Project Title

Roof Upgrades at
Parry Sound Canadian Coast Guard Base
28 Waubeek Street
Parry Sound, Ontario

Issued for Bid

Project Number

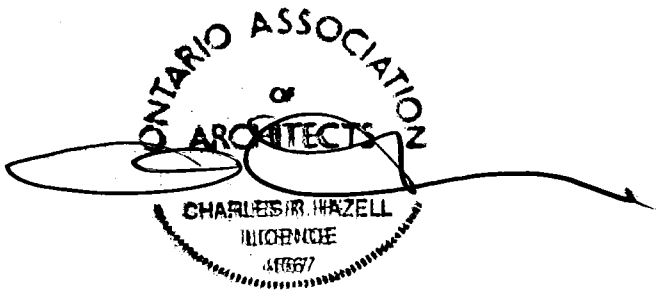
R.064667.001

Project Date

2014-09-16

END

Architect



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PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Work sequence.

.2 Contractor use of premises.

.3 Owner occupancy.

.4 Partial Owner occupancy.

.5 Owner furnished items.

.6 Alterations to existing building or site.

1.2 PRECEDENCE

.1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

1.4 CONTRACT METHOD

.1 Construct work under Lump Sum Contract.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises of roof upgrades at Parry Sound Canadian Coast Guard Base, located at 28 Waubeek Street, Parry Sound, and further identified as PWGSC Project Number R.064667.001.

.2 The Contractor shall for the purpose of the Ontario Occupational Health and Safety Act and Regulations for Construction Projects, and for the duration of the Work of the Contract:
.1 Assume the role of Constructor in accordance with the Authority Having Jurisdictions.
.2 Agree, in the event of two or more Contractors working at the same time and space at the work site, without limiting the General Conditions GC3.7, to the Departmental Representative's order to:
.1 Assume, as the Constructor, the responsibility for the Departmental Representative's other Contractors.

1.6 WORK SEQUENCE

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

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

.3 Maintain fire access/control.

1.7 CONTRACTOR USE OF PREMISES

.1 Contractor shall limit use of premises for Work, and for access, to allow;
.1 Owner occupancy.
.2 Partial owner occupancy.
.3 Work by other contractors.
.4 Public usage.

.2 Coordinate use of premises under direction of Departmental Representative.

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

1.8 OWNER OCCUPANCY

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

.2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END

PART 1 - GENERAL

1.1 ACCESS AND EGRESS

.1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work provide temporary means to maintain security.

.4 Provide sanitary facilities for the duration of the project. Keep facilities clean.

.5 Use only elevators existing in building for moving workers and material.
.1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.
.2 Accept liability for damage, safety of equipment and overloading of existing equipment.

.6 Closures: protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations occupants, and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.4 EXISTING SERVICES

.1 Notify, Departmental Representative utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give

1.4 EXISTING SERVICES (Cont'd)

.2 (Cont'd) Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Provide for personnel and vehicular traffic.

.4 Construct barriers in accordance with Section 01 56 00.

1.5 SPECIAL REQUIREMENTS

.1 Carry out noise generating: Work Monday to Friday from 18:00 to 07:00 hours and on Saturdays, Sundays, and statutory holidays.

.2 Submit schedule in accordance with Section 01 32 16 - Construction Progress Schedule.

.3 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.4 Keep within limits of work and avenues of ingress and egress.

.5 Deliver materials outside of peak traffic hours 9:00 to 15:00 unless otherwise approved by Departmental Representative.

1.6 SECURITY

.1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

.2 Security clearances:
.1 Personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter premises.
.2 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

1.7 BUILDING SMOKING ENVIRONMENT .1 Comply with smoking restrictions. Smoking is not permitted.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Coordination Work with other contractors and work by Owner under administration of Departmental Representative.

1.2 RELATED SECTIONS

.1 Section 01 11 00 - Summary of Work.

1.3 DESCRIPTION

.1 Coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of other contractors and Work by Owner, under instructions of Departmental Representative.

1.4 PROJECT MEETINGS

.1 Schedule and administer bi-weekly project meetings throughout progress of Work as determined by Departmental Representative.

.2 Prepare agenda for meetings.

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

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record minutes. Include significant proceedings and decisions. Identify action by parties.

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

1.5 CONSTRUCTION ORGANIZATION AND START-UP

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Senior representatives of the Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Agenda to include following:
.1 Appointment of official representative of participants in Work.
.2 Schedule of Work, progress scheduling in accordance with Section 01 32 16.
.3 Schedule of submission of shop drawings, samples, colour chips in accordance with Section 01 33 00.
.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 51 00.
.5 Delivery schedule of specified equipment in accordance with Section 01 32 00.
.6 Site security in accordance with Section 01 52 00.
.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements (GC).
.8 Record drawings in accordance with Section 01 78 00.
.9 Maintenance in accordance with Section 01 78 00.
.10 Take-over procedures, acceptance, and warranties in accordance with Section 01 77 00 and 01 78 00.
.11 Monthly progress claims, administrative procedures, photographs, and holdbacks (GC).
.12 Appointment of inspection and testing agencies or firms in accordance with Section 01 45 00.
.13 Insurances and transcript of policies (GC).

.5 Comply with Departmental Representative's allocation of mobilization areas of site; for field offices and sheds, access, traffic, and parking facilities.

1.5 CONSTRUCTION ORGANIZATION AND START-UP (Cont'd)

.6 During construction coordinate use of site and facilities through Departmental Representative's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.

.7 Comply with instructions of Departmental Representative for use of temporary utilities and construction facilities.

.8 Coordinate field engineering and layout work with Departmental Representative.

1.6 ON-SITE DOCUMENTS

.1 Maintain at job site, one copy each of the following:

.1 Contract drawings.
.2 Specifications.
.3 Amendments.
.4 Reviewed shop drawings.
.5 Change orders.
.6 Other modifications to Contract.
.7 Field test reports.
.8 Copy of approved Work schedule.
.9 Manufacturers' installation and application instructions.
.10 Labour conditions and wage schedules.
.11 Material Safety Data Sheets.
.12 Labour and Material Bonds.
.13 All applicable Municipal Permits.

1.7 SCHEDULES

.1 Submit preliminary construction progress schedule in accordance with Section 01 32 00 to Departmental Representative coordinated with Departmental Representative's project schedule.

.2 After review, revise and resubmit schedule to comply with revised project schedule.

.3 During progress of Work revise and resubmit as directed by Departmental Representative.

1.8 CONSTRUCTION PROGRESS MEETINGS

.1 During course of Work and 2 weeks prior to project completion, schedule progress meetings.

1.8 CONSTRUCTION PROGRESS MEETINGS (Cont'd)

.2 Contractor, major subcontractors involved in Work and Departmental Representative are to be in attendance.

.3 Notify parties minimum 4 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

.5 Agenda to include following:
.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems which impede construction schedule.
.5 Review of off-site fabrication delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review submittal schedules: expedite as required.
.10 Maintenance of quality standards.
.11 Review proposed changes for affect on construction schedule and on completion date.
.12 Other business.

1.9 SUBMITTALS

.1 Make submittal to Departmental Representative for review.

.2 Process change orders through Departmental Representative.

.3 Deliver closeout submittals for review and preliminary inspections, for transmittal to Departmental Representative.

1.10 COORDINATION DRAWINGS

.1 Provide information required by Departmental Representative for preparation of coordination drawings.

.2 Review and approve revised drawings for submittal to Departmental Representative.

1.11 CLOSEOUT PROCEDURES

.1 Notify Departmental Representative when Work is considered ready for Substantial Performance.

.2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Departmental Representative's instructions for correction of items of Work listed in executed certificate of Substantial Performance and for access to Owner-occupied areas.

.4 Notify Departmental Representative of instructions for completion of items of Work determined in Departmental Representative's final inspection.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

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

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

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

1.2 PRECONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

1.2 PRECONSTRUCTION MEETING (Cont'd)

.5 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.

.3 Schedule of submission of shop drawings, samples, mock-ups, colour chips. Submit submittals in accordance with Section 01 33 00.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.

.5 Delivery schedule of specified equipment in accordance with Section 01 61 00.

.6 Site security in accordance with Section 01 52 00.

.7 Health and safety in accordance with Section 01 35 29.

.8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.9 Record drawings and specifications in accordance with Sections 01 33 00 and 01 78 00.

.10 Maintenance manuals in accordance with Section 01 78 00.

.11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00.

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

.13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 During course of Work and 2 weeks prior to project completion, schedule progress meetings.

.2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.

.3 Notify parties minimum 4 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

1.3 PROGRESS MEETINGS (Cont'd)

.5 Agenda to include the following:
.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems which impede construction schedule.
.5 Review of off-site fabrication delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review submittal schedules: expedite as required.
.10 Maintenance of quality standards.
.11 Review proposed changes for affect on construction schedule and on completion date.
.12 Other business.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 77 00 - Closeout Procedures.

1.2 PROGRESS PHOTOGRAPHS

.1 Viewpoints: interior and exterior locations: viewpoints determined by Departmental Representative.

.2 Frequency: monthly with progress statement as directed by Departmental Representative.

.3 Submit all digital files of coloured prints before final acceptance of buildings.

.4 Insert C.D. of files in envelopes and identify with name and number of project.

1.3 ELECTRONIC COPY

.1 Submit electronic copy of colour digital photography in jpg format, standard resolution.

.2 Identification: name and number of project and date of exposure indicated.

.3 Number of viewpoints: 4. Locations of viewpoints determined by Departmental Representative.

.4 Frequency: monthly with progress statement and as directed by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable

1.1 DEFINITIONS (Cont'd)

.9 (Cont'd) monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Certificate of Substantial Performance and Certificate of Completion as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

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

.2 Submit to Departmental Representative within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Departmental Representative will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
- .1 Award.
- .2 Shop Drawings, Samples.
- .3 Permits.
- .4 Mobilization.
- .5 Roof removal.
- .6 Roofing.

1.6 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.7 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings specified in Section 01 31 19, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END

PART 1 - GENERAL

1.1 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.10 Keep one reviewed copy of each submission on site.

1.1 ADMINISTRATIVE (Cont'd)

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

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

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

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

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

.6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, in duplicate, containing:
.1 Date.
.2 Project title and number.
.3 Contractor's name and address.

1.2 SHOP DRAWINGS AND PRODUCT DATA (Cont'd)

.7 (Cont'd)
.4 Identification and quantity of each shop drawing, product data and sample.
.5 Other pertinent data.

.8 Submissions shall include:
.1 Date and revision dates.
.2 Project title and number.
.3 Name and address of:
.1 Subcontractor.
.2 Supplier.
.3 Manufacturer.
.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
.5 Details of appropriate portions of Work as applicable:
.1 Fabrication.
.2 Layout, showing dimensions, including identified field dimensions, and clearances.
.3 Setting or erection details.
.4 Capacities.
.5 Performance characteristics.
.6 Standards.
.7 Operating weight.
.8 Wiring diagrams.
.9 Single line and schematic diagrams.
.10 Relationship to adjacent work.

.9 After Departmental Representative's review, distribute copies.

.10 Submit three hard copies and one electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.11 Submit three hard copies and one electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
.2 Testing must have been within 3 years of date of contract award for project.

1.2 SHOP DRAWINGS AND PRODUCT DATA (Cont'd)

.12 Submit three hard copies and one electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
.2 Certificates must be dated after award of project contract complete with project name.

.13 Submit three hard copies and one electronic copy of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

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

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

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

.17 Delete information not applicable to project.

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

.19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated

1.2 SHOP DRAWINGS AND PRODUCT DATA (Cont'd)

.19 (Cont'd) above, must be performed before fabrication and installation of Work may proceed.

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

.1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

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

.2 Deliver samples prepaid to Departmental Representative's business address.

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

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

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

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

1.3 SAMPLES (Cont'd)

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

1.4 MOCK-UPS

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

1.5 PHOTOGRAPHIC DOCUMENTATION

.1 Refer to Section 01 32 00.

1.6 FEES, PERMITS AND CERTIFICATES

.1 Provide authorities having jurisdiction with information requested.

.2 Pay fees and obtain certificates and permits required.

.3 Furnish certificates and permits.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA): Canada
.1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

.2 National Building Code 2010 (NBC):
.1 NBC 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.

.3 National Fire Code 2010 (NFC):
.1 NFC 2010, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.

.4 Province of Ontario:
.1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
.2 O. Reg. 490/09, Designated Substances.
.3 Workplace Safety and Insurance Act, 1997.
.4 Municipal statutes and authorities.

.5 Treasury Board of Canada Secretariat (TBS):
.1 Treasury Board, Fire Protection Standard April 1, 2010 www.tbs-sct.gc.ca/pol/doc-eng.aspx ?id=17316&section=text.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
.1 Results of site specific safety hazard assessment.
.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
.3 Measures and controls to be implemented to address identified safety hazards and risks.

.3 Provide a Fire Safety Plan, specific to the work location, in accordance with NBC, Division B, Article 8.1.1.3 prior to commencement of work. The plan shall be coordinated with, and integrated into, the

1.2 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.3 (Cont'd) existing Emergency Procedures and Evacuation Plan in place at the site. Departmental Representative will provide Emergency Procedures and Evacuation Plan. Deliver two copies of the Fire Safety Plan to the Departmental Representative not later than 14 days before commencing work.

.4 Contractor's and Sub-contractors' Safety Communication Plan.

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

.6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 14 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.

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

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

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

.10 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.

.11 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.13 Submit copies of incident and accident reports.

.14 Submit Material Safety Data Sheets (MSDS).

.15 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.

1.3 FILING OF NOTICE

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

.2 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.4 WORK PERMIT

.1 Obtain building permits related to project prior to commencement of Work.

.2 Obtain Hot Work Permit from Property Manager.

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

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

1.7 REGULATORY REQUIREMENTS

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

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

1.8 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.

1.8 GENERAL REQUIREMENTS (Cont'd)

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

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

1.9 COMPLIANCE REQUIREMENTS

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

1.10 RESPONSIBILITY

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

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act and Regulations for Construction Projects for the Province of Ontario.

1.11 UNFORSEEN HAZARDS

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

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

1.12 HEALTH AND SAFETY CO-ORDINATOR

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

.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 and report directly to and be under direction of site supervisor.

1.13 POSTING OF DOCUMENTS

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

.1 Contractor's Safety Policy.

.2 Constructor's Name.

.3 Notice of Project.

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

.5 Ministry of Labour Orders and reports.

.6 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.

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

.8 Material Safety Data Sheets.

.9 Written Emeregency Response Plan.

.10 Site Specific Safety Plan.

.11 Valid certificate of first aider on duty.

.12 WSIB "In Case of Injury At Work" poster.

.13 Location of toilet and cleanup facilities.

1.14 CORRECTION OF NON-COMPLIANCE

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

.2 Provide Departmental Representative with written report of action taken to correct

1.14 CORRECTION OF NON-COMPLIANCE (Cont'd)

.2 (Cont'd) non-compliance of health and safety issues identified.

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

1.15 BLASTING

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

1.16 POWDER ACTUATED DEVICES

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

1.17 WORK STOPPAGE

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

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

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not used.

END

PART 1 - GENERAL

1.1 GENERAL

.1 This section specifies general requirements and procedures for fire safety. Additional requirements may be specified in individual sections elsewhere in specifications.

1.2 REPORTING FIRES

.1 The Departmental Representative will co-ordinate arrangements for the Contractor to be briefed at the pre-construction meeting concerning Building's fire safety protocol.

.2 Building Manager will supply a copy of "Fire Safety Emergency Evacuation Plan" in effect for this building. Contractor shall comply with outlined fire safety requirements.

.3 Know location of nearest fire alarm box and telephone, including emergency phone number.

.4 Report immediately all fire incidents to Fire Department as follows:
.1 activate nearest fire alarm box; or
.2 telephone.

.5 Person activating fire alarm box will remain at box to direct Fire Department to scene of fire.

.6 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

1.3 FIRE WATCH

.1 Appoint a Fire Watch at locations where welding and soldering, torching or roofing is to take place.

.2 A dedicated Fire Watch is not required. A competent person from the workforce on site may be assigned as Fire Watch for duration of work.

.3 Assign a person who is knowledgeable in the correct use of fire extinguishers on the project.

.4 Have work inspected by the Fire Watch up to 1.0 hours after work stoppage for each work period.

1.4 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm system will not be:
.1 obstructed;
.2 shut-off; or
.3 left inactive at end of working day or shift.

.2 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by Departmental Representative.

.3 Provide and maintain free access to fire extinguishing equipment. Maintain exit facilities. Keep means of egress free from materials, equipment and obstructing.

1.5 FIRE EXTINGUISHERS

.1 Supply fire extinguishers, as necessary to protect work in progress and contractor's physical plant on site.

1.6 INSTALLATION AND/OR REPAIR OF ROOF TO INCLUDE CONTRACTORS PHYSICAL PLANT AT SITE

.1 Ensure personnel use and take precautions as follows:
.1 Use kettles equipped with thermometers or gauges in good working order.
.2 Locate kettles in safe place outside of building. Locate to avoid danger of igniting combustible material.
.3 Maintain continuous supervision while kettles are in operation and provide metal covers for kettles to smother any flames in case of fire. Fire extinguishers shall be provided as required in 1.6.
.4 Prior to start of work, demonstrate container capacities to Departmental Representative.
.5 Use only glass fibre roofing mops.
.6 Used roofing mops will not be left unattended on roof and shall be stored away from building and combustible materials.
.7 All roofing materials will be stored in location no closer than 3 m to any structures.

1.7 BLOCKAGE OF ROADWAYS

.1 Advise Departmental Representative of any work that would impede fire apparatus response. This includes violation of minimum required overhead clearance.

1.8 SMOKING PRECAUTIONS

.1 Smoking is not permitted within areas of work or site storage.

1.9 RUBBISH AND WASTE MATERIALS

.1 Rubbish and waste materials are to be kept to a minimum.

.2 Burning of rubbish is prohibited.

.3 Remove all rubbish from work site at end of work day or shift or as directed.

.4 Storage:
.1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.
.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove from site daily or at the end of each shift.

1.10 FLAMMABLE AND COMBUSTIBLE LIQUIDS

.1 Handling, storage and use of flammable and combustible liquids are to be governed by the current National Fire Code of Canada.

.2 Flammable and combustible liquids such as gasoline, kerosene and naphtha will be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires permission of local Building Manager.

.3 Transfer of flammable and combustible liquids is prohibited within buildings or jetties.

.4 Transfer of flammable and combustible liquids will not be carried out in vicinity of open flames or any type of heat-producing devices.

.5 Flammable liquids having a flash point below 38°C such as naphtha or gasoline will not be used as solvents or cleaning agents.

.6 Flammable and combustible waste liquids, for disposal, will be stored in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Fire Department is to be notified when disposal is required.

1.11 HAZARDOUS SUBSTANCES

.1 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety or health, will be in accordance with National Fire Code of Canada.

.2 Obtain from local Building Manager a "Hot Work" permit for work involving welding, burning or use of blow torches and salamanders, in building or facility.

.3 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of the local Building Manager. Contractors are responsible for providing fire watch service for work on a scale established and in conjunction with Building Manager at pre-construction meeting.

.4 Where flammable liquids, such as lacquers or urethanes are to be used, proper ventilation will be assured and all sources of ignition are to be eliminated. Building Manager is to be informed prior to and at cessation of such work.

1.12 WELDING, BURNING AND CUTTING

.1 Contractor performing work of this section must notify Departmental Representative in advance of commencing work.

.2 Use non-combustible shields for electric and gas welding or cutting executed within 3 m of combustible material or in occupied spaces.

.3 Place cylinders supplying gases as close to work as possible. Secure cylinders in upright position, free from exposure to sun or high temperature.

.4 Locate fire extinguishing equipment near all welding, cutting and soldering operations.

.5 Contractor's mechanics shall be properly equipped with required protective clothing, including goggles or welding hood or face mask, gloves, etc.

1.12 WELDING, BURNING AND CUTTING (Cont'd)

.6 Contractor is responsible for the protection of his work and the Departmental Representative 's property.

.7 Provide Fire Watch on standby with approved fire extinguisher while burning or welding is in progress.

1.13 QUESTIONS AND/OR CLARIFICATIONS

.1 Direct any questions or clarification on Fire Safety in addition to above requirements to local Building Manager.

1.14 FIRE INSPECTION

.1 Site inspections by Building Manager will be coordinated through Departmental Representative.

.2 Allow local Building Manager unrestricted access to work site.

.3 Co-operate with Building Manager during routine fire safety inspection of work site.

.4 Immediately remedy all unsafe fire situations observed by Building Manager.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

PART 1 - GENERAL

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) 2010, National Fire Code of Canada (NFC) 2010 and Ontario Building Code (OBC) 2012, including all amendments up to bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply as directed by the Departmental Representative.

.2 Meet or exceed requirements of:
.1 Contract documents.
.2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

.1 Stop work immediately and notify Departmental Representative if materials which may contain designated substances or PCB's, other than those identified in Section 01 35 29 are discovered in course of work.

1.3 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

1.4 IAQ - INDOOR AIR QUALITY

.1 Comply with CSA-Z204-94(R1999), Guideline for Managing Indoor Air Quality in Office Buildings and CSA B651-12.

1.5 ACCESSIBLE DESIGN

.1 Comply with CSA B651-12, Accessible Design for the Built Environment, unless specified otherwise. In any case of conflict or discrepancy between the building codes and CSA B651, the requirements of CSA B651 shall apply.

1.6 TAXES

.1 Pay applicable Federal, Provincial and Municipal taxes.

1.7 EXAMINATION .1 Examine existing conditions and determine conditions affecting work.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Inspection and testing, administrative and enforcement requirements.

.2 Tests.

.3 Mock-ups.

.4 Equipment and system adjust and balance.

1.2 INSPECTION

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

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

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

.4 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work, above and beyond those required of the Contractor. Cost of such services will be borne by Departmental Representative.

1.3 INDEPENDENT INSPECTION AGENCIES (Cont'd)

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.4 ACCESS TO WORK

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

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

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

1.6 REJECTED WORK (Cont'd)

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative may deduct from Contract Amount difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.7 REPORTS

.1 Submit 4 copies of inspection and test reports to Departmental Representative.

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

1.8 TESTS

.1 Furnish test results as may be requested.

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

1.9 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.

.2 Construct in all locations acceptable to Departmental Representative.

.3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.

1.9 MOCK-UPS (Cont'd)	.6	Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.
1.10 EQUIPMENT AND SYSTEMS	.1	Submit testing, adjusting and balancing reports for mechanical, electrical and building equipment systems.

PART 2 - PRODUCTS

2.1 NOT USED	.1	Not Used.

PART 3 - EXECUTION

3.1 NOT USED	.1	Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Temporary utilities.

1.2 RELATED SECTIONS

.1 Section 01 52 00 - Construction Facilities.

1.3 REFERENCES

.1 U.S. Environmental Protection Agency (EPA) / Office of Water

.1 EPA 833-R-06-004, May 2007, Developing Your Stormwater Pollution Prevention Plan - A Guide for Construction Sites.

1.4 SUBMITTALS

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

1.5 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.6 WATER SUPPLY

.1 Departmental Representative will provide continuous supply of potable water for construction use.

.2 Arrange for connection with appropriate utility company and pay all costs for installation, maintenance and removal.

.3 Departmental Representative will pay for utility charges at prevailing rates.

1.7 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

1.7 TEMPORARY HEATING AND VENTILATION (Cont'd)

.3 Provide temporary heat and ventilation in enclosed areas as required to:
.1 Facilitate progress of Work.
.2 Protect Work and products against dampness and cold.
.3 Prevent moisture condensation on surfaces.
.4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
.5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Ventilating:
.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
.4 Ventilate storage spaces containing hazardous or volatile materials.
.5 Ventilate temporary sanitary facilities.
.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.5 Permanent heating system of building may not be used.

.6 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Departmental Representative.

.7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
.1 Conform with applicable codes and standards.
.2 Enforce safe practices.
.3 Prevent abuse of services.
.4 Prevent damage to finishes.
.5 Vent direct-fired combustion units to outside.

.8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.8 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools.

.2 Arrange for connection with appropriate utility company. Pay all costs for installation, maintenance and removal.

.3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

1.9 TEMPORARY COMMUNICATION FACILITIES

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

1.10 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Construction aids.

.2 Sheds.

.3 Parking.

.4 Project identification.

1.2 SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Indicate use of supplemental or other staging area.

.3 Provide construction facilities in order to execute work expeditiously.

.4 Remove from site all such work after use.

1.4 SCAFFOLDING

.1 Scaffolding in accordance with CSA Z797.

.2 Provide and maintain scaffolding, ramps, ladders.

1.5 HOISTING

.1 Provide, operate and maintain hoists/cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists/cranes shall be operated by qualified operator.

1.6 SITE STORAGE/LOADING

.1 Confine work and operations of employees to areas defined by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.7 CONSTRUCTION PARKING

.1 Parking may be permitted on site provided it does not disrupt performance of Work.

.2 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.9 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 CONSTRUCTION SIGNAGE

.1 No signs or advertisements, other than warning and health and safety signs, are permitted on site.

.2 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321.

.3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.11 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.2 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.3 Dust control: adequate to ensure safe operation at all times.

1.12 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Barriers.

.2 Environmental Controls.

.3 Traffic Controls.

.4 Fire Routes.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.3 HOARDING

.1 Erect temporary site enclosure using modular freestanding fencing: galvanized, minimum 1.8 m high, chain link or welded steel mesh, pipe rail. Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys. Maintain fence in good repair.

.2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.4 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around open shafts, open stair wells, open edges of roofs.

.2 Provide as required by governing authorities.

1.5 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished skylight and other openings in roofs.

1.6 DUST TIGHT SCREENS

.1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

1.6 DUST TIGHT SCREENS (Cont'd)

.2 Maintain and relocate protection until such work is complete.

1.7 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.8 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

1.9 FIRE ROUTES

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

1.10 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.11 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

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

.2 Manufacturer's instructions.

.3 Quality of Work, coordination and fastenings.

.4 Existing facilities.

1.2 REFERENCES

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

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

.3 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

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

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

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

1.3 QUALITY

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish

1.3 QUALITY (Cont'd)

.1 (Cont'd) evidence as to type, source and quality of Products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

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

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

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

1.4 AVAILABILITY

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

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

1.5 METRIC SIZED MATERIALS

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

1.5 METRIC SIZED MATERIALS (Cont'd)

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

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

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

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

1.6 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store sheet materials, and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

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

.6 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.7 TRANSPORTATION

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

.2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.

1.8 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.

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

1.9 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.10 CO-ORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Departmental Representative of conflicting installation. Install as directed.

1.13 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

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

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

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

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

1.14 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No.304 stainless steel for exterior areas.

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

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

1.15 PROTECTION OF WORK IN PROGRESS

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

1.16 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

1.2 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Departmental Representative of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.3 RECORDS

.1 Record locations of maintained, re-routed and abandoned service lines.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00.

.2 Submit written request in advance of cutting or alteration which affects:
.1 Structural integrity of elements of project.
.2 Integrity of weather-exposed or moisture-resistant elements.
.3 Efficiency, maintenance, or safety of operational elements.
.4 Visual qualities of sight-exposed elements.
.5 Work of Owner or separate contractor.

.3 Include in request:
.1 Identification of project.
.2 Location and description of affected Work.
.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 Owner or separate contractor.
.7 Written permission of affected separate contractor.
.8 Date and time work will be executed.

1.2 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00.

1.3 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

1.3 PREPARATION (Cont'd)

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Remove samples of installed Work for testing.

.6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.10 Restore work with new products in accordance with requirements of Contract Documents.

.11 Submit proposed materials, finishes and installation method for patching to Departmental Representative for approval, prior to patching.

.12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

1.4 EXECUTION (Cont'd)

.13 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Progressive cleaning.

.2 Final cleaning.

1.2 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Provide and use clearly marked separate bins for recycling.

.7 Remove waste material and debris from site and deposit in waste container at end of each working day.

.8 Dispose of waste materials and debris off site.

.9 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.10 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.11 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

1.2 PROJECT CLEANLINESS (Cont'd)

.12 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.13 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

.1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris other than that caused by Owner or other Contractors.

.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.8 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.9 Clean and sweep roofs, gutters, areaways, and sunken wells.

.10 Clean roofs, downspouts, and drainage systems.

.11 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.12 Remove snow and ice from access to building.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 CONSTRUCTION & DEMOLITION WASTE

.1 Carefully deconstruct and source separate materials/equipment and divert, from D&C waste destined for landfill to maximum extent possible. Target for this project is 50 % diversion from landfill. Reuse, recycle, compost, anaerobic digest or sell material for reuse except where indicated otherwise. On site sales are not permitted.

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

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

.2 Source separate the following waste:

.1 Corrugated cardboard.

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

.3 Gypsum board, unpainted.

.4 Items indicated in Section 02 41 19, Deconstruction and Waste Products Workplan Summary.

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

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

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

1.2 WASTE PROCESSING SITES

.1 Province of: Ontario.
.1 Ministry of Environment and Energy, 135 St. Clair Avenue West, Toronto, ON, M4V 1P5.
.2 Telephone: 800-565-4923 or 416-323-4321.
.3 Fax: 416-323-4682.

.2 Recycling Council of Ontario: 215 Spadina Avenue, #225, Toronto, ON, M5T 2C7.
.1 Telephone: 416-657-2797.
.2 Fax: 416-960-8053.
.3 Email: rco@rco.on.ca.
.4 Internet: http://www.rco.on.ca/.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Government Chief Responsibility for the Environment.

Province	Address	General Inquiries	Fax
Ontario	Ministry of Environment and Energy 135 St Clair Avenue West Toronto, ON M4V 1P5	(416) 323-4321 (800) 565-4923	(416) 323-4682
	Environment Canada Toronto, ON	(416) 734-4494	

END

PART 1 - GENERAL

1.1 INSPECTION AND DECLARATION

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

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

.2 Request Departmental Representative's Inspection.

.2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Certificates required by Fire Commissioner have been submitted.

.5 Operation of systems have been demonstrated to Owner's personnel.

.6 Work is complete and ready for final inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request reinspection.

1.2 CLEANING

.1 In accordance with Section 01 74 11.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 As-built, samples, and specifications.

.2 Equipment and systems.

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

.4 Operation and maintenance data.

.5 Special tools and maintenance materials.

.6 Warranties.

1.2 SUBMISSION

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Copy will be returned after final inspection, with Departmental Representative's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of maintenance manuals and commissioning documentation in English.

.5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.6 If requested, furnish evidence as to type, source and quality of products provided.

.7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.8 Pay costs of transportation.

1.3 FORMAT

.1 Organize data in the form of an instructional manual.

1.3 FORMAT (Cont'd)

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

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

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

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

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

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

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

.9 Provide 1:1 scaled CAD files in dwg format. Forward pdf, NMSEdit Professional spp, MS Word, MS Excel, MS Project and Autocad dwg files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.4 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;
.1 Date of submission; names,
.2 Addresses, and telephone numbers of Contractor with name of responsible parties;
.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:
.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

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

1.4 CONTENTS - EACH VOLUME (Cont'd)

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

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

1.5 AS-BUILTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
.1 Contract Drawings.
.2 Specifications.
.3 Amendments and addenda.
.4 Change Orders and other modifications to the Contract.
.5 Reviewed shop drawings, product data, and samples.
.6 Field test records.
.7 Inspection certificates.
.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

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

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

.6 Turn one set, paper copy and electronic copy, of AS-BUILT drawings and specifications over to Departmental Representative on completion of work. Submit files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.5 AS-BUILTS AND SAMPLES (Cont'd)

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

1.6 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.

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

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

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
.1 Measured depths of elements of foundation in relation to finish first floor datum.
.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
.4 Field changes of dimension and detail.
.5 Changes made by change orders.
.6 Details not on original Contract Drawings.
.7 References to related shop drawings and modifications.

.5 Specifications: legibly mark each item to record actual construction, including:
.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
.2 Changes made by Amendments and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.7 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.3 Include manufacturer's printed operation and maintenance instructions.

.4 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.5 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.6 Additional requirements: As specified in individual specification sections.

1.8 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.9 MAINTENANCE MATERIALS

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.10 SPECIAL TOOLS

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

1.11 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

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

1.12 WARRANTIES

.1 Separate each warranty with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

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

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

.6 Co-execute submittals when required.

.7 Retain warranties until time specified for submittal.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Methods and procedures for deconstruction of structures and parts of structures.

1.2 REFERENCES

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

.2 Federal Legislation.
.1 Canadian Environmental Assessment Act (CEAA), 1992, c. 37.
.2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
.3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.3 DEFINITIONS

.1 Alternate Disposal: reuse and recycling of materials by designated facility, user or receiving organization which has valid Certificate of Approval to operate. Alternative to landfill disposal.

.2 Deconstruction: systematic dismantling of structure in a manner that achieves safe removal/disposal of hazardous materials and maximum salvage/recycling of materials.
.1 Ultimate objective is to recover potentially valuable resources while diverting from landfill what has traditionally been significant portion of waste system.

.3 Demolition: rapid destruction of structure with or without prior removal of hazardous materials.

.4 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, including but not limited to: corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health, well being or environment if handled improperly.

.5 Recycle: process by which waste and recyclable materials are transformed or

1.3 DEFINITIONS (Cont'd)

.5 Recycle:(Cont'd) collected for purpose of being transferred into new products.

.6 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form.
.1 Recycling does not include burning, incinerating, or thermally destroying waste.

.7 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
.1 Salvaging reusable materials from remodelling 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.

.8 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.9 Source Separation: acts of keeping different types of waste materials separate, beginning from first time they became waste.

.10 Waste Management Coordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

1.4 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00.

.2 Submit copies of certified bills of lading from authorized disposal sites and reuse and recycling facilities for material removed from site to Departmental Representative upon request.
.1 Written authorization from Departmental Representative is required to deviate from haulers facilities listed in Waste Reduction Workplan.

.3 Include following information:
.1 Time and date of removal.
.2 Description of materials.
.3 Weight, volume, quantityof material.

1.4 SUBMITTALS (Cont'd)

.3 Include following information:(Cont'd)
.4 Breakdown of reuse, recycling and landfill quantities.
.5 End destination of materials.

.4 Workers, haulers and subcontractors must possess current, applicable Certificates of Approval to remove, handle and dispose of wastes categorized Provincially as hazardous.
.1 Provide proof of compliance within 24 hours upon written request of Departmental Representative.

1.5 QUALITY ASSURANCE

.1 Ensure Work is performed in compliance with CEPA, CEAA, TDGA, and applicable provincial regulations.

1.6 STORAGE, HANDLING AND PROTECTION

.1 Do in accordance with Section 01 74 20.

1.7 SITE CONDITIONS

.1 Existing Conditions.
.1 Should materials resembling spray or trowel applied asbestos or other designated substance listed as hazardous be encountered in course of deconstruction, stop work, take preventative measures, and notify Departmental Representative immediately. Do not proceed until written instructions have been received.
.2 Label and package component parts of mechanical and electrical material specified for salvage in accordance with Departmental Representative's instructions to prevent damage or loss.

.2 Protection.
.1 Prevent movement, settlement or damage of structures, services, walks, paving, trees, landscaping, and adjacent grades. Provide bracing as required. Repair damage caused by deconstruction as directed by Departmental Representative.
.2 Support affected structures and, if safety of structure being deconstructed or adjacent structures appears to be endangered, take preventative measures. Cease operations and immediately notify Departmental Representative.

1.7 SITE CONDITIONS (Cont'd)

.2 (Cont'd)
.3 Prevent debris from blocking surface drainage system, mechanical and electrical systems.

PART 2 - PRODUCTS

2.1 EQUIPMENT

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

.2 Demonstrate that tools are being used in manner which allows for salvage of materials in best condition possible.

PART 3 - EXECUTION

3.1 SITE VERIFICATION OF CONDITIONS

.1 Determine if Environmental Assessment (EA) is required under requirements of CEAA.
.1 If necessary, employ licensed consultant to perform EA.
.2 Communicate findings and conclusions in writing to Departmental Representative prior to start of Work.

3.2 PREPARATION

.1 Do Work in accordance with Section 01 35 35.

.2 Locate and protect utility lines. Do not disrupt active or energized utilities traversing premises.

.3 Disconnect and cap designated mechanical services.
.1 Natural gas supply lines: as directed by Departmental Representative.

3.3 DISASSEMBLY

.1 Materials removed from structures are property of this Contract.

.2 Throughout course of deconstruction pay close attention to connections and material assemblies. Employ workmanship procedures which minimize damage to materials and equipment.

3.3 DISASSEMBLY (Cont'd)

.3 Ensure workers and subcontractors are trained to carry out work in accordance with appropriate deconstruction techniques.

.4 Project supervisor with previous deconstruction experience must be present on site throughout project.

.5 Deconstruct in accordance with CSA S350 and other applicable safety standards.

.6 Workers must utilize adequate fall protection where Departmental Representative considers it necessary.

.7 Maintain structural integrity of structures.

.8 Wherever possible, transfer material assemblies from heights to ground level for easier disassembly. Take appropriate measures to ensure safety.

.9 Separate from waste stream, material in condition suitable for reuse and/or recycling.

.10 Remove and store materials to be salvaged, in manner to prevent damage.
.1 Store and protect in accordance with requirements for maximum preservation of material.
.2 Handle salvaged materials as new materials.

.11 Source separate for recycling materials that cannot be salvaged for reuse including roofing, wood, and metal.

.12 Remove materials that cannot be salvaged for reuse or recycling and dispose of in accordance with applicable codes at licensed facilities.

.13 Where existing materials are to be re-used in Work, use special care in removal, handling, storage and re-installation to assure proper function in completed work.

.14 Roof (asphalt):
.1 Where sections of roof are to be removed for subsequent work, remove gravel and pavers to expose membrane. Cut back minimum of 230 mm outside line of opening or removal area to facilitate future flashing.
.2 Fold up metal counter flashings to permit access to top edge of base flashings.

3.3 DISASSEMBLY (Cont'd)

.14 Roof (asphalt):(Cont'd)
.3 Remove ballast, fabric, insulation, membrane, and gypsum board over area to be removed.
.4 Provide areas where roof system has been removed ready for subsequent roofing work.

.15 Roof (shingle):
.1 Remove existing roofing, flashings and underlay, and expose sheathing.
.2 Withdraw existing shingle and flashing nails, set those which break off. Leave surfaces free from dirt and loose material.
.3 Departmental Representative to inspect roof sheathing. Take up, cut out, remove portion of sheathing boards affected by fungal or insect attack as directed on site by Departmental Representative.
.4 Replace cut out portions of sheathing boards or lath with boards of equal sectional dimensions, and specified grade. Seat each end of board on rafter, with 25 mm bearing, and secured to rafter.

.16 Sheet metal flashings:
.1 Remove sheet metal flashings indicated on drawings.
.2 Departmental Representative to inspect sheet metal flashings to determine suitability for reuse. Stockpile sheet metal flashings to be reused.

3.4 PROCESSING

.1 Designate location for processing of materials which eliminates double handling and provides adequate space to maintain efficient material flow.

.2 Denail, strip, and separate materials to ensure best possible condition of salvaged materials.

.3 Keep processing area clean and free of excess debris.

.4 Supply separate, marked disposal bins for categories of waste material. Notify Departmental Representative prior to removal of bins from site.

.5 Separate processed materials into organized piles for stockpiling. Provide collection area

3.4 PROCESSING (Cont'd)

.5 (Cont'd) for materials processed. Pile materials on pallets to facilitate transport off-site.

3.5 STOCKPILING

.1 Label stockpiles, indicating material type and quantity.

.2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.3 Locate stockpiled materials convenient for use in new construction. Eliminate double handling wherever possible.

.4 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

3.6 REMOVAL FROM SITE

.1 Transport material designated for alternate disposal to approved facilities listed in waste reduction workplan and in accordance with applicable regulations. Do not deviate from facilities listed in waste reduction workplan without prior written authorization from Departmental Representative.

.2 Dispose of materials not designated for alternate disposal in accordance with applicable regulations. Disposal facilities must be approved of and listed in waste reduction workplan. Do not deviate from disposal facilities listed in waste reduction workplan without prior written authorization from Departmental Representative.

3.7 CLEANING AND RESTORATION

.1 Keep site clean and organized throughout deconstruction.

.2 Upon completion of project, remove debris, trim surfaces and leave work site clean.

.3 Upon completion of project, reinstate areas, parking surfaces, walkways, and light standards affected by Work to match condition of adjacent, undisturbed areas.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 American Wood Protection Association (AWPA):
.1 AWPA P5-10, Standard for Waterborne Preservatives.
.2 AWPA P8-11, Standard for Oil-Borne Preservatives.

.2 Canadian Standards Association (CSA):
.1 CSA O80 Series-08(R2012) Consolidation, Wood Preservation.
.2 CSA O112 Series M1977(R2006), CSA Standards for Wood Adhesives.
.3 CSA O121-08(R2013), Douglas Fir Plywood.
.4 CAN/CSA-Z809-08(R2013), Sustainable Forest Management.

.3 Forestry Stewardship Council (FSC).

.4 Sustainable Forestry Initiative (SFI).

.5 South Coast Air Quality Management District (SCAQMD):
.1 SCAQMD Rule 1168-05, Adhesive and Sealant Applications, Amended January 7, 2005.

1.2 QUALITY ASSURANCE

.1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood, and particleboard in accordance with CSA and ANSI standards.

1.3 ENVIRONMENTAL REQUIREMENTS

.1 Wood products: CAN/CSA-Z809, SFI or Forestry Stewardship Council (FSC) certified.

.2 Panel products:
.1 SCAQMD Rule 1168, Adhesives and Sealants Applications.
.2 CAN/CSA-Z809, SFI or Forest Stewardship Council (FSC) certified.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Wood: S-DRY, graded and stamped to National Lumber Grades Authority, Standard Grading Rules for Canadian Lumber, S4S.
.1 Blocking, furring, strapping, curbs, battens, nailers,and cants: spruce, pine or fir (SPF), 121d. and pine, 113d. Pressure treated with CCA to CAN/CSA O80.9, minimum retention 4.0 kg/m^3 by assay.
.2 Preservative: chromated copper arsenate (CCA) to AWPA P5 as amended by CAN/CSA-O80-Series.

.2 Preservative treated plywood: Douglas Fir to CSA O121, G1S good one side, pressure treated with CCA to CAN/CSA O80.9, minimum retention 4.0 kg/m^3 by assay.
.1 Preservative: chromated copper arsenate (CCA) to AWPA P5 as amended by CAN/CSA-O80-Series.

.3 Fastenings: to CAN/CSA-086.

.4 Field applied wood preservative: copper napthenate to AWPA P8, green colour.

.5 Construction adhesive: to CSA O112 Series, cartridge loaded.
.1 Maximum allowable VOC limit 140 g/L.
.2 SCAQMD Rule 1168, Adhesives and Sealants Applications.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Apply wood preservative to wood in contact with roofing, concrete and masonry.

.2 Treat surfaces of pressure treated wood and plywood which are cut or bored after pressure treatment with field applied wood preservative.

.3 Set items in place plumb, straight and level to a tolerance of 1:600 and rigidly secure in place.

.4 Construct continuous members from pieces of longest practical length.

3.1 INSTALLATION (Cont'd)

.5 Construct wood roof blocking and curbs as indicated on drawings.

.6 Replace rotted and damaged wood roof sheathing and fascia panels with wood plywood to match existing thickness.

.7 Secure exterior work with galvanized or non-ferrous fasteners.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 ASTM A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM E108-11, Standard Test Methods for Fire Tests of Roof Coverings.

.3 CSA A123.1-05/A123.5-05(R2010), Asphalt Shingles Made From Organic Felt and Surfaced with Mineral Granules/Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules.

.4 CSA A123.2-03(R2013), Asphalt Coated Roofing Sheets.

.5 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.6 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.

.7 CGSB 37-GP-56M+Amdt-Dec-85, Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

.8 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

.9 CAN/CGSB-93.3-M91, Prefinished Galvanized and Aluminum-Zinc Alloy Steel Sheet for Residential Use.

.10 CRCA Asphalt Shingle Roofing Specification Guidelines.

.11 CAN/ULC-S107-10, Methods of Fire Tests of Roof Coverings.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Asphalt shingles: to CSA A123.1/A123.5, self sealing, asphalt saturated glass felt surfaced with mineral granules, Type A5.1, Self Seal Shingle, minimum mass 12 kg/m^2, 112 km/h wind warranty tested to UL 997, fire-resistance Class C to CAN/ULC-S107 or ASTM E108.

.2 Drip edge: galvanized steel, 0.5 mm core nominal thickness, Z275 zinc coating designation to ASTM A653/A653M. Prefinished in accordance with Section 07 62 00.

.3 Eave protection: use either Type A, B or C.
.1 Type A: To CSA A123.2, Type S smooth surface roll roofing.
.2 Type B: 0.9 mm rubberized asphalt laminated to 0.1 mm polyethylene film with removable paper backing.
.1 Acceptable material: 'Ice & Water Shield' manufactured by Grace Construction Products 800-354-5414x5211 www.ca.graceconstruction.com;
.3 Type C: 1.0 mm rubberized asphalt, non woven glass fibre mat reinforcing, sand upper surface, 900 mm wide roll, self adhesive with removable paper backing.
.1 Acceptable material: 'Eaveguard' manufactured by Bakor Inc., 416-735-6508, www.bakor.com; 'Progard-Plus' manufactured by BPCO division of EMCO, 800-567-2726, www.emcobp.com; 'ArmourGard' manufactured by IKO, 800-361-5836, www.iko.com.

.4 Underlayment: 15 lb. asphalt saturated sheathing paper to CAN/CGSB-51.32.

.5 Valley flashing: galvanized steel, 0.5 mm core nominal thickness, Z275 zinc coating designation to ASTM A653/A653M. Prefinished to CAN/CGSB-93.3

.6 Starter strip: asphalt shingles to CSA A123.2.

.7 Hip and ridge cap: asphalt shingles.

.8 Plastic cement: cutback asphalt to CAN/CGSB-37.5.

2.1 MATERIALS (Cont'd)

.9 Fasteners: large head, galvanized steel or aluminum roofing nails or 1.6 mm galvanized steel wire staples, 20 mm crown width, minimum 20 mm deck penetration.

.10 Sheet metal:
.1 Galvanized steel: 0.6 mm core nominal thickness, Z275 zinc coating designation to ASTM A653/A653M, prefinished to CAN/CGSB-93.3.

.11 Vent stack collar: one piece neoprene, 500 mm^2 deck flange, size to suit vent, sealed to stack with flexible, non-shrink collar.

PART 3 - EXECUTION

3.1 APPLICATION

.1 Drip edge: install drip edge along eaves overhanging 12 mm with minimum 50 mm flange extending onto roof decking, set in plastic cement, lap joints 100 mm, nail at 400 mm centres.

.2 In accordance with Canadian Roofing Contractors' Association Asphalt Shingle Roofing Specification Guideline, Rev. Jan/97:
.1 Install sheet metal valley linings for open valley.
.2 Install metal flashings.
.3 Apply eave protection, underlayment, and asphalt shingles.

.3 Vent stack collar: to CRCA requirements for steep roof. Install vent stack collar over plumbing vent, collar tight to stack, deck flange below shingles on upper half and above shingles on lower half.

.4 Install roof louvres in accordance with manufacturer's instructions using aluminum fasteners. Insert top and side flanges under shingles. Adhere shingles to flanges with plastic cement.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 ASTM International
- .1 ASTM D6878/D6878-13, Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.

.2 Canadian Roofing Contractors Association (CRCA)
- .1 CRCA Roofing Specifications Manual-1997.

.3 CSA International
- .1 CSA A123.21-04(R2009), Standard Test Method for the Dynamic Wind Uplift Resistance of Mechanically Attached Membrane-Roofing Systems

.4 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
- .1 SCAQMD Rule 1168-A2005, Adhesive and Sealant Applications.

.5 Underwriters' Laboratories of Canada (ULC)
- .1 CAN/ULC-S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .2 CAN/ULC-S704-11, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
- .3 CAN/ULC-S706-09, Standard Test Method for Determination of Long-Term Thermal Resistance of Closed-Cell Thermal Insulating Foams.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning roofing Work, with roofing contractor's representative and Departmental Representative in accordance with Section 01 32 00 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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data:

.1 Provide two copies of most recent technical roofing components datasheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies of WHMIS MSDS in accordance with Section 01 33 00, and indicate VOC content for:

.1 Primers.

.2 Sealers.

.3 Insulation.

.3 Shop Drawings: Indicate flashing, fastenings, joints, and insulation details.

.4 Manufacturer's Certificate: certify that products meet or exceed specified requirements.

.5 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.

.6 Manufacturer's field report: in accordance with Section 01 45 00.

.7 Reports: indicate procedures followed, ambient temperatures and wind velocity during application.

1.4 QUALITY ASSURANCE

.1 Installer qualifications: company or person specializing in application of TPO roofing systems with 5 years documented experience and approved by manufacturer.

.2 Mock-ups:

.1 Construct mock-up in accordance with Section 01 45 00.

.2 Construct mock-up 10 m^2 minimum size showing typical roof construction. Accepted mock-up may form part of complete work.

.3 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with roofing work.

1.5 DELIVERY, STORAGE, AND HANDLING

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

.2 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 TPO flat on cross supports.
.4 Remove only in quantities required for same day use.
.5 Store materials in accordance with manufacturer's written instructions.
.6 Store insulation protected from sunlight and weather and deleterious materials.

.3 Packaging Waste Management: remove for reuse by manufacturer of pallets, crates, padding and packaging materials in accordance with Section 01 74 20.
.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.

1.6 FIELD CONDITIONS

.1 Ambient Conditions:
.1 Temperature, relative humidity, moisture content
.1 Apply TPO membrane only when surfaces and ambient temperatures are within manufacturers' prescribed limits.
.2 Do not install TPO membrane when temperature remains below 5 degrees C, or when wind chill gives equivalent cooling effect.
.3 Install TPO membrane on dry substrate, free of snow and ice. Use only dry materials and apply only during weather that will not introduce moisture into system.

1.7 WARRANTY

.1 For the Work of this Section 07 54 23 - Thermoplastic Polyolefin Roofing, 12 months warranty period is extended to 60 months.

PART 2 - PRODUCTS

2.1 PERFORMANCE CRITERIA

.1 Compatibility between components of roofing system is essential.
.1 Provide written declaration to Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

.2 Roofing System: to CSA A123.21 for wind uplift resistance.

2.2 MEMBRANE

.1 Flexible thermoplastic polyolefin TPO sheet membrane: to ASTM D6878/D6878-13.
.1 Class B, Type 2-reinforced, 1.5 mm thick.

2.3 POLYSTYRENE INSULATION

.1 Extruded polystyrene (XPS) insulation to CAN/ULC-S701, Type 2, thickness as indicated, square edges.

2.4 POLYISOCYANURATE INSULATION

.1 To CAN/ULC-S704, Type 2, Class 3, facing inorganic coated glass, thickness 25 mm.

2.5 ADHESIVE AND SOLVENTS

.1 Water-based adhesives: as recommended by membrane manufacturer.

.2 Solvent: as recommended by membrane manufacturer.

2.6 SEALERS

.1 Sealants: as recommended by membrane manufacturer.

2.7 FASTENERS

.1 Insulation to substrate: coated insulation fasteners and galvanized plates must meet FM Approval for wind uplift and corrosion resistance, as recommended by insulation manufacturer.

2.7 FASTENERS (Cont'd)

.2 Membrane to substrate: fasteners and spacing as recommended by manufacturer.

2.8 ACCESSORIES

.1 Edge and fascia flashings: TPO clad galvanized steel, 0.607 mm thickness.

2.9 SOURCE QUALITY CONTROL

.1 Submit laboratory test reports in accordance with Section 01 45 00.

PART 3 - EXECUTION

3.1 QUALITY OF WORK

.1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.

.2 Assembly, component and material connections will be made in consideration of appropriate design loads.

3.2 EXAMINATION OF ROOF DECKS

.1 Verification of Conditions: inspect with Departmental Representative existing roof conditions including construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

.2 Evaluation and Assessment: prior to beginning of work ensure:
.1 Existing roof 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 Curbs have been built.
.3 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.

.3 Do not install roofing materials during rain or snowfall.

3.3 PROTECTION OF IN-PLACE CONDITIONS

.1 Cover walls and adjacent work where materials hoisted or used.

.2 Use warning signs and barriers. Maintain in good order until completion of Work.

.3 Dispose of rain water away from face of building until drains or hoppers installed and connected.

.4 Protect from traffic and damage. Comply with precautions deemed necessary by Departmental Representative.

.5 Place plywood runways over work to enable movement of material and other traffic.

.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. Seal and ballast exposed edges.

3.4 (EXPOSED) CONVENTIONAL MEMBRANE ROOFING (CMR) APPLICATION

.1 Insulation: mechanically fastened application:
.1 Mechanically fasten insulation using screws and pressure distribution plates
.2 Fasten insulation as per manufacturer's written recommendations.
.3 Number and pattern of screws per board to meet Factory Mutual requirements.
.4 Place boards in parallel rows with ends staggered, and in firm contact with one another.
.5 Cut boards to suit existing roof profile.

.2 Membrane:
.1 Install fully adhered membrane and flashings in accordance with ASTM D6878/D6878-13 manufacturer's written instructions, and reviewed shop drawings.

.3 Flashings:
.1 Install TPO membrane flashings in accordance with manufacturer's written instructions.

.4 Roof penetrations:
.1 Install roof drain pans, vent stack covers and other penetration flashings and seal to membrane in accordance with manufacturer's recommendations and details.

3.5 FIELD QUALITY CONTROL

.1 Inspection:
.1 Inspection and testing of TPO membrane application will be carried out by testing laboratory designated by Departmental Representative.
.2 Inspection and testing of membrane application will be carried out by testing laboratory designated by Departmental Representative.

3.6 CLEANING

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 2.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
.2 Place materials defined as hazardous or toxic in designated containers.
.3 Clearly label location of salvaged material's storage areas and provide barriers and security devices.
.4 Ensure emptied containers are sealed and stored safely.
.5 Unused adhesive, sealant and 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.
.6 Dispose of unused adhesive material at official hazardous material collections site approved by Departmental Representative.
.7 Dispose of unused sealant material at official hazardous material collections site approved by Departmental Representative.
.8 Dispose of other unused roofing materials at official hazardous material collections site approved by Departmental Representative.
.9 Collect, package and store TPO membrane cut-offs and waste material for recycling and return to recycler in accordance with Waste Management Plan.

3.6 CLEANING (Cont'd)

.4 Clean to Departmental Representative's approval, soiled surfaces, spatters, and damage caused by work of this Section.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for 2 ply SBS modified bituminous roofing for roofing and waterproofing in a protected membrane roofing (PMR) systems.

.2 Removal of existing roof system is specified in Section 02 41 19 - Selective Demolition.

1.2 REFERENCES

.1 ASTM International Inc.
.1 ASTM C1177/C1177M-13, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
.2 ASTM D6162-00a(2008), Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.

.2 Canadian General Standards Board (CGSB).
.1 CGSB 37-GP-9Ma-83, Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing.
.2 CAN/CGSB-37.29-M89, Rubber-Asphalt Sealing Compound.

.3 Canadian Standards Association (CSA International).
.1 CSA A231.1/A231.2-06, Precast Concrete Slabs/Precast Concrete Pavers.
.2 CSA A123.21-10, Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane Roofing Systems

.4 Underwriters' Laboratories of Canada (ULC).
.1 CAN/ULC-S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting one week prior to beginning roofing Work, with roofing contractor's representative and Departmental Representative in accordance with Section 01 32 00 to:
.1 Verify project requirements.
.2 Review installation and substrate conditions.
.3 Co-ordination with other building subtrades.

1.3 ADMINISTRATIVE REQUIREMENTS (Cont'd)

.1 (Cont'd)
.4 Review manufacturer's installation instructions and warranty requirements.

1.4 SUBMITTALS

.1 Submit proof of manufacturer's CCMC Listing and listing number to Departmental Representative.

.2 Submit product data and manufacturer's written installation instruction s in accordance with Section 01 33 00.

.3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00.

.4 Submit product data sheets for all roof system components. Include:
.1 Product characteristics.
.2 Performance criteria.
.3 Limitations.

.5 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.6 Indicate repair methodology, roof system components, flashing, control joints, insulation, penetrations, field fabricated seamsdetails.

1.5 QUALITY ASSURANCE

.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.

.2 Construct mock-up of one valley repair showing typical method or roof sytem repair and replacement.

.3 Mock-up will be used:
.1 To judge workmanship, substrate preparation, operation of equipment and material application.
.2 Locate where directed.
.3 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with roofing Work.
.4 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

1.5 QUALITY ASSURANCE (Cont'd)

.4 Ensure torching is performed by skilled workers who have successfully completed and passed a course of instruction by membrane manufacturer in torch-applied-membrane techniques.

1.6 FIRE PROTECTION

.1 Fire Extinguishers:
.1 Maintain a minimum of one 4.5 kg cartridge operated type or stored pressure rechargeable type with hose and shut-off nozzle,
.2 ULC labelled for A, B and C class protection.

1.7 DELIVERY, STORAGE AND HANDLING

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

.2 Provide and maintain dry, off-ground weatherproof storage.

.3 Stand roll materials on end.

.4 Remove only in quantities required for same day use.

.5 Store insulation protected from sunlight and weather and deleterious materials.

.6 Store materials in accordance with manufacturer's written instructions to prevent damage or loss of performance.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate applicable waste materials for reuse and recycling.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, and corrugated cardboard packaging material for recycling.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

1.8 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

.6 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.

.7 Clean and reues all aggregate materials.

1.9 PROJECT/SITE ENVIRONMENTAL REQUIREMENTS

.1 Temperature, relative humidity, moisture content.

.1 Apply membranes only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.2 Do not install membrane when air and substrate temperature remains below 5 degrees C, or when wind chill gives equivalent cooling effect.

.3 Install membrane on dry substrate, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into system.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of rubberized asphalt, sealing compounds, primers and caulking materials.

1.10 WARRANTY

.1 For the Work of this Section 07 55 50 - Modified Bituminous Protected Membrane Roofing the 12 months warranty period prescribed in subsection GC 3.13 of General Conditions is extended to 24 months.

PART 2 - PRODUCTS

2.1 PERFORMANCE CRITERIA

.1 Compatibility between components of system and adjacent materials is essential. Provide written declaration to Departmental Representative stating that materials and components, as assembled in system, meet this requirement.

.2 Roofing System: to CSA A123.21 for wind uplift resistance.

2.2 DECK COVERING

.1 Glass Mat Gypsum Board: to ASTM C 1177 thickness to match existing.

2.3 COVERING FASTENERS

.1 Covering to steel deck: No. 10 flat head, self tapping, Type A or AB, cadmium plated screws. Recommend FM Approved screw and plate assemblies.

2.4 PRIMER

.1 Asphalt primer: to CGSB 37-GP-9Ma, manufacturer's low VOC primer.

2.5 MEMBRANE

.1 Base sheet:
.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, glass matt reinforcement, having minimum thickness of 3 mm and nominal weight of 180 g/m^2.
.2 Type 1, fully adhered.
.3 Class: C - plain surfaced.
.4 Grade:heavy duty service.
.5 Top and bottom surfaces:
.1 Poly/Poly.
.6 Base sheet membrane properties: to CGSB 37-GP-56M.

.2 Cap sheet:
.1 Styrene-Butadiene-Styrene (SBS) elastomeric polymer prefabricated sheet, glass matt reinforcement, having minimum thickness of 3 mm and nominal weight of 250g/m^2.
.2 Type 1, fully adhered.
.3 Class: C - Granulated surfaced.
.4 Grade:heavy duty service.
.5 Top and bottom surfaces:
.1 Poly/Granulated.
.6 Base sheet membrane properties: to CGSB 37-GP-56M.

2.6 POLYSTYRENE INSULATION

.1 Reuse existing insulation that is in good shape. Where additional insulation is required; Extruded polystyrene (XPS) insulation: to CAN/ULC-S701, Type 4, thickness as indicated, shiplapped edges.

2.7 SEALERS

.1 Sealing compound: to CAN/CGSB-37.29 , rubber asphalt type.

2.8 FILTER FABRIC

.1 UV resistant, black woven polyolefin fabric for installation between insulation and stone ballast in protected membrane system. Fabric to meet recommendation of insulation manufacturer.

2.9 BALLAST

.1 Stone: Reuse existing. Where additional stone is required; 19 to 32 mm size, well graded crushed stone, opaque, non-porous, washed, free from fines, splinters, ice and snow.

.2 Paving slabs: Reuse existing. Where additional slabs are requried; to CSA A231.1/A231.2, size, thickness, and finish to match existing. Support all corners of slabs with a 150 mm x 150 mm x 25 mm thick Type 4 insulation pad to allow drainage.

2.10 SOURCE QUALITY CONTROL

.1 Submit laboratory test reports in accordance with Section 01 45 00 - Quality Control

PART 3 - EXECUTION

3.1 QUALITY OF WORK

.1 Perform removals, examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.

.2 Do priming in accordance with manufacturers written recommendations.

3.2 SUBSTRATE EXAMINATION

.1 Examine substrates and immediately inform Departmental Representative in writing of defects.

.2 Prior to beginning of Work ensure:
.1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, contamination and swept clean of dust and debris.
.2 Curbs have been built.

3.2 SUBSTRATE EXAMINATION (Cont'd)

.2 Prior to beginning of Work ensure:(Cont'd)
.3 Drains have been installed at proper elevations relative to finished surfaces.
.4 Sleeves, vents, pipes and other items passing through substrates receiving work of this Section are properly and rigidly installed.
.5 Plywood and lumber nailer plates have been installed to walls and parapets as indicated.

.3 Do not install roofing materials during rain or snowfall.

3.3 PREPARATION - PROTECTION

.1 Cover walls, walks 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 bituminous material immediately.

.4 Dispose of rain water away from face of building until drains or hoppers installed and connected.

.5 Protect from traffic and damage. Comply with precautions deemed necessary by Departmental Representative.

.6 Place plywood runways over work to enable movement of material and other traffic.

.7 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. Seal and ballast exposed edges.

3.4 DECK COVERING

.1 In areas where existing gypsum board has to be replaced, lay Glass Mat Gypsum Board with tightly butted joints. Longitudinal joints must be at right angles to flute direction. Joints occurring along widths of board to be continuously supported on top flange of metal deck.

3.4 DECK COVERING (Cont'd)

.2 Mechanically fasten deck covering to steel deck with self-tapping, non-corroding screws and plates spaced 200 mm on centre each way and to only top flanges of steel deck.

3.5 PRIMING DECK

.1 Apply Primer to glass matt gypsum board roofing substrate at the rate recommended by manufacturer.

3.6 PROTECTED MEMBRANE ROOFING APPLICATION

.1 In areas where existing roof membrane has been removed, tie new roof membrane into existing room membrane to provide a monolithic roof system.

.2 Base sheet application:
.1 Starting at low point of roof, perpendicular to slope, unroll base sheet, align and reroll from both ends.
.2 Unroll and torch base sheet to substrate.
.3 Lap sheets 75 mm for side and 150 mm for end laps.
.4 Application to be fully bonded to substrate and free of blisters, wrinkles and fishmouths.

.3 Cap sheet application:
.1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.
.2 Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.
.3 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm from those in base sheet.
.4 Application to be fully bonded to base sheet and free of blisters, fishmouths and wrinkles.
.5 Do membrane application in accordance with manufacturer's recommendations.

.4 Remove existing trees/shrubs on roof and repair existing roof membrane in accordance with reviewed shop drawing.

3.7 INSULATION APPLICATION

.1 Apply insulation loose laid immediately after application of separation sheet. Butt insulation boards tightly, in parallel rows with staggered end joints. Butt insulation tightly against existing insulation.

3.8 FILTER FABRIC APPLICATION

.1 Apply continuous layer of filter fabric unbonded over installed insulation lapping joints 200 mm minimum.

.2 Cut fabric around drains, vents and other penetrations and extend up protrusions and place under metal flashings.

3.9 BALLAST AND PROTECTIVE COVERING

.1 Apply stone ballast, as soon as possible after placement of fabric, at minimum rate of 75 kg/m^2.

.2 Spread stone ballast to an even thickness over entire area. Extend ballast over base of metal flashings by 100 mm.

.3 Install paving slabs over fabric in locations indicated. Allow space between slabs to permit drainage of surface water. Cut pavers to fit irregularly shaped areas and around protrusions.

3.10 FIELD QUALITY CONTROL

.1 Inspections:
.1 Inspection and testing of roofing application will be carried out by testing laboratory designated by Departmental Representative.

.2 Costs of tests will be paid by Departmental Representative.

3.11 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.

3.11 CLEANING (Cont'd)

.3 Repair or replace defaced or disfigured finishes caused by work of this section.

.4 Clean to Departmental Representative's approval, soiled surfaces, spatters, and damage caused by Work of this Section.

.5 Check area drains to ensure cleanliness and proper function, and remove debris, equipment and excess material from site.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
.1 ASTM A653-11/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
.2 ASTM D523-08, Standard Test Method for Specular Gloss.
.3 ASTM D822-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.2 Canadian Roofing Contractors Association (CRCA)
.1 Roofing Specifications Manual 2012.

.3 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

.4 Canadian Standards Association (CSA International)
.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.6 South Coast Air Quality Management District (SCAQMD), California State
.1 SCAQMD Rule #1168-05, Adhesives and Sealants.

1.2 SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
.2 Submit two copies WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00.

1.2 SUBMITTALS (Cont'd)

.3 Shop Drawings:
.1 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.4 Samples:
.1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.

.5 Quality assurance submittals: submit following in accordance with Section 01 45 00.
.1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

1.3 QUALITY ASSURANCE

.1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with contractor's representative and Departmental Representative in accordance with Section 01 32 00 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 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00.

.2 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 20.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

.1 Zinc coated steel sheet: 0.6 mm thickness, commercial quality to ASTM A653/A653M, with Z275 designation zinc coating.

2.2 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied polyvinylidene fluoride.
.1 Class F2S.
.2 Colour selected by Departmental Representative from manufacturer's standard range.
.3 Specular gloss: 30 units +/- in accordance with ASTM D523.
.4 Coating thickness: not less than 22 micrometres.
.5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 as follows:
.1 Outdoor exposure period 2500 hours.
.2 Humidity resistance exposure period 5000 hours.

2.3 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Plastic cement: to CAN/CGSB-37.5.
.1 Maximum VOC limit 50 g/L to SCAQMD Rule 1168.

.3 Underlay for metal flashing: dry sheathing to CAN/CGSB-51.32.

.4 Sealants: In accordance with Section 07 92 00.

.5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

.6 Fasteners: of same material as sheet metal, to CSA B111, flat head roofing nails of length and thickness suitable for metal flashing application.

.7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

2.3 ACCESSORIES (Cont'd)

.8 Touch-up paint: as recommended by prefinished material manufacturer.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details.

.2 Form pieces in 2400 mm maximum lengths.
.1 Make allowance for expansion at joints.

.3 Hem exposed edges on underside 12 mm.
.1 Mitre and seal corners with sealant.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.5 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.5 METAL FLASHINGS

.1 Form flashings, copings and fascias to profiles indicated of prefinished steel.

2.6 PANS

.1 Form pans to receive roofing plastic from prefinished steel sheet metal with minimum 75 mm upstand above finished roof and 100 mm continuous flanges with no open corners.
.1 Rivet joints.
.2 Make pans minimum 50 mm wider than member passing through roof membrane.

2.7 SCUPPERS

.1 Form scuppers from prefinished steel sheet metal.

.2 Sizes and profiles as indicated.

.3 Provide necessary fastenings.

.4 Form 600 x 600 mm splash pans from prefinished steel sheet metal.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install sheet metal work as detailed.

.2 Use concealed fastenings except where approved before installation.

.3 Provide underlay under sheet metal.
.1 Secure in place and lap joints 100 mm.

.4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
.1 Flash joints using S-lock forming tight fit over hook strips, as detailed.

.5 Lock end joints and caulk with sealant.

.6 Turn top edge of flashing into recessed reglet and secure.

.7 Caulk flashing at cap flashing with sealant.

.8 Install pans, where shown around items projecting through roof membrane.

3.3 SCUPPERS

.1 Install scuppers as indicated.

3.4 CLEANING

.1 Proceed in accordance with Section 01 74 11.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Leave work areas clean, free from grease, finger marks and stains.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 62 00: Sealing metal flashing.

.2 Section 08 62 10: Plastic Skylights.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
.1 ASTM C920-11, Standard Specification for Elastomeric Joint Sealants.

1.3 ENVIRONMENTAL CHOICE PROGRAM

.1 Provide sealant products bearing the 'Ecologo' of the Environmental Choice Program, Department of the Environment, Canadian Environmental Protection Act, Environmental Choice Product Guidelines ECP/PCE-45-92 for Sealants and Caulking Compounds, except maximum VOC 60 g/L during application and curing.

.2 For primers and sealants, indicate VOC in g/L during application and curing.

1.4 PRODUCT DATA

.1 Submit manufacturer's literature indicating recommended surface preparation, sealant selection and primer for each substrate in accordance with Sections 01 33 00 and 01 78 00.

1.5 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 4.4°C.
.2 When joint substrates are wet.

.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.

1.5 PROJECT CONDITIONS (Cont'd)

.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 SEALANTS

.1 Provide sealant products bearing Ecologo to ECP/PCE-45-92 with maximum VOC 60 g/L.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Silicones One Part '3'.
.1 To ASTM C920-14, primerless, Type S, Grade NS, Class 50, SWRI validated.

.2 Preformed Compressible and Non-Compressible back-up materials.
.1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
.1 Extruded open or closed cell foam backer rod.
.2 Size: oversize 30 to 50%.
.2 High Density Foam.
.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.
.3 Bond Breaker Tape.
.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

.1 Perimeters of exterior openings where frames meet exterior building elements: Designations 3.

.2 Seal interior perimeters of exterior openings as detailed on drawings: Designations 3.

.3 Seal openings in roof flashisngs and roof openings: Designations 3.

2.4 JOINT CLEANER

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

2.4 JOINT CLEANER (Cont'd)

.2 Primer: to manufacturer's recommendations.

PART 3 - EXECUTION

3.1 PREPARATION OF JOINT SURFACES

.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.

3.2 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.

3.3 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape with approximately 30% compression.

3.4 APPLICATION

.1 Ventilate interior spaces during application and curing of sealants to maintain VOCs less than 50 g/l. Coordinate with building manager to ensure existing ventilation system or temporary ventilation supllies sufficient outside air.

3.4 APPLICATION (Cont'd)

.2 Sealant.

.1 Protect installed work of other trades from staining or contamination.

.2 Apply sealant in accordance with manufacturer's application manual and written instructions. Maintain SPC STC rating of assemblies.

.3 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint. remove tape after sealant applied.

.4 Apply sealant in continuous beads.

.5 Apply sealant using gun with proper size nozzle.

.6 Use sufficient pressure to fill voids and joints solid.

.7 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.8 Tool exposed surfaces before skinning begins to give slightly concave shape.

.3 Curing.

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.4 Cleanup.

.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

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-12.12-M90, Plastic Safety Glazing.
.2 CAN/CGSB-63.14-M89, Plastic Skylights.
.3 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.2 CSA International
.1 AAMA/WDMA/CSA-101/I.S.2/A440-11, NAFS - North American Fenestration Standard/ Specification for Windows, Doors and Skylights.
.2 AAMA/WDMA/CSA-101/I.S.2/A440S1-09, Canadian Supplement to AAMA/WDMA/CSA-101/I.S.2/ A440-08, NAFS - North American Fenestration Standard/Specification for Windows, Doors and Skylights.
.3 CAN/CSA-A440.4-07(R2012), Window, Door, and Skylight Installation.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for skylight, frame, fasteners, and caulking and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
.2 Indicate size and description of components, materials, attachment devices, description of frame and finish, and construction details.

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

.5 Manufacturers Reports:
.1 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in Part 3 - FIELD QUALITY CONTROL.

1.2 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.6 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00.

.2 Operation and Maintenance Data: submit operation and maintenance data for skylights for incorporation into manual.

1.4 QUALITY ASSURANCE

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

.2 Energy performance:
.1 U-factor: .047
.2 Solar Heat Gain Coefficient: 0.27

1.5 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect skylights and frames from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 SKYLIGHT

.1 Plastic skylights: to CAN/CGSB-63.14, Type 2 - Double glazed argon filled with low E coating, Class A - Aluminum frame and conforming to AAMA/WDMA/ CSA-101/I.S.2/A440 and AAMA/WDMA/CSA-101/I.S.2/ A440S1.

2.2 FRAME FINISH

.1 Class A - Aluminum frame: Class1, clear, anodized to match Departmental Representative's sample.

2.3 SKYLIGHT GLAZING

.1 Plastic: to CAN/CGSB-12.12, category I, 6 mm thick, clear polycarbonate, Class A flame spread and smoke developed.

.2 Outer layer: clear with minmum 80% light transmission value.

.3 Inner layer: clear with 80% light transmission value.

.4 Sealed unit: In accordance with CAN/CGSB-12.8-M90.

2.4 CURB FRAME

.1 Wood in accordance with Section 06 10 12 Carpentry.

2.5 ACCESSORIES

.1 Fasteners: nails to CSA B111 and screws to manufacturers standard, galvanized.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Install skylights in accordance with CAN/CSA-A440.4-07, CAN/CGSB-63.14, and supplement as follows:
.1 Erect components plumb, level and in proper alignment.
.2 Ensure continuity of envelope air barrier and vapour retarder systems.
.3 Secure skylight to to structure.
.4 Adjust and seal assembly with provision for expansion and contraction of components.
.5 Secure and seal frame to curb.

3.3 FIELD QUALITY CONTROL

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract within 3 days of review.

3.4 CLEANING

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

3.4 CLEANING (Cont'd)

.1 (Cont'd)

.2 Remove protective film from plastic surfaces.

.3 Clean interior and exterior plastic surfaces in accordance with manufacturers' instructions.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.

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

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

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by plastic skylight installation.

END