Federal Building

PROJECT MANUAL

FOR

Project No. 7222198
TBU 8 Resource Centre Improvements
Regina, Saskatchewan

Issued for Construction
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Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises roof replacement of the TBU 8 Building on the grounds at 5600 - 11th Avenue, Regina, Saskatchewan.

1.2 CONTRACT METHOD

.1 Construct Work under stipulated price contract.

1.3 WORK BY OTHERS

.1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Owner Representative.

.2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Owner Representative, in writing, any defects which may interfere with proper execution of Work.

1.4 CONTRACTOR USE OF PREMISES

.1 Unrestricted use of site until Substantial Performance.

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

.3 Use lay-down area and waste bin location as provided and directed by Owner Representative.

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

.5 Remove or alter existing work to prevent injury or damage to portions of existing work that remain.

.6 Repair or replace portions of existing work that have been altered during construction operations to match existing or adjoining work, as directed by Owner Representative.

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

1.5 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.6 EXISTING SERVICES

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

.2 Where Work involves breaking into or connecting to existing services, give Owner Representative 48 hours' notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions.

.3 Establish location and extent of service lines in area of work before starting Work. Notify Owner Representative of findings.

.4 Submit schedule to and obtain approval from Owner Representative for shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.5 Provide temporary services when directed by Owner Representative to maintain critical building and tenant systems.

.6 Where unknown services are encountered, immediately advise Owner Representative and confirm findings in writing.

.7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

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

.9 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.7 DOCUMENTS REQUIRED

.1 Successful bidding Contractor is to obtain required sets of Contract Documents for construction purposes, which includes two (2) sets for "as-built" and record purposes.

.1 Contractor is responsible for costs of printing, handling, and shipping of Contract Documents.

.2 Maintain at job site, one copy of each document as follows:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Reviewed Shop Drawings.

.5 List of Outstanding Shop Drawings.

.6 Change Orders.

.7 Other Modifications to Contract.

.8 Field Test Reports.

.9 Copy of Approved Work Schedule.

.10 Health and Safety Plan and Other Safety Related Documents.

.11 Other documents as specified.

END OF SECTION

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, 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 Owner 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 Owner Representative will assign washroom facilities for use by Contractor's personnel. Keep area and facilities in sanitary condition.

.5 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 Owner Representative to facilitate execution of work.

1.4 EXISTING SERVICES

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

.2 Where Work involves breaking into or connecting to existing services, give Owner Representative 48 hours’ notice for necessary interruption of mechanical or electrical service. Keep duration of interruptions to a minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Provide for personnel, pedestrian, and vehicular traffic.

.4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

.1 Submit schedule in accordance with Section 01 32 16 - Construction Progress Schedule - Bar (GANTT) Chart.

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

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

.4 Ingress and egress of Contractor vehicles at site is limited to front gate entrance off Dewdney Avenue – McCarthy entrance only.

.5 Deliver materials outside of peak traffic hours 07:30 to 22:00 unless otherwise approved by Owner Representative.

1.6 SECURITY CLEARANCES

.1 Personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for each individual who will require entry to premises.

.2 Personnel will be checked daily at start of work shift and provided with pass that must be worn at all times. Pass must be returned at end of work shift and personnel checked out. Employees are required to leave their drivers' licences to acquire security passes.

1.7 SECURITY ESCORT

.1 Personnel engaged in work outside normal working hours are to be escorted by a designated officer. Submit escort request to Owner minimum 72 hours before service is required.

.2 Personnel are to be escorted while working in non-public areas during normal working hours. Submit escort request minimum 48 hours before service is required.

.3 No escort is required while working on exterior roof areas.

1.8 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

.2 Smoking is not permitted inside building.

.3 Confirm, with Owner Representative, outdoor locations where personnel may smoke.

END OF SECTION

Part 1 General

1.1 APPLICATIONS FOR PROGRESS PAYMENT

.1 Submit to the Owner Representative, at least 14 days before first application for payment, a Cost Breakdown, in detail for parts of the Work, aggregating total amount of the Contract Price, to facilitate evaluation of application for payment. After approval by Owner Representative, Cost Breakdown will be used as a basis for progress payments.

.2 Support claims for products delivered to Place of Work but not yet incorporated into the Work by such evidence as Owner Representative may reasonably require, to establish value and delivery of products.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

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

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to Owner 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; transmit to Owner Representative, meeting participants, and affected parties not in attendance.

.8 Representatives 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 Owner Representative, Contractor, major Subcontractors, field inspectors, and supervisors will be in attendance.

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

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

.5 Agenda to include:

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

.2 Schedule of Work: in accordance with Section 01 32 16 - Construction Progress Schedules - Bar (GANTT) Chart.

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

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

.5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

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

.7 Owner Representative provided products.

.8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

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

.12 Appointment of inspection and testing agencies or firms.

.13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 During course of Work and two weeks prior to project completion, schedule progress meetings bi-weekly.

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

.3 Notify parties minimum three days prior to meetings.

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

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems that 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 and expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for effect on construction schedule and on completion date.

.12 Other business.

END OF SECTION

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 Owner Representative to enable 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 it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

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

.2 Submit to Owner Representative within 10 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 Owner 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 Owner 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 Excavation.
.6 Siding and Roofing.
.7 Demobilization.

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. 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.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Provide submittals listed for review to Owner Representative. 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 are not produced in SI Metric units, converted values are acceptable.

.5 Review submittals prior to submission to Owner 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 Owner Representative at time of submission, in writing, 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 Owner Representative's review of submittals.

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

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that 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 Saskatchewan.

.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 10 working days for Owner Representative's review of each submission.

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

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

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Contractor.
  - .2 Subcontractor.
  - .3 Supplier.
  - .4 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 Owner Representative's review, distribute copies.

.10 Submit electronic copies of shop drawings for each requirement requested in specification Sections and as Owner Representative may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Owner Representative

where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Owner Representative.

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

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

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Owner Representative.

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

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

.14 Submit electronic copies of manufacturers' instructions for requirements requested in specification Sections and as requested by Owner Representative.

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

.15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Owner Representative:

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

.16 Submit electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Owner Representative.

.17 Delete information not applicable to project.

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

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

.20 The review of shop drawings is for sole purpose of ascertaining general conformance with design intent.

.1 This review shall not mean that Owner Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve

Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

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

1.3 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 Owner Representative's business address.

.3 Notify Owner 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 Owner Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Owner Representative prior to proceeding with Work.

.6 Make changes in samples that Owner Representative may require, consistent with Contract Documents.

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

1.4 MOCK-UPS

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

1.5 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copy of colour digital photography in jpg format, standard resolution, as directed by Owner Representative.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Viewpoints and locations: As determined by Owner Representative.

.4 Frequency of photographic documentation: Monthly with progress statement.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.2 Province of Saskatchewan

.1 Occupational Health and Safety Act 1996, updated 2014.

1.2 SAFETY PLAN

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

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

1.3 RESPONSIBILITY

.1 The "Prime Contractor" according applicable local jurisdiction, is 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.

1.4 SUBMITTALS

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

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

.1 Results of site-specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation.

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

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS MSDS - Material Safety Data Sheets.

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

Representative within 5 days after receipt of comments from Departmental Representative.

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

.9 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.

.10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.5 FILING OF NOTICE

.1 If required by authority having jurisdiction, file Notice of Project with Provincial authorities prior to beginning of Work.

1.6 SAFETY ASSESSMENT

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

1.7 MEETINGS

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

1.8 REGULATORY REQUIREMENTS

.1 Perform Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.9 COMPLIANCE REQUIREMENTS

.1 Comply with Saskatchewan Occupational Health and Safety Regulations.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.10 UNFORESEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator, follow procedures in accordance with Acts and Regulations of Province having jurisdiction, and advise Departmental Representative verbally and in writing.

1.11 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.

1.12 POSTING OF DOCUMENTS

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

1.13 CORRECTION OF NON-COMPLIANCE

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

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

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

1.14 BLASTING

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

1.15 POWDER ACTUATED DEVICES

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

1.16 WORK STOPPAGE

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

1.17 FIRE PROTECTION

.1 Comply with requirements of the local Fire Commissioner's Office.

.2 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

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

.4 Maintain placed or installed firestopping to protect the portions of the Work during construction.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with 2015 National Building Code of Canada (NBC) including amendments up to tender closing date, and other codes of provincial or local application; in case of conflict or discrepancy, more stringent requirements apply. The following governing standards are also to apply.

.1 Canadian Electrical Code, 2015.

.2 National Plumbing Code of Canada, 2015.

.3 National Fire Code of Canada, 2015.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Owner Representative.

.2 PCB: Polychlorinated Biphenyl: Stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Owner Representative.

.3 Mould: Stop work immediately when material resembling mould is encountered during demolition work. Notify Owner Representative.

1.3 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

END OF SECTION

Part 1 General

1.1 INSPECTION

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

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals whether by Owner Representative instructions, or by 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 Owner Representative may order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination, such work is found not in accordance with Contract Documents, correct Work and pay cost of examination and correction. If Work is found in accordance with Contract Documents, cost of examination and replacement will be borne by Owner Representative.

1.2 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies may be engaged by Owner Representative for purpose of inspecting and testing portions of Work. Cost of such services will be borne by Owner Representative.

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

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

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

1.3 ACCESS TO WORK

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

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

1.4 PROCEDURES

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

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

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

1.5 REJECTED WORK

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

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

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

1.6 REPORTS

.1 Submit three print copies and one electronic copy of inspection and test reports to Owner Representative.

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

1.7 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

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

1.8 MOCK-UPS

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

.2 Construct in locations acceptable to Owner Representative.

.3 Prepare mock-ups for Owner Representative’s review with reasonable promptness and in orderly sequence, to not cause delays in Work.

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

.5 If requested, Owner Representative will assist in preparing schedule-fixing dates for preparation.

.6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.9 MILL TESTS

.1 Submit mill test certificates as required of specification Sections.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.3 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.4 WATER SUPPLY

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

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

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

1.5 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.

.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 Maintain temperatures of minimum 10°C in areas where construction is in progress.

.5 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours, or gases in areas occupied during 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.

.6 Permanent heating system of building may be used when available. Be responsible for damage to heating system if use is permitted.

.7 On completion of Work for which permanent heating system is used, [replace filters and bearings as required.

.8 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 Owner Representative.

.9 Owner Representative will pay utility charges when temporary heat source is existing building equipment.

.10 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.

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

1.6 TEMPORARY POWER AND LIGHT

.1 Owner Representative will pay for temporary power during construction for temporary lighting and operating of power tools, to a maximum supply of 230 volts 30 amps.

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

.3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Owner Representative.

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

.5 Existing electrical power and lighting systems and those installed under this Contract may be used for construction requirements only with prior approval of Owner Representative, provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps that have been used for more than 3 months.

1.7 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.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CAN/CSA S269.2-M87 (R2003), Access Scaffolding for Construction Purposes.

.2 CAN/CSA Z321-96 (R2006), Signs and Symbols for the Workplace.

1.2 SUBMITTALS

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

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 S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, temporary stairs.

1.5 HOISTING

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

.2 Hoists and cranes to be operated by qualified operator.

1.6 SITE STORAGE/LOADING

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

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

1.7 CONSTRUCTION PARKING

.1 Parking will be permitted on site in designated areas only, as instructed by Owner Representative.

.2 Provide and maintain adequate access to project site.

.3 Clean access routes where used by Contractor's equipment.

1.8 OFFICES

.1 Provide on-site construction trailer for use by Contractor during execution of Work.

.2 Provide marked and fully stocked first-aid case in a readily available location.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

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

1.10 CONSTRUCTION SIGNAGE

.1 No construction advertisement signs, other than health and safety, warning and instructional signs, are permitted on site.

.2 Signs and notices for safety and instruction; graphic symbols 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 Owner Representative.

1.11 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Owner Representative.

.2 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.

.3 Protect travelling public from damage to person and property.

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

.5 Deliveries to the Site are restricted. Confirm acceptable routes with Owner Representative at Construction Start-Up Meeting.

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

.7 Provide snow removal during period of Work.

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 not in construction facilities.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.2 SITE ENCLOSURE

.1 Erect temporary site enclosure (hoarding) using chain link fence, 2.4 metres high. Provide one lockable truck gate. Maintain fence in good repair.

.2 Provide barriers around trees and plants designated to remain.

.3 Protect from damage by equipment and construction procedures.

1.3 GUARD RAILS AND BARRIERS

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, along side retaining walls, and open edges of floors and roofs.

.2 Provide as required by governing authorities.

1.4 WEATHER ENCLOSURES

.1 Provide weathertight closures and protection for exterior openings including unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

.4 Ensure that upon final construction, and during the course of construction, the work is executed to prevent the entry of water, snow and air infiltration into the interior of the building. Correct deficient work. Bring to the attention of the Owner Representative, prior to construction, details that may compromise weather tightness.

1.5 DUST TIGHT BARRIERS

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

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

1.6 ACCESS TO SITE

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

1.7 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 public.

1.8 FIRE ROUTES

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

1.9 PROTECTION OF BUILDING FINISHES

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

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm locations and installation schedule with Owner Representative, three days prior to installation.

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

1.10 PROTECTION OF SURROUNDING WORK

.1 Provide protection for finished and partially finished Work from damage.

.2 Provide necessary cover and protection.

.3 Be responsible for damage incurred due to lack of or proper or appropriate protection.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.

.2 If there is question as to whether products or systems are in conformance with applicable standards, Owner Representative reserves right to have such products or systems tested to prove or disprove conformance.

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

1.2 QUALITY OF PRODUCTS

.1 Products, materials, equipment, and articles incorporated in Work are to be new, not damaged nor defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source, and quality of products provided.

.2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.

.3 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.

.4 Should disputes arise as to quality or fitness of products, decision rests strictly with Owner Representative based upon requirements of Contract Documents.

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

.6 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.

1.3 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Owner 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 Owner Representative at commencement of Work, and should it subsequently appear that Work may be delayed for such reason,

Owner Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING, AND PROTECTION

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

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

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

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

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

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Owner Representative.

.9 Touch-up damaged factory finished surfaces to Owner Representative's satisfaction. Use touch-up materials to match original. Do not paint over nameplates.

1.5 TRANSPORTATION

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

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

1.6 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 Owner Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Owner Representative will establish course of action.

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

1.7 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 Owner 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. Owner 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 Owner Representative, whose decision is final.

1.8 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

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

1.9 CONCEALMENT

.1 In finished areas conceal pipes, ducts, and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Owner Representative if there is interference. Install as directed by Owner Representative.

1.10 REMEDIAL WORK

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

.2 For remedial work, employ specialists familiar with materials affected.

1.11 LOCATION OF FIXTURES

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

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

1.12 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 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.

1.13 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.

1.14 PROTECTION OF WORK IN PROGRESS

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

1.15 EXISTING UTILITIES

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

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

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 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 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.

.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 that are to be exposed by uncovering work; maintain excavations free of water.

1.3 EXECUTION

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

.2 Fit 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 that will provide proper surfaces to receive patching and finishing.

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

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

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

.11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 – Firestopping, full thickness of the construction element.

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

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

END OF SECTION

Part 1 General

1.1 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 daily regularly scheduled times or dispose of as directed by Owner Representative. Do not burn waste materials on site, unless approved by Owner Representative.

.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. Equip containers with covers to prevent spread of waste by wind, and entry into container by unauthorized persons.

.6 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.7 Dispose of waste materials and debris off site.

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

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

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

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

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

1.2 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 Owner Representative. Do not burn waste materials on site.

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

.7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.9 Clean lighting reflectors, lenses, and other lighting surfaces.

.10 Vacuum clean and dust building interiors, behind grilles, louvres, and screens.

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

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

.13 Remove dirt and other disfiguration from exterior surfaces.

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

.15 Sweep and wash clean paved areas.

.16 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.17 Clean roofs, downspouts, and drainage systems.

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

.19 Remove snow and ice from access to building.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

.1 Prior to start of Work conduct meeting with Owner Representative to review and discuss PWGSC's Waste Management Plan and Goals.

.2 PWGSC's Waste Management Goal is for 50% of total Project Waste to be diverted from landfill sites. Provide Owner Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.

.3 Accomplish maximum control of solid construction waste.

.4 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

.1 Class III: Non-hazardous waste - construction renovation and demolition waste.

.2 Demolition Waste Audit (DWA): Relates to actual waste generated from project.

.3 Inert Fill: Inert waste - exclusively asphalt and concrete.

.4 Materials Source Separation Program (MSSP): Consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.5 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

.6 Recycle: Process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

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

.8 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

.2 Returning reusable items including pallets or unused products to vendors.

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

.10 Separate Condition: Refers to waste sorted into individual types.

.11 Source Separation: Acts of keeping different types of waste materials separate beginning from first time they became waste.

.12 Waste Audit (WA): Detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.

.13 Waste Management Co-ordinator (WMC): Contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.14 Waste Reduction Workplan (WRW): Written report that addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (Schedule A).

1.3 DOCUMENTS

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

.1 Waste Audit.

.2 Waste Reduction Workplan.

.3 Material Source Separation Plan.

.4 Schedules A, B, C, and D completed for project.

1.4 SUBMITTALS

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

.2 Prepare and submit following prior to project start-up:

.1 Submit 2 copies of completed Waste Audit (WA): Schedule A.

.2 Submit 2 copies of completed Waste Reduction Workplan (WRW): Schedule B.

.3 Submit 2 copies of completed Demolition Waste Audit (DWA): Schedule C.

.4 Submit 2 copies of Materials Source Separation Program (MSSP) description.

.3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using deconstruction/disassembly material audit form.

.1 Failure to submit could result in hold back of final payment.

.2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed.

.3 For each material reused, sold or recycled from project, include amount and destination.

.4 For each material land filled or incinerated from project, include amount of material and identity of landfill, incinerator, or transfer station.

1.5 WASTE AUDIT (WA)

.1 Conduct WA prior to project start-up.

.2 Prepare WA: Schedule A.

.3 Record, on WA - Schedule A, extent to which materials or products used consist of recycled or reused materials or products.

1.6 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare WRW prior to project start-up.

.2 WRW should include but not limited to:

.1 Destination of materials listed.

.2 Deconstruction/disassembly techniques and sequencing.

.3 Schedule for deconstruction/disassembly.

.4 Location.

.5 Security.

.6 Protection.

.7 Clear labelling of storage areas.

.8 Details on materials handling and removal procedures.

.9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.

.3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.4 Describe management of waste.

.5 Identify opportunities for reduction, reuse, and recycling of materials based on information acquired from WA.

.6 Post WRW or summary where workers at site are able to review content.

.7 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.

.8 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.

1.7 DEMOLITION WASTE AUDIT (DWA)

.1 Prepare DWA prior to project start-up.

.2 Complete DWA: Schedule C.

.3 Provide inventory of quantities of materials to be salvaged for reuse, recycling, or disposal.

1.8 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 Prepare MSSP and have ready for use prior to project start-up.

.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Owner Representative.

.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.4 Provide containers to deposit reusable and recyclable materials.

.5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.6 Locate separated materials in areas that minimize material damage.

.7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.

.1 Transport to approved and authorized recycling facility.

.8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.

.1 Ship materials to site operating under Certificate of Approval.

.2 Materials must be immediately separated into required categories for reuse or recycling.

1.9 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled, and salvaged in locations as directed by Owner Representative.

.2 Unless specified otherwise, materials for removal become Contractor's property.

.3 Protect, stockpile, store and catalogue salvaged items.

.4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.5 Protect structural components not removed for demolition from movement or damage.

.6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Owner Representative.

.7 Protect surface drainage, mechanical and electrical from damage and blockage.

.8 Separate and store materials produced during dismantling of structures in designated areas.

.9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.

.1 On-site source separation is recommended.

.2 Remove co-mingled materials to off-site processing facility for separation.

.3 Provide waybills for separated materials.

1.10 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.

.3 Keep records of construction waste including:

.1 Number and size of bins.

.2 Waste type of each bin.

.3 Total tonnage generated.

.4 Tonnage reused or recycled.

.5 Reused or recycled waste destination.

.4 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

.5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.11 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Provide temporary security measures approved by Owner Representative.

1.12 SCHEDULING

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

Part 2 Products

Not used.

Part 3 Execution

3.1 APPLICATION

.1 Perform Work in compliance with WRW.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

.1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Owner Representative, and consistent with applicable fire regulations.

.1 Mark containers or stockpile areas.

.2 Provide instruction on disposal practices.

.2 On-site sale of salvaged, recovered, reusable, and recyclable material is not permitted.

.3 Demolition Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Acoustic Tile	50	
Acoustical Insulation	100	
Carpet	100	
De-mountable Partitions	80	
Doors and Frames	100	
Electrical Equipment	80	
Furnishings	80	
Mechanical Equipment	100	
Metals	100	
Rubble	100	
Wood (uncontaminated)	100	
Other		

.4 Construction Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100	
Plastic Packaging	100	
Rubble	100	
Steel	100	
Wood (uncontaminated)	100	
Other		

3.4 WASTE AUDIT (WA)

.1 Schedule A - Waste Audit (WA):

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) % Recycled	(7) % Reused
Wood and Plastics						
Off-cuts						
Warped Pallet Forms						
Plastic Packaging						
Cardboard Packaging						
Other						
Doors and Windows Material Description						
Painted Frames						
Glass						
Wood						
Metal						
Other						

3.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B:

(1) Material Category	(2) Person(s) Respon-sible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material(s) Destina-tion
Wood and Plastics Material Description							
Chutes							
Warped Pallet Forms							
Plastic Packaging							
Card-board Packaging							
Other							
Doors and Windows Material Description							
Painted Frames							
Glass							
Wood							
Metal							
Other							

3.6 DEMOLITION WASTE AUDIT (DWA)

.1 Schedule C - Demolition Waste Audit (DWA):

(1) Material Description	(2) Quantity	(3) Unit	(4) Total	(5) Volume (cumulative)	(6) Weight (cumulative)	(7) Remarks and Assumptions
Wood						
Wood Stud						
Plywood						
Baseboard-Wood						
Door Trim - Wood						
Cabinet						
Doors and Windows						
Panel Regular						
Slab Regular						
Wood Laminate						
Glazing						

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Procedures for Acceptance of Work:

.1 Contractor's Inspection:

.1 Contractor: Conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.2 Notify Owner Representative, in writing, of satisfactory completion of Contractor's inspection; submit verification that corrections have been made.

.3 Request Owner Representative inspection.

.2 Owner Representative Inspection:

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

.2 Contractor to correct Work as directed.

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

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

.2 Defects: Corrected and deficiencies completed.

.3 Equipment and systems: Tested, adjusted, balanced, and fully operational.

.4 Certificates required by Fire Commissioner, Utility companies: Submitted.

.5 Operation of systems: Demonstrated to designated personnel.

.6 Work: Complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks have been performed, request final inspection of Work by Owner Representative and Contractor.

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

1.2 FINAL CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to contract completion with Contractor's Representative and Owner Representative, in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review warranty requirements.

.2 Owner Representative to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

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

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

1.2 SUBMITTALS

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

.2 Two weeks prior to Substantial Performance of the Work, submit to the Owner Representative, three print copies and one electronic final copy of operating and maintenance manuals in English.

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

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

1.3 FORMAT

.1 Organize data as instructional manual.

.2 Binders: Vinyl, hard covered, 3 'D' ring, with spine and face pockets.

.1 When multiple binders are used, correlate data into related consistent groupings.

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

1.4 CONTENTS – O&M MANUALS

.1 Binder Cover and Binder Edge

.1 Include: Building Name, address, project name, project number (GOC#), completed date.

.2 Title Page

.1 O&M Manual for... Building name, address, date, general contractor information: name address, phone number.

.2 Consultant name address, phone number.

.3 Table of contents indicates each binder's contents.

.3 Index and tabs

.1 Dividers with permanently marked tabs separate each section and sub section.

.2 Tab labels typed, not hand written.

.3 Main tab for each specification section.

.4 Tab A: Signed Letter of Warranty, to include:

.1 Date.

.2 Project name.

.3 Project number (GOC#).

.4 Building Location.

.5 Warranty start date and end, to be from date of substantial, declared by Consultant.

.6 Organization, names and phone numbers of persons to call for warranty services.

.7 All warranties to be included from all contractors in this section and extended warranties.

.5 Tab B: Contact Information for all Subcontractors and Suppliers, including:

.1 Name, address, telephone number of manufacturer, installing contractor.

.2 24-hour number for emergency service for all equipment in this section identified by equipment.

.6 Tab C: All Reports and Permits:

.1 TAB reports.

.2 Pre-functional tests.

.3 Start-up reports.

.4 Completed performance verification forms (found in the Tender Documents).

.5 Cabling verifications.

.6 ESA certification.

.7 TSSA certification.

.8 Fire alarm certification.

.9 Seismic certification.

.10 All permits, including electrical, building, plumbing.

.7 Tab D: As-Built Drawings:

.1 Marked-up by contractor**,** changes marked in red to also be given to Consultant.

.8 Tab E: Shop Drawings:

.1 Copy of all reviewed “by the Consultant” shop drawings.

.9 Tab F: Maintenance:

.1 Copy of specific service and maintenance manuals.

.2 Preventative and corrective maintenance, with service procedures and schedules.

.3 Schedule for preventive maintenance in a printed format and electronic format compatible with Owner’s system.

.4 Recommended frequency of performance for each preventive maintenance task, cleaning, inspection and scheduled overhauls or reconditioning.

.5 Cleaning: Instructions and schedules for all routine cleaning and inspection recommended, including recommended cleaners and lubricants.

.6 Inspection: Periodic inspection of equipment required for operation, cleaning or other reasons, with items to be inspected indicated and inspection criteria given for motors, controls, filters, and any other maintenance items.

.7 Instructions for minor repairs or adjustments required for preventive maintenance routines.

.8 Listing of any special tools required to service or maintain the equipment.

.10 Last Tab: Miscellaneous Items:

.1 Health and Safety submittals including: site specific hazard assessment, safety manual TOC and company safety policy, MSDS sheets (if applicable) signed site orientations for worker, copy of first aid certificate, copy of emergency plan and muster location.

.2 Special requirements for equipment, not to be used for reports.

1.5 AS-BUILT DOCUMENTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at site for Owner Representative, one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store as-built documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label as-built documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.

.4 Maintain as-built documents in clean, dry and legible condition.

.1 Do not use as-built documents for construction purposes.

.5 Keep as-built documents and samples available for inspection by Owner Representative.

.6 Record as-built information on drawings and in designated copy of Project Manual provided by Owner Representative.

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

.8 Maintain information during construction on project site drawings and accurately record deviations of newly installed or existing works from Contract documents.

.9 Use red felt tip marking pens for recording information.

.10 Mark on one set of prints and at completion of project and prior to final inspection; neatly transfer notations to second set.

.11 Ensure but do not limit recording of following information on as-built drawings:

.1 Locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

.2 Changes made by Change Order.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Details not on original Contract Drawings.

.6 References to related shop drawings and modifications.

.12 Incorporate as-built information into drawings.

.13 Submit as-built drawings to Owner Representative.

.1 Provide in electronic form in PDF format, on CD or DVD.

.14 Specifications: Mark each item to record actual construction, including:

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

.2 Changes made by Addenda and change orders.

1.6 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.

1.7 MAINTENANCE MATERIALS

.1 Spare Parts:

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

.2 Extra Stock 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 site; place and store.
- .4 Receive and catalogue items.
  - .1 Submit inventory listing to Owner Representative.
  - .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

.3 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 site; place and store.
- .4 Receive and catalogue items.
  - .1 Submit inventory listing to Owner Representative.
  - .2 Include approved listings in Maintenance Manual.

1.8 DELIVERY, STORAGE, AND HANDLING

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

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

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

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Owner Representative.

1.9 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Owner Representative approval.

.3 Warranty management plan to include required actions and documents to assure that Owner Representative receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Owner Representative for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

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

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

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

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

.5 Co-execute submittals when required.

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

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

.8 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by Owner Representative.

.9 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.3 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.

.4 Procedure and status of tagging of equipment covered by extended warranties.

.5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.10 Respond in timely manner to oral or written notification of required construction warranty repair work.

.11 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Owner Representative to proceed with action against Contractor.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

1.2 SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit 20 days prior to start of demolition and removals Work.

.3 Where required, submissions to be signed and sealed by a Professional Engineer licensed in the Province of Saskatchewan.

.4 Shop Drawings:

.1 Drawings, diagrams or details indicating sequence of disassembly Work, supporting structures, and underpinning.

.5 Hazardous Materials: provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.

.6 Demolition plan:

.1 Show schedule of selective demolition.

.2 Number and location of dumpsters.

.3 Anticipated frequency of tippage.

.4 Show impacts, interruptions, and delays to building operations.

.7 Waste reduction: Submit progress reports and audits in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.3 QUALITY ASSURANCE

.1 Convene pre-installation meeting one week prior to beginning work of this section to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with building sub-trades.

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

.3 Hold project meetings every month.

.1 Ensure key personnel, site supervisor, project manager, subcontractor representatives attend.

1.4 DELIVERY, STORAGE AND HANDLING

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

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

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

1.5 SITE CONDITIONS

.1 Perform operations, machine and equipment movements, deliveries and removals at time or times that will permit uninterrupted operations in and around structures, including parking, deliveries, and Site access and egress.

.2 Take over structures to be demolished based on condition on date that Bids close.

.3 In all circumstances, ensure that demolition work does not adversely affect adjacent water courses groundwater and wildlife, nor contribute to excess air and noise pollution.

.4 Do not dispose, of waste or volatile materials such as mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.

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

.6 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

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

Part 2 Products

Not used.

Part 3 Execution

3.1 GENERAL

.1 Products requiring demolition become Contractor's property. Remove Products from Site daily, unless such Products are otherwise specified or indicated on Contract Drawings to be reused or handed over to Owner Representative.

.2 Stockpiling of rubble, debris and surplus Products on Site will not be permitted.

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

3.2 EXAMINATION

.1 Examine adjacent structures and other installations prior to commencement of demolition and removals Work.

3.3 PREPARATION

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

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

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

.4 Disconnect electrical and telephone service lines in areas to be demolished. Post warning signs on electrical lines and equipment that remain energized to serve other areas during period of demolition. Disconnect electrical and telephone service lines in demolition areas to requirements of local authority having jurisdiction.

.5 Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction. Natural gas supply lines are to be removed by gas company or by qualified trade, in accordance with gas company instructions.

.6 Erect and maintain dustproof partitions, seal off ducts as required to prevent spread of dust and fumes to other parts of the building. On completion, remove partitions and make good surfaces to match adjacent surfaces.

3.4 EXISTING CONDITIONS

.1 Prior to start of demolition work, remove from site materials defined as contaminated or hazardous by authorities having jurisdiction, and dispose at designated disposal facilities.

3.5 PROTECTION

.1 Prevent movement of or damage to adjacent structures, services and parts of existing structure to remain. Supply and install bracing and shoring as required. Make good damage caused by demolition, to acceptance of Owner Representative.

.2 Protect adjacent structures and property against damage that might occur from falling debris or other causes. Repair or replace damage caused from Work of this Section to acceptance of Owner Representative.

.3 Do not interfere with use of adjacent structures and Work areas. Maintain free, safe passage to and from adjacent structures and Work areas.

.4 Take precautions to support affected structures. If safety of structure being demolished, adjacent structures or services are endangered, cease demolition operations and take necessary action to support endangered item. Immediately inform Owner Representative. Do not resume demolition until reasons for endangering have been determined and corrected and action taken to prevent further endangering.

.5 If movement or settlement occurs, install additional bracing and shoring as necessary and make good any damage to acceptance of Owner Representative.

.6 Prevent debris from blocking surface drainage system, mechanical and electrical systems which are required to remain in operation.

.7 Pay attention to prevention of fire and elimination of fire hazards that would endanger Work or adjacent structures and premises.

.8 Close off access to areas where demolition is proceeding by barricades and post warning signs.

.9 Where required, supply, install and maintain barricades, guards, railings, lights, warning signs, security and other safety measures, and fully protect persons and property.

.10 Do not proceed with demolition work when weather conditions constitute a hazard to workers and site.

.11 Dust/Weather Protection:

.1 Prior to demolition Work proceeding in existing structures, temporarily enclose Work areas, access and supply and install dustproof partitions. Design partitions to prevent dust and dirt infiltration into adjoining areas.

.2 Prevent dust, dirt and material caused by demolition operations from entering operational areas.

.3 Adjust and relocate partitions as required for various operations of Work.

.4 Upon completion of Work, remove and dispose of partitions from Site.

3.6 DEMOLITION

.1 Carry out demolition in accordance with the requirements of CSA S350.

.2 Perform demolition with extreme care. Confine effects of demolition to those parts that are to be demolished.

.3 Perform Work and prevent inconvenience to persons outside the demolition area.

.4 Demolish parts of structure to permit construction of addition as indicated.

.5 Perform Work to minimize dusting.

.6 Do not sell or burn materials on Site.

.7 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as Work progresses.

.8 Sprinkle exterior debris with water to prevent dust. Do not cause flooding, contaminated runoff or icing. Do not allow waste material, rubbish, and windblown debris to reach and contaminate adjacent properties.

.9 Lower waste materials in a controlled manner; do not drop or throw materials from heights.

.10 At end of day's Work, leave Work in safe condition with no part in danger of toppling or falling.

.11 Drainage and Sewer System Protection:

.1 Ensure that no dust, debris, nor slurry enters drainage and sewer system on Site.

.2 Remove and dispose of debris and slurry promptly from Site.

3.7 REMOVAL OPERATIONS

.1 Except where otherwise specified, all materials indicated or specified to be permanently removed from the Place of the Work shall become Contractor's property. Maximize salvage and recycling of such materials, consistent with proper economy and expeditious performance of the Work.

.2 Remove items as indicated.

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

.4 Removal from site: Interim removal of stockpiled material will be required by Owner Representative, if material is deemed to interfere with operations.

3.8 RESTORATION

.1 Restore areas and existing works outside areas of demolition to match conditions of adjacent, undisturbed areas.

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

3.9 CLEAN UP

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

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

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International

.1 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

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

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction and amendment.

.3 Canadian Standards Association (CSA)

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

.2 CSA O112.9-10 (R2014), Evaluation of Adhesives for Structural Wood Products (Exterior Exposure).

.3 CSA O121-08 (R2013), Douglas Fir Plywood.

.4 CSA O141-05 (R2014), Softwood Lumber.

.5 CSA O151-09 (R2014), Canadian Softwood Plywood.

.6 CSA O325-07 (R2012), Construction Sheathing.

.4 National Lumber Grades Authority (NLGA)

.1 NLGA Standard Grading Rules for Canadian Lumber (2014 edition).

.5 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC S102-10, Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.2 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for wood products and accessories. Include product characteristics, performance criteria, physical size, finish and limitations.

1.3 QUALITY ASSURANCE

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

.2 Plywood, particleboard, OSB, and wood based composite panels in accordance with CSA and ANSI standards.

1.4 DELIVERY, STORAGE, AND HANDLING

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

.2 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 wood from [nicks, scratches, and blemishes].

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 FRAMING STRUCTURAL AND PANEL MATERIALS

.1 Lumber: Softwood, S4S, moisture content 19% (S-dry) or less in accordance with following standards:

.1 CSA O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:

.1 Use S2S or S4S materials.

.2 Board sizes: "Standard" or better grade.

.3 Dimension sizes: "Standard" light framing or better grade.

.4 Post and timbers sizes: "Standard" or better grade.

.3 Plywood, OSB and wood based composite panels: CSA O325.

.4 Douglas fir plywood (DFP): CSA O121, standard construction.

.1 Roof sheathing: Grade C or better.

.5 Canadian softwood plywood (CSP): CSA O151, standard construction.

.1 Roof sheathing: Grade C or better.

.6 Treated wood products: To CSA O80 Series.

.7 Fire retardant treated wood: To CAN/ULC S102.

.1 Flame spread: Maximum 25.

.2 Smoke developed: Maximum 25.

2.2 ACCESSORIES

.1 General purpose adhesive: CSA O112.9.

.2 Nails, spikes and staples: CSA B111.

.3 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

.4 Proprietary fasteners: Toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.

.5 Joist hangers: Minimum 1 mm thick sheet steel, galvanized ZF001 coating designation.

.6 Fasteners: Hot dipped galvanized steel to ASTM A123/A123M or ASTM A653/A653M for high humidity and treated wood locations, unfinished steel elsewhere.

.7 Panel edge clips (“H clips”): Galvanized steel, sized to plywood sheathing.

Part 3 Execution

3.1 EXAMINATION

.1 Verify conditions of substrates are acceptable for product installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate.

.2 Inform Owner Representative of unacceptable conditions.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 FRAMING

.1 Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

.2 Install members true to line, levels and elevations, square and plumb.

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

.4 Construct framing members full length without splices.

.5 Install spanning members with "crown-edge" up.

.6 Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists. Frame rigidly into joists.

.7 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.

.8 Frame, anchor, fasten, tie, and brace members to provide necessary strength and rigidity.

.9 Countersink bolts where necessary to provide clearance for other work.

3.3 FURRING AND BLOCKING

.1 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, audio-visual equipment mounting, electrical

equipment mounting boards, architectural hardware, bathroom accessories, fire extinguisher brackets, and other work as required.

.2 Install rough bucks, nailers, and linings to rough openings as required to provide backing for frames and other work.

.3 Install wood cants, fascia backing, nailers, curbs, and other wood supports as required and secure using galvanized steel fasteners.

.4 Install sleepers as indicated.

3.4 ROOF SHEATHING

.1 Confirm roof substrate is level before installation of plywood sheathing. Shim as necessary to provide a level nailing surface.

.2 Install panels with surface grain perpendicular to roof framing. Stagger end joints.

.3 Install H-clips on unsupported edges of plywood sheathing, one clip spaced evenly between roof joists.

.4 Attach plywood sheathing using wood screws, or ring-type or ardox nails.

.1 Space fasteners at maximum 150 mm (6 inches) on center at supported sheathing ends and edges.

.2 Space fasteners at maximum 300 mm (12 inches) on center at intermediate supports.

.5 Install panels with 3 mm (1/8 inch) space between panel ends and edge joints.

3.5 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 11 - Cleaning.

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

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

.4 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International

.1 ASTM C167-09, Standard Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.

.2 ASTM C518-10, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

.3 ASTM C665-12, Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.4 ASTM D1621-10, Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

.2 Canadian Standards Association (CSA)

.1 CSA B149.1-10, Natural Gas and Propane Installation Code.

.2 CSA B149.2-10 (R2015), Propane Storage and Handling Code.

.3 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC S102-07, Test for Surface Burning Characteristics of Building Materials and Assemblies.

.2 CAN/ULC S114-05, Test for Determination of Non-Combustibility in Building Materials.

.3 CAN/ULC S129-06, Standard Method of Test for Smoulder Resistance of Insulation (Basket Method).

.4 CAN/ULC S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings.

.5 CAN/ULC S702-09, Standard for Thermal Insulation, Mineral Fibre, for Buildings.

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

.1 Material Safety Data Sheets (MSDS).

1.2 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications, and data sheets.

.3 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver materials in manufacturer's original containers clearly labeled with manufacturer's name, product identification, safety information, net weight of contents and expiration date.

.2 Store material in a safe manner and where the temperatures are within range specified by manufacturer.

.3 Remove empty containers from site on a daily basis.

.4 Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

1.5 PROJECT CONDITIONS

.1 Maintain environmental conditions of temperature, humidity, and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

.2 Ventilate area to receive insulation to maintain safe working conditions.

.3 Protect workers as recommended by standards and manufacturer's recommendations.

Part 2 Products

2.1 BOARD INSULATION

.1 Extruded polystyrene (XPS): To CAN/ULC S701, closed cell rigid board with drainage channels.

.1 Compressive strength to ASTM D1621: Minimum 170 kPa (25 psi).

.2 Thermal resistance to ASTM C518: RSI 0.88/25 mm (R5 per inch).

.3 Thickness: As indicated on Drawings.

.4 Edges: Shiplap or tongue-and-groove.

2.2 BATT INSULATION

.1 Batt insulation – mineral wool: To CAN/ULC S702, Type 1; semi-rigid mineral wool batt insulation.

.1 CAN/ULC S114: Non-combustible.

.2 Surface burning characteristics (CAN/ULC S102):

.1 Flame spread: 0.

.2 Smoke developed: 0.

.3 Density (ASTM C167): 32 kg/m^3.

.4 Thermal resistance (ASTM C518):
  .1 R14 at 89 mm (3-1/2 inches) thickness.
  .2 R24 at 140 mm (5-1/2 inches) thickness.
.5 Smoulder resistance (CAN/ULC S129): 0.09%.
.6 Corrosive resistance (ASTM C665): Pass.

2.3 ACCESSORIES

.1 Insulation fasteners: Screw and plate style.
  .1 Screws: Case-hardened steel, #14 gauge, length sufficient to penetrate substrate 25 mm (1 inch).
  .2 Plates: Polypropylene or galvanized steel, minimum 44 mm diameter, low profile.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 GENERAL

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from CSA B149.1 and CSA B149.2 type B and L vents.

.5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.6 Offset vertical and horizontal joints in multiple layer applications.

.7 Do not enclose insulation until it has been reviewed by Owner Representative.

3.3 EXAMINATION

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

.2 Verify substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

.3 Verify acoustic and firestop sealants required at stud framing junctions with adjacent building components or at mechanical and electrical conduit and duct penetrations are installed.

.4 Confirm mechanical, electrical, and telecommunications service lines in walls and ceilings to be insulated have been inspected.

3.4 BOARD INSULATION INSTALLATION

.1 Install rigid insulation boards with screw-and-plate fasteners, 8 per 1200 x 2400 mm board minimum. Fit boards tightly at edges.

3.5 BATT INSULATION INSTALLATION

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.3 Do not compress insulation excessively to fit voids.

3.6 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International

.1 ASTM D882-10, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

.2 ASTM D1970/D1970M-13, Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.

.3 ASTM E84-12C, Standard Test Method for Surface Burning Characteristics of Building Materials.

.4 ASTM E96/E96M-05, Water Vapor Transmission of Materials.

.5 ASTM E2178-13, Standard Test Method for Air Permeance of Building Materials.

.6 ASTM E2357-11, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.2 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet. Include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit WHMIS Material Safety Data Sheets.

.3 Quality Assurance Submittals:

.1 Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

.4 Mock-Up:

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

.2 Construct typical dormer, incorporating window frame and sill, insulation, junction with roof system; illustrating materials interface and seals.

.3 Locate where directed.

.4 Mock-up may remain as part of finished work.

.5 Allow for review of mock-up by Owner Representative before proceeding with air barrier Work.

1.3 DELIVERY, STORAGE, AND HANDLING

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

.2 Clean spills and leave area as it was prior to spill.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

1.5 AMBIENT CONDITIONS

.1 Install solvent curing sealants and vapour release adhesive materials in open spaces with ventilation.

.2 Maintain temperature and humidity recommended by material manufacturers before, during, and after installation.

1.6 SEQUENCING

.1 Sequence work to permit installation of materials in conjunction with related materials and seals.

Part 2 Products

2.1 GENERAL

.1 Provide air/vapour barrier system components from one manufacturer.

2.2 SHEET MATERIALS

.1 Air Barrier: Self-adhered, vapour permeable, water-resistive air barrier membrane, consisting of reinforced, modified polyolefin laminate film surface and permeable adhesive with split-back poly-release film; with typical physical properties:

- .1 Water Vapour Permeance (ASTM E96): 29 perms.
- .2 Air Leakage of Air Barrier Assemblies (ASTM E2357): Pass.
- .3 Air Permeance (ASTM E2178): Pass.
- .4 Nail Sealability (ASTM D1970): Pass.
- .5 Dry Tensile Strength (ASTM D882):
  - .1 182 N (41 lbf) MD
  - .2 129 N (29 lbf) CD
- .6 Surface Burning Characteristics (ASTM E84):
  - .1 Flame Spread: Class A.
  - .2 Smoke Development: Class A.
- .7 Low Application Temperature: -7°C.

2.3 PRIMER

.1 Primer: As recommended by weather barrier manufacturer and appropriate to application conditions.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION

.1 Verify surfaces and conditions are ready to accept work of this section.

.2 Ensure surfaces are clean, dry, sound, smooth, continuous, and in compliance with air barrier manufacturer's requirements.

.3 Report unsatisfactory conditions to Owner Representative.

.4 Do not start work until deficiencies have been corrected.

.1 Beginning of Work implies acceptance of conditions.

3.3 PREPARATION

.1 Remove loose or foreign matter that might impair adhesion of materials.

.2 Ensure substrates are clean of oil or excess dust; open joints filled; and concrete surfaces free of large voids, spalled areas, or sharp protrusions.

.3 Ensure substrates are free of surface moisture prior to application of self-adhesive membrane and primer.

.4 Ensure metal closures are free of sharp edges and burrs.

.5 Prime substrate surfaces in accordance with manufacturer's instructions.

3.4 INSTALLATION

.1 Install materials in accordance with manufacturer's instructions.

.2 Install air barrier in continuous fashion without gaps.

.3 Lap seams and edges minimum 50 mm.

.4 Position lap seal over firm bearing.

.5 Incorporate allowance for deflection of structure below roof beam locations.

.6 At inside and outside corners, provide extra layer of membrane extending 200 mm each side of corner.

.7 Apply pressure with roller over entire surface of installed membrane to ensure adhesion.

.8 Apply sealant within recommended application temperature ranges.

.1 Consult manufacturer when sealant cannot be applied within these temperature ranges.

.9 Apply insulation as soon as possible after air/vapour barrier is installed. Do not leave applied air/vapour barrier exposed for longer than 72 hours.

3.5 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

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

3.6 PROTECTION OF WORK

.1 Do not permit adjacent work to damage work of this section.

.2 Ensure finished work is protected from climatic conditions.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International

.1 ASTM D412-06ae2, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.

.2 ASTM D1970/D1970M-14, Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.

.3 ASTM D3161/D3161M-12, Standard Test Method for Wind Resistance of Asphalt Shingles (Fan-Induced Method).

.4 ASTM D3462-03, Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.

.5 ASTM D7158/D7158M-11, Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method).

.6 ASTM E96/E96M-13, Standard Test Methods for Water Vapor Transmission of Materials.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-37.4-M89, Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing.

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

.3 Canadian Roofing Contractors' Association (CRCA)

.1 CRCA Roofing Specification Manual – Current Edition.

.4 Canadian Standards Association (CSA)

.1 CSA A123.1-05/A123.5-05, Asphalt Shingles Made from Organic Felt and Surfaced with Mineral Granules/Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.

.2 CSA-A123.3-05, Asphalt Saturated Organic Roofing Felt.

.3 CAN3-A123.51-M85, Asphalt Shingle Application on Roof Slopes 1:3 and Steeper.

.4 CAN3-A123.52-M85, Asphalt Shingle Application on Roof Slopes 1:6 to less than 1:3.

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

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

.1 Material Safety Data Sheets (MSDS).

1.2 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Manufacturer's Instructions: Indicate special handling criteria, installation sequence, cleaning procedures and all other special instructions as may be required.

.3 Submit product data sheets for asphalt shingles. Include:

.1 Product characteristics.
.2 Performance criteria.
.3 Installation instructions.
.4 Warranty limitations.
.5 Colour and finish.

.4 Samples:

.1 Submit duplicate samples of full sized specified asphalt shingle material, of colour and type specified.

1.3 QUALITY ASSURANCE

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

.1 Provide 3000 x 3000 mm mock-up to illustrate component application.
.2 Mock-up will be used:
.1 To judge workmanship, substrate preparation, operation of equipment and material application.
.3 Locate where indicated.
.4 Allow 24 hours for review of mock-up before proceeding with work.
.5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Accepted mock-up may remain as part of finished Work.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle, store, and protect materials in accordance with manufacturer’s recommendations.

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

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

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate facilities.

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

.3 Fold up metal banding, flatten, and place in designated area for recycling.

1.6 EXTRA MATERIAL

.1 Provide 2 bundles of matching shingles for maintenance use.

.2 All unused shingles remain property of Owner.

Part 2 Products

2.1 MATERIALS

.1 Asphalt dimensional shingles: To CSA A123.5.

.1 Type: Self-seal, pattern rectangular.
.2 Reinforcement: Fibreglass felt core.
.3 Wind resistance:
.1 ASTM D3161: Class F.
.2 ASTM D7158: Class H.
.4 Acceptable product: IKO Cambridge Architectural Shingles.
.1 Colour: Riviera Red.

.2 Roofing underlayment: To ASTM D1970, Self-adhesive, modified asphalt fibreglass-reinforced membrane; sand surfaced. Typical properties:

.1 Thickness: 1.4 mm (57 mils).
.2 Tear strength: 89 N (20 lbf).
.3 Elongation at break: Minimum 10%.
.4 Water vapour permeance (ASTM E96): ≤ 5.7 ng/Pa·s·m^2 (< 0.1 perms).

.4 Roof ridge vent: CSA certified plastic Type C ridge vent, high grade polypropylene with UV inhibitor additives; with internal baffles and drainage openings to deflect and direct water infiltration; insect grill; engineered to resist denting, peeling, extreme heat, and cold impact to -38°C.

.1 Net free vent area: 380 cm^2/linear metre (18 sq inches/linear foot).

.5 Asphaltic Cement:

.1 Plastic cement: To CAN/CGSB-37.5.
.2 Lap cement: To CAN/CGSB-37.4.

.6 Nails: To CSA B111, hot-dipped galvanized steel, sufficient length to penetrate 19 mm into deck.

.7 Plumbing Stack Flashing: Neoprene.

Part 3 Execution

3.1 APPLICATION

.1 Perform asphalt shingle work in accordance with CAN3-A123.51, CAN3-A123.52, CRCA Specification except where specified otherwise.

.2 When temperatures are too low to prevent self-tabbing, manually apply manufacturer-approved cement to ensure tabbing of shingles.

.3 Install drip edge along eaves, overhanging 12 mm, with minimum 50 mm flange extending onto roof decking. Nail to deck at 400 mm on centre.

.4 Install self-adhesive membrane eave and edge protector membrane along eaves, roof hips, peaks, edges and valleys. Provide minimum 100 mm lap at all joints and transitions. Refer to Drawings.

.5 Install roof underlayment in accordance with manufacturer specifications and in accordance with NBC (latest) requirements throughout roof system, including fastening requirements and overlaps.

.6 Apply shingles with six nail fasteners per shingle. Apply asphaltic cement along shingles where specified by manufacturer to comply with 110 mph warranty.

.7 Install asphalt shingles on roof slopes 1:3 and steeper in accordance with CAN3-A123.51.

.8 Install asphalt shingles on roof slopes 1:6 to less than 1:3 in accordance with CAN3-A123.52.

3.2 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 11 – Cleaning.

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

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

3.3 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by asphalt shingle installation.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society of Mechanical Engineers (ASME)

.1 ASME B18.6.3-2013, Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series).

.2 ASTM International

.1 ASTM C920-11, Standard Specification for Elastomeric Joint Sealants.

.2 ASTM D523-14, Standard Test Method for Specular Gloss.

.3 ASTM D822/D822M-13, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 93.2-M91, Prefinished Aluminum Siding, Soffits and Fascia, for Residential Use.

.2 CAN/CGSB 93.5—92, Installation of Metal Residential Siding, Soffits, and Fascia.

.4 Canadian Standards Association (CSA)

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

1.2 SUBMITTALS

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

.2 Product Data: Submit manufacturer's instructions, printed product literature, and data sheets for metal siding; include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings: Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascia, and related work.

.4 Samples: Submit duplicate 300 x 300 mm samples of siding material, of colour and profile specified.

1.3 DELIVERY, STORAGE, AND HANDLING

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

.2 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 metal siding from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 ALUMINUM SIDING

.1 Strip siding: to CGSB 93.2, aluminum.

.1 Thickness: Minimum 0.40 mm base metal thickness.

.2 Profile: D4 horizontal, with pre-formed interlocking joints, and pre-punched fastener holes.

.3 Pre-finish aluminum materials with factory applied silicone modified polyester.

.1 Specular gloss: 30 units +/- 5 in accordance with ASTM D523.

.2 Coating thickness: Minimum 25 micrometres.

.3 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 1000 hours.

.2 Humidity resistance exposure period 1000 hours.

.4 Colour: As selected by Owner Representative from manufacturer's standard range.

2.2 FASTENERS

.1 Nails: CSA B111.

.2 Screws: ASME B18.6.3. Purpose made aluminum alloy.

2.3 AIR BARRIER

.1 Refer to Section 07 27 00 – Air Barriers.

2.4 CAULKING

.1 Sealants: Elastomeric polyurethane polymer sealant to ASTM C920, Class 35, Type S, Grade NS, as required for watertight installation.

2.5 ACCESSORIES

.1 Exposed trim: Inside corners, outside corners, cap strip, drip cap, undersill trim, starter strip and window/door trim of same material, colour, and gloss as cladding, with fastener holes pre-punched.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that conditions of substrate are acceptable in accordance with manufacturer's written instructions.

.1 Visually inspect substrate.

.2 Inform Owner Representative of unacceptable conditions.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 MANUFACTURER'S INSTRUCTIONS

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

3.3 INSTALLATION

.1 Install air barrier, refer to Section 07 27 00 – Air Barriers.

.2 Install cladding in accordance with CGSB 93.5, and manufacturer's written instructions.

.3 Install continuous starter strips, corners, edgings, drip, cap, sill and window/door opening flashings as required.

.4 Install outside corners, fillers, and closure strips with carefully formed and profiled work.

.5 Maintain joints in exterior cladding, true to line, with tight fitting, hairline joints.

.6 Attach components in manner not restricting thermal movement.

.7 Caulk junctions with adjoining work with sealant. Perform work in accordance with Section 07 92 00 - Joint Sealants.

3.4 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 11 - Cleaning.

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

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

.4 Waste Management: Remove waste material in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by preformed metal siding installation.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 ASTM International

.1 ASTM D523-14, Standard Test Method for Specular Gloss.

.2 ASTM D822/D822M-13, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.2 Canadian General Standards Board (CGSB)

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

.3 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual, current edition.

.4 Canadian Standards Association (CSA)

.1 CSA A123.3-05 (R2010), Asphalt Saturated Organic Roofing Felt.

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

.3 CSA HA Series-M1980, Standards for Aluminum and Aluminum Alloys.

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

.1 Material Safety Data Sheets (MSDS).

1.2 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature for sheet metal flashing materials, specifications, and datasheets; include product characteristics, performance criteria, physical size, finishes, and limitations.

.3 Samples:

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

1.3 DELIVERY, STORAGE, AND HANDLING

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

.2 Waste Management and Disposal: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 SHEET METAL MATERIALS

.1 Aluminum sheet: Utility quality to CSA HA Series.

.1 Pre-finish sheet metal with factory applied silicone modified polyester.
  .1 Specular gloss: 30 units +/- 5 in accordance with ASTM D523.
  .2 Coating thickness: Minimum 25 micrometres.
  .3 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 1000 hours.
    .2 Humidity resistance exposure period 1000 hours.
  .4 Colours: As selected by Owner Representative from manufacturer's standard range.

2.2 FABRICATION

.1 Soffit: to CGSB 93.2.
  .1 Thickness: Minimum 0.38 mm (0.015 inch) base metal thickness.
  .2 Profile: Flat sheet, “V” crimped for stiffness, pre-perforated.

.2 Fascia facings, and exposed trim: to CGSB 93.2.
  .1 Thickness: Minimum 0.44 mm (0.017 inch) base metal thickness.
  .2 Profile: Flat sheet, ”V” crimped for stiffness, preformed.

.3 Eavestroughs, downspouts, cap flashing:
  .1 Thickness: Minimum 0.81 mm (0.032 inch) base metal thickness.

.4 Roof edge strips:
  .1 Thickness: Minimum 1.27 mm (0.050 inch) base metal thickness.

2.3 ACCESSORIES

.1 Isolation coating: Alkali resistant bituminous paint.

.2 Plastic cement: to CAN/CGSB 37.5.

.3 Underlay for metal flashing: No. 15 perforated asphalt felt to CSA A123.3.

.4 Sealants: Refer also to Section 07 92 00.
  .1 Sealing Tape: Polyisobutylene compound sealing tape with 100% solids and pressure sensitive release-paper backing. Provide non-toxic, non-staining permanent elastic tape.
  .2 Elastomeric Sealant: Elastomeric polyurethane polymer sealant to ASTM C920, as required for watertight installation.
  .3 Butyl Sealant: Single-component, solvent-release butyl rubber sealant to ASTM C1311, for use in joints with limited movement.
  .4 Epoxy Seam Sealer: Aluminum seam-cementing compound, 2-part, non-corrosive, as recommended by manufacturer for exterior non-moving joints.
  .5 Bituminous Coating: Cold-applied asphalt mastic, compounded for 0.4 mm (15-mil) dry film thickness per coat.

.5 Cap flashing attachment clips: Galvanized sheet steel, minimum 22 gauge.

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

.7 Eavestrough hangers: Purpose-made for attachment of K-style gutters, aluminum, 1.5 mm (0.060 inch) minimum thickness, screw attachment, channeled or ribbed body.

.8 Fasteners: Same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.

.9 Washers: Same material as sheet metal, 1 mm thick with rubber packings.

.10 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.

.6 Form flashings and copings to profiles indicated, from prefinished aluminum sheet.

.7 Form eavestroughs and downspouts from prefinished aluminum sheet metal.

.1 Eavestroughs: K-style, 152 mm (6 inches) width.

.2 Downspouts: Rectangular, 100 x 125 mm (4 x 5 inches), corrugated.

.3 Provide goosenecks, outlets, strainer baskets, and necessary fastenings.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that conditions of substrate are acceptable in accordance with manufacturer's written instructions.

.1 Visually inspect substrate.

.2 Inform Owner Representative of unacceptable conditions.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Install sheet metal work in accordance with CRCA Roofing Specifications Manual.

.2 Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

.3 Fit flashings tightly in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

.4 Lock end joints and caulk with sealant.

3.3 EAVESTROUGHS AND DOWNSPOUTS

.1 Install eavestroughs and secure to building at 450 mm on centre with purpose-made eavestrough hangers.

.1 Slope eavestroughs to downspouts as indicated.

.2 Seal joints watertight.

.2 Install downspouts and provide goosenecks back to wall.

.1 Secure downspouts to wall with straps at 1800 mm on centre; minimum two straps per downspout.

3.4 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

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

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

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Architectural Aluminum Manufacturers Association (AAMA)

.1 AAMA 812-04 (2012), Voluntary Practice for Assessment of Single Component Aerosol Expanding Polyurethane Foams for Sealing Rough Openings of Fenestration Installations.

.2 ASTM International

.1 ASTM C719-14, Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement (Hockman Cycle).

.2 ASTM C834-05, Standard Specification for Latex Sealants.

.3 ASTM C919-12, Standard Practice for Use of Sealants in Acoustical Applications.

.4 ASTM C920-05, Standard Specification for Elastomeric Joint Sealants.

.5 ASTM C1016-14, Determination of Water Absorption of Sealant Backing (Joint Filler) Material.

.6 ASTM C1193-13, Standard Guide for Use of Sealants.

.7 ASTM C1311-02, Standard Specification for Solvent Release Sealants.

.8 ASTM C1330-02 (2013), Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.

.9 ASTM D1623-09, Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.

.10 ASTM D5249-10(2016), Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints.

.11 ASTM E814-13a, Standard Test Method for Fire Tests of Penetration Firestop Systems.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.

.2 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.

.3 CAN/CGSB 19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.

.4 CAN/CGSB 19.21-M87, Sealing and Bedding Compound, Acoustical.

.5 CAN/CGSB 19.24-M90, Multi-component, Chemical Curing Sealing Compound.

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

.1 Material Safety Data Sheets (MSDS).

1.2 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants. Include product characteristics, performance criteria, physical size, finish and limitations.

.2 Manufacturer's product to describe:

.1 Caulking compound.

.2 Primers.

.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit WHMIS MSDS for Products used in project.

.3 Manufacturer's Instructions:

.1 Submit instructions to include installation instructions for each product used.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit operation and maintenance data for incorporation into manual.

1.4 QUALITY ASSURANCE

.1 Compatibility: Verify sealants used are compatible with their respective joint substrates.

.2 Provide sealants with appropriate expansion and contraction properties for the joints being sealed.

.3 Perform sealant application work to ASTM C1193.

.4 Perform acoustic sealant application work to ASTM C919.

1.5 DELIVERY, STORAGE, AND HANDLING

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

.2 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

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

.2 Replace defective or damaged materials with new.

1.6 SITE CONDITIONS

.1 Ambient Conditions:

.1 Proceed with installation of joint sealants only when:

.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4°C.

.2 Joint substrates are dry.

.3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Joint-Width Conditions:

.1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.

.2 Ventilate area of work as directed by Owner Representative by use of approved portable supply and exhaust fans.

Part 2 Products

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas that off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.3 Where sealants are qualified with primers, use only these primers.

.4 Air/vapour barrier sealant and adhesive: To ASTM C920, Type S, Grade NS, Class 35, single component, low odour, moisture cure, medium modulus, low VOC.

.1 Adhesion to ASTM C719: ± 35%.

.2 Ultimate Elongation: 450 - 550%.

.3 Modulus, 100%: 275 - 345 kPa.

.4 Shore A Hardness: 25 ± 5.

.5 Tensile Strength: 1034 – 1378 kPa.

.6 Maximum VOC: 5 g/L.

.5 Polyurethane Sealant: To CAN/CGSB 19.24, Type 2, Class B; and ASTM C920, Type M, Grade NS, Use NT, M, A and O; non-sag, multi component, chemical curing.

.1 Typical uses: Control joints in concrete floors (when no hard finish is specified), exterior joints, expansion joints, panel walls, perimeter windows.

.6 Elastomeric Polyurethane Sealant: To CAN/CGSB 19.13, Type 2; and ASTM C920, Type S, Grade NS, Use NT, M, A and O; non-sag, single component, moisture curing hybrid polyurethane.

.1 Typical uses: Expansion and control joints, perimeter caulking of windows and doors, curtain wall joints.

.7 Spray foam sealant: Spray applied polyurethane, closed cell, low pressure build foam, complying with AAMA 812.

.8 Latex Sealant: To CAN/CGSB 19.17; and ASTM C834; single component, acrylic latex or siliconized acrylic latex.

.1 Typical uses: General purpose, acoustic sealing, back bedding glazing compound, window frame perimeters.

.9 Acoustic Sealant: To CAN/CGSB 19.21 and ASTM C919, acoustic grade, single component, non-hardening, non-skinning.

.1 Typical uses: Acoustic sealing of gypsum wall board partitions, sealing of interior polyethylene air/vapour barrier.

.10 Acoustic and Smoke Sealant: To CAN/CGSB 19.21 and ASTM C919, acoustic grade, single component, non-hardening, non-skinning.

.1 Typical use: Acoustic and smoke sealing of gypsum wall board partitions.

.11 Fire-Resistive Sealant: To ASTM E814, one part fire-stopping sealant.

.1 Typical uses: Penetrations in fire-rated floor and wall assemblies.
.2 Refer to Section 07 84 00 – Firestopping.

.12 Silicone, one part: To CAN/CGSB 19.13; and ASTM C920, Type S, Grade NS; mildew resistant, single component, colour white unless otherwise specified.

.1 Typical uses: Around washroom fixtures, lavatories, janitor sinks, and other wet areas.

.13 Butyl: To CGSB 19-GP-14M and ASTM C1311.

.1 Typical uses: Gutter and flashing sealing, roof vents, metal panel joining, between base plates and slabs, bedding thresholds, secondary glazing seals.

.14 Preformed compressible and non-compressible back-up materials:

.1 Polyethylene foam: Extruded closed cell round foam backer rod, to ASTM C1330 Type C, to ASTM D5249 Type 3.

.1 Compression recovery to ASTM D5249: Minimum 96%.

.2 Tensile strength to ASTM D1623: Minimum 200 kPa.

.3 Water absorption to ASTM C1016 Procedure B: Maximum 0.03 g/cm^3.

.4 Size: oversize 30 to 50%.

.2 Neoprene or butyl rubber:

.1 Round solid rod, Shore A hardness 70.

.3 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.

.4 Bond breaker tape:

.1 Polyethylene bond breaker tape that will not bond to sealant.

.15 Primer: As recommended by sealant manufacturer, where required, for adhesion of sealant to substrate.

2.2 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.

.2 Primer: in accordance with sealant manufacturer's written recommendations.

Part 3 Execution

3.1 EXAMINATION

.1 Verify conditions of substrates are acceptable for joint sealants installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate.

.2 Inform Owner Representative of unacceptable conditions.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter that may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

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

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime joint substrates as recommended by sealant manufacturer immediately prior to caulking.

3.4 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.

3.5 MIXING

.1 Mix materials in accordance with sealant manufacturer's instructions.

3.6 APPLICATION

.1 Sealant:

.1 Mask edges of joint where irregular surface or sensitive joint border exists, to provide neat joint.

.2 Apply sealant in continuous beads.

.3 Apply sealant using gun with proper size nozzle.

.4 Use sufficient pressure to fill voids and joints solid.

.5 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.6 Tool exposed surfaces before skinning begins to give slightly concave shape.

.7 Remove excess compound promptly as work progresses and upon completion.

.2 Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

3.7 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 11 - Cleaning.

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

.2 Clean adjacent surfaces immediately.

.3 Remove excess and droppings, using recommended cleaners as work progresses.

.4 Remove masking tape after initial set of sealant.

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

.3 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

3.8 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 AAMA/WDMA/CSA/101/I.S. 2/A440-08 – NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

.2 AAMA/WDMA/CSA/101/I.S.2/A440S1-09 - Canadian Supplement to North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

.3 CAN/CGSB 12.8-97, Insulating Glass Units.

.4 CAN/CSA A440-00/A440.1-00 (R2005), Windows/User Selection Guide to A440 00.

.5 CSA A440.2-14/A440.3-14 – Fenestration Energy Performance / User Guide to CSA A440.2-14, Energy Performance of Windows and Other Fenestration Systems.

.6 CAN/CSA A440.4-07 - Window, Door, and Skylight Installation.

1.2 PERFORMANCE REQUIREMENTS

.1 Performance Class: LC.

.2 Performance Grade: Minimum 30.

.3 U-Value: Maximum 2.0 $W/m^2 \cdot K$.

.4 Energy Rating: Minimum 35.

.5 Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.

.6 System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

.7 Thermal Movement: Design sections to permit movement caused by thermal expansion and contraction of plastic to suit glass, infill, and perimeter opening construction.

1.3 SUBMITTALS

.1 Section 01 33 00: Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for windows; include product characteristics, performance criteria, physical size, finish and limitations.

.2 Provide component dimensions, anchorage and fasteners, glass, and internal drainage details.

.3 Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work; installation requirements; materials and details for head, jamb and sill, profiles of components, interior and exterior trim, elevations of unit, anchorage details, description of related components, fasteners, and caulking.

.4 Manufacturer's Certificate: Certify that Products meet or exceed specified performance criteria.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit operation and maintenance data for windows, for incorporation into manual.

1.5 QUALITY ASSURANCE

.1 Perform Work in accordance with AAMA/WDMA/CSA-101/I.S.2/A440.

.2 All vinyl windows to be provided by same manufacturer.

1.6 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Transport, handle, store, and protect products.

.2 Protect finished surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

.3 Jig, brace, and box window frame assemblies for transport to minimize flexing of members or joints.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Do not install sealants when ambient temperature is less than 5°C (40°F).

.2 Maintain minimum temperature during installation and curing of sealants.

Part 2 Products

2.1 WINDOWS

.1 Windows: Extruded tubular plastic sections, factory fabricated, vision glass, related flashings, anchorage and attachment devices.

.2 Configuration: Fixed.

2.2 MATERIALS

.1 Materials to CSA A440/A440.1, supplemented as follows:

.1 Main frame and sash: Vinyl, thermally broken, hollow tubular sections of polyvinyl chloride (PVC), UV resistant.

.1 PVC minimum thickness: 2.0 mm.

.2 Colour: White.

2.3 COMPONENTS

.1 Frames: Fabricate with integral nailing flange.

.2 Sills: Wood, sloped for positive wash; fit under sash to project 12 mm (1/2 inch) beyond wall face; one-piece full width of opening.

.3 Stools: Wood, 19 mm (3/4 inch) nominal thickness; fit under sash to project 12 mm (1/2 inch) beyond interior wall face; one-piece full width of opening.

.4 Through-wall flashing tape: Self-adhering bituminous membrane with polyethylene surface.

.5 Fasteners: Stainless steel.

2.4 GLASS AND GLAZING MATERIALS

.1 Double-glazed insulated glazing unit: To CAN/CGSB 12.8, manufacturer's standard to attain specified performance, with Low-E coating on glass surface #2 and argon gas fill.

.1 Glass: Clear.

.2 Provide clear glazing units with muntins.

2.5 SEALANT MATERIALS

.1 Sealant and Backing Materials: Refer to Section 07 92 00.

.1 Perimeter Sealant: Elastomeric polyurethane type.

.2 Rough opening/window frame sealer/insulator: Low-expanding polyurethane foam.

2.6 FABRICATION

.1 Fabricate framing, mullions, and sash members with fusion welded corners and joints, in a rigid jig. Supplement frame sections with internal reinforcement where required for structural rigidity.

.2 Fabricate units square and true with maximum tolerance of plus or minus 2 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Brace frames to maintain squareness and rigidity during shipment and installation.

.4 Form snap-in glass stops, closure moulds, weather stops, and flashings of extruded PVC for tight fit into window frame section.

.5 Form weather stop flange to perimeter of unit.

.6 Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

.7 Arrange fasteners to be concealed from view.

.8 Permit internal drainage weep holes and channels to migrate moisture to exterior. Provide internal drainage of glazing spaces to exterior through weep holes.

.9 Factory glaze window units.

Part 3 Execution

3.1 EXAMINATION

.1 Verify existing conditions before starting work.

.2 Verify wall openings and adjoining air and vapour seal materials are ready to receive work of this Section.

3.2 INSTALLATION

.1 Install window assembly in accordance with CAN/CSA A440.4.

.2 Apply through-wall bituminous flashing tape around perimeter of rough framing, to flashing manufacturer’s directions.

.3 Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

.4 Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

.5 Install shims between windows and building frame at each installation screw location. Shim and fasten windows in accordance with manufacturer’s recommendations and CAN/CSA A440.4.

.6 Provide for thermal movement to take place between windows and adjacent construction.

.7 Attach window frames via nailing flanges into building framing.

.8 Install sills and stools.

.9 Coordinate attachment and seal of perimeter air and vapour barrier materials.

.10 Install glass with silicone glazing compound or glazing tape.

3.3 SEALANTS

.1 Install perimeter sealant and backing materials, in accordance with Section 07 92 00.

.2 Seal joints between windows and window sills with sealant. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.3 Install low expanding polyurethane foam sealant installed at head, jamb and sill of rough window opening, for sealing to building air barrier, vapour retarder, and window frame. Ensure sealant width is adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder.

3.4 CLEANING

.1 Section 01 74 11: Cleaning installed work.

.2 Remove labels as soon as window is installed.

.3 Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Air Movement and Control Association International (AMCA)

.1 AMCA 500-L-12 (Rev. 2015), Laboratory Methods of Testing Louvers for Rating.

.2 ASTM International

.1 ASTM B209-10, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.2 ASTM B221-08, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.3 ASTM D523-89(2008), Standard Test Method for Specular Gloss.

1.2 SUBMITTALS

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

.2 Product Data: Submit manufacturer's printed product literature, specifications and datasheets; include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings: Indicate fabrication and erection details, including anchorage, accessories, and finishes.

.4 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 - Quality Control.

.1 Instructions: Submit manufacturer's installation instructions and special handling criteria.

.2 Manufacturer's Certificate: Certify that Products meet or exceed performance criteria.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling, and unloading:

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

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.3 Deliver materials to the site in undamaged condition.

.2 Storage and Protection:

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

.2 Protect louvres from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.3 Waste Management and Disposal: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 PERFORMANCE REQUIREMENTS

.1 Performance to AMCA 500-L:

.1 Free area: Minimum 50%.

.2 Wind driven rain performance: Class A, minimum 99%.

.1 Tested wind speed: 13 m/s (29 mph) at 75 mm/h (3 inch/h) rainfall rate.

2.2 MATERIALS

.1 Aluminum sheet: To ASTM B209, mill finish plain utility sheet.

.2 Aluminum extrusions: To ASTM B221 alloy 6063-T5.

.3 Fasteners: Stainless steel.

.4 Insect screens: Aluminum wire or stainless steel mesh, secured to frame with mitred corners and corner locks.

2.3 FINISHES

.1 Finish louvre with factory applied fluoropolymer resin powder coat system:

.1 Colour: As selected by Owner Representative from manufacturer's standard range.

.2 Specular gloss (ASTM D523): 30 ± 5 units.

.3 Coating thickness: not less than 22 micrometres.

2.4 FABRICATION

.1 Heads, sills, jambs and mullions: One-piece structural aluminum members with integral caulking slot and retaining beads.

.2 Frame: Channel profile, corner joints mitered and mechanically fastened.

.3 Mullions: To match frame.

.4 Blades: Aluminum extrusions, horizontally oriented.

.1 Install concealed vertical stiffeners as required to meet wind loads.

.5 Sills: Minimum 1.27 mm thick aluminum.

.6 Louvres and sill flashings: Installed in accordance with the manufacturer’s recommended procedures to ensure complete water integrity performance of the louver system.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage, and installation instructions, and datasheets.

3.2 INSTALLATION

.1 Install louvres in accordance with manufacturer's recommendations.

.2 Install level and plumb, free from distortion and defects detrimental to performance and appearance.

.1 Plumb tolerance: 1:175.

.3 Install flashings and align louvre assembly to ensure moisture shed from flashings and diversion of moisture to exterior.

.4 Attach insect screen to inside face of louvre.

.5 Repair damage to louvres to match original finish.

3.3 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

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

3.4 PROTECTION

.1 Where aluminum contacts metal other than zinc, paint dissimilar metal with primer and two coats of aluminum paint.

.2 Paint wood or other absorptive materials that may become repeatedly wet and in contact with metal with two coats of aluminum paint or coat of heavy-bodied bituminous paint.

END OF SECTION