

# **PUBLIC SERVICES AND PROCUREMENT CANADA (PSPC)**

## **TECHNICAL SPECIFICATIONS**

### **Des Joachims Bridge - Members strengthening**

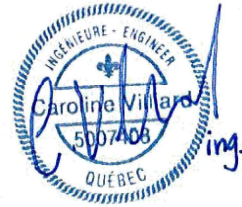



**Projet : Des Joachims Bridge - Members strengthening**

**Date : 04-12-2021**

**Issued for tenders**

**Project Number PSPC : R.109480**

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END OF SECTION

SECTION	SUBJECT	NUMBER OF PAGES
<b>DIVISION 00</b>		
00 01 07	Seals Page .....	1
00 01 10	Table of Contents .....	1
<b>DIVISION 01</b>		
01 14 00	Work Restrictions .....	2
01 31 19	Project meetings .....	3
01 33 00	Submittal Procedures .....	4
01 35 29.06	Health and Safety Requirements .....	24
01 35 43.10	Environmental Procedures - Bridges .....	8
01 45 00	Quality Control .....	2
01 51 00	Temporary Utilities .....	1
01 52 00	Construction Facilities .....	5
01 55 26	Traffic Control .....	2
01 56 00	Temporary Barriers and Enclosures .....	3
01 61 00	Common Product Requirements .....	4
01 73 00	Execution .....	2
01 74 00	Cleaning .....	2
01 74 19	Waste Management and Disposal .....	7
01 78 00	Closeout Submittals .....	6
<b>DIVISION 02</b>		
02 41 16	Structure Demolition .....	7
<b>DIVISION 05</b>		
05 12 33	Structural Steel for Bridges .....	8
<b>DIVISION 09</b>		
09 91 13.23	Exterior Painting of Structural Steel .....	9

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 35 43.10 – Environmental procedures - Bridges
- .3 Section 01 52 00 - Construction Facilities
- .4 Section 01 56 00 - Temporary Barriers and Enclosures
- .5 Section 01 78 00 - Closeout Submittals

**1.2 ACCESS TO THE WORKSITE**

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, work platforms, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations. The design of the required elements for the worksite traffic are under the Contractor's responsibility. Contractor must provide to the Departmental Representative shop drawings signed and sealed by qualified Professional Engineer licensed in the province of Ontario or Quebec, for review.
- .2 The Contractor must respect the boundaries of the worksite shown on the drawings.

**1.3 USE OF SITE AND FACILITIES**

- .1 The Contractor must execute work with least possible interference or disturbance to normal use of premises.
- .2 The Contractor is responsible in providing all necessary services needed to execute the work promptly, including but not limited to:
  - .1 Generator for electricity;
  - .2 Water tank for potable water to clean surfaces;
  - .3 Compressor for air supply.
- .3 Where security is reduced by work, provide temporary means to maintain security.
- .4 The Contractor is responsible in providing his own personnel sanitary facilities and its cleaning. In addition, Contractor shall also supply or provide Departmental Representative access to sanitary facilities.

**1.4 EXISTING SERVICES**

- .1 No existing services are available on site.

**1.5 SPECIAL REQUIREMENTS**

- .1 The following articles present special requirements to respect at all times during work:
  - .1 Normal working hours are Monday to Friday for 7AM to 7PM, based on 55 hours work week.
  - .2 Whenever possible, no noise generating work is to be carried out Monday to Friday between 7PM and 7AM. Noise generating work consist of, among other, demolition, anchors drilling, rebar, screws and foundation work. Noise generating work also include machinery, mechanical tools and truck traffic.
  - .3 Upon Contractor's request, it will be possible to work outside normal working hours. An authorization from the Departmental Representative must be provided 72 hours in advance. No additional charges will be paid for work outside normal working hours.
  - .4 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
  - .5 Construct barriers in accordance with section 01 56 00 - *Temporary Barriers and Enclosures*.
  - .6 Permitted loads over or near the existing work are indicated on the drawings. Temporary concrete barriers are not permitted on the bridge.
  - .7 Stay inside the work zones limits and access.
  - .8 Whenever possible, ensure that materials are delivered outside of peak hours, which are between 06:30 and 09:30 and between 15:00 and 18:00.
  - .9 Contractor shall maintain access across the bridge for emergency vehicles and school buses at all time.
- .2 This list is not comprehensive, and Contractor must comply with all specification's requirements.

**Part 2 PRODUCTS****2.1 NOT USED**

- .1 Not used.

**Part 3 EXECUTION****3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 35 43.10 – Environmental Procedures - Bridges
- .3 Section 01 52 00 - Construction Facilities
- .4 Section 01 56 00 - Temporary Barriers and Enclosures
- .5 Section 01 78 00 - Closeout Submittals

**1.2 ADMINISTRATIVE**

- .1 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of the party each represents.

**1.3 START-UP MEETING**

- .1 Within five days after Contract award, request a meeting of contractual parties to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum four days before meeting.
- .4 Agenda to include:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of submission of shop drawings, samples, color chips. Submit submittals in accordance with Section 01 33 00 - *Submittal Procedures*.
  - .3 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - *Construction Facilities*.
  - .4 Site security in accordance with Section 01 56 00 - *Temporary Barriers and Enclosures*.
  - .5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .6 Record drawings in accordance with Section 01 33 00 - *Submittal Procedures*.
  - .7 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - *Closeout Submittals*.
  - .8 Environmental Clauses and specific requirements.
  - .9 Appointment of inspection and testing agencies or firms.
  - .10 Insurances, transcript of policies.

**1.4 PRECONSTRUCTION MEETING**

- .1 Five days before Work start, request a meeting of contractual parties to prepare worksite.
- .2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum five days before meeting.
- .4 Agenda to include:
  - .1 Schedule of submission of shop drawings, samples, color chips. Submit submittals in accordance with Section 01 33 00 - *Submittal Procedures*.
  - .2 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - *Construction Facilities*.
  - .3 Site security in accordance with Section 01 56 00 - *Temporary Barriers and Enclosures*.
  - .4 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .5 Record drawings in accordance with Section 01 33 00 - *Submittal Procedures*.
  - .6 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - *Closeout Submittals*.
  - .7 Environmental Clauses and specific requirements

**1.5 PROGRESS MEETINGS**

- .1 Meetings will be held every two weeks during the work, or more as needed, as designated by the Departmental Representative.
- .2 Project manager, superintendent and foreman are to be in attendance.
- .3 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.

- .11 Review proposed changes for effect on construction schedule and on completion date.
- .12 Other business.

**Part 2 PRODUCTS**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 EXECUTION**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 35 29.06 - Health and Safety Requirements
- .2 Section 01 35 43 - Environmental Procedures
- .3 Section 01 45 00 - Quality Control
- .4 Section 01 51 00 – Temporary Utilities
- .5 Section 01 52 00 – Construction Facilities

**1.2 ADMINISTRATIVE**

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered enough reason for extension of Contract Time and no claim for extension due to such default will be allowed.
- .2 Do not proceed with work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are coordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

**1.3 SHOP DRAWINGS AND PRODUCT DATA**

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by a qualified Professional Engineer licensed in the province of Ontario or Quebec.

- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow seven days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .8 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Standards.
    - .5 Relationship to existing work.

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

#### **1.4 WORK PROCEDURES**

- .1 Ten days before preconstruction meeting, Contractor must submit, for commentaries and approval of Departmental Representative:
  - .1 Work sequencing document including its complete work and access procedures planned for the performance of the work in accordance with its Schedule of Work.
  - .2 Detailed Work Methods for each of the three types of steel strengthening work.
  - .3 Demolition Plan showing Work method for rivet removal.
  - .4 Work method for seized bolt removal.
  - .5 Work method for replacement of structural steel, most specifically the replacement of the lattice bars.

- .6 Submit painting plan designating the locations and order of painting as well as locations of laps in coating system layers.
- .7 Submit a repair method for any paint defect that may occur during the demolition and strengthening work.

**1.5 ON-SITE SURVEY**

- .1 Ten days following the completion of the on-site existing members survey, the Contractor shall submit the on-site survey report to the Departmental Representative, for commentaries and approval. The survey must cover all members to be strengthened and all other area of Work needed to complete the Work.

**1.6 SAMPLES**

- .1 Before commencing the fabrication of the painted steel members, provide a sample of each of the steel members painted in accordance with Section 01 45 00 - *Quality Control*.

**1.7 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit one electronic and hard copy of color digital photography in jpg format, fine resolution monthly with progress statement and as directed by Departmental Representative.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 The shooting date must appear directly on the photo.
- .4 Number of viewpoints.
  - .1 Viewpoints and their location as determined by Departmental Representative.

**1.8 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.
- .3 Transcripts must be issued within five working days after holding a meeting.

**Part 2 PRODUCTS****2.1 NOT USED**

- .1 Not Used.

**Part 3 EXECUTION****3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal Procedures

**1.2 REFERENCE STANDARDS**

- .1 Province of Quebec.
  - .1 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).
  - .2 Association de la Construction du Québec (ACQ) COVID-19, (<https://www.acq.org/coronavirus/>)
  - .3 Construction in the Context of the COVID-19 Pandemic, Quebec government website (<https://www.quebec.ca/en/employment/reopening-construction-during-covid-19-pandemic/>)
  - .4 Coronavirus disease (COVID-19) in Québec, Quebec Government website (<https://www.quebec.ca/en/health/health-issues/a-z/2019-coronavirus/>)
- .2 Province of Ontario
  - .1 Occupational Health and Safety Act, R.S.O. 1990 Updated 2005
  - .2 Construction site health and safety during COVID-19, Ontario government website (<https://www.ontario.ca/page/construction-site-health-and-safety-during-covid-19>)
  - .3 Coronavirus disease (COVID-19) in Ontario, Ontario Government website (<https://covid-19.ontario.ca>)
- .3 CSA Group (CSA)
  - .1 CSA Z462 Workplace Electrical Safety Standard

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Submit to Departmental Representative, the site-specific prevention program (SSPP), at least ten days prior to the start of Work. An updated version can be requested by the Departmental Representatives to include the up-to-date Contractor's protocols for COVID-19.
- .3 Departmental Representative will review Contractor's SSPP and provide comments to Contractor within ten days after receipt of the document. Revise plan as appropriate and resubmit to Departmental Representative within five days after receipt of comments from Departmental Representative. Departmental Representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental Representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.

- .4 Departmental Representative's review of Contractor's site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor's overall responsibility for construction Health and Safety during the work.
- .5 Submit copies of Contractor's authorized representative's construction site health and safety inspection reports to Departmental Representative, at least once a week.
- .6 Submit to Departmental Representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit to Departmental Representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
  - .1 The investigation report shall contain at least the following:
    - .1 Date, time and place of accident.
    - .2 Name of sub-contractor involved in the accident.
    - .3 Number of persons involved and condition of wounded.
    - .4 Witness identification.
    - .5 Detailed description of tasks performed at the time of the accident.
    - .6 Equipment being used to accomplish the tasks performed at the time of the accident.
    - .7 Corrective measures taken immediately after the accident.
    - .8 Causes of the accident.
    - .9 Preventive measures that have been put in place to prevent a similar accident.
- .8 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental Representative.
- .9 Submit to Departmental Representative an on-site Emergency Response Plan at the same time as the prevention program.
- .10 Submit to Departmental Representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
  - .1 First aid in the workplace and cardiopulmonary resuscitation.
  - .2 Work likely to release asbestos dust (mandatory for all work where asbestos is present).
  - .3 Work in confined spaces (mandatory for all work in confined spaces).
  - .4 Lockout-tagout procedures (mandatory for all work requiring lockout).
  - .5 Safely operating forklift trucks (mandatory for all forklift usage).
  - .6 Safely operating elevating work platforms (mandatory for the use of all elevating platforms).
  - .7 Any other requirement of Regulations or the safety program.

- .11 In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
- .12 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental Representative a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must always be available on site.

#### 1.4 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNESST (*Commission des normes, de l'équité, de la santé et de la sécurité du travail*) before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental Representative.
- .2 At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental Representative.
- .3 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening, he provides to the CNESST.
  - .1 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

#### 1.5 HAZARD ASSESSMENT

- .1 The Contractor must perform construction site specific safety hazard assessment related to project.

#### 1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- .2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental Representative no later than five days after the committee meeting.

#### 1.7 REGULATORY REQUIREMENTS

- .1 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.

- .2 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .3 Comply with specified standards and regulations to ensure safe operations during the Covid-19 pandemic.
- .4 Always use the most recent version of the standards specified in the Code de sécurité pour les travaux de construction (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that Code.

## 1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

## 1.9 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).
- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental Representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

## 1.10 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site. It shall
- .2 The safety program must include at least the following:
  - .1 Company safety and health policy.
  - .2 Description of the stages of the work.
  - .3 Total costs, schedule and projected workforce curves.
  - .4 Flow chart of safety and health responsibilities.
  - .5 Physical and material layout of the construction site.
  - .6 Risk assessment for each stage of the work, including preventive measures and the procedures for applying them.



- .7 Identification of the preventive measures relative to the specific risks inherent to the worksite.
- .8 Identification of the preventive measures relative to COVID-19 pandemic risks inherent to the worksite.
- .9 Identification of preventive measures for health and safety of employees and / or public worksite.
- .10 Training requirements.
- .11 Procedures in case of accident/injury.
- .12 Written commitment from all parties to comply with the safety program.
- .13 Construction site inspection checklist based on the preventive measures.
- .14 Emergency response plan which shall contain at least the following:
  - .1 Construction site evacuation procedures.
  - .2 Identification of resources (police, firefighters, ambulance services, etc.).
  - .3 Identification of persons in charge of the construction site.
  - .4 Identification of the first-aid attendants.
  - .5 Communication organizational chart (including the person responsible for the site and the Departmental Representative).
  - .6 Training required for those responsible for applying the plan.
  - .7 Any other information necessary considering the characteristics of the site.
- .15 If there's a specific evacuation procedure of the site, it will be provided to the Contractor by the Departmental Representative; then the Contractor will have to insert this procedure to his emergency response plan and transmit it to the Departmental Representative.
- .16 Departmental Representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .17 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental Representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental Representative.
- .18 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .19 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.

- .20 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental Representative on demand.
- .21 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental Representative on demand.
- .22 The Departmental Representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .23 The Departmental Representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

#### 1.11 COVID-19 RESTRICTIONS

- .1 The following items shall be incorporated to the SSPP:
  - .1 Communication and Awareness – signage reflecting the requirements and maintenance of health and safety protocols and updates as they occur
  - .2 Recommended practices for reducing the risk of transmission
  - .3 Posters for hand hygiene/hand washing/protection of others
  - .4 Self-Screening Protocols
  - .5 Fit for Duty/Worker Prescreening Protocols
  - .6 IMPORTANT: Fit for Duty includes “YOU or Anyone in your Household”
  - .7 Social/Personal Distancing Protocols
  - .8 Personal Hygiene Stations (hand wash stations/hand sanitization stations)
  - .9 Enhanced Cleaning Protocols/Worksite Cleaning Guidelines
  - .10 Reporting processes and procedures to follow if feeling ill while at the job site
  - .11 PPE Requirements for Workers
  - .12 Prevention Measures to be taken by workers
  - .13 Protocols on management of a reported case of COVID-19 at the job site
  - .14 Access to/from construction site
  - .15 Limiting and removing internal touch areas
  - .16 Compartmentalization
  - .17 Site Operation Procedures
  - .18 Daily Audit Protocols
- .2 General guideline for communication during COVID-19 pandemic:

- .1 Recognize that all employees and Contractors may currently be dealing with increased uncertainty, worry, anxiety and stress as a result of the COVID-19 pandemic.
  - .2 Ensure that all communications are courteous and respectful.
  - .3 Treat all Contractors in a respectful, open and transparent manner.
  - .4 Departmental Representatives and Contracting Authorities should continue to maintain open lines of communication regarding all contracting issues.
  - .5 Since employees may be working offline, Departmental Representatives and Contracting Authorities should communicate by telephone if an issue requires urgent attention.
- .3 Travel for Work and Site Visits
- .1 If it is determined that an employee is required to travel for work during the COVID-19 pandemic, including site visits, approval must be obtained by the appropriate authority designated for the region (i.e. Regional Director). Additionally, the employee must be aware of the restrictions of the Provincial regulator concerning public health emergencies declared within the jurisdiction or any specific provincial jurisdictions.
  - .2 As a physical distancing measure, the number of PSPC employees in attendance at one time to conduct / observe site reviews required for quality and quantity control should be restricted. To minimize the number of PSPC attendees, site reviews required for quality and quantity control should be conducted by designated individuals (consultant, for example) who can effectively determine if the work meets the necessary requirements of quality and quantity; certification requirements must continue to rely on those with delegated authority. It is not recommended to have any client representatives or any other persons that are not absolutely required for the purpose of the inspection. The use of technology is encouraged. For those persons on site, the use of photos or video streaming, to allow for inclusion of other members of the team, are suggested alternatives.
  - .3 Prior to any visit, PSPC employees shall ensure they are in good health and should carry out any self-assessment deemed necessary for the site's location to reveal signs and symptoms. Results of this self-assessment (absent any confidential medical information) should be provided to the PSPC supervisor or manager prior to travel.
  - .4 For added safety, the following guidelines should be considered:
    - .1 Take a personal vehicle instead of a rental vehicle
    - .2 If multiple people have to travel, take separate vehicles so not to be in close quarters
    - .3 Carry either wipes, sanitizer or appropriate cleaning solution to be able to clean hands and surfaces before and after touching
    - .4 Employees' travel shall be tracked and monitored by the PSPC staff manager.
    - .5 Manager should be aware of travel itinerary and employee should make regular check-ins consistent with the policy on working alone.

- .6 Employee should carry their PSPC employee ID, and Public Service Health Care card and be aware of phone numbers for provincial health authorities, public safety, HRG, etc.
- .7 Employees should use their Government of Canada Travel Card for greater/better insurance coverage.
- .4 Personal Protective Equipment (PPE) & Mitigation Techniques
  - .1 Typical PPE (e.g. boots, vest, safety glasses) must be worn at all times on the job site, without exception. In light of COVID-19 additional PPE may be required, such as, bio-hazard suits, latex / vinyl gloves, masks, goggles, and face shields, if appropriate to the job site. Any PPE required as per current COVID-19 protocols should be used as recommended and with the appropriate level of training to ensure its proper use.

### 1.12 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed. Without limiting his prevention program to these, the Contractor shall also include these elements in his program.
  - .1 At the worksite there is the presence of the following:
    - .1 Trees and landscaping to preserve and protect.
    - .2 The cramped site and the worksite machinery.
    - .3 Rust, paint and dust particles;
    - .4 Body of water close by.
    - .5 Navigation corridor.
    - .6 Vehicular traffic.

### 1.13 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental Representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

### 1.14 SAFETY OFFICER

- .1 If the construction site meets the requirements of article 2.5.3 of the Code de la sécurité pour les travaux de construction (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications :
  - .1 Have a safety officer certificate issued by the CNESST since at least three years;

- .2 Have site-related working experience specific to the activities associated with the present project;
  - .3 Have working knowledge of occupational health and safety regulations in the workplace;
  - .4 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;
  - .5 Be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
  - .6 Be on construction site at all times during execution of work;
  - .7 Inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.
  - .8 Keep a daily log of actions taken and submitting a copy to Departmental Representative each week.
- .2 The safety officer's certificate shall be submitted to the Departmental Representative before the start of the work.
  - .3 When the hiring of a safety officer is not required or if this person is hired by the Departmental Representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental Representative before the start of work.

#### 1.15 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental Representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
  - .1 Notice of construction site opening.
  - .2 Identification of Principal Contractor.
  - .3 Company OSH policy.
  - .4 Site-specific prevention program.
  - .5 Emergency plan.
  - .6 Minutes of worksite committee meetings.
  - .7 Names of worksite committee representatives.
  - .8 Names of the first-aid attendants.
  - .9 Action reports and correction notices issued by the CNESST.

**1.16 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES**

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental Representative.
- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental Representative or his agent.
- .3 Submit to Departmental Representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental Representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental Representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

**1.17 PREVENTION OF VIOLENCE**

- .1 Health and safety management of Public Works and Government Services Canada construction sites include the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental Representative.

**1.18 BLASTING**

- .1 Blasting or other use of explosives is not permitted.

**1.19 POWDER ACTUATED DEVICE**

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
- .2 Any person using an explosive actuated tool shall hold a training certificate and meet all requirements of Section 7 of the Code de la sécurité pour les travaux de construction (S- 2.1, r. 4). (Safety code for the construction industry).
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

**1.20 USE OF PUBLIC ROADS**

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

**1.21 LOCKOUT-TAGOUT**

- .1 For all work on electrically or otherwise energized equipment, the Contractor shall draw up and implement a general lockout-tagout procedure and submit it to the Departmental Representative.
- .2 Supervisors and all workers concerned by work requiring lockout-tagout must have received training on lockout-tagout procedures by a recognized organization; Contractor shall submit training certificates to the Departmental Representative.
- .3 Before starting the lockout-tagout procedure of a piece of equipment on an occupied site, Contractor must coordinate his work with the representative of the site if the interruption of the power sources can have an impact on the operations of the site or on its occupants.
- .4 Contractor must designate a qualified person as responsible for the lockout-tagout and must make sure that that person prepares a lockout-tagout data sheet for each piece of equipment involved. The lockout-tagout data sheet must be submitted to the Departmental Representative at least 48 hours before the beginning of the work. The Departmental Representative will review the data sheet with the representative of the site if the work takes place in an existing building. The data sheets for lockout-tagout must contain at least the following information :
  - .1 description of work to carry out;
  - .2 identification, description and location of the circuit and/or piece of equipment to lockout-tagout;
  - .3 identification of energy sources that feeds the piece of equipment;
  - .4 identification of each cutout point;
  - .5 sequence of lockout-tagout and the release of residual energy as well as the sequence of unlocking;
  - .6 list of material needed for the lockout-tagout;
  - .7 method of verification of zero energy implementation;
  - .8 name and signature of the person who prepared the data sheet.
- .5 When required by the Departmental Representative, Contractor must record all this information on the site's representative form.
- .6 At the time of lockout-tagout, the person responsible must date the data sheet and ensure that each worker involved in the work on the circuit/piece of equipment to lockout-tagout puts his name on the data sheet and signs it.

**1.22 ELECTRICAL WORK**

- .1 Contractor shall ensure that all electrical work is executed by qualified employees in accordance with the provincial regulation respecting vocational training and qualification.
- .2 Contractor shall respect all requirements of standard CSA Z462 Workplace Electrical Safety Standard.
- .3 No repairs or alterations shall be carried out on any live equipment except where complete disconnection of the equipment is not feasible.
- .4 Contractor shall respect all requirements prescribed in paragraph "Lockout - Tagout" in this section.
- .5 Contractor shall advise in writing the Departmental Representative of all the work that cannot be done with de-energized equipment and obtain his authorization. Contractor shall demonstrate to the Departmental Representative that it is impossible to do the work with de-energized equipment and provide all the information necessary to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) before the beginning of the work, excluding for the exceptions indicated in standard CSA Z462 - Workplace electrical safety.
- .6 The energized electrical work permit on must contain at least the following elements:
  - .1 Description of the circuit and equipment and its location.
  - .2 Justification for having to do the work in an energized condition.
  - .3 Description of safe work practices to apply.
  - .4 Results of the shock hazard analysis.
  - .5 Limit of the protective perimeter against electric shock.
  - .6 Results of the arc flash hazard analysis.
  - .7 Description of the arc flash protection boundary.
  - .8 Description of the personal protective equipment required.
  - .9 Description of the means to limit access to unqualified persons.
  - .10 Proof that an information session has been carried out.
  - .11 Approval signature of the energized electrical work (by a person in authority or by the owner).
- .7 If for the operational requirements of the occupants of the site the representative of the site requires that the Contractor performs work in an energized condition, the Contractor shall obtain all the information required to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) and have it signed by the representative of the site assigned by the Departmental Representative before the beginning of the work.

**1.23 EXPOSURE TO SILICA**

- .1 For any interior or exterior work generating silica, the Contractor must respect the following requirements, in addition to those in the *Code de sécurité pour les travaux de construction* S-2.1, r.4 (Safety code for the construction industry).



- .1 Work in wet environment or use tools with the inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high-efficiency filters not to propagate dust in the environment.
- .2 Clean surfaces and tools with water, never with compressed air.
- .3 Sand and pickle surfaces by using an abrasive containing less than 1% of silica (also called amorphous silica).
- .4 Install shields or other containment device to prevent silica dust from migrating toward other workers or the public.
- .5 Wear individual respiratory and ocular protection equipment during all the operations that could generate silica dust in accordance with the requirements of the Code de sécurité pour les travaux de construction, S-2.1, r.4 (Safety code for the construction industry).
- .6 Wear coveralls to prevent contamination outside the construction site.
- .7 Do not eat, drink, or smoke in a dusty environment.
- .8 Wash the hands and the face before drinking, eating or smoking.

#### 1.24 RESPIRATORY PROTECTION

- .1 Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 *Selection, use and care of respirators*. Submit the Certificates of the fit testings to the Departmental Representative on demand.

#### 1.25 FALL PROTECTION

- .1 Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
- .2 Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
- .3 The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
- .4 Define the limits of the danger zone around each elevating platform.
- .5 All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
- .6 Everyone who works within 2 m from a fall hazard of 3 m or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.
- .7 Despite the requirements of the regulation, the Departmental Representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than 3 m.

**1.26 SCAFFOLDINGS**

- .1 In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who uses scaffoldings must respect the following requirements:
  - .1 Foundation
    - .1 Scaffoldings shall be installed on a solid foundation so that it does not slip or rock.
    - .2 Contractors wishing to install scaffoldings on a roof, overhang, canopy or awning shall submit their calculations and loads, as well as plans signed and sealed by an engineer to the Departmental Representative and obtain his authorization before beginning installation.
    - .3 For all scaffoldings with span between two supports greater than 3 m, Contractors shall submit plans signed and sealed by an engineer to the Departmental Representative.
  - .2 Assembly, bracing and mooring
    - .1 All scaffoldings shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
    - .2 Where a situation requires the removal of part of the scaffoldings (e.g., crosspieces), the Contractor shall submit to the Departmental Representative an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
    - .3 For scaffoldings where the span between two supports is greater than 3 m, the Contractor shall provide the Departmental Representative an assembly plan signed and sealed by an engineer.
  - .3 Protection against falls during assembly
    - .1 Workers exposed to the risk of falling more than 3 m shall be protected against falls at all times during assembly.
  - .4 Platforms
    - .1 Scaffolding platforms shall be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
    - .2 If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
    - .3 Scaffoldings of four sections (or 6 m) high or more shall have a full platform covering the entire surface between the putlogs every 3 m high or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.
  - .5 Guardrails
    - .1 A guardrail shall be installed on every landing.
    - .2 Cross braces shall not be considered as guardrails.

- .3 If the platforms are not covering the entire surface between the putlogs, the guardrail must be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
- .4 Where scaffoldings has four sections (or 6 m) high or more and full platforms are required, the guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.
- .6 Access
  - .1 The Contractor shall ensure that access to the scaffoldings does not compromise worker safety.
  - .2 Where the platforms of the scaffoldings are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.
  - .3 Notwithstanding the provisions of the Code de sécurité pour les travaux de construction (Safety code for the construction industry), stairs shall be installed on all scaffoldings that have six or more rows of uprights or is six sections (or 9 m) high or higher.
- .7 Protection of the public and occupants
  - .1 When scaffoldings are installed in a zone accessible to the public, the Contractor shall take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffolding.
  - .2 Contractor must install covered walkways, nets or other similar devices to protect workers, the public and the occupants against falling objects. The means of protection must be approved by the Departmental Representative.
- .8 Engineering plans
  - .1 In addition to those required by the Code de sécurité pour les travaux de construction (Safety code for the construction industry), the Departmental Representative reserves the right to require engineering plans for other types or configurations of scaffoldings.
  - .2 A plan signed and sealed by an engineer is required for all scaffoldings that will be covered with a canvas, a tarpaulin or any other material that has wind resistance.
  - .3 A plan signed and sealed by an engineer is required for the temporary bridge.
  - .4 A certificate of conformity signed by an engineer is required in all cases where an engineering plan is required and this, before anybody uses the facility. A copy of these documents must always be available on the construction site.

## 1.27 CONFINED SPACES

- .1 Not used.

**1.28 ASBESTOS EXPOSURE**

- .1 It is not anticipated that the work covered by the present specifications involves the manipulation of materials containing asbestos; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of containing asbestos, the Contractor must immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain asbestos, the Contractor shall comply with the following requirements.
  - .1 Prior to starting any work likely to emit asbestos dust, the Contractor must:
    - .1 Provide a written procedure for the work, identifying the risk level of the work (low, moderate, high), as defined in section 3.23 of the Code de sécurité pour les travaux de construction S 2.1, r 4, (Safety code for the construction industry). This procedure must take into account all the requirements of that section 3.23.
    - .2 Submit certificates that demonstrate that all workers involved in the work have received training on asbestos hazards and on the procedure required in the preceding paragraph.
    - .3 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

**1.29 FUNGAL CONTAMINATION**

- .1 It is not anticipated that the work covered by the present specifications involves the manipulation of materials contaminated by mould; however, if the Contractor or the Departmental Representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor must immediately stop the work and advise the Departmental Representative. If more investigation demonstrates that the materials do contain mould, the Contractor shall comply with the following requirements.
- .2 Prior to starting any work where workers are likely to be in contact with materials contaminated by mould, the Contractor must:
  - .1 Provide a written procedure for the work which respects all the requirements of the Code de sécurité pour les travaux de construction S-2.1, r 4, (Safety code for the construction industry), as well as the requirements indicated in the document "Mould Guidelines for the Canadian Construction Industry" published by the Canadian Construction Association (<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>).
  - .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

**1.30 SANDBLASTING**

- .1 Prior to starting any sandblasting work, the Contractor must:
  - .1 Provide a written procedure of the work that meets the requirements of section 3.20. of the Code de sécurité pour les travaux de construction, S-2.1, r.4 (Safety code for the Construction Industry).
  - .2 Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.



- .3 All sanding and sandblasting work shall be done by using an abrasive containing less than 1 % of silica.

### 1.31 LEAD-BASE PAINT REMOVAL

- .1 Existing paint system on this bridge have been tested previously and no lead was detected. The full results are shown in Project R.048235.002 - 01 14 25 Designated substance report, found in Appendix B.

### 1.32 EXCAVATION WORK

- .1 In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who performs the digging of trenches or excavations must respect the following requirements:
  - .1 Fill out the following form and submit it to the Departmental Representative before beginning to excavation work.
  - .2 Submit to the Departmental Representative, as appropriate, the following documents:
    - .1 Plans and specifications, signed and sealed by an engineer, of the shoring needed to be installed for the excavation work.
    - .2 Engineer's advice specifying the wall angles of the trench or excavation.

## Excavation guidelines

N° \_\_\_\_\_ of \_\_\_\_\_

This directive is provided as an example by the Commission de la santé et de la sécurité du travail (CSST). It contains the main instructions that the employer should give to the person responsible for the work on the site and to the operator of the earth-moving machine.

Company name	
Project name	Project no.
Address of the site	Construction start date

**Field survey**

Chaining or axes : from \_\_\_\_\_ to \_\_\_\_\_ Attached plan ☐ Plan no. : \_\_\_\_\_

**Working method to use**

While making sure the excavation walls do not pose the risk of landslide

☐ dig and shore according to the plans and specifications of the engineer ;  
☐ dig and shore using a trench box ;  
☐ dig without shoring as long as one of the following conditions is respected :
 

- ☐ rock is sound;
- ☐ no worker goes down in the trench or excavation;
- ☐ the walls are dug according to the engineer's advice.

**Dimensions of excavation (Dig according to the following profile.)**


	Minimum	Maximum
H Depth		
Wb Width at bottom		
Width at top		

**Safety measures**

Deposit the materials at a distance of at least 1.2 metre (4 feet) from top of walls.  
Do not allowed any vehicle to come closer than 3 metres (10 feet) from top of walls.

☐ Respect the engineer's plan concerning work in the proximity of an existing facility.  
☐ Follow the location plan to locate the underground infrastructures.  
☐ Install signaling devices prescribed in the traffic plan (barriers, visual references, etc.).  
☐ Assign a flag person or more to control the flow of traffic.  
☐ Respect the procedure prescribes for work near power lines.  
☐ Provide protection devices for the workers, such as concrete crash barriers.

Name	Occupation	
Signature	Date	Telephone no.

Directive submitted

☐ to the responsible of the work on the site
 ☐ to the operator of the earth-moving machine

DCT000062 (2003-01)

**1.33 LIFTING LOADS WITH CRANE OR BOOM TRUCK**

- .1 Unless specified otherwise, the Contractor must prepare a hoisting plan and submit it to the Departmental Representative for all lifting operations done with a crane or a boom truck at least five days before these lifting operations begin. The hoisting plan must contain at a minimum the information listed at the end of this article.
- .2 The hoisting plan must be signed and sealed by an engineer for the following lifting operations:
  - .1 Lifting elements of existing work, to demolish or recover.
  - .2 Lifting mechanical/electrical equipment.
  - .3 Lifting large dimensions or very heavy loads.
  - .4 All other lifting operation, in accordance with the requirements of the Departmental Representative.
- .3 In addition to the above requirements, the Contractor must plan the hoisting operations in a way as to avoid that the loads pass over the occupied zones on the site. When there is no alternative, the hoisting plan must absolutely be signed and sealed by an engineer and must guarantee the security of the occupants in that zone; the plan must also be approved by the Departmental Representative. The Departmental Representative can, if he deems necessary, require that the work be done at night or on weekends.
- .4 Upon the beginning of the work on the construction site, the Contractor must submit the list of the hoisting plans anticipated for the whole project to the Departmental Representative. That list shall be updated as needed if changes occur during the work.
- .5 In addition to the mechanical service inspection certificate, the annual inspection certificate and the crane logbook must be aboard all cranes and boom truck cabs.
- .6 The entire lifting area shall be marked off to prevent the entry of non-authorized persons.
- .7 The Contractor shall carefully inspect all of the slings and lifting accessories and make sure that those in poor condition are destroyed and scrapped.
- .8 Compressed-gas cylinders shall be lifted with a basket specially designed for this purpose.
- .9 Minimum content of hoisting plan:
  - .1 Sketch indicating at a minimum, the location of the crane, the surrounding facilities, the zone covered by the hoisting operations, the pedestrian's pathways and vehicular routes, the security perimeter, etc.
  - .2 Weight of loads.
  - .3 Dimensions of loads.
  - .4 List of hoisting devices and weight of each.
  - .5 Total weight lifted.
  - .6 Maximum height of obstacles to clear.
  - .7 Height of loads lifting relative to the surface of the roof (in the case of loads to be placed on roofs).
  - .8 Use of guide cables.

- .9 Type of crane used.
- .10 Crane capacity.
- .11 Boom length.
- .12 Boom angle.
- .13 Crane's radius of action.
- .14 Deployment of stabilizers.
- .15 Percentage usage of the crane's capacity.
- .16 Verification confirmation of hoisting equipment.
- .17 Identification of the crane operator and the person responsible for the hoisting operations with date and signatures.

### 1.34 HOT WORK

- .1 Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.
- .2 Before the beginning of each shift of work and for each sector, the Contractor must obtain a "Hot Work Permit" emitted by the person responsible for the site.
- .3 A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
- .4 The Contractor must appoint an individual to do continuous monitoring of the fire risks for a period of one hour after the end of the shift of hot work. This individual shall sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
- .5 When the hot work is done in areas where there is combustible materials or where the walls, ceilings or floors are made of or covered with combustible materials, a final inspection of the work area must be scheduled four hours after the work has finished. Unless specified otherwise by the Departmental Representative, the Contractor must assign a person to carry out this monitoring.
- .6 Welding and cutting
  - .1 In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:
    - .1 Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction*, S-2.1, r.4 (Safety code for the construction industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
    - .2 Air extraction system with filters must be used for all welding and cutting work performed inside.
    - .3 Stop all activities producing flammable or combustible gas, vapours or dust in the vicinity of the welding or cutting work.
    - .4 Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.



- .5 Store all oxygen cylinders more than 6 m from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in the article 3.13.4 of the Code de sécurité pour les travaux de construction, S-2, r. 6 (Safety code for the construction industry).
- .6 Store the cylinders far from all heat sources.
- .7 Not to store the cylinders close to the staircases, exits, corridors and elevators.
- .8 Do not put acetylene in contact with metals such as silver, mercury, copper and alloys of brass having more than 65 % copper, to avoid the risk of an explosive reaction.
- .9 Check that welding equipment with electric arc has the necessary tension and are grounded.
- .10 Ensure that the conducting wires of the electric welding equipment are not damaged.
- .11 Place the welding equipment on a flat ground away from the bad weather.
- .12 Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
- .13 Move away or protect the combustible materials which are closer than 15 m from the welding work.
- .14 Prohibition to weld or cut any closed container.
- .15 Do not perform any cutting, welding or work with a naked flame on a container, a tank, a pipe or other container containing a flammable or explosive substance unless:
  - .1 They have been cleaned and air samples indicating that work can be done without danger has been taken.
  - .2 Provisions to ensure the safety of the workers have been made.

### 1.35 ROOFING WORK

- .1 Not used.

### 1.36 STEEL STRUCTURE ERECTION OR DISMANTLING WORK

- .1 Dismantling work is required prior to the reinforcements addition.

### 1.37 WORK NEAR BODIES OF WATER

- .1 For all work done near a body of water (such as work above water, work on a wharf, work on the edge of a watercourse, etc.), the Contractor must respect the requirement of the following paragraphs in addition to those in article 2.10.13 du *Code de sécurité pour les travaux de construction* (Safety code for the Construction Industry).
- .2 The Contractor must plan his work in a way to implement safety measures to prevent any worker from falling in the water. The use of these measures should be favoured over the wearing of a life jacket.

- .3 If no other safety measure can protect the workers, ensure that they all wear a life jacket that is able to maintain their head out of the water and keep them afloat without any effort of the arms.
- .4 Submit the following documents to the Departmental Representative before the beginning of the work:
  - .1 Description of the body of water.
  - .2 Description of the work done next to this body of water.
  - .3 Plan of transportation on water adapted to the work and to the characteristics of the body of water.
  - .4 Rescue plan adapted to the work and to the characteristics of the body of water.
- .5 Each of the document listed above must contain at a minimum the information required in section 11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
- .6 If there is the possibility that all or part of the work can be done during the winter, the safety measures included in the documents required above must be adapted accordingly.
- .7 The Contractor must submit to the Departmental Representative the certificate of training required in article 11.2 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry) for the following individuals:
  - .1 The person assigned to prepare the documents required in the preceding paragraph.
  - .2 Each person responsible for the transport or rescue operations.
- .8 If the rescue plan stipulates the use of a vessel, the Contractor must submit to Departmental Representative the competency card or certificate for the individuals in the rescue team for his work, issued by Transport Canada.
- .9 The Contractor must include in his weekly inspection checklist the devices required in the articles 11.4 and 11.5 du *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry).
- .10 Ensure that a rescue vessel moored and in the water is available at each place where a worker may fall in the water. However, a vessel may serve more than one workplace on the same construction site provided the distance between any of these workplaces and the vessel is less than 30 m.
- .11 Where the construction site is a wharf, a pier, a quay or any similar structure, a ladder with at least 2 rungs below the surface of the water shall be installed on the front of the structure every 60 m.

### 1.38 INTERIOR USE OF INTERNAL COMBUSTION ENGINES

- .1 Not used.

### 1.39 TEMPORARY HEATING

- .1 In addition to respecting section 3.11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.

- .2 A portable fire extinguisher must be available at all times near the heating units, no matter what type of heating is used.
- .3 The heating units must always be used in accordance with the manufacturer's specifications.
- .4 If applicable, the canvas or tarpaulins used next to the heating units must be solidly fixed so as not to be projected on the heaters, on the pipes connected to the heaters or on any other heat source.
- .5 The gas cylinders must be installed in a way that they are protected from vehicle and other equipment traffic.
- .6 For the use of heating units other than electric, the Contractor must install a carbon monoxide detector in the work area, next to the heating units and/or the workers, throughout the course of the heating period. The Contractor must immediately apply the corrective measures required to the heating units if the detector's alarm goes off.
- .7 The Contractor must ensure a minimum surveillance of the heating units outside the hours of work (nights and weekends). He must submit a surveillance plan to the Departmental Representative before the use of the heating units.

#### 1.40 WORK NEAR OVERHEAD POWER LINES

- .1 When there is an overhead power line in the work zone and that the Contractor chooses to apply paragraph b) of article 5.2.2 of the *Code de sécurité pour les travaux de construction* (2.1, r.4) (Safety code for the Construction Industry), a copy of the agreement with the electrical power company and a copy of the work process, required in the article 5.2.2 b), must be submitted to the Departmental Representative before the beginning of the work in relation to these documents.

#### 1.41 DIVING OPERATIONS

- .1 Not used

**1.42 HEALTH AND SAFETY SUBORDINATION AGREEMENT****Project:** \_\_\_\_\_ **Address:** \_\_\_\_\_**EXTERNAL CONTRACTOR**

I hereby agree to submit to the authority of (name of the Principal Contractor's business) \_\_\_\_\_, which is the Principal Contractor for the project indicated above during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to:

- inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times;
- apply the prevention program that is specific to the activities that we carry out under this project;
- inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and
- follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.

Name of representative: \_\_\_\_\_

Name of business: \_\_\_\_\_

Description of work to be done on the construction site: \_\_\_\_\_

Approximate dates of work (start-end): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**PRINCIPAL CONTRACTOR**

I hereby agree to allow the business (name of external contractor) \_\_\_\_\_ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PSPC's Departmental representative of this and to provide documentary evidence of my actions or dealings with the Contractor.

Name of representative: \_\_\_\_\_

Name of the Principal Contractor's business: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Submit a completed and signed copy to PSPC's Departmental representative

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 31 19 - Project Meetings
- .2 Section 01 33 00 – Submittal Procedures
- .3 Section 01 35 29.06 - Health and Safety Requirements
- .4 Section 01 74 00 – Cleaning

**1.2 DEFINITIONS**

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.
- .3 Barge: a long flat-bottomed boat for carrying freight on canals and rivers, either under its own power or towed by another.
- .4 Erosion: deterioration, displacement, or transportation of land surface by wind or water, intensified by land clearing practices related to construction work.
- .5 Sediment: particulate matter transported and deposited as a layer of solid particles within a body of water.
- .6 Shroud: a protective casing or cover.

**1.3 REFERENCES STANDARDS**

- .1 Refer to laws, by laws, ordinances, rules, regulations and orders or authority having jurisdictions, and other legally enforceable requirements applicable to Work at that area or become in force during Work performance.
- .2 Canada Water Act (R.S.C., 1985, c. C-11)
- .3 Comprehensive Water Resource Management
- .4 Canada Labour Code, Part 2, Canada Occupational Health and Safety Regulations
- .5 Canadian Centre for Occupational Health and Safety (CCOHS), OSH Answers Fact Sheets, Working on or near water
- .6 Fisheries Act (R.S.C., 1985, c. F-14)
- .7 Fisheries and Oceans Canada (DFO).
- .8 Species at Risk Act (S.C. 2002, c. 29)
- .9 Transportation of Dangerous Goods Act (TDGA), 1992 (S.C. 1992, c. 34)
- .10 Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22)

- .11 Canadian Environmental Protection Act, 1999 (CEPA 1999)
- .12 Canada National Parks Act (S.C. 2000, c. 32)
- .13 U.S. Environmental Protection Agency (EPA)/Office of Water
  - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
  - .2 EPA General Construction permit (GCP) 2012.

#### 1.4 ACTION AND INFORMATIONS SUBMITTALS

- .1 Submit in accordance with section 01 33 00 – *Submittal Procedures*.
- .2 Technical data :
  - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - *Health and Safety Requirements*.
- .3 Prior to the commencement of work or materials delivery, submit an environmental protection plan for review and approval by Departmental Representative.
- .4 The environmental protection plan must include a complete overview of the potential or known environmental issues to be solve during construction.
- .5 All the actions in the environmental protection plan must be presented at a level of details according to the environmental problems and to the complete execution of work.
- .6 The environmental protection plan must include:
  - .1 Names of worksite supervisors.
  - .2 Names and qualifications of the persons who are responsible for the manifests pertaining to the hazardous waste materials.
  - .3 Names and qualifications of the persons who are responsible for worksite staff training.
  - .4 Description of the training program of the worksite staff assigned to environmental protection.
  - .5 Complete list of all the equipment including inspections certificates.
  - .6 Erosion and sediment control plan with all the measures to be implemented at work site including site supervision and production of reports for monitoring and reporting conditions in compliance with the federal, provincial and municipal laws.
  - .7 Drawings must indicate locations of proposed temporary excavations or roads embankments, stream crossings, materials storage areas, structures and sanitary facilities, including methods to control runoff waters and to contain materials on work site.

- .8 Worksite drawings showing proposed activity in each working zone and identifying restricted and prohibited working areas.
    - .1 Worksite drawings must include all the measures fixing the restricted and prohibited working areas and all of the protection method used to all the elements which need to be protected in the authorised working areas.
  - .9 Spill control plan must include procedures, instructions, and reports to be produced in case of controlled substances spilling.
  - .10 Non-hazardous and hazardous solid waste disposal plan which include all the disposal methods and sites for excavation waste.
  - .11 Air pollution control plan specifying the actions must be taken to control dust, waste materials and debris in the work area.
  - .12 Contaminant prevention plan specifying potentially hazardous substances to be used on worksite; intended actions to prevent introduction of such materials into air, water, or ground; and detailing hazardous substances storage and handling in compliance with federal, provincial, and municipal laws and regulations.
  - .13 Waste water management plan identifying methods and procedures for discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
  - .14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
  - .15 Pesticide treatment plan to be included and updated, as required.
- .7 Monitoring environmental surveillance schedule will be transmitted at contract award. Contractor shall fully cooperate to adopt the mitigations measures related to the environmental authorizations achieved.

#### 1.5 RESPONSIBILITY

- .1 Contractor shall make arrangements with and obtain permits from authorities having jurisdiction for the disposal of construction waste and debris.
- .2 Contractor shall provide copies of permits to Departmental Representative upon request.
- .3 Contractor shall pay, unless otherwise indicated in the Contract, any fees associated to obtain necessary permits and regulatory approvals before Work starts.
- .4 Contractor shall provide and maintain on-Site protection measures as Best Management Practices (BMPs) in accordance with EPA-833-R-06-004.
- .5 Contractor is responsible for the protection of human health, fish and wildlife habitats including species at risk.

- .6 Contractor is responsible for complying with amendments as they become effective.

#### **1.6 NOTICE OF NON-COMPLIANCE**

- .1 A written notice of non-compliance will be issued to the Contractor by the Departmental Representative whenever a non-compliance with a federal, provincial or municipal law, regulation or permit, or other plan for the protection of the environment implemented by the Contractor.
- .2 Upon receipt of a notice of non-compliance, the Contractor shall propose corrective measures to the Departmental Representative and shall implement them with the approval of the Departmental Representative.
  - .1 The Contractor must wait for the written approval of the Departmental Representative before proceeding with the implementation of the proposed measures.
- .3 Departmental Representative will stop work until satisfactory corrective action is taken.
- .4 No additional time and no adjustment will be granted for the work stoppage.

### **Part 2 PRODUCTS**

#### **2.1 NOT USED**

- .1 Not used.

### **Part 3 EXECUTION**

#### **3.1 INSPECTION**

- .1 Inspect temporary ESC measures on Site regularly during the course of construction and make all necessary repairs if any damage occurs.

#### **3.2 POLLUTION PREVENTION**

- .1 Ensure construction activities have no negative impact on water quality in accordance with Canada Water Act:
  - .1 Use measures such as barges or shrouding to trap and prevent blasting abrasives, protective coatings, rust and grease from entering the waterbody.
  - .2 Remove paint or protective coatings in a manner that prevents any paints, paint flakes, primers, blasting abrasives, rust, solvents, degreasers or other waste material from entering the waterbodies.
  - .3 Prevent concrete and other bridge materials from entering waterbodies. Use barges or shrouding to trap concrete, when Work involves structural repairs and reinforcement.
  - .4 Do not allow water containing suspended materials into waterways, sewer or drainage systems.



- .5 Contain paint flakes, abrasives, and other waste materials for safe disposal.
- .2 Emission Control:
  - .1 Control emissions from equipment and vehicles in accordance with local authorities' emission requirements.
  - .2 Use new or well-maintained equipment and machinery, preferably fitted with fully functional emission control systems, mufflers, exhaust system baffles and engine covers.
  - .3 Ensure that machinery is to arrive on-Site in a clean condition and is to be maintained free of fluid leaks.
- .3 Dust Control:
  - .1 Take the required steps to prevent dust nuisance resulting from Work operations within the right of way, over river or waterbody in accordance with EPP.
  - .2 Prevent debris and other extraneous materials from contaminating air beyond work area by providing the necessary control of dust and debris.
  - .3 Provide temporary enclosures to contain possible airborne contaminants.
  - .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4 Spill Control:
  - .1 Develop Site-specific spill response plan (SRP) that will contain and clean up any leaks or spills of hazardous materials before Work starts.
  - .2 Keep (SRP) at hand all times during the completion of the project, so that any leaks or spills that occur can be promptly contained and cleaned up.
  - .3 Maintain vehicles and equipment in good working condition to avoid leaks and spills of hazardous materials.
  - .4 Contact local Environmental Emergency immediately when a spill occurs.
    - .1 Ontario
      - .1 Ministry of the Environment Spills Action Centre at 800-268-6060.
    - .2 Quebec
      - .1 Environment Department, Ministère de l'environnement et de la Lutte contre les changements climatiques, phone: 1-866-694-454
  - .5 Wash, refuel and service machinery and store fuel and other materials for the machinery away from waterbody to prevent any deleterious substance from entering.
  - .6 Keep an emergency spill kit on site in case of fluid leaks or spills from machinery.

- .7 Store, mix and transfer paints and solvents on land and not on the bridge to prevent these materials from entering waterbodies in the event of a spill.
- .5 Noise Control:
  - .1 Keep construction noise level below restricted levels assigned to the Work area and in accordance with regulations and municipals by-laws.

### 3.3 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Keep waterways free of excavated fill, waste material and debris.
- .3 Do not skid logs or construction materials across waterways.

### 3.4 VEGETATION PROTECTION

- .1 Protect trees and plants on adjacent properties.
- .2 If any Species at Risk (SAR) have the potential to be present on Site, conduct a SAR Survey before any removal of vegetation.
- .3 Protect roots of trees to drip line during work. Avoid unnecessary traffic and storage of materials over root zones.
- .4 Wrap in burlap, trees and shrubs adjacent to construction zone within Site, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 meters.
- .5 If removal of select plants is required, keep this removal to a minimum and limit it to the right-of-way of the bridge.
- .6 Schedule vegetation removal and the management or removal of hazard trees or limbs within the Regional Timing Window of least risk for breeding birds and before the instream window, wherever possible.
- .7 Vegetate any disturbed areas by planting and seeding preferably with native trees, shrubs or grasses and cover such areas with mulch to prevent erosion and to help seeds germinate. If there is insufficient time remaining in the growing season, the site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
- .8 Maintain effective sediment and erosion control measures until re-vegetation of disturbed areas is achieved.

### 3.5 WILDLIFE HABITAT PROTECTION

- .1 Perform Work with minimal disturbance to habitat of protected migratory birds and Species at Risk as directed by Departmental Representative. Develop protection plan for migratory birds and species at risk if they are found on site.
- .2 Ensure the intakes of pumping hoses are equipped with an appropriate device, when extracting water from a waterbody, to avoid entraining and impinging fish.

- .1 Refer to Guidelines to determine the appropriate mesh size for intake screens, DFO (Freshwater Intake End-of-Pipe Fish Screen Guideline (1995).
- .2 Avoid using small streams as a source for water, unless it is the only water source to be used on-Site.

### 3.6 STREAM BANK STABILIZATION

- .1 Operate machinery on land (from outside of the water) or on the water (i.e., from a barge or vessel) in a manner that minimizes disturbance to the banks or bed of waterways.
- .2 Restore banks to original condition if any disturbance occurs.
- .3 Stabilize and replace damaged rock reinforcement at eroded areas due to construction activities around bridge structures, such as abutments and wing walls, to its original or better condition.
- .4 Provide digital photos as requested by Departmental Representative for approval

### 3.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove and dispose waste materials from Site at scheduled times as directed by the Departmental Representative.
- .2 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - *Waste Management and Disposal*.
- .3 Ensure that all works involving the use of concrete, cement, mortars, and other Portland cement or lime-containing construction materials will not deposit, directly or indirectly, sediments, debris, concrete, concrete fines, wash or contact water into or about any waterbody.
- .4 Concrete materials cast in-place shall remain inside sealed formed structures.
- .5 Do not dispose of waste or volatile materials into waterways, storm or sanitary sewers.
- .6 Prevent foreign materials including garbage, sand, debris, cleaning solvents or paint from falling or washing into river or through deck drains.
- .7 Use hand tools or machinery for emergency debris removal at any time of the year. Emergencies include situations where carrying out the project immediately is in the interest of preventing damage to property or the environment or is in the interest of public health or safety.
- .8 Handle the disposal of hazardous materials in accordance with Regional and Municipal regulations.
- .9 Stabilize any waste materials removed from the work Site to prevent them from entering the waterbody. This could include covering spoil piles with biodegradable mats or tarps or planting them with grass or shrubs.
- .10 Do not bury rubbish and waste materials on Site.
- .11 Do not burn waste materials on Site, unless approved by Departmental Representative.

**3.8 PREVENTION OF HAZARDOUS MATERIAL DURING WORK**

- .1 Lock up hazardous materials left on site outside worksite construction hours.
- .2 Use retention tanks (110% capacity) or impermeable fuel mats with a berm for all stationary equipment and machinery (generators, compressors, etc.) located on the shore. Inspect facilities during rainy periods to prevent overflowing.
- .3 Identify and use a temporary, isolated site storage for fuel, oil, other petroleum products or contaminants.
- .4 Do not store hazardous residual materials on-site and dispose of them off-site in accordance with applicable regulations.
- .5 Remove off-site all non-hazardous residual materials and provide enough containers to store household waste daily.
- .6 Establish an adequate management program to ensure the containment and disposal of debris such as scrap metal, used asphalt pavement and concrete debris. These rejects should be, as far as possible, isolated at source and recycled.
- .7 Establish debris and scrap disposal plan and ensure use of a local site duly authorized by the MELCC.

**3.9 CLEANING**

- .1 Cleaning site during work: clean in accordance with Section 01 74 00 – *Cleaning*
- .2 Clean and remove debris and sediment from drainage devices and dispose of the material that will prevent it from entering the waterbody.
- .3 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .4 Do not clean equipment in the watercourse or where the wash-water can enter the waterbody.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 05 12 33 – Structural Steel for Bridges

**1.2 INSPECTION**

- .1 Allow Departmental Representative access to the worksite. If part of work area is in preparation at a location outside of the worksite, allow access to such work area whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Worksite.
- .3 If Contractor covers or permits to be covered work that has been designated for special tests, inspections or approvals before such is made, uncover such work, have inspections or tests satisfactorily completed and make good such work.
- .4 Departmental Representative will order part of work to be examined if work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

**1.3 INDEPENDENT INSPECTION AGENCIES**

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform work in accordance with contract documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

**1.4 ACCESS TO WORK**

- .1 Allow inspection/testing agencies access to work, off site manufacturing and fabrication plants.
- .2 The Contractor shall ensure access to the inspection agencies designated by the Department Representative, including the labor and equipment.
- .3 Co-operate to provide reasonable facilities for such access.

**1.5 PROCEDURES**

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide enough space to store and cure test samples.

**1.6 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with contract documents.
- .2 Repair any other Contractor's work damaged by such removals or replacements.
- .3 If in opinion of Departmental Representative, it is not expedient to correct defective work or work not performed in accordance with contract documents, Owner will deduct from contract price difference in value between Work performed and that called for by contract documents, amount of which will be determined by Departmental Representative.

**1.7 REPORTS**

- .1 Submit four copies of inspection and test reports to Departmental Representative.

**1.8 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.

**1.9 MILL TESTS**

- .1 Submit mill test certificates as requested or required of specification Sections.

**Part 2 PRODUCTS****2.1 NOT USED**

- .1 Not Used.

**Part 3 EXECUTION****3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 GENERAL**

**1.1 RELATED REQUIREMENTS**

- .1 Section 01 14 00 – Work Restrictions

**1.2 INSTALLATION AND REMOVAL**

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

**1.3 WATER SUPPLY**

- .1 The Contractor must ensure his water supply continuously and provide all necessary measures for the insulation of pipes and heating depending on the temperature.
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

**1.4 TEMPORARY POWER AND LIGHT**

- .1 Provide and maintain the electrical connections required for the site.
- .2 Existing services required for work may be used by the Contractor. The Contractor is responsible for securing the electrical connection (underground or aerial) to the worksite area according to the rules of the art. See section 01 14 00 *Work Restrictions*.
- .3 Provide temporary lighting for the duration of the work and ensure the maintenance of the network.

**1.5 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on Site.

**Part 2 PRODUCTS**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 EXECUTION**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 01 35 43.10 – Environmental Procedures – Bridges

**1.2 REFERENCE STANDARDS**

- .1 Canadian General Standards Board (CGSB).
  - .1 CGSB 1.59-97, Exterior enamel, glossy, with alkyd resins.
- .2 Canadian Standards Association (CSA International).
  - .1 CSA-A23.1 / A23.2-04, Concrete Materials and Work Performances / Tests and Standard Practices for Concrete.
  - .2 CAN / CSA-S269.2-FM1987 (C2003), Scaffolding.
  - .3 CAN / CSA-Z321-E96 (C2001), Signals and Symbols in the Workplace.
- .3 Public Works and Government Services Canada (PWGSC), Standard Acquisition Clauses and Conditions Manual (SACC) - ID: R0202D, Title: "C" General Conditions, effective May 14, 2004.
- .4 U.S. Environmental Protection Agency (EPA) / Office of Water.
  - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices

**1.3 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL / INFORMATION**

- .1 Submit required documents and samples in accordance with Section 01 33 00 – *Submittal Procedures*.

**1.4 INSTALLATION AND REMOVAL**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all materiel after use when no longer required.

**1.5 SCAFFOLDING**

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide design drawings, signed and sealed by qualified Professional Engineer licensed in the province of Ontario or Quebec, where prescribed



- .3 Provide and maintain scaffolding, ramps, ladders, swing staging, catwalks, platforms and temporary stairs.

#### **1.6 HOISTING**

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists cranes to be operated by qualified operator.

#### **1.7 SITE STORAGE/LOADING**

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

#### **1.8 CONSTRUCTION PARKING**

- .1 Provide and maintain adequate access to project site.
- .2 Clean road lanes where used by Contractor's equipment.

#### **1.9 SECURITY**

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

#### **1.10 OFFICES**

- .1 Provide office heated to 22 degrees C, lighted 750 lx, air-conditioned and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.
- .4 Departmental Representative's Site office.
  - .1 Provide temporary office for Departmental Representative.
  - .2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 4 50% opening windows and one lockable door.
  - .3 Insulate building and provide heating system and air-conditioning system to maintain 22 degrees C inside temperature at all times.
  - .4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood.
  - .5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10 % upward light component.

- .6 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.
- .7 Equip office with internet access, 1 m x 2 m table, four chairs, 6 m of shelving 300 mm wide, one three drawer filing cabinet, one plan rack, one coat rack and shelf, water dispenser and printers.
- .8 Maintain in clean condition.

**1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

**1.12 SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

**1.13 CONSTRUCTION SIGNAGE**

- .1 No other signs or advertisements, other than warning and project identification site signs, are permitted on site.
- .2 Provide project identification site sign comprising framing, and one 1200 mm x 2400 mm signboard as detailed and as described below.
  - .1 Framework and battens: SPF, pressure treated minimum 89 x 89 mm.
  - .2 Signboard: 19 mm Medium Density Overlaid Douglas Fir Plywood to CSA O121.
  - .3 Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189.
  - .4 Fasteners: hot-dip galvanized steel nails and carriage bolts.
  - .5 Vinyl sign face: printed project identification, self-adhesive, vinyl film overlay, supplied by Departmental Representative.
- .3 Direct requests for approval to erect Contractor signboard to Departmental Representative. For consideration general appearance of Contractor signboard must conform to project identification site sign. Wording in both official languages.
- .4 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .5 Maintain approved signs and notices in good condition for duration of project and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

**1.14 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Protect travelling public from damage to person and property.
- .2 Provide access and temporary relocated roads as necessary to maintain traffic.
- .3 Maintain and protect traffic on the bridge during construction period except as otherwise specifically directed by Departmental Representative.
- .4 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .5 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .6 Construct access and haul roads necessary.
- .7 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .9 Dust control: adequate to ensure safe operation at all times.
- .10 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.
- .11 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .12 Provide snow removal during period of Work.
- .13 Provide temporary access for pedestrian when a site that it normally accessible by pedestrian and not in the worksite is now inaccessible because of the Work.
- .14 Provide temporary access on water during period of work.
- .15 Remove, upon completion of work, haul roads designated by Departmental Representative.

**1.15 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from worksite daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Do not stack stored new or salvaged material in construction facilities.

**Part 2 PRODUCTS****2.1 NOT USED**

- .1 Not used.

**Part 3      EXECUTION**

**3.1    TEMPORARY MEANS OF CONTROL OF EROSION AND SEDIMENTS**

- .1      Establish temporary erosion and sediment control measures to prevent soil loss from stormwater runoff or wind erosion and entrainment of soil on properties and adjacent pedestrian ways

**3.2    TEMPORARY MEANS OF CONTROL TO PREVENT DEBRIS AND TOOLS FROM FALLING INTO WATER**

- .1      Establish temporary fall control measures to prevent all tools, debris from demolition work and strengthening work to fall into the water. Refer to Section 01 35 43.10 – *Environmental Procedures – Bridges*.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 05 12 33 – Structural Steel for Bridges

**1.2 REFERENCE STANDARDS**

- .1 Ministry of Transportation, Quebec (MTQ)
  - .1 Les Publications du Québec, Volume 5: Traffic control devices – Part 01.
- .2 Ministry of Transportation, Ontario (MTO)
  - .1 Ontario Traffic Manual, Book 7: Temporary Conditions - 01.

**1.3 PROTECTION OF PUBLIC TRAFFIC**

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 When working on travelled way:
  - .1 Place equipment in position to minimize interference and hazard to travelling public.
  - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
  - .3 Do not leave equipment on travelled way overnight, unless authorized by the Departmental representative.
- .3 The bridge traffic lane shall stay open to traffic during the entire duration of the Work. Therefore, no lane closure is permitted.
- .4 Keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.
  - .1 Provide 3 m wide minimum temporary roadway for traffic in one-way sections through Work.

**1.4 INFORMATIONAL AND WARNING DEVICES**

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices to comply with the reference standards
- .3 Place signs and other devices in locations recommended in the reference standards, as required.
- .4 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
- .5 Continually maintain traffic control devices in use, if required:

- .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
- .2 Remove or cover signs which do not apply to conditions existing from day to day.

### **1.5 OPERATIONAL REQUIREMENTS**

- .1 Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken as specified and approved by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:
  - .1 Bridge way
    - .1 One traffic lane of 3 m width maintained open at all time.
    - .2 Speed limit maintained to 30 km/h
  - .2 During the strengthening work of stringers and bottom chord, the mandatory layout of traffic lanes is shown on specific drawings and is as follow:
    - .1 3 m wide traffic lane centered
    - .2  $\pm 0.65$  m wide access zone on each side.
  - .3 During the strengthening work of diagonal members, the mandatory layout of traffic lanes is shown on specific drawings and is as follow:
    - .1 3 m wide traffic lane on the opposite side of the strengthening work
    - .2  $\pm 1.9$  m wide construction work zone on the strengthening work side
  - .4 Concrete barriers are not permitted on the bridge.

## **Part 2 PRODUCTS**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 EXECUTION**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 GENERAL**

**1.1 RELATED REQUIREMENTS**

- .1 01 14 00 - Work Restrictions
- .2 01 52 00 - Construction Facilities
- .3 01 74 19 - Waste Management and Disposal

**1.2 REFERENCES STANDARDS**

- .1 CNESST - Commission des normes, de l'équité, de la santé et de la sécurité du travail, Quebec.
- .2 WSIB - Workplace Safety and Insurance Board, Ontario.

**1.3 INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

**1.4 HOARDING**

- .1 Erect temporary staging area site enclosure using a 2440 mm of high «OMEGA» type fence. Provide pivot fence sections at high traffic locations. Prior the commencement of work, Contractor must provide a sketch showing the installation method for review and approval by Departmental Representative.
- .2 The Contractor shall ensure the fences enclosed the full surface of the staging area. Before installation, Contractor must valid the fences positions with the Departmental Representative.
- .3 Advertising displays are not permitted on the work site (including fences, scaffold, etc.) which is relevant to the Contractor and subcontractors.
- .4 Contractor must maintain and repair temporary fences if needed during the work which include the replacement of broken parts and painting.
- .5 Temporary fences must be following the appropriate municipal law or regulation.
- .6 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

**1.5 GUARD RAILS AND BARRICADES**

- .1 Provide secure, rigid guard rails and barricades around deep excavations, along working platforms, and in places where the risk of falling into water is possible.
- .2 Provide and install all the elements with requirements made by the competent authorities (CNESST, WSIB etc.)

## **1.6 SHELTERS, ENCLOSURES AND CLOSURES**

- .1 Shelters, enclosures and closures are not to be erected on the bridge structure.

## **1.7 DUST TIGHT SCREENS**

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of work and public.
- .2 Maintain and relocate protection until such work is complete.
- .3 Provide and install fences recover for public protection.

## **1.8 ACCESS TO SITE**

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction walkways as may be required for access to work.
- .2 Implement temporary access measures for machinery and materials that would be required for the proper performance of the work.

## **1.9 TRAFFIC AND PEDESTRIAN CIRCULATION**

- .1 Traffic and pedestrian circulation must be conformed to the needs of Departmental Representative, as presented in Section 01 55 26 – *Traffic Control*.
- .2 Provide and maintain competent signal flag operators, traffic signals, barricades, and flares, lights, or lanterns as required to perform Work and protect public.
- .3 Respect roads and sidewalks constraints presented in section 01 14 00 – *Work Restrictions*. The work area must be organized in respect of the project site preparation sketch and temporary installations related to section 01 52 00 - *Construction Facilities*.
- .4 Contractor is responsible, at his expensive, for designing, organising and coordinating the pedestrian circulation regarding competent authorities. Therefore, Contractor is responsible for organising and planning police officers to the work site as competent authorities shall required.

## **1.10 ACCESS TO EMERGENCY VEHICLES**

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

## **1.11 MOTORIZED MARINE EQUIPMENT FOR WORK SURVEILLANCE**

- .1 Provide to the Departmental Representative the access to motorized marine equipment (boats, barges) necessary for work surveillance, if required.

## **1.12 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1 Protect surrounding private and public property from damage during performance of work.
- .2 Be responsible for damage incurred.



**1.13 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - *Waste Management and Disposal*.

**Part 2 PRODUCTS**

**2.1 NOT USED**

- .1 Not used.

**Part 3 EXECUTION**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 35 29.06 - Health and Safety Requirements
- .2 Section 05 12 33 - Structural Steel for Bridges
- .3 Section 09 91 13.23 - Exterior Painting of Structural Steel

**1.1 QUALITY**

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
  - .1 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents.
- .3 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .4 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .5 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or similar item throughout the work.

**1.2 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

- .2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

### **1.3 STORAGE, HANDLING AND PROTECTION**

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

### **1.4 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of work.

### **1.5 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.

- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in contract price or contract time.

#### **1.6 QUALITY OF WORK**

- .1 Ensure the quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of the quality of work in cases of dispute rest solely with Departmental Representative, whose decision is final.

#### **1.7 CO-ORDINATION**

- .1 Ensure co-operation of workers in laying out work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

#### **1.8 REMEDIAL WORK**

- .1 Perform remedial work required to repair or replace parts or portions of work identified as defective or unacceptable. Co-ordinate adjacent affected work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

#### **1.9 FASTENINGS - GENERAL**

- .1 Provide metal fastenings and accessories in same texture, color and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

#### **1.10 FASTENINGS - EQUIPMENT**

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified.

- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur.

**1.11 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of work.

**1.12 EXISTING UTILITIES**

- .1 When breaking into or connecting to existing services or utilities, execute work at times directed by local governing authorities, with minimum of disturbance to Work and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

**Part 2 PRODUCTS**

**2.1 NOT USED**

- .1 Not used.

**Part 3 EXECUTION**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 74 19 - Waste Management and Disposal
- .3 Section 05 12 33 - Structural Steels for Bridges
- .4 Section 09 91 13.23 - Exterior Painting of Structural Steel

**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of elements of project.
  - .2 The integrity of water-repellent elements or elements exposed to bad weather.
  - .3 Efficiency, maintenance or safety of functional elements.
  - .4 The final finish of the apparent elements.
  - .5 The work of another contractor.
- .3 Include in request:
  - .1 Identification of project.
  - .2 Location and description of affected Work.
  - .3 Description of proposed Work, and products to be used.
  - .4 The impact of cutting and patching work on those performed by the Owner or another contractor.
  - .5 Written permission from the contractor involved
  - .6 Date and time work will be executed.

**1.2 MATERIALS**

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - *Submittal Procedures*.

**1.3 PREPARATION**

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 Beginning of cutting or patching means acceptance of existing conditions.
- .3 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

**1.4 EXECUTION**

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Execute Work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.
- .6 Restore work with new products in accordance with requirements of Contract Documents.
- .7 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - *Waste Management and Disposal*.

**Part 2 PRODUCTS****2.1 NOT USED**

- .1 Not used.

**Part 3 EXECUTION****3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 74 19 - Waste Management and Disposal

**1.2 REFERENCES**

- .1 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions "C", In Effect as of May 14, 2004.

**1.3 PROJECT CLEANLINESS**

- .1 Maintain worksite in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from worksite at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to site.
- .4 Make the necessary arrangements and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for the disposal of debris and waste materials. If necessary, provide a dust screen.
- .6 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - *Waste Management and Disposal*.
- .7 Dispose of waste materials and debris off site.

**1.4 FINAL CLEANING**

- .1 When work is substantially performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris and all sites must be in a state equivalent or superior to the condition it presented before the start of work
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .6 Make the necessary arrangements and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.



- .8 Sweep and wash clean paved areas.
- .9 Remove dirt and other disfiguration from exterior surfaces.
- .10 Repair any damage caused on site to public or private property affected by the work, the ponds, storage of equipment, materials and environmental storage.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - *Waste Management and Disposal*.

**Part 2 PRODUCTS**

**2.1 NOT USED**

- .1 Not used.

**Part 3 EXECUTION**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 74 00 - Cleaning

**1.2 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss SPAC's waste management goal and Contractor's proposed Waste Reduction Work plan for Construction, Renovation and /or Demolition (CRD) waste to be project generated.
- .2 Protect environment and prevent environmental pollution damage.

**1.3 REFERENCE STANDARDS**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM E 1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program (withdrew in 2010).
- .2 Canada Green Building Council (CaGBC)
  - .1 LEED Reference Guide for Building Design and Construction, Version 4.
- .3 Recycling Certification Institute (RCI):
  - .1 RCI Certification Construction and Demolition Materials Recycling.

**1.4 DEFINITIONS**

- .1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the Departmental Representative.
- .2 Class III: non-hazardous waste - construction renovation and demolition waste.
- .3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities.
- .4 Inert Fill: inert waste - exclusively asphalt and concrete.
- .5 Waste Source Separation Program (WSSP): implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.
- .6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

- .8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
  - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2 Returning reusable items including pallets or unused products to vendors.
- .10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .11 Separate Condition: refers to waste sorted into individual types.
- .12 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.
- .13 Waste Management Coordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating required submittal and reporting requirements.
- .14 Waste Reduction Work plan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals, implementation and reporting procedures, anticipated results and responsibilities.

### 1.5 DOCUMENTS

- .1 Post and maintain in visible and accessible area at job site, one copy of following documents:
  - .1 Waste Reduction Work plan.
  - .2 Waste Source Separation Program.

### 1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Prepare and submit following prior to project start-up:
  - .1 One paper copy and one electronic copy of completed Waste Reduction Work plan (WRW).
  - .2 One paper copy and one electronic copy of Waste Source Separation Program (WSSP).
- .3 Prepare and submit on monthly basis, throughout project the following:
  - .1 Receipts, scale tickets, waybills, and/or waste disposal receipts that show quantities and types of materials reused, recycled, or disposed of.
- .4 Submit prior to final payment the following:

- .1 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

### **1.7 WASTE REDUCTION WORKPLAN (WRW)**

- .1 Prepare and submit WRW at least ten days prior to project start-up.
- .2 WRW identifies strategies to optimize diversion through reduction, reuse, and recycling of materials and comply with applicable regulations.
- .3 WRW should include but not limited to:
  - .1 Applicable regulations.
  - .2 Specific goals for waste reduction, identify existing barriers and develop strategies to overcome them.
  - .3 Destination of materials identified.
  - .4 Deconstruction/disassembly techniques and schedules.
  - .5 Methods to collect, separate, and reduce generated wastes.
  - .6 Location of waste bins on-site.
  - .7 Security of on-site stock piles and waste bins.
  - .8 Protection of personnel, sub-contractors.
  - .9 Clear labelling of storage areas.
  - .10 Training plan for Contractor and sub-contractors.
  - .11 Methods to track and report results reliably.
  - .12 Details on materials handling and removal procedures.
  - .13 Recycler and reclaimer requirements.
  - .14 Quantities of materials to be salvaged for reuse or recycled and materials sent to landfill.
  - .15 Requirements for monitoring on-site wastes management activities.
- .4 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .5 Post WRW or summary where workers at site are able to review content.
- .6 Monitor and report on waste reduction by documenting total volume (in tons) and cost of actual waste removed from project.

### **1.8 WASTE SOURCE SEPARATION PROGRAM (WSSP)**

- .1 As part of Waste Reduction Work plan, prepare WSSP prior to project start-up.
- .2 WSSP will detail methodology and planned on-site activities for separation of reusable and recyclable materials from waste intended for landfill.

- .3 Provide list and drawings of locations that will be made available for sorting, collection, handling and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide sufficient on-site facilities and containers for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .5 Locate containers to facilitate deposit of materials without hindering daily operations.
- .6 Provide training for sub-contractors and workers in handling and separation of materials for reuse and/or recycling.
- .7 Locate separated materials in area which minimizes material damage.
- .8 Clearly and securely label containers to identify types/conditions of materials accepted and assist sub-contractors and workers in separating materials accordingly.
- .9 Monitor on-site waste management activities by conducting periodic site inspections to verify: state of signage, contamination levels, bin locations and condition, personnel participation, use of waste tracking forms and collection of waybills, receipts and invoices.
- .10 On-site sale of salvaged materials is not permitted unless authorized in writing by Departmental Representative and if site safety regulations and security requirements are adhered to.

**1.9 USE OF SITE AND FACILITIES**

- .1 Execute Work with minimal interference and disturbance to normal use of premises.
- .2 Maintain security measures established by facility.

**1.10 WASTE PROCESSING SITES**

- .1 Contractor is responsible to research and locate waste diversion resources and service providers. Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.

**1.11 STORAGE, HANDLING AND PROTECTION**

- .1 No location is available on site to store materials in stockpile. Therefore, stockpiling on site is prohibited.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed and salvaged materials from movement or damage.

- .6 Protect surface drainage, mechanical and electrical from damage and blockage.
- .7 Separate and store materials produced during project in designated areas.
- .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.
  - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.
  - .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

#### 1.12 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil and paint thinner into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
  - .1 Number and size of bins.
  - .2 Waste type of each bin.
  - .3 Total tonnage generated.
  - .4 Tonnage reused or recycled.
  - .5 Reused or recycled waste destination.
- .4 Remove materials on-site as work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis.
- .6 Characterize and then dispose of all excavated soils and sediments at appropriate off-site facility identified by Contractor and approved by Departmental Representative.
- .7 Characterize for the presence of creosote and then dispose of all wooden crib at appropriate off-site facility identified by Contractor and approved by Departmental Representative.
- .8 The Contractor shall consider that the existing guardrail-steel body paint to be dismantled contains lead. The management of these materials must therefore be carried out accordingly.

#### 1.13 SCHEDULING

- .1 Coordinate waste management work with other activities to ensure timely and orderly progress of work.

**Part 2 PRODUCTS****2.1 NOT USED**

- .1 Not used.

**Part 3 EXECUTION****3.1 GENERAL**

- .1 Do work in compliance with WRW and WSSP.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

**3.2 CLEANING**

- .1 Progress cleaning: clean in accordance with Section 01 74 00 - *Cleaning*.
  - .1 All sites must be clean at end of each day.
  - .2 Final cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - *Cleaning*.

**3.3 IMPLEMENTATION**

- .1 Manager: Contractor is responsible for designating an on-site party or parties responsible for instructing workers and overseeing and documenting results of the WRW and WSSP plans for the project.
- .2 Distribution: Distribute copies of the WRW and WSSP plans to the job site foreman, each Subcontractor, the Owner, the Departmental Representative and other site personnel as required to maintain WRW and WSSP plans.
- .3 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the project to Subcontractor's at appropriate stages of the project.
- .4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:
  - .1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
  - .2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.
- .5 Progressive Documentation: Submit a monthly summary of waste generated by the project to ensure that waste diversion goals are on track with project requirements:
  - .1 Submission of waste summary can coincide with application for progress payment, or similar milestone event as agreed upon between the Owner, Contractor and Departmental Representative.
  - .2 Monthly waste summary shall contain the following information:

- .1 The amount in tonnes or m<sup>3</sup> and location of material landfilled,
- .2 The amount in tonnes or m<sup>3</sup> and location of materials diverted from landfill, and
- .3 Indication of progress based on total waste generated by the project with materials diverted from landfill as a percentage.

### 3.4 SUBCONTRACTOR'S RESPONSIBILITY

- .1 Subcontractor's shall cooperate fully with the Contractor to implement the WRW and WSSP plans.
- .2 Failure to cooperate may result in the Owner not achieving their environmental goals and may result in penalties being assessed by the Contractor to the responsible Subcontractor's.

### 3.5 SAMPLE CONSTRUCTION WASTE MANAGEMENT FORMS

- .1 Sample waste tracking form below can be used by the Contractor to establish their own forms for recording management of construction waste:

**Table 1: SAMPLE [WASTE MANAGEMENT FORM]**

Material Stream		Diverted Waste by Report Date					
		<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	Total	Units
Material Streams Contributing to Credit	Plastic	1.25	2.5	10	5	18.75	m <sup>3</sup>
	Carpet	2.5	2.5	2.5	0	7.5	m <sup>3</sup>
	Paper/Carboard	5	.5	2.5	25	15	m <sup>3</sup>
	Clean Wood	0	25	0	1.25	26.25	m <sup>3</sup>
	Metal	1.25	2.5	5.5	7	16.25	m <sup>3</sup>
	Gypsum	2.5	2.5	4	5	14	m <sup>3</sup>
	Board Brick/Concrete	10.5	2.5	5.5	8.75	27.25	m <sup>3</sup>
	Asphalt Shingles	10	0	0	0	10	m <sup>3</sup>
Total Diverted Waste						135	m <sup>3</sup>
Material Stream		Diverted Waste by Report Date					
		<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>	Total	Units
Material Streams Not Contributing to Credit	Screen Fines (ADC)						m <sup>3</sup>
	150 mm Minus (ADC)						m <sup>3</sup>
Total Landfill/ADC Waste						65	m <sup>3</sup>
Total Waste						200	m <sup>3</sup>
Percent Diverted						67.5	%

**END OF SECTION**



**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal Procedures

**1.2 REFERENCES**

- .1 Canadian Environmental Protection Act (CEPA).
  - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

**1.3 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-warranty Meeting:
  - .1 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - *Project Meetings* to:
    - .1 Verify Project requirements.
    - .2 Verify the manufacturer's instructions regarding the installation and the terms of the warranty offered by the manufacturer.
- .2 Departmental Representative to establish communication procedures for:
  - .1 Notifying construction warranty defects.
  - .2 Determine priorities for type of defects.
  - .3 Determine reasonable response time.
- .3 Provide the name, address and telephone number of the bonded company responsible for warranty repairs.
- .4 Ensure that corporate offices are located in the local service area of the element / work being warranted, that resource persons are available at all times and are able to respond to inquiries regarding warranty repairs.

**1.4 SUBMITTALS FOR APPROVAL / INFORMATION**

- .1 Provide submittals in accordance with Section 01 33 00 - *Submittal Procedures*.
- .2 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .3 Two weeks before substantial completion of Work, submit to Departmental Representative four final copies of record documents. The project file must be submitted through USB and file share services.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

**1.5 FORMAT**

- .1 Present the data in the form of an instruction manual.

- .2 Use rigid, vinyl, three-ring, 219 mm x 279 mm D-ring binders with backs and sleeves.
- .3 When multiple bindings are required, group data in a logical order.
- .4 On the front cover of each binding must be indicated, the designation of the document, i.e. "Project File", typed or printed, the name of the project and the table of contents.
- .5 Arrange the content in logical order of operations, according to the section numbers of the specifications and the order in which they appear in the table of contents.
- .6 Provide, for each product and each system, a tab separator to be typed on the product description and the list of major pieces of equipment.
- .7 The text shall consist of printed data provided by the manufacturer or typewritten data.
- .8 Provide 1:1 scaled CAD file in dwg and PDF format on CD and a paper copy.
- .9 The project record documents must be submitted for comments before final version.

#### **1.6 CONTENTS - PROJECT RECORD DOCUMENTS**

- .1 Table of Contents for Each Volume: provide title of project.
  - .1 Indicate project designation;
  - .2 Date of submission of documents;
  - .3 Names, addresses, and telephone numbers of Departmental Representative and Contractor with name of their representatives;
  - .4 Schedule of products and systems indexed to content of volume.
- .2 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .3 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .4 Work methods and environmental plan submitted for comments and approval.
- .5 Reports: all reports requested to ensure the completion of work including but not limited to: underwater inspection report, soil characterization report for area 23, record of preserved stones.
- .6 Photographic report: produce a weekly photographic report to show the completed works.
- .7 All ministerial on-site instructions and list.
- .8 All Proposed Change Notices and List.
- .9 Underwater inspections presented as a final report.
- .10 Warranties.

- .11 As-built documents.
- .12 Provide a summary table with numbering of each shop drawings and other documents to easily trace a shop drawing or other documents in the project file.

### **1.7 AS -BUILT DOCUMENTS AND SAMPLES**

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

### **1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record information on set of blue line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colors for each major system, for recording information.
- .3 Record information concurrently with construction progress.
  - .1 Do not conceal work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured horizontal and vertical locations of the strengthening steel

members.

- .2 Field changes of dimension and detail.
- .3 Changes made by change orders.
- .4 Details not on original Contract Drawings.
- .5 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications and field test records required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

#### **1.9 DELIVERY, STORAGE AND HANDLING**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by the Departmental Representative.

#### **1.10 WARRANTIES AND BONDS**

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 10 days before planned pre-warranty meeting, to the Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that the Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to the Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
  - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within [ten] days after completion of applicable item of work.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 9 months warranty inspection, measured from time of acceptance, by the Departmental Representative.
- .9 Include information contained in warranty management plan as follows:
  - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
  - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items.
  - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
    - .1 Name of item.
    - .2 Model and serial numbers.
    - .3 Location where installed.
    - .4 Name and phone numbers of manufacturers or suppliers.
    - .5 Names, addresses and telephone numbers of sources of spare parts.
    - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
    - .7 Cross-reference to warranty certificates as applicable.
    - .8 Starting point and duration of warranty period.
    - .9 Summary of maintenance procedures required to continue warranty in force.
    - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
    - .11 Organization, names and phone numbers of persons to call for warranty service.

- .12 Typical response time and repair time expected for various warranted equipment.
- .4 Contractor's plans for attendance at 9 months post-construction warranty inspections.
- .5 Procedure and status of tagging of equipment covered by extended warranties.
- .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.
- .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

**1.11 WARRANTY TAGS**

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by the Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
  - .1 Type of product/material.
  - .2 Model number.
  - .3 Serial number.
  - .4 Contract number.
  - .5 Warranty period.
  - .6 Inspector's signature.
  - .7 Construction Contractor.

**Part 2 PRODUCTS****2.1 NOT USED**

- .1 Not used.

**Part 3 EXECUTION****3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 31 19 - Project Meetings
- .2 Section 01 33 00 - Submittal Procedures
- .3 Section 01 35 43.10 - Environmental Procedures- Bridges.
- .4 Section 01 74 00 - Cleaning
- .5 Section 01 74 19 - Waste Management and Disposal

**1.2 SCOPE**

- .1 This section deals with the requirements and prescriptions for demolition work on existing structures, including but not limited to:
  - .1 Rivet removal on diagonal members

**1.3 REFERENCE STANDARDS**

- .1 Canadian Environmental Protection Act (CEPA).
  - .1 CCME PN 1327-2008, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems for Petroleum Products and Allied Petroleum Products.
- .2 CSA International
  - .1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.
- .3 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
  - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
    - .1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
    - .2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
    - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .4 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S660-08, Standard for Nonmetallic Underground Piping for Flammable and Combustible Liquids.
  - .2 ULC/ORD-C58.15-1992, Overfill Protection Devices for Flammable Liquid Storage Tanks.
  - .3 ULC/ORD-C58.19-1992, Spill Containment Devices for Underground Flammable Liquid Storage Tanks.
- .5 U.S. Environmental Protection Agency (EPA)

- .1 EPA CFR 86.098-10, Emission standards for 1998 and later model year Otto-cycle heavy-duty engines and vehicles.
- .2 EPA CFR 86.098-11, Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles.
- .3 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

#### 1.4 DEFINITIONS

- .1 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, include but not limited to : poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or materials that endanger human health or environment if handled improperly.
- .2 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling
- .3 Waste Management Coordinator (WMC): Contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements].
- .4 Construction Waste Management Plan (CWM Plan): Written plan addressing opportunities for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19 - *Waste Management and Disposal*.
- .5 Construction Waste Management Report (CWM Report): Written report identifying actual materials that formed CWM Plan for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19 - *Waste Management and Disposal*.

#### 1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-demolition Meetings:
  - .1 Convene pre-demolition meeting one week prior to beginning work of this Section with Contractor's Representative and Departmental Representative in accordance with Section 01 31 19 - *Project Meetings* to:
    - .1 Verify project requirements.
    - .2 Verify existing site conditions adjacent to demolition work.
    - .3 Coordination with other construction subtrades.
  - .2 Ensure key personnel, site supervisor, project manager and subcontractor representatives attend.
  - .3 Departmental Representative will provide written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.
- .2 Scheduling:



- .1 Employ necessary means to meet project timelines without compromising specified minimum rates of material diversion.
- .1 In event of unforeseen delay notify Departmental Representative in writing.

#### 1.6 DOCUMENTS / SAMPLES FOR APPROVAL / INFORMATION

- .1 Submit in accordance with Section 01 33 00 - *Submittal Procedures* and Section 01 74 19 - *Waste Management and Disposal*.
  - .1 Submit the proposed method for rivet /seized bolt removal. Removal of such fasteners will not be permitted until the removal method has been approved by the Departmental Representative.
- .2 Prior to beginning of work on site submit detailed Waste Reduction Workplan in accordance with Section 01 74 19 - *Waste Management and Disposal* and indicate:
  - .1 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.
  - .2 Schedule of selective demolition.
  - .3 Number and location of dumpsters.
  - .4 Anticipated frequency of tipping.
  - .5 Name and address of haulers, waste facilities and waste receiving organizations.
- .3 Submit copies of certified weigh bills from authorized disposal sites and reuse and recycling facilities for material removed from site on a monthly basis.
  - .1 Written authorization from Departmental Representative is required to deviate from haulers, facilities or receiving organizations listed in Waste Reduction Workplan.
- .4 Shop Drawings: Submit drawings signed and sealed by qualified Professional Engineer licensed in the province of Ontario or Quebec as follows:
  - .1 Submit for review and approval demolition drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.

#### 1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial/Territorial and Municipal regulations.
- .2 Qualifications:

- .1 Provide steelworkers and supervising engineers with a minimum of two historical steel truss bridge jobs as previous experience in the repair of structural steel components. The steel strengthening works including the removal of rivet are to be led by steelworkers with a minimum of ten years of experience in this class of work. It is not acceptable for the structural steel strengthening to be led by workers of any trade other than the steelworker trade.

## 1.8 SITE CONDITIONS

- .1 Environmental protection:
  - .1 Ensure Work is done in accordance with Section 01 35 43.10 - *Environmental Procedures- Bridges*.
  - .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
  - .3 Fires and burning of waste or materials is not permitted on site.
  - .4 Do not bury rubbish waste materials.
  - .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
  - .6 Ensure proper disposal procedures of this type of materials are maintained throughout project.
  - .7 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
  - .8 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction and as directed by Departmental Representative.
  - .9 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
  - .10 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

## 1.9 EXISTING CONDITIONS

- .1 Structures to be demolished are based on their condition on date that tender is accepted.

## Part 2 PRODUCTS

### 2.1 EQUIPMENT

- .1 Equipment and heavy machinery:
  - .1 On-road vehicles to: CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations and CEPA-SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.

.2 Off-road vehicles to: EPA CFR 86.098-10 and EPA CFR 86.098-11.

.2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

## Part 3 EXECUTION

### 3.1 EXAMINATION

- .1 Survey existing conditions and correlate with requirements indicated to determine extent of structure demolition required.
- .2 Review Project Record Documents of existing construction provided by Departmental Representative
- .3 Departmental Representative does not guaranty that existing conditions are the same as those indicated in Project Record Documents.

### 3.2 PREPARATION

- .1 Protection of in-place conditions:
  - .1 Work in accordance with Section 01 35 43.10 - *Environmental Procedures - Bridges*, Environmental Protection Plan.
  - .2 Prevent movement, settlement or damage of bridge components, services, walks, paving, trees, landscaping and adjacent grades to remain.
    - .1 Provide bracing and shoring as required.
    - .2 Repair damage caused by demolition as directed by Departmental Representative.
  - .3 Support affected structures and, if safety of structure being demolished, adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify Departmental Representative.

### 3.3 DEMOLITION

- .1 Contractor to provide Departmental Representative with Demolition Plan showing Work method for rivet removal, including equipment and demolition sequences projected in order to avoid compromising the overall structural stability.
- .2 The Demolition plan must be signed and sealed by qualified Professional Engineer licensed in the province of Ontario or Quebec. The engineer who signed the demolition plan must be on site during the first shift of demolition of the element concerned by the plan. This engineer or an engineer approved by the latter must be on site for the remainder of the demolition of the element concerned by the plan.
- .3 Execute demolition work to allow for strengthening of structural steel members.

- .4 Mechanically remove rivet. No thermal removal is permitted., including torch or thermal lance.
- .5 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.
- .6 At end of each day's work, leave work in safe and stable condition.
- .7 Demolish to minimize dusting.
- .8 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.
- .9 Use natural lighting to do Work where possible.
  - .1 Shut off lighting except those required for security purposes at end of each day.

### 3.4 CLEANING

- .1 Develop Waste Reduction Workplan related to work of this Section.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - *Waste Management and Disposal*.
- .3 Divert excess materials from landfill to site approved Departmental Representative.
- .4 Designate appropriate security resources / measures to prevent vandalism, damage and theft.
- .5 Stock materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.
  - .1 Label stocked materials, indicating type and quantity.
- .6 Supply separate, clearly marked disposal bins for categories of waste material. Do not remove bins from site until inspected and approved by Departmental Representative. Notify Departmental Representative prior to removal of bins from worksite.
- .7 Remove stocked material as directed by Departmental Representative, when it interferes with operations of project construction.
- .8 Remove materials by alternate disposal option once collection of materials is complete.
- .9 Transport material designated for alternate disposal using approved haulers, facilities, or receiving organizations listed in Waste Reduction Workplan and in accordance with applicable regulations.
  - .1 Written authorization from Departmental Representative is required to deviate from haulers, facilities, or receiving organizations listed in Waste Reduction Workplan.

- .10 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
  - .1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.
  - .2 Written authorization from Departmental Representative is required to deviate from disposal facilities listed in Waste Reduction Workplan.

**END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 31 19 - Project Meetings
- .2 Section 01 33 00 - Submittal Procedures
- .3 Section 01 35 29.16 - Health and Safety Requirements
- .4 Section 01 61 00 - Common Product Requirements
- .5 Section 01 74 00 - Cleaning
- .6 Section 01 74 19 - Waste Management and Disposal
- .7 Section 09 91 13.23 – Exterior painting of Structural Steel

**1.2 PRICE AND PAYMENT PROCEDURES**

- .1 Measurement for Work associated in this section will be:
  - .1 As a lump sum price for the strengthening work, as described in the Lump Sum price Table. It will include materials and work required under this section in lump sum price bid.
  - .2 Per unit, as described in the Unit Price Table.

**1.3 REFERENCE STANDARDS**

- .1 American Association for State Highway and Transportation Officials (AASHTO)
  - .1 AASHTO HB Standard Specifications for Highway Bridges-17th Edition 2002.
- .2 ASTM International (ASTM)
  - .1 ASTM A 123/A 123M-17, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .2 ASTM A 490M-09, Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints.
  - .3 ASTM F 3125/F 3125M-15a, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.
- .3 CSA Group (CSA)
  - .1 CSA G40.20-13/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA S6-19, Canadian Highway Bridge Design Code.
  - .4 CSA S16-19, Design of Steel Structures.
  - .5 CSA S269.1-16, Falsework & formwork.
  - .6 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding.

- .7 CSA W59-13, Welded Steel Construction, (Metal Arc Welding).
- .8 CAN/CSA-A23.3-04 (R2010), Design of Concrete Structures.
- .4 U.S. Environmental Protection Agency (EPA)
  - .1 EPA CFR 86.098-10, Emission standards for 1998 and later model year Otto-cycle heavy-duty engines and vehicles.
  - .2 EPA CFR 86.098-11, Emission standards for 1998 and later model year diesel heavy-duty engines and vehicles.
  - .3 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

#### **1.4 ADMINISTRATIVE REQUIREMENTS**

- .1 Preconstruction Meeting:
  - .1 Convene preconstruction meeting five days prior to beginning on site installation, with Departmental Representative in accordance with Section 01 31 19 - *Project Meetings* to:
    - .1 Verify project requirements.
    - .2 Review installation and substrate conditions
    - .3 Review work method with Contractor, if necessary.
    - .4 Co-ordination with other building subtrades.
    - .5 Review manufacturer's written installation instructions and warranty requirements.
- .2 Prior to start of Work arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work and strengthening work.
- .3 Site Meetings: as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work.

#### **1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - *Submittal Procedures*:
  - .1 Submit the detailed Work Methods for each of the three types of steel strengthening work. No strengthening work will be permitted until the methods have been approved by the Departmental Representative.
  - .2 Submit the proposed Work method for seized bolt removal. The sequence of removal and replacement, and the number of fasteners that can be removed at any time shall be such that the global and local structural integrities are not compromised. Removal of such fasteners will not be permitted until the removal method has been approved by the Departmental Representative.
  - .3 Submit the proposed method for replacement of structural steel, in this case, lattice bars. Such replacement operations will not be permitted until the replacement method and the necessity of replacing the structural steel have been approved by the Departmental Representative.
- .2 Product Data:

- .1 Submit manufacturer's instructions, printed product literature and data sheets for structural steel and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit WHMIS Safety Data Sheet (SDS) in accordance with Section 01 35 29 – *Health and Safety Requirements*.
- .3 Shop Drawings:
  - .1 Submit drawings signed and sealed by qualified Professional Engineer licensed in the province of Ontario or Quebec.
  - .2 Indicate shop and erection details including shop splices, cuts, copes, connections, holes, bearing plates, threaded fasteners, rivets and welds. Indicate welds by CSA W59, welding symbols.
- .4 Fabricator Reports:
  - .1 Provide structural steel fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and products standards specified and indicated.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store and handle in accordance with Section 01 61 00 - *Common Product Requirements*.
- .2 Provide protective blocking for lifting, transportation and storing.
  - .1 Exercise care during fabrication, transportation and erection so as not to damage structure.
  - .2 Do not notch edges of members.
  - .3 Do not cause excessive stresses.
- .3 Mark mass on members weighing more than 3 tons.
- .4 Protect unpainted weathering steel, before erection, with waterproof covering.
- .5 Ensure that no portion of steel come into contact with ground.
- .6 Provide Departmental Representative with delivery schedules minimum 7 days prior to shipping.

**1.7 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Provide steelworkers and supervising engineers with a minimum of two historical steel truss bridge jobs as previous experience in the repair of structural steel components. The steel strengthening works are to be led by steelworkers with a minimum of ten years of experience in this class of work. It is not acceptable for the structural steel strengthening to be led by workers of any trade other than the steelworker trade.
- .2 Preconstruction Testing:
  - .1 Provide suitable facilities and cooperate with Departmental Representative in carrying out inspection and tests required.



**Part 2 PRODUCTS****2.1 MATERIALS**

- .1 Structural steel: to CSA G40.20/G40.21, grade and types as indicated.
- .2 High strength bolts, nuts and washers: to ASTM F 3125/F 3125M as approved by Departmental Representative.
- .3 Anchor bolts: to ASTM F 3125 grade and types as indicated.
- .4 Welding electrodes: to CSA W48 series.

**2.2 SOURCE QUALITY CONTROL**

- .1 Steel producer qualifications: certified in accordance with CSA G40.20/G40.21.
- .2 Submit Departmental Representative 2 copies of certified test reports for Charpy V-notch test.
- .3 The nuts, bolts, and washers shall be supplied and shipped together as an assembly from the same manufacturer.
- .4 Provide suitable facilities and co-operate with Departmental Representative in carrying out inspection and tests required.

**2.3 EQUIPMENT**

- .1 Equipment and heavy machinery:
  - .1 On-road vehicles to: CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations and CEPA-SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
  - .2 Off-road vehicles to: EPA CFR 86.098-10 and EPA CFR 86.098-11.
- .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

**Part 3 EXECUTION****3.1 EXAMINATION AND SURVEY**

- .1 The on-site existing members survey shall include, but is not limited to:
  - .1 Verification of overall conditions.
  - .2 Verification of existing member geometry.
  - .3 Inspection of lattice bars.
  - .4 Projected fit-up of steel strengthening components.
- .2 Inspection of lattice bars:
  - .1 During the on-site survey, verify if any of the lattice bar is damaged and/or if there is any coating defect located on the diagonals to be strengthened. Contact the Departmental Representative for approval if one or more lattice bars is judged damaged.
- .3 Verification of Conditions:

- .1 Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for structural steel installation in accordance with manufacturer's written instructions.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative

### **3.2 PREPARATION**

- .1 Clean off steel surfaces as directed by Departmental Representative when staining or defacing occurs.
- .2 Use touch-up paint when metal surfaces become exposed due to general preparation, measurement and fit-up of strengthening members, in accordance with Section 09 91 13.23 – *Exterior painting of Structural Steel*.
- .3 Mechanically remove rivet in accordance with the demolition plan as requested in Section 02 41 16 – *Structure Demolition*.
- .4 Mechanically remove any structural steel in accordance with the demolition plan as requested in Section 02 41 16 – *Structure Demolition*.
- .5 No thermal work is permitted, including torch or thermal lance.

### **3.3 GENERAL INSTRUCTIONS FOR REMOVAL OF FASTENERS**

- .1 Difficult fastener removal is anticipated due to the presence of restricted access to the existing fasteners. It is further anticipated that some or all of the existing bolts will be seized and may need to be cut in order to perform removals.
- .2 If the Departmental Representative determines that fastener removal work is resulting in damage to the structure, the Contractor shall cease fastener removal operations until a modified method of removal has been submitted to the Departmental Representative and approved.
- .3 Restrict drifting during assembly to minimum required to bring parts into position without enlarging or distorting holes, and without distorting, kinking or sharply bending metal of any unit.
  - .1 If necessary, enlarge holes by not more than 2 mm, by reaming only after receipt of written approval from Departmental Representative.
  - .2 Ensure reamed holes are 2 mm maximum larger than bolt size used.
  - .3 When reaming of more than 2mm in diameter greater than the nominal rivet diameter and installing an oversize bolt is required for the repair, the cost of the reaming, furnishing and installing the oversize bolts shall be at the Contractor's expense. This method of repair shall not be used without the prior approval of the Departmental Representative for each fastener hole.
- .4 At locations where small nicks and burrs in the vicinity of the fastener head are created, they shall be ground smooth to result in a less than 10:1 slope provided the bolt will be properly seated and the thickness of the plate to remain is acceptable as verified by the Departmental Representative.

- .5 At locations where fastener holes contain cracked, torn, or otherwise damaged material due to conditions other than the Contractor's operations, The Contractor shall immediately contact the Departmental Representative for review prior to fastener removal and installation of the new bolt.

### 3.4 GENERAL INSTRUCTIONS FOR INSTALLATION

- .1 Do fabrication and erection of structural steel in accordance with CSA S6 and Ontario Highway Bridge Design Code.
- .2 High strength bolting: in accordance with CAN/CSA S6 Use 'turn-of-nut' tightening method.
- .3 Finish: members true to line, free from twists, bends, open joints, sharp corners and sharp edges.
- .4 Holes in steel members shall be drilled, not punched. Each 7/8" bolt holes shall measure 24 mm in diameter.
- .5 Allowable tolerance for bolt or rivet holes:
  - .1 Matching holes for rivets and bolts to line up so that dowel 2 mm less in diameter than hole passes freely through assembled members at right angles to such members.
  - .2 Finish holes not more than 2 mm in diameter larger than diameter of rivet or bolt unless otherwise specified by Departmental Representative.
  - .3 Centre-to-centre distance between any two holes of group to vary by not more than 1 mm from dimensioned distance between such holes.
  - .4 Centre-to-centre distance between any two groups of holes to vary not more than maximum of the following:

#### Centre-to-Centre distance in meters    Tolerance in plus or minus [mm]

less than 10	1
10 to 20	2
<u>20 to 30</u>	<u>3</u>

- .5 Correct misdrilled members only as directed by Departmental Representative.
- .6 Mark members in accordance with CSA G40.20/G40.21.
  - .1 Do not use die stamping.
  - .2 Place marking at locations hidden when viewed from exterior after erection when steel is to be left in unpainted condition.

### 3.5 SPECIFIC INSTRUCTIONS FOR INSTALLATION

- .1 Strengthening of stringers
  - .1 Prepare the stringer surfaces
    - .1 Clean existing paint on faying surfaces and 50 mm beyond in accordance with the specifications from Section 09 91 13.23 – *Exterior Painting of Structural Steel*.
    - .2 Apply one coat of primer paint to protect exposed metal in accordance with the Section 09 91 13.23 – *Exterior Painting of Structural Steel*.

- .2 For the exposed area following the strengthening work, follow painting guidelines in accordance with the Section 09 91 13.23 – *Exterior Painting of Structural Steel*.
- .3 Install concrete anchors according to manufacturer requirements and the following:
  - .1 Drill the holes in accordance with manufacturer's installation guide in the reinforced concrete beam using a template. Anchors are performed where indicated on drawings and specifications.
  - .2 The concrete must provide adhesive anchors that satisfy the load effects specified on the drawings.
  - .3 The Contractor should consider that the reinforced concrete beam contains reinforcement bars while drilling the holes through these.
  - .4 Install new anchors in concrete with chemical anchor product. Holes must be filled completely with chemical anchoring product. The amount of chemical anchoring product inserted in the hole must be enough to fill entirely the gap located in between the anchor and the concrete, to spill out of the hole when the anchor is inserted.
  - .5 The walls of the hole must be cleaned according to the recommendations of the anchor's manufacturer. If an air jet is used, it must be equipped with a filter that captures oil. The efficiency of the filter must be demonstrated prior to use.
  - .6 Unless indicated otherwise on drawings, the diameter of the hole to drill must be 3 mm greater than the overall diameter of the anchor to insert.
- .2 Strengthening of a bottom chord
  - .1 Prepare the surfaces
    - .1 Clean existing paint on faying surfaces and 50 mm beyond in accordance with the specifications from Section 09 91 13.23 – *Exterior Painting of Structural Steel*.
    - .2 Apply one coat of primer paint to protect exposed metal in accordance with the Section 09 91 13.23 – *Exterior Painting of Structural Steel*.
  - .2 Install new plate. The new plate must be notched while being fabricated. the new plate shall receive the in shop application of the coating system.
- .3 Strengthening of diagonals
  - .1 Remove existing rivets in accordance with the demolition plan as requested in Section 02 41 16 – *Structure Demolition*.
  - .2 In the occurrence of coating defect observed on the diagonal members to be strengthened, prepare surfaces and apply coating system in accordance with the specifications from Section 09 91 13.23 – *Exterior Painting of Structural Steel*.
- .4 Replacement of lattice bars
  - .1 Fabricate new lattice bar in shop. New lattice bar shall receive the in shop application of the 3 coats painting system.

- .2 Remove existing rivets in accordance with the demolition plan as requested in Section 02 41 16 – *Structure Demolition*.
- .3 Remove damaged lattice bar one at a time and fill the holes with temporary bolts. A diagonal member shall not be left with more than one lattice bar missing at a time.
- .4 Install the new lattice bar by replacing the temporary bolts by drift pins one by one.
- .5 Replace drift pins by permanent bolts one by one
- .6 Repeat the steps 1 to 5 if more than one damaged lattice bars must be replaced.

### **3.6 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Services:
  - .1 Contractor to provide access for inspection services to Departmental Representative.
  - .2 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, protecting and cleaning of steel.
  - .3 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
  - .4 Ensure manufacturer's representative is present before installation and during critical periods of installation.
  - .5 Schedule site visits:
    - .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
    - .2 Upon completion of the Work, after cleaning is carried out.

### **3.7 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - *Cleaning*.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - *Cleaning*.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - *Waste Management and Disposal*.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **END OF SECTION**

**Part 1 GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 01 31 19 - Project Meetings
- .2 Section 01 33 00 - Submittal Procedures
- .3 Section 01 35 43.10 - Environmental Procedures - Bridges
- .4 Section 01 35 29.16 - Health and Safety Requirements
- .5 Section 01 45 00 - Quality Control
- .6 Section 01 61 00 - Common Product Requirements
- .7 Section 01 74 00 - Cleaning
- .8 Section 01 74 19 - Waste Management and Disposal

**1.2 PRICE AND PAYMENT PROCEDURES**

- .1 There will be no measurement for work associated with structural steel painting.
- .2 Preparation and application for structural steel painting shall be included in lump sum bid for strengthening of steel members and unit price when applicable.

**1.3 REFERENCE STANDARDS**

- .1 Canadian Standard Association (CSA Group)
  - .1 CSA S6-19, Canadian Highway Bridge Design Code.
- .2 Ontario Provincial Standard Specification
  - .1 OPSS.PROV 911 Construction Specification for Coating Structural Steel Systems, November 2014
  - .2 OPSS.PROV 1704 Material Specification for Paint Coating Systems for Structural Steel, November 2014
- .3 Ministry of Transportation (MTO) Designated Sources List DSM # 9.20.39, Structural Coatings – Low VOC.
- .4 The Master Painters Institute (MPI)
  - .1 Exterior Structural Steel and Metal Fabrications, 07.
    - .1 EXT 5.1D, Alkyd.
    - .2 EXT 5.1G, Polyurethane, Pigmented (over epoxy zinc rich primer and high build epoxy).
    - .3 EXT 5.4, Aluminum.
- .5 Environmental Choice Program (ECP)
  - .1 CCD-047-98(R2005), Architectural Surface Coatings.
  - .2 CCD-048-98(R2006), Surface Coatings - Recycled Water-borne.

- .6 Federal Standard (FS)
  - .1 FED-STD-595B-89, Colours Used in Government Procurement.
- .7 The Society for Protective Coatings (SSPC)
  - .1 SSPC-SP 1-82(R2004), Solvent Cleaning.
  - .2 SSPC-SP 2-82(R2004), Hand Tool Cleaning.
  - .3 SSPC-SP 3-82(R2004), Power Tool Cleaning.
  - .4 SSPC-SP 6/NACE No. 3-07, Commercial Blast Cleaning.
  - .5 SSPC-SP 7/NACE No. 4-07, Brush-off Blast Cleaning.
  - .6 SSPC-Vis-1-89, Visual Standard for Abrasive Blast Cleaned Steel (Standard Reference Photographs) Editorial Changes September 1, 2000 (Steel Structures Painting Manual, Chapter 2 - Surface Preparation Specs.).
  - .7 SSPC-SP 10/NACE No. 2-07, Near White Blast Cleaning.
  - .8 SSPC-SP 11, Power Tool Cleaning to Bare Metal.
  - .9 SSPC-PA 2-04, Measurement of Dry Coat Thickness with Magnetic Gauges.
  - .10 SSPC Good Painting Practices, Volume 1, 4th Edition.

#### 1.4 DEFINITIONS

- .1 Application Specialist: An individual who performs surface preparation and application of protective coatings and linings to steel and concrete surfaces of complex industrial structures.

#### 1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide in accordance with Section 01 33 00 - *Submittal Procedures*.
  - .1 Submit painting plan designating the locations and sequences for:
    - .1 Cleaning of existing surfaces (Removal of existing coating) .
    - .2 Detailed application of coating system on each members and surfaces, including locations of lap of coating.
  - .2 Submit a repair method for:
    - .1 Any paint defect that may occur during the demolition and strengthening work.
    - .2 Any paint defect observed on diagonal members on surfaces adjacent to strengthening work.
- .2 Product Data:
  - .1 Provide manufacturer's instructions, printed product literature and data sheets for painting exterior metal surfaces and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit 2 copies of WHMIS SDS in accordance with Section 01 35 29.06 - *Health and Safety* and Section 01 35 43.10 - *Environmental Procedures - Bridges*.

- .3 For coatings, primers, paints and other finishes applied on site, indicate VOC content (in g/L).
- .3 Samples:
  - .1 Provide for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Upon request, Departmental Representative will furnish qualified products list of paints.
- .4 Certificates:
  - .1 Submit certifications for Application Specialists to demonstrate compliance to the requirements of ANSI/NACE No.13.
  - .2 Provide product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .5 Test Reports:
  - .1 Provide test reports showing compliance with specified performance characteristics and physical properties and in accordance with Section 01 45 00 - *Quality Control*.

## 1.6 QUALITY ASSURANCE

- .1 Qualifications:
  - .1 Ensure that 50% of lining applications specialists, who perform concrete and steel surfaces preparation and coating applications, are certified by a recognized Applicator Certification Agency, in accordance with NACE 13 /SSPC ACS-I, Applicator Certification Standard (ACS).
  - .2 Maintain a current and valid ACS certification during project period.
  - .3 Application specialists who perform surface preparation and coating application work on this project must have a current ACS.
  - .4 Notify Departmental Representative of any change in application specialist certification status.
  - .5 Any delays to the completion of the Project due to invalid certifications will not be considered, and liquidated damages shall not be waived for any non-performance by Contractor.

## 1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - *Common Product Requirements* and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

## Part 2 PRODUCTS

### 2.1 MATERIALS



- .1 Paint system: Inorganic Zinc/Epoxy/Polyurethane (IZEP) system to Ministry of Transportation of Ontario Designated Sources of Material DSM # 9.20.39 and conform to the provisions of OPSS.PROV 1704 November 2014.
- .2 Paint components shall comprise a coating system from a single manufacturer, suitable for application to steel surfaces.
- .3 Paint for existing and new steel shall be comprised of the following coating system components known to be compatible with the existing bridge coating system. Other products equivalent to those listed could be accepted by Departmental Representative if proved to be compatible with existing system:
  - .1 Primer Coat 1: Carbozinc 11HS or other approved primer.
  - .2 Intermediate Coat 2: Carboguard 890 LT or other approved midcoat.
  - .3 Topcoat 3: Carbothane 133LH (field-applied)/Carbothane 133HB (shop-applied) or other approved topcoat.
  - .4 Primer coat 1 paint shall satisfy the requirements for Class B in accordance with CSA S6-19.
  - .5 Colors: Match existing paint color where painting affected steel work. Colors to be approved by Departmental Representative.
- .4 All materials must be applied in a climate-controlled environment which is in accordance with the manufacturer's recommendations and this specification.
- .5 All primer must have an unlimited recoat time to allow areas to be painted in stages.
- .6 Products acceptable for zinc touch-ups:
  - .1 METAFLUX distributed by BPB Chemicals BVBA with 98.5% - 99% pure zinc.
  - .2 ZINGA distributed by GALVANIZATION ZINGA with 96% ± 1% zinc content.
  - .3 Rust-Anode distributed by Galvatech 2000, with more than 90% zinc.
- .7 Products for sandblasting
  - .1 Sand for sandblasting: to SSPC (Steel Structures Painting Council).

### **Part 3 EXECUTION**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for painting exterior metal surfaces installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

- .4 Current paint system does not contain lead.

### 3.2 PREPARATION

- .1 Metal surfaces to be repainted in the field (defined in section 05 12 33 - Structural steel for bridges):
  - .1 Clean surfaces by removing loose, cracked, brittle or non-adherent paint, rust, loose mill scale, welding slag, dirt, oil, grease existing paint on faying surfaces of new connections and other foreign substances
  - .2 All surfaces to be painted shall be cleaned to requirements of SSPC-SP 11 Power Tool Cleaning to Bare Metal with a power tool achieving the same surface profile as a Monti Bristle Blaster.
    - .1 Submit specifications of power tool to Departmental Representative for approval. All power tools used for paint removal shall have an effective dust collection system equipped with a HEPA filter. Effective implies that the dust collection system should be capable of controlling airborne lead concentration levels to below 0.05 mg/m<sup>3</sup>. Contractor shall follow manufacturer's recommendations and maintenance specifications for optimal function.
    - .2 For strengthening of stringers and of a bottom chord, the extend of the existing surfaces to be painted is defined as the faying surfaces of new strengthening members and 50mm beyond on all sides.
    - .3 The faying surface of the projected strengthening member shall be cleaned to requirements of CSA S6-19 Class B surfaces.
    - .4 Solvent cleaning to SSPC-SP 1 shall be used to remove grease and oil prior to power tool cleaning.
    - .5 Clean existing coating within 300 mm of the edge of the new coating by power washing using potable water to remove all contaminants.
    - .6 The edges of the existing coating shall be feathered into areas cleaned to bare steel so that at least 10 mm of each coat of the existing coating is exposed.
- .2 Metal surfaces to be painted in the shop:
  - .1 Comply with OPSS.PROV 911.
    - .1 Solvent cleaning to SSPC-SP 1.
    - .2 Faying surfaces : Power Tool Cleaning to Bare Metal to SSPC-SP 11
    - .3 All other surfaces: Near white blast cleaning to SSPC-SP 10
  - .2 Solvent cleaning shall be used to remove grease and oil prior to abrasive blast cleaning.
  - .3 Compressed air to be free of water and oil before reaching nozzle.
  - .4 Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, by blowing with clean dry compressed air, or by vacuum cleaning.

- .5 Apply paint after prepared surfaces have been accepted by Departmental Representative.
- .6 Prior to starting paint application ensure degree of cleanliness of surfaces is to SSPC-Vis 1.
  - .1 Apply primer, paint, or pretreatment after surface has been cleaned and before deterioration of surface occurs.
  - .2 Clean surfaces again if rusting occurs after completion of surface preparation.
- .7 Mixing paint:
  - .1 Do not dilute or thin paint for brush application.
  - .2 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
  - .3 Do not mix or keep paint in suspension by means of air bubbling through paint.
  - .4 Thin paint for spraying according to manufacturer's written instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
- .3 Number of paint coats:
  - .1 Faying surfaces - Field and in shop painting.
    - .1 One primer coat to minimum dry film thickness of 75 µm and to a maximum of 150 µm. All faying surfaces should be in of Class B in accordance with requirements of CSA S6-19.
  - .2 Metal surfaces - In shop painting (3 coats coating system).
    - .1 One primer coat to minimum dry film thickness of 75 µm and to a maximum of 150 µm.
    - .2 One intermediate coat to minimum dry film thickness of 100 µm.
    - .3 One top coat to a minimum dry film thickness of 50 µm.
    - .4 Follow the written manufacturer's recommendations if the dry film thickness differ from those given above
  - .3 Metal surfaces - Field painting (3 coats coating system).
    - .1 One primer coat to minimum dry film thickness of 75 µm and to a maximum of 150 µm.
    - .2 One intermediate coat to minimum dry film thickness of 100 µm.
    - .3 One top coat to a minimum dry film thickness of 50 µm.
    - .4 Follow the written manufacturer's recommendations if the dry film thickness differ from those given above.
- .4 For the paint system submitted the optimum dry film thickness and the manufacturer's acceptable range for each layer shall be submitted for review as part of the review process. The Departmental Representative reserves the right to reduce the range and require stricter control if it is deemed that the range is

too large compared to the range of other manufacturers products and to require the Contractor to come closer to the optimum thickness.

### 3.3 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Apply paint by spraying, brushing, or combination of both. Use sheepskins or daubers when no other method is practical in places of difficult access.
- .3 Use dipping or roller coating method of application when specifically authorized by Departmental Representative in writing.
- .4 Caulk open seams at contact surfaces of built up members with material approved by Departmental Representative, before second undercoat of primer is applied.
- .5 Where surface to be painted is not under cover, do not apply paint when:
  - .1 Air temperature is below 5 degrees C or when temperature is expected to drop to 0 degrees C before paint has dried.
  - .2 Temperature of surface is over 50 degrees C unless paint is specifically formulated for application at high temperatures.
  - .3 Fog or mist occur at site; it is raining or snowing; there is danger of rain or snow; relative humidity is above 85%.
  - .4 Surface to be painted is wet, damp or frosted.
  - .5 Previous coat is not dry.
- .6 Supply cover when paint must be applied in damp or cold weather. Supply, shelter, or heat surface and surrounding air to comply with temperature and humidity conditions specified. Protect until paint is dry or until weather conditions are suitable.
- .7 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.
- .8 Apply each coat of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .9 Brush application:
  - .1 Work paint into cracks, crevices and corners and paint surfaces not accessible to brushes by spray, daubers or sheepskins.
  - .2 Brush out runs and sags.
  - .3 Remove runs, sags and brush marks from finished work and repaint.
- .10 Spray application:
  - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

- .2 Provide traps or separators to remove oil and water from compressed air and drain periodically during operations.
- .3 Keep paint ingredients properly mixed in spray pots or containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
- .4 Apply paint in uniform layer, with overlapping at edges of spray pattern.
- .5 Brush out immediately runs and sags.
- .6 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray. In areas not accessible to spray gun, use brushes, daubers or sheepskins.
- .7 Remove runs, sags and brush marks from finished work and repaint.
- .11 Shop painting:
  - .1 Do shop painting after fabrication and before damage to surface occurs from weather or other exposure
  - .2 Paint 3 coats in shop according to requirements of OPSS.PROV 911. Paint faying surfaces with primer coat only.
- .12 Field painting:
  - .1 The faying surface and 50 mm beyond shall receive only the primer coat of paint prior to assembly. Prime coated surfaces that are exposed after assembly shall receive the second and third coats of the paint system after cleaning of the surfaces according to the manufacturer's recommendations.
  - .2 Touch up metal which has been shop coated with same type of paint and to same thickness as shop coat. This touch-up to include cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas.
  - .3 Field paint surfaces (other than joint contact surfaces) which are accessible before erection but which are not to be accessible after erection.
  - .4 Where painting does not meet with requirements of specifications, and when so directed by Departmental Representative remove defective paint, thoroughly clean affected surfaces and repaint in accordance with these specifications.
- .13 Handling painted metal:
  - .1 Handle painted metal after paint has dried, or when necessary for handling for painting or stacking for drying.
  - .2 Scrape off and touch up paint which is damaged in handling, with same number of coats and kinds of paint as were previously applied to metal.

### 3.4 FIELD QUALITY CONTROL

- .1 Site Tests, Inspections:
  - .1 Upon completion of the painting procedures test for dry film reading and evaluate the results as per SSPC-PA 2.

**3.5 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - *Cleaning*.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - *Cleaning*.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - *Waste Management and Disposal*.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**3.6 PROTECTION**

- .1 Protect painted surfaces from damage during construction.
- .2 Protection of surfaces:
  - .1 Protect surfaces not to receive paint.
  - .2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats of paint. Remove contaminants from surface and apply paint immediately.
  - .3 Protect cleaned and freshly painted surfaces from dust to approval of Departmental Representative.
  - .4 Take preventive actions to prevent peeling or damage to existing paint system outside areas to be repainted for steel repairs. Such actions might include physical protection, careful planning and execution of cleaning operations, etc. All costs associated with repairing existing paint damaged during repairs will be borne by the Contractor.
- .3 Repair damage to adjacent materials caused by painting exterior metal surface application installation.

**END OF SECTION**