

PWGSC Ontario	SPECIFICATION	Section 00 00 00
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PROJECT TITLE Burlington Canal Lift Bridge (BCLB)
 1157 Beach Boulevard
 Tower Windows Replacement

PROJECT NUMBER R.089504.050

PROJECT DATE 2018-03-09

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PUBLIC WORKS AND GOVERNMENT SERVICES CANADA
BURLINGTON CANAL LIFT BRIDGE
TOWER WINDOWS REPLACEMENT

SIGN-OFF SHEET

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PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Title and description of Work.
- .2 Work Covered by Contract Documents.
- .3 Contract Method.
- .4 Cost Breakdown.
- .5 General Requirements.
- .6 Work sequence.
- .7 Contractor use of premises.
- .8 Work Restrictions.
- .9 Owner occupancy.

1.2 PRECEDENCE

- .1 Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Contractor shall refer to the Environmental Compliance Audit- Burlington Lift Bridge, 2018 as it pertains to this project. Contractor to follow requirements as outlined in report.
- .2 Work of this Contract comprises the replacement of windows in the North and South Towers, Control Building and the Workshop/Changeroom Building, at the Burlington Canal Lift Bridge, located at 1157 Beach Blvd, Hamilton, Ontario. The scope and extent of work is as shown on the Drawings.
- .3 Remove, temporarily store, clean, alter to suit and reinstall:
 - .1 Mechanical Louvres.
 - .2 Peregrine Falcon Nest box.
 - .3 Exhaust fan.
- .4 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated

openings or joints to ensure continuity is maintained.

1.4 CONTRACT METHOD .1 Construct work under lump sum contract.

1.5 COST BREAKDOWN .1 Within 3 days of notification of acceptance of bid, furnish a cost breakdown by Section aggregating contract amount.

1.6 GENERAL REQUIREMENTS

.1 The contractor shall verify all dimensions on site related to the Work.

.2 Prior to beginning of the works, the Contractor shall verify all dimensions, levels and site conditions and notify the Departmental Representative of error or omission.

.3 The Contractor must take into consideration the site conditions and perform work using accepted construction practices and methods to the satisfaction of the Departmental Representative.

.4 The Contractor shall supply necessary labors, material and equipment for the execution of the work shown on contract drawings.

.5 During work, the Contractor is responsible for all damages caused to the existing properties and shall repair said damage at no cost to the Departmental Representative. The Contractor shall keep the area of work clean and free of any debris at the end of each work day.

.6 The Contractor shall carefully inspect the site to view and assess features and difficulties that might affect the removal and installation work. No extra charge due to a mistaken evaluation will be accepted.

1.7 WORK SEQUENCE

.1 Construct Work in stages to accommodate Owner's continued use of premises during construction.

.2 Coordinate Progress Schedule and coordinate with Owner Occupancy during construction.

.3 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide

alternate usage.

.4 Maintain fire access/control.

<u>1.8 CONTRACTOR USE OF PREMISES</u>	.1	Coordinate use of premises under direction of Owner and/or Departmental Representative on site.
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<u>1.9 WORK RESTRICTIONS</u>	.1	Carry out Work from Monday to Friday from 0700 hours to 1800 hours.
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<u>1.10 OWNER OCCUPANCY</u>	.1	Owner will occupy premises during entire construction period for execution of normal operations and other construction projects.
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PART 2 - PRODUCTS

<u>2.1 NOT USED</u>	.1	Not used.
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PART 3 - EXECUTION

<u>3.1 NOT USED</u>	.1	Not used.
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END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Title and Description.
- .2 Administrative.
- .3 Preconstruction Meeting.
- .4 Progress Meeting.
- .5 Equipment and system adjust and balance.

1.2 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.
- .4 PWGSC shall provide a meeting space at the Burlington Canal Lift Bridge.
- .5 Preside at meetings.
- .6 Record the minutes of meetings. Include significant proceedings and decisions. Identify actions by parties.
- .7 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

- .1 Within 10 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 minimum 4 days before meeting.

- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: contractor to provide construction schedule.
 - .3 Schedule of submission of shop drawings, samples, mock-ups, colour chips. Submit submittals in accordance with Section 01 33 00.
 - .4 Health and safety in accordance with Section 01 35 29.
 - .5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .6 Record drawings and specifications in accordance with Sections 01 33 00 and 01 78 00.
 - .7 Maintenance manuals in accordance with Section 01 78 00.
 - .8 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00.
 - .9 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .10 Appointment of inspection and testing agencies or firms.
 - .11 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

- .1 During course of Work and 2 weeks prior to project completion, schedule progress meetings bi-weekly.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Notify parties minimum (4) days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within (2) days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work

- period.
- .9 Review submittal schedules: expedite as required.
- .10 Maintenance of quality standards.
- .11 Review proposed changes for affect on construction schedule and on completion date.
- .12 Other business.

PART 2 - PRODUCTS

<u>2.1 NOT USED</u>	.1	Not Used.
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PART 3 - EXECUTION

<u>3.1 NOT USED</u>	.1	Not Used.
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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 and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and 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 minimum 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 and Autocad dwg files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing

service such as ftp, as directed by Departmental Representative.

- .12 Contractor shall report any discrepancies found in Contract Drawings.

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 coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow five (5) working days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative and/or Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions 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 three (3) hard copies and one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit three (3) hard copies and one (1) 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 three (3) hard copies and one (1) 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 three (3) hard copies and one (1) 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 three (3) hard copies and one (1) 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 three (3) hard copies and one (1) 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 three (3) hard copies and one (1) 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, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .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 business address.
- .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 MOCK-UPS

- .1 Erect mock-ups in accordance with Section 01 45 00.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workplace Safety and Insurance Board Experience Report.
- .2 Submit transcription of insurance immediately after award of Contract.

1.6 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 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 National Building Code 2015 (NBC)
 - .1 NBC 2015, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
- .3 National Fire Code 2015 (NFC)
 - .1 NFC 2015, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.
- .4 Province of Ontario
 - .1 Occupational Health and Safety Act Revised Statutes of Ontario 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.
- .5 Treasury Board of Canada Secretariat (TBS)
 - .1 Treasury Board, Fire Protection Standard April 1, 2010 www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316§ion=text.

1.2 SUBMITTALS

- .1 Submit 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.
 - .3 Measures and controls to be implemented to address identified safety hazards and risks.
- .3 Provide a Rescue Plan: In accordance with current regulations for Working at Heights, provide the Owner and Departmental Representative a rescue plan for workmen in the event of an emergency.
- .4 Provide a Fire Safety Plan, specific to the work

location, in accordance with NBC, Division B, Article 8.1.1.1.3 prior to commencement of work. The plan shall be coordinated with, and integrated into, the existing Building, Facility and Tenant's Emergency Procedures and Evacuation Plan in place at the site. Departmental Representative will provide Building, Facility and Tenant's Emergency Procedures and Evacuation Plan. Deliver two copies of the Fire Safety Plan to the Departmental Representative not later than 14 days before commencing work.

- .5 Contractor's and Sub-contractors' Safety Communication Plan.
- .6 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Coordinate plan with existing Building, Facility and procedures provided by Departmental Representative.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 3 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 3 days after receipt of comments from Departmental Representative.
- .8 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.
- .9 Submit names of personnel and alternates responsible for site safety and health.
- .10 Submit records of Contractor's Health and Safety meetings when requested.
- .11 Submit 1 copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
- .12 Submit 1 copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.
- .13 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.
- .14 Submit copies of incident and accident reports.

- .15 Submit Material Safety Data Sheets (MSDS).
- .16 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 commencement of Work.
- .2 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.6 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.

1.7 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Silica in concrete and concrete block.
- .2 Contractor to refer to DSS report titled Environmental Compliance Audit - Burlington Lift Bridge, 2018 prepared by Environmental Services - Ontario Region".
- .3 Contractor to review report and become familiar with the contents and conditions affecting the work.
- .4 Where removals of Designated Substances are required, Contractor to follow procedures outlined in the appropriate legislation.

1.8 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 Departmental Representative in writing.
- .4 Contractor shall have all required Personal Protective Equipment (PPE) while working on site, in accordance with Occupational Health and Safety Act and Regulations for Construction Projects.
 - .1 Contractor shall have all required PPE been applied while working with all electrical replacement and installation.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.

1.10 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 and Regulations for Construction Projects for the Province of Ontario.
- .4 Contractor to be aware that there will be other contractors on this site during the Work. Contractor to ensure that time and spatial separation is

maintained at all time, and where required will co-ordinate with Departmental Representative to ensure spatial separation is maintained.

- 1.11 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.

- 1.12 HEALTH AND SAFETY CO-ORDINATOR .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. In accordance with subsection 1.15.2, Health and Safety Co-ordinator must:
- .1 Have site-related working experience specific to activities associated with abatement of lead and asbestos 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 Registered Occupational Hygienist, Certified Industrial Hygienist and site supervisor.

- 1.13 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.

1.14 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.

1.15 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.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

<u>3.1 NOT USED</u>	.1	Not used.
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END OF SECTION

Part 1 - GENERAL

1.1 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.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit information and documents in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements.
- .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review by 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 person] responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 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.
 - .6 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

- .7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .8 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- .9 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.

1.3 WORK ADJACENT TO WATERWAYS

- .1 Construction equipment to be operated on land only.
- .2 Waterways to be kept free of waste material and debris.

1.4 POLLUTION CONTROL

- .1 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

1.5 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.

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.

- .2 Ensure public waterways, storm and sanitary sewers remain free of waste generated by this project.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .4 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

PART 1 - GENERAL

- | | | |
|-------------------------------------|----|---|
| 1.1 REFERENCES AND
CODES | .1 | Perform Work in accordance with National Building Code of Canada (NBC) 2015, National Fire Code of Canada (NFC) 2015 and Ontario Building Code (OBC) 2016, including all amendments up to bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply as directed by the Departmental Representative. |
| | .2 | Meet or exceed requirements of: <ul style="list-style-type: none"> .1 Contract documents. .2 Specified standards, codes and referenced documents. |
| 1.2 HAZARDOUS
MATERIAL DISCOVERY | .1 | Stop work immediately and notify Departmental Representative if materials which may contain designated substances or PCB's, other than those identified in Section 01 35 29 are discovered in course of work. |
| 1.3 BUILDING
SMOKING ENVIRONMENT | .1 | Comply with smoking restrictions. |
| 1.4 RELICS AND
ANTIQUITIES | .1 | Relics and antiquities, and items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tables, and similar objects found on site shall remain the property of PWGSC. Protect such articles and request directives from Departmental Representative. |
| | .2 | Should historic objects be uncovered during work, stop work immediately and notify the Departmental Representative. Do not resume work until directed to by the Departmental Representative. |
| | .3 | Archaeology staff from PWGSC will monitor the project work and may require temporary stop of work to carry out site investigations. |

1.5 IAQ - INDOOR AIR QUALITY	.1	Comply with CSA-Z204-94 (R1999), Guideline for Managing Indoor Air Quality in Office Buildings and CSA B651-12 (R2017).
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<u>1.6 TAXES</u>	.1	Pay applicable Federal, Provincial and Municipal taxes.
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<u>1.7 EXAMINATION</u>	.1	Examine existing conditions and determine conditions affecting work.
	.2	Upon completion of review, provide written report identifying existing conditions that may affect the work for review.
	.3	Failure to provide report, will mean that the contractor has accepted the existing and additional claim for extra costs will not be accepted.

PART 2 - PRODUCTS

<u>2.1 NOT USED</u>	.1	Not Used.
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PART 3 - EXECUTION

3.1 NOT USED	.1	Not Used.
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END OF SECTION

PART 1 - GENERAL

- | | | |
|--|----|--|
| <u>1.1 SECTION INCLUDES</u> | .1 | Inspection and testing, administrative and enforcement requirements. |
| | .2 | Tests |
| | .3 | Mock-ups. |
| | .4 | Equipment and system adjust and balance. |
| | .5 | Equipment and system adjust and balance. |
| <u>1.2 INSPECTION</u> | .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 may order any 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. |
| <u>1.3 INDEPENDENT INSPECTION AGENCIES</u> | .1 | Contractor should retain an Independent Inspection/Testing Agencies to conduct material testing and confirm material and procedures meeting the specified requirements. All cost of such services |

shall be Contractor's responsibility.

- .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 an orderly sequence so as not to cause delay 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 may deduct from Contract Amount difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.7 REPORTS

- .1 Submit four (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 may be requested.
- .2 The cost of tests beyond those called for in Contract Documents or beyond those required by product requirements shall be appraised by Departmental Representative and may be authorized as recoverable.

1.9 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.
- .2 Construct in all locations acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.
- .6 Mock-ups may remain as part of Work.
- .7 Specification section identifies whether mock-up may

remain as part of Work or if it is to be removed and when.

PART 2 - PRODUCTS

<u>2.1 NOT USED</u>	.1	Not Used.
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PART 3 - EXECUTION

<u>3.1 NOT USED</u>	.1	Not Used.
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END OF SECTION

PART 1 - GENERAL

<u>1.1 SECTION INCLUDES</u>	.1	Temporary utilities.
<u>1.2 SUBMITTALS</u>	.1	Provide submittals in accordance with Section 01 33 00.
<u>1.3 INSTALLATION AND REMOVAL</u>	.1	Provide temporary utilities controls in order to execute work expeditiously.
	.2	Remove from site all such work after use.
<u>1.4 WATER SUPPLY</u>	.1	Provide continuous supply of potable water for construction use.
	.2	Arrange for connection with appropriate utility company and pay all costs for installation, maintenance and removal.
	.3	Pay for utility charges at prevailing rates.
<u>1.5 TEMPORARY HEATING AND VENTILATION</u>	.1	Provide temporary heating required during construction period, including attendance, maintenance and fuel.
	.2	Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
	.3	Provide temporary heat and ventilation in enclosed areas as required to: <ul style="list-style-type: none">.1 Facilitate progress of Work..2 Protect Work and products against dampness and cold..3 Prevent moisture condensation on surfaces..4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

- .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Maintain temperatures of minimum 10°C in areas where construction is in progress.
- .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during
 - .2 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .3 Ventilate storage spaces containing hazardous or volatile materials.
 - .4 Ventilate temporary sanitary facilities.
 - .5 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .6 Pay utility charges when temporary heat source is existing building equipment.
- .7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6 TEMPORARY POWER AND LIGHT

- .1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools, to a maximum supply of 230 volts, 30 amps.
- .2 Arrange for connection with appropriate utility company. Pay all costs for installation, maintenance and removal.
- .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

1.7 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, data hook up, and equipment necessary for own use and use of Departmental Representative.

- | | | |
|----------------------------|----|--|
| <u>1.8 FIRE PROTECTION</u> | .1 | Provide and maintain temporary fire protection and equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws. |
| | .2 | Burning rubbish and construction waste materials is not permitted on site. |

PART 2 - PRODUCTS

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|---------------------|----|-----------|
| <u>2.1 NOT USED</u> | .1 | Not Used. |
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PART 3 - EXECUTION

- | | | |
|---------------------|----|-----------|
| <u>3.1 NOT USED</u> | .1 | Not Used. |
|---------------------|----|-----------|

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 specifications, reference may be made to reference standards.
- .2 Conform to these standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 The cost for such testing will be borne by Owner 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 in effect on date of submission of Bids, except where specific date or issue is specifically noted.

1.3 QUALITY

- .1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) 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 any dispute arise as to quality or fitness of products, decision rests strictly 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 any 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 exclusively 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.
- .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 and 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.

- | | | |
|--|----|---|
| <u>1.7 TRANSPORTATION</u> | .1 | Pay costs of transportation of products required in performance of Work. |
| <u>1.8 MANUFACTURER'S INSTRUCTIONS</u> | .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 may establish course of action. |
| <u>1.9 QUALITY OF WORK</u> | .1 | Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results. |
| | .2 | Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless. |
| | .3 | Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final. |
| <u>1.10 CO-ORDINATION</u> | .1 | Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision. |
| | .2 | Be responsible for coordination and placement of openings, sleeves and accessories. |
| <u>1.11 REMEDIAL WORK</u> | .1 | Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate 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 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as appropriate, and where they may impact the work.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

1.13 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 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.

1.14 PROTECTION OF WORK IN PROGRESS

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

1.15 EXISTING
UTILITIES

- .1 When where may affect 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 or otherwise interfere with the work in this Contract, 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 SECTION
<u>INCLUDES</u> | .1 | Progressive cleaning. |
| | .2 | Final cleaning. |
| 1.2 PROJECT
<u>CLEANLINESS AND WASTE
REMOVAL</u> | .1 | Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors. |
| | .2 | Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site. |
| | .3 | Clear snow and ice from project stock pile/access area. |
| | .4 | Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris. |
| | .5 | Provide on-site containers for collection of waste materials and debris. |
| | .6 | Provide and use clearly marked separate bins for recycling. Refer to Section 01 74 20. |
| | .7 | Remove waste material and debris from site and deposit in waste container at end of each working day. |
| | .8 | Dispose of waste materials and debris off site. |
| | .9 | Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations. |
| | .10 | Store volatile waste in covered metal containers, and remove from premises at end of each working day. |
| | .11 | Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose. |
| | .12 | Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer. |
| | .13 | Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems. |

- 1.3 FINAL CLEANING
- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
 - .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
 - .3 Prior to final review, remove surplus products, tools, construction machinery and equipment.
 - .4 Remove waste products and debris other than that caused by Owner or other Contractors.
 - .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
 - .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .7 Clean and polish glass, hardware, stainless steel, chrome, baked enamel, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
 - .8 Remove stains, spots, marks and dirt caused by Work from electrical and mechanical fixtures, walls, and floors.
 - .9 HEPA vacuum clean and dust building interiors, behind grilles, louvres and screens, where affected by the Work.
 - .10 Inspect finishes and fitments and ensure specified workmanship and operation.
 - .11 Remove dirt and other disfiguration from exterior surfaces.
 - .

PART 2 - PRODUCTS

- 2.1 NOT USED
- .1 Not Used.

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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 85% 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:
 - .1 Brick and portland cement concrete.
 - .2 Corrugated cardboard.
 - .3 Wood, not including painted or treated wood or laminated wood.
 - .4 Gypsum board, unpainted.
 - .5 Steel.
 - .6 Items indicated in Contract Document, 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 Contract Document, 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
Ministry of Environment and Climate Change, 135 St. Clair Avenue West, Toronto, ON, M4V 1P5.

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Telephone: 800-565-4923 or 416-323-4321
Fax: (416) 323-4682

- .2 Recycling Council of Ontario: 215 Spadina Avenue, #225,
Toronto, ON, M5T 2C7.
Telephone: 416-657-2797
Fax: 416-960-8053
Email: rco@rco.on.ca
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.
.1 Province of: Ontario
.2 General: Ministry of Environment and Climate Change
.3 Address: 135 St Clair Avenue West, Toronto, ON
.4 Telephone: (416) 323-4321 or 1 (800) 565-4923
.5 Fax: (416) 323-4682; (416) 734-4494

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 As-built drawings, 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 SUBMISSION

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection, with Departmental Representative's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four (4) final copies of maintenance manuals and commissioning documentation, as applicable, in English.
- .5 Ensure spare hardware, parts and components for windows and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work; and are stored in designated location approved by Departmental Representative.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.3 FORMAT

- .1 Organize data in the form of an 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 by systems, process flow, 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 scaled CAD files, drawn 1:1 in model space in dwg format. Forward pdfs, and Autocad dwg files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.4 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project;
 - .1 Date of submission; names,
 - .2 Addresses, and telephone numbers of 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 clearly 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 Contract Document.

1.5 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Amendments and addenda.
 - .4 Change Orders and other modifications to the 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. Submit files on USB compatible with PWGSC encryption requirements or 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".

1.6 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Provide 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 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

1.7 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Additional Requirements: as specified in individual specifications sections.

1.8 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.

- .3 Deliver to site; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.9 MAINTENANCE
MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.10 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

1.11 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 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.12 WARRANTIES AND BONDS

- .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 (10) days after completion of the applicable item of work.
- .4 Except for items put into use with Owner'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.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

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END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK .1 This Section covers the requirements for demolition of the exterior removals of the existing buildings and structures, as described in the drawings.

1.2 REFERENCES .1 CSA International
.1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
.2 National Building Code (NBC)
.1 NBC 2015, Part 8 - Safety Measures at Construction and Demolition Sites and local authority having jurisdiction.
.3 U.S. Environmental Protection Agency (EPA)/Office of Water
.1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 SUBMITTALS .1 Submit in accordance with Section 01 33 00 and 01 74 20.
.2 10 calendar days prior to start of demolition and removals work, submit for review, drawings, diagrams or details showing sequence of disassembly work in accordance with authorities having jurisdiction.
.3 Submit for approval, a plan showing impacts, interruptions and delays to Owners operations.
.4 Submit to Departmental Representative, details of where rubble, debris and other materials are to be disposed. Include each disposal/reuse site location, operator's name and business address, type of license under which site operates, and criteria used by site to assess suitability of rubble, debris and other materials for disposal.

- 1.4 QUALITY ASSURANCE .1 Regulatory Requirements: Prepare waste audits, waste reduction work plans, source separation programs and recycling programs as required by jurisdictional authorities and update programs and implement such programs as required.
- .2 The demolition contractor must engage a registered professional engineer who holds a certificate of authorization and an appropriate level of liability insurance to prepare demolition procedures.

- 1.5 SITE CONDITIONS .1 Review "Hazardous Products Inventory - Burlington Lift Bridge, 2018" and "Asbestos and Lead Reassessment Survey - Burlington Lift Bridge, 2018" and take precautions to protect environment.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.
- .1 Proceed only after receipt of written instructions have been received from Departmental Representative.
- .3 Notify Departmental Representative before disrupting building access or services.

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

- 3.1 GENERAL .1 Clean up rubble and debris, resulting from Work promptly and dispose at end of day or place in waste disposal bins. Empty bins on regular basis.

- .2 Stockpiling of rubble, debris, and surplus Products on Site will not be permitted.
- .3 Remove, handle and transport Products indicated to be salvaged and stored for future use. Transport Products to storage area(s) designated by Departmental Representative. Perform Work to prevent any damage to Products during removal and in storage. Products damaged during removal, will be inspected by Departmental Representative. Departmental Representative will determine extent of damage and accept or refuse Products.
- .4 List and description of items to be removed and stored or reused, but not limited to the following:
 - .1 Existing Windows, Frames, and Glazing, as indicated on drawings.
 - .2 Existing concrete masonry unit window sill.
 - .3 Existing falcon nest box.
 - .4 Existing louvres, vents and exhaust fan.

3.2 EXAMINATION

- .1 Inspect building and site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Examine adjacent areas and other installations prior to commencement of demolition and removals.
- .3 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .4 Notify and obtain approval of utility companies before starting demolition.
- .5 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
 - .1 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.
 - .2 Immediately notify the Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.3 PROTECTION

- .1 Do not interfere with use of adjacent structures and Work areas. Maintain free, safe passage to and from adjacent structures and Work areas.
- .2 Take precautions to support affected structures. If safety of structure being demolished, adjacent structures or services are endangered, cease demolition operations and take necessary action to support endangered item. Immediately inform Departmental Representative. Do not resume demolition until reasons for endangering have been determined and corrected and action taken to prevent further endangering.
- .3 Hang tarpaulins where debris and other materials are lowered. Build in around openings with wood and plywood at locations used 'for removal of debris and materials.
- .4 Supply and install adequate protection for materials to be re-used, set on ground and prevent moisture pick-up. Cover stockpiles of materials with tarpaulins.

3.4 PREPARATION

- .1 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and parts of building to remain in place.
 - .2 Keep noise, dust, and inconvenience to occupants to minimum.
 - .3 Protect building systems, services and equipment.
 - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
 - .5 Do Work in accordance with Section 01 11 00.

3.5 DEMOLITION

- .1 Perform demolition with extreme care. Confine effects of demolition to those parts which are to be demolished.
- .2 Perform Work and prevent inconvenience to persons outside those parts which are to be demolished.
- .3 Demolish parts of structure to permit remedial Work as indicated.

- .4 Do not overload floor or wall with accumulations of material or debris or by other loads.
- .5 Perform Work to minimize dusting.
- .6 Do not sell or burn materials on Site.
- .7 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as Work progresses.
- .8 At end of day's Work, leave Work in safe condition with no part in danger of toppling or falling. Protect interiors of parts not to be demolished from exterior elements.
- .9 Drainage and sewer system protection:
 - .1 Ensure that no dust, debris or slurry enters drainage and sewer system on Site.
 - .2 Remove and dispose of debris and slurry promptly from Site.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .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 Labour, products, and services necessary to complete the work of this Section in accordance with the Contract Documents.
- .2 List of metal fabrication items that include, but is not limited to:
 - .1 Metal angles, bolts, anchor bolts, screws and other fasteners, plates and closure plates.

1.2 REFERENCES

- .1 ASTM International
 - .1 CCD-047-98(R2005), Architectural Surface Coatings
 - .2 ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - .3 ASTM A123/A123M-17, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
 - .4 ASTM A153/A153M-16a Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - .5 ASTM A307-14e1, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
 - .6 ASTM A666-15, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
 - .7 ASTM F593-17, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- .2 CSA International
 - .1 CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA S16-14, Design of Steel Structures.
 - .3 CSA W48-18, Filler Metals and Allied Materials for Metal Arc Welding.
 - .4 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .3 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .4 Health Canada / Workplace Hazardous Materials

Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.5 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual -
current edition.

1.3 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 angles,
plates, bolts and include product
characteristics, performance criteria,
physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by
professional engineer registered or licensed
in Province of Ontario, Canada.
.2 Indicate materials, core thicknesses, finishes,
connections, joints, method of anchorage,
number of anchors, supports, reinforcement,
details, and accessories.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing
compliance with specified performance characteristics
and physical properties.

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

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with
Section 01 61 00 and with manufacturer's written
instructions.

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

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors in dry
location and in accordance with manufacturer's
recommendations in clean, dry, well-ventilated
area.

.2 Replace defective or damaged materials with new.

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

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W.
- .2 Stainless steel sheet, strip, plate and flat bar: to ASTM A666, type 304, AISI No. 4 finish.
- .3 SS bolts, nuts and washers: stainless steel to ASTM F593, minimum 75% recycled content.
- .5 Primer paint: CAN/CGSB-1.40 or CISC/CPMA 1.73a.
- .6 Alkyd primer: to MPI #79.
- .7 Galvanizing: hot dip, unpassivated, to ASTM A123/A123M, Coating Grade 85, minimum 600 g/m2.
- .8 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours, pullout strength 7.9 MPa.

2.2 COMPONENTS AND ACCESSORIES

- .1 Fasteners: Bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws, and machine bolts.
 - .1 Unfinished fasteners: In areas not exposed to public, use unfinished bolts conforming to ASTM A307, Grade A, with hexagon heads and nuts. Supply bolts of lengths required to suit thickness of material being joined, but not projecting more than 6 mm beyond nut, without the use of washers.
 - .2 Finished fasteners: In areas exposed to public use, bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws and machine bolts to be hot dip galvanized in accordance with ASTM A153/A153M. For joining stainless steel components, use stainless steel fasteners.

2.3 FABRICATION

- .1 Verify dimensions of existing Work before commencing fabrications and report any discrepancies to Departmental Representative.

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- .2 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .3 Fit and assemble Work in shop where possible. Execute Work in accordance with details and reviewed shop drawings. Where shop fabrication is not possible, make trial assembly in shop.
- .4 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated. Use welded connections for exterior metal Work unless otherwise found acceptable by Departmental Representative
- .5 Where possible, fit and shop assemble work, ready for erection.
- .6 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- .7 Execute shop welding to requirements specified.
- .8 Carefully make and fit details. Take special care with exposed finished Work to produce a neat and correct appearance to Departmental Representative's acceptance.
- .9 Assemble members without twists or open joints.
- .10 Correctly size holes for connecting Work of other trades where such can be determined prior to fabrication. Where possible, show holes on shop drawings. Place holes not to cause appreciable reduction in strength of member.

2.4 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m2, Coating Grade 85, to ASTM A123/A123M.

2.5 ISOLATION COATING

- .1 Isolate aluminum from following components, by means of bituminous paint:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.

2.6 SHOP PAINTING

- .1 CCD-047-98(R2005), Architectural Surface Coatings.

- .2 Primer: VOC limit 250 g/L maximum to CCD-047a.
- .3 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .4 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees Celsius.
- .5 Clean surfaces to be field welded; do not paint.

2.7 CHANNEL FRAMES

- .1 Fabricate frames from steel, sizes of channel and opening as indicated.
- .2 Finish: prime coat and painted.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CSA S16 or Weld field connection.
- .7 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
- .8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion of:
 - .1 Primer: maximum VOC limit 250 g/L to GS-11.
- .9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
 - .1 Primer: maximum VOC limit 250 g/L to GS-11.

3.3 METAL ANGLES

- .1 Install galvanized steel angle frames to openings as indicated.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 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.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 This section includes labour, products, and services necessary for rough carpentry work in accordance with the Contract Documents.

1.2 REFERENCES

- .1 CSA International
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-O80 Series-15, Wood Preservation.
 - .3 CSA O112-M1977 (R2006), CSA Standards for Wood Adhesives.
 - .4 CSA O121-17, Douglas Fir Plywood.
 - .5 CAN/CSA-O141-05(R2014), Softwood Lumber.
 - .6 CSA O151-17, Canadian Softwood Plywood.
 - .7 CAN/CSA-Z809-16, Sustainable Forest Management.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A123/A123M-17, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM D1761-12, Standard Test Methods for Mechanical Fasteners in Wood.
- .3 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2015, FSC Principle and Criteria for Forest Stewardship.
 - .2 FSC-STD-20-002-2004, Structure and Content of Forest Stewardship Standards V2-1.
 - .3 FSC Accredited Certified Bodies.
- .4 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .6 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2014.
- .7 National Building Code of Canada (NBC) 2015.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.

- | | | |
|------------------------------------|----|---|
| 1.4 QUALITY ASSURANCE | .1 | Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board. |
| | .2 | Plywood identification: by grade mark in accordance with applicable CSA standards. |
| | .3 | Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards. |
| | .4 | Sustainable Standards Certification: <ul style="list-style-type: none"> .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809, SFI or Forestry Stewardship Council (FSC) certified. |
| 1.5 DELIVERY, STORAGE AND HANDLING | .1 | Deliver, store and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions. |
| | .2 | Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address. |
| | .3 | Storage and Handling Requirements: <ul style="list-style-type: none"> .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area. .2 Store and protect wood from nicks, scratches, and blemishes. .3 Replace defective or damaged materials with new. |
| | .4 | Packaging Waste Management: remove for reuse of all packaging materials in accordance with Section 01 74 20. |

PART 2 - PRODUCTS

- | | | |
|---------------|----|--|
| 2.1 MATERIALS | .1 | Lumber: unless specified otherwise, softwood, S4S, S-DRY graded and stamped, in accordance with following standards: <ul style="list-style-type: none"> .1 CAN/CSA-O141-05 (R2014) Softwood Lumber .2 NLGA Standard Grading Rules for Canadian Lumber. .3 CAN/CSA-Z809, SFI or Forestry Stewardship |
|---------------|----|--|

Council (FSC) certified.

- .2 Lumber Quality: Carefully select individual pieces so that knots and obvious defects will not interfere with placing bolts, proper nailing or making proper connections.
- .3 Lumber Defects: Discard wood with defects which will render a piece unable to serve its intended function. Lumber will be rejected for excessive warp, twist, bow, crook, mildew, fungus, or mould, as well as for improper cutting and fitting, whether or not it has been installed.
- .4 Furring, blocking, nailing strips, and backing: G2S kiln dried with moisture content 19% or less at time of installation, free from sap, shakes, splits, knots and other defects.
- .5 Plywood: CSA O121, G1S standard construction, laminated with waterproof adhesive, exterior grade.
- .6 Surface applied wood preservative:
 - .1 Green coloured copper naphthenate or 5% pentachlorophenol solution, water repellent preservative or same CCA preservative as used for shop impregnation, in accordance with CAN/CSA-O80 Series.
- .7 Pressure Treatment: Where called for on the drawings or specified herein, all lumber to receive preservative-type pressure treatment shall have a minimum moisture content of 19 percent after pressure treatment and shall be pressure treated using Ammoniacal Copper Quaternary compound (ACQ). Preservative shall penetrate a minimum of 9.5 mm (3/8-inch) deep into wood. Fasteners and connectors used with preservative pressure treated lumber shall be G185 hot dip galvanized, Type 304 stainless steel or Type 316 stainless steel.
- .8 Primers and Paints: in accordance with manufacturer's recommendations for surface conditions:
 - .1 Primer: VOC limit 100 g/L maximum to GS-11.
 - .2 Paint: VOC limit 150 g/L maximum to GS-11.

2.2 ACCESSORIES

- .1 Fasteners: for exterior work pressure treated lumber.
- .2 Nails, spikes and staples: to CSA B111.
- .3 Bolts: 12.7 mm diameter unless indicated otherwise, complete with nuts and washers.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- .1 Treat surfaces of material with wood preservative, before installation.
- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak on plywood.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.
- .4 Treat material as follows:
 - .1 Wood blocking, fascia backing, nailers.

3.3 INSTALLATION

- .1 Comply with requirements of NBC, supplemented by the following paragraphs.
- .2 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .3 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .4 Install wood cants, fascia backing, nailers and other wood supports as required and secure using steel fasteners.
- .5 Use caution when working with particle board. Use dust

collectors and high quality respirator masks.

- .6 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .7 Countersink bolts where necessary to provide clearance for other work.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 Waste Management: separate waste materials for reuse 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 DESCRIPTION OF WORK .1 This section includes labour, products, and services necessary for galvanized steel, prefinished counter flashings, and cap flashings, in accordance with the Contract Documents.

1.2 REFERENCES .1 The Aluminum Association Inc. (AAI)

- .1 AAI-Aluminum Sheet Metal Work in Building Construction-2002.
- .2 AAI DAF 45-03(R2009), Designation System for Aluminum Finishes.

.2 American Society for Testing and Materials International (ASTM)

- .1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 ASTM A240/A240M-17, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .3 ASTM A606/A606M-15, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
- .4 ASTM A653/A653M-17, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .5 ASTM A792/A792M-10(2015), Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- .6 ASTM B32-08(2014), Standard Specification for Solder Metal.
- .7 ASTM B370-12, Standard Specification for Copper Sheet and Strip for Building Construction.
- .8 ASTM D523-14, Standard Test Method for Specular Gloss.
- .9 ASTM C920-18 Standard Specification for Elastomeric Joint Sealants
- .10 ASTM D822/D822M-13, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.3 Canadian Standards Association (CSA International)

- .1 AAMA/WDMA/CSA 101/I.S.2/A440-11,

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Standard/Specification for Windows, Doors, and Unit Skylights.

- .2 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
- .4 Canadian Roofing Contractors Association (CRCA).
- .5 Green Seal Environmental Standards
 - .1 Standard GS-03-93, Anti-Corrosive Paints.
 - .2 Standard GS-11-97, Architectural Paints.
 - .3 Standard GS-36-00, Commercial Adhesives.
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies WHMIS MSDS - Material Safety Data Sheets.
- .3 Shop Drawings:
 - .1 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
- .4 Samples:
 - .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.
- .5 Quality assurance submittals: submit following in accordance with Section 01 45 00.
 - .1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

1.4 QUALITY ASSURANCE

- .1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative and Departmental Representative in accordance with Section 01 11 00:

- .1 Verify project requirements.
- .2 Review installation and substrate conditions.
- .3 Co-ordination with other building subtrades.
- .4 Review manufacturer's installation instructions and warranty requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 11 00 and 01 61 00.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 20.

1.6 WARRANTY

- .1 A guarantee for a minimum period of two (2) years from date of substantial performance, as determined by Departmental Representative, must be submitted against defects in workmanship and materials. The Contractor must extend the guarantee on replaced parts and workmanship for a period of two (2) years from date of acceptance of any replacement parts and workmanship. Defects will include but will not be limited to leaking, failure to stay in place, lifting, deformation and breaking of weather-tight seals.
- .2 Repairs will be made promptly by the Contractor with no cost to Departmental Representative within the warranty period.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

- .1 Metal flashing shall be prefinished 24 mm thick commercial galvanized (zinc-coated) steel conforming to ASTM A653/A653M Grade 230. Finish being 2-coat commercial/industrial finish system. Colour to match existing cladding.

2.2 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB-37.5.
- .3 Sealants: Silicone, one-part:
 - .1 Non-sag to CAN/CGSB-19.13, Type 2, MCG-2-25,

MCG-2-40 or ASTM C920, colour to be selected from manufacturer's standard colour chart.

- .4 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.
- .5 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.
- .6 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

2.3 FABRICATION

- .1 Fabricate metal flashings and other sheet metal work, as indicated.
- .2 Form pieces in 2400 mm maximum lengths.
 - .1 Make allowance for expansion at joints.
- .3 Hem exposed edges on underside 12 mm.
 - .1 Mitre and seal corners with sealant.
- .4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .5 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install metal flashing in accordance with the Quality Assurance requirements specified herein, the manufacturer's recommendations and Contract Drawings.
- .2 Verify shapes and dimensions of surfaces being covered

before fabricating sheet metal.

- .3 Anchor units of Work securely in place, providing for thermal expansion of metal units. Conceal fasteners where possible and set units true to line and level.
- .4 Install Work with laps, joints and seams that are watertight and weatherproof.
 - .1 Secure in place and lap joints 100 mm.
- .5 Lock end joints and caulk with sealant.
- .6 Counter Flashing:
 - .1 Coordinate installation of counter flashings with installation of assemblies being protected by counter flashing. Install counter flashings as indicated on Contract Drawings.
 - .2 Secure in a waterproof manner.
 - .3 Lap counter flashing joints a minimum of 50 mm and bed with sealant.

3.3 CLEANING

- .1 Proceed in accordance with Section 01 11 00 and 01 74 11.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 This section includes materials, equipment, labour, and services necessary for the supply and installation of stainless steel framed windows complete with projected vents; in accordance with the Contract Documents.
- .2 All work shall include, but not limited to, the following:
 - .1 Stainless Steel weatherstripped frame and sash with projected ventilators.
 - .2 Mullions, covers and trim.
 - .3 Insect screens for all operating ventilators.
 - .4 Factory applied finishes, where applicable.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A123/A123M-17, Standard Specification for Zinc (Hot-Dip galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A653/A653M-17, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .3 ASTM C542-05(2017) Standard Specification for Lock-Strip Gaskets
 - .4 ASTM C920-18 Standard Specification for Elastomeric Joint Sealants
 - .3 ASTM D2240-15e1 Standard Test Method for Rubber Property - Durometer Hardness
 - .6 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.
 - .7 ASTM E1748-95(2017), Standard Test Method for Evaluating the Engagement Between Windows and Insect Screens as an Integral System.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.1-2017, Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.2-M91(R2017), Flat, Clear Sheet Glass.
 - .3 CAN/CGSB-12.3-M91(R2017), Flat, Clear Float Glass.
 - .4 CAN/CGSB-12.8-97 (Amendment), Insulating Glass Units.

- .3 CSA Group
 - .1 AAMA/WDMA/CSA 101/I.S.2/A440-17, NAFS - North American Fenestration Standard for Windows, Doors, and Skylights.
 - .2 CSA-A440.2-14/A440.3-17, Fenestration energy performance/User guide to CSA A440.2-14, Fenestration energy performance.
 - .3 CSA Z91-17 Health and safety code for suspended equipment operations
- .4 Flat Glass Manufacturers Association (FGMA)
 - .1 FGMA Glazing Manual - 1997.
- .5 Glass Association of North American (GANA)
 - .1 GANA Glazing Manual 50th Anniversary Edition-2008
 - .2 GANA Sealant Manual-2008.
 - .3 GANA Guide to Architectural Glass (2010).
- .6 Green Seal (GS)
 - .1 GS-11-(2015), Paints and Coatings.
- .7 Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual, 2015.
 - .1 MPI #79, Primer, Alkyd, Anti-Corrosive for Metal.
- .8 Screen Manufacturers Association (SMA)
 - .1 SMA 1201R-2007 (R2012) Specification for Insect Screens for Windows, Sliding Doors and Swinging Doors.
- .9 Society for Protective Coatings (SSPC)
 - .1 SSPC - Paint 20-02(R2004), Zinc Rich Coating, Type I - Inorganic and Type II - Organic.

1.3 DEFINITIONS

- .1 Manufacturers of Glass Products: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- .2 Interspace: Space between lites of an insulating-glass unit that contains dehydrated air or other specified gas.
- .3 Sealed Insulating Glass Unit Surface Designations:
 - .1 Surface 1 - Exterior surface of the outer glass lite.
 - .2 Surface 2 - Interspace surface of the outer glass lite.
 - .3 Surface 3 - Interspace surface of the inner glass lite.

- .4 Surface 4 - Interior surface of inner glass lite (double pane).

1.4 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 windows and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
 - .2 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes, fasteners, and caulking. Indicate location of manufacturer's nameplates.
- .4 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit one representative model of each type window.
 - .4 Include frame, sash, sill, glazing and weatherproofing method, insect screens, surface finish and hardware. Show location of manufacturer's nameplates.
 - .5 Include 150 mm long samples of head, jamb, sill, meeting rail, muntin section, mullions to indicate profile, colour sample of finish, hardware.
 - .6 Submit duplicate 300 mm size samples of glass and sealant material.
- .5 Test and Evaluation Reports:
 - .1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications.
 - .2 All test reports that reference the NAFS must include, on the first page, a summary of the results including, at minimum:
 - .1 The product manufacturer.
 - .2 The type of product.
 - .3 The model number/series number.
 - .4 The primary product designation.
 - .5 The secondary product designation.

- .1 Positive design pressure.
- .2 Negative design pressure.
- .3 Water penetration resistance test pressure.
- .4 Canadian air infiltration and exfiltration levels.
- .6 The test completion date.
- .3 The report will also contain the following information:
 - .1 Test dates.
 - .2 Report preparation dates.
 - .3 Test information retention period.
 - .4 Location of testing facilities.
 - .5 Full description of test samples, including:
 - .1 Finish type, weathering characteristics.
 - .2 Condensation resistance.
 - .3 Sash strength and stiffness - projecting.
 - .4 Forced entry resistance.
 - .5 Mullion deflection - combination and composite windows.
 - .6 Complete description of amendments, as applicable.
 - .7 Conclusion.
 - .8 Drawings signed by the testing laboratory, if provided.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00.
- .2 Operation and Maintenance Data: submit operation and maintenance data for windows for incorporation into manual.

1.5 QUALITY ASSURANCE

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Manufacturer shall have not less than five years' experience in fabrication of steel windows.
- .3 Installation of windows shall be done by experienced installers.
- .4 Allowable tolerances: Size dimensions +/-1.5 mm (+/-1/16th inch).

1.6 DELIVERY,
STORAGE AND
HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect windows from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials.

1.7 WARRANTY

- .1 Warrant the following work against defects and deficiencies for the period specified from date work is certified as substantially performed and in accordance with the General Conditions of the Contract.
 - .1 Contractor hereby warrants that glazed steel windows will function as specified, but for 5 years commencing on date of Substantial Performance of Work.
 - .2 Insulating sealed glass units: 10 years, on date of Substantial Performance of Work.
- .2 Promptly make good defects and deficiencies which become apparent within the warranty period by replacing defective work satisfactory to the Departmental Representative at no expense.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Materials: to AAMA/WDMA/CSA 101/I.S.2/A440 supplemented as follows:
 - .1 Weatherstripped stainless steel sections manufactured from solid rolled stainless steel shapes.
 - .1 Sections made from new billet steel with flanges rolled integral at the mill.
 - .2 Perimeter frames and ventilator sections shall have glazing rebates providing an

- unobstructed glazing surface of at least 12.7 mm in height.
- .3 The ventilator sections shall have an integral groove for the reception of weatherstripping.
- .4 Vent frame section shall receive applied weatherstripping.
- .2 Muntins: Stainless Steel Tee Muntins.
 - .1 Muntins shall be solid hot rolled from new billet stainless steel with flanges rolled integral at the mill.
- .2 All windows to contain fibreglass thermal breaks.
- .3 Sash: Stainless steel, thermally broken.
- .4 Main frame: Stainless steel, thermally broken.
- .5 Glass:
 - .1 Design Criteria:
 - .1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials using inner lite of sealed units for continuity of air and vapour seal.
 - .2 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to design pressure of minimum 0.16 kPa to ASTM E330/E330M.
 - .3 Limit glass deflection to flexural limit of glass with full recovery of glazing materials.
 - .2 Flat Glass:
 - .1 Safety glass: to CAN/CGSB-12.1, 6 mm thick.
 - .1 Type 2-tempered.
 - .2 Class B-float.
 - .3 Category II.
 - .4 Colour:
 - .1 Transparent clear for both lites
 - .3 Insulating Glass Units:
 - .1 Insulating glass units: to CAN/CGSB-12.8, double unit, 33 mm overall thickness.
 - .1 Glass: to CAN/CGSB-12.3.
 - .2 Glass thickness: 6 mm inner lite, 6 mm outer lite.
 - .3 Inter-cavity space thickness: 20 mm, or as required to suit overall unit dimension, with low conductivity spacers.
 - .4 Inert gas fill: argon.
- .6 Screens: to ASTM E1748, SMA 1201R on the ventilating

portion of the windows.

- .1 Insect screening mesh: count 18 x 14, .011 diameter wire; mesh to be fibreglass.
- .2 Fasteners: tamper proof.
- .3 Screen frames: extruded aluminum, colour to match window frames.
- .4 Mount screen frames for interior replacement.
- .7 Interior metal sills: as detailed on Drawings, and where required; minimum 3 mm thick, complete with anchoring devices.
- .8 Hardware:
 - .1 Spring Catch or Cam Handle.
 - .2 Stainless Steel 4-Bar Hinges.
- .9 Isolation coating: alkali resistant bituminous paint.
- .10 Sealants:
 - .1 Silicone, one-part, non-sag to CAN/CGSB-19.13, Type 2, MCG-2-25, MCG-2-40, or ASTM C920, SWRI validated, colour to be selected from manufacturer's standard colour chart.

2.2 WINDOW TYPE AND CLASSIFICATION

- .1 Product type(s):
 - .1 AP - Awning hopper projected windows.
 - .2 FW - Fixed window.
- .2 Classification rating: to AAMA/WDMA/CSA 101/I.S.2/A440.
 - .1 Primary designation:
 - .1 Performance classes: CW.
 - .2 Performance categories: 45.
 - .2 Secondary designation:
 - .1 Positive design pressure: 2160 Pa.
 - .2 Negative design pressure: 2160 Pa.
 - .3 Water penetration resistance test pressure: 330 Pa.
 - .4 Canadian air infiltration and exfiltration levels: A3.
 - .3 Surface condensation control: compliant with standard CSA-A440.2/A440.3.
 - .4 Forced Entry: F10.

2.3 FABRICATION

- .1 Fabricate in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 and approved shop drawings.
- .2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm

for units with a diagonal measurement over 1800 mm.

- .3 Face dimensions detailed are maximum permissible sizes.
- .4 Brace frames to maintain squareness and rigidity during shipment and installation.
- .5 Corners of frame and ventilators shall be mitered then flash welded. Exposed and contact surfaces shall be ground smooth, flush with adjacent surfaces.
- .6 Stainless steel tee muntins shall be tenoned and welded to the perimeter frame. Muntin intersections shall be slotted and cross-notched and shall extend continuous from jamb to jamb and head to sill. All joints shall be face welded and exposed surfaces shall be finished smooth flush with adjacent surfaces.
- .7 Finish steel clips and reinforcement with shop coat galvanized 380 g/m2 zinc coating to ASTM A123/A123M.

2.4 FACTORY FINISHING

- .1 After fabrication, components not fabricated from stainless steel shall receive the following finishes:
 - .1 Hot-Dipped Galvanizing.
 - .2 Baked on enamel. Colour to be selected by Departmental Representative from manufacturer's standard colours.

2.5 SCREEN FINISHES

- .1 Screen frames shall be finished to match the sash (mill finish if sash is primed).
- .2 Screens shall be rewirable to allow for mesh replacement.
- .3 Screen clips shall permit easy attachment and removal.

2.6 ISOLATION COATING

- .1 Paints: in accordance with manufacturer's recommendations for surface conditions.
- .2 Isolate aluminum from following components, by means of isolation coating:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.
 - .3 Wood.

2.7 GLAZING

- .1 Glaze windows in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
 - .1 All sash shall be designed for interior glazing.
 - .2 Provide continuous snap-on (optional screw-on) glazing beads to suit glass as specified.
 - .3 Provide 38 mm x 6 mm steel screw-on glazing bar with 3mm PVC thermal break for 25 mm o/a glass.

2.8 GLAZING ACCESSORIES

- .1 Setting blocks: neoprene, 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.
- .2 Spacer shims: neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self-adhesive on one face.
- .3 Glazing tape:
 - .1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.
 - .2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2%, designed for compression of 25%, to effect an air and vapour seal.
- .4 Glazing splines: resilient polyvinyl chloride foam, extruded shape to suit glazing channel retaining slot, colour as selected.
- .5 Glazing clips: manufacturer's standard type.
- .6 Lock-strip gaskets: to ASTM C542.

2.9 HARDWARE

- .1 Hardware: standard US25D finish.
 - .1 Ventilators are hung on heavy duty stainless steel four bar hinges, having friction maintained by a sliding brass shoe with a screw adjustment.
 - .2 Provide two cam handles, spring catches or pushbars per ventilator where sash width exceeds 1420 mm.
 - .3 Cam handles or spring catches shall be shipped loose for field installation.

- .2 Where windows containing latching devices are located in excess of 1900 mm above floor level:
 - .1 Equip projected units with roto operators with locking handle.
- .3 Wicket: Aluminum frame finished to match flyscreen. Used with cam handle hardware on projected-out ventilators.
- .4 Tie back and life line anchors: to CSA-Z91, 2 per window, to permit window installation and maintenance.

2.10 WEATHERSTRIPPING

- .1 Double continuous PVC weatherstripping shall be applied to the frame and integral weatherstrip groove of the ventilator sections, and shall be on the same plane around the interior perimeter of the ventilated area.
- .2 Weatherstripping that is surface applied or requires an additional retainer or requires screws for application shall not be acceptable.
- .3 Thermal break for 25 mm o/a glazing to be extruded PVC.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 EXAMINATION

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

after receipt of written approval to proceed from Departmental Representative.

- .2 Window openings shall conform to details, dimensions and tolerances shown on the window manufacturers approved shop drawings.

3.3 PREPARATION

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION

- .1 Window installation:
 - .1 Install in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
 - .2 Arrange components to prevent abrupt variation in colour.
 - .3 Windows specified under this section shall be installed by experienced personnel.
 - .4 Set units plumb, level and true to line, without warp or rack of frames.
 - .5 Anchor units securely to surrounding construction with approved fasteners.
 - .6 The exterior joints between the sash, trim and mullions shall be properly sealed watertight with an approved sealant and neatly tooled to provide engagement with adhesive surfaces.
- .2 Sill installation:
 - .1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces.
 - .2 Cut sills to fit window opening.
 - .3 Secure sills in place with anchoring devices located at ends and joints of continuous sills and evenly spaced 600 mm on centre in between.
 - .4 Fasten drip deflectors with self-tapping stainless steel screws.
 - .5 Maintain 6 to 9 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3 to 6 mm space at each end.
- .3 Attach ventilator hardware, as required, and adjust ventilators to operate smoothly free from twist and to be weather tight when closed.
- .4 Repair any abraded areas of the factory finish with touch-up paint supplied by the manufacturer.

- .5 Caulking:
 - .1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.
 - .2 Apply sealant and conceal within window units except where exposed use is permitted by Departmental Representative.

3.5 GLAZING
INSTALLATION:
EXTERIOR - WET
METHOD (SEALANT AND
SEALANT)

- .1 Perform work in accordance with GANA Glazing Manual and for glazing installation methods.
- .2 Place setting blocks at 1/4 points and install glazing light or unit.
- .3 Install removable stops with glazing centred in space by inserting spacer shims both sides at 600 mm intervals, 6 mm below sight line.
- .4 Fill gaps between glazing and stops with sealant to depth of bite on glazing, maximum 9 mm below sight line to ensure full contact with glazing and continue air and vapour seal.
- .5 Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
 - .1 Remove traces of primer, caulking.
 - .2 Remove glazing materials from finish surfaces.
 - .3 Remove labels.
 - .4 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 Window installer shall leave window surfaces clean after installation and ready to receive glass and glazing. The window installer will not be responsible for final cleaning.
- .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.

3.7 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 After installation, mark each light with an "X" by using removable plastic tape or paste.
 - .1 Do not mark heat absorbing or reflective glass units.
- .3 Repair damage to adjacent materials caused by window and glazing installation.

3.8 SCHEDULE

- .1 As indicated in drawings.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Labour, materials, tools and other equipment required to complete exterior and interior painting; and interior re-painting for affected areas.
- .2 Surface preparation for this section will be limited to priming and back priming, and specific pre-treatments noted in this section or as specified in the Master Painters Institute (MPI) Painting Specification Manual.
- .3 Material and installation of site applied paint finishes to interior and exterior surfaces, including site painting of shop primed surfaces. The work of this section is for the painting and finishing of all areas as the Contract drawings and specifications, but not limited to the following surfaces: concrete masonry block, metal, steel structure, etc.

1.2 REFERENCES

- .1 Architectural Painting Specifications Manual, Master Painters Institute (MPI), 2010.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.57-2003, Interior Alkyd Semigloss Enamel.
 - .2 CAN/CGSB-1.59-M89, Alkyd Exterior Gloss Enamel.
 - .3 CAN/CGSB-1.60-97, Interior Alkyd Gloss Enamel.
 - .4 CAN/CGSB-1.188-2004, Emulsion Filler for Masonry Block.
 - .5 CAN/CGSB-1.195-95, Interior Latex Semigloss Paint.
 - .6 CAN/CGSB 85.10-99, Protective Coating for Metals.
 - .7 CAN/CGSB 85-GP-100M, Painting.
- .3 Canada Green Building Council (CaGBC).
- .4 Environmental Protection Agency (EPA)
 - .1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).
- .5 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

- .1 Material Safety Data Sheets (MSDS).
- .7 National Fire Code of Canada, 2015 (NFC)
- .8 Systems and Specifications Manual, SSPC Painting Manual 2008, Volume Two, Society for Protective Coatings (SSPC).
- .9 The Master Painters Institute (MPI).
 - .1 Architectural Painting Specification Manual - 2010.
 - .2 Standard GPS-1-08, MPI Green Performance Standard for Painting and Coatings.

1.3 QUALITY ASSURANCE

- .1 Contractor shall have a minimum of five years proven satisfactory experience.
- .2 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.
- .3 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .4 Materials (primers, paints, coatings, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.
- .5 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.
- .6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .7 Standard of Acceptance:
 - .1 No defects visible from a distance of 1000 mm at 90° to surface.
 - .2 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.4 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- .1 Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 ratings based on VOC (EPA Method 24) content levels.
- .2 Where indoor air quality (odour) is a problem, use only MPI listed materials having a minimum E2 or E3 rating.

1.5 INSPECTION REQUIREMENTS

- .1 Interior surfaces requiring painting shall be inspected by Paint Inspection Agency who shall notify Departmental Representative and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.

1.6 SCHEDULING OF WORK

- .1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule minimum of 48 hours in advance of proposed operations.
- .2 Obtain written authorization from Departmental Representative for any changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.7 SUBMITTALS

- .1 Submit product data and manufacturer's installation/application instructions for each paint and coating product to be used in accordance with Section 01 33 00.
- .2 Submit WHMIS MSDS - Material Safety Data Sheets.
- .3 Upon completion, submit records of products used. List products in relation to finish system and include the following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers.
 - .4 MPI Environmentally Friendly classification system rating.
 - .5 Manufacturer's Material Safety Data Sheets (MSDS).

1.8 SAMPLES

- .1 Submit full range colour sample chips in accordance with Section 01 33 00. Indicate where colour availability is restricted.
- .2 Submit 200 x 300 mm sample panels of each with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:
 - .1 3 mm plate steel for finishes over metal surfaces.
 - .2 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
- .3 When approved, sample panels shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

1.9 QUALITY CONTROL

- .1 Provide mock-up in accordance with Section 01 45 00.
- .2 When requested by Departmental Representative, prepare and paint designated surface, area, room or item to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.10 EXTRA MATERIALS

- .1 Submit maintenance materials in accordance with Section 01 78 00. Package products with protective covering and identify with descriptive labels.
- .2 Submit one - one litre can of each type and colour of primer and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
- .3 Deliver to Departmental Representative and store where directed.

1.11 DELIVERY, HANDLING AND STORAGE

- .1 Deliver, store and handle materials in accordance with Section 01 61 00, supplemented as follows:
 - .1 Deliver and store materials in original containers, sealed, with labels intact.

- .2 Labels shall clearly indicate:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.
- .4 Provide and maintain dry, temperature controlled, secure storage.
- .5 Observe manufacturer's recommendations for storage and handling.
- .6 Store materials and supplies away from heat generating devices.
- .7 Store materials and equipment in a well ventilated area with temperature range 7°C to 30°C.
- .8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Departmental Representative.
- .10 Remove paint materials from storage only in quantities required for same day use.
- .11 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .12 Fire Safety Requirements:
 - .1 Provide minimum one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 20.
 - .2 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) are regarded as hazardous products and are subject to regulations for disposal.
 - .3 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
 - .4 Place materials defined as hazardous or toxic

- waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .5 Ensure emptied containers are sealed and stored safely.
- .6 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
 - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .7 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .8 Set aside and protect surplus and uncontaminated finish materials.
- .9 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

1.12 SITE REQUIREMENTS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces in accordance with Section 01 51 00.
 - .2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10°C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - .3 Where required, provide continuous ventilation for seven days after completion of application of paint.
 - .4 Coordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
 - .5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and

- heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
- .6 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by General Contractor.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
- .1 Unless specifically pre-approved by the specifying body, Paint Inspection Agency and the applied product manufacturer, perform no painting work when:
- .1 Ambient air and substrate temperatures are below 10°C.
- .2 Substrate temperature is over 32°C unless paint is specifically formulated for application at high temperatures.
- .3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.
- .4 The relative humidity is above 85% or when the dew point is less than 3°C variance between the air/surface temperature.
- .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
- .2 Perform no painting work when the maximum moisture content of the substrate exceeds:
- .1 12% for concrete and masonry (clay and concrete brick/block).
- .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".
- .4 Test masonry surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
- .1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
- .2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.
- .3 Apply paint only when previous coat of paint is dry or adequately cured.
- .4 Additional Interior Application Requirements:
- .1 Apply paint finishes only when temperature at location of installation can be satisfactorily

- maintained within manufacturer's recommendations.
- .2 Apply paint in occupied facilities during hours specified in accordance with Section 01 11 00. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Paint materials for paint systems shall be products of a single manufacturer.
- .3 Low odor products. Whenever possible, select products exhibiting low odor characteristics. If two products are otherwise equivalent, select the product with the lowest odor. Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:
 - .1 be water-based, water soluble, water clean-up.
 - .2 be non-flammable.
 - .3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
 - .4 be manufactured without compounds which contribute to smog in the lower atmosphere.
 - .5 do not contain methylene chloride, chlorinated hydrocarbons and toxic metal pigments.
- .5 Water-borne surface coatings must be manufactured and transported in a manner that steps of process, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
- .6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

- .7 Water-borne surface coatings and recycled water-borne surface coatings must have a flash point of 61.0°C or greater.
- .8 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

2.2 COLOURS

- .1 Departmental Representative will provide Colour Schedule after Contract award.
- .2 Selection of colours will be from manufacturers full range of colours.
- .3 Where specific products are available in a restricted range of colours, selection will be based on the limited range.
- .4 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Departmental Representative's written permission.
- .2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.
- .4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following values:

Gloss Level Category	Units @ 60°	Units @ 85°
G1 - matte finish	0 to 5	max. 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	min. 35
G5 - semi-gloss finish	35 to 70	
G6 - gloss finish	70 to 85	
G7 - high gloss finish	> 85	

- .2 Gloss level ratings of painted surfaces shall be as specified herein.

2.5 EXTERIOR PAINTING SYSTEMS

- .1 Concrete Masonry Units: smooth and split face block.
.1 EXT 4.2A - Latex G5 finish.

2.6 INTERIOR PAINTING SYSTEMS

- .1 Concrete Masonry Units: smooth and split face block and brick
.1 INT 4.2A Latex G5 finish.
- .2 Structural Steel and Metal Fabrications: angles, channels, etc.
.1 INT 5.1E Alkyd G5 finish.
- .3 Galvanized Metal: frames, misc. steel, etc.
.1 INT 5.3A Latex G5 finish.
- .4 Interior re-painting:
.1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
.1 RIN 5.1E - Alkyd G5 finish.
.2 Galvanized Metal: high contact/high traffic areas (frames).
.1 RIN 5.3C - Alkyd G3 finish.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Perform preparation and operations for interior painting in accordance with MPI Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
- .3 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.

3.2 EXISTING CONDITIONS

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Departmental Representative. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .3 Maximum moisture content as follows:
 - .1 Concrete Block: 12%.

3.3 PROTECTION

- .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .3 Protect factory finished products and equipment.
- .4 Protect passing pedestrians, building occupants and general public in and about the building.

- .5 Removal of electrical cover plates, light fixtures, surface mounted equipment, fittings and fastenings shall be done prior to undertaking any painting operations by General Contractor. Items shall be securely stored and re-installed after painting is completed by General Contractor.
- .6 As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Departmental Representative.

3.4 CLEANING AND PREPARATION

- .1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
 - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .4 Allow surfaces to drain completely and allow to dry thoroughly.
 - .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
 - .6 Use trigger operated spray nozzles for water hoses.
 - .7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.
- .2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .3 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .4 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed

air, or vacuum cleaning.

- .5 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.
- .6 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

3.5 APPLICATION

- .1 Method of application to be as approved by Departmental Representative. Apply paint by brush, roller, air sprayer, airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
 - .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Departmental Representative.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 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 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.
 - .4 Brush out immediately all runs and sags.
 - .5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Departmental Representative.

- .5 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces.

3.6 FIELD QUALITY CONTROL

- .1 Field inspection of painting operations to be carried out by Departmental Representative.
- .2 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Co-operate with Departmental Representative and provide access to all areas of work.

3.7 RESTORATION

- .1 Clean and re-install all hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

END OF SECTION