Project Title KINGSTON ONTARIO
LASALLE CAUSEWAY BASCULE BRIDGE
BUFFERS REPLACEMENT

Project Number R.079892.001

Project Date 2015-11-25

END OF SECTION

END OF SECTION

LICENSED PROFESSIONAL ENGINEER
Dec 11/2015
R. Y. H. YU
PROVINCE OF ONTARIO

SPECIFICATION LIST

DRAWING LIST

Part 1 General

1.1 SECTION INCLUDES

.1 Title and description of Work.

.2 Contract Method.

.3 Cost Breakdown

.4 Contractor use of premises.

.5 Owner occupancy.

.6 Alterations to existing bridge.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises general repair and construction of the La Salle Causeway Bascule Bridge located at Kingston, Ontario; and further identified as PWGSC Project Number R.079892.001.

1.3 CONTRACT METHOD

.1 Construct Work under lump sum contract.

1.4 COST BREAKDOWN

.1 Within 48 hours of notification of acceptance of bid furnish a cost breakdown by Section aggregating Contract amount.

.2 Within 48 hours of acceptance of bid submit a list of subcontractors.

1.5 CONTRACTOR USE OF PREMISES

.1 Contractor shall limit use of premises for Work, for storage, and for access, to allow:

.1 Owner occupancy.

.2 Public usage.

.2 Co-ordinate use of premises under direction of Departmental Representative.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.5 Repair or replace portions of existing work which have been altered or damaged during construction operations to match existing or adjoining work, as directed by Departmental representative.

.6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.6 OWNER OCCUPANCY

.1 Owner will occupy premises during entire construction period for execution of normal operations.

.2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.7 ALTERATIONS TO EXISTING BRIDGE

.1 Execute work with least possible interference or disturbance to bridge operations, pedestrians, vehicles, navigation and normal use of bridge. Arrange with Departmental Representative to facilitate execution of work.

1.8 SCHEDULING

.1 On award of contract submit bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been reviewed and approved by the Departmental Representative take necessary measures to complete work within scheduled time. Do not change schedule without notifying Departmental Representative.

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 SECTION INCLUDES

.1 Cash allowances.

1.2 REFERENCES

.1 Project Supplementary Conditions

1.3 CASH ALLOWANCES

.1 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for any excess incurred and substantiated plus an allowance for overhead and profit as set out in Contract Documents.

.2 Progress payments on accounts of work authorized under cash allowances shall be included in Departmental Representative's monthly certificate for payment.

.3 Schedule shall be prepared jointly by Departmental Representative and Contractor to show when items called for under cash allowances must be authorized by Departmental Representative for ordering purposes so that progress of Work will not be delayed.

.4 Amount of each allowance, for Work specified in respective specification Sections is as follows:

.1 Section 01 35 00.06 include an allowance of $ 7000 for provision of taxi service during bridge closure.

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 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at a maximum of two week intervals and at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting 5 days in advance of meeting date to Departmental Representative.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within 3 days after meetings and transmit to meeting participants and, affected parties not in attendance, Departmental Representative.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings shall be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

.1 Within 5 days after award of Contract, request a meeting of parties in contract 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 a minimum of 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement.

.5 Agenda to include:

- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work.
- .3 Schedule of submission of shop drawings, samples, and colour chips.
- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences.
- .5 Site security.
- .6 Traffic Plan.
- .7 Allowances.
- .8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .9 Record drawings.
- .10 Maintenance manuals.
- .11 Take-over procedures, acceptance, warranties.

.12 Monthly progress claims, administrative procedures, photographs, hold backs.

.13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 Throughout the course of Work immediately inform the Departmental Representative of any issues or concerns arising during the Work. The Contractor shall keep a journal of progress on site, including:

.1 Reports all safety related issues and subsequent resolutions.

.2 Regular accounts of work progress.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule and site resolutions as agreed by the Departmental Representative

.5 Revisions to construction schedule.

.6 Maintenance of quality standards.

.2 At the end of construction, submit both a scanned original of the journal and a transcribed Microsoft Word format copy to the Departmental Representative.

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 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 sufficient reason for extension of Contract Time and no claim for extension by reason of 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 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 co-ordinated 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 co-ordinated.

.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.

.11 Submit number of hard copies specified for each type and format of submittal and also submit in electronic format as pdf files. Forward pdf, NMSEdit Professional spp, MS Word, MS Excel, MS Project and Autocad dwg files as applicable to the documents being submitted on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.2 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 professional engineer registered or licensed in Province of Ontario of Canada.

.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 co-ordinated, regardless of Section under which

adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 5 working days for Departmental Representative's review of each submission.

.5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Amount. 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 shall include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with 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 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent 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 copy 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 Submit one electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of contract award for project.

.13 Submit one electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit one electronic copy of manufacturers' instructions for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit one electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.18 Delete information not applicable to project.

.19 Supplement standard information to provide details applicable to project.

.20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, an electronic response will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted an electronic response 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.

.21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PWGSC 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.

1.3 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Departmental Representative's site office.

.3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Departmental Representative are not intended to change Contract Amount. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Safety and Insurance Board Experience Report.

.2 Submit transcription of insurance immediately after award of Contract.

1.5 FEES, PERMITS AND CERTIFICATES

.1 Provide authorities having jurisdiction with information requested.

.2 Pay fees and obtain certificates and permits required.

.3 Furnish certificates and permits.

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 SECTION INCLUDES

.1 Traffic control, traffic and pedestrian protection.

1.2 ALLOWANCES

.1 Include, as cash allowance, $7000.00 to cover provision of taxi transportation services in accordance with Section 01 21 00, and as outlined in this Section.

.2 All remaining Work of this Section shall fall under the lump sum arrangement.

1.3 REFERENCES

.1 Ministry of Transportation, Ontario (MTO)

.1 Ontario Traffic Manual, Book 7: Temporary Conditions – January 2014

1.4 PROTECTION OF PUBLIC TRAFFIC AND OF THE WORK ZONE

.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 The Contractor shall be responsible for the complete safety and protection of his workers and of the bridge structure, including all necessary provisions to prevent unauthorized vehicular or pedestrian access to the work zone.

.3 When working within the publicly travelled portions of the roadway/sidewalk (travelled way):

.1 Place equipment in position to minimize interference and hazard.

.2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.

.3 Do not leave equipment on travelled way overnight.

.4 Institute work zone protection traffic control and detour signage in accordance with OTM Book 7.

.5 Outside of the closure window, the Contractor shall keep travelled way graded, free from pot holes and of sufficient width for required number of lanes of traffic.

.1 Provide 7.0 m wide minimum temporary roadway for traffic in two-way sections through Work and on detours.

.2 Provide 5.0 m wide minimum temporary roadway for traffic in one-way sections through Work and on detours.

.6 Provide and maintain road access and egress to property fronting along the LaSalle Causeway affected by the work zone, except where other means of road access exist that meet approval of Departmental Representative.

.7 Provide traffic management plan at least two weeks prior to closures to the Departmental Representative. Coordinate with affected stakeholders.

1.5 CONTROL OF PUBLIC TRAFFIC

.1 All work requiring a full closure of the bridge shall be conducted between the hours of 9:30 PM to 6:00 AM.

.2 If and when the following scenarios are authorized to exist by the Departmental Representative, provide competent flag personnel, trained in accordance with, and properly equipped to Ontario Traffic Manual, Book 7: Temporary Conditions for situations as follows:

.1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.

.2 Where roadway, carrying two-way traffic, is restricted to one lane on the bridge, provide competent flag personnel, trained in accordance with, and properly equipped to Ontario Traffic Manual, Book 7: Temporary Conditions.

.3 When labourers or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.

.4 Where temporary protection is required while other traffic control devices are being erected or taken down.

.5 For emergency protection when other traffic control devices are not readily available.

.6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

.7 At each end of restricted sections where pilot cars are required.

.8 Delays to public traffic due to Contractor's operators: 15 minutes maximum.

.3 Provide temporary detour signage indicating traffic detour route per OTM Book 7.

1.6 OPERATIONAL REQUIREMENTS

.1 The Contractor shall 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.

.2 Any work requiring closures of the bridge shall be restricted such that bridge closures are limited to the window between 9:30 P.M. and 6:00 A.M. the following day. No work requiring bridge closures outside of this window will be permitted.

.3 The Contractor shall schedule his operations in such a manner that the duration of activities which prevent emergency vehicle crossing of bridge are kept to an absolute minimum.

.4 During periods of bridge closure, Provide taxi service for pedestrians and cyclists requiring passage to other side of structure. This item to be paid under cash allowance.

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 REFERENCES

.1 Canadian Standards Association (CSA): Canada

.1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.3 National Building Code 2010 (NBC):

.1 NBC 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.

.4 National Fire Code 2010 (NFC):

.1 NFC 2010, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.

.5 Province of Ontario

.1 Occupational Health and Safety Act, R.S.O. 1990, Chapter O.1 as amended, and regulations for Construction Projects, O. Reg. 213/91 as amended.

.2 O. Reg. 490/09, Designated Substances.

.3 Workplace Safety and Insurance Act, 1997.

.4 Municipal statutes and authorities

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00.

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 Measures and controls to be implemented to address identified safety hazards and risks.

.4 Contractor’s and Sub-contractors’ Safety Communications Plan.

.5 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Coordinate plan with existing Emergency Response requirements and procedures provided by Departmental Representative.

.3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 10 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.

.4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.5 Submit names of personnel and alternates responsible for site safety and health.

.6 Submit records of Contractor's Health and Safety meetings when requested.

.7 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, monthly.

.8 Submit copies of orders, reports or directions issued by health and safety inspectors of the authorities having jurisdiction.

.9 Submit copies of incident and accident reports.

.10 Submit WHMIS MSDS - Material Safety Data Sheets.

.11 Submit Workplace Safety and Insurance Board (WSIB) – Experience Rating Report.

1.3 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.4 WORK PERMIT

.1 Obtain building and other permits related to the project prior to beginning of Work

1.5 SAFETY ASSESSMENT

.1 Perform 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.

1.7 REGULATORY REQUIREMENTS

.1 Comply with the Acts and regulations of the Province of Ontario.

.2 Comply with specified standards and regulations to ensure safe operations at site.

1.8 PROJECT/SITE CONDITIONS

.1 Work at site may involve contact with:

.1 Silica in concrete.

.2 Lead in paint. (Believed to have been removed from all painted surfaces of the bridge in previous painting contract).

.3 Guano on bridge surfaces

.4 Rusted metals from structure

.5 Work near water

.6 Work near utilities

.7 Arsenic (CCA) in preserved wood

.8 Contact with moving equipment

.9 Work on the roadway

.10 Falling hazards

.11 Animals and pests

.12 Low temperatures

.13 Ice

.14 Heating equipment

.15 Air quality/vapours inside enclosures

.2 The Contractor shall comply with the PWGSC lock out/tag out procedures for the equipment at the site.

1.9 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

.3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety plan shall be submitted to the Departmental Representative in writing. .

1.10 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Health and Safety Act, R.S.O. 1990 Chapter O.1, as amended.

1.11 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 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 Health and Safety Plan.

.3 Where applicable the Contractor shall be designated “Constructor”, as defined by Occupational Health and Safety Act for the Province of Ontario.

1.12 UNFORSEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.

.2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.13 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have site-related working experience specific to activities associated with abatement of lead and guano containing materials.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.14 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.

.1 Contractor’s Safety Policy

.2 Constructor’s Name.

.3 Notice of Project.

.4 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).

.5 Ministry of Labour Orders and reports.

.6 Occupational Health and safety Act and Regulations for Construction Projects for province of Ontario.

.7 Address and phone number of nearest Ministry of Labour office.

.8 Material Safety Data Sheets.

.9 Written Emergency Response Plan.

.10 Site Specific Safety Plan

.11 Valid certificate of first aider on duty.

.12 WSIB :In case of Injury at Work: poster.

.13 Location of toilet and cleanup facilities.

1.15 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.16 BLASTING

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

1.17 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.18 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

.2 Assign responsibility and obligation to Competent supervisor to stop or start Work when, at Competent Supervisor's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

1.19 DESIGNATED SUBSTANCES

.1 The Contractor is to familiarize himself with the designated survey reports provided by the Departmental Representative

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

1.1 REFERENCES

.1 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. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous and liquid waste; radiant energy and radioactive material as well as other pollutants.

.2 Reference Standards:

.1 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.

1.2 ENVIRONMENTAL REPORT

.1 Attached to this specification is a copy of the Risk Assessment for the LaSalle Causeway, Kingston Harbour – AMEC Earth & Environmental 31 July 2007.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product 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 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 Health and Safety Requirements.

.3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and acceptance by the Departmental Representative.

.4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.6 Include in Environmental Protection Plan:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.3 Names and qualifications of persons responsible for training site personnel.

.4 Descriptions of environmental protection personnel training program.

.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

.1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

.1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.13 Waste Water Management Plan identifying methods and procedures for management and/or 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.

1.4 FIRES

.1 Fires and burning of rubbish on site is not permitted.

1.5 DRAINAGE

.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.

.3 Provide temporary drainage and pumping required to keep excavations and site free from water.

.4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

.5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties as indicated.

.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas designated by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Use waterway beds for borrow material only after written receipt of approval from Departmental Representative.

.3 Waterways to be kept free of excavated fill, waste material and debris.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Blasting is not allowed.

1.8 HAZARDOUS WASTE DISPOSAL

.1 Note: Lead paint has previously been present on site but it is believed has been removed from the bridge.

1.9 PERMIT TO TRANSPORT

.1 While it is not anticipated that lead waste will be found if waste, described as subject to Ontario Regulation 347 as amended of the Environmental Protection Act, is found it must be transported with a valid “Certificate of Approval for a Waste Management System” to a site approved by the Ontario Ministry of the Environment to accept that waste. The cost of this disposal shall not be included in the bid price and will be compensated but it is important that the regulations be respected should for some unforeseen reason should apply.

1.10 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where directed by Departmental Representative.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

.5 Spills of deleterious substances:

.1 Immediately contain, limit spread and clean up in accordance with provincial regulatory requirements.

.2 Report immediately to Ontario Spills Action Centre: 1-800-268-6060.

.3 Further information on dangerous goods emergency clean-up and precautions including a list of companies performing this work can be obtained from the Transport Canada 24-hour number (613) 996-6666 collect.

1.11 SPILL CONTAINMENT

.1 The Contractor shall have a spill containment kit on site and available at all times.

.2 During all operations, such as refuelling and paint transfer, the operations shall be completed within a secondary containment system capable of preventing release of spills or leaks into the environment.

1.12 NOISE CONTROL

.1 Any methods of rivet removal create a significant amount of noise. Limit the timing of rivet removal and noise from the removal as much as possible. In all cases attempt to comply with local noise by-laws including the by-laws, related to noise and construction, of the City of Kingston. All rivets are to be removed and replaced with bolts during the day. In some cases it will be necessary regardless of efforts and protection to remove rivets during the night time closures. If this is the case illustrate to the Departmental Representative that there is no alternative that would allow daytime removal and replacement with bolts.

.2 Minimize the noise levels from construction activities by using proper muffling devices, in addition to appropriate timing and location of these activities to reduce or minimize the effect of noise on nearby residents, recreationists, and wildlife.

1.13 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.1 Take action only after receipt of written approval by Departmental Representative.

.3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 77 00.

.4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Inspection, testing, administrative and enforcement requirements.

.2 Tests.

.3 Mill tests.

.4 Equipment and system adjust and balance.

1.2 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative will order 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. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

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 re-inspection.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 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 sufficient 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 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative 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 4 copies of inspection and test reports to Departmental Representative.

.2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.8 TESTS

.1 Furnish test results as requested.

.2 Cost of tests beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.9 MILL TESTS

.1 Submit mill test certificates for all steel.

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 SECTION INCLUDES

.1 This section covers the work of supplying, maintaining, and removing, temporary access, housing, lighting, and supplementary heating and ventilating for the workspaces and the work described by the drawings and the specification.

.2 Additional requirements for sealing and containment of areas during paint removal and surface preparation are provided in Section 01 35 43 – Environmental Protection.

.3 Note that the existing operator's building and main building are not available for use, by this Contractor, at any time during this Contract.

.4 The access, housing, lighting, heating and ventilating must be sufficient:

.1 To ensure a safe working environment.

.2 To facilitate progress of Work in an efficient manner.

.3 To eliminate any chance of debris falling to the waterway below.

.4 To protect areas or features adjacent to the Work during procedures which may damage those areas or features.

.5 To protect the Work and products against dampness and cold.

.6 To prevent moisture condensation on surfaces.

.7 To provide ambient temperatures and humidity levels for storage, application, installation and curing of materials.

.8 To provide sufficient lighting to work areas.

.5 The requirements of this section apply to all other sections of the specification and anywhere dust and/or cold weather protection to provide an appropriate environment to complete the work is required to achieve the best quality of the finished product. This section is especially important to all painting operations.

1.2 RELATED REQUIREMENTS

.1 Section 05 12 33 – Structural Steel for Bridges

.2 Section 09 79 19 – Painting Exterior Metal Surfaces

1.3 DEFINITIONS

.1 Scaffolding: any method used for access to carry out the Work such as a barge, rigid framed scaffolding, mobile access buckets, cranes, ladders, etc. Scaffolding includes swing staging.

.2 Housing: enclosure placed around Work to provide protection for the work taking place, and to the waterway and, to provide an air tight micro-climate more suitable to the work than ambient atmospheric conditions.

1.4 REFERENCES

.1 SSPC Guide 6 – Steel Structures Painting Council Guide for Containing Surface Preparation Debris During Paint Removal Operations.

.2 SSPC Guide 16 – Steel Structures Painting Council Guide for Specifying and Selecting Dust Collectors.

1.5 DESIGN

.1 It is anticipated that a full air tight enclosure will not be required as lead based paints have been previously removed. Containment of dust and removed material will be required when the small areas of paint are removed from the old structure.

.2 General design concepts and detailing relative to the containment of debris and the provision of dust collection will be in accordance with this specification and SSPC Guide 6 and SSPC Guide 16.

.3 Engage a Professional Engineer licensed in the Province of Ontario, who is experienced in this work, to design, draw and inspect the scaffolding, temporary housing, temporary lighting and heating and humidity measures. All drawings shall be sealed and signed by this Professional Engineer.

.4 All temporary work required to under this Contract shall be erected and removed within the scheduled closure duration.

1.6 SUBMITTALS

.1 Submit in accordance with Section 01 33 00:

.1 Drawings for all scaffolding, temporary housing and temporary lighting.

.2 Heating and humidity control measures.

.3 Site barriers must be sufficient to protect the public and exclude them from the work area.

1.7 SCAFFOLDING

.1 Provide all scaffolding, ladders, access lifting equipment, to carry out the work and protect the public.

.2 Carry out work in accordance with the Occupational Health and Safety Act and the Site Specific Plan. Make all changes required by the Ministry of Labour and Departmental Representative.

.3 Make periodic inspections of the scaffolding as the work progresses.

.4 Make no holes in the structural steel nor any welds to the structural steel to attach the scaffold.

1.8 HOUSING

.1 Provide strong and durable housing for portions of the work which must be protected, heated, and/or ventilated during the work. Design housing to withstand rain, wind and snow.

.2 Install and maintain temporary coverings to protect existing features, such as gearing, limit switches and electrical equipment from damage in the course of the work. Remove these at the end of the work. Make good all damage to the satisfaction of the Departmental Representative.

.3 For coating application:

.1 Temperature and relative humidity requirements refer to Section 09 97 19 – Painting Exterior Metal Surfaces

.2 The Contractor shall manage water from precipitation to prevent fouling or damage to the coating system or prepared surfaces.

1.9 AIR QUALITY

.1 Monitor air quality inside the enclosure and the integrity of the housing to ensure temperature and relative humidity requirements set forth in Section 09 97 19 are satisfied, and that all requirements of the coating manufacturer are additionally satisfied.

.2 Provide separate air supply for workers.

.3 Implement and maintain dust control measures in accordance with Province of Ontario regulations.

.4 Monitor temperatures, humidity and minimum air exchange rates within enclosures.

1.10 LIGHTING

.1 In all areas of work ensure sufficient lighting is provided to complete and inspect the work.

.2 During night time work provide additional lighting in work areas to compensate for the lack of natural lighting.

.3 Provide for the use of the Departmental Representative additional work lights for inspection.

1.11 TEMPORARY HEATING

.1 Provide temporary heating required during the construction period.

.2 For coating application:

.1 Temperature and relative humidity requirements refer to Section 09 97 19 – Painting Exterior Metal Surfaces.

1.12 TEMPORARY VENTILATING

.1 Ventilate storage spaces containing hazardous or volatile materials but in a manner not to reduce the containment of dust.

1.13 PROTECTION

.1 As part of this work protect all greased surfaces which may be affected by the work by covering with tarps or and or plastic wrapped or taped to form an effective barrier.

1.14 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for recycling in accordance with Section 01 74 20.

Part 2 Products

2.1 MATERIALS

.1 The following alternatives are acceptable:

.1 New materials; or

.2 Used, salvaged or recycled materials, in good condition, subject to the approval of the Departmental Representative; or

.3 Prefabricated, portable components in a good, safe condition, approved by the Departmental Representative as to type, materials and detail.

Part 3 Execution

3.1 HEATING EQUIPMENT

.1 Use only heating equipment types acceptable to the Departmental Representative

.2 Use electricity, gas, diesel oil or other fuels approved by the Departmental Representative

.3 Store fuel to the requirements of the Fire Commissioner of Canada.

.4 Provide and maintain temporary fire protection equipment during performance of Work commensurate with fuel source selected.

.5 Locate fuel storage facilities away from the water and structural components of the bridge.

.6 Ensure that the heating requirements are met by providing, at optimum efficiency of the equipment, a capacity of 125% of the heat requirement and a sufficient number of standby heaters ready for use at the site.

.7 Vent the exhausts of heating equipment to the outside of the housing and well clear of combustible materials. Maintain air quality within the enclosure and do not pollute the environment. If the products of combustion enter the enclosure provide regular (minimum twice a week) air sampling for products of combustion.

.8 Upon receipt of the Departmental Representative's approval:

.1 Discontinue heating operations;

.2 Remove the housing and heating equipment from the site.

3.2 FIELD QUALITY CONTROL

.1 Provide maximum-minimum thermometers inside the housing.

.2 Measure and monitor humidity levels to ensure they are compatible with painting operations.

.3 Ensure continuity of protection by providing a Watchkeeper to make periodic checks, at all times when work is and is not in progress. The Watchkeeper's qualifications are to be sufficient to perform maintenance on heating and ventilating equipment:

.1 Maintain strict supervision of the operation of heating and ventilating equipment.

.2 Enforce safe work practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes due to mis-use of the heating and ventilating equipment.

.5 Undertake preventative maintenance and re-fuelling.

.6 Complete emergency repairs of minor complexity.

.7 Place standby items into service.

.8 Record maximum and minimum temperatures.

.9 Make the written temperature records available to the Departmental Representative.

.10 In the event that heating or humidity levels are not maintained all suspect work shall be replaced.

3.3 REVIEW OF WORK

.1 In the event that heating or humidity levels are not maintained all suspect work shall be replaced.

.2 Suspect work shall be considered to include all work that is not fully cured based on 150% of manufacturer's written curing times.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Manufacturer's instructions.

.3 Quality of Work, coordination and fastenings.

.4 Existing facilities.

1.2 REFERENCES

.1 Within text of each specifications section, reference may be made to reference standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.3 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.

.4 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

.5 Conform to latest date of issue of referenced standards inn effect on date of submission of Bids, except where specific date or issue is specifically noted.

.6 OPSS Ontario Provincial Standard Specifications and OPSD Ontario Provincial Standard Drawings quoted in these specifications are available online at http://www.raqsa.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage .

1.3 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 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.

.3 Should disputes arise as to quality or fitness of products, decision rests solely with Departmental Representative based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 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.

1.5 METRIC SIZED MATERIALS

.1 SI metric units of measurement are used extensively on the drawings and in the specifications for this project.

.2 The Contractor is required to provide metric products in the sizes called for in the Contract Documents except where a valid claim can be made that a particular product is not available on the Canadian market, or where imperial products are specified.

.3 Claims for exemptions from use of metric sized products shall be in writing and fully substantiated with supportive documentation. Promptly submit application to Departmental Representative for consideration and ruling. Non-metric sized products may not be used unless Contractor's application has been approved in writing by the Departmental Representative.

.4 Difficulties caused by the Contractor's lack of planning and effort to obtain modular metric sized products which are available on the Canadian market will not be considered sufficient reasons for claiming that they cannot be provided.

.5 Claims for additional costs due to provision of specified modular metric sized products will not be considered.

1.6 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, lumber on flat, solid supports and keep clear of ground. 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.

1.7 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

1.8 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.

1.9 QUALITY OF WORK

.1 Quality of Work shall be of the highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if site conditions will impact the quality of the work.

.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 Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.10 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.

1.11 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.

1.12 STRUCTURAL FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise. Torque bolts in accordance with manufacturer’s instructions; structural bolts shall be installed as specified elsewhere in the Contract Documents.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work in concrete, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

.7 Re-drilling of holes on site is not permitted.

1.13 EQUIPMENT - FASTENINGS

.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. Use No. 304 stainless steel for exterior areas.

.3 Prevent electrolytic action between dissimilar metals and materials.

.4 Bolts may not project more than one diameter beyond nuts.

.5 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of any part of the structure. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.15 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 CONSTRUCTION & DEMOLITION WASTE

.1 Carefully deconstruct and source separate materials/equipment and divert, from D&C waste destined for landfill to maximum extent possible. Target for this project is 75% diversion from landfill. Reuse, recycle, compost, anaerobic digest or sell material for reuse except where indicated otherwise. On site sales are not permitted.

.2 Source separate waste and maintain waste audits in accordance with the Environmental Protection Act, Ontario Regulation 102/94 and Ontario Regulation 103/94.

.1 Provide facilities for collection, handling and storage of source separated wastes.

.2 Source separate the following waste:

.3 Brick and portland cement concrete.

.4 Corrugated cardboard.

.5 Wood, not including painted or treated wood or laminated wood.

.6 Gypsum board, unpainted.

.7 Steel.

.8 Items indicated in Section 02 42 93, Deconstruction and Waste Products Workplan Summary.

.3 Submit a waste reduction workplan indicating the materials and quantities of material that will be recycled and diverted from landfill.

.1 Indicate how material being removed from the site will be reused, recycled, composted or anaerobically digested using Section 02 42 93, Deconstruction and Waste Products Workplan Summary.

.4 Submit proof that all waste is being disposed of at a licensed land fill site or waste transfer site. A copy of the disposal/waste transfer site's license and a letter verifying that said landfill site will accept the waste must be supplied to Departmental Representative prior to removal of waste from the demolition site.

1.2 WASTE PROCESSING SITES

.1 Province of: Ontario.

.1 Ministry of Environment and Energy, 135 St. Clair Avenue West, Toronto, ON, M4V 1P5.

.2 Telephone: 800-565-4923 or 416-323-4321.

.3 Fax: 416-323-4682.

.2 Recycling Council of Ontario: 215 Spadina Avenue, #225, Toronto, ON, M5T 2C7.

.1 Telephone: 416-657-2797.

.2 Fax: 416-960-8053.

.3 Email: rco@rco.on.ca.

.4 Internet: http://www.rco.on.ca/.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Government Chief Responsibility for the Environment.

Ontario Ministry of Environment and Energy
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

General Enquiries
(416) 323-4321
(800) 565-4923

Fax
(416) 323-4682

Environment Canada
Toronto, Ontario
General Enquiries
(416) 734-4494

END OF SECTION

Part 1 General

1.1 INSPECTION AND DECLARATION

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Departmental Representative’s inspection.

.2 Departmental Representative Inspection:

.1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, adjusted and fully operational.

.4 Certificates required by Utility companies: submitted.

.5 Operation of systems: demonstrated to Departmental Representative's personnel.

.6 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.

.2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of Departmental Representative's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 When Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.2 CLEANING

.1 Maintain project free of accumulated waste and rubbish.

.2 Final cleaning:

.1 Remove temporary protection.

.2 Remove dust, dirt and foreign matter from surfaces.

.3 Broom clean paved exterior surfaces, rake clean other exterior surfaces.

.4 Remove snow and ice from access to building and parking lots.

.3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 20.

1.3 COMMISSIONING

.1 Verify operation of limit switches and span lock mechanism and adjust as necessary.

.2 Verify equal seating of lift span on bearing seats and adjust as necessary.

.3 Verify no displacement (0±1 mm) in the bridge truss (with respect to existing condition) using established reference lines as shown on the Contract Drawings and measuring geometry before and after partial replacement of bottom chord. Measurements shall be taken with equipment capable of measuring to the nearest 0.5 mm.

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 SECTION INCLUDES

.1 As-built, samples, and specifications.

.2 Equipment and systems.

.3 Product data, materials and finishes, and related information.

.4 Operation and maintenance data.

.5 Spare parts, special tools and maintenance materials.

.6 Warranties and bonds.

.7 Final site survey.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to conclusion of Contract with Contractor's representative, Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review warranty requirements, manufacturer’s installation instructions.

.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 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01-33-00.

.2 Prepare instructions and data using personnel experienced in maintenance and operation of described product.

.3 Copy will be returned after final inspection with Departmental Representative’s comments.

.4 Revise content of documents as required prior to final submission.

.5 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals in English or French.

.6 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.7 Provide evidence, if requested, for type, source and quality of products supplied.

1.4 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in AutoCAD dwg format on CD. The drawings shall conform to PWGSC National CADD Standards and Supporting Documents.

1.5 CONTENTS – EACH VOLUME

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.6 AS -BUILTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, maintain 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 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. 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. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

.6 Turn one set, paper copy and electronic copy, of AS-BUILT drawings and specifications over to Departmental Representative on completion of work. The CADD files shall conform to PWGSC National CDD Standards and Supporting Documents. Submit pdf and CADD files on USB compatible with PWGSC encryption requirements; through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

.7 If project is completed without significant deviations from Contract drawings and specifications submit to Departmental Representative one set of drawings and specifications marked "AS-BUILT".

1.7 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, and in copy of Manufacturer’s Project Manual.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

.1 Field changes of dimension and detail.

.2 Changes made by change orders.

.3 Details not on original Contract Drawings.

.4 References to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Amendments 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.

1.8 EQUIPMENT AND SYSTEMS

.1 Carefully document position and orientation of all equipment, control systems and sensors required to be removed to do the work of this Contract. Submit documentation to the Departmental representative a minimum of 10 days prior to commencing removals.

.2 Partially remove existing equipment, control systems and sensors only if absolutely necessary to do the work of this Contract.

.3 Upon completion of the work, reinstate all removed equipment, control systems and sensors to their original position and verify proper function. Function verification to be witnessed by the Departmental Representative.

.4 Submit written documentation of the verification of proper function to the Departmental Representative.

1.9 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.1 Provide information for re-ordering custom manufactured products.

.2 Additional requirements: as specified in individual specifications sections.

1.10 STORAGE, HANDLING AND PROTECTION

.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 Departmental Representative.

1.11 WARRANTIES AND BONDS

.1 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 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Certificate of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

1.12 COMMISSIONING REPORT

.1 Provide Commissioning Report and certify all findings, tests and measurements obtained during commissioning.

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 SECTION INCLUDES

.1 General requirements for commissioning bridge buffers and limit switches.

1.2 CONTRACTOR'S RESPONSIBILITIES

.1 Completion of construction works and subsequent notification to the Departmental Representative that systems are ready for commissioning

.2 Adjustment of limit switch position as directed by the Departmental Representative including repeated bridge lifts and readjustment to set the limit switches in the correct position for proper bridge operation

.3 Cooperation with the Departmental Representative for commissioning measurements deemed necessary by the Departmental Representative to confirm buffer function in accordance with the Contract Documents

.4 Adjustments to buffer installation to rectify deficiencies identified by the Departmental Representative.

1.3 PREPARATION

.1 Confirm installation is complete in accordance with the Contract Documents prior to notification of the Departmental Representative to commence commissioning of buffers and limit switch installations

.2 Coordinate with bridge operation to arrange for bridge movements deemed necessary by the Departmental Representative

1.4 1.9 EXECUTION

.1 Make adjustments to Buffers and Limit switch components as directed by the Departmental Representative to establish correct component function to the satisfaction of the Departmental Representative.

Part 2 Products

2.1 2.1 NOT USED

.1 Not Used.

Part 3 PART 3 - EXECUTION

3.1 3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 DESCRIPTION OF WORK

.1 This section covers the requirements for the demolition and removal of:

.1 Structural steel and fasteners as shown on the Contract Drawings

.2 Miscellaneous temporary removal and reinstatement of items that are necessary for completion of the work, including but not limited to removal and reinstatement of sensors, limit switches, cable supports, and all other components requiring temporary removal/disconnection and reinstatement/reconnection.

1.2 RELATED REQUIREMENTS

.1 Section 05 12 33 - Structural Steel for Bridges

1.3 REFERENCES

.1 Definitions:

.1 Demolition: selective removal of components following removal of hazardous materials.

.2 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCB's, CFC's, HCFC's poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly.

.3 Waste Audit (WA): detailed inventory of materials in building. Indicates quantities of reuse, recycling and landfill.

.4 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.

.2 Reference Standards:

.1 Canadian Environmental Protection Act (CEPA) 1999

.2 Canadian Environmental Assessment Act (CEAA), 1992 c37.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Site Meetings.

.1 Convene pre-demolition meeting one week prior to beginning work of this Section to:

.1 Verify project requirements.

.2 Review removal procedures.

.3 Review installation and substrate conditions.

.4 Co-ordination with other sub-trades.

.5 Review manufacturer's installation instructions and warranty requirements.

.6 Review bridge operation and vehicular traffic restrictions.

.2 Arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work, prior to start of Work.

.2 Scheduling: meet project time lines without compromising specified minimum rates of material diversion.

.1 Notify Departmental Representative in writing when unforeseen delays occur.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.2 Submit for approval: drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, where required by authorities having jurisdiction.

.3 Hazardous Materials:

.1 Provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.

.4 Waste Reduction Workplan:

.1 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Section 01 74 20 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 tippage.

.5 Name and address of haulers, waste facilities, waste receiving organizations.

.5 Certificates:

.1 Submit certified bills of lading, receipts from authorized disposal sites and reuse and recycling facilities for material removed from site upon request of Departmental Representative.

.2 Written authorization from Departmental Representative is required to deviate from receiving organizations listed in Waste Reduction Workplan.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: ensure Work is performed in compliance with CEPA, CEAA, TDGA, applicable Provincial regulations.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Store and manage hazardous materials in accordance with Section 01 35 43 - Environmental Procedures.

.2 Storage and Protection.

.1 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Departmental Representative and at no cost to Departmental Representative.

.2 Remove and store materials to be salvaged, in manner to prevent damage.

.3 Store and protect in accordance with requirements for maximum preservation of material.

.4 Handle salvaged materials as new materials.

.3 Develop Waste Reduction Workplan related to Work of this Section

.4 Packaging Waste Management: remove for reuse and return of pallets, crates, padding, packaging materials as specified in Waste Reduction Workplan in accordance with Section 01 74 20.

1.8 SITE CONDITIONS

.1 Site Environmental Requirements.

.1 Perform work in accordance with Section 01 35 43 - Environmental Procedures.

.2 Ensure that selective demolition work does not adversely affect adjacent mechanical/electrical systems, watercourses, or contribute to excess air and noise pollution.

.3 Do not dispose of waste of volatile materials including but not limited to, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.

.1 Ensure proper disposal procedures are maintained throughout the project.

.4 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.

.5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities and as directed by Departmental Representative.

.6 Protect trees, plants and foliage on site and adjacent properties where indicated.

.2 Existing Conditions.

.1 Remove contaminated or hazardous materials as defined by authorities having jurisdiction and as directed by Departmental Representative from site, prior to start of demolition Work, and dispose of at designated disposal facilities in safe manner in accordance with TDGA and other applicable regulatory requirements.

.2 List of hazardous materials: None.

Part 2 Products

2.1 EQUIPMENT

.1 Equipment and heavy machinery used to meet or exceed all applicable emission requirements.

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

.3 Sawing equipment shall not be used unless it can be demonstrated that no damage will occur to the structural steel of the bridge. This includes control of sparks and cutting, nicking or otherwise affecting the existing members.

.4 Chipping hammers shall be 7.0 kg maximum.

.5 Air compressor shall supply a minimum pressure of 620 kPa within 3 m of the hose.

.6 See Section 05 12 33 Item 3.3 for acceptable methods and equipment for rivet removals and reaming of rivet holes.

.7 New bolt holes shall be made by drilling or coring existing steel elements.

.8 Existing steel members shall be cut only by abrasive steel cutting wheels or other non-thermal means.

Part 3 Execution

3.1 PREPARATION

.1 Inspect site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition. There are utilities immediately to the north and south of the bridge for the full length of the bridge and in the abutments.

.3 Notify and obtain approval of utility companies before starting demolition.

3.2 SHORING AND BRACING

.1 Provide all temporary bracings and shoring to the structure so that stability is maintained throughout the project.

.2 Provide bracing to prevent overloading of members and to maintain alignment of components. Do not allow forces in connection and adjacent connections to increase such that any loosening of the riveted connections could occur.

.3 All bracing and shoring design and drawings are to be completed by a Professional Engineer licensed in the Province of Ontario engaged by the Contractor and shall be stamped, sealed and dated. The installation and final configuration of the bracing and shoring shall be reviewed by the Contractor's Engineer.

3.3 REMOVAL OF HAZARDOUS WASTES

.1 Remove contaminated or dangerous materials 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.

3.4 REMOVAL OPERATIONS

.1 Remove items as indicated.

.2 Do not disturb items designated to remain in place.

.3 Disposal of Material:

.1 Dispose of materials not designated for salvage or reuse on site at authorized facilities approved in Waste Reduction Workplan and as instructed by Departmental Representative.

.4 Provide adequate access to facilitate, determination of location and extent of repair, performance of the work and inspection of the work.

3.5 RESTORATION

.1 Restore areas and existing works outside areas of demolition to conditions that existed prior to beginning of Work.

.2 Use soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.6 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Remove debris, trim surfaces and leave work site clean, upon completion of Work

.3 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 77 00.

.3 Waste Management: separate waste materials for reuse, recycling in accordance with Section 01 74 20.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

.1 Repair damage to adjacent materials or property caused by selective site demolition.

END OF SECTION

Part 1 General

1.1 DESCRIPTION OF WORK

.1 This Section covers the requirements for the following work:

.1 Supply, fabrication and installation of structural steel required to do the work as shown on the Contract Drawings.

.2 Replacement of rivets with new bolts for the above work.

.3 Coring, drilling and reaming of bolt holes.

.4 All other work as shown on the Contract Drawings

1.2 RELATED REQUIREMENTS

.1 Section 02 41 13 – Selective Site Demolition

.2 Section 09 97 19 – Painting Exterior Metal Surfaces

1.3 REFERENCES

.1 ASTM International

.1 ASTM A325M-13, Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength Metric.

.2 CSA International

.1 CSA G40.20/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CAN/CSA S6-14, Canadian Highway Bridge Design Code.

.3 CSA S16-09, Design of Steel Structures.

.4 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.

.5 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.

.6 CSA W59-03 (R2008), Welded Steel Construction, (Metal Arc Welding).

.7 CSA W47.1-09 Certification of companies for fusion welding of steel.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Removals and Pre-Installation Meetings:

.1 Convene pre-removals and pre-installation meeting one week prior to beginning work of this Section, with Contractor's Representative and Departmental Representative to:

.1 Verify project requirements.

.2 Review removals/installation procedures

.3 Review installation and substrate conditions.

.4 Co-ordination with other sub-trades.

.5 Review manufacturer's written installation instructions and warranty requirements.

.6 Review bridge operation, marine and vehicular traffic restrictions.

.2 Prior to start of Work arrange for site visit with Departmental Representative to examine existing site conditions.

.3 Ensure Departmental Representative, site supervisor, project manager, subcontractor representatives attend.

.4 Departmental Representative will provide written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.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 two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Shop Drawings:

.1 All submissions below to be stamped and signed by a Professional Engineer registered or licensed in the Province of Ontario.

.2 Submit shop drawings.

.3 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 Proposed welding procedures to be approved by Canadian Welding Bureau. Welding to the original members of the bridge is not anticipated on this project. The bridge is a dynamic structure and welding would be contingent on the details exceeding the fatigue life of the original structure.

.5 Submit description of methods, temporary bracing and strengthening, sequence of erection and type of equipment proposed for use in erecting structural steel signed and sealed by a Licensed Professional Engineer.

.6 Submit description of methods, temporary bracing and strengthening, sequence of removals and type of equipment proposed for use in removing structural steel signed and sealed by a Licensed Professional Engineer.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.1 Ensure Departmental Representative has delivery schedules 7 days minimum prior to shipping.

.3 Storage and Handling Requirements:

.1 Provide protective blocking for lifting, transportation and storing.

.1 Exercise care during fabrication, transportation and erection plates and sections.

.2 Do not notch edges of members.

.3 Do not cause excessive stresses.

.2 Mark mass on members weighing more than 3 tonnes.

.3 Protect unpainted weathering steel, before erection, with waterproof covering.

.4 Ensure that no portion of steel comes into contact with ground.

.1 Replace defective or damaged materials with new.

1.7 QUALITY ASSURANCE

.1 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 as shown on the Contract Drawings.

.2 High strength bolts, nuts and washers: to ASTM A325M.

.3 Welding electrodes: to CSA W48 series, low hydrogen (H16 or less).

2.2 SOURCE QUALITY CONTROL

.1 Steel producer qualifications: certified in accordance with CSA G40.20/G40.21.

.2 Submit to Departmental Representative 2 copies of certified test reports for Charpy V-notch test.

.3 Submit to Departmental Representative Mill Certificate for every batch of steel supplied.

.4 Submit to Departmental Representative Test Reports and Mill Certificates of products delivered to site.

.5 Provide suitable facilities and co-operate with Departmental Representative in carrying out inspection and tests required.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for structural steel installation in accordance with manufacturer's written instructions.

.1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.2 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 steel surfaces as directed by Departmental Representative when staining or defacing occurs.

.2 Verify location of substructure units, elevations of bearing seats and location of anchor bolts before erection of structural steel; report discrepancies to Departmental Representative.

.3 Work near river banks or embankments in accordance with the Contractor's Health and Safety Plan submitted to the Departmental Representative prior to commencing work.

.4 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 Enlarge holes if necessary by reaming only after receipt of written approval from Departmental Representative.

.2 Reamed holes shall be a maximum of 2 mm larger than bolt size used.

.5 Place anchor bolts at elevations and locations indicated.

.1 Protect holes against entry of water and foreign material.

.2 Provide heating and protection as directed by Departmental Representative and completely fill space around anchor bolts with grout.

3.3 REMOVALS

.1 Cutting of existing structural steel is not anticipated to be required to do the work of this Contract. The Contractor is alerted to the presence of sensitive mechanical and electrical components in the vicinity of the work, and shall take all required precautions to prevent damage of components or contamination of lubricants from all operations on site.

.2 The Contractor shall submit to the Departmental Representative the proposed method for cutting and removal of structural steel a minimum of 10 working days prior to the scheduled work. Such removal operations will not be permitted until the removal method has been approved by the Departmental Representative.

.3 Acceptable removal methods shall conform to the following:

.1 Any thermal method (such as a torch or thermal lance), which has potential of damaging, weakening or changing any property of the adjacent steel, as determined by the Departmental Representative, shall not be used.

.2 Any mechanical removal method must be controlled so as to prevent damage to the parent steel.

.4 In the event that the Departmental Representative determines that removal work is resulting in damage to the structure, the Contractor shall cease removal operations until a modified method of removal has been submitted to the Departmental Representative and approved.

.5 Any paint or material to remain that is damaged as a result of the Contractor's operations, shall be repaired at the Contractor's expense. The Contractor shall develop a proposed repair methodology, and submit to the Departmental Representative for review and approval prior to commencing work.

3.4 REMOVAL OF EXISTING FASTENERS

.1 It is anticipated that removal of existing fasteners (rivets and bolts) may be required to complete the designated repairs. 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. The Contractor shall allocate sufficient resources to perform fastener removal to enable the work to proceed within the allocated time and the cost shall be deemed to be included in the lump sum price.

.2 The Contractor shall submit to the Departmental Representative the proposed method for rivet / seized bolt removal a minimum of 10 working days prior to the scheduled replacement of fastener removals. Removal of such fasteners will not be permitted until the removal method has been approved by the Departmental Representative.

.3 Acceptable removal methods shall conform to the following:

.1 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.

.2 Any thermal method (such as a torch or thermal lance), which has potential of damaging, weakening or changing any property of the adjacent steel, as determined by the Departmental Representative, shall not be used.

.3 Any mechanical removal method must be controlled so as to prevent damage to the parent steel or enlarging of the existing hole in the structural steel through which the existing fastener passes.

.4 In the event that 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.

.5 Difficult fastener removal is anticipated due to the presence of restricted access to the existing fasteners. In addition, the multiple plies of material are likely to result in misaligned holes that will further resist fastener removal. The Contractor is to account for these difficulties and include these factors when pricing the work.

.6 Where fasteners are removed and the holes require enlargement due to misalignment, the holes shall be enlarged by **NOT** more than 2mm and only after the proposed enlargement is reviewed and approved by the Departmental Representative. Holes shall be enlarged by reaming. Full compensation for enlarging holes up to 2mm shall be considered as included in the contract lump sum price for removal of rivets and replacement with bolts.

.7 At locations where surrounding material is damaged as a result of the Contractor's operations, the surrounding material shall be repaired. 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.

.8 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.

.9 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.

3.5 INSTALLATION

.1 Do falsework in accordance to CSA S269.1.

.2 Do fabrication and erection of structural steel in accordance with CAN/CSA S6, Design of Highway Bridges and CAN/CSA-S16-09, Design of Steel Structures.

.3 Do welding in accordance with CSA W59, except where specified otherwise.

.1 All deposited weld metal to have Charpy V-Notch value not lower than that of the specified Charpy V-Notch value of the parent steel.

.2 Do welding in shop unless otherwise permitted by Departmental Representative.

.3 Weld only at locations indicated on shop drawings.

.4 High strength bolting: in accordance with CAN/CSA S6. Use 'turn-of-nut' tightening method. Only new bolts shall be installed.

.5 All bolts shall be new. All bolts which have been installed and fully tensioned, but for any reason require loosening or removal, shall be discarded and replaced with new bolts.

.6 Finish: members true to line, free from twists, bends, open joints, sharp corners and sharp edges.

.7 Allowable tolerance for bolt holes:

.1 Shall be as shown on the Contract Drawings. Where not specified, the following tolerances shall apply:

.1 Matching holes for bolts to line up so that a 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 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 metres	Tolerance in plus or minus mm
less than 10	1
10 to 20	2
20 to 30	3

.5 Correct mispunched or misdrilled members only as directed by Departmental Representative.

.8 Span length tolerances:

.1 Girders and beams: plus or minus 3 mm

.2 Centre-to-centre of bearing stiffeners and bearing plates: plus or minus 3 mm.

.9 Do not shop splice.

.10 Field splices: to approval of Departmental Representative.

.11 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.

.12 Match marking: shop mark.

.13 Provide temporary support to items attached to the steel members to be replaced including span lock mechanism, electrical equipment, limit switches etc.

3.6 CLOSURE

.1 Work of the Contract shall be performed within the closure duration set forth elsewhere in the Contract Documents

.2 The Contractor shall provide a method of securely holding the bridge in position to prevent unintended movement, either up or down, when Construction operations necessitate a partial opening of the bridge. The Contractor shall submit the proposed methodology to the Departmental Representative two weeks prior to the planned closure for review and acceptance.

.3 The Contractor is responsible for the verification of all necessary measurements required to do the work. All field measurements required to perform fabrication and to record the base-line reference dimensions/alignment of bridge elements where structural removals are to take place shall be taken by the Contractor to verify existing conditions.

.4 The Contractor is responsible for correct fabrication and fit of all fabricated components and shall submit documentation of said verification to the Departmental Representative, prior to commencing removals.

.5 The Contractor shall demonstrate and submit for review a written plan methodology including an itemized step by step sequence of every task required to fully complete the project 14 days before the planned closure and demonstrate the availability of all necessary material, equipment and labour on site.

3.7 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Remove debris, trim surfaces and leave work site clean, upon completion of Work

.3 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 77 00.

.3 Waste Management: separate waste materials for reuse, recycling in accordance with Section 01 74 20.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 This section covers the requirements for the painting of all new and existing steelwork affected by all other work of this Contract.

.2 This section also includes a description of the Contractor's requirement for quality control and verification procedures.

.3 All painting of new steelwork shall be completed in the shop with only touch-up painting required in the field.

1.2 RELATED SECTIONS

.1 Section 01 55 00 - Access, Housing, Heating and Ventilation

.2 Section 05 12 33 – Structural Steel for Bridges

1.3 REFERENCES

.1 OPSS – Ontario Provincial Standard – 1704 Material Specifications for Paint Coating Systems for Structural Steel April 2010

.2 Ministry of Transportation (MTO) Designated Sources List DSM # 9.20.39.

.3 American Society for Testing and Materials

.1 ASTM D160-01, Standard Practice for Degree of rusting on Painted steel Surfaces.

.2 ASTM D2369-03, Standard Test Method for Volatile Content of Coatings.

.3 ASTM D2832-92 (2011), Standard Guide for Determining Volatile and Non-volatile Content of Paint and Related Coatings.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.171-98, Inorganic Zinc Coating

.2 CAN/CGSB 1.207-98, Low Temperature Curing epoxy compound

.3 CAN/CGSB 1.212-95, Chromate and lead free Marine primer for Steel and Light Alloy Services.

.5 Environmental choice Program (ECP)

.1 ECP-67-95, Recycled Water-borne Surface Coatings

.2 ECP-76-98, Surface Coatings

.6 Federal Standard (FS)

.1 FS-595B-98, Paint Colours

.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 10/NACE No. 2-07, Near White Blast Cleaning

.6 SSPC-Vis-3-11, Guide and Reference Photographs for Steel Surfaces Prepared By Power and Hand Tool Cleaning

.7 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).

.8 SSPC-PA 2-04, Measurement of Dry Coat Thickness with Magnetic Gauges.

.9 SSPC Good Painting Practices, Volume 1, 4th Edition.

.10 Manufacture's current product data sheets must be used in conjunction with, and form part of, this specification. Where contradictions occur, the most stringent requirement that will produce the best quality and durability of the coating system as judged by the Departmental Representative, thus protecting the structure, shall be used.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00

.2 Submit painting plan designating the locations and order of painting as well as locations of laps in coating system layers.

.3 Product Data:

.1 Submit 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 MSDS.

.4 Samples:

.1 Upon request, Departmental Representative will furnish qualified products list of paints.

.2 Submit for review and acceptance 1 L of each unit to the Department Representative for analysis and acceptance prior to commencing work.

.3 Mark samples with name of project, its location, paint manufacturer's name and address, name of paint and manufacturers paint code number.

.4 Enable Departmental Representative to take 1 L samples of each paint delivered to site, one sample from manufacturer's containers and one sample from painters' pot.

.5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.6 Test Reports:

.1 Submit test reports showing compliance with specified performance characteristics and physical properties.

1.5 QUALITY ASSURANCE

.1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 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 1704 April 2010.

.2 Paint components shall comprise a coating system from a single manufacturer, suitable for application to steel surfaces.

.3 Paint applied in the shop shall be comprised of:

.1 Primer Coat 1: shall be inorganic zinc and conform to the requirements of the IZEP system according to MTO designated Sources of Materials DSM # 9.20.39.

.2 Intermediate Coat 2: to conform to the requirements of the IZEP system according to MTO designated Sources of Materials DSM # 9.20.39.

.3 Topcoat 3: Aliphatic Polyurethane to CAN/CGSB-1.177.

.4 Paint applied in the field shall be comprised of the following coating system components known to be compatible with the existing bridge coating system:

.1 Primer Coat 1: shall be aluminum flake filled epoxy mastic, applied to a dry film thickness of 5 to 7 mils DFT. (Carbomastic 15FC or approved equivalent)

.2 Intermediate Coat 2: to conform to the requirements of the IZEP system according to MTO designated Sources of Materials DSM # 9.20.39. (Carboguard 893 or approved equivalent)

.3 Topcoat 3: Aliphatic Polyurethane to CAN/CGSB-1.177. (Carbothane 134HG or approved equivalent)

.5 Colours: Match existing paint colour where painting affected steel work. Colours to be approved by Departmental Representative.

.6 All materials must be applied in a climate controlled environment which is in accordance with the manufacturer’s recommendations and this specification.

.7 All primer must have an unlimited recoat time to allow areas to be painted in stages.

2.2 ALTERNATIVES

.1 Due to compatibility issues alternatives will not be considered.

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 corrected and after receipt of written approval to proceed from Departmental Representative.

3.2 PREPARATION

.1 Remove existing loose and rusted paint from exterior metal surfaces.

.2 Metal surfaces to be repainted in the field:

.1 Clean surfaces by removing loose, cracked, brittle or non-adherent paint, rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with following.

.1 Solvent cleaning to SSPC-SP 1.

.2 Power tool cleaning with vacuum shrouding: to SSPC-SP 3.

.2 Solvent cleaning shall be used to remove grease and oil prior to power tool cleaning.

.3 Scrape edges of old paint back to sound material where remaining paint is thick and sound, feather exposed edges.

.3 New metal surfaces to be painted in the shop:

.1 Clean surfaces of new steel in accordance with following:

.1 Solvent cleaning to SSPC-SP 1.

.2 Near white blast cleaning to SSPC-SP 10

.2 Solvent cleaning shall be used to remove grease and oil prior to abrasive blast cleaning.

.4 Compressed air to be free of water and oil before reaching nozzle.

.5 Remove traces of loose paint after cleaning from surfaces, pockets and corners to be painted by: brushing with clean brushes, by blowing with clean dry compressed air, or by vacuum cleaning.

.6 Silicone sealant shall be applied to all upward facing edges of joints and connections between mating members and other elements mated to gusset plates, splice plates, shear tab, clip angles, beam webs to each other etc.

.7 Silicone sealant shall be applied after the finish coat has cured then touched up to match paint colour. Provide minimum of 25 mm long downward extensions of sealing material at each end of horizontal/inclined seals.

.8 Apply paint after prepared surfaces have been accepted by Departmental Representative.

.9 Prior to starting paint application ensure degree of cleanliness of surfaces is to SSPC-Vis3 for field painting and SSPC-Vis1 for shop painting.

.1 Apply primer, paint, or pre-treatment after surface has been cleaned and before deterioration of surface occurs.

.2 Clean surfaces again if rusting occurs after completion of surface preparation.

.10 Mixing paint:

.1 Follow manufacturer’s instructions for mixing, straining, and thinning paint. In addition to the manufacturer’s instruction:

.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.

.11 Number of paint coats (shop painting):

.1 One primer coat to minimum dry film thickness of 75 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.

.12 Number of paint coats (field painting):

.1 One primer coat to minimum dry film thickness of 175 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.

.13 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 brushing or spraying. 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 Seal open seams at contact surfaces of built up members with sealant approved by Departmental Representative when top coat is fully cured. Touch-up over sealant to match bridge colour

.5 The Contractor shall provide enclosures and indirect (dry) heat to maintain air and surface temperatures within the manufacturer's prescribed limits during painting and curing operations both to maintain adequate conditions for coating / curing and to ensure curing is completed within the available working time.

.6 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 occurs at site; it is raining or snowing; there is danger of rain or snow; relative humidity is above 85%.

.4 Surface is wet, damp, frosted, or contaminated with dirt or chlorides.

.5 Previous coat is not dry.

.7 Adequate ventilation shall be provided to ensure proper curing and a safe working environment.

.8 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 in accordance with Manufacturer's specifications.

.9 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

.10 Apply each coat of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.11 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.

.12 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.

.13 Shop Painting

.1 Do shop painting after fabrication and before damage to surface occurs from weather or other exposure.

.2 Spray paint contact surfaces of field assembled, bolted, friction type joints with primer coat only. Do not brush primer after spraying.

.3 Do not paint metal surfaces which are to be embedded in concrete.

.4 Paint metal surfaces to be in contact with wood with either full paint coats specified or three shop coats of specified primer.

.5 Do not paint metal within 50 mm of edge to be welded. Give unprotected steel one coat of approved primer after shop fabrication is completed.

.6 Remove weld spatter before painting. Remove weld slag and flux by methods as specified in paragraph 3.2.2 Metal surfaces to be repainted in the field.

.7 Protect machine finished or similar surfaces (i.e. underside of sole plate and shims on bearing pedestal) that are not to be painted but that do require protection, with coating of rust inhibitive petroleum, molybdenum disulphide, or other coating approved by Departmental Representative.

.8 Copy previous erection marks and weight marks on areas that have been shop painted.

.14 Field Painting:

.1 Paint steel structures as soon as practical after erection.

.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.

.15 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 Measure the wet film thickness of each coat during application

.2 Upon completion of the painting procedures test for dry film reading and evaluate the results as per SSPC-PA 2. Submit results to the Department Representative within 72 hours.

.3 Departmental Representative may engage the services of a coating inspector for quality control purposes.

3.5 CLEANING

.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Remove debris, trim surfaces and leave work site clean, upon completion of Work

.3 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 77 00.

.3 Waste Management: separate waste materials for reuse, recycling in accordance with Section 01 74 20.

.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.

.3 Repair damage to adjacent materials caused by painting exterior metal surface application installation.

END OF SECTION