j) Perform Site-specific safety hazard assessment related to the Project activities.
- k) Develop and implement a Site-specific safety plan for all aspects of this Project. The Site-specific safety plan shall be based on a preliminary and ongoing hazard assessment of the Project to be performed. Update the Site-specific safety plan as Site conditions or hazards change. Inform all persons on the Site in the change of conditions or hazards. Resubmit the updated plan to the Departmental Representative immediately.
- l) Develop an On-site Contingency and Emergency Response Plan that must address standard operating procedures to be implemented during emergency situations.
- m) Be responsible for health and safety of persons on site, safety of property on Site and for protection of persons adjacent to Site and environment to extent that they may be affected by conduct of Work.
- n) Shall respond to any unforeseen or peculiar safety-related factor, hazard, or condition that becomes evident during performance of the Project, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction. Advise Departmental Representative verbally and in writing.
- o) Ensure applicable items, articles, notices and orders are posted in conspicuous location on Site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.
- p) Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative. Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified. Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

Departmental Representative will review Construction Manager's Site-specific Health and

Safety Plan and provide comments to Construction Manager within five days after receipt of plan.

The Construction Manager shall revise the plan as appropriate and resubmit plan to Departmental Representative within three days after receipt of comments from Departmental Representative. The Departmental Representative 's review of Construction Manager 's final Health and Safety plan should not be construed as approval and does not reduce the Construction Manager's overall responsibility for construction Health and Safety.

#### **HEALTH & SAFETY Deliverables**

The Construction Manager shall submit to the DR the following documents:

- 1) Traffic control plan and updates as necessary;
- 2) Hoarding plan and updates as necessary;
- 3) Pedestrian traffic plan and updates as necessary;
- 4) Site specific Health and Safety plan and updates as necessary;
- 5) Copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- 6) Contingency and emergency response plans and updates as necessary.
- 7) Copies of incident and accident reports
- 8) Safety Data Sheets (SDS)
- 9) File Notice of Project with Provincial authorities prior to commencement of Work.

#### **4.4.6 REPORTING AND PROJECT SITE DOCUMENTS**

##### **Monthly Report**

The Construction Manager shall prepare and submit, at the start of the project, a sample of the Construction Management Monthly Report structure for review by the DR. Resubmit, as may be required for approval and acceptance. The structure of the report shall be used for all subsequent project stages.

The monthly report will accompany each application for Progress Payment. The Progress Payment will not be accepted unless the monthly report is attached. This report will provide a system for documentation and project Monitoring and reporting through each stage of project delivery, for review and acceptance by the Departmental Representative.

The Construction Management Monthly Report will include;

- 1) A summary of the work completed during the month and projected work for the following month. This includes an update on the indigenous benefits plan which details specific actions that the Contractor has taken in the previous month and those actions to be carried out during the following month. Each update will provide details on how each action was/will be carried out, the objectives and schedule, required resources, any dependencies, and what benefits (employment, subcontracting, skills development, innovative measures or other) were/will be provided.
- 2) Invoicing Summary

- a) The billing section should be broken down by tender package and then itemized by trade.
  - b) Identify all expenditures to date (including all change orders) in a form that compares the original budgets for each trade with the expected costs, including contingencies
- 3) Cost Section – Refer to Section 4.4.1
  - 4) Time Section – Refer to section 4.4.2
  - 5) Risk Section – Refer to Section 4.4.3
  - 6) Quality – Refer to section 4.4.4
  - 7) Health and Safety Section – Refer to Section 4.4.5.
  - 8) Copy of the daily logbook and daily photographs, certified as true copies, as a separate report or volume. For each day worked, provide individual daily log that will include all activities on the Site. Document and verify quantities of materials received and record Work progress through daily photographs and narrative reports. Record the following:
    - a) Weather conditions, particularly unusual weather relative to Work in progress,
    - b) Materials and equipment deliveries,
    - c) Daily activities and major Work done through all shifts of Work,
    - d) Start, stop or completion of activities through all shifts of Work,
    - e) Presence of inspection and testing firms, tests taken, results, etc.,
    - f) Unusual Site conditions experienced,
    - g) Significant developments, remarks, email or other correspondence, etc.
    - h) Reports, instructions from appropriate authorities response actions,
    - i) Safety inspections and reports; and
    - j) If work is based on unit prices, measure and record the quantities for verification of monthly progress claims and the Final Certificate of Measurement.
    - k) For any work carried on time and material basis, provided daily work records signed by the CM and PC representatives (documenting the work activities including labour hours, equipment and material used).

### **Decision Log**

The Construction Manager shall maintain a separate decision log indexed for preconstruction and construction, for the entire duration of the Contract, recording participants, date and place of all decisions affecting scope, schedule, cost and quality. These records are to be made available to Departmental Representative at all times.

### **Site Documents**

The Construction Manager shall maintain at the Project Site, records of all necessary contracts, samples, purchases, materials, equipment and other Work related documents, including revisions thereof. A redlined set of drawing documenting all changes, SI, as-built conditions etc should also be kept at the Project site. These site documents are to be made available to Departmental Representative at all times.

#### **4.4.7 PROJECT ADMINISTRATION**

While PWGSC acknowledges the Construction Manager's obligations to meet project requirements, the project delivery process entitles PWGSC to review all work. PWGSC reserves the right to reject undesirable or unsatisfactory work. The Construction Manager must obtain Departmental Representative's acceptance of all required deliverables for the Project.

Acceptance indicates that based on a general review of work for specific issues, the work is considered to comply with governmental and departmental objectives, policies and practices and those overall project objectives appear to be satisfied.

Acceptance does not relieve the Construction Manager of responsibility for the work and compliance with the contract. Acceptance does not prohibit rejection of work, which is determined to be unsatisfactory at later stages of review.

#### **4.4.8 CONSTRUCTION ADVICE**

Act as an advisor to the Project Team throughout the life of the Project.

The Construction Manager shall:

- 1) Acquaint PWGSC and other members of the design team with the labour conditions and supply issues applicable for the duration of the Project;
- 2) Assist in providing liaison and coordination among government authorities, utilities and other authorities having jurisdiction;
- 3) Provide advice on separation of Work packages and sequencing of design work to effectively meet schedule and cost objectives; and
- 4) Provide design input and constructability reviews, as well as input to value engineering and life cycle costing work lead by the Prime Consultant.

#### **4.4.9 DESIGN MEETINGS**

Meetings with PWGSC, the Construction Manager, the Prime Consultant and Client will normally be held in downtown Ottawa or virtually.

All aspects of the design, design coordination, cost, Schedule, quality, constructability, scope separation for Work packages, scope changes, etc. are to be discussed.

Other ad hoc meetings and when necessary workshops to discuss detailed requirements will be required in the progress of the Project such as meetings between the Prime Consultant, the Construction Manager on constructability and construction implementation plan, Subcontractors, PWGSC, technical team members, City of Ottawa, Ville de Gatineau, NCC, or other Authorities having jurisdiction. Decisions taken at these other ad hoc meetings and workshops must be ratified at the next design meeting. These meetings are for the accurate exchange of information.

The Prime Consultant shall be responsible for preparing minutes of meetings and forwarding minutes to all attendees.

The Construction Manager shall attend all service-related and design meetings and respond to minutes as required prior to the next meeting.

#### **4.4.10 REVIEW OF DESIGN AND CONSTRUCTION DOCUMENTS**

The Construction Manager shall:

- 1) Review and provide comment on all design and construction document submissions released to the Construction Manager. The review shall focus on constructability, coordination between all design disciplines, schedule impacts and costing. Documents are to be reviewed at 100% construction documents package stage.
- 2) Take all reasonable measures to identify errors and omissions and to promptly advise the Departmental Representative of the same.
- 3) Provide advice to the Prime Consultants and the Departmental Representative, including the provision of expertise for constructability, bid-ability, scheduling, cost control and coordination, as well as construction phasing, site security and site safety. Recommend alternative solutions whenever design details adversely affect construction feasibility or schedules.
- 4) Provide suggestions and/or alternatives for cost reductions or acceleration of the Project Schedule.
- 5) Refer all questions for the interpretation of the documents prepared by the Prime Consultant to the Prime Consultant. In the event of continuing interpretation difficulties, refer the issue with all required background material to the Departmental Representative for resolution; the Departmental Representative's interpretation shall be deemed final and conclusive.
- 6) Make recommendations to the Prime Consultant and Departmental Representative regarding the phased issuance of drawings and specifications to facilitate phased construction of the Work taking into consideration such factors as available funding, time of performance, economies and provision of temporary facilities.

##### **Review of design and Construction Documents Deliverable**

Review and return one marked-up set of documents with detailed, written comments relating to the reports, drawings, details, specifications, etc. to the Departmental Representative with a copy to the Consultant within ten (10) working days of the 100% construction document submission.

#### **4.4.11 CONSTRUCTION IMPLEMENTATION PLAN**

##### **Scope**

The purpose of this implementation plan is to document the constraints and requirements that will be imposed on the Work so that approval from the stakeholders is received. Once approval is received, the constraints and requirements will be outlined in the construction documents mainly in Division 1 of the Construction Specification. It is important for the Construction Manager and its sub trades to be aware of the constraints and requirements that have a cost and schedule impact. Those constraints and requirements deal with various subjects such as environmental control, scheduling restrictions, sequence of work, construction safety, hours of work, delivery of equipment/materials and waste disposal, scaffold, temporary services, noise, security, shutdown of services, storage, parking and access to site, site plan showing limits of construction and staging areas, etc.

Input for this plan is required from all stakeholders. The Construction Manager shall take a lead in developing this plan.

Once the plan is approved by the Departmental Representative, the Construction Manager and the Consultant will be required to work together to incorporate those requirements into the construction documents mainly in Division 1 of the construction specification. The Consultant will be responsible to develop Division 1 common to all trades. The Construction Manager shall be responsible to review the common Division 1 to ensure all the requirements and constraints outlined in the construction implementation plan have been captured. The Construction Manager shall be responsible to develop the Division 1 construction specification (i.e. Front-End Document for Bidders) specific to each tender package that may include other requirements from the Construction Manager's perspective.

### **Deliverables**

Submit a construction implementation plan, within 4 weeks of contract award, so that the Division 1 specification is developed prior to tendering any tender packages. This implementation plan shall be updated as required to coincide with other tender packages. The PC will update Division 1 if required as the project progresses.

## **4.4.12 TENDERING THE WORK**

### **Context**

While the Contract for the delivery of construction management services is between the Department and the Construction Manager, it is understood that the Construction Manager will deliver the construction services called for in this Terms of Reference through subcontractors.

It is most important that the selection processes used by the CM to retain subcontractors are fair, open and transparent and that all qualified subcontractors have the opportunity to be considered for the construction Work. PWGSC believes that competitive bidding and open tendering processes will yield the best value for subcontracted Work.

### **Scope**

- 1) In subcontracting for the construction the Construction Manager shall:
  - a) In consultation with the Consultant, prepare tender and contract documents that clearly set out the full requirements for material and services (i.e. 100% tender ready documents). Exceptions may be considered on a case-by-case basis to meet schedule requirements subject to PWGSC DR approval;
    - i) When warranted, using standard construction industry documents ensure that subcontractors in trades that are essential to the successful delivery of the Work, are pre-qualified prior to being invited to submit tenders. Basis for prequalification to be submitted to DR prior to solicitation of tenders.;
    - ii) Submit a recommendation award to Departmental Representative for approval prior to contract award.
  - b) Enter into contracts with qualified subcontractors who submit the lowest-priced compliant tenders. Note where appropriate, time and materials contracts are acceptable subject to Departmental Representative approval. Entry into

subcontracts on a time and material basis is dependent on following the process outlined in this section, i.e. ensure daily work records are signed by the CM and PC or DR and that rates for equipment, material and labour are agreed upon beforehand. Ensure an upset limit has been established before starting the work. Upset limits do not preclude proper reporting procedures required by the Departmental Representative. A site-based inventory control system must be set up and managed by the CM to ensure time and material usage does not exceed upset limits. In the event that an upset limit needs to be increased, the CM shall seek appropriate approval from the DR prior to exceeding the upset limit;

- c) Manage subcontractors and ensure they provide the required services in a manner consistent with the terms and conditions of this Contract and achieve timely delivery of quality services at the lowest cost;
  - d) Establish quality and performance requirements and monitor subcontractor performance, including quality of deliverables, adherence to schedules and costs;
  - e) Provide for dispute resolution, initiation of subcontract amendments and payments.
- 2) The Construction Manager shall obtain open, fair and competitive bids for the subcontracts required for each portion of the Work in accordance with the following requirements:
- (a) Subcontracts estimated at less than \$25,000 including Harmonized Sales Tax, may be sole-sourced to qualified suppliers only upon the written approval of the Departmental Representative.
  - (b) For subcontracts estimated at less than \$100,000, including Harmonized Sales Tax, and upon the written approval of the Departmental Representative, the Construction Manager may invite on a rotating basis a minimum of 3 qualified suppliers from the CM's prequalified lists to submit bids. It is recommended the Construction Manager will notify in writing subcontractors who are unsuccessful.
  - (c) For subcontracts estimated at less than \$100,000, including Harmonized Sales Tax, the Construction Manager, upon the written agreement of the Departmental Representative, may set aside the requirement to solicit a minimum of three bids if it has demonstrated to the satisfaction of the Departmental Representative, that less than three firms are capable of performing the Work.
  - (d) For subcontracts estimated at \$100,000 or more, including harmonized sales tax, advertise publicly through Buy & Sell, in accordance with the following open bidding procedures:
    - i) The public advertisement shall include, at a minimum, a description of the nature of the Work to be performed, information regarding any technical requirements, financial guarantees or other documentation to be provided with the bid, the completion date for the Work, the address of the bid closing location and the final date and time for receiving bids, the identification of a contact point for obtaining bid documents and from

which further information may be obtained, the date, time and place of the public opening of the bids.

- ii) The minimum time period (in calendar days) for receipt of tenders shall vary based on the estimated value of subcontracts (including HST) according to the schedule below. Reduced tendering periods may be considered on a case-by-case subject to written approval from PWGSC DR.

\$100,000 to \$1,000,000	10 days
Over \$1,000,001	15 days

- iii) Tender documentation shall include all of the public advertisement information, as well as identification of the bid validity period, the criteria for awarding the contract including any factors other than price to be considered in the evaluation of bids, the type of procurement (i.e. 1 or 2 stage process), the terms of payment and any other terms or conditions.
  - iv) During the solicitation the Construction Manager shall reply promptly to any request for bid documents or any reasonable request for relevant information made by a supplier participating in the tender. Information provided in response to questions during the tender period must be provided to all bidders.
- 3) The receipt and opening of bids and the awarding of contracts must be consistent with the following:
- a) Bids must be opened in Ottawa in the presence of at least one representative of the Construction Manager, and a representative of Canada, all of whom will act as witnesses to the opening by verifying and signing the Record of Bids received.
  - b) Contracts shall be awarded in accordance with the requirements specified in the notices and bid documentation, and must be submitted by a supplier that complies with the terms and conditions of the bid documents.
- 4) The CM shall:
- a) Seek pre-approval from the DR for any deviation from the competitive subcontracting process and make the documentation available to PWGSC.
  - b) Demonstrate to the DR that it has a competitive subcontracting process and a prequalification process, reflecting best industry practices.
- 5) The CM shall analyze the bids received and recommend awards to the DR through a trade contract award recommendation. The format of the trade contract award recommendation is the responsibility of the CM, however, at a minimum; the recommendation must include copies of the following documents:
- a) Prequalification Phase (if applicable) – copies of prequalification documents, the list of contractors submitting applications for prequalification and the results of the evaluation of prequalification submissions

- b) Tender Phase: copies of all bids received, verification (e.g. a time stamp) that bids were received on time prior to the time scheduled for bid closing, a copy of the Record of the bid opening, properly witnessed, a copy of the MERX TM notice, or invitation to tender if the Work is valued at under \$100,000, a copy of all solicitation documents, a summary of all tenders received with bid amount breakdowns and totals, verification that bid security (if applicable) was provided with the bid, information on any tender qualifications or disqualifications; and identification of the supplier recommended for contract award
- 6) When the Departmental Representative approves the procurement process and the trade contract award recommendation by the CM, the Construction Manager shall prepare the subcontracts for execution. No award of subcontracts to a Subcontractor can proceed without an approved trade contract award recommendation. It is recommended the Construction Manager will notify in writing subcontractors who are unsuccessful.
- 7) The Construction Manager, and anyone not at Arm's Length to the Construction Manager, shall be ineligible to submit bids for any construction tenders issued for work tendered as part of the Union Bridge Rehabilitation and the Hull Causeway Widening project, Construction Management contract. For further clarity, the Construction Manager will be deemed to have a Conflict of Interest that would prevent it from being eligible to submit bids for any tenders issued in connection with the Project.

#### **4.4.13 FINAL INDIGENOUS BENEFITS PLAN (IBP)**

Within **45 days** after date of Contract Award, the Contractor shall submit to the Crown for approval a finalized Indigenous Benefits Plan, which is based upon the draft Plan submitted as part of the proposal, updated as detailed below. The draft Indigenous Benefits Plan shall include the following:

##### **4.4.13.1 Indigenous Benefits Content**

The Indigenous Benefits Plan shall include a clear statement of the minimum amount of Indigenous Benefits that the Bidder proposes to provide, expressed in dollars and as a percentage of the total contract value. The Indigenous Benefits Plan may have other requirements for the bidder, such as including a clear statement of the minimum hours of direct employment of Indigenous Resources as well as a clear statement of the minimum dollar value of business sourced to Indigenous firms that the Contractor intends to use in carrying out the work. The minimum benefits must not be less than that detailed in the proposal.

##### **4.4.13.2 Human Resources**

The Indigenous Benefits Plan shall include a Human Resources Plan that details how the Contractor or its subcontractor(s) intends to maximize the use of Indigenous employment. The Human Resources Plan shall address how employment of Indigenous people will be managed and shall provide:

- a) Details on the work to be carried out for each position proposed to be filled by an

Indigenous person,

- b) Strategies for recruitment of Indigenous persons within all job types including all STEM trades and professions with a focus on youth.

The Human Resources Plan shall be in sufficient detail to allow the Crown to assess the quality and value of the Indigenous Benefits proposed but also the probability of meeting the objectives contained therein. The final plan will be co-developed with the Indigenous parties, and if required, with the assistance of Canada. Information about the project and timelines has been shared with the Indigenous communities to ensure strong and effective planning.

#### **4.4.13.3 Skills Development**

The Indigenous Benefits Plan shall include a Skills Development Plan that details how the Contractor or its subcontractor(s) intends to maximize the training and skills development of Indigenous persons. Union dues and specialized training need to be factored in as part of the IBP where necessary.

The Skills Development Plan may address the use of:

- a) Apprenticeship programs and education programs,
- b) Pre-professional programs,
- c) College programs,
- d) On the job training, shadowing, and
- e) In-house training programs.

The Skills Development Plan shall address how training of Indigenous people will be managed. The Skills Development Plan shall be in sufficient detail to allow the Crown to assess the value of the Skills Development proposed but also the probability of meeting the objectives contained therein.

#### **4.4.13.4 Indigenous Business**

The Indigenous Benefits Plan shall include an Indigenous Business Plan that details how the Contractor intends to maximize the use of Indigenous firms. The Indigenous Business Plan shall:

- a) Identify the work intended to be carried out by Indigenous firms, as well as the dollar value of the work,
- b) Detail how business with Indigenous firms will be managed, from developing sources of supply to administration, and
- c) Detail any development of new sources of supply, or new capabilities

The Plan shall address how the Contractor or its subcontractor(s) intends to work with outside organizations that have experience or mandates in various aspects of contracting with Indigenous people or firms. These organizations include, but are not limited to:

- a) Crown-Indigenous Relations and Northern Affairs Canada (Government of Canada)
- b) Indigenous Services Canada (Government of Canada)
- c) Employment and Social Development Canada (ESDC)
- d) Public Services and Procurement Canada (Government of Canada)

For a list of Indigenous Community Economic Development Officers and other Indigenous organizations, please refer to list below.

If the Contractor has consulted with other organizations, it must present details substantiating that the organization has experience or a mandate related to contracting with Indigenous people or firms.

#### INDIGENOUS CONTACT LIST

##### **Kitigan Zibi Anishinabeg Administration office**

P.O. Box 309

1 Paganakomin Mikan

Maniwaki, Quebec J9E 3C9 Contact: 819-449-5170, toll-free at 1-888-449-5170

##### **Algonquins of Pikwàkanagàn First Nation**

1657A Mishomis Inamo

Pikwàkanagàn, ON, CANADA

K0J 1X0

T: 613-625-2800

F: 613-625-2332

##### **Algonquin Anishinabeg Nation Tribal Council**

81 Kichi Mikan, Kitigan Zibi, Québec J9E 3C3

Ph: 819-449-1225 Aboriginal Apprenticeship Board of Ontario

Sarah Monture – Executive Director

Email: [saramonture@aabo.ca](mailto:saramonture@aabo.ca)

Tel: 905-516-0582

Website: <https://aabo.ca/>

##### **Kigita Mikam – Aboriginal Training and Employment Inc.**

Ottawa Office

Lydia Bélanger - Director

815 St. Laurent Blvd., Room 231

Ottawa, ON K1K 3A7

Email: [lydia@kagitamikam.ca](mailto:lydia@kagitamikam.ca)

Tel: 613-565-8333

Website: <https://kagitamikam.com/contact/>

##### **Employment and Social Services Canada (ESDC)**

<https://www.canada.ca/en/employment-social-development/programs/indigenous-skills-employment-training/service-delivery-organizations.html>

**Public Services and Procurement Canada**

**Office of Small and Medium Enterprise:**

National Capital Region

(Ottawa and Gatineau)

L'Esplanade Laurier

300 Laurier Avenue West

M1-suite 104

Ottawa ON K1A 0S5

Telephone: 873-355-9796

Fax: 613-943-8814

Email: [TPSGC.PARCNBPME-APNCROSME.PWGSC@tpsgc-pwgsc.gc.ca](mailto:TPSGC.PARCNBPME-APNCROSME.PWGSC@tpsgc-pwgsc.gc.ca)

**Odawa Friendship Centre**

Kimberly Jerome, Executive Director

Email: [executive.director@odawa.on.ca](mailto:executive.director@odawa.on.ca)

815 St. Laurent Blvd, Ottawa, ON K1K 3A7

Phone: 613-722-3811

Website: <http://www.odawa.on.ca/>

**Akwesasne Career and Employment Support Services (ACCESS)**

25 Third St.

Akwesasne, QC H0M1A0

Phone: 613-575-2626

Fax: 613-575-2683

<https://www.acesjobs.ca/>

The plan should be in sufficient detail to allow the Crown to develop a clear assessment of the viability of the Indigenous Business Plan.

**4.4.13.5 Innovative Approaches and Other Measures**

The Indigenous Benefits Plan shall include other measures that the Contractor or its subcontractor(s) considers relevant. These innovative approaches are any measures that produce Indigenous Benefits and are not covered by previously listed categories. These include, but are not limited to:

- a) Specialized training or programs required for employment onsite (union dues and specialized training need to be factored in as part of the IBP where necessary)
- b) Other activities related to but not specifically detailed in the Statement of Work,
- c) Relying on Skills Inventories (as prepared by Indigenous governments) and actively working directly with local employment officers;
- d) Participation in careers events, such as high school visits, career presentations and scholarships,

- e) Actively recruiting and reaching out to Indigenous Communities for Indigenous summer student employment,
- f) Community outreach projects aimed at addressing local infrastructure needs, as identified by Indigenous partners,
- g) Innovative approaches to addressing barriers to the workforce reaching the work site, such as travel expenses, housing, living costs and child care
- e) Innovative approaches that could stimulate economic development of Indigenous communities, such as addressing core infrastructure needs through providing matching equipment in applications, and supporting the capacity building for Indigenous Businesses and Peoples.
- f) Policies for anti-racism and harassment, as well as grievance mechanisms for managing concerns in the workforce as well as locally, should be identified.

<https://www.ottawaaboriginalcoalition.ca/indigenous-ottawa-organizations>

The plan should be in sufficient detail to allow the Crown to develop a clear assessment of the viability of the Innovative Approaches and Other Measures Plan.

## **4.5 CONSTRUCTION SERVICES**

The following services are rendered in support of construction (the Work).

### **4.5.1 GENERAL**

The Pre-construction Services in Sections 4.4.1 to 4.4.12 are to be provided concurrently with the Construction Services described herein.

### **4.5.2 CONSTRUCTION MEETINGS**

The Construction Manager will chair construction meetings every two (2) weeks. The meeting participants to include Construction Management staff, PWGSC Departmental Representative, and Consultants. Key trade contractors and PWGSC Technical Resources may be invited on an as-needed basis to meetings.

The Construction Manager shall:

- 1) Arrange and coordinate all regular construction meetings (every 2 weeks) on site throughout the duration of the project:
- 2) Prepare and distribute minutes within two (2) working days of the meeting.
- 3) Endeavour to hold all meetings as Green Meetings (i.e. Electronic copies of documents where possible or double sided hard copies)
- 4) Establish a list of standing agenda items, including (as a minimum):

- a) Schedule and progress,
- b) Cost issues and changes,
- c) Risk and quality issues,
- d) Quality,
- e) Scope of work
- f) Site safety,

#### **4.5.3 CONSTRUCTION MONITORING**

Maintain competent full-time supervisory staff on Site during implementation of the Work to monitor and provide general direction to all those associated with the Work for all work shifts as required; and quality management and field engineering staff as required. Identify unacceptable Work early to avoid delays that might arise as a result of required corrections of deficient Work. Ensure that comprehensive quality management processes are followed daily. Ensure that adequate back-up personnel are available.

Monitor progress on site and ensure coordination of trades.

- 1) Establish on-Site organization and lines of authority in order to carry out the overall plans of the Construction Manager and PWGSC;
- 2) Schedule and conduct progress meetings at which Subcontractors, PWGSC, Prime Consultant and Construction Manager can discuss jointly such matters as procedures, progress, problems, risks, costs and scheduling;
- 3) Provide daily Monitoring of the Schedule as the Work proceeds;
- 4) Complete the Work according to the accepted construction documents, Project Schedule and Project Estimated Construction Cost;
- 5) As part of a comprehensive quality management process, provide daily inspection of all aspects of the Work (QC), documenting matters for action or follow-up by Subcontractors, or referral to the Prime Consultant. Ensure the Work is constructed as specified. Use photographs to document issues and their correction;
- 6) Review the adequacy of the Subcontractors personnel and equipment and availability of material and supplies to meet the Schedule. Implement remedial action when requirements of a subcontract or the Project Schedule are not being met;
- 7) Prepare and maintain a decision log recording all decisions affecting Schedule, construction estimates, scope, or quality, including dates, place, and participants. These records are to be made available to PWGSC at all times;
- 8) Monitor and document all health and safety matters daily.

#### **4.5.4 SUBCONTRACTOR'S CHANGES (NOTICES AND ORDERS)**

When a change to a subcontract is contemplated, the Prime Consultant (PC) shall prepare and issue a Supplemental Instruction (SI). This can be the result of a consultant-driven change to the construction documents or a CM/subcontractor-initiated Request for Information (RFI).

Upon receipt of an SI, the CM will promptly review and validate the SI prior to forwarding to their subcontractors to obtain a quotation. While the subcontractors are preparing their quotation, the CM will also prepare a substantive cost estimate which will be used as the basis to evaluate subcontractor quotations.

It is the responsibility of the CM to ensure that all prices included in the Subcontractor's breakdown, including the costs and mark-ups of subcontractors, are fair and reasonable and in accordance with the general conditions of the contract documents. The CM must provide written confirmation, in the form of Expenditure Authorization (EA) letter, to the PWGSC DR declaring that the quotation is fair and reasonable and on this basis recommends the EA for approval. The EA letter shall include: a detailed description of the change; the applicable EA driver category; a breakdown of all labor, material, plant and equipment, rates, and mark-ups; subcontractor contract change; contingency budget drawdown/cash flow. Note that project-specific EA driver categories (e.g. Client Request, Site Conditions, Consultant Request) will be established by PWGSC at project initiation and must be adhered to by the CM for the duration of the project.

The DR will review the EA letter provided by the CM. The DR may request further breakdown and clarification of costs, until such time that the DR is satisfied with the information provided and that the quotation is indeed fair and reasonable. Upon written approval of the EA letter, a Change Order will be prepared and issued by the CM to the Subcontractor, with a copy to the PC and the DR.

Under normal circumstances, the PWGSC DR will review and approve an EA within 48 hours, and/or advise accordingly. No work is to proceed without prior written approval from the DR. The CM shall ensure that Supplemental Instructions are prioritized and processed in an expeditious manner in view of maintaining the project schedule.

A detailed log of the cost of forecasted final subcontract amounts, changes in construction contingency that may result, change notices and change orders is to be maintained by the CM for all subcontracts, at all times throughout the Project. A copy of this log is to be included in the monthly report.

#### **4.5.5 CONSTRUCTION WORK**

The Construction Manager shall:

- 1) Be responsible for the development, coordination and management of all Work and services included in Division 01.
- 2) Ensure the provision of all necessary equipment to the Project and all other resources required to perform all services.

- 3) Procure, coordinate, administer and manage all construction Work and contracts.
- 4) Prepare and execute contracts with the successful Subtrades so as to:
  - a) Coordinate and manage the respective contracts in an integrated manner to avoid any conflicts between the Work of any of the Construction Manager's subtrades and/or the Construction Manager's own forces.
  - b) Coordinate, manage and ensure completion of all the Work of each Subtrade tender package in strict adherence to the accepted drawings and specifications of each tender package, including all addenda and authorized change orders.
  - c) Deliver the Work packages by the agreed upon completion dates
  - d) Develop and implement a procedure for review, certification, processing and payment of Subtrades in accordance with the terms and conditions of the Construction Management Contract.
  - e) Schedule and conduct progress meetings at which Subtrades, PWGSC and the Construction Manager can jointly discuss such matters as procedures, progress, problems, risks and scheduling.
  - f) Provide timely response to correct issues, as they occur.

#### **4.5.6 QUALITY CONTROL**

The Construction Manager shall:

- 1) Ensure that quality control measures are coordinated with PC's quality assurance plan.
- 2) Arrange for testing services as required, which may include concrete testing, compaction testing, etc.

Carry out Work using qualified licensed workers or apprentices in accordance with Provincial Act respecting manpower vocational training and qualification.

Permit employees registered in Provincial apprenticeship program to perform specific tasks only if under direct supervision of qualified licensed workers.

Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties.

#### **4.5.7 AS-BUILT DRAWINGS**

The Construction Manager is to collect and turn over to the Prime Consultant at the end of each completed subcontract a marked-up set of drawings and specifications for completion of as-builts by the Prime Consultant. As-built documents shall clearly indicate all deviations from the Issued for Construction documents, including identifying all changes by Change Order number.

#### **4.5.8 SHOP DRAWINGS**

The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept. This review does not constitute approval by the Departmental Representative of the detail design inherent in shop drawings, responsibility for which shall remain with Contractor or Subcontractor submitting same, and such review shall not relieve Contractor or Subcontractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of Contract Documents. Shop drawings shall be stamped: "Reviewed", or "Revise and Resubmit", as appropriate, by the Construction and by the Prime Consultant before return to the subcontractor.

The Construction Manager shall:

- 1) Produce and manage a shop drawing log with a complete list of all shop drawings, samples and mock-ups required by the tender documents. Log to track all dates associated with each submission, review and return in keeping with the construction schedule.
- 2) Prioritize the preparation and submission of shop drawings to ensure schedule is maintained.
- 3) Review, discuss, record problems and identify agreed remedial action.
- 4) Monitor and record the progress of shop drawing review. Record parties designated for action and follow up.
- 5) On completion of project, forward reviewed/as-commissioned shop drawings to the Departmental Representative.
- 6) Verify that shop drawings include the project number and are recorded in sequence.
- 7) Do not commence manufacture or order materials before shop drawings are reviewed.

#### **4.5.9 PERMITS AND APPROVALS**

Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction. The Construction Manager will be responsible for coordinating, paying for and obtaining all permits and approvals from local and statutory authorities and shall:

- 1) Liaise with local and statutory authorities with respect to hoarding, traffic restrictions, services and associated diversions and/or connections.
- 2) Inform PWGSC of their requirements to inform any statutory body via applications or orders.
- 3) Ensure that all applications are filed and executed successfully.

- 4) Verify that all necessary approvals have been obtained.

#### **4.5.10 SITE REVIEWS**

The Construction Manager shall:

- 1) Arrange with the Departmental Representative for the issuance of necessary forms respecting interim and final completion of the work;
- 2) Prepare lists of incomplete and deficient items;
- 3) Schedule completion of these items with the Subtrades and distribute all lists as appropriate;
- 4) Distribute interim and final completion certificates.

#### **4.5.11 SUSTAINABILITY AND ENVIRONMENTAL**

The Construction Manager will provide:

- 1) Advice on the source and availability of regional materials and materials with recycled content, including on-Site verification of same;
- 2) Provide information required by the Consultant to develop the Waste Management Program for the Work and to monitor its implementation;
- 3) Site verification related to the use of acceptable materials, compiling and verifying MSDS sheets and WHMIS information;
- 4) Coordination with all subcontractors to ensure compliance with contract requirements for sustainability and environmental requirements.

#### **4.5.12 WASTE MANAGEMENT**

The Construction Manager shall:

- 1) Review the Waste Audit plan and provide comments to the Prime Consultant as to the completeness and practicality of the plan.
- 2) Prepare and provide to the Prime Consultant written monthly reports on waste reduction efforts including quantities of materials reused, recycled or disposed of (based on tonnage), with supporting documentation (i.e. waybills, receipts, invoices, waste tracking forms).
- 3) Review the findings of the Waste Audits conducted by the Prime Consultant. The audits will indicate the degree to which recycling objectives are being achieved and will provide recommendations for improvements if objectives are not being met.

#### **4.5.13 GENERAL REQUIREMENTS**

The Construction Manager is to provide for the management of all services normally included

in Division 1 of the National Master Specification. This Work is to be defined as all those items that are necessary for the smooth and safe operation and co-ordination of the site.

Services to be provided mainly in relation to requirements of Division 1 of the National Master Specifications: site organization and safety as per "prime contractor" and "constructor" duties defined in the Ontario OHSA and the Québec CNESST; provision of temporary services and site facilities, site security, traffic management, management of the waste and recycling program for the site; protection, hoardings, cranes and lifts as required.

#### **4.5.14 PROJECT SITE OFFICE**

The CM is responsible for establishing his site presence for the project. Staging area will be available for Site office, parking and storage. The CM is responsible for ensuring that there is sufficient space and services for the CM's staff as well as provision for the Prime Consultants Resident Site Supervision personnel.

#### **4.5.15 HAZARDOUS MATERIALS**

Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of Material Safety Data Sheets (MSDS) acceptable to Human Resources Development Canada, Labour Program.

#### **4.5.16 GUARANTEES AND WARRANTIES**

Before completion of Work, collect all manufacturers' guarantees and warranties and deposit with Departmental Representative.

#### **4.5.17 CONSTRUCTION CLEANING**

The Construction Manager will be responsible for construction cleaning throughout the life of the project. Construction cleaning is to be carried out to ensure a safe work from excessive construction dust and debris. As work packages are completed and/or construction areas are completed, perform a final construction cleaning of the entire area to eliminate all construction dust and debris. Advise the Departmental Representative in writing before final cleaning is to proceed.

#### **4.5.18 SECURITY CLEARANCES**

The CM and all subcontractors are required to comply to the security requirements described in the Security Requirements Checklist (SRCL) and associated Security Classification Guide. It is the responsibility of the CM to provide personnel cleared at the appropriate level of security clearance.

### **4.6 POST CONSTRUCTION AND WARRANTY STAGE**

During the Post Construction and Warranty Stage, the Construction Manager shall:

- 1) Assemble Record Documents in whole packages per subproject or as directed by the Departmental Representative. Provide copies of Record Documents to PWGSC as directed by the Departmental Representative;
- 2) Review and comment on the accuracy of warranties and guarantees.
- 3) Coordinate with Subtrades to provide final Record Documents as required for each subtrade.
- 4) Within the warranty period, arrange for an inspection of the facility to determine all deficiencies to be corrected;
  - a) Prepare a deficiency list for review and acceptance by the Departmental Representative.
  - b) Provide a schedule indicating when correction of all deficiencies covered under the warranty will be corrected and submit to the Departmental Representative for review and acceptance;
  - c) Arrange for and correct all identified deficiencies in accordance with the schedule and advise when all deficiencies have been properly corrected.
  - d) Ensure that all warranty deficiencies are properly corrected in a timely manner.

## APPENDIX A – SUMMARY OF WORK

Section 01 11 00  
SUMMARY OF WORK

### General

#### RELATED REQUIREMENTS

All projection specifications shall apply to this section.

#### DEFINITIONS

General: Basic Contract definitions are included in the Conditions of the Contract.

1. "Approved": When used to convey Departmental Representative's action on Contractor's submittals, applications, and requests, "approved" is limited to Departmental Representative's duties and responsibilities as stated in the Conditions of the Contract.
2. "Directed": A command or instruction by Departmental Representative. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
3. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
4. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
5. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
6. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
7. "Provide": Furnish and install, complete and ready for the intended use.
8. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.
9. "Departmental Representative": Either PSPC's Project Manager or someone appointed by PSPC's Project Manager that represents Public Services and Procurement Canada on their behalf.
10. "Approved Equivalent", "Or Equal", and "Or Approved Equal": a substitution for a product or method that differs from the contract documents that has been deemed acceptable by the Departmental Representative and written approval has been provided.

#### WORK COVERED BY CONTRACT DOCUMENTS

1. Work of this Contract comprises of:
  - a. General repair and rehabilitation of the Union Bridge, located on the Chaudière Crossing between Ottawa, Ontario and Gatineau, Quebec; and further identified as PSPC Project Number R.093957.005.
    - i. The work generally includes the structural rehabilitation of the bridge and approaches, and the installation of new District Thermal Heating pipes on the bridge.
  - b. Widening of the Hull Causeway, located on the Chaudière Crossing between Ottawa, Ontario and Gatineau, Quebec; and further identified as PSPC Project Number R.095392.004.

- i. The work generally includes the widening of the bridge and approaches, and the installation of new Hydro Quebec, Bell Canada, Portage Power water main and sanitary lines.
2. All work to be carried out in accordance with applicable federal, provincial, and municipal regulations for those agencies having jurisdiction for the work.
3. The Contractor must be aware that other construction work may be being performed at several different locations in the bridge vicinity during the time frame of this contract.

## CODES

1. Perform all work in accordance with the Canadian Bridge Highway Design Code CSA S6-19 (CHBDC), the Occupational Health and Safety Act of Ontario, the Ontario Traffic Manual - Book 7, the Quebec Occupational Health and Safety Act, the Quebec Safety Code for the construction industry, and MTQ Road Works, Volume 5: Traffic Control Devices.
2. Materials and workmanship must conform to or exceed applicable standards of Canadian General Standards Board (CGSB), Canadian Standards Association (CSA), American Society for Testing and Materials (ASTM) and other standards organizations.
3. Conform to latest revision of any reference standard as re-affirmed or revised to date of specification. Standards or codes not dated shall be deemed editions in force on date of tender advertisement.
4. Vehicle weights and dimensions shall conform to the Highway Traffic Act of Ontario and Quebec.

## DOCUMENTS REQUIRED

1. Contractor to maintain at the job site, one copy of each of the following:
  - a. Contract drawings.
  - b. Specifications.
  - c. Addenda.
  - d. Approved shop drawings and approved construction documentation.
  - e. Requests for information.
  - f. Change orders.
  - g. Other modifications to the Contract.
  - h. Copy of approved Work schedule.
  - i. Plan locating underground electrical/communication lines.
  - j. All testing results.

## SITE CONDITIONS

The Contractor is responsible to visit the bridge and review existing site conditions including approach roadways, bridge infrastructure, and bridge structural components.

## CONTRACT METHOD

1. Construct Work under a combined Unit Price and Lump Sum contract.
2. Lump Sum Work:
  - a. Any work which is not included in the unit price table is deemed to be included in the lump sum price.

## SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit Project construction progress schedule in accordance with Section 01 32 16.16 - Construction Progress Schedule - Critical Path Method (CPM).

3. Sustainable Design Submittals:
  - a. Construction Waste Management:
    - i. Submit project Waste Management Plan and Waste Reduction Workplan highlighting recycling and salvage requirements.
    - ii. Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating 75% of construction wastes recycled or salvaged.
4. Submit site-specific and Work Plan Health and Safety Plan in accordance with Section 01 35 29.06 - Health and Safety Requirements.

## COST BREAKDOWN

1. Within one week of notification of acceptance of bid, furnish a schedule of values, and a cost breakdown by Section aggregating contract price.
  - a. Submit prices for each line item for the unit of measure specified.
2. Within one week of acceptance of bid, submit a list of subcontractors.

## WORK BY OTHERS

1. Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.
2. Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative in writing, any defects which may interfere with proper execution of Work.
3. Coordinate with the affected and involved utilities and stakeholders, including Portage Power, Hydro Ottawa, Bell Canada.
4. Coordinate with Windmill Development Group (Zibi) and their subcontractors.
5. Allow for and coordinate work for the installation and commissioning of the new Zibi District Thermal Heating (DTH) pipes by Windmill Development Group's subcontractor ("DTH Installer").
6. DTH Installer's work shall take place under the supervision of the Contractor. The Contractor must assure the coordination of DTH Installer's construction and commissioning work as part of this project, according to the terms described in the present documents. DTH Installer will conform to the methods of construction, schedules, and instructions of the Contractor for health and safety (including the emergency preparedness plan). The contractor is also entirely responsible and in control of the site during construction, he is the Constructor. The efforts required from the Contractor for the coordination and monitoring of this work are included in this tender. The value of DTH Installer's work is not part of this tender.
7. DTH Installer's work that is excluded from this contract, but that will be executed during the delivery of the project related to this tender, includes but is not limited to the following.
  - a. Supply, installation, and commissioning of six (6) District Thermal Heating (DTH) pipes.
  - b. Pipe quantities, dimensions, and weight as follows:
    - i. Two (2) high temperature hot water pipes.
      1. Outside diameter of 315 mm.
      2. Pipe weight (empty) of 25.1 kg/m.
      3. Pipe weight (full) of 45.3 kg/m.
    - ii. Two (2) low temperature hot water pipes
      1. Outside diameter of 630 mm.
      2. Pipe weight (empty) of 82.9 kg/m.

3. Pipe weight (full) of 176.1 kg/m.
    - iii. Two (2) chilled water pipes
      1. Outside diameter of 560 mm.
      2. Pipe weight (empty) of 71.1 kg/m.
      3. Pipe weight (full) of 147.9 kg/m.
    - c. The arrangement, location, and elevation of the DTH pipes are as shown in the contract drawings.
    - d. Commissioning of the DTH pipes will include welding the sections of pipes together.
    - e. Installation and commissioning of the two 630mm diameter Low Temperature Hot Water pipes and one 100mm communication conduit must be completed by October 1, 2021.
      - i. Duration of work estimated at four (4) weeks.
    - f. Installation and commissioning of the two 560mm diameter Chilled Water pipes and the two 315mm diameter High Temperature Hot Water pipes.
      - i. Duration of work estimated at six (6) weeks.
8. In addition, the Contractor shall execute the following in relation to DTH Installer's Work:
  - a. Supervise the Work including DTH Installer's Work.
  - b. Provide environmental monitoring of DTH Installer's Work.
  - c. Hoist/rig the pipes onto the working platform.
  - d. Provide a competent supervisor and health and safety office on site during DTH Installer's work.
  - e. Verify DTH Installer's health and safety plan related to the specific requirements of DTH Installer's scope of work, and other submittals to meet the requirements of Section 01 35 29.06 - Health and Safety Requirements.
  - f. Provide access to the top and underside of the bridge to enable DTH Installer to install and commission the DTH pipes.
  - g. Provide temporary support for the DTH pipes until they are connected to the permanent pipe hangers that are attached to the underside of the new bridge deck and sidewalk stringers.
  - h. Provide and install the permanent pipe hangers at the locations indicated in the contract drawings.
  - i. Schedule Work to meet deadlines for the installation and commissioning of the DTH pipes.
  - j. Protect DTH pipes from damage at all times until takeover.
9. Work of Project which will be executed prior to commencement of Work of this Contract, and which is specifically excluded from this Contract:
  - a. Removal of the Portage Power cable tray and cables from below the bridge and on the west face of the Union Bridge north abutment.
  - b. Removal of the Environment Canada monitoring equipment and cabling from the Union Bridge south portal frame, below the south end of the bridge and sidewalk, and the south abutment.
  - c. Construction of structures at the northeast and southeast quadrants of the Union Bridge by Windmill Development Group (Zibi) to support the new District Thermal Energy pipes.
10. Work of Project executed during Work of this Contract, and which is specifically excluded from this Contract:
  - a. Installation and commissioning of Zibi District Thermal Heating pipes.
  - b. Installation of Hydro Ottawa utility cables.
  - c. Replacement of Bell Canada utility cables.

11. Work of Project which will be executed after completion of Work of this Contract, and which is specifically excluded from this Contract:
  - a. Re-installation of the Environment Canada monitoring equipment and cabling on the Union Bridge south portal frame, below the south end of the bridge and sidewalk, and the south abutment.
12. Work of this Project must include provisions for co-ordinating work, identified in Contract Documents, for following principal items.
  - a. All utility companies within the project limits.
  - b. Portage Power Water and Sanitary services.
  - c. Installation and commissioning of Zibi District Thermal Heating pipes.
  - d. Other contractors in the area working on the Zibi Development.

## WORK SEQUENCE

1. Comply with operational constraints, milestones, and completion dates. Work must be monitored and completed to meet the goals at the milestones and at the completion date.
2. Complete the work as indicated in the Contract Documents and maintain vehicular, cyclist, and pedestrian traffic at all times.
3. Milestone dates for work under this Contract are as follows:
  - a. Installation and commissioning of the two 630mm diameter Low Temperature Hot Water pipes and one 100 mm communication conduit must be completed by October 1, 2021.
  - b. Installation and commissioning of the two 560mm diameter Chilled Water pipes and the two 315mm diameter High Temperature Hot Water pipes.
  - c. In-water works requiring the dewatering at the base of the north abutment must be completed between July 15, 2021 and November 15, 2021 inclusive.
  - d. All work under this Contract must be substantially completed by June 30, 2022.
4. Required stages:
  - a. Project award.
  - b. Obtain necessary permits.
  - c. Initiate and maintain shop drawing submittal and review process.
  - d. Contractor mobilization.
  - e. Set up construction staging areas.
  - f. Install erosion and sediment control measures.
  - g. Implement and maintain traffic and pedestrian control plans.
  - h. Union Bridge Rehabilitation (performed concurrently with Hull Causeway Widening):
    - i. Stage 1:
      1. Modify east truss portal frame bracing.
      2. Install temporary concrete barriers and shift traffic to east side of bridge.
      3. Install suspended access platform below structure.
      4. Remove abandoned/decommissioned utility pipes, conduits, and cables. Detach, temporarily support, and protect Bell conduits/cables.
      5. Install two new 630 mm Zibi pipes on underside of structure and temporarily support.
      6. Install roadway protection system.
      7. Remove asphalt from approaches.
      8. Remove part of concrete deck and steel traffic railing on truss.
      9. Replace roadway stringers.

10. Remove part of concrete deck on east side at north abutment. Replace floor beam and install temporary steel plates on east side over gap.
11. Install new jacking stiffeners and repair end floor beam at south abutment. Strengthen bottom chords at bearings.
12. Jack superstructure, construct new concrete bearing pedestals, and replace bearings.
13. Perform miscellaneous structural steel repairs on the truss members and intermediate roadway floor beams.
14. Replace end floor beam at north abutment.
15. Abrasive blast clean and coat all existing structural steel to remain below deck to 2.0 m above floor beams.
16. Remove part of north distribution slab.
17. Remove approach traffic barriers.
18. Excavate behind abutments.
19. Remove part of ballast walls.
20. Construct new ballast walls.
21. Backfill behind abutments and remove roadway protection.
22. Install cofferdam at north abutment and dewater work area.
23. Reface north abutment wall and remove cofferdam.
24. Construct new approach slabs.
25. Construct new concrete deck and cycle track.
26. Construct new parapet walls on deck and approaches.
27. Install new part of transverse expansion joint at north abutment.
28. Perform localized structural steel coating repairs above deck from 2.0 m above floor beams.
29. Install two new 315 mm and two new 560 mm Zibi pipes on pipe hangers from the deck soffit or temporarily support.
30. Replace drainage works on south approach, regrade approach, and construct cycle track.
31. Waterproof deck and pave base course of asphalt on deck and approaches.

ii. Stage 2:

1. Install temporary concrete barriers and shift traffic to east side of bridge. Detour pedestrians to temporary sidewalk on west cycle track.
2. Install roadway protection system.
3. Remove asphalt from approaches.
4. Remove part of concrete deck and steel traffic railing on truss.
5. Replace roadway stringers.
6. Remove concrete sidewalk, stringers and floor beams on bridge and south approach.
7. Perform miscellaneous structural steel repairs on the truss members and intermediate roadway floor beams.
8. Abrasive blast clean and coat all existing structural steel to remain below deck to 2.0 m above floor beams.
9. Remove part of north distribution slab.
10. Remove approach traffic barriers.
11. Excavate behind abutments.
12. Remove part of ballast walls.
13. Remove southeast wingwall.

14. Construct new southeast wingwall.
15. Construct new ballast walls.
16. Backfill behind abutments and remove roadway protection.
17. Construct new approach slabs.
18. Construct new concrete deck and cycle track.
19. Connect new Zibi pipes on pipe hangers from the deck soffit.
20. Construct new parapet walls on deck and approaches.
21. Remove bridge light fixtures and cables on truss.
22. Install new cantilever sidewalk floor beams and stringers.
23. Install new FRP sidewalk, including pedestrian/cyclist railing.
24. Install new part of transverse expansion joint at north abutment.
25. Perform localized structural steel coating repairs above deck from 2.0 m above floor beams.
26. Install new bridge light fixtures and cables on truss.
27. Install new Bell, Hydro Ottawa, Zibi and PSPC conduits on new hanger system.
28. Remove suspended access platform below structure.
29. Replace drainage works on south approach, regrade approach, construct cycle track, and install southeast energy attenuator.
30. Waterproof deck and pave base course of asphalt on deck and approaches.

iii. Stage 3:

1. Remove temporary concrete barriers and re-open east sidewalk for pedestrians. Open cycle tracks to cyclists.
2. Pave top course of asphalt on deck and approaches.
3. Place new pavement markings and re-open roadway to normal traffic.
4. Reinstate construction staging areas.
5. Demobilize.

i. Hull Causeway Widening (performed concurrently with the Union Bridge rehabilitation):

- i. Implement traffic control measures and detour all traffic to one side of the bridge during each stage. The main stages are:
  1. Rehabilitate the west side of the deck and approaches.
  2. Construct the cycle track, rebuild the barrier wall and widen the sidewalk between Union Bridge and Hull Causeway on the east side of the east side of the deck and approaches.
- ii. Install pedestrian site control measures.
- iii. Install erosion and sediment control measures.
- iv. Set up construction staging areas.
- v. Install access to work areas and environmental protection measures.
- vi. Remove and protect existing bell conduits.
- vii. Remove and salvage security fencing and gates at the south abutment and pier truss.
- viii. Remove existing concrete deck on the west side to the limits shown, including deck drains and expansion joints.
- ix. Remove existing asphalt on approaches, north & south approach slabs, northwest retaining wall, and southwest retaining wall to the limits specified. Remove east side parapet wall and salvage railings.
- x. Install roadway protection system on both approaches. Excavate behind ballast walls.

- xi. Partial depth removal on existing west vertical face of pier 1 and north abutment as detailed elsewhere.
  - xii. Install access platform for the structural steel repairs. Perform miscellaneous structural steel repairs and strengthening on the truss members.
  - xiii. Install temporary protection system (cofferdam) at the west fascia of north abutment. Dewater work area.
  - xiv. Perform partial depth concrete removals & repairs on top of north abutment retaining wall.
  - xv. Construct new extended abutment at pier 1 and existing north abutment location, construct new approach abutment. Construct new sloped abutment bearing seats and new bearing pedestals.
  - xvi. Install new steel girder line, cross braces, diaphragms, and bearings.
  - xvii. Backfill behind both ballast walls. Reconstruct north and south approaches on west side of bridge, including approach slabs, cycle tracks, parapet walls and railings and expansion joint.
  - xviii. Construct new extended concrete deck, including cycle tracks, parapet walls and railings, and deck drains on both side of bridge.
  - xix. Install new Bell Canada, Hydro Ottawa, Hydro-Québec and Portage Power conduits on hangers suspended from the underside of the deck soffit.
  - xx. Install new security fencing and gates at the Pier 1 and Trusses.
  - xxi. Remove and replace west barrier to the limits.
  - xxii. Widen east sidewalk to the limits.
  - xxiii. Waterproof deck. Pave deck and approaches.
  - xxiv. Place new pavement markings. Remove traffic control measures and re-open rehabilitated bridge to normal traffic. Remove pedestrian site control measures
- j. Remove access to work areas and environmental protection measures.
  - k. Reinstate construction staging areas and remove erosion and sediment control measures.
  - l. Demobilize.
5. Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
  6. Required stages:
    - a. Rehabilitate the west side of the deck and approaches.
    - b. Rehabilitate the sidewalk, east side of the deck and approaches.
  7. Maintain fire access/control.
  8. Protect workers and public safety.

## WORK IN WINTER

1. Construction work will need to occur during the winter months to meet the substantial completion date of June 30, 2022.
2. The Contractor shall include all costs for the necessary provisions to work in the winter months in their bids.
3. The Contractor shall assume the cost of all material and labour to protect the Work during winter conditions, including any required heating or insulation.
4. A delay in the schedule due to winter conditions will not be accepted.
5. The Contractor is responsible for all snow removal and de-icing operations for the construction site as per the Construction Regulation 213/91 and the Quebec Safety Code for the Construction Industry.

## CONTRACTOR USE OF PREMISES

1. Limit use of premises for Work, for storage, and for access, to allow:
  - a. Work by other contractors.
  - b. Public usage of the bridge and approaches.
  - c. Permit access to the Portage Power Centrale Hull 2 facility at 1, Rue Eddy.
2. Use of site as specified in the Contract Documents. Refer to the contract drawings for proposed site storage and staging areas, which is to be equipped and maintained by the Contractor. Limit site storage to light storage. All permitted staging areas, along with any restrictions, within the contract limits of the project have been identified in the Contract Documents.
3. On-site and off-site staging areas are identified as appropriate. Reinstatement to original condition or better.
4. Co-ordinate use of premises under direction of Departmental Representative.
5. Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
6. Do not unreasonably encumber site with equipment or materials.
7. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
8. At completion of operations condition of existing work: equal to or better than that which existed before new work started.
9. Perform timely disposal of excess materials.
10. Move stored products or equipment which interfere with operations of Departmental Representative or other contractors.
11. Clean up as work progresses.

## LONG DELIVERY SPECIALTY ITEMS

1. Some specialty materials have long fabrication and delivery times. Account for the availability and supply of materials and fabrication and delivery time of components with long lead times in schedule and prioritize work accordingly. These materials and components include, but may not be limited to:
  - a. Structural steel sections and plates.
  - b. Bearings.
  - c. Expansion joint assemblies.
  - d. Prefabricated sidewalk panels.
  - e. Pipe hangers.

## EXISTING SERVICES

1. Notify the Departmental Representative and utility companies of intended interruption of services and obtain required permission and permits.
2. Where Work involves breaking into or connecting to existing services, give the Departmental Representative one week notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of these interruptions to a minimum. Carry out work at times as directed by governing authorities with minimum disturbance to vehicular and pedestrian traffic.
3. Provide alternative routes for pedestrian and vehicular traffic in accordance with Section 01 35 00.06 – Special Procedures for Traffic Control.
4. Establish location and extent of service lines in area of work before starting Work. Notify the Departmental Representative of findings.

5. Submit schedule to and obtain approval from the Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
6. Provide temporary services when directed by the Departmental Representative.
7. Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
8. Where unknown services are encountered, immediately advise the Departmental Representative and confirm findings in writing.
9. Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
10. Record locations of maintained, re-routed and abandoned service lines.
11. Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

## MINIMUM STANDARDS

1. Materials are to be new and Work is to conform to the minimum applicable standards of the latest versions of the Canadian Highway Bridge Design Code (CSA S6-19), the National Building Code of Canada (where applicable), the Canadian General Standards Board, the Canadian Standards Association, the Ministry of Transportation, Ontario (MTO) Designated Sources of Material (DSM) list ([www.roadauthority.com](http://www.roadauthority.com)) and all applicable Provincial and Municipal codes. In the case of conflict or discrepancy, the most stringent requirement is to apply.

## PROTECTION

1. The Contractor will be held fully responsible by the Departmental Representative for any damage to utilities, services, properties, buildings, or structures adjacent to or in the general area of the Work, through settlement of ground, vibration or shock resulting from any cause relating to the Work carried out under this Contract. Make good and repair all such damage at Contractor's expense.
2. Provide and maintain all other necessary guardrails, fences, barricades, lights and other devices required for protection of workmen and public in accordance with the requirements of Provincial and Local by-laws.
3. Take all precautions to protect vegetated areas and specimen trees from any damage.
4. Protect finished work against damage until takeover.
5. Protect adjacent work against the spread of dust and dirt beyond the work areas.
6. Protect operatives and other users of site from all hazards.

## VERIFICATION OF SITE DIMENSIONS

1. The Contractor is advised that all elevations and dimensions shown on the plans are approximate only. Verify all existing dimensions and grades before preparing and submitting shop drawings and before planning and undertaking any construction work. Immediately report all discrepancies, in writing, to the Departmental Representative.

## REGULATORY REQUIREMENTS

1. Compliance: Be fully acquainted with all rules, regulations and other by-laws of the appropriate Provincial and Municipal governments relating to the work of this Contract and comply with same.
2. Comply with the regulations of the Province of Ontario and Quebec with regards to every aspect of the project.

3. Fee permits, certificates: Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction.
4. Ensure compliance of employees with safety requirements of Contract Documents, site specific health and safety plan(s), and all applicable regulatory requirements.

## LICENCING REQUIREMENTS

1. The Contractor must be licensed to work in the Province of Ontario or Quebec in accordance with all provincial laws, regulations and requirements.

## PERMITS/AUTHORITIES

1. The Contractor shall obtain, and pay for, permits from authorities as required for all operations and construction. He shall also comply with all pertinent regulations of all authorities having jurisdiction over the work. The Contractor shall provide copies of all permits to the Departmental Representative prior to starting the work.
2. The Land Access Permit will be provided by PSPC.
3. The FLUDA Permit will be provided by PSPC.
4. The Contractor shall be responsible for obtaining all applicable permits, inspections and approvals required and shall pay all changes in connection there with.

## SIGNS

1. Provide common-use signs related to traffic control, information, instruction, use of equipment, public safety devices, etc., in both official languages or by the use of commonly understood graphic symbols to the Departmental Representative's approval.
2. No advertising will be permitted on this project.

## ADDITIONAL DRAWINGS

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

## DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
  - .2 Contract Drawings.
  - .3 Specifications.
  - .4 Addenda.
  - .5 Reviewed Shop Drawings.
  - .6 List of Outstanding Shop Drawings.
  - .7 Change Orders.
  - .8 Other Modifications to Contract.
  - .9 Field Test Reports.
  - .10 Copy of Approved Work Schedule.
  - .11 Health and Safety Plan and Other Safety Related Documents.
  - .12 Other documents as specified.

## Products

## NOT USED

Not used.

Execution

NOT USED

Not used.

END OF SECTION

## APPENDIX B – ACRONYMS and ABBREVIATIONS

CADD	Computer-aided Design and Drafting
CCN	Contemplated Change Notice
CEAA	<i>Canadian Environmental Assessment Act 2012</i>
CM	Construction Manager
CMP	Construction Management Plan
CPM	Critical Path Method
CoE	Center of Expertise (PSPC)
CSA	Canadian Standards Association
DD	Design Development
DP	Design Package
DR	Departmental Representative
FC	Field Clarification
FLUDA	Federal Land Use and Design Approval
IAM	Infrastructure Asset Management (PSPC)
LCC	Life Cycle Costing
MSDS	Material Safety Data Sheets
NCC	National Capital Commission
NMS	National Master Specification
PDF	Portable Document Format
PFM	Property Facility Manager (PSPC)
PSPC	Public Services and Procurement Canada (new Department naming for PWGSC)
RPCD	Real Property Contracting Directorate (PSPC)
RFI	Request for Information
RPS	Real Property Services (PSPC)

SD	Schematic Design
ToR	Terms of Reference
VE	Value Engineering
WHMIS	Workplace Hazardous Materials Information System

## **APPENDIX C – PROCESS MAPS**

The following process maps depict the general workflow involved with subject in question.

Time periods indicated show activity duration.

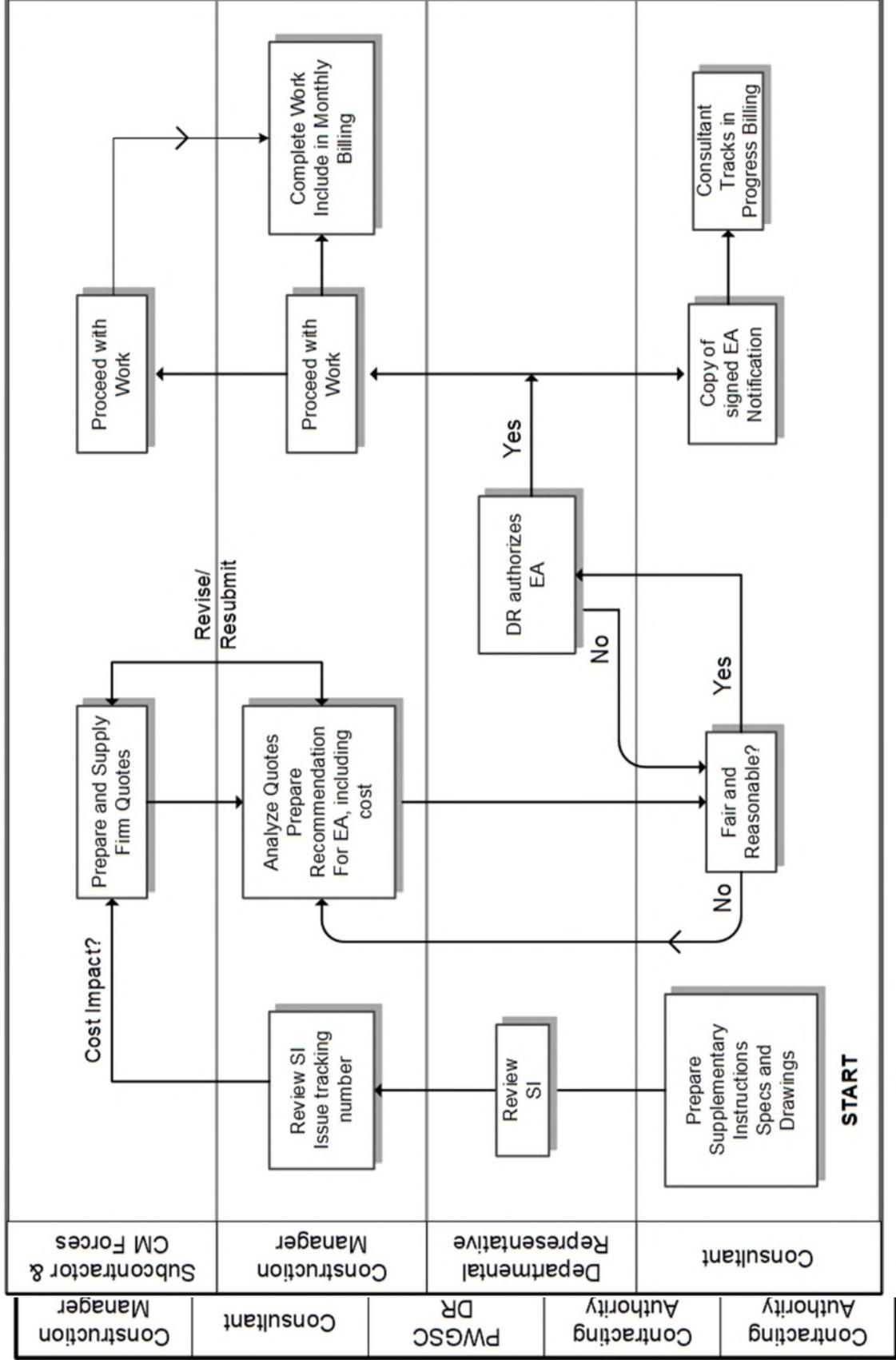
Process maps applicable to the Contract include:

- Changes to CM Contract;
- Expenditure Authority (EA) for Subcontract Changes;
- Design and DP Submissions;
- Request for Information (RFI);
- Field Clarification (FC) and Supplementary Instruction; and
- Construction Submittals.

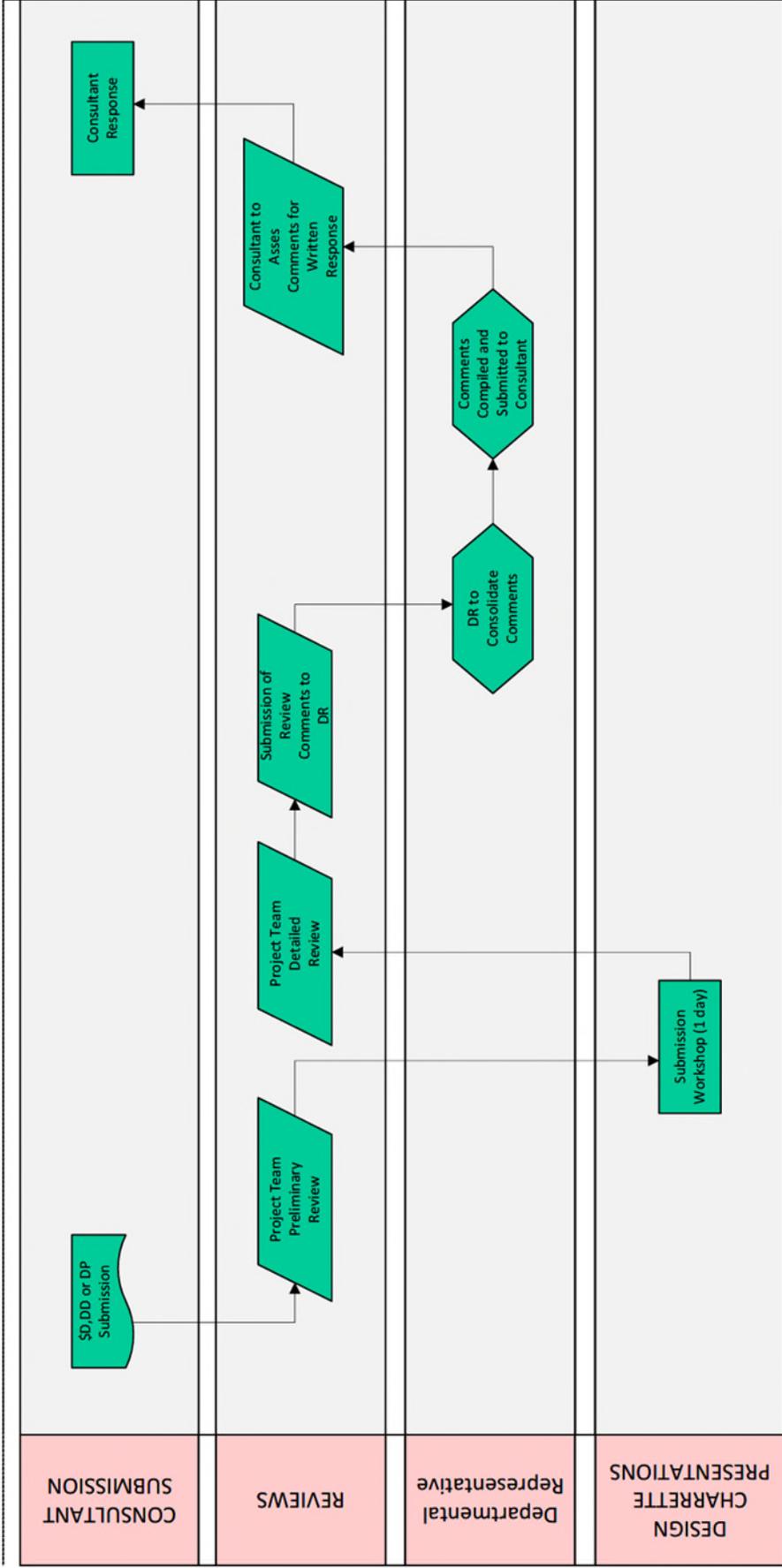
The term “Consultant” noted in the Appendix D process maps means Design Consultant.

Refer to the DR for clarification or refinement of any individual workflow process. The DR may redefine existing and add new workflow processes during the Contract.

# EXPENDITURE AUTHORITY (EA) WORKFLOW



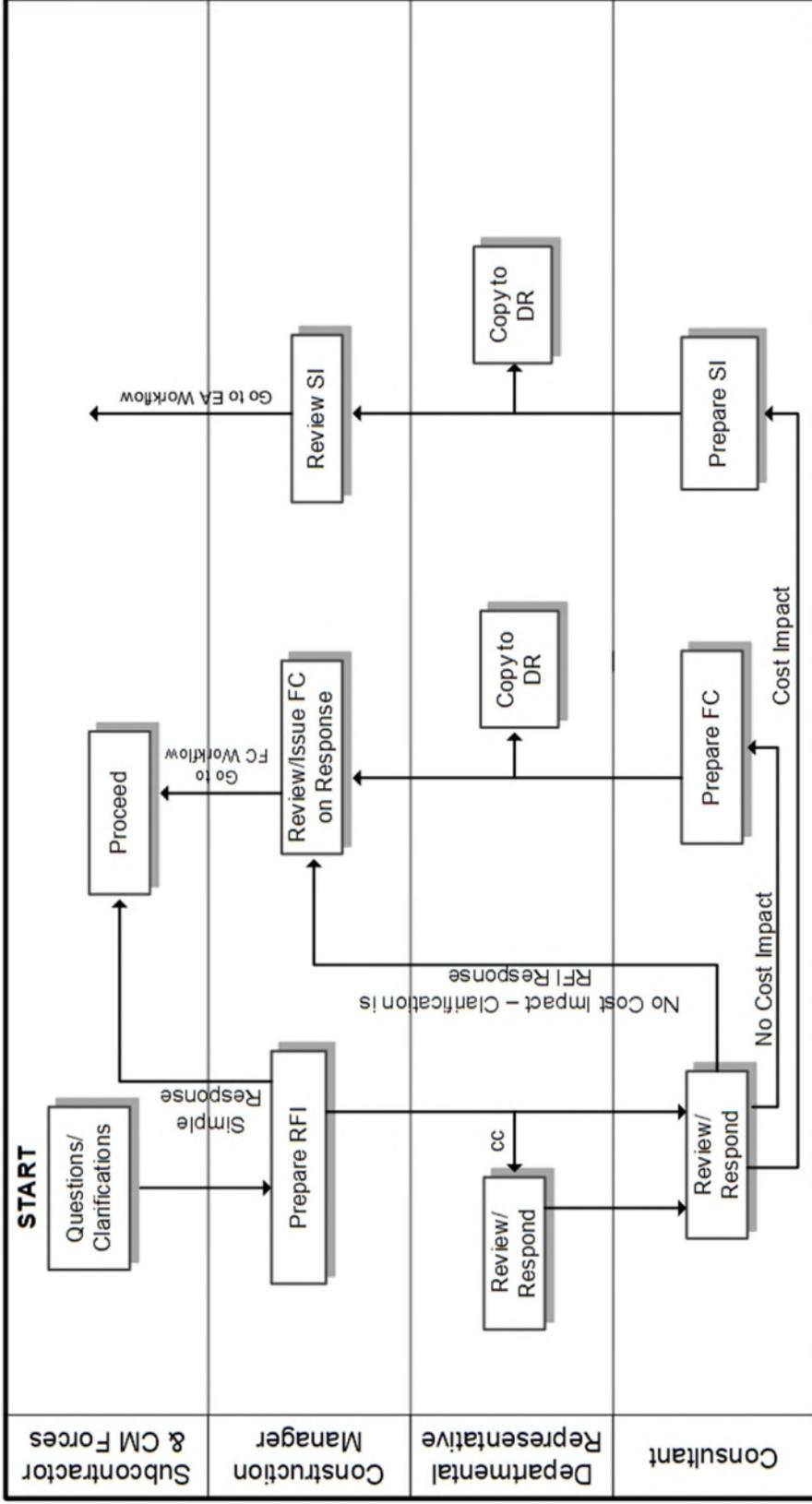
SI – Supplementary Instruction



Repeat for all Design and DP submissions

**DESIGN and DP REVIEW PROCESS**

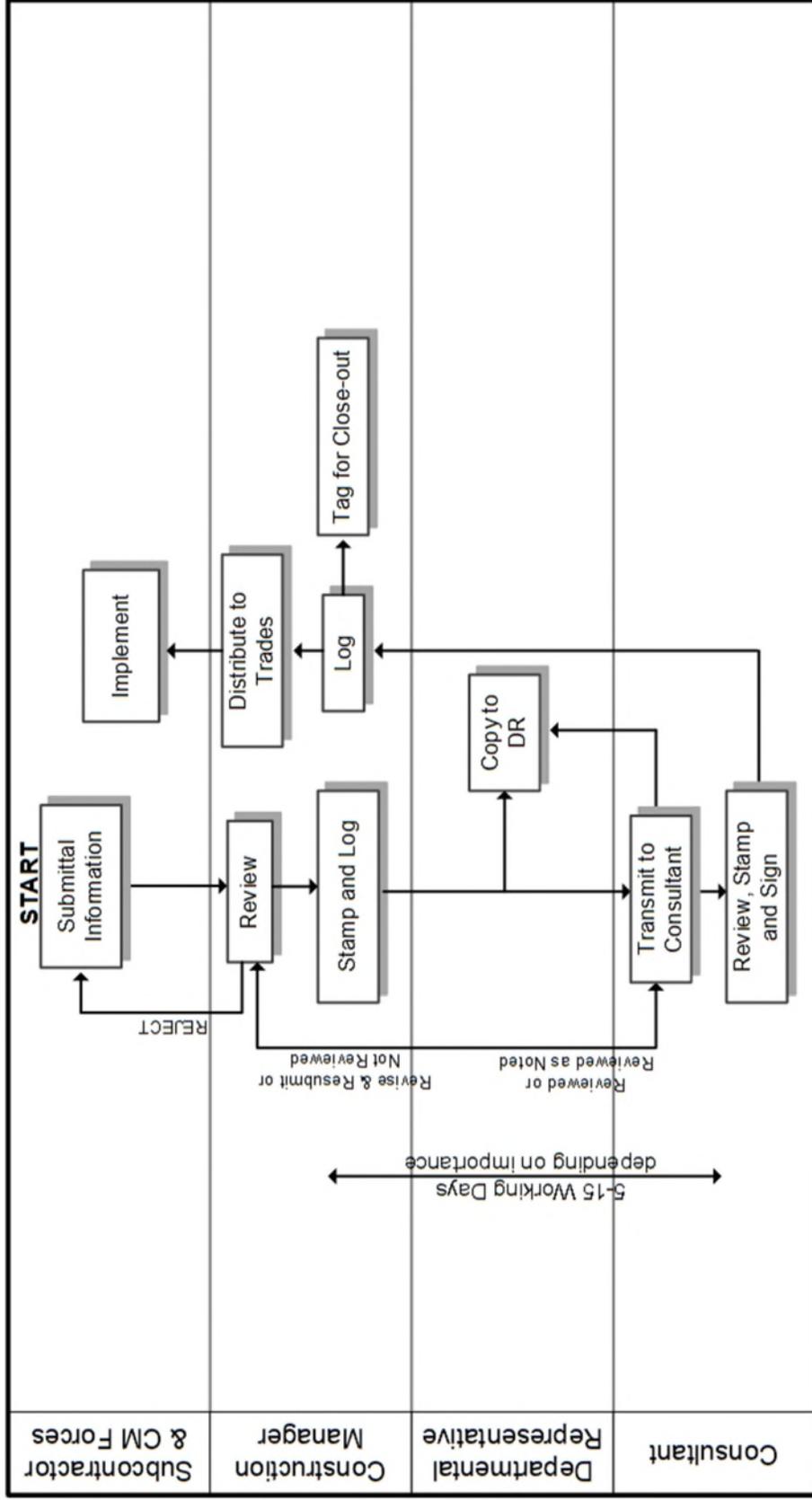
# RFI WORKFLOW



RFI – Request for Information  
 FC – Field Clarification  
 SI – Supplementary Instruction



# CONSTRUCTION SUBMITTALS FLOWCHART



## **APPENDIX D – REFERENCE INFORMATION**

1. Extensive information and documentation about the PWGSC's National Project Management System (NPMS) can be found on-line at:

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

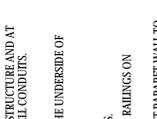
2. Information on cost estimates can be found within the NPMS website at:

<https://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/bi-rp/conn-know/couts-cost/definition-eng.html>

APPENDIX E – GENERAL ARRANGEMENT DRAWINGS





	<p>Project: <b>UNION BRIDGE REHABILITATION REFLECTION DU PONT UNION</b></p>		project dessin
<p><b>GENERAL-ARRANGEMENT III</b></p> <p><b>ARRANGEMENT GÉNÉRAL III</b></p>			
Designed By: P. MERGEL Date: 2019/06/26 Drawn By: V. GUO Date: 2019/06/26 Reviewed By: P. HARVEY Date: 2019/06/26 Approved By: (yyyy/mm/dd) Date: (yyyy/mm/dd) Tender: Soumission		Conçu par: P. MERGEL Date: 2019/06/26 Dessiné par: V. GUO Date: 2019/06/26 Examiné par: P. HARVEY Date: 2019/06/26 Approuvé par: (yyyy/mm/dd) Date: (yyyy/mm/dd) Soumission	
Project Manager: Administrateur de projets Project no.: R.093957 Drawing no.: SXX		N° du projet: R.093957 N° du dessin: SXX	

**SCOPE OF WORK**

THE FOLLOWING SCOPE OF WORK SHALL BE CARRIED OUT IN STAGES AND IS NOT INTENDED TO BE A COMPREHENSIVE LIST OF ALL ITEMS REQUIRED TO COMPLETE THE REHABILITATION WORK. WORK IS INTENDED TO BE A SEQUENCE OF WORK.

1. INSTALL TRAFFIC CONTROL MEASURES AND DETOUR ALL TRAFFIC TO ONE SIDE OF THE BRIDGE DURING EACH STAGE. INSTALL PEDESTRIAN SITE CONTROL MEASURES.
2. INSTALL EROSION AND SEDIMENT CONTROL MEASURES.
3. SET UP CONSTRUCTION STAGING AREAS.
4. INSTALL ACCESS TO WORK AREAS AND ENVIRONMENTAL PROTECTION MEASURES.
5. REMOVE EXISTING MAINLINE BRIDGE APPROACHMENT UTILITY PIPES, CONDUITS, AND CABLES ON THE UNDERSIDE OF THE STRUCTURE AND AT BEHIND ABUTMENTS, INCLUDING SUPPORTS AND BRACKETS, DETACH TEMPORARY SUPPORT, AND PROTECT EXISTING BELL CONDUITS.
6. REMOVE EXISTING BRIDGE LIGHT FIXTURES AND CABLES ON THE TRUSS AND DECK SOFFIT.
7. REMOVE SECURITY FENCING AND GATES AT BOTH ABUTMENTS. REMOVE EXISTING ACCESS STAIRS AND CATWALKS ON THE UNDERSIDE OF THE STRUCTURE AND AT BOTH ABUTMENTS.
8. REMOVE EXISTING DAMAGED MARINE WARNING SIGNS AND SUPPORTS ON UNDERSIDE OF STRUCTURE.
9. REMOVE AND SALVAGE EXISTING BRIDGE PLAQUES LOCATED ON THE NORTH AND SOUTH END POSTS OF THE EAST TRUSS.
10. REMOVE EXISTING CONCRETE ROADWAY DECK, INCLUDING DECK DRAINS, NORTH EXPANSION JOINT, AND STEEL TRAFFIC RAILINGS ON INTERIOR OF TRUSSES.
11. REMOVE EXISTING ASPHALT ON APPROACHES, NORTH DISTRIBUTION SLAB, NORTHWEST BARRIER WALL, AND NORTHEAST PARAPET WALL TO THE LIMITS SPECIFIED. REMOVE SOUTHEAST PARAPET WALL AND SOUTHWEST TEMPORARY CONCRETE BARRIERS.
12. INSTALL ROADWAY PROTECTION SYSTEM ON BOTH APPROACHES. EXCAVATE BEHIND BALLAST WALLS, REMOVE AND CAP ABANDONED UTILITY PIPES AND CONDUITS AT EXCAVATION LIMITS.
13. REMOVE EXISTING CONCRETE SIDEWALK ON BRIDGE AND SOUTH APPROACH, INCLUDING PEDESTRIAN RAILING, DRAINS, EXPANSION JOINTS, GATING PANELS BETWEEN TRUSS MEMBERS, STRINGERS, AND FLOOR BEAMS. REMOVE SOUTHEAST APPROACH SIDEWALK FOUNDATIONS.
14. REMOVE EXISTING BALLAST WALLS AND SOUTHEAST WINGWALL.
15. ABRASIVE BLAST CLEAN AND COAT ALL EXISTING STRUCTURAL STEEL TO REMAIN BELOW DECK TO 2.0 M ABOVE FLOOR BEAMS. PERFORM LOCALIZED STRUCTURAL STEEL COATING REPAIRS ABOVE DECK FROM 2.0 M ABOVE FLOOR BEAMS.
16. REPLACE END FLOOR BEAM AT THE NORTH ABUTMENT. INSTALL NEW JACKING STIFFENERS AND REPAIR END FLOOR BEAM AT THE SOUTH ABUTMENT.
17. REPLACE ROADWAY STRINGERS.
18. PERFORM MISCELLANEOUS STRUCTURAL STEEL REPAIRS ON THE TRUSS MEMBERS AND INTERMEDIATE ROADWAY FLOOR BEAMS. TEMPORARILY MODIFY END PORTAL FRAMES AT EAST TRUSS FOR CONSTRUCTION STAGE 1.
19. INSTALL NEW CANTILEVER SIDEWALK STRUCTURAL STEEL FLOOR BEAMS AND STRINGERS.
20. INSTALL NEW FRP SIDEWALK, INCLUDING PEDESTRIAN/CYCLIST RAILING, DRAINS, EXPANSION JOINTS, AND ALUMINUM OMBE NON-SIP WEARING SURFACE.
21. INSTALL TEMPORARY PROTECTION SYSTEM (I.E. COFFERDAM) AT THE NORTH ABUTMENT. DEWATER WORK AREA.
22. PERFORM PARTIAL DEPTH CONCRETE REMOVALS ON ABUTMENT WALLS AND BEARING SEATS.
23. CONSTRUCT NEW SLOPED ABUTMENT BEARING SEATS AND NEW BEARING PEDESTALS. REPLACE BOTH ABUTMENT WALLS. REMOVE TEMPORARY PROTECTION SYSTEM (I.E. COFFERDAM) AT THE NORTH ABUTMENT.
24. INSTALL NEW DIAPHRAGMS BETWEEN BOTTOM CHORD WEBS AT SOUTH ABUTMENT. MODIFY EXISTING DIAPHRAGMS BETWEEN BOTTOM CHORD WEBS AT NORTH ABUTMENT. JACK ENTIRE SUPERSTRUCTURE AND TEMPORARILY SUPPORT. REMOVE EXISTING BEARINGS, AND INSTALL NEW BEARINGS.
25. CONSTRUCT NEW BALLAST WALLS AND NEW SOUTHEAST WINGWALL.
26. REMOVE EXISTING CONCRETE SLOPE PAVING AND CONCRETE STAIRS, WALKWAYS, AND LEDGES BEHIND THE SOUTH ABUTMENT RETAINING WALL. REMOVE REMAINING GRANULAR MATERIAL BEHIND RETAINING WALL.
27. RECONSTRUCT SOUTHEAST END SECTION OF SOUTH ABUTMENT RETAINING WALL KEYED INTO BEDROCK WALL.
28. PERFORM CONCRETE PATCH REPAIRS IN RETAINING WALL. CROUT ALL JOINTS/VOIDS BETWEEN RETAINING WALL AND BEDROCK WALL.
29. CONSTRUCT NEW CONCRETE STAIRWAY ON THE SOUTHEAST EMBANKMENT AND NEW CONCRETE WALKWAY IN FRONT OF THE SOUTH ABUTMENT. BACKFILL SOUTH ABUTMENT RETAINING WALL WITH GRANULAR MATERIAL AND CONSTRUCT NEW CONCRETE SLOPE PAVING BEHIND RETAINING WALL. INSTALL NEW DRAINAGE SYSTEM AT THE SOUTHWEST EMBANKMENT.
30. BACKFILL BEHIND BOTH BALLAST WALLS AND REMOVE ROADWAY PROTECTION SYSTEM. RECONSTRUCT NORTH AND SOUTH APPROACHES, INCLUDING APPROACH SLABS, CYCLE TRACKS, PARAPET WALLS WITH RAILINGS, AND EAST SIDEWALK. INSTALL ENERGY ATTENUATOR AT END OF SOUTHEAST PARAPET WALL.
31. CONSTRUCT NEW CONCRETE ROADWAY DECK, INCLUDING CYCLE TRACKS, PARAPET WALLS WITH RAILINGS, DECK DRAINS, EXPANSION JOINT AT NORTH ABUTMENT, AND SEMI-INTEGRAL DECK END AT SOUTH ABUTMENT.
32. INSTALL NEW ZIBI PIPES ON PIPE HANGERS FROM THE DECK SOFFIT.
33. INSTALL NEW BELL, HYDRO, OTTAWA, ZIBI AND PSPC CONDUITS ON HANGERS FROM THE DECK SOFFIT AND EXTEND THROUGH BALLAST WALLS OR SURFACE MOUNT ON ABUTMENTS.
34. INSTALL NEW BRIDGE LIGHT FIXTURES AND CABLES.
35. INSTALL NEW POWER SUPPLY UNDER BRIDGE FOR ENVIRONMENT CANADA MONITORING EQUIPMENT.
36. INSTALL NEW CATWALK AT THE SOUTHEAST EMBANKMENT. INSTALL NEW CATWALK ON THE NORTH ABUTMENT WALL WITH AN ACCESS LAUNDER AT THE NORTHWEST CORNER.
37. REPLACE EXISTING STEEL RAILING ON THE SOUTHWEST RETAINING WALL WITH A PEDESTRIAN RAILING. INSTALL NEW INSPECTOR RAILINGS ON THE EXISTING SOUTH ABUTMENT RETAINING WALL AND NEW CONCRETE WALKWAY AT THE SOUTH ABUTMENT.
38. INSTALL NEW SECURITY FENCING AND GATES AT THE SOUTH ABUTMENT AND NORTHWEST ABUTMENT WALL.
39. INSTALL NEW MARINE WARNING SIGNS AND SUPPORTS ON UNDERSIDE OF STRUCTURE.
40. REFINISH AND RE-INSTALL BRIDGE PLAQUES ON THE NORTH AND SOUTH END POSTS OF THE EAST TRUSS.
41. WATERPROOF DECK, PAVE DECK AND APPROACHES.
42. PLACE NEW PAVEMENT MARKINGS. REMOVE TRAFFIC CONTROL MEASURES AND RE-OPEN REHABILITATED BRIDGE TO NORMAL TRAFFIC. REMOVE PEDESTRIAN SITE CONTROL MEASURES.
43. REMOVE ACCESS TO WORK AREAS AND ENVIRONMENTAL PROTECTION MEASURES.
44. REINSTATE CONSTRUCTION STAGING AREAS AND REMOVE EROSION AND SEDIMENT CONTROL MEASURES.

**LIST OF ABBREVIATIONS**

TYP.	APPROXIMATE DIMENSION
Ø	TYPICAL
D	DIAMETER
E.W.	EACH WAY
EXP.	EXPANSION BEARINGS
F.W.	FLOOR BEARINGS
W.L.	WATER LEVEL
ABUT.	ABUTMENT
CL	CENTRELINE
N	NORTH
S	SOUTH
E	EAST
W	WEST

**GENERAL NOTES:**

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. S01 AND S02.

**DESIGN LOADING**

CSA S6-14, CHBC  
CL-625-ONT AND CL-625

**CLASS OF CONCRETE**

ALL CONCRETE SHALL BE EXPOSURE CLASS C-1 IN ACCORDANCE WITH CSA A23.1 WITH A MINIMUM COMPRESSIVE STRENGTH OF 35 MPa AT 28 DAYS.

CONCRETE IN CYCLE TRACKS SHALL CONTAIN A CRYSTALLINE WATERPROOFING ADMIXTURE.

**CLEAR COVER TO REINFORCING STEEL**

FOOTINGS:..... 100 ± 25MM  
DECK TOP:..... 70 ± 20MM  
DECK SOFFIT:..... 40 ± 10MM  
REMAINDER, UNLESS NOTED OTHERWISE:..... 70 ± 20MM

**REINFORCING STEEL**

1. REINFORCING STEEL SHALL BE GRADE 400W, UNLESS OTHERWISE SPECIFIED.
2. UNLESS SHOWN OTHERWISE, TENSION LAP SPICES SHALL BE CLASS B.
3. STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa, UNLESS OTHERWISE SPECIFIED.
4. BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
5. GLASS FIBRE REINFORCED POLYMER (GFRP) REINFORCING BARS SHALL BE GRADE III. THE NOMINAL DIAMETER, TENSILE MODULUS OF ELASTICITY AND COMPRESSIVE STRENGTH SHALL BE AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.
6. BAR MARKS WITH THE PREFIX 'GII' DENOTE GRADE III GLASS FIBRE REINFORCED POLYMER BARS.
7. BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND RADIUS AND HOOK LENGTH AS SHOWN. ALL DIMENSIONS SHALL BE IN MILLIMETRES UNLESS INDICATED OTHERWISE.
8. ALL DIMENSIONS ARE IN MILLIMETRES, STATIONS AND ELEVATIONS ARE SHOWN IN METERS, UNLESS NOTED OTHERWISE.
9. ALL MATERIALS SHALL IN ACCORDANCE WITH INTO DESIGNATED SOURCES OF SUPPLY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND MATERIALS SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
10. THE CONTRACTOR SHALL LOCATE, TEMPORARILY SUPPORT, AND PROTECT ALL UTILITIES THAT ARE TO REMAIN DURING ALL STAGES OF CONSTRUCTION OPERATIONS.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF ALL TEMPORARY PROTECTION SYSTEMS, TEMPORARY WORK PLATFORMS AND DEBRIS CONTAINMENT SYSTEMS.
12. THE CONTRACTOR IS ADVISED THAT THE WATER LEVEL SHOWN IS SUBJECT TO VARIATIONS DUE TO THE OPERATIONS OF THE PORTAGE POWER CHAUDIÈRE AND THAT THE CONTRACTOR SHALL COORDINATE WORK WITH THE FACILITY OPERATOR, WHEN REQUIRED.
13. THE CONTRACTOR SHALL CONTROL ON-SITE OPERATIONS TO PREVENT ENTRY OF DELETERIOUS MATERIALS INTO THE OTTAWA RIVER. THE CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL MEASURES AND ENVIRONMENTAL PROTECTION MEASURES, SUBJECT TO THE APPROVAL OF THE INTERDEPARTMENTAL REPRESENTATIVE, PRIOR TO COMMENCEMENT OF THE WORK.

**CONSTRUCTION NOTES**

1. UNION BRIDGE MUST REMAIN OPEN AT ALL TIMES DURING CONSTRUCTION TO PEDESTRIANS, CYCLISTS AND ONE ALTERNATING LANE OF VEHICULAR TRAFFIC. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS AND BRACKETS TO MAINTAIN FULL CLOSURES. REFER TO CONTRACT SPECIFICATIONS FOR ADDITIONAL DETAILS OF WORK RESTRICTIONS DUE TO OPERATIONAL CONSTRAINTS.
2. CONSTRUCTION STAGING AREAS SHALL BE LIMITED TO THE AREAS IDENTIFIED IN THE CONTRACT DRAWINGS AND SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS AND THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE CONTRACT DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE DEPARTMENTAL REPRESENTATIVE WITHIN THE PROPOSED PERIODS OF THE WORK REQUIRED TO MAINTAIN THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.
4. ALL DIMENSIONS ARE IN MILLIMETRES, STATIONS AND ELEVATIONS ARE SHOWN IN METERS, UNLESS NOTED OTHERWISE.
5. ALL MATERIALS SHALL IN ACCORDANCE WITH INTO DESIGNATED SOURCES OF SUPPLY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND MATERIALS SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
6. THE CONTRACTOR SHALL LOCATE, TEMPORARILY SUPPORT, AND PROTECT ALL UTILITIES THAT ARE TO REMAIN DURING ALL STAGES OF CONSTRUCTION OPERATIONS.
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Contractor to verify all dimensions & conditions on site and immediately notify the engineer if all discrepancies.

L'entrepreneur devra vérifier toutes les dimensions et conditions sur place et faire part à l'ingénieur de toute contradiction.

	Description: (Empty)		date
A. detail no. B. location drawing no. C. drawing no.		A B C	

Contractor to verify all dimensions & conditions on site and immediately notify the engineer if all discrepancies.

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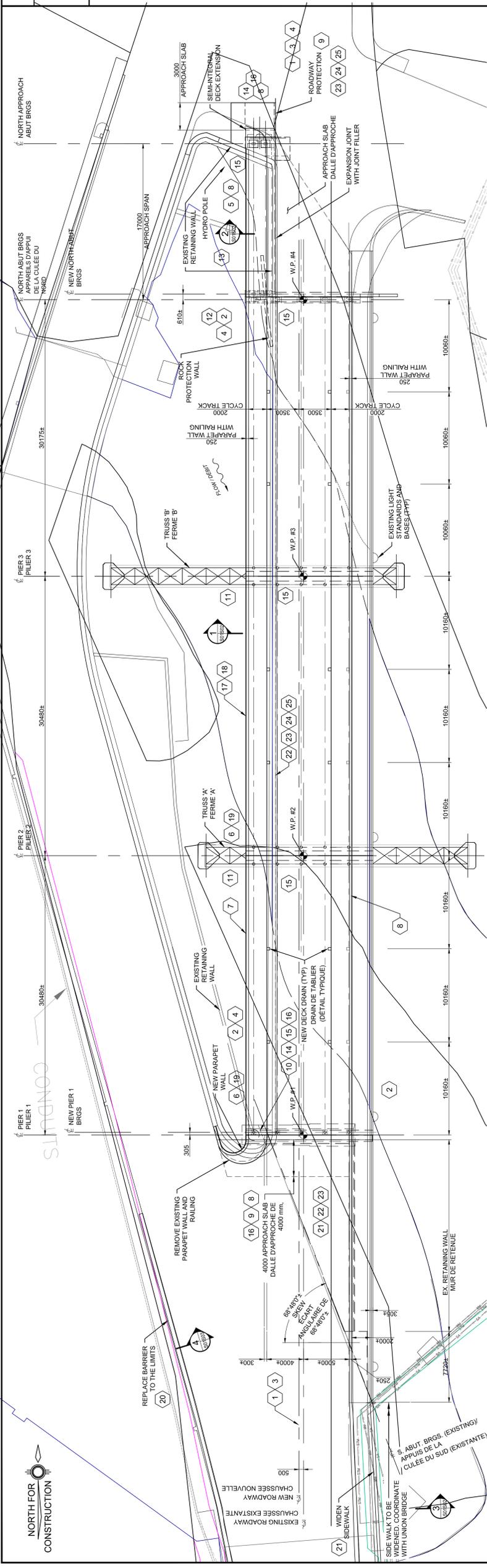
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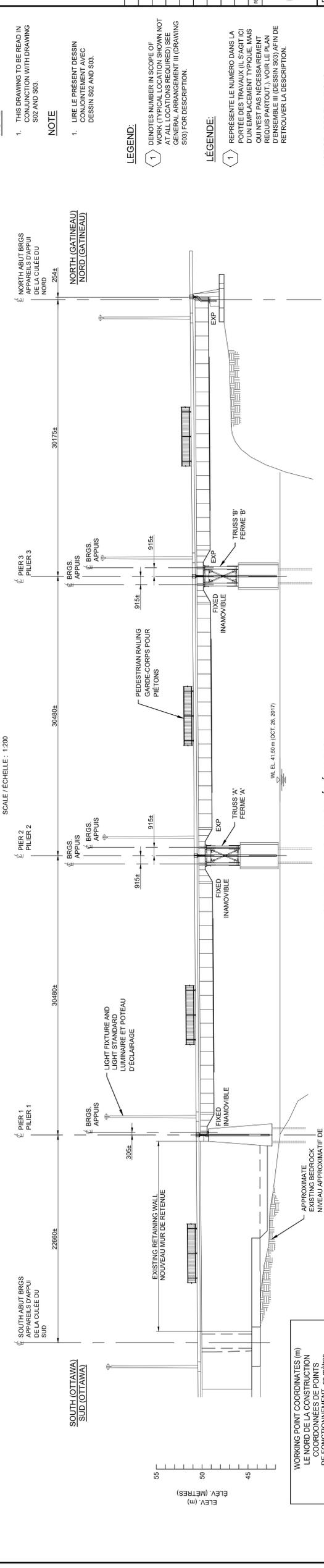
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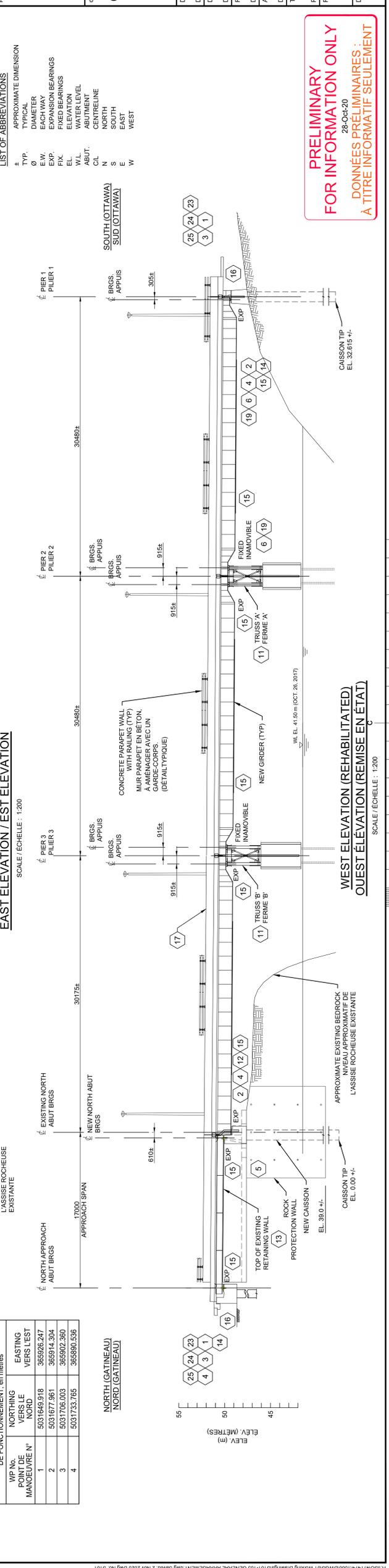
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 16-Sep-20  
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**PLAN (REHABILITATED STRUCTURE)**  
**PLAN (STRUCTURE REMISE EN ÉTAT)**  
 SCALE / ÉCHELLE : 1:200



**EAST ELEVATION / EST ÉLÉVATION**  
 SCALE / ÉCHELLE : 1:200



**WEST ELEVATION (REHABILITATED)**  
**OUEST ÉLÉVATION (REMISE EN ÉTAT)**  
 SCALE / ÉCHELLE : 1:200

**NOTE**

- THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING S02 AND S03.

**NOTE**

- LIRE LE PRÉSENT DESSIN CONJOINTEMENT AVEC DESSIN S02 AND S03.

**LEGEND:**

- 1 DENOTES NUMBER IN SCOPE OF WORK (TYPICAL LOCATION SHOWN NOT WORK LOCATIONS REQUIRED) SEE ATTACHED DRAWING S02 (DRAWING S03) FOR DESCRIPTION.

**LÉGENDE:**

- 1 REPRÉSENTE LE NUMÉRO DANS LA PORTEE DES TRAVAUX (IL S'AGIT CI D'UN EMPACEMENT TYPIQUE, MAIS QUI N'EST PAS NECESSAIREMENT REQUIS PARTOUT). VOIR LE PLAN D'ENSEMBLE II (DESSIN S03) AFIN DE RETROUVER LA DESCRIPTION.

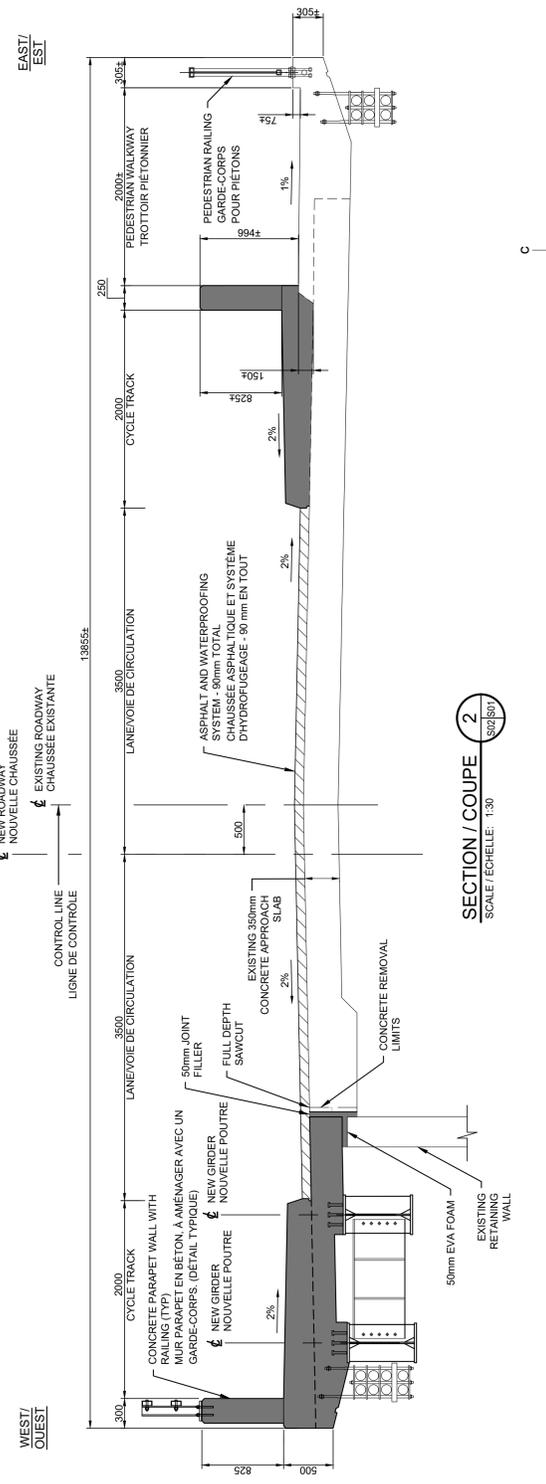
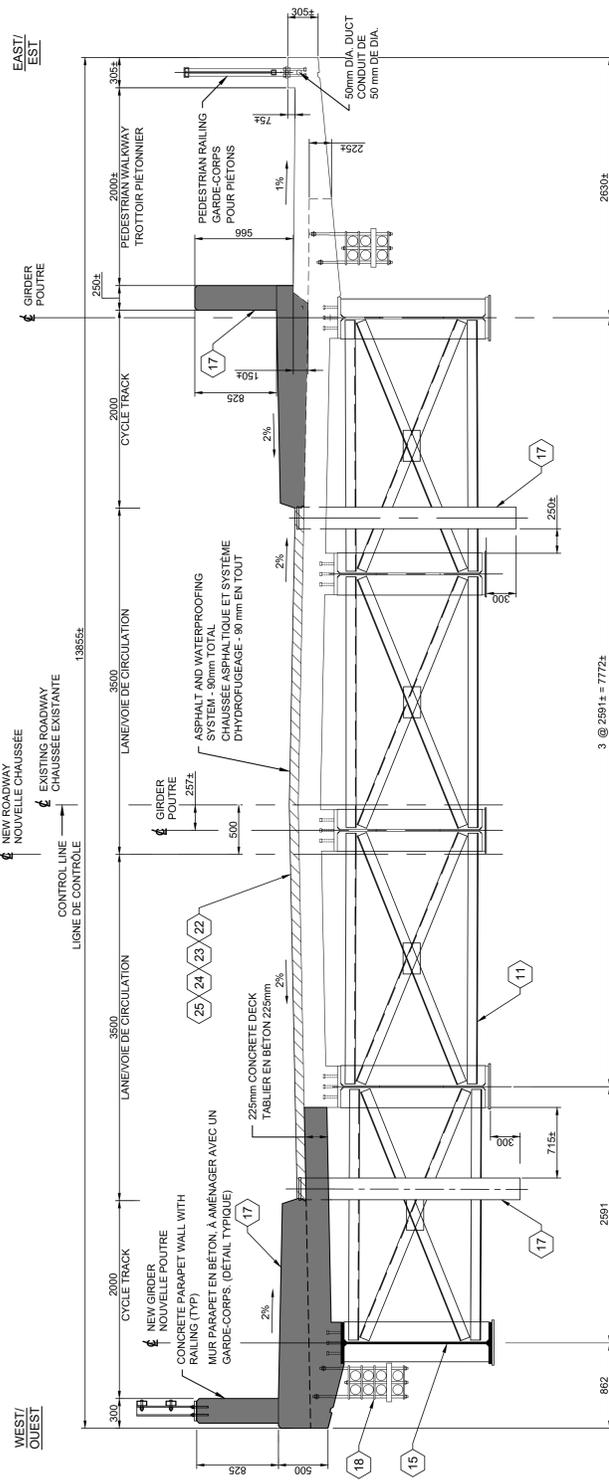
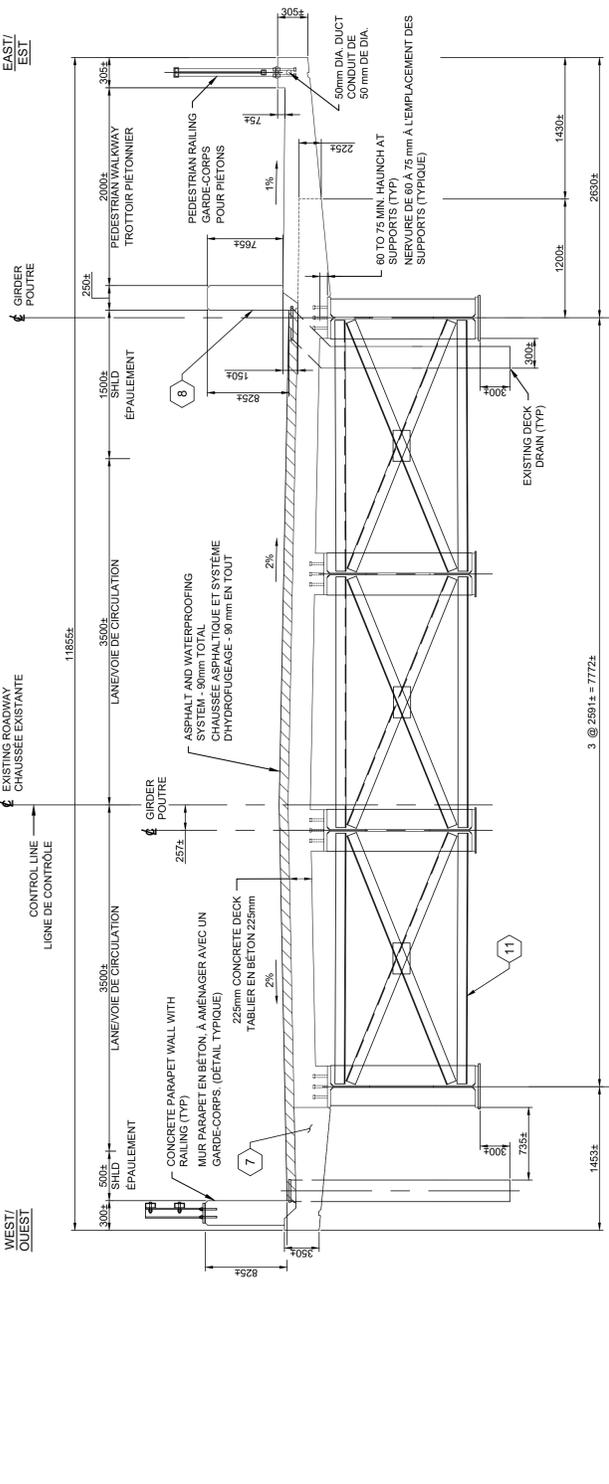
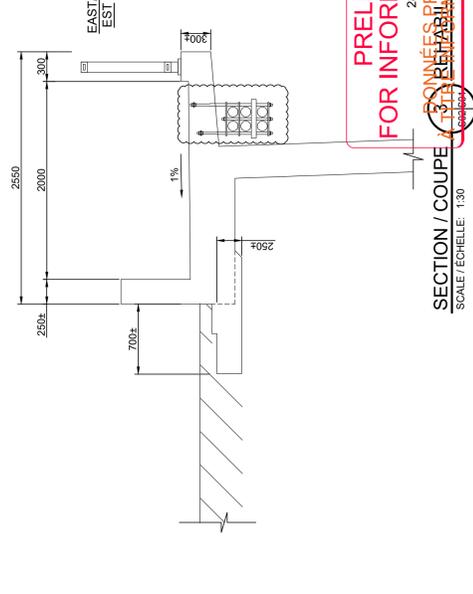
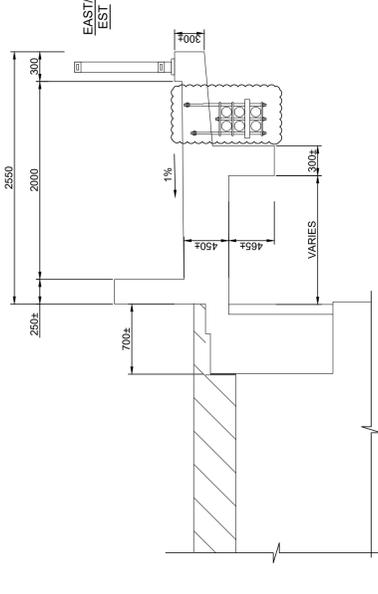
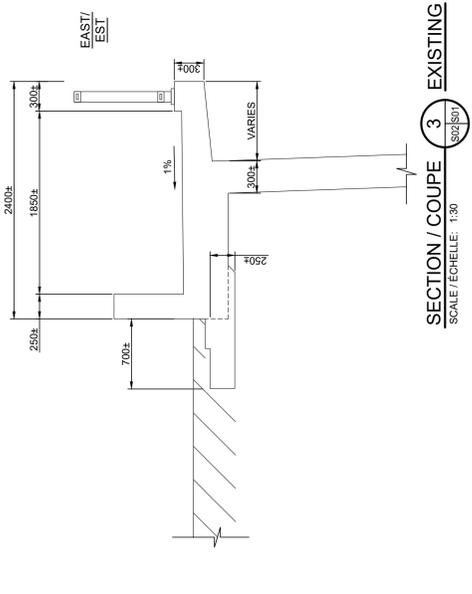
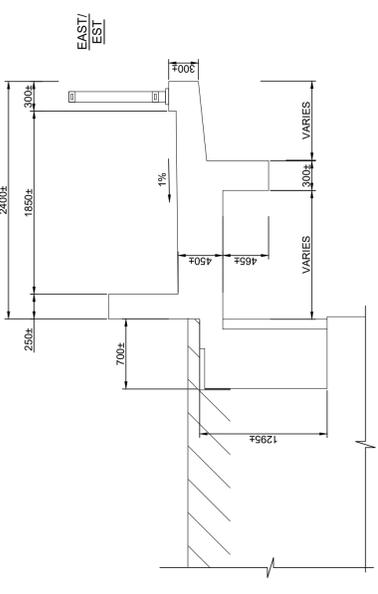
**LIST OF ABBREVIATIONS**

SYMBOL	ABBREVIATION	DESCRIPTION
Ø	TYP.	APPROXIMATE DIMENSION
Ø	Ø	TYPICAL DIAMETER
E.W.	E.W.	EACH WAY
EXP.	EXP.	EXPANSION BEARINGS
FIX.	FIX.	FIXED BEARINGS
ELEV.	ELEV.	ELEVATION
ABUT.	ABUT.	ABUTMENT
COL.	COL.	ABUTMENT
N	N	NORTH
S	S	SOUTH
E	E	EAST
W	W	WEST

**WORKING POINT COORDINATES (m)**  
LE NORD DE LA CONSTRUCTION  
COORDONNÉES DE POINTS  
DE FONCTIONNEMENT: en mètres

WP No.	NORTHING	EASTING
1	5031649.918	365926.247
2	5031677.951	365914.304
3	5031706.003	365902.360
4	5031733.765	365890.536

**PRELIMINARY**  
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 28-Oct-20  
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PRELIMINARY  
 FOR INFORMATION ONLY  
 28-Oct-20  
 DRAWINGS PRELIMINAIRES :  
 NON DÉTÉRMINÉES  
 POUR INFORMATION SEULEMENT

SCOPE OF WORK

THE FOLLOWING SCOPE OF WORK SHALL BE CARRIED OUT IN STAGES AND IS NOT INTENDED TO BE A COMPREHENSIVE LIST OF ALL ITEMS REQUIRED TO COMPLETE THE REHABILITATION WORK...

- 1) INSTALL TRAFFIC CONTROL MEASURES AND DETOUR ALL TRAFFIC TO ONE SIDE OF THE BRIDGE DURING EACH STAGE.
2) SET UP CONSTRUCTION STAGING AREAS.
3) INSTALL ACCESS TO WORK AREAS AND ENVIRONMENTAL PROTECTION MEASURES.
4) REMOVE AND PROTECT EXISTING BELL CONDUITS.
5) REMOVE AND SALVAGE SECURITY FENCING AND GATES AT THE SOUTH ABUTMENT AND PIER TRUSS.
6) REMOVE EXISTING CONCRETE DECK ON THE WEST SIDE TO THE LIMITS SHOWN, INCLUDING DECK DRAINS AND EXPANSION JOINTS.
7) REMOVE EXISTING ASPHALT ON APPROACHES, NORTH & SOUTH APPROACH SLABS, NORTHWEST RETAINING WALL, AND SOUTHWEST RETAINING WALL TO THE LIMITS SPECIFIED. REMOVE EAST SIDE PARAPET WALL AND SALVAGE RAILINGS.
8) INSTALL ROADWAY PROTECTION SYSTEM ON BOTH APPROACHES: EXCAVATE BEHIND BALLAST WALLS.
9) PARTIAL DEPTH REMOVAL ON EXISTING WEST VERTICAL FACE OF PIER 1 AND NORTH ABUTMENT AS DETAILED ELSEWHERE.
10) INSTALL ACCESS PLATFORM FOR THE STRUCTURAL STEEL REPAIRS. PERFORM MISCELLANEOUS STRUCTURAL STEEL REPAIRS AND STRENGTHENING ON THE TRUSS MEMBERS.
11) INSTALL ROCK ANCHORS VIA UNDERWATER DRILLING/BARGES, FORM AND CAST REINFORCED ROCK PROTECTION WALL VIA TREMIE METHOD.
12) PERFORM PARTIAL DEPTH CONCRETE REMOVALS & REPAIRS ON TOP OF NORTH ABUTMENT RETAINING WALL.
13) CONSTRUCT NEW EXTENDED ABUTMENT AT PIER 1 AND EXISTING NORTH ABUTMENT LOCATION, CONSTRUCT NEW APPROACH ABUTMENT. CONSTRUCT NEW SLOPED ABUTMENT BEARING SEATS AND NEW BEARING PEDISTALS.
14) INSTALL NEW STEEL GIRDER LINE, CROSS BRACES, DIAPHRAGMS AND BEARINGS.
15) BACKFILL BEHIND BOTH BALLAST WALLS. RECONSTRUCT NORTH AND SOUTH APPROACHES ON WEST SIDE OF BRIDGE, INCLUDING APPROACH SLABS, CYCLE TRACKS, PARAPET WALLS AND RAILINGS AND EXPANSION JOINT.
16) CONSTRUCT NEW EXTENDED CONCRETE DECK, INCLUDING CYCLE TRACKS, PARAPET WALLS AND RAILINGS, AND DECK DRAINS ON BOTH SIDE OF BRIDGE.
17) INSTALL NEW BELL, HYDRO OTTAWA, AND PSPC CONDUITS ON HANGERS SUSPENDED FROM THE UNDERSIDE OF THE DECK SOFFIT.
18) REMOVE AND REPLACE WEST BARRIER TO THE LIMITS.
19) WIDEN EAST SIDEWALK TO THE LIMITS.
20) WATERPROOF DECK, PAVE DECK AND APPROACHES.
21) PLACE NEW PAVEMENT MARKINGS, REMOVE TRAFFIC CONTROL MEASURES AND RE-OPEN REHABILITATED BRIDGE TO NORMAL TRAFFIC.
22) REMOVE PEDESTRIAN SITE CONTROL MEASURES.
23) REMOVE ACCESS TO WORK AREAS AND ENVIRONMENTAL PROTECTION MEASURES.
24) REINSTATE CONSTRUCTION STAGING AREAS AND REMOVE EROSION AND SEDIMENT CONTROL MEASURES.
25)

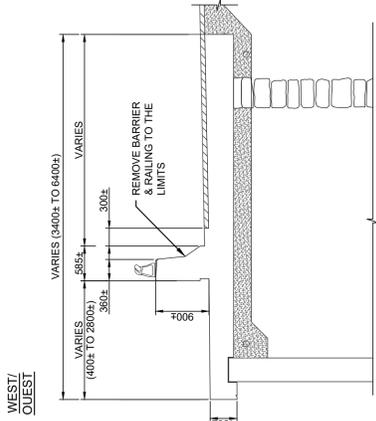
LIST OF ABBREVIATIONS

Table with 2 columns: TYP, APPROXIMATE DIMENSION. Includes symbols for diameter, expansion bearings, water level, abutment, centerline, and cardinal directions.



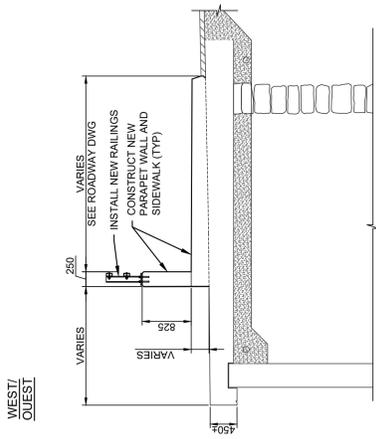
EAST SIDEWALK VIEW

SCALE / ÉCHELLE: N.T.S.



SECTION / COUPE 4 300(S)7

EXISTING



SECTION / COUPE 4 300(S)7

REHABILITATED

GENERAL NOTES

THIS DRAWING TO BE READ IN CONJUNCTION WITH (DRAWING S01, S02).

DESIGN LOADING

CODE: CSA S6-19 LOAD: CL-625-ONT / CL-625

CLASS OF CONCRETE

DECK AND PARAPET WALLS 35 MPa REMAINDER UNLESS OTHERWISE NOTED 30 MPa

CLEAR COVER TO REINFORCING STEEL

FOOTINGS 100 ±25 DECK TOP 70 ±20 BOTTOM 40 ±10 PARAPET WALLS 60 ±10 REMAINDER - UNLESS OTHERWISE NOTED 70 ±20

REINFORCING STEEL

REINFORCING STEEL SHALL BE GRADE 400W, UNLESS OTHERWISE SPECIFIED.

BAR MARKS WITH PREFIX 'G' DENOTE GALVANIZED BARS. UNLESS SHOWN OTHERWISE, TENSION LAP SPICES SHALL BE CLASS B.

BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE CHBCD AND RSIC, UNLESS INDICATED OTHERWISE.

REINFORCING STEEL DOVELS INTO CONCRETE SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS, UNLESS NOTED OTHERWISE:

Table with 3 columns: BAR, HOLE DIAMETER (mm), MIN. ULTIMATE BOND CAPACITY (kN). Rows for 15M, 20M, 25M bars.

CONTRACTOR MAY PRESENT PROPOSAL TO DEPARTMENTAL REPRESENTATIVE TO ADJUST AND/OR ADD CONSTRUCTION JOINTS AND/OR REBAR LAP SPICES IF THIS FACILITATES PLACEMENT OF REINFORCING STEEL.

STRUCTURAL STEEL

ALL STRUCTURAL STEEL TO CONFORM TO CSA STANDARD CAN/CSA-G40.20-04/G40.21-04 GRADE 350 WT. THE CHIPPY IMPACT ENERGY REQUIREMENTS SHALL BE 27 JOULES AND THE TEST TEMPERATURE SHALL BE -20°C. ROLLED SECTIONS TO CONFORM TO CSA STANDARD CAN/CSA-G40.20-04/G40.21-04 OR ASTM SPECIFICATION A588.

BOLTS TO BE ASTM A325 TYPE 1, M22 OR M24. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES.

STUD SHEAR CONNECTORS TO BE 22mm DIA. AND CONFORM TO ASTM STANDARD A108 AND CSA W59.

ALL LENGTHS SHOWN ARE IN THE HORIZONTAL PLANE AND MEASURED AT 20°C.

GIRDERS SHALL BE CAMBERED TO VALUES SHOWN IN THE RELAXED CAMBER DIAGRAM.

RELAXED CAMBER ORDINATES INCLUDE AN ALLOWANCE FOR GIRDER SELF-WEIGHT CONCRETE DECK, SUPERIMPOSED DEAD LOADS AND PROFILE OF ROADWAY.

THE ENDS OF GIRDERS AND BEARING STIFFENERS SHALL BE TRULY VERTICAL UNDER FULL DEAD LOAD.

ALL BUTT WELDS IN FLANGE AND WEB SHOP SPICES SHALL BE FINISHED FLUSH OR BEveled. ALL WELDS SHALL BE FULL PENETRATION BUTT WELDS. ALL WELDS SHALL BE APPLIED STRESSES. IF SHOP SPICES ARE REQUIRED IN LOCATIONS OTHER THAN THOSE WHERE PLATE SIZES TRANSITIONS, THEIR LOCATION SHALL BE APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.

UNLESS OTHERWISE NOTED, THE MINIMUM FILLET WELD SHALL BE AS FOLLOWS:

Table with 2 columns: THICKER PART JOINED (mm), MINIMUM SIZE OF FILLET WELD (mm). Rows for 12 to 20, 20 to 40, 40 to 60 mm.

STAY-IN-PLACE FORMS NOT PERMITTED.

CONTACT SURFACES OF BOLTED PARTS SHALL BE SHOP PRIMED SURFACES.

CONSTRUCTION NOTES

DETAILS, DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURAL COMPONENTS SHOWN ON CONTRACT DRAWINGS ARE BASED ON ORIGINAL DESIGN, REHABILITATION AND CONSTRUCTION RECORDS. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE CONTRACT DRAWINGS AGAINST EXISTING FIELD CONDITIONS AND/OR PRESENT CONFIGURATION OF EXISTING STRUCTURAL COMPONENTS AND SHALL INFORM DEPARTMENTAL REPRESENTATIVE OF DISCREPANCIES BEFORE PROCEEDING WITH PROJECT WORK.

EXTENT OF CONCRETE REMOVALS/REPAIRS TO BE AS DETERMINED AND DIRECTED BY DEPARTMENTAL REPRESENTATIVE.

CONTRACTOR TO ENSURE THE STABILITY OF ALL EXISTING AND NEW STEEL COMPONENTS DURING HANDLING, TRANSPORTATION AND ERECTION AND UNTIL THE STRUCTURAL STEEL IS IN ITS FINAL LOCATION WITH ALL PERMANENT BRACING, CONNECTIONS AND SUPPORTS IN PLACE AND THE CONCRETE IN THE DECK HAS REACHED 75% OF ITS SPECIFIED STRENGTH.

CHAMFER ALL EXPOSED CONCRETE EDGES TO 20mm x 20mm UNLESS NOTED OTHERWISE.

ALL CONSTRUCTION JOINTS TO BE NEAT, STRAIGHT, HORIZONTAL OR VERTICAL LINES. FORMS TO BE KEPT TIGHT FROM POUR TO POUR.

THE CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL UTILITY REMOVAL AND RELOCATION WORK REQUIRED FOR THE COMPLETION OF THIS PROJECT.

NOTES GÉNÉRALES

LIRE LE PRÉSENT DESSIN CONCURREMMENT AVEC LE DESSIN S01, S02.

CHARGES ÉTABLIES

CODE: CSA S6-19 CHARGE: CL-625-ONT / CL-625

CLASSIFICATION DU BÉTON

TABLER ET MURS DE PARAPET 35 MPa AUTRES ARTICLES EN BÉTON 30 MPa À MOINS D'INDICATIONS CONTRAIRES, A.

RECOUVREMENT NET PAR DESSUS L'ACIER DE RENFORT

EMPAITEMENTS 100 ±25 TABLER: PARTIE SUPÉRIEURE 70 ±20 PARTIE INFÉRIEURE 40 ±10 MURS DE PARAPET 60 ±10 AUTRES ARTICLES 70 ±20 À MOINS D'INDICATIONS CONTRAIRES, A.

ACIER D'ARMATURE

À MOINS D'INDICATIONS CONTRAIRES, L'ACIER D'ARMATURE DEVRA ÊTRE DE CATÉGORIE 400 W.

LES MARQUES SUR LES BARRES QUI SONT PRÉCÉDÉES DU PRÉFIXE ' G ' REPRÉSENTENT DES BARRES GALVANISÉES.

À MOINS D'INDICATIONS CONTRAIRES, LES ÉPISURES DE CHEVAUCHEMENT SOUS TENSION DEVONT ÊTRE DE CLASSIFICATION B.

CROCHETS DE BARRES, DEVANT PRÉSENTER DES DIMENSIONS STANDARD D'ACCROCHE. LA FORMATION DE CES CROCHETS DEVRA ÊTRE ASSURÉE PAR DES DIAMÈTRES DE PLAGE MINIMA ET CE EN SE SERVANT D'ÉTRIERS ET D'ATTACHES AVANT DES DIMENSIONS D'ACCROCHE MINIMALES. SAUF INDICATIONS CONTRAIRES, TOUS LES CROCHETS DEVONT ÊTRE CONFORMES AUX EXIGENCES DES NORMES PERTINENTES DU CHBCD ET DU RSIC.

À MOINS D'INDICATIONS CONTRAIRES, LES GOULONS EN ACIER D'ARMATURE DANS LE BÉTON DEVONT ÊTRE CONFORMES AUX EXIGENCES SUIVANTES :

Tableau des goujons: Diamètre du trou, profondeur de liaisonnement, capacité de liaisonnement ultime.

L'ENTREPRENEUR POURRA PRÉSENTER UNE SOLUTION DE RECHANGE AU REPRÉSENTANT DU MINISTÈRE ET CE, EN VUE DU REÇAGE ET (OU) DU BAOUIT DE JOINTS DE CONSTRUCTION ET (OU) DE LA PRATIQUE D'ÉPISURES DE CHEVAUCHEMENT DANS LES BARRES D'ARMATURE, DANS LA MESURE OÙ UNE TELLE SOLUTION DE RECHANGE FACILITE LA MISE EN PLACE DE L'ACIER D'ARMATURE.

ACIER DE CONSTRUCTION

L'ENSEMBLE DE L'ACIER STRUCTUREL DEVRA ÊTRE DE CATÉGORIE 350 W ET CONFORME AUX NORMES CAN/CSA-G40.20-4 ET G40.21-04. LES PROFILS ROLÉS DEVONT ÊTRE CONFORMES À LA NORME CAN/CSA-G40.20-04/G40.21-04 OU À LA NORME A588 DE L'ASTM.

LES BOLLONS DEVONT ÊTRE CONFORMES À LA NORME ASTM A325 ET DE TYPE 1, AVEC UNE CLASSIFICATION CORRESPONDANT À : M22 OU M24. LE FILETAGE PROPRIÉTAIRE DES BOLLONS DEVRA ÊTRE EXCLUS DES PLANS DE CISAILLEMENT.

LES CONNECTEURS DE CISAILLEMENT POUR MONTANTS DEVONT PRÉSENTER UN DIAMÈTRE DE 22 mm ET ÊTRE CONFORMES AUX STIPULATIONS PERTINENTES DES NORMES SUIVANTES : ASTM A108 ET CSA W59.

SAUF ANNOTATIONS CONTRAIRES, LA GROSSEUR MINIMALE DES FILETS DE SOUDAGE DEVRA ÊTRE COMME SUIT :

Table with 2 columns: ÉPAISSEUR DE MATÉRIAU DE LA PIÈCE COMPOSANTE, FILETS DE SOUDAGE (mm). Rows for 5, 6, 8, 10 mm.

L'ENTREPRENEUR DEVRA S'ASSURER DE LA STABILITÉ DES PIÈCES COMPOSANTES EN ACIER DURANT LES OPÉRATIONS DE MANUTENTION, DE TRANSPORT ET DE MONTAGE ET CE, JUSQU'À CE QUE L'ACIER SE RETROUVE DANS SA POSITION DÉFINITIVE ET QUE LES ENTRETOISES, CONNEXIONS ET SUPPORTS PERMANENTS SOIENT EN PLACE ET QUE LE BÉTON DANS LA DALLE DU TABLIER AIT TEINTÉ 75 P. 100 DE SA RÉSISTANCE PRÉSCRITE.

LES COFFRAGES À CONSERVER DANS LES CONSTRUCTIONS DÉFINITIVES NE SERONT PAS TOLÉRÉS.

LES SURFACES DE CONTACT DES PIÈCES COMPOSANTES BOULONNÉES DEVONT ÊTRE APPRÊTÉES EN ATELIER.

NOTES - TRAVAUX DE CONSTRUCTION

LES DÉTAILS, DIMENSIONS ET ÉLEVATIONS DES PIÈCES COMPOSANTES STRUCTURELLES ET EXISTANTES QUI SONT PRÉSENTÉES DANS LES DESSINS CONTRACTUELS SONT FONDÉS SUR LA CONCEPTION D'ORIGINE ET SUR LES DESSINS DE RE-MISE EN ÉTAT ET (OU) D'ATELIER. L'ENTREPRENEUR SE DEVRA DONC VÉRIFIER TOUS LES DÉTAILS, DIMENSIONS ET ÉLEVATIONS PRÉSENTÉS DANS LES DESSINS DU CONTRAT ET CE, EN LES COMPARANT AVEC LES CONDITIONS ACTUELLES SUR PLACE ET (OU) LA CONFIGURATION ACTUELLE DES PIÈCES COMPOSANTES STRUCTURELLES ET EXISTANTES. EN OUTRE, L'ENTREPRENEUR SE DEVRA D'INFORMER LE REPRÉSENTANT DU MINISTÈRE DE TOUTE CONTRADICTION ET CE, AVANT LA MISE EN ROUTE DES TRAVAUX DU PROJET.

LA PORTÉE DES TRAVAUX D'ENLÈVEMENT ET (OU) DE RÉPARATION DU BÉTON DEVRA ÊTRE DÉTERMINÉE PAR LE REPRÉSENTANT DU MINISTÈRE, QUI DÉCIDERA DES MESURES À PRENDRE SELON LES SITUATIONS QUI SE PRÉSENTENT.

L'ENTREPRENEUR DEVRA S'ASSURER DE LA STABILITÉ DES PIÈCES COMPOSANTES EN ACIER DURANT LES OPÉRATIONS DE MANUTENTION, DE TRANSPORT ET DE MONTAGE ET CE, JUSQU'À CE QUE L'ACIER SE RETROUVE DANS SA POSITION DÉFINITIVE ET QUE LES CONTRAINTES, CONNEXIONS ET SUPPORTS PERMANENTS SOIENT EN PLACE ET QUE LE BÉTON DANS LA DALLE DU TABLIER AIT TEINTÉ 75 P. 100 DE SA RÉSISTANCE PRÉSCRITE.

PRELIMINARY FOR INFORMATION ONLY DONNÉES PRELIMINAIRES : A TITRE INFORMATIF SEULEMENT. Includes project number R.095392.004 and drawing number S103.

Header section with logos for Canada, Parsons, and RD Énergie, and project information including title 'HULL CAUSEWAY WIDENING'.