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Laurier House Flat Roof Rehabilitation

PARKS CANADA AGENCY

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Canada

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1.1 WORK OF THIS CONTRACT

.1 Work of this Contract comprises the following:

.1 Demolition of existing built-up roof membrane and substrate. Partial salvage and re-use of existing lead-coated copper flashing. Provide new lead-coated copper flashing as indicated. Installation of new self-adhered 2-ply roof panel/membrane including all joints and penetration details. Paint removal and re-painting of elevator mechanical room exterior walls. Restoration of the heritage wood door and frame to elevator mechanical room penthouse.

.2 Protection of the building's heritage features from damage during the work. Including all existing façade elements and other site and architectural features as noted on the plans.

1.2 Municipal Address: 335 Laurier Ave. E, Ottawa, ON, K1N 6R4

.1 Description: Laurier House National Historic Site.

.2 The work under this contract **is covered by a twenty (20) year warranty from the manufacturer**. A 12-month warranty inspection will be held, which findings could trigger a one year warranty extension.

1.3 DIVISION OF WORK

.1 Division of the *Work* among *Subcontractors* and *Suppliers* is solely *Contractor's* responsibility. *Consultant* and *Owner* assume no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of the *Work*.

1.4 SPECIFICATIONS LANGUAGE AND STYLE

.1 These specifications are written in the imperative mood and in streamlined form. The imperative language is directed to Contractor, unless stated otherwise.

.2 Complete sentences by reading "shall", "Contractor shall", "shall be", and similar phrases by inference. Where a colon (:) is used within sentences and phrases, read the words "shall be" by inference.

.3 Fulfill and perform all indicated requirements whether stated imperatively or otherwise.

.4 When used in the context of a Product, read the word "provide" to mean "supply and install to result in a complete installation ready for its intended use".

1.5 CONTRACT DOCUMENTS FOR CONSTRUCTION PURPOSES

.1 *Owner* will supply *Contractor* with a complete set of *Contract Documents* in electronic form before commencement of the *Work*. *Contractor* may print hard copies for construction purposes as required.

1.6 DOCUMENTS AT THE SITE

- .1 Keep the following documents at Place of the Work, stored securely and in good order and available to Owner and Consultant in hard copy form:
- .2 Current Contract Documents, including Drawings, Specifications and addenda.
- .3 Change Orders, Change Directives, and Supplementary Instructions.
- .4 Reviewed Shop Drawings, Product data and samples.
- .5 Field test reports and records.
- .6 Construction progress schedule.
- .7 Meeting minutes.
- .8 Manufacturer's certifications.
- .9 Permits, inspection certificates, and other documents required by authorities having jurisdiction.
- .10 Current as-built drawings.
- .11 Material Safety Data Sheets (MSDS) for all controlled Products.
- .12 Other documents such as Safety Plan-s, COVID Protocols, among others, will be required by the Project Manager at the kick-off meeting. All those documents will also be required to remain available at the working site.

1.7 CONTRACTOR'S USE OF PREMISES

- .1 Refer to Section 01 14 00 – Work Restrictions
 - .1 Confine *Construction Equipment, Temporary Work*, storage of *Products*, waste products and debris, and all other construction operations to limits required by laws, ordinances, permits, and *Contract Documents*, whichever is most restrictive. Do not unreasonably encumber *Place of the Work*.

1.8 OWNER-SUPPLIED PRODUCTS

- .1 *Not Applicable*

1.9 PRESERVATION OF THE SITE

- .1 The Work is within a National Historic Site. It is essential that all lands remain as undisturbed as possible. Use standards and methods beyond those for normal construction in order to protect the environment and ensure aesthetics of the Work. Strictly adhere to contract limits and take every precaution to minimize environmental damage and disruption to vegetation and structures or existing services, both on construction and storage sites.
- .2 If damage occurs during construction, bear the expense to immediately restore such damaged areas to the satisfaction of the Departmental Representative. .2 If restoration fails to satisfy specified requirements, the Departmental Representative may complete repairs at the Contractor's expense.
- .3 Ensure no damage will be done to aerial or underground electrical /communications cables.

1.10 RELICS

- .1 Protect relics, antiquities, items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during course of work.
- .2 Give immediate notice to Departmental Representative and await Departmental Representative's written instructions before proceeding with work in this area.
- .3 Relics, antiquities and items of historical or scientific interest remain the Client's property.

1.11 NO-GO ZONES

- .1 No construction activities to occur in zones identified and delineated by Parks Canada Departmental Representatives as "No-Go" Zones without prior Departmental approval and ground protection measures (ie. plywood) in place.

1.12 PROTECTION OF EXISTING BUILDING AND SITE

- .1 Protect existing building elements, surface features, heritage landscape, asphalt and concrete pavements, and archaeological sensitive areas from damage while Work is in progress.
- .2 Pay special attention to protect the following heritage features:
 - .1 Brick Masonry and mortar
 - .2 Slate roofing
 - .3 Wood trim and mouldings
 - .4 Windows and doors
 - .5 Balconies and awnings
 - .6 Metal flashing and trim not included in the work

END OF SECTION

PART 1 GENERAL

1.1 RESTRICTIONS ON USE OF PREMISES

- .1 Limit use of premises for Work and for storage to allow;
 - .1 Staff occupancy.
 - .2 Public usage.
- .2 All vehicle traffic and parking to remain on extant parking areas or on roadway.
- .3 All staging, except as noted on drawings to remain on the extant parking areas or on the roadway.
- .4 Avoid driving heavy equipment on sod areas of the site.

1.2 WORK SEQUENCE

- .1 Schedule and construct Work in stages to accommodate Owner's continued use of premises during construction.
- .2 Schedule and construct Work in stages as required to provide for continuous public usage.

1.3 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period.
- .2 Cooperate with Owner in scheduling operations to minimize disruptions and to facilitate Owner usage.

1.4 RESTRICTED HOURS OF WORK IN OCCUPIED FACILITIES

- .1 Work may be performed during Owner's normal business hours. Owner's normal business hours are:
 - .1 Monday to Friday from 8:00 to 05:00.
 - .2 Allow for hours of work restrictions in construction progress schedule.
 - .3 Additional work hours may be coordinated and approved by the departmental representative.

1.5 NOISY WORK RESTRICTIONS IN OCCUPIED FACILITIES

- .1 Comply with municipal noise bylaw restrictions.
- .2 Noisy work shall be scheduled in advance, in coordination with the Departmental Representative.
- .3 Use powder actuated devices only with Consultant's written permission.

1.6 MAINTAINING LIFE SAFETY SYSTEMS IN OCCUPIED FACILITIES

- .1 Maintain operational life safety systems and public access to exits in occupied areas during all stages of the Work.

- .2 Determine nature and exact locations of existing fire and smoke sensors prior to the commencement of the Work. Avoid direct or indirect jarring while working in adjacent areas and exercise caution to avoid triggering these devices.
- .3 Be responsible for costs incurred by Departmental Representative on account of false fire alarms activated as a result of the execution of the Work without adequate precautions.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 DEFINITION

- .1 In this Section "Substitution" means a Product, a manufacturer, or both, not originally specified in Contract Documents as an "acceptable product" but proposed for use by Contractor. It may also mean any product proposed by the Contractor that does not fully meet or exceed the performance required as specified in the Contract Documents.

1.2 SUBSTITUTION PROCEDURES

- .1 Propose Substitution submission with all of the available information so Consultant will promptly review and accept or reject the proposed Substitution.
- .2 Consultant may accept a Substitution if satisfied that:
 - .1 The proposed substitute Product is the same type as, is capable of performing the same functions as, interfaces with adjacent work the same as, and meets or exceeds the standard of quality, performance and, if applicable, appearance and maintenance considerations, of the existing or previously approved Product.
 - .3 If Contractor fails to order an accepted Product in adequate time to meet Contractor's construction schedule, Consultant will not consider that a valid reason to accept a Substitution.
 - .4 If the Consultant accepts a Substitution and subject to Departmental Representative agreement, the change in the Work will be documented in the form of a Change Order.
 - .5 If a Substitution is accepted, the Contractor shall not revert to an originally accepted Product or manufacturer without Consultant's prior written acceptance.

1.3 SUBMISSION REQUIREMENTS FOR PROPOSED SUBSTITUTIONS

- .1 Include with each proposed Substitution the following information:
 - .1 Identification of the Substitution, including product name and manufacturer's name, address, telephone numbers, and web site.
 - .2 Reason(s) for proposing the Substitution.
 - .3 A statement verifying that the Substitution will not affect the Contract Price and Contract Time or, if applicable, the amount and extent of a proposed increase or decrease in Contract Price and Contract Time on account of the Substitution.
 - .4 A statement verifying that the Substitution will not affect the performance or warranty of other parts of the Work.
 - .5 Manufacturer's Product literature for the Substitution, including material descriptions, compliance with applicable codes and reference standards, performance and test data, compatibility with contiguous materials and systems, and environmental considerations.
 - .6 Product samples as applicable.

- .7 A summarized comparison of the physical properties and performance characteristics of the specified Product and the Substitution, with any significant variations clearly highlighted.
- .8 Availability of maintenance services and sources of replacement materials and parts for the Substitution, as applicable, including associated costs and time frames.
- .9 If applicable, estimated life cycle cost savings resulting from the Substitution.
- .10 Details of other projects and applications where the Substitution has been used.
- .11 Identification of any consequential changes in the Work to accommodate the Substitution and any consequential effects on the performance of the Work as a whole. A later claim for an increase to the Contract Price or Contract Time for other changes in the Work attributable to the Substitution will not be considered.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

1.1 SCHEDULE OF VALUES

.1 Prior to the first application for payment, submit for *Consultant's* review an initial schedule of values. Modify the initial schedule of values if and as requested by *Consultant*. Obtain *Consultant's* written acceptance of the initial schedule of values prior to the first application for payment.

.2 Together with the first and all subsequent applications for payment, submit updated versions of the schedule of values to indicate the values, to the date of application for payment, of work performed and *Products* delivered to *Place of the Work*.

.3 Provide the schedule of values in an electronic spreadsheet format that provides for inclusion of the following information:

- .1 Identifying information including title and location of the *Work*, name of *Contractor*, number and date of application for payment, and period covered by the application for payment.
- .2 A work breakdown structure based on *Contractor*, *Subcontractor* and sub-*Subcontractor* work breakdown. Include separate line items for closeout procedures including closeout submittals, demonstration and training, start-up and testing, and commissioning collectively valued at minimum 5 % of *Contract Price*.

1.2 CASH FLOW PROJECTION

.1 Prior to the first application for payment submit, for *Consultant's* review, a forecast of approximate monthly progress payments for each month of the *Contract Time*.

.2 Submit revised cash flow forecasts when required due to significant changes in rate of progress of the *Work* or significant changes in the *Contract Price* when requested by *Consultant*.

1.3 WORKERS' COMPENSATION CLEARANCE

.1 Submit proof of workers' compensation clearance with each application for payment.

1.4 STATUTORY DECLARATIONS

.1 Submit a statutory declaration in the form of the Departmental Form to that effect with each application for payment except the first one.

1.5 HOLDBACK PROCEDURES

- .1 Holdback procedures shall be in accordance with Federal Regulations / GC 5.4.
- .2 The holdback is released upon *deemed completion* of the project.

END OF SECTION

PART 1 GENERAL

1.1 CONSTRUCTION START-UP MEETING

- .1 Promptly after Contract award, the Departmental Representative will establish the time and location of a construction start-up meeting to review and discuss administrative procedures and responsibilities. Departmental Representative will notify Contractor and Consultant at least 3 (three) Working Days before the meeting.
- .2 Senior representatives of Owner, Consultant, and Contractor, including Contractor's project manager and site superintendent, shall be in attendance.
- .3 Departmental Representative will chair the meeting and record and distribute the minutes.
- .4 Agenda will include following:
 - .1 Appointment of official representatives of Owner, Contractor, Consultant.
 - .2 Project communications.
 - .3 Contract Documents for construction purposes.
 - .4 Documents at the site.
 - .5 Contractor's use of premises.
 - .6 Owner-supplied Products, if applicable
 - .7 Work restrictions.
 - .8 Contract modification procedures.
 - .9 Payment procedures.
 - .10 Construction progress meetings.
 - .11 Construction progress schedule, including long lead time items.
 - .12 Submittals schedule and procedures.
 - .13 Quality requirements, including testing and inspection procedures.
 - .14 Contractor's mobilization.
 - .15 Temporary utilities.
 - .16 Existing utility services.
 - .17 Construction facilities.
 - .18 Temporary barriers and enclosures.
 - .19 Site safety.
 - .20 Site security.
 - .21 Cleaning and waste management.
 - .22 Closeout procedures and submittals.
 - .23 Other items.

1.2 CONSTRUCTION PROGRESS MEETINGS

- .1 Schedule regular weekly (plus as required for specific situations) construction progress meetings for the duration of the Work. Departmental Representative will prepare meeting agendas, chair the meetings, and record and distribute the minutes.
- .2 Meetings shall take place on site.
- .3 Departmental Representative will record in the meeting minutes significant decisions and identify action items and action dates by attendees or the parties they represent.
- .4 Departmental Representative will distribute copies of minutes within three Working Days after each meeting to meeting attendees and any affected parties who may not be in attendance.
- .5 Agenda for each meeting shall include the following, as a minimum:
 - .1 Approval of minutes of previous meeting.
 - .2 Work progress since previous meeting.
 - .3 Field observations, including any problems, difficulties, or concerns.
 - .4 Construction progress schedule.
 - .5 Submittals schedule.
 - .6 Proposed changes in the Work.
 - .7 Requests for information.
 - .8 Site safety issues.
 - .9 Other business.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- .1 This Section specifies Contractor's responsibilities for preparation and submission of schedules and other documentation related to tracking construction progress.
- .2 The purpose of submitting progress schedules is to:
 - .1 Inform Departmental Representative and Consultant of actual progress versus planned progress, and
 - .2 provide assurance that scheduling issues are being proactively identified and addressed in a timely manner, and that planned progress is being maintained as closely as possible.

1.2 CONSTRUCTION PROGRESS SCHEDULE

- .1 Format and Content:
 - .1 Prepare schedule in the form of a Critical Path Method (CPM) Gantt chart using Microsoft Project or Excel.
 - .2 Provide a work breakdown structure identifying key activities, work packages, shutdown or closure activities and major milestones, including long delivery Products, inspection and testing activities, preparation and review of mock-ups, and similar items, at a sufficient level of detail to effectively manage construction progress.
 - .3 Indicate milestone dates for Substantial Performance of the Work.
- .2 Submission:
 - .1 Submit initial schedule to Departmental Representative and Consultant within 10 Working Days after Contract award.
 - .2 Submit schedule via e-mail and pdf files.
 - .3 Consultant will review format and content of initial schedule and request necessary changes, if any, within 10 Working Days after receipt.
 - .4 If changes are required, resubmit finalized initial schedule within 5 Working Days after return of review copy.
 - .5 Submit updated progress schedule bi-weekly and invoice monthly to Departmental Representative and Consultant, indicating actual and projected start and finish dates with report date line and progress, activity and baseline comparison to current progress.
 - .6 Include a written report with each updated progress schedule. Indicate work status to date comparing baseline to actual progress, current forecasts, identifying problem areas, anticipated delays and impact on schedule, and planned corrective actions.

1.3 SUBMITTALS SCHEDULE

- .1 Format and Content:

- .1 Prepare schedule identifying all required Shop Drawing, Product data, and sample submissions.
 - .2 Prepare schedule in electronic format.
 - .3 Provide a separate line for each required submittal, organized by Specifications section names and numbers, and further broken down by individual Products and systems as required.
 - .4 For each required submittal, show planned earliest date for initial submittal and latest date for return by Consultant of reviewed submittal without causing delay.
 - .5 Allow time in schedule for resubmission of submittals, should resubmission be necessary.
- .2 Submission:
- .1 Submit schedule to Consultant within 15 Working Days after Contract award.
 - .2 Submit schedule via e-mail as .pdf files.
 - .3 Consultant will review format and content of initial schedule and request necessary changes, if any, within 7 Working Days after receipt.
 - .4 If changes are required, resubmit finalized schedule within 7 Working Days after return of review copy.

1.4 SCHEDULE MANAGEMENT

- .1 A schedule submitted as specified and accepted by Consultant shall become the baseline schedule and shall be used as the baseline for updates.
- .2 At each regular progress meeting, review and discuss current construction progress and submittals schedules with Consultant and Departmental Representative, including activities that are behind schedule and planned measures to regain schedule slippage in key areas on or near the critical path.
- .3 Activities considered behind schedule are those with start or completion dates later than the dates shown on the baseline schedule.

1.5 RECORDING ACTUAL SITE CONDITIONS ON AS-BUILT DRAWINGS

- .1 Obtain from Consultant an electronic copy of the construction Drawings for the purpose of creating as-built drawings. Print a hard copy set of construction Drawings at a perfectly legible scale and size for the purpose of creating as-built drawings.
- .2 Record information and maintain as-built drawings in clean, dry and legible condition.
- .3 The Contractor is also allowed to record information in electronic form, clearly identifying as-built deviations from the originally obtained construction Drawings.
- .4 Clearly label each drawing as "AS-BUILT DRAWING". Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .5 Record actual construction including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by Change Orders and Supplemental Instructions

- .3 References to Shop Drawings, where Shop Drawings show more detail.
- .4 Do not use as-built drawings for construction purposes.

1.6 PROGRESS PHOTOGRAPHS

- .1 Contractor to take pre-construction photos for the purpose of recording existing conditions.
- .2 Arrange for periodic digital photography to document and provide a photographic record of the progress of the Work.
- .3 Arrange for final photographs to be taken.
- .4 Identify each photograph by project name, date taken and location using grid line references or else if more practical.
- .5 Submission: Submit .jpg format files in standard resolution via e-mail monthly.
- .6 Do not use progress or any other Project photograph-s for promotional purposes without Departmental Representative's written consent.

1.7 PRODUCTS – NOT USED

1.8 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 ADMINISTRATIVE

- .1 All submissions to Consultant must also be submitted to the Departmental Representative.
- .2 Submit specified submittals to Consultant for review. Submit with reasonable promptness and in orderly sequence so as not to cause delay in the Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time or for Product substitutions or other deviations from the Drawings and Specifications.
- .3 Where required by authorities having jurisdiction, provide submittals to such authorities for review and approval.
- .4 Do not proceed with Work affected by a submittal until review is complete.
- .5 Present Shop Drawings, Product data, and samples in SI metric units. Where items or information is not produced in SI Metric units, converted values are acceptable.
- .6 Review submittals, provide verified field measurements where applicable, and affix Contractor's review stamp prior to submission to Consultant. Contractor's review stamp represents that necessary requirements have been determined and verified, and that the submittal has been checked and coordinated with requirements of the Work and Contract Documents.
- .7 Verify field measurements and that affected adjacent work is coordinated.
- .8 Submittals not meeting specified requirements will be returned with comments.
- .9 Reproduction of construction Drawings to serve as background for Shop Drawings is not permitted.
- .10 **Contractor shall not propose product substitutions at the submittals stage.** If a product substitution is proposed, provide all information to the Consultant for review prior to submission as a submittal. Only submit substituted products if approved by Consultant.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Indicate Products, methods of construction, and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of the Work.
- .2 Where Products attach or connect to other Products, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross-references to Drawings, Specifications and other already reviewed Shop Drawings.
- .3 Accompany submittals with a transmittal information including:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification of each submittal item and quantity.

- .5 Other pertinent data.
- .4 Shop Drawing submittals shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .4 Subcontractor.
 - .5 Supplier.
 - .6 Manufacturer.
 - .5 Contractor's stamp, date, and signature of Contractor's authorized representative responsible for Shop Drawing review, indicating that each Shop Drawing has been reviewed for compliance with Contract Documents and, where applicable, that field measurements have been verified.
 - .6 Details of appropriate portions of the 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 Relationships to other parts of the Work.
- .7 Product data submittals shall include material safety data sheets (MSDS) for all controlled Products.
- .8 Submit electronic copy of Shop Drawings where specified in the technical Specifications.
- .9 Submit electronic copy of Product data sheets where specified in the technical Specifications.
- .10 Where a submittal includes information not applicable to the Work, clearly identify applicable information and strike out non-applicable information.
- .11 Supplement standard information to include details applicable to Project.
- .12 Allow 7 Working Days for Consultant's review of each submittal and incorporate in submittals schedule specified in Section 01 32 00 – Construction Progress Documentation.
- .13 If upon Consultant's review no errors or omissions are discovered, or if only minor corrections are required as indicated, submittal will be returned and fabrication or installation of Work may proceed.

- .14 If upon Consultant's review significant errors or omissions are discovered, a so noted copy will be returned for correction and resubmission. Do not commence fabrication or installation.
- .15 Consultant's notations on submittals are intended to ensure compliance with Contract Documents and are not intended to constitute a change in the Work requiring change to the Contract Price or Contract Time. If Contractor considers any Consultant's notation to be a change in the Work, promptly notify Consultant in writing before proceeding with the Work.
- .16 Resubmit corrected submittals through same procedure indicated above, before any fabrication or installation of the Work proceeds. When resubmitting, notify Consultant in writing of any revisions other than those requested by Consultant.

1.3 SAMPLES

- .1 Submit samples for Consultant's review where specified in the technical Specifications. Label samples as to origin, Project name, and intended use.
- .2 Deliver samples prepaid to Consultant's business address. Departmental Representative reserves the right to request duplicates of all samples at no extra charge.
- .3 Notify Consultant in writing of any deviations in samples from requirements of Contract Documents.
- .4 Where a required colour, pattern or texture has not been specified, submit full range of available Products meeting other specified requirements. Clarifying with the Consultant in advance and in writing is also permitted to avoid unnecessary waste of samples.
- .5 Consultant selection from samples is not intended to change the Contract Price or Contract Time. If a selection would affect the Contract Price or Contract Time, notify Consultant in writing prior to proceeding with the Work.
- .6 Resubmit samples as required by Consultant to comply with Contract Documents.
- .7 Reviewed and accepted samples will establish the standard against which installed Work will be reviewed.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures
- .2 Section 02 41 99 – Demolition

1.2 REFERENCE STANDARDS

- .1 Province of Ontario
 - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990, c.0.1, as amended and O. Reg. 213/91 as amended - Updated 2005.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .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 operations.
- .3 Submit bi-weekly the Superintendent's work site health and safety inspection reports to Departmental Representative in PDF format.
- .4 Upon request, submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 Working days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 3 days after receipt of comments.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan must not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 On-site Contingency and Emergency Response Plan: list operating procedures to be implemented in case of emergency situations, based on the site specific safety hazard assessment and requirements.

1.4 FILING OF NOTICE

- .1 File Notice of Project with Provincial and Municipal authorities prior to beginning of Work.
- .2 Work zone locations are as per drawings.
- .3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

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

1.7 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 Consultant and/or Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 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 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- .3 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.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.

1.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

1.11 HEALTH AND SAFETY AND SITE SUPERINTENDENT

- .1 Employ and assign to Work a Superintendent who is knowledgeable in Health and Safety matters in order to:
 - .1 Have working knowledge of occupational safety and health regulations.
 - .2 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.
 - .3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

- .4 Be on site during execution of Work.

1.12 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 having jurisdiction, and in consultation with Departmental Representative.

1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative or Consultant.
- .2 Provide Departmental Representative and Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative and / or Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 BLASTING

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

1.15 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices is not permitted.

1.16 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.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal
- .2 Annex 01 – Parks Canada Environmental Impact Assessment

1.2 REFERENCE STANDARDS

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2008, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.
 - .2 LEED Canada-CI Version 1.0-2008, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
 - .3 LEED Canada 2009 for Design and Construction-2010, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.
 - .4 LEED Canada for Existing Buildings, Operations and Maintenance-2009, LEED Canada 2009 Leadership In Energy and Environmental Design Green Building Rating System Reference Guide.

1.3 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.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Refer to Annex 01 – Parks Canada Environmental Impact (EIA) Assessment
- .3 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for all products used in the course of this project and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements 01 35 43 - Environmental Procedures.
- .4 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative and Consultant.

- .5 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
 - .6 Address topics at level of detail commensurate with environmental issue and required construction tasks.
 - .7 Include in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - .1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
 - .6 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.
 - .7 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .8 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
 - .9 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
 - .10 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.
 - .11 Waste Water Management Plan identifying methods and procedures for management of discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.
 - .12 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
 - .13 Pesticide treatment plan to be included and updated, as required.
 - .14 Adhere to the requirements of Annex 01 – Parks Canada Environmental Impact Assessment
- 1.5 FIRES
- .1 Fires and burning of rubbish on site are not permitted.

1.6 SITE CLEARING AND PLANT PROTECTION INCLUDING HARDSCAPING

- .1 Protect hardscaping where applicable.
 - .1 Contractor to repair at no additional cost to Departmental Representative's and/or Consultant's satisfaction.
- .2 Protect trees and plants on site and adjacent properties at all times.
- .3 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 3 meters minimum.
- .4 Protect roots of designated trees to dripline to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .5 Minimize stripping of topsoil and vegetation.
- .6 Advise Departmental Representative if any vegetation will be impacted by the Work and obtain approval prior to commencing.
 - .1 Contractor to remove and replace, at no additional cost, any plant that is damaged or removed.
- .7 No tree removal is permitted.

1.7 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures as needed or where directed by Departmental Representative and/or Consultant.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.8 HISTORICAL/ARCHAEOLOGICAL CONTROL

- .1 All vehicle traffic and parking to remain on existing parking areas or on roadway only.
- .2 All staging to remain on the parking areas or on the roadway only. Landscaped areas shall not be used for staging or onsite storage at any time.
- .3 Driving equipment on the landscaped areas of the site is not permitted except with written approval of Departmental Representative.
 - .1 Ask departmental representative for permission for allowable driving route.
 - .2 Use the smallest possible equipment for the work.
 - .3 Use plywood sheets to protect landscaped areas when driving equipment.
- .4 If archaeological remains are found, stop work immediately and contact the departmental representative.

1.9 NOTIFICATION

- .1 Departmental Representative or Consultant 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 or Consultant 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 and Consultant.
- .3 Departmental Representative or Consultant 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.

1.10 SITE PROTECTION PROCEDURES

- .1 All vehicle traffic and parking to remain on extant parking areas or on roadway.
- .2 All staging to remain on the extant parking areas or on the roadway.
- .3 Avoid driving heavy equipment between the Visitor Centre and the House.

1.11 NO-GO ZONE

- .1 Work area plan showing proposed activity in each portion of area identifying No-Go zones as identified by Parks Canada.
- .2 Work area plan to include measures for marking limits of use areas including methods for protection of features (i.e. ground protection system in No-Go zones) to be preserved within authorized work areas.

1.12 PROTECTION

- .1 Care shall be taken to protect existing landscape and plant material including trees, plants, garden vegetation on site and adjacent properties.

1.13 ARCHAEOLOGY

- .1 The site may contain historical, archaeological, cultural resources, or biological resources.
- .2 If any potential archaeological resources are uncovered during the course of the work, the contractor shall immediately notify the departmental representative and await further instructions.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning and Waste Management.
 - .1 Leave Work area clean at end of each day.
- .2 Burying rubbish and waste materials on site is forbidden.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 – Cleaning and Waste Management.
- .5 Waste Management: separate waste materials for recycling and reuse 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.
- .6

END OF SECTION

PART 1 GENERAL

1.1 REFERENCE STANDARDS

- .1 "Reference standards" means consensus standards, trade association standards, guides, and other publications expressly referenced in Contract Documents.
- .2 Where an edition or version date is not specified, referenced standards shall be deemed to be the latest edition or revision issued by the publisher at the time of bid closing. However, if a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the regulatory referenced edition or version shall apply.
- .3 Reference standards establish minimum requirements. If Contract Documents call for requirements that differ from a referenced standard, the more stringent requirements shall govern.
- .4 If compliance with two or more reference standards is specified and the standards establish different or conflicting requirements, comply with the most stringent requirement. Refer uncertainties to Consultant for clarification.
- .5 Within the Specifications, reference may be made to the following standards writing, testing, or certification organizations by their acronyms or initialisms:
 - .1 AA - Aluminum Association
 - .2 ACI - American Concrete Institute
 - .3 AISC - American Institute of Steel Construction
 - .4 ANSI - American National Standards Institute
 - .5 ASME - American Society of Mechanical Engineers
 - .6 ASTM - American Society for Testing and Materials
 - .7 AWMAC - Architectural Woodwork Manufacturers Association of Canada
 - .8 AWPA - American Wire Producers Association
 - .9 CaGBC - Canadian Green Building Council
 - .10 CGSB - Canadian General Standards Board
 - .11 CISC - Canadian Institute of Steel Construction
 - .12 CPCI - Canadian Prestressed Concrete Institute
 - .13 CSA - Canadian Standards Association
 - .14 CSSBI - Canadian Sheet Steel Building Institute
 - .15 CWB – Canadian Welding Bureau
 - .16 ICEA - Insulated Cable Engineers Association
 - .17 IEEE - Institute of Electrical and Electronics Engineers
 - .18 IGMAC – Insulating Glass Manufacturers Association of Canada
 - .19 LEED - Leadership in Energy and Environmental Design
 - .20 MPP – Master Painters Institute

- .21 MSS - Manufacturers Standardization Society of the Valve and Fittings Industry
- .22 NAAMM - National Association of Architectural Metal Manufacturers
- .23 NEMA - National Electrical Manufacturers Association
- .24 NFPA - National Fire Protection Association
- .25 NHLA - National Hardwood Lumber Association
- .26 NLGA - National Lumber Grades Authority
- .27 SSPC – The Society for Protective Coatings
- .28 TTMAC - Terrazzo, Tile and Marble Association of Canada
- .29 ULC - Underwriters' Laboratories of Canada

1.2 INDEPENDENT INSPECTION AND TESTING AGENCIES

- .1 Except as otherwise specified, Departmental Representative will retain and pay for independent inspection and testing agencies to inspect, test, or perform other quality control reviews of parts of the Work.
- .2 Contractor shall retain and pay for inspection and testing that is for Contractor's own quality control or is required by regulatory requirements.
- .3 Employment of inspection and testing agencies by Contractor or Departmental Representative does not relieve Contractor from responsibility to perform the Work in accordance with Contract Documents.
- .4 Allow and arrange for inspection and testing agencies to have access to the Work, including access to off site manufacturing and fabrication plants.
- .5 For inspection and testing required by Contract Documents or by authorities having jurisdiction, provide Consultant and inspection and testing agencies with timely notification in advance of required inspection and testing.
- .6 Submit test samples required for testing in accordance with submittals schedule specified in Section 01 32 00 – Construction Progress Documentation.
- .7 Provide labour, construction equipment and temporary facilities to obtain and handle test samples on site.

1.3 INSPECTION AND TESTING AGENCY REPORTS

- .1 For inspection and testing required by Contract Documents or by regulatory requirements, and performed by Contractor retained inspection and testing agencies, submit to Consultant and Departmental Representative copies of reports. Submit within 3 days after completion of inspection and testing.
- .2 For inspection and testing performed by Departmental Representative retained inspection and testing agencies, copies of inspection and testing agency reports will be provided to Contractor.

1.4 MOCK-UPS

- .1 Prepare mock-ups of Work as specified in the technical Specifications. If a mock-up location is not indicated in the Drawings or Specifications, locate where directed by Consultant.

- .2 Modify mock-up as required until Consultant approval is obtained.
- .3 Approved mock-ups establish an acceptable standard for the Work.
- .4 Protect mock-ups from damage until the Work they represent is complete.
- .5 Unless otherwise specified in the technical Specifications, approved mock-ups forming part of the Work may remain as part of the Work.
- .6 Remove mock-ups only when the Work they represent is complete or when otherwise directed by Consultant.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 INSPECTION

- .1 Allow Departmental Representative and/or Consultant 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 and/or Consultant 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 and/or Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay the cost of examination only.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .3 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 Consultant and/or Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.3 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.

1.4 PROCEDURES

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

1.5 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 and/or Consultant 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 and Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative and Consultant.

1.6 REPORTS

- .1 Submit PDF version of inspection and test reports to Departmental Representative and Consultant.

1.7 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.8 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Departmental Representative and Consultant.
- .3 Prepare mock-ups for Departmental Representative and Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups 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.
- .5 If requested, Departmental Representative and Consultant will assist in preparing schedule fixing dates for preparation.
- .6 Mock-ups may remain as part of Work, as per Consultant's decision in each single case. Remove mock-up at conclusion of Work or when acceptable to Consultant and Departmental Representative.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED

END OF SECTION

PART 1 GENERAL

1.1 TEMPORARY UTILITIES – GENERAL

- .1 Provide temporary utilities as specified and as otherwise necessary to perform the *Work* expeditiously.
- .2 Remove temporary utilities after use.

1.2 TEMPORARY WATER SUPPLY

- .1 Use of the site's existing cold water supply is permitted.
 - .1 Connect to and use existing water supply for temporary use during construction, subject to existing available volume and pressure.
 - .1 Contractor to coordinate with Departmental Representative as to which exterior tap to use.
 - .2 Usage at no cost to Contractor.
 - .3 Contractor to provide own hoses and accessories.

1.3 TEMPORARY HEATING AND VENTILATION

- .1 Arrange and pay for temporary heating and ventilation required during construction.
- .2 Vent construction heaters in enclosed spaces to the outside or use flameless type of construction heaters.
- .3 Provide temporary heat for the *Work* as required to:
 - .1 Facilitate progress of *Work*.
 - .2 Protect the *Work* against dampness and cold.
 - .3 Prevent moisture condensation on surfaces, freezing, or other damage to finishes or stored *Products*.
 - .4 Maintain specified minimum ambient temperatures and humidity levels for storage, installation and curing of *Products*.
- .4 Provide temporary ventilation for the *Work* as required to:
 - .1 Prevent accumulations of fumes, exhaust, vapours, gases and other hazardous, noxious, or volatile substances in enclosed spaces, as required to maintain a safe work environment meeting applicable regulatory requirements.
 - .2 Ensure that hazardous, noxious, or volatile substances do not migrate to indoor occupied spaces.
 - .3 Ventilate temporary sanitary facilities.
- .5 Do not use permanent building heating and ventilation systems during construction.

1.4 TEMPORARY ELECTRICAL POWER AND LIGHTING

- .1 Arrange and pay for necessary connections and disconnections of temporary power and lighting as required to execute the work, and in accordance with regulatory requirements.
- .2 Permanent building power systems may be used during construction, at Contractor's option. If used during construction:
 - .1 Contractor shall verify load capacity of existing power system and ensure that the existing system is not overloaded during the course of the work. Any damage to system as a result of contractor activities shall be replaced at the expense of the contractor.
 - .2 Only existing exterior receptacles are available for contractor use.
 - .3 Contractor is not required to reimburse utility costs resulting from the use of permanent systems.
 - .4 Operate systems in a non-wasteful and energy efficient manner. Be responsible for any system damage.
 - .5 Existing power systems may not match loads, for which the Contractor will be responsible to provide temporary power utilities.

1.5 EXISTING BUILDING HEATING, VENTILATION, POWER, AND LIGHTING

- .1 Contractor to seal off the air inlets into the HVAC system. System will be shut off completely from the start of construction until after cleanup. Coordinate with Departmental Representative.
- .2 Coordinate and make arrangements with the building operator for provision of these services during hours or days when the building is not operational.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 CONSTRUCTION FACILITIES - GENERAL

- .1 Provide temporary construction facilities as necessary for performance of the Work and in compliance with applicable regulatory requirements.
- .2 Maintain temporary construction facilities in good condition for the duration of the Work.
- .3 Remove temporary construction facilities from Place of the Work when no longer required.

1.2 CONSTRUCTION PARKING

- .1 Dedicated parking will not be provided at Place of the Work.
- .2 Street parking is available in the site vicinity. Contractor to abide by all municipal parking by-laws.

1.3 VEHICULAR ACCESS

- .1 Provide and maintain adequate access to Place of the Work.

1.4 SITE OFFICES

- .1 No site office is to be built on the property during construction.

1.5 SANITARY FACILITIES

- .1 Provide sanitary facilities for workers. Location of facilities to be coordinated with Departmental Representative.
- .2 Do not use permanent washroom facilities during construction.

1.6 FIRE PROTECTION

- .1 **Fire is a prime area of concern for the site. Special attention must be paid to fire suppression/fire prevention.**
- .2 Provide and maintain temporary fire protection systems and equipment during construction.
- .3 Provide a continuous **fire watch** during all hot work. Monitor all hot-work zones for a minimum **of 2 hours (or 120 minutes)** after completion of hot work.

PART 2 PRODUCTS – NOT USED.

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 FENCING

- .1 Erect temporary security and safety site fencing, subject to applicable regulatory requirements and Departmental Representative's approval.
 - .1 Erect temporary security and safety site fencing, minimum 1,8 m high, using self-supporting wire fence sections enclosing specific work areas, including a reasonable buffer zone between construction activities and public access. Maintain site fencing in good repair until removed.
 - .1 Scaffolding will be within the fenced area outlined on the plan drawing.
 - .2 Storage pods may also be used, but cannot be located on the grass or in the administration parking lot.
 - .2 Provide lockable access gates as required to facilitate construction access.

1.2 WEATHER ENCLOSURES

- .1 Provide weather tight enclosures to unfinished work on roofs and chimney.
 - .1 Provide weather enclosures to protect floor areas where walls are not finished and to enclose work areas where ambient conditions must be controlled.
 - .2 Design weather enclosures to withstand wind pressure and snow loading requirements.

1.3 DUST TIGHT SCREENS

- .1 Provide dust tight polyethylene screens (with self supporting, spring loaded posts that will preserve floor and ceiling finishes) to localize interior building areas from dust generating activities.
- .2 Erect, maintain, and relocate screens as required to facilitate construction operations and Owner's operational requirements.

1.4 FIRE ROUTES

- .1 Maintain fire access routes, including overhead clearances, for use by emergency response vehicles.

1.5 PROTECTION OF BUILDING FINISHES

- .1 Provide necessary temporary barriers and enclosures to protect completed or partially completed finished surfaces from damage during performance of the Work.

PART 2 PRODUCT – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

PART 1 GENERAL

1.1 GENERAL

- .1 Provide Products that are not damaged or defective, and suitable for purpose intended, subject to specified requirements. If requested by Consultant, furnish evidence as to type, source and quality of Products provided.
- .2 Unless otherwise specified, maintain uniformity of manufacturer for like items throughout.
- .3 Permanent manufacturer's markings, labels, trademarks, and nameplates on Products are not acceptable in prominent locations, except where required by regulatory requirements or for operating instructions, or when located in mechanical or electrical rooms.

1.2 PRODUCT OPTIONS

- .1 Wherever a Product is specified by reference to a standard only, provide any Product that meets or exceeds the specified standard. If requested by Consultant, submit information verifying that the proposed Product meets or exceeds the specified standard.
- .2 Wherever a Product is specified by descriptive or performance requirements only, provide any Product that meets or exceeds the specified requirements. If requested by Consultant, submit information verifying that the proposed Product meets or exceeds the specified requirements.

1.3 PRODUCT AVAILABILITY AND DELIVERY TIMES

- .1 Promptly upon Contract award and periodically during construction, review and confirm Product availability and delivery times. Order Products in sufficient time to meet the construction progress schedule and the Contract Time.
- .2 If a specified Product is no longer available, promptly notify Consultant. Consultant will take action as required.
- .3 If delivery delays are foreseeable, for any reason, promptly notify Consultant.
 - .1 If a delivery delay is beyond Contractor's control, Consultant will provide direction.
 - .2 If a delivery delay is caused by something that was or is within Contractor's control, Contractor shall propose actions to maintain the construction progress schedule for Consultant's review and acceptance.

1.4 STORAGE, HANDLING, AND PROTECTION

- .1 Store, handle, and protect Products during transportation to Place of the Work and before, during, and after installation in a manner to prevent damage, adulteration, deterioration and soiling.
- .2 Comply with manufacturer's instructions for storage, handling and protection.
- .3 Store packaged or bundled Products in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in Work.

- .4 Comply with the requirements of the workplace hazardous materials information system (WHMIS) regarding use, handling, storage, and disposal of hazardous materials, including requirements for labeling and the provision of material safety data sheets (MSDS).
- .5 Store Products subject to damage from weather in weatherproof enclosures.
- .6 Store sheet Products on flat, solid, supports and keep clear of ground. Slope to shed moisture.
- .7 Remove and replace damaged Products.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

PART 1 GENERAL

VERIFICATION OF EXISTING CONDITIONS

- .1 Where work specified in a Section is dependent on the completion of work performed under another section, verify that earlier work is complete and performed to the consultant's satisfaction before starting on subsequent work. The Consultant's written approval of all work completed in a Section or Sections is required before subsequent stages can be initiated under other Sections.
- .2 Verify that ambient conditions are suitable before commencing the work of any Section and will remain suitable for as long as required for proper setting, curing, or drying of Products used.
- .3 Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.
- .4 Notify Consultant in writing of unacceptable conditions.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- .1 Except where otherwise specified in technical Specifications or otherwise indicated on Drawings, comply with requirements of this Section.

1.2 MANUFACTURER'S INSTRUCTIONS

- .1 Install, erect, or apply Products in strict accordance with manufacturer's instructions.
- .2 Notify Consultant, in writing, of conflicts between Contract Documents and manufacturer's instructions where, in Contractor's opinion, conformance with Contract Documents instead of the manufacturer's instructions may be detrimental to the Work or may jeopardize the manufacturer's warranty.
- .3 Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.
- .4 Provide manufacturer's representatives with access to the Work at all times. Render assistance and facilities for such access so that manufacturer's representatives may properly perform their responsibilities.

1.3 CONCEALMENT

- .1 Conceal pipes, ducts, and wiring in floors, walls and ceilings in finished areas:
 - .1 After review by Consultant and authority having jurisdiction, and
 - .2 Where locations differ from those shown on Drawings, after recording actual locations on as-built drawings.
- .2 Provide incidental furring or other enclosures as required.
- .3 Notify Consultant in writing of interferences before installation.

1.4 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials.
- .2 Prevent electrolytic action and corrosion between dissimilar metals and materials by using suitable non-metallic strips, washers, sleeves, or other permanent separators to avoid direct contact.
- .3 Use non-corrosive fasteners and anchors for securing exterior work and in spaces where high humidity levels are anticipated.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Do not use fastenings or fastening methods that may cause spalling or cracking of material to which anchorage is made.

1.5 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Bolts shall not project more than one diameter beyond nuts.

1.6 FIRE RATED ASSEMBLIES

- .1 When penetrating fire rated walls, ceiling, or floor assemblies, completely seal voids with fire-stopping materials, smoke seals, or both, in full thickness of the construction element and on both sides as required to maintain the integrity of the fire rated assembly.

1.7 LOCATION OF FIXTURES, OUTLETS AND DEVICES

- .1 Consider location of fixtures, outlets, and devices indicated on Drawings as approximate.
- .2 Locate fixtures, outlets, and devices to provide minimum interference, maximum usable space, and as required to meet safety, access, maintenance, acoustic, and regulatory, including barrier free, requirements.
- .3 Promptly notify Consultant in writing of conflicting installation requirements for fixtures, outlets, and devices. If requested, indicate proposed locations and obtain approval for actual locations.

1.8 PROTECTION OF COMPLETED WORK AND WORK IN PROGRESS

- .1 Adequately protect parts of the Work completed and in progress from any kind of damage.
- .2 Promptly remove, replace, clean, or repair, as directed by Consultant, work damaged as a result of inadequate protection.
- .3 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the safety or integrity of the Work.

1.9 REMEDIAL WORK

- .1 Notify Consultant of, and perform remedial work required to, repair or replace defective or unacceptable work. Ensure that properly qualified workers perform remedial work. Coordinate adjacent affected work as required.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

PART 1 GENERAL

1.1 REQUEST FOR CUTTING, PATCHING AND REMEDIAL WORK

- .1 Submit written request to the Departmental Representative and receive written approval in advance of cutting, coring, or alteration which affects or is likely to affect:
 - .1 Structural integrity of any element of the Work.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of any operational element.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Departmental Representative or other contractors.
 - .6 Warranty of Products affected.
- .2 Include in request:
 - .1 Identification of Project.
 - .2 Location and description of affected work, including drawings or sketches as required.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed work, and Products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on work of Departmental Representative or other contractors.
 - .7 Written permission of affected other contractors.
 - .8 Date and time work will be executed.

1.2 PRODUCTS

- .1 Unless otherwise specified, when replacing existing or previously installed Products in the course of cutting and patching work, use replacement Products of the same character and quality as those being replaced.
- .2 If an existing or previously installed Product must be replaced with a different Product, submit request for substitution in accordance with Section 01 25 00 - Substitution Procedures.

1.3 PREPARATION

- .1 Inspect existing conditions in accordance with Section 01 71 00 - Examination and Preparation.
- .2 Provide supports to ensure structural integrity of surroundings; provide devices and methods to protect other portions of the Work from damage.
- .3 Provide protection from elements for areas that may be exposed by uncovering work.

1.4 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services' utilities, execute the Work at times directed by local governing authorities, with a minimum of disturbance to the Work, pedestrian and vehicular traffic, and ongoing Departmental Representative operations.

- .2 Where the Work involves breaking into or connecting to existing services, give authority having jurisdiction and Departmental Representative 72 hours notice for necessary interruption of mechanical or electrical services.
- .3 Maintain excavations free of water.
- .4 Keep duration of interruptions to a minimum.
- .5 Carry out interruptions after regular working hours of occupants, preferably on weekends, unless Departmental Representative's prior written approval is obtained.
- .6 Protect and maintain existing active services. Record location of services, including depth, on as-built drawings.
- .7 Construct or erect barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures as required to protect pedestrian and vehicular traffic.

1.5 CUTTING, PATCHING, AND REMEDIAL WORK

- .1 Coordinate and perform the Work to ensure that cutting and patching work is kept to a minimum.
- .2 Perform cutting, fitting, patching, and remedial work, including excavation and fill, to make the affected parts of the Work come together properly and complete the Work.
- .3 Provide openings in non-structural elements of the Work for penetrations of mechanical and electrical work.
- .4 Perform cutting by methods to avoid damage to other work
- .5 Provide proper surfaces to receive patching, remedial work, and finishing.
- .6 Perform cutting, patching, and remedial work using competent and qualified specialists familiar with the Products affected, in a manner that neither damages nor endangers the Work.
- .7 Do not use pneumatic or impact tools without Consultant's prior approval.
- .8 Ensure that cutting, patching, and remedial work does not jeopardize manufacturers' warranties.
- .9 Refinish surfaces to match adjacent finishes. For continuous surfaces refinish to nearest intersection. For an assembly, refinish entire unit.
- .10 Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces with suitable allowance for deflection, expansion, contraction, acoustic isolation, and firestopping.
- .11 Maintain fire ratings of fire rated assemblies where cutting, patching, or remedial work is performed. Completely seal voids or penetrations of assembly with firestopping material to full depth or with suitably rated devices.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

PART 1 GENERAL

1.1 GENERAL CLEANING REQUIREMENTS

- .1 Provide adequate ventilation during use of volatile or noxious substances. Do not rely on building ventilation systems for this purpose.
- .2 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .3 Prevent cross-contamination during the cleaning process.
- .4 Notify the Consultant of the need for cleaning caused by Departmental Representative or other contractors.

1.2 PROGRESSIVE CLEANING AND WASTE MANAGEMENT

- .1 Maintain the Work in a tidy and safe condition, free from accumulation of waste materials and construction debris.
- .2 Provide appropriate, clearly marked, containers for collection of waste materials and recyclables. Locate containers where indicated by Department Representative.
- .3 Remove waste materials and recyclables from work areas, separate, and deposit in designated containers at end of each Working Day. Collect packaging materials for recycling or reuse.
- .4 Remove waste materials and recyclables from Place of the Work daily.
- .5 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly finished surfaces nor contaminate building systems.

1.3 FINAL CLEANING

- .1 Before final cleaning, arrange a meeting at Place of the Work to determine the acceptable standard of cleaning. Ensure that Departmental Representative (or delegate), Consultant and Contractor are in attendance.
- .2 Remove from Place of the Work surplus Products, waste materials, recyclables, Temporary Work, and Construction Equipment not required to perform any remaining work.
- .3 Provide professional cleaning by a qualified, established cleaning company.
- .4 Lock or otherwise restrict access to each room or area after completing final cleaning in that area.
- .5 Re-clean as necessary areas that have been accessed by Contractor's workers prior to Departmental Representative occupancy.
- .6 Remove stains, spots, marks, and dirt from finished surfaces, electrical and mechanical fixtures, furniture fitments, walls and floors
- .7 Clean and polish glass, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate and all other finished surfaces, including mechanical and electrical fixtures. Replace broken, scratched or otherwise damaged glass.
- .8 Remove dust from lighting reflectors, lenses, lamps, bulbs, and other lighting surfaces.

- .9 Vacuum clean and dust exposed wall, floor, and ceiling surfaces, behind grilles, louvres and screens, including above ceilings that were open to perform work.
- .10 Clean mechanical, electrical, and other equipment. Replace filters for mechanical equipment if equipment is used during construction.
- .11 Remove waste material and debris from crawlspaces and other accessible concealed spaces.
- .12 Remove stains, spots, marks, and dirt from exterior facades.
- .13 Clean exterior window glass and frames.
- .14 Clean and sweep roofs, clear roof drains and along foundations.
- .15 Power wash exterior sidewalks and other paved surfaces.
- .16 Use leaf blowers to clean landscaped surfaces.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 All planification and procedures regarding waste management as per Section 01 74 21 – Construction / Demolition Waste Management and Disposal.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

PART 1 GENERAL

1.1 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with Departmental Representative and Consultant to review and discuss Park's Canada waste management goal and Contractor's proposed Waste Reduction Workplan for Construction, Renovation and /or Demolition (CRD) waste to be project generated.
- .2 Target percentage goals are achievable for waste diversion. Contractor to review and confirm Departmental Representative's Waste Audit acceptable values.
- .3 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by CRD activities.
- .4 Protect environment and prevent environmental pollution damage.

1.2 DEFINITIONS

- .1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the Departmental Representative and Consultant.
- .2 Class III: non-hazardous waste - construction renovation and demolition waste.
- .3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities
- .4 Inert Fill: inert waste - exclusively asphalt and concrete.
- .5 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .6 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .7 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .8 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .9 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .10 Separate Condition: refers to waste sorted into individual types.
- .11 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.
- .12 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals,

implementation and reporting procedures, anticipated results and responsibilities. Waste Reduction Workplan (Schedule A) information acquired from Waste Audit.

1.3 DOCUMENTS

- .1 Post and maintain in visible and accessible area at job site, one copy of following documents:
 - .1 Waste Reduction Workplan (Schedule A).

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following project start-up:
 - .1 1 electronic copy of completed Waste Reduction Workplan (WRW): Schedule A.
- .3 Prepare and submit on monthly basis, throughout project or at intervals agreed to by Departmental Representative and or Consultant the following:
 - .1 Receipts, scale tickets, waybills, and/or waste disposal receipts that show quantities and types of materials reused, recycled, or disposed of.

1.5 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare and submit WRW (Schedule A) at least 10 days prior to project start-up.
- .2 WRW identifies strategies to optimize diversion through reduction, reuse, and recycling of materials and comply with applicable regulations, based on information acquired from WA.
- .3 WRW must include but not limited to:
 - .1 Applicable regulations.
 - .2 Specific goals for waste reduction.
 - .3 Destination of materials identified.
 - .4 Location of waste bins on-site.
 - .5 Security of on-site stock piles and waste bins.
 - .6 Protection of personnel, sub-contractors.
 - .7 Clear labelling of storage areas.
 - .8 Methods to track and report results reliably (Schedule D).
 - .9 Quantities of materials to be salvaged for reuse or recycled and materials sent to landfill.
 - .1 Objective: to be determined at the construction start-up meeting.
- .4 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .5 Post WRW or summary where workers at site are able to review content.
- .6 Monitor and report on waste reduction by documenting total volume (in tonnes) and cost of actual waste removed from project.

1.6 USE OF SITE AND FACILITIES

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

1.7 WASTE PROCESSING SITES

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

1.8 QUALITY ASSURANCE

- .1 After award of Contract, a mandatory site examination will be held for this Project for Contractor responsible for construction, renovation demolition/deconstruction waste management.
 - .1 Date, time and location will be arranged by Departmental Representative.

1.9 STORAGE, HANDLING AND PROTECTION

- .1 Store materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed and salvaged materials from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative and or Consultant.
- .7 Protect surface drainage, mechanical and electrical from damage and blockage.
- .8 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.
- .9 Separate and store materials produced during project in designated areas to be confirmed by Departmental Representative at construction start-up meeting.
- .10 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
 - .1 On-site source separation is recommended.
 - .2 Remove co-mingled materials to off site processing facility for separation.
 - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.
 - .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

1.10 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of oil, volatile materials, mineral spirits, paint thinner, waste into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage/weight generated.
 - .4 Tonnage/weight reused or recycled.
 - .5 Reused or recycled waste destination.
- .4 Remove materials on-site as Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in the waste audit.
- .6 Keep site neat and tidy. Clean daily and do not allow waste to accumulate on the site.

1.11 SCHEDULING

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

PART 2 PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 EXECUTION

3.1 APPLICATION

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

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning and Waste Management.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 – Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with this Section and Section 01 35 43 –Environmental Procedures

- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .2 Source separate materials to be reused/recycled into specified sort areas.

3.3 SCHEDULES

- .1 Following Schedules will be provided after contract award:
 - .1 Waste Reduction Workplan Form - Schedule A.

END OF SECTION

PART 1 GENERAL

1.1 INSPECTION AND REVIEW BEFORE SUBSTANTIAL COMPLETION

- .1 Contractor's Inspection: Before applying for the Consultant's review to establish Substantial Completion of the Work:
 - .1 Ensure that the specified prerequisites to Substantial Completion of the Work are completed.
 - .2 Conduct an inspection of the Work to identify defective, deficient, or incomplete work.
 - .3 Prepare a comprehensive and detailed list of items to be completed or corrected.
 - .4 Provide an anticipated schedule and costs for items to be completed or corrected.
- .2 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant will review the Work. The Consultant will advise the Contractor whether or not the Work meets Substantial Completion criteria and will provide the Contractor with a list of items, if any, to be added to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the Contractor's revised list.
- .3 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant and the Contractor shall arrange a mutually satisfactory agreed date and time to jointly review the Work. The Consultant will advise the Contractor whether or not the Work has reached Substantial Completion. Add additional items, if any, to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the revised list.
- .4 Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete work. The Contractor's inspection and Consultant's review procedures specified above shall be repeated until the Work is Substantial Completion and no items remain on the Contractor's list of items to be completed or corrected.
- .5 When the Consultant determines that the Work meets Substantial Completion criteria, the Consultant will notify the Contractor and the Departmental Representative in writing to that effect.

1.2 PREREQUISITES TO FINAL PAYMENT

- .1 After Substantial Completion of the Work and before submitting an application for final payment in accordance with the General Conditions of Contract:
 - .1 Correct or complete all remaining defective, deficient, and incomplete work.
 - .2 Remove from the Place of the Work all remaining surplus Products, Construction Equipment, and Temporary Work.
 - .3 Perform final cleaning and waste removal necessitated by the Contractor's work performed after Substantial Completion, as specified in Section 01 74 00 – Cleaning and Waste Management.

1.3 PARTIAL USER OCCUPANCY

- .1 This project must take into account the Owner's occupancy throughout the whole project duration.

1.4 SUBSTANTIAL PERFORMANCE OF THE WORK

- .1 The prerequisites to, and the procedures for, attaining substantial performance of the Work, or similar such milestone as provided for in the lien legislation applicable to the Place of the Work, shall be:
 - .1 Independent of those for attaining Substantial Completion of the Work.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

PART 1 GENERAL

1.1 OPERATION AND MAINTENANCE MANUAL

- .1 Prepare a comprehensive operation and maintenance manual, in the language of the Contract, using personnel qualified and experienced for this task.
- .2 Submit an initial draft of the operation and maintenance manual for Consultant's review. If required by Consultant's review comments, revise manual contents and resubmit for Consultant's review. If required, repeat this process until Consultant accepts the draft manual in writing.
- .3 Submit final version to Departmental Representative in hard copy and electronic format.

1.2 OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Organize data in the form of an instructional manual (hard copy).
- .2 Binders: vinyl, hard covered, three D-rings, loose leaf, 216 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 typed or printed title "Operation and Maintenance Manual", name of Project or facility, and subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate Product or 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 electronic copy of manual in PDF format.

1.3 OPERATION AND MAINTENANCE MANUAL – GENERAL CONTENT

- .1 Table of contents for each volume.
- .2 Introductory information including:
 - .1 Date of manual submission.
 - .2 Complete contact information for Consultant, subconsultants, other consultants, and Contractor, with names of responsible parties.
- .3 Schedule of Products and systems indexed to content of volume.
- .4 For each Product or system, include complete contact information for Subcontractors, Suppliers and manufacturers, including local sources for supplies and replacement parts.

- .5 Product Data: mark each sheet to clearly identify specific products, options, and component parts, and data applicable to installation. Delete or strike out inapplicable information. Supplement with additional information as required.
 - .6 Reviewed Shop Drawings.
 - .7 Permits, certificates, letters of assurance and other relevant documents issued by or required by authorities having jurisdiction.
 - .8 Warranties.
 - .9 Operating and maintenance procedures, incorporating manufacturer's operating and maintenance instructions, in a logical sequence.
- 1.4 OPERATION AND MAINTENANCE MANUAL - PRODUCTS AND FINISHES CONTENT
- .1 Include Product data, with catalogue number, options selected, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured Products.
 - .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .3 Include an outline of requirements for routine and special inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.
 - .4 Include additional content as specified in technical Specifications sections.
- 1.5 OPERATION AND MAINTENANCE MANUAL - WARRANTIES CONTENT
- .1 Separate each warranty with index tab sheets keyed to Table of Contents listing.
 - .2 List each warrantor with complete contact information.
 - .3 Verify that documents are in proper form and contain full information. Ensure that warranties are for the correct duration and are in Departmental Representative's name.
- 1.6 CONTRACTOR'S AS-BUILT DRAWINGS
- .1 Submit final as-built drawings in the form specified in Section 01 32 00 – Construction Progress Documentation to Consultant and c.c. Departmental Representative.
- 1.7 PROJECT RECORD DRAWINGS
- .1 Transfer all information marked up on the as-built drawings during the progress of the Work to a master set of record drawing files provided by Consultant, in perfectly legible hard copy or electronic format.
 - .2 Mark revised drawings as "RECORD DRAWINGS".
 - .3 Submit completed record drawings in perfectly legible hard copy or electronic form to Consultant and c.c. Departmental Representative. If applicable, provide one hard copy set.
- 1.8 SPARE PARTS, MAINTENANCE MATERIALS, AND SPECIAL TOOLS
- .1 Supply spare parts, maintenance materials, and special tools in quantities specified in technical Specifications sections.

- .2 Ensure spare parts and maintenance materials are new, not damaged nor defective, and of same quality, manufacturer, and batch or production run as installed Products.
- .3 Provide tags for special tools identifying their function and associated Product.
- .4 Deliver to and store items at location directed by Departmental Representative at Place of the Work. Store in original packaging with manufacturer's labels intact and in a manner to prevent damage or deterioration.
- .5 Catalogue all items and submit to Consultant an inventory listing organized by Specifications section. Include Consultant reviewed inventory listing in operation and maintenance manual.

PART 2 NOT USED

PART 3 NOT USED

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Section 01 74 00 – Cleaning and Waste Management.

1.2 REFERENCES

- .1 CSA International
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 Notify the Departmental Representative before disrupting building access or services.

1.3 WASTE MANAGEMENT

- .1 Separate and recycle demolition materials in accordance with the approved Waste Management and Disposal Plan.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit demolition drawings:
 - .1 Submit for review and approval by the Departmental Representative
 - .2 Any scaffolding, shoring and underpinning drawings to be stamped and signed by a professional engineer registered, licensed and authorized to practice in the Province of Ontario, Canada, showing proposed method.
 - .3 Submit demolition plan including method of removals and location of waste bins and chutes. Subject to approval by Departmental Representative.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Physical anchorage to the building is prohibited.
- .2 Inspect site with the Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .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 the Departmental Representative and utility company concerned in case of damage to any utility or service
 - .2 Immediately notify the Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.
- .6 Protect from damage all building and site elements to remain, including heritage elements.

3.2 PREPARATION

- .1 Protect from damage all existing finishes and equipment to remain.
- .2 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent and parts of building to remain in place. Provide bracing and shoring required.
 - .2 Keep noise, dust, and inconvenience to occupants to minimum. Building must remain fully operational and occupied at all times.
 - .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 35 29.06 – Health and Safety Requirements.
- .3 Demolition/Removal:
 - .1 Protect from damage all existing finishes and equipment to remain.
 - .2 Remove items as indicated.
 - .3 Remove parts of existing building to permit new construction.
 - .4 Trim edges of partially demolished building and elements to suit new work.
 - .5 Carefully cut and remove existing wood components noted to be salvaged for re-use.

3.3 CLEANING

- .1 Leave Work area clean at end of each day.
- .2 Clean progressively as per Section 01 74 00 – Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

END OF SECTION

- Part 1 General
- 1.1 RELATED REQUIREMENTS
 - .1 Section 07 52 00 – Modified Bituminous Membrane Roofing.
 - .2 07 62 00 – Sheet Metal Flashing and Trim
- 1.2 MEASUREMENT OF PAYMENT
 - .1 This work, mostly performed at chimneys and at the junction of the lower roof with the rest of the building, is part of the lump sum cost for the project.
- 1.3 ALTERNATES
 - .1 Obtain Consultant's approval before changing manufacturer's brands or sources of supply of mortar materials during entire Contract or other methods of mixing mortar specified elsewhere in this specification. This criterion will apply for the duration of the contract.
- 1.4 REFERENCES
 - .1 American Society for Testing and Materials (ASTM) International
 - .1 ASTM C109/C109M-[16a], Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm Cube Specimens).
 - .2 ASTM C144-18, Specification for Aggregate for Masonry Mortar.
 - .3 ASTM C185-15a, Test Method for Air Content of Hydraulic Cement Mortar.
 - .4 ASTM C207-18, Specification for Hydrated Lime for Masonry Purposes.
 - .5 ASTM C270-19, Specification for Mortar for Unit Masonry.
 - .6 ASTM C1714/C1714M-19a, Specification for Preblended Dry Mortar Mix for Unit Masonry.
 - .2 Canadian Standards Association (CSA) International
 - .1 CSA A23.1/A23.2-19, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
 - .2 CAN/CSA A179-14 (R2019), Mortar and Grout for Unit Masonry.
 - .3 CAN/CSA A3000-18, Cementitious Materials Compendium.
- 1.5 ADMINISTRATIVE REQUIREMENTS
 - .1 Scheduling of Work
 - .1 Submit work schedule indicating anticipated progress stages within time of final completion shown in bid document.
 - .2 Take measures necessary to complete work within approved schedule time. Schedule may not be changed without approval of Consultant.

- 1.6 ACTION AND INFORMATIONAL SUBMITTALS
 - .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for mortar and include product characteristics, performance criteria, physical size, finish and limitations.
 - .3 Samples:
 - .1 Provide samples in accordance with CAN/CSA A179.
 - .2 Submit two 50 mm x 50 mm size samples of mortar to demonstrate colour and texture.
 - .3 Submit sample of sand to demonstrate colour and gradation.
- 1.7 QUALITY ASSURANCE
 - .1 Qualifications:
 - .1 Mortar preparation workers to have minimum of 5 years of experience in soft brick work and in lime mortar preparation. This experience must be verified by References.
 - .2 Mortar to be mixed by same workers throughout project.
 - .2 Certificates
 - .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- 1.8 DELIVERY, STORAGE AND HANDLING
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
 - .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
 - .3 Storage and Handling Requirements:
 - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store cementitious materials and aggregates in accordance with CSA A23.1/A23.2.
 - .3 Protect from weather, freezing and contamination.
 - .4 Remove rejected or contaminated material from site
 - .4 Waste Management and Disposal
 - .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

- .2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with local collection services.

1.9 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Execute work to CAN/CSA A179.
 - .2 Ensure work is performed at air temperature above 10° Celsius at all times.
 - .3 Prepare and maintain temperature of mortar between 10° Celsius and 30° Celsius until used.
 - .4 Ensure initial cure prevents accelerated drying of the mortar joints.

Part 2 Products

2.1 MATERIALS

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Mortar and grout: to CAN/CSA A179.
- .3 Water: potable, clean and free from contaminants.
- .4 Sand: to CAN/CSA A179; Gradation to ASTM C144. Use well graded sand passing 4.75mm down to 150 micron sieve where joints are greater than 6mm. Use sand passing 1.18mm down to 300 micron sieve where 6mm thick joints or less are indicated. In the event that the sand does not meet the gradation requirements of CAN/CSA A179, carry out additional sieving to meet requirements or provide alternate sand. Provide dry aggregate to CAN/CSA A179, Clause 5.3.6.
 - .1 Sharp, screened and washed pit sand, free of organic material, with final grading and colour to approval of Consultant.
 - .2 Round river sourced aggregate is not acceptable.
 - .3 Custom blend sands where necessary to provide appropriate colour match and gradation to approval of Consultant.
 - .4 Acceptable material:
 - .1 1 mm washed sand.
 - .2 Alternative material: to be approved by addendum prior to close of bid.
- .5 Colour: inorganic oxide pigments only. Colour of sand to match existing shades and tones.
- .6 Portland cement: to CAN/CSA A3000, non-staining, type GU.
- .7 Masonry cement: to CAN/CSA A3000.
- .8 Lime:
 - .1 Hydrated Lime:
 - .1 Hydrated, high calcium, Type "SA" to ASTM C207.
- .9 Do not use calcium chloride or chloride based admixtures.
- .10 Non-Staining mortar: use non-staining masonry cement for cementitious portion of specified mortar type. Use for all repointing work.

- .11 Restoration mortar for patching of stone to be a proprietary formulation, pre-mixed/pre-bagged. Properties to be compatible with existing stone. Restoration materials for crack repair and patching of stone: Acceptable Products:
 - .1 Jahn Restoration Mortars by Cathedral Stone Products Inc., or equivalent as accepted by the Consultant:
 - .1 Cracks/Voids ranging in width - 2.0 mm to 15.0 mm: M40
 - .2 Soft stone/Brick (Limestone/Sandstone): M70 or Jahn Restoration Adhesive
 - .3 Anchors Setting Mortar: M80
 - .4 Casting Replacement Pieces: M150
 - .5 Granite repair: M160
 - .2 Keim Restauro-Top or equivalent as accepted by the Consultant: for finishpointing and repair [all stone types]
 - .3 Keim Restauro-Grund or equivalent as accepted by the Consultant: for backpointing and base mortar for deep repair [all stone types]
 - .4 Alternative materials: to be approved by addendum prior to close of bid.
- .12 Colour: to ASTM C979
 - .1 To match existing]. Use minimum amount necessary.
 - .2 Coloured mortar: use colouring admixture not exceeding 10% of cement content by mass, or integrally coloured masonry cement, to produce coloured mortar to match approved sample. Use in accordance with the specific manufacturer's instructions and recommendations.

2.2 MORTAR MIXES

- .1 Proportion requirements:
 - .1 Bedding and pointing mortar for brick work: type O based on proportion specifications. Range for compressive strength: 3.0 MPa to 9.0 MPa at 56 days.
 - .1 Brick Masonry
 - .1 Type O based on Proportion specifications, CAN/CSA A179, 1:2:9 cement: lime: aggregate mix.
 - .2 Vicat Cone Penetration for Stonework: to ASTM C780.
 - .1 Pointing Mortar: 15-20mm.
 - .2 Bedding Mortar: 20-30mm.
 - .3 Allowable air content for all Lime Mortars: 7% to 15%.
 - .4 Do not add air entraining admixture to mortar mix on site.
 - .5 Restoration mortar: premix to manufacturer's instructions.
 - .1 1:2:6 mix for severe exposure.
 - .2 1:2:9 mix for all other locations.

Part 3 Execution

3.1 GENERAL PREPARATIONS

- .1 Traditional Mortar (Site mix):
 - .1 Prepare measuring boxes to ensure accurate proportioning of materials.

- .2 Maintain separate measuring boxes for each component.
 - .3 Ensure sand is tested and volume corrected for bulking. To avoid bulking, use only dry sand.
 - .4 Ensure air entraining agent is available together with a graduated container for accurate volume measurements.
 - .5 Ensure testing equipment is ready and in working order.
 - .6 Apply Vicat cone test to ensure desirable performance of the mortar and record results.
- .2 Premixed Mortar:
- .1 Follow manufacturer's written instructions.
 - .2 Prepare entire contents of bag. Mortar prepared using a portion of a bag will be rejected.
 - .3 Apply Vicat cone test to ensure desirable performance of the mortar. Record results.
- .3 Coloured Mortar:
- .1 Use sand as colouring agent where possible.
 - .2 Maintain one mortar mixer exclusively for coloured mortar.
 - .3 For pre-blended mortar mix, use the complete contents of the bag in the mix. Use of partial contents is unacceptable, as the materials may separate.
 - .4 Match existing mortar in colour to a minimum depth of 30 mm for finishpointing.

3.2 BULKING OF SAND (SITE MIX)

- .1 Test sand for bulking prior to commencing work.
- .2 Verify moisture content in sand conforms to CAN/CSA A179.
- .3 The Consultant reserves the right to reject sand if bulked volumes are excessive.
- .4 Test and adjust sand quantities for bulking:
 - .1 Obtain sample of sand which accurately reflects average condition of pile of damp sand, as follows:
 - .1 Take 4 shovels full of sand, each from a different level of the pile, and mix thoroughly.
 - .2 Place sand in a conical pile and divide into 4 quarters with a board. Remove 2 opposite quarters from pile and combine remaining 2 quarters and mix thoroughly.
 - .3 Repeat quartering and mixing procedure until a sample of size required for testing remains.
 - .2 Fill a 1-litre capacity jar, about two-thirds full with damp sand to be tested. Drop sand in loosely. Do not pack it in. Level off surface, measure depth of damp sand (D).
 - .1 Carefully empty sand into another container, and half fill first container with water.
 - .2 Pour back about half of test sample of sand slowly into water so it is entirely saturated. Rod it thoroughly to remove air.
 - .3 Add rest of sand, rodding again to remove air and level off surface. Measure depth of saturated sand (S), which will be less than depth of damp sand.

.4 Calculate percentage bulking using formula: $[(D-S) \times 100\%]/S =$ percentage bulking; where D = depth of damp sand, and S = depth of saturated sand.

.3 Increase volume of sand by percentage bulking shown in test.

3.3 MIXING (SITE MIX UNLESS NOTED)

- .1 Prepare measuring boxes to ensure accurate proportioning of mortar ingredients. Each box to contain exact volume proportion for each specific mix ingredient.
- .2 Introduce approximately 75% of the total volume of water into the mixer, followed by 50% of the sand and all of the dry hydrated lime and any pigment. Mix for approximately 3 minutes or until the materials are thoroughly blended and no particles of white lime are apparent in the mix.
- .3 Allow to stand for 5 minutes.
- .4 Add the full volume of Portland cement, the remainder of the sand and water. Mix for further 3-5 minutes until thoroughly blended and mortar has reached consistency determined by Vicat Cone penetration testing.
- .5 Add just sufficient water to obtain workable consistency for setting units. Avoid too wet a mix which stains the face of the work. Vicat Cone penetration may be slightly greater for bedding mixes but should not exceed maximum value specified by more than 20%.
- .6 Mix Characteristics:
 - .1 Pointing mortar: slightly stiffer than bedding mortar with a consistency such that the mortar can be hand-formed into a stiff ball.
 - .2 Record amount of water required to reach this consistency and use this quantity for subsequent mixes.
- .7 Adjust mix proportions based on percentage bulking shown in the test.
- .8 Mortar for reconstruction of dismantled masonry, or new construction, can be mixed using a regular paddle mixer. Only electric motor mixers are permissible. Mixers that run on hydrocarbons are not permitted, due to fumes. This also applies to pre-mix mortars.
- .9 Mixing by hand for repointing mortars must be pre-approved by Consultant as follows:
 - .1 Carry out hand mixing using high speed, 2500 RPM drill, with paddle mixer attachment. Mixing to be completed in sufficiently small container to allow full contact of the paddle with the mortar during the mixing process, thus ensuring thorough incorporation of ingredients and air entrainment.
 - .2 Submit masonry tools and container for approval prior to starting the pointing work.
- .10 Prepare only enough mortar to be used within two hours. Do not re-temper mortar beyond this time. This also applies to pre-mix mortars.
- .11 Follow manufacturer instructions when premixed mortar is used.
- .12 Appoint one individual to mix mortar for duration of project. If this individual must be replaced, mortar mixing must cease until replacement individual is trained, and mortar mix is tested. This applies to site mix and pre-mix mortars.
- .13 Do not re-temper hydraulic lime mortar.
- .14 Ensure site mix and pre-mix mortar does not contain elements detrimental to the original masonry or surrounding materials.

- .15 For site mix and pre-mix mortars, provide a mortar mixing log and record type of mortar, time of mix, air temperature, location where installed in wall, Vicat Cone result, and tests taken by independent testing agency, where applicable.

3.4 CONSTRUCTION

- .1 Do masonry mortar work in accordance with CAN/CSA A179 except where specified otherwise.

3.5 CLEANING

- .1 Final Cleaning: upon completion remove surplus materials, rubbish, tools equipment in and barriers.
- .2 Remove droppings and splashings using clean sponge and water.
- .3 Clean masonry with low pressure clean water and stiff natural bristle brush. For limestone, pressure should be between 276 kPa and 410 kPa. See Section 04 03 07- Historic - Masonry Repointing.
- .4 Obtain approval of Consultant prior to using other cleaning methods for persistent stains.

3.6 PROTECTION OF COMPLETED WORK

- .1 Cover completed and partially completed work, that is not either enclosed or sheltered at end of each work day.
- .2 Enclose and protect work using wetted burlap.
- .3 Cover with waterproof tarps to prevent weather from eroding recently laid material.
 - .1 Maintain tarps in place for minimum of 1 week after laying.
 - .2 Ensure that bottoms of tarps permit airflow to reach mortar in joints.
- .4 Anchor coverings securely in position.

END OF SECTION

- Part 1 General
- 1.1 RELATED REQUIREMENTS
 - .1 Section 07 52 00 – Modified Bituminous Membrane Roofing.
- 1.2 REFERENCES
 - .1 CSA International
 - .1 CSA O121-2017, Douglas Fir Plywood.
 - .2 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001, FSC Principle and Criteria for Forest Stewardship.
 - .3 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS
 - .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for wood products and accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.4 QUALITY ASSURANCE
 - .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board. Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.
 - .2 Sustainable Standards Certification:
 - .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.
- 1.5 DELIVERY, STORAGE AND HANDLING
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
 - .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

Part 2 Products

2.1 FRAMING STRUCTURAL AND PANEL MATERIALS

- .1 Lumber: softwood, S4S, moisture content 19% (S-dry) or less in accordance with following standards:
 - .1 CSA O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:
 - .1 Board sizes: "Standard" or better grade.
 - .2 Dimension sizes: "Standard" light framing or better grade.
 - .3 Post and timbers sizes: "Standard" or better grade.
- .3 Douglas fir plywood (DFP): to CSA O121-2017, standard construction.

2.2 ACCESSORIES

- .1 Fasteners:
 - .1 Length and type as suited to application.
 - .2 Use stainless steel fasteners to ensure that board removal can eventually performed with minimal damage to the existing roof deck.

Part 3 Execution

3.1 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 Consultant.
 - .2 Inform Consultant 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 Consultant.

3.2 MATERIAL USAGE

- .1 Roof sheathing:
 - .1 Plywood, DFP, 15.9 mm thick.
- .2 Against brick surfaces:
 - .1 Plywood, DFP, 19 mm thick.

3.3 INSTALLATION

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.
- .4 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.
- .5 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .6 Countersink bolts where necessary to provide clearance for other work.
- .7 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction. Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

- Part 1 General
- 1.1 RELATED REQUIREMENTS
 - .1 Section 06 10 00 - Rough Carpentry.
 - .2 Section 07 92 00 – Joint Sealant.
- 1.2 REFERENCE STANDARDS
 - .1 ASTM International Inc.
 - .1 ASTM D41-05, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 - .2 ASTM D6162-00a, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.
 - .3 ASTM D6163-00e1, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements.
 - .4 ASTM D6164-05, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
 - .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 37-GP-56M-80b(A1985), Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
 - .3 Canadian Roofing Contractors Association (CRCA)
 - .1 CRCA Roofing Specifications Manual-1997.
 - .4 Canadian Standards Association (CSA International)
 - .1 CSA A123.21:20, Standard test method for the dynamic wind uplift resistance of membrane-roofing systems.
 - .2 CSA O121-08, Douglas Fir Plywood.
 - .5 Factory Mutual (FM Global)
 - .1 FM Approvals - Roofing Products.
 - .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- 1.3 ADMINISTRATIVE REQUIREMENTS
 - .1 Convene pre-installation meeting one week prior to beginning waterproofing Work, with roofing contractor's representative, Departmental Representative and Consultant in accordance with Section 01 32 00 - Construction Progress - to:
 - .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.

- 1.4 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Provide the most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Provide the WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements 01 35 43 - Environmental Procedures, and indicate VOC content for:
 - .1 Granulated membrane
 - .2 Primer
 - .3 Silicone Roof Coating
 - .4 SBS/Solvent-based jointing mastic
 - .5 Filter fabric
 - .6 Low-rise polyurethane adhesive
 - .3 Provide shop drawings:
 - .1 Showing roof perimeter details, including metal flashing overlaps.
 - .2 Roof component securement and/or adhesive pattern to one another in the a) field; b) along parapets and c) corner areas. The uplift resistance in each case is provided on the drawings (Page A100).
 - .4 Samples: submit two (2) samples of the following materials:
 - .1 Granulated membrane
 - .2 Self-adhesive joint cover membrane
 - .3 Factory-laminated base sheet panel
 - .5 Manufacturer's Certificate: certify that products meet or exceed specified requirements.
 - .6 Test and Evaluation Reports: submit laboratory test reports certifying compliance of materials specified in this section with specification requirements.
 - .7 Manufacturer's Installation Instructions: indicate special precautions required for seaming the granulated membrane and factory-laminated base sheet panel including self-adhesive joint cover membrane.
 - .8 Manufacturer's field report: in accordance with Section 01 45 00 - Quality Control.
 - .9 Reports: indicate procedures followed, ambient temperatures and wind velocity during application, with emphasis regarding the following aspects:
 - .1 The quantity/rate of application of low-rise polyurethane adhesive for the various roof areas as per wind uplift requirements.
 - .2 The proper and complete curing of primer prior to material installation
 - .3 The seaming of the granulated membrane
 - .4 The seaming of the factory-laminated base sheet panel including self-adhesive joint cover membrane

1.5 QUALITY ASSURANCE

- .1 Installer qualifications: company and staff person specializing in application of torchless modified bituminous roofing systems, approved by manufacturer with documented 5-year experience.
- .2 Sustainability Standards Certification:
 - .1 Recycled Content: provide listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-industrial content, and total cost of materials for project.

1.6 FIRE PROTECTION

- .1 Fire Extinguishers for each 30 feet x 30 feet area:
 - .1 ULC labelled for A, B and C class protection.
- .2 Even though this section specifies a self-adhered system, maintain fire watch for 1 hour after each day's roofing operations cease.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions Section 01 61 00 - Common Product Requirements.
- .2 Storage and Handling Requirements:
 - .1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.
 - .2 Provide and maintain dry, off-ground weatherproof storage.
 - .3 Store rolls of membrane in upright position. Store membrane rolls with salvage edge up.
 - .4 Remove only in quantities required for same day use.
 - .5 Place plywood runways over completed Work to enable movement of material and other traffic.
 - .6 Store sealants at +15 degrees C minimum.
- .3 Packaging Waste Management: remove for reuse of padding packaging materials pallets, crates in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
 - .2 Fold up metal banding, flatten and place in designated area for recycling.

1.8 SITE CONDITIONS

- .1 Ambient Conditions
 - .1 Do not install roofing when temperature remains below 5 degrees C for self-adhesive applications.
 - .2 Minimum temperature for polyurethane-based adhesive is 5 degrees C.
- .2 Install roofing on dry deck on its whole thickness, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.9 WARRANTY

- .1 For Work of this Section 07 52 00 - Modified Bituminous Membrane Roofing, the 12 months warranty period for labour work is extended to 240 months.

Part 2 Products

2.1 PERFORMANCE CRITERIA

- .1 Compatibility between components of roofing system is essential. This entails that all those products originate from the same manufacturer. Provide written declaration to Departmental Representative and Consultant stating that materials and components, as assembled in system, meet this requirement.
- .2 Roofing System: to CSA A123.21 for dynamic wind uplift resistance. Shop drawings shall indicate for the various areas (i: field; ii: along walls and parapets; iii: corners) of each roof. See "Adhesive" sub-section below. Refer to drawings, page A100.
 - .1 The quantity and of adhesive and spacing between adhesive beads/configuration, if any, for each area/roof.

2.2 DECK COVERING

- .1 Plywood:
 - .1 As specified in Section 06 10 00 - Rough Carpentry.

2.3 PRIMER

- .1 Primer composed of synthetic polymers, high adhesion resins and solvents. The primer has the following characteristics and properties:
 - .1 To promote the adhesion of self-adhesive membranes to most substrates including porous substrates such as:
 - .1 Factory laminated base sheet panel
 - .2 Acceptable product: "ELASTOCOL STICK ZERO" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system.

2.4 FACTORY-LAMINATED BASE SHEET PANEL

- .1 High performance underlayment panel consisting of a SBS polymer modified bitumen membrane, a non-woven polyester reinforcement and a sanded surface. This membrane is the base layer and is factory-laminated to an asphalt backer board. The membrane and board have the following characteristics and properties (per CSA A123.23-15, Type B, Class 3):
 - .1 Mass per unit area: 8 600 g/m²: (1.76 lb/sq.ft.)
 - .2 Compliant with the CSA A123.25-18 standard « Asphalt Core Boards used in Roofing ».
 - .3 Longitudinal overlaps with high adhesion strips when sealed with an electric hot air gun.
 - .4 Membrane thickness only: 2.2 mm (87 mils)
 - .5 Total thickness of the membrane and asphalt substrate: 4.8 mm
 - .6 Dimensional stability, max. L/T: +/- 0.5 / 0.1 %

- .7 Shear resistance: 550 N (ASTM E154).
 - .8 Water absorption: 2.5 % (ASTM D994)
 - .9 Acceptable product: "2-1 SOPRASMART BOARD SANDED" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system.
 - .2 Adhesion to plywood board: using two-component low expansion polyurethane adhesive.
- 2.5 SELF-ADHESIVE JOINT COVER MEMBRANE
- .1 Cover strip consisting of SBS polymer modified bitumen and composite reinforcement. The surface is sanded. The underside is self-adhesive and covered with a removable silicone film. It is used to waterproof the transverse overlaps of composite panels laminated to a base layer membrane. The membrane and panel have the following characteristics and properties (per CSA A123.23-15, Type B, Class 3).
 - .1 Mass per unit area: 2.8 kg/m² (0.57 lb/ sq.ft.)
 - .2 Thickness: 2.5 mm (98 mils)
 - .3 Internal fabric: composite
 - .4 Surface/underface:
 - .1 Sanded / self-adhesive, covered with a removable silicone film.
 - .5 Deformation energy (longitudinal / transversal) at 23 degrees C before thermal conditioning: 8 / 6.5 kN/m (46 / 37 lbf/ft)
 - .6 Maximum failure load (longitudinal / transversal) at 23 degrees C before thermal conditioning: 17 / 14 kN/m (97 / 80 lbf/in.
 - .7 Ultimate elongation (longitudinal/ transversal) at 23 degrees C: 65/65 %.
 - .8 Dimensional stability max (longitudinal / transversal): -0.2 / 0.2.
 - .2 Acceptable product : "SOPRALAP STICK" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system.
 - .3 Adhesion to underlayment panel: full adhesion. Primer required.
- 2.6 GRANULES IN BULK
- .1 Coloured ceramic granules designed for roof finishing and UV protection of/imbedded in underlying coatings and end lap joints.
 - .2 Acceptable product: "GREY GRANULES" by SOPREMA, or equivalent as accepted by the Consultant, based on all characteristics and product properties, or one essential or most significant to the system integrity.
- 2.7 SELF-ADHERED MEMBRANE FLASHING
- .1 Base sheet membrane flashing composed of SBS modified bitumen and a glass mat reinforcement. The surface is sanded and the self-adhesive is covered with a silicone release film.
 - .1 Nominal mass per unit area: 2,900 g/m² (0,6 lbs/sq.ft.).
 - .2 Thickness: 2.5 mm (98 mils).
 - .3 Surface: sanded.
 - .4 Underface: self-adhesive, covered with a removable silicone film.

- .5 Deformation energy (longitudinal / transversal) at 23 degrees C before thermal conditioning: 7 / 5.5 kN/m (42 / 33 lbf/in.).
 - .6 Maximum failure load (longitudinal / transversal) at 23 degrees C before thermal conditioning: 17 / 14 kN/m (97 / 80 lbf/in.).
 - .7 Ultimate elongation (longitudinal/ transversal) at 23 degrees C: 65/65 %.
 - .8 Dimensional stability max (longitudinal / transversal): -0.2 / 0.2 %.
- .2 Acceptable product: "SOPRAFLASH STICK" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system
- .3 Adhesion to underlayment panel with laminated membrane: full adhesion. Primer required

2.8 POLYESTER REINFORCED FLASHING BASE PLY

- .1 Base sheet membrane composed of SBS modified bitumen reinforced with a composite reinforcement. The surface is sanded and the self-adhesive underface is covered with a silicone release film.
- .1 Thickness: 3 mm (118 mils).
 - .2 Surface: sanded.
 - .3 Reinforcement: composite.
 - .4 Underface: self-adhesive, covered with a silicone release film.
 - .5 Strain energy (minimum MD/XD) at 23 degrees C before thermal conditioning: 8 / 6.5 kN/m (46 / 37 lbf/in.).
- .2 Acceptable product: "SOPRAPLY STICK DUO" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system
- .3 Adhesion to underlayment panel with laminated membrane: full adhesion. Primer required

2.9 GRANULATED CAP SHEET MEMBRANE

- .1 High performance granulated cap sheet composed of styrene-butadiene-styrene (SBS) polymers, modified bitumen to CSA A123.23, composite reinforced membrane. The membrane has a self-adhesive underface covered with a split-back silicone release film. The membrane has the following characteristics and properties according to CSA A123.23-15, Type C, Grade 1.
- .1 Nominal mass per unit area: 4 800 g/m² (1.0 lbs/sq.ft.).
 - .2 The membrane features a technology which allows the immediate sealing of the membrane along side laps.
 - .3 Thickness: 3.8 mm (157 mils).
 - .4 Selvedge width: 100 mm (4 in.)
 - .5 Surface: GREY granules.
 - .6 Underface: self-adhesive, covered with a split-back silicone release film.
 - .7 Strain energy (minimum MD/XD) at 23 degrees C before thermal conditioning: 8 / 6.5 kN/m (46 / 37 lbf/in.).
 - .8 Peak load (minimum MD/XD) at 23 degrees C before thermal conditioning: 17 / 14 kN/m (97 / 80 lbf/in.)

- .9 Elongation at peak load (minimum MD/XD) at 23 degrees C: 55/65 %.
 - .10 Dimensional stability (minimum MD/XD): -0.2 / 0.2 %.
 - .11 Complies with ULC-S107 requirements.
 - .2 Acceptable product: "SOPRAPLY STICK TRAFFIC CAP" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system
 - .3 Adhesion to underlayment panel with laminated membrane: full adhesion. Primer required.
- 2.10 LOW-RISE POLYURETHANE ADHESIVE
- .1 A two component, low expansion, polyurethane based adhesive for low temperature applications. Used to bond polyisocyanurate insulation boards (to each other and to another substrate) and underlayment board with laminated membrane. The adhesive has the following properties:
 - .1 Cream time: less than 10 seconds
 - .2 Rise time: never more than 90 seconds
 - .3 Curing time: 30 minutes
 - .2 Establish adhesive quantities based on CSA A123.21-14 wind uplift test reports or FM 4470 publications ("RoofNav" database) including recommendations for corners and perimeters in Factory Mutual PLPDS 1-29.
 - .3 Acceptable product: "DUOTACK 365" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system
- 2.11 POLYESTER PRECAST BLOCKS
- .1 Offered in three variable sizes to adapt to the various configurations of projections.
 - .1 Bevelled ends.
 - .2 Acceptable product: "SOPRAMASTIC BLOCK" by SOPREMA, or an equivalent product accepted by the Consultant, based on all the product's characteristics and properties, or on one or several of its characteristics or properties that are essential for the system.
- 2.12 SEALERS
- .1 Sealants: Caulking - see Section 07 92 00 - Joint Sealants.
- 2.13 REMOVABLE STACK FLASHING
- .1 Insulated
 - .2 Acceptable product: "Removable Stack Jack Flashing (SJ-Series), by Thaler, or equivalent accepted by the Consultant.
 - .3 Height and diameter as per roof survey by the contractor for each single projection.
- 2.14 HOT PIPE FLASHING
- .1 Insulated

- .2 Acceptable product: "Hot Pipe Flashing MEF-3A, by Thaler, or equivalent accepted by the Consultant.
- .3 Height and diameter as per roof survey by the contractor for this specific projection.

Part 3 Execution

3.1 QUALITY OF WORK

- .1 Do examination, preparation and roofing Work in accordance with Manufacturer's Specifications, to Ontario Industrial Roofing Contractors Association.
- .2 Apply ULC fire safety standards.
- .3 Install only assemblies approved for wind resistance in accordance with FM 4470 and CSA A123.21.
- .4 Apply primer in accordance with manufacturer's written recommendations and WAIT UNTIL IT IS COMPLETELY DRY before installing subsequent products. THIS REQUIREMENT WILL BE STRICTLY ENFORCED ON THE JOB SITE.
- .5 Between the walls and the roof, interpose an interface of durable rigid material, i.e. plywood, to ensure the continuity of the air sealing system.
- .6 Carry out the connection of all components and the materials by taking into account the loads of calculation of the elements considered.

3.2 EXAMINATION OF ROOF DECKS

- .1 Verification of Conditions:
 - .1 Inspect with Departmental Representative and Consultant deck conditions including roof perimeter, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.
- .2 Evaluation and Assessment:
 - .1 Prior to beginning of work ensure:
 - .1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.
 - .2 Plywood have been installed to deck and walls as indicated.
- .3 Do not install roofing materials during rain or snowfall.

3.3 PROTECTION OF IN-PLACE CONDITIONS

- .1 Cover walls, sloped roofs and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of adhesive material immediately.
- .4 Dispose of rainwater off roof and away from face of building until roof drains or hoppers installed and connected.
- .5 Protect roof from traffic and damage. Comply with precautions deemed necessary by Departmental Representative and Consultant.
- .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.

- .7 Metal connectors and decking will be treated with rust proofing or galvanization.
- 3.4 DECK SHEATHING
 - .1 Mechanically fasten to existing deck/wood boards the 15,9 mm Plywood with screws, spaced 400 mm on centre each way.
 - .2 Place with long axis of each sheet transverse to boards, with end joints staggered.
- 3.5 CONSTRUCTION OF AN EXPOSED ORDINARY MEMBRANE ROOF (“CONVENTIONAL/UNPROTECTED TYPE”)
 - .2 Installation of the factory-laminated base sheet panel
 - .1 Apply the adhesive in continuous strips at the intended centre-to-centre distance according to the tested/approved wind uplift simulations for the different roof areas.
 - .2 Lay the laminates with joints between staggered by at least 300 mm.
 - .3 Pressure-roll with a 90-lb roll.
 - .4 Implement all applicable manufacturer’s instructions and recommendations.
 - .3 Installation of the self-adhesive joint cover membrane
 - .1 Apply primer to both sides of the membrane/underlayment panel joints, exceeding the width of the self-adhesive strip, in accordance with the manufacturer’s recommended dosage (in L per sq. ft.) depending on the type of surface (porous or smooth). Allow to dry completely and thoroughly.
 - .2 Install the self-adhesive joint cover membrane.
 - .3 Pressure-roll with a 90-lb roll.
 - .4 Implement all applicable manufacturer’s instructions and recommendations.
 - .4 Installation of the granulated membrane
 - .1 Make the membrane according to the manufacturer’s recommendations.
 - .2 Apply the primer to the membrane/underlayment panel, using the manufacturer’s recommended dosage (in L per sq. ft.) depending on the type of surface (porous or smooth). Allow to dry completely and thoroughly.
 - .3 Start at the low point, moving perpendicular to the axis of the slope.
 - .4 Unroll the finishing granulated membrane and adhere it to the panel.
 - .5 Overlap the membrane sheets by 100 mm at the sides and 150 mm at the ends respectively. Joints in the top layer should be staggered by at least 300 mm from the self-adhesive overlap strips.
 - .6 The topcoat must be free of blistering, wrinkling and yawning.
 - .7 Implement all applicable manufacturer’s instructions and recommendations.
 - .5 Membrane flashing
 - .1 Apply a primer to the parapets, using the manufacturer’s recommended dosage (in L per sq. ft.) depending on the type of surface (porous or smooth). Allow to dry completely and thoroughly.
 - .2 Complete the installation of the base coat membrane flashing strips before applying the top coat.
 - .3 Overlap the base layer membrane flashing on the base layer for a minimum width of 150 mm and apply pressure with a roll.

- .4 Overlap the topcoat membrane flashing over the topcoat by a minimum of 250 mm and apply pressure with a roller against the primed surfaces.
- .5 Leave an overlap of at least 75 mm on the sides and then seal.
- .6 The flashings must be correctly fixed to their support; the work must not show any sagging, blistering, yawning or wrinkling.
- .7 Implement all applicable manufacturer's instructions and recommendations.
- .6 Metal flashing
 - .1 Install metal flashings in accordance with Section 07 62 00 - Sheet Metal Flashings and Trim.
- .7 Roof penetrations:
 - .1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with manufacturer's recommendations and details.
- 3.6 FIELD QUALITY CONTROL
 - .1 Inspections:
 - .1 Inspection and testing of roofing application will be carried out by testing laboratory designated by Departmental Representative.
 - .2 Departmental Representative will pay for tests as specified in Section 01 45 00 - Quality Control.
 - .3 Inspection and testing of roofing application will be carried out by testing laboratory designated by the Departmental Representative.
 - .2 Testing:
 - .1 Visual inspections carried out at each stage of preparation.
 - .2 Visual inspections carried out at each stage of materials installation.
- 3.7 CLEANING
 - .1 Remove bituminous markings from finished surfaces.
 - .2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.
 - .3 Repair or replace defaced or disfigured finishes caused by work of this section.
 - .4 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Place materials defined as hazardous or toxic in designated containers.
 - .2 Clearly label location of salvaged material's storage areas and provide barriers and security devices.
 - .3 Ensure emptied containers are sealed and stored safely.
 - .4 Divert unused aggregate materials from landfill to local facility for reuse as reviewed by Departmental Representative and Consultant.
 - .5 Unused coating material must be disposed of at official hazardous material collections site as reviewed by Departmental Representative and Consultant.
 - .6 Unused adhesive and sealant materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

- .7 Dispose of unused adhesive material at official hazardous material collections site approved by Departmental Representative and Consultant.
- .8 Dispose of unused sealant material at official hazardous material collections site approved by Departmental Representative and Consultant.
- .9 Dispose of unused asphalt material at official hazardous material collections site approved by Departmental Representative and Consultant.
- .10 Divert unused gypsum materials from landfill to recycling facility as reviewed by Departmental Representative and Consultant.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- .1 Section Includes:
 - .1 Replacement of metal flashings and accessories with new lead coated copper sheet metal in contact with masonry and as indicated elsewhere on drawings.
 - .2 Adding new lead coated copper flashings at locations as indicated on drawings.
 - .3 Modification of existing copper flashings to remain with like materials.

1.2 RELATED SECTIONS

- .1 Section 07 52 00 – Modified Bituminous Membranes
- .2 Section 07 92 00 – Joint Sealants

1.3 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM B209-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - .2 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- .2 Canadian Roofing Contractors Association (CRCA)
 - .1 Roofing Specifications Manual 2012.
- .3 ASTM B 32-96, Standard Specification for Solder Metal.
- .4 B370 - Copper Sheet and Strip for Building Construction.
- .5 ASTM Standard B101 Lead Coated Copper.
- .6 Copper Development Association (CDA) - Contemporary Copper, A Handbook of Sheet Copper Fundamentals, Design, Details and Specifications.

1.4 QUALIFICATIONS

- .1 Metal Roofing and Flashings:
 - .1 Use single Contractor Metal Roofing for all metal roofing and flashing work. Ensure Contractor has **5 years** minimum in metal roofing and flashing work, work with prefinished sheet metal roofing and especially for historic metal roofing.
- .2 Submit evidence of this experience for the Consultant's approval prior to engagement and mobilization onsite.
- .3 Contractor to convene meeting with the Consultant 2 weeks prior to start of metal roofing to review installations and plan scheduling.

1.5 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .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.
- .3 Samples:
 - .1 Submit duplicate 300 x 300 mm samples of each type of sheet metal colour finishes.
- .4 Shop Drawings:
 - .1 Indicate arrangements of sheets and joints, types and locations of fasteners and special shapes.

1.6 MOCK-UPS

- .1 Fabricate 48" long mock-up of each typical flashing detail.
- .2 Reconstruct mock-up at the Consultant's discretion until required quality of Work is achieved.
- .3 Mock-up may be part of finished Work.
- .4 Allow 48 h for inspection of mock-up by the Consultant and Departmental Representative before proceeding with roofing Work.
- .5 Mock-up will be used as model for quality of Work for project.
- .6 Work that does not meet quality as established by mock-up will be rejected.

1.7 DELIVERY, STORAGE AND HANDLING

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

1.8 WASTE MANAGEMENT

- .1 Separate waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.9 WARRANTY

- .1 Refer to warranties applicable to the Modified Bituminous Membranes system.

PART 2 PRODUCTS

2.1 FLASHING MATERIALS

- .1 Use Lead Coated copper as the flashing material throughout, where "metal flashing" are called out on the drawings. Use other flashing materials (pre-finished metal, etc.) only where noted on the drawings:
 - .1 Base metal: Lead coated copper roofing sheets complying with ASTM B 101, temper

designation H00, consisting of cold-rolled copper sheet coated both sides with lead.

- .2 Basis weights or thickness:
 - .1 20 oz per sq. ft. copper sheet with a coated weight of not less than 21.2 oz. per sq. ft.

2.2 ACCESSORIES

- .1 Sealants: in accordance with Section 07 92 00 - Sealants.
- .2 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.
- .3 Fasteners: screw fasteners of same material as sheet metal, length and thickness suitable for application, complete with neoprene washers where fasteners are to be exposed.
- .4 Touch-up paint: as recommended by prefinished material manufacturer.
- .5 Soldering: Solder and accessories as recommended by lead-coated copper manufacturer and in accordance with best practices for lead-coated copper.

2.3 FABRICATION

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details.
- .2 Fabricate all metal in accordance with the CDA - Contemporary Copper, A Handbook of Sheet Copper Fundamentals, Design, Details and Specifications, unless otherwise indicated.
- .3 Form pieces in 2400 mm maximum lengths.
 - .1 Make allowance for expansion at joints.
- .4 Hem exposed edges on underside 12 mm.
 - .1 Mitre and seal corners with sealant.
- .5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- .7 Overlap pieces by minimum 50mm and seal with sealant in accordance with Section 07 92 00 – Joint Sealants.

PART 3 EXECUTION

3.1 INSTALLATION WORKMANSHIP

- .1 Install all metal in accordance with the CDA - Contemporary Copper, A Handbook of Sheet Copper Fundamentals, Design, Details and Specifications, unless otherwise indicated or specified otherwise.
- .2 Form to shapes and dimensions shown, free from defects which impair strength or mar appearance.
- .3 Form planes and lines to true alignment.

3.2 INSTALLATION

- .1 Install sheet metal work in accordance with CRCA FL Series.
- .2 Use concealed fastenings except where approved before installation.
- .3 Install metal flashing as details on the project drawings.
- .4 Remove existing roofing and salvage for reuse as indicated.
- .5 Bend up or remove existing metal flashings as indicated on drawings.
- .6 Remove deteriorated underlayment.
- .7 Install plane surfaces and seams without waves, warps, buckles, fastening stresses or distortion, allowing fully for expansion and contraction.
- .8 Use concealed fastenings except where approved by the Consultant prior to installation.
- .9 Stagger transverse seams in adjacent panels.
- .10 Form seams in direction of water-flow and make watertight.
- .11 Flash roof penetrations with material matching roof panels, and make watertight by soldering.
- .12 Install surface mounted reglets true and level, and caulk top of reglet with sealant.
- .13 Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm at masonry veneered walls. Lead wedge flashing securely into joint.
- .14 Caulk flashing at cap flashing with sealant, refer to Section 07 92 00 – Joint Sealants.

3.3 CLEANING

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 07 52 00 – Modified Bituminous Membrane Roofing
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim
- .4 Section 09 91 99 – Painting

1.2 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit duplicate samples of each type of material and colour.
- .4 Submit manufacturer's instructions to include installation instructions for each product used

1.3 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data in accordance with Section 01 78 00 – Closeout Submittals.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.5 WASTE MANAGEMENT

Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.6 PROJECT CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 5°C.
 - .2 When joint substrates are wet.

- .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

PART 2 PRODUCTS

2.1 SEALANT MATERIAL DESIGNATIONS

- .1 Colours: multiple colours to be selected by Departmental Representative from manufacturer's complete range.
- .1 Referred to on drawings as "SEALING COMPOUND".
 - .1 Polyether-based resin, single-component, moisture cure elastomer sealing mastic and adhesive.
 - .2 Odourless and has low VOC content.
 - .3 Adheres to precast blocks made of polyester resin (used to seal penetrations).
 - .4 Sag Resistance: Zero slump (ASTM C639).
 - .5 Elongation at break: 290% (ASTM D412).
 - .6 Low temperature flexibility: "Pass" (ASTM D816).
 - .7 Acceptable product: SOPRAMASTIC SP2 by SOPREMA or equivalent as approved by the Consultant.
- .2 Referred to on drawings as "SEALING JOINT".
 - .1 One-component, medium modulus and high performance, elastomeric polyurethane sealant.
 - .2 Tear Strength: 8.5 N/mm (ASTM D624).
 - .3 Elongation at break: 500% (ASTM D412).
 - .4 Adhesion in Peel / Aluminium: 3.4 N/mm (ASTM C794).
 - .5 Acceptable product: Sikaflex-1a by Sika or equivalent as approved by the Consultant.
- .3 Referred to on drawings as "FILLING COMPOUND".
 - .1 Polyether-based resin, single-component, moisture cure elastomer sealing mastic.
 - .2 Odourless and has low VOC content.
 - .3 VOC content: less than 15 g/L
 - .4 Brookfield viscosity at 21 degree C: 40,000 cP
 - .5 Shrinkage: Not visible after 14 days.
 - .6 Acceptable product: SOPRAMASTIC PF by SOPREMA or equivalent as approved by the Consultant.
- .4 Referred to on drawings as "HIGH TEMPERATURE".
 - .1 One-component, sealing and adhesive mono-component, acetoxysilicone-based.

- .2 Colour: red
- .3 Service temperature: Minus 62.2 to 260/280 degree Celsius.
- .4 Acceptable product: Sikasil GP HT by Sika or equivalent as approved by the Consultant.

- .5 Preformed Compressible and Non-Compressible back-up materials.
 - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
 - .1 Extruded open cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .2 Bond Breaker Tape.
 - .1 Polyethylene bond breaker tape which will not bond to sealant.

- .6 Reinforcing fabric: Non-woven, white needle-punched polyester fabric.
 - .1 Thickness: 0.75 to 1 mm.
 - .2 Tensile strength at break: superior to 130 (long); superior to 150 (transversal) (ASTM D1682).
 - .3 Tear resistance: superior to 200 N (ASTM D1117).
 - .4 Acceptable product: ALSAN RS FLEECE by SOPREMA or equivalent as approved by the Consultant.

2.2 SEALANT SELECTION PER LOCATION

- .1 Refer to drawings.
- .2 Never use sealant for reglets into soft brick. Mortar is used as per section 04 03 08 0 Historic mortaring, installed by a mason.

2.3 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

PART 3 EXECUTION

3.1 PROTECTION

- .1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.

- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install backup material in all joints to achieve correct joint depth and shape, with approximately 30% compression.

3.5 APPLICATION

- .1 Sealant:
 - .1 Mix and apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.

3.6 CLEANING

- .1 Clean adjacent surfaces immediately and leave Work neat and clean.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE OF WORK

- .1 This section includes instructions for the rehabilitation and repair of existing historic windows, doors and frames.
- .2 Refer to window repair schedule and elevations.

1.2 RELATED REQUIREMENTS

- .1 Section 09 91 99 – Painting.

.2 REFERENCES

.3 References:

- .1 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 Architectural Woodwork Standards Manual - (Edition 2) 2014.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA O141-05 (2014), Softwood Lumber.
- .3 National Lumber Grading Authority (NLGA)
 - .1 NLGA Standard Grading Rules for Canadian Lumber 2014.

1.3 ADMINISTRATIVE REQUIREMENTS:

.1 Sequencing.

- .1 Rehabilitate wood windows and doors in accordance with Work of this Section and related sections, as identified in the drawings and on Work Sheets.
- .2 Coordinate with Consultant for confirmation of viability of individual components to rehabilitate.
- .3 Restore sashes, leafs, and frames as noted in the Work Sheets.
- .4 Retain for repair, repainting and reinstallation in original location all existing window sashes, door leafs, and door frames as indicated on Work Sheets.
- .5 Remove all storm windows to facilitate work – work on frames, trim and hung sashes to take place on site.
- .6 Salvage components as directed in Work Sheets.
- .7 Fabricate replica sashes and frames for replacement as indicated and in accordance with Section 08 03 00 -Conservation Treatment for Period Openings.
- .8 Install salvaged and new glazing as required.
- .9 Paint in accordance with Section 09 91 99 – Painting.
- .10 Install restored and new sashes and related wood window components.
- .11 Touch-up affected adjacent finishes.

1.4 ACTION SUBMITTALS/INFORMATIONAL SUBMITTALS

.1 Shop Drawings.

- .1 Submit drawings.

- .2 Indicate materials and details in large scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, description of related components and exposed finishes, limit of different finishes, fasteners, and caulking.
- .2 Samples.
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will not be returned for inclusion into work.
 - .3 Submit 150 mm long samples of parting strips.
 - .4 Submit 250 mm long samples of molding profiles; assume custom profiles requiring the fabrication of custom cutters.
 - .1 Use of standard profile cutters is acceptable only with approval from Consultant.
 - .5 Submit samples of each type of hardware.
- .3 Photographic Documentation
 - .1 Submit photographs of existing conditions, prior to commencing work.
 - .2 Submit photographs for each of the following stage of the work, for site and shop work, with separate submittals at each stage:
 - .1 Before removal, interior and exterior.
 - .2 Post removal, interior and exterior.
 - .3 During repairs.
 - .4 Post repair but prior to painting.
 - .4 Submit photographs for each of the aforementioned stage of the work, for mock- ups, with separate submittals for each mock-up.
 - .5 Include window schedule number in each photograph.

1.5 CLOSEOUT SUBMITTALS

Operation and Maintenance Data

Submit operation and maintenance data for incorporation into manual.

1.6 QUALITY ASSURANCE

- .1 Allow Departmental Representative access to the workshop(s) for inspection of current work-in-progress.
- .2 Mandatory Requirements
 - .1 Contractor to have expertise in the conservation and replication of historic wood windows and doors on projects of similar size and complexity to Work of this Contract.
 - .2 Individual tradespersons shall have a minimum of 5 years of experience performing similar work.
 - .3 Carry out wood repair work of this Section using skilled tradespersons trained and experienced in rehabilitation of historic wood windows.
 - .1 Contractor's Field Supervision and Crew Qualifications: maintain full- time supervisor/foreperson on job site during times work is in progress. Supervisor must have door/window rehabilitation training and experience in wood repairs similar in nature and scope to specified work.

- .2 Shop Crew Makeup: trade qualified journeyperson carpenters and registered apprentices in the ratio of no more than one to one (at least one journeyperson to one apprentice).
- .3 Only workers accepted by Departmental Representative during mock-ups will be authorized to perform Work of this Section.
- .3 Mock-ups.
 - .1 Not Required.
- .4 Inspections.
 - .1 Allow Departmental Representative access to Work.
 - .2 Give 5 working days of notice requesting inspection of Work by Departmental Representative to confirm interventions.
 - .1 Schedule in situ review of elements to be rehabilitated.
 - .2 Schedule shop review of sashes and related wood components, post glazing and paint removal, and simultaneously of hardware following cleaning.
 - .3 Layout materials in shop to allow review of all facets with limited manipulation.
 - .4 Group work to minimize the number of reviews.
 - .5 Inspections during and post repair to occur as part of mock-up reviews and during regular site visits.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements.
 - .1 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 Store and protect from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management.
 - .1 Remove for reuse and return of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Dimension lumber: to CSA O141 and National Lumber Grades Authority (NLGA) requirements.
- .2 New parting strips, sills, wood repairs, and replica windows:
 - .1 Use clear white pine, quarter cut with edge grain to weather.
 - .2 Moisture content: maximum 10%.
- .3 Fasteners:

- .1 Nails: stainless steel 300 series finishing nails, size to suit application.
 - .2 All exposed screws to be slotted stainless steel screws 300 series.
 - .3 Assume replacement of all screws holding hardware in stainless steel 300 series, slot head, match existing in terms of round or flat head.
 - .4 Glazing: Re-set existing glazing
- 2.2 FINISHES
- .1 Finish Materials.
 - .1 Proceed in accordance with Section 09 91 99 – Painting.
- PART 3 EXECUTION
- 3.1 EXAMINATION
- .1 Verification of Conditions.
 - .1 Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.
- 3.2 PREPARATION
- .1 Demolition/Removal
 - .1 Salvage Door components for reuse in accordance with contract documents.
 - .2 Fully remove all existing paint and coatings from frames and trim.
- 3.3 REPAIR
- .1 Repair frame and door leaf:
 - .1 Provide component replacement all deteriorated wood elements including, stiles, rails, panels, frame and trim.
 - .2 Provide Dutchman repairs as required.
 - .3 Disassemble existing door components to facilitate full coating of all components with linseed oil primer.
 - .4 Re-set door components true and square. Provide all required pegs and accessories.
 - .5 Re-set glazing with new trim and putty as required.
 - .2 Finish in accordance with Section 09 91 99 – Painting.
 - .3 Reinstall hardware as needed.
- 3.4 INSTALLATION OF DOOR
- .1 All priming and painting to be complete at time of installation.

- .2 Install frames true and square. Use cedar shims to position window frame into the opening. Place shims only at corners of window frame, two opposing shims at each location, and set securely.
- .3 Install trim as shown on drawings.
- .4 Install hardware once installation is complete.

3.5 CLEANING

- .1 Progress Cleaning: Leave Work area clean at end of each day.
- .2 Final Cleaning:
 - .1 Upon completion remove surplus materials, rubbish, tools and equipment.
- .3 Waste Management:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

3.6 PROTECTION

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

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 07 92 00 – Sealants.
- .3 Section 08 03 00 – Conservation Treatment for Period Openings
- .4 Section 08 03 40 – Wood Repairs
- .5 Section 08 03 52.71 – Historic Wood Window and Door Rehabilitation

1.2 REFERENCES

- .1 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual, 2004.
- .2 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113 January 2007, Architectural Coatings
 - .2 SCAQMD Rule 1168 January 2005, Adhesives and Sealants Applications

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures
- .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.

1.4 MOCK-UPS

- .1 Provide 1m x 1m mock ups of all painting types prior to executing work.
- .2 Provide 300mm x 300mm mock-ups of heritage wood painting and finishing on separate lumber not to remain as part of finished work prior to commencing work.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data in accordance with Section 01 78 00 – Contract Closeout.

1.6 STORAGE AND HANDLING

- .1 Storage and Protection:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.8 SITE CONDITIONS

- .1 Lighting: Provide minimum lighting level of 350 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
 - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .3 Additional application requirements:
 - .1 Apply paint finish 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.

PART 2 PRODUCTS

2.1 VOC REQUIREMENTS

- .1 Except for indicated alkyd formulations, all other formulas to conform to SCAQMD.

2.2 COLOURS

- .1 Colour schedule will be based upon existing building colours. Departmental Representative shall provide colour codes.

2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written instructions.
- .2 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .3 Thin paint for spraying in accordance with paint manufacturer's instructions.
- .4 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 PAINT PRODUCT SCHEDULE

- .1 Paint Type 1 (PT-1):
 - .1 Schedule:
 - .1 Metal Siding

- .2 Finish coat: two coats of Sherwin Williams Pro Industrial Urethane Alkyd Enamel or approved equivalent. Allow to cure between coats.
 - .1 Colour: Departmental Representative to Provide colour codes prior to work.
 - .2 Brush-applied on exposing sides, including ends and joints. Coverage to extend into tongue and groove joints. Back-brush to remove excess.
 - .3 Mils per coat: 3.5 – 7.0 wet
 - .4 Vehicle Type: Alkyd
 - .5 Finish: Gloss
- .3 Primer: One (1) coat Sherwin Williams Galvite HS or approved equivalent
- .2 Paint Type 2 (PT-2):
 - .1 Schedule:
 - .1 Exterior wood doors
 - .2 Paint, linseed oil paint, by same manufacturer as putty compound, to CGSB 1-GP-2M.
 - .1 Paint shall consist of cold-pressed, cleaned, filtered, sterilized, well-matured, cooked linseed oil only, with no solvents.
 - .2 Minimum 3 coats. Additional coats shall be provided at no additional cost if result of first three coats results in colour flashing through or variation in coating thickness.
 - .3 At factory add 20% zinc by volume.
 - .4 Pigments shall be made from titanium oxide, iron oxides, chromium oxide green and ultramarine blue.
 - .5 Tinting: as recommended by paint manufacturer.
 - .6 Wood primer: Boiled linseed oil type, by same manufacturer as paint.
 - .7 Cleaning solution: linseed oil soap, by same manufacturer as paint.
 - .1 Mix linseed oil soap with boric acid; 1 tablespoon of acid to 1 litre of soap.
 - .3 Wood Sealer: Shellac to CGSB 1-GP-16M.
 - .1 Mix shellac flakes and methyl hydrate in a glass jar to the consistency of motor oil to be used for sealing knots and encapsulate extant grained finish. Mix only enough for one day's use.
 - .4 Glazing Putty
 - .1 Linseed oil based glazing putty by same manufacturer as linseed oil paint.

2.5 PAINTING ACCESSORIES FOR HERITAGE WOOD DOOR RESTORATION

- .1 Materials:
 - .1 Cleaning solution: linseed oil soap, by same manufacturer as paint.
 - .1 Mix linseed oil soap with boric acid; 1 tablespoon of acid to 1 liter of soap.
 - .2 Glazing Putty
 - .1 Linseed oil based glazing putty
- .2 Tools:

- .1 Brush: natural bristle brushes of size and shape to suit application.
- .2 Rags: micro fibre rags.
- .3 Mechanical tools without sharp edges.
- .4 Scouring pad: plastic mesh.
- .5 Scrub brushes: natural fibre bristle or soft plastic type.

PART 3 EXECUTION

3.1 GENERAL

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

3.2 EXAMINATION

- .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 properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

- .1 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 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.
- .2 Surface Preparation:
 - .1 Remove paint from metal siding using wire brushes and compressed air. Chemical strippers are not permitted. Do not damage the embossing of the metal siding.
 - .2 Remove surface rust as required by paint application data sheets.
- .3 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual specific requirements and coating manufacturer's recommendations.
- .4 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.
- .5 Where applicable, prime non-exposed surfaces of interior wood surfaces before installation. Always prime every surface, exposed and concealed, of exterior wood surfaces prior to application.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
 - .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1,000 mm.
 - .7 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.
 - .8 Touch up of shop primers with primer as specified.
 - .9 Do not apply paint until prepared surfaces have been inspected by Departmental Representative.
 - .10 Paint Type 2 (PT-2) Coating Application:
 - .1 Method of application to be as approved by Departmental Representative. Apply paint by brush and micro fibre rags. Conform to manufacturer's application instructions unless specified otherwise.
 - .2 Remove existing clear finish and sand surface.
 - .3 All exterior wood work to be back primed with oil and to have one application of paint to "all six sides" before assembly.
 - .4 For all new joiners' work prime end grain and joinery, including mortice and tenon, with boiled linseed oil and putty, prior to assembly.
 - .5 Note that any wood surfaces that will be in contact with masonry are to receive two coats of dark pine tar on bare wood, no painting is required at these locations. In particular, work pine tar into end grain and construction joints.
 - .6 Pine tar to be mixed 50/50 with boiled linseed oil and is to be applied warm at 60 degrees C. The surface of the wood is also to be warmed as the mixture is applied.
 - .7 All surfaces treated with pine tar to off gas for three weeks, prior to delivery to site.
 - .8 Heat boiled linseed oil primer and maintain a temperature of 50-60 degrees C. Also heat the surface of the wood with a hair dryer as application proceeds.
 - .9 Paint application:
 - .1 Prior to mixing paint, remove any skin from the surface. As some settling of pigment may have occurred during shipping, stir the paint thoroughly with a hand-blender before painting.
 - .2 Do not dilute paint with solvents. Where necessary, thin with a maximum 5% boiled linseed oil.
 - .3 Order paint from supplier with added zinc white, 20% by volume, to the paint as a fungicide. As this affects paint colours, samples will be adjusted prior to painting.

- .4 Apply warmed paint in thin coat with a brush and/or micro fibre rags. Note that linseed oil paints are to be applied much more thinly, but in multiple coats, compared to conventional paints.
- .5 After first coat of paint on wood, fill any minor holes or small checks and all countersunk fasteners with linseed oil based glazing putty and rub smooth.
- .10 Allow boiled linseed oil to properly cure between subsequent coats for minimum time period as recommended by manufacturer.

END OF SECTION