PROJECT MANUAL
Issued for Tender

Building Envelope Upgrade

Gypsumville, Manitoba

Date: December 19, 2016

A|49 Project No. 149-12549-06 Set No: **1**

TABLE OF CONTENTS

Pages

Division 00 - Procurement and Contracting Requirements

Section 00 01 10 - Table Of Contents 1
Section 00 31 00 - Available Project Information 11

Division 01 - General Requirements

Section 01 00 10 - General Instructions 13

Division 02 - Existing Conditions

Section 02 41 19 - Selective Demolition 6

Division 06 - Wood, Plastics and Composites

Section 06 10 00 - Rough Carpentry 5

Division 07 - Thermal and Moisture Protection

Section 07 21 13 - Board Insulation 4
Section 07 21 19 - Foamed-in-Place Insulation 4
Section 07 27 00 - Air Barriers 6
Section 07 31 13 - Asphalt Shingles 8
Section 07 46 26 - Hardboard Siding 4
Section 07 71 23 - Manufactured Gutters and Downspouts 5
Section 07 92 00 - Joint Sealants 6

Division 08 - Openings

Section 08 11 26 - Steel Doors 5
Section 08 11 69 - Metal Storm Doors And Frames 3
Section 08 50 00 - Windows 10
Section 08 80 50 - Glazing 4
Section 08 90 00 - Louvers And Vents 2

Division 09 - Finishes

Section 09 91 00 - Painting 10

END OF TABLE

1.1 GENERAL

.1 This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project.

.2 The site photographs provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in place of Bidders' own investigations.

.3 The site photographs are made available for Bidders' convenience and information, but are not a warranty of existing conditions.

.4 These site photographs are not part of the Contract Documents, unless indicated otherwise.

1.2 SUMMARY

.1 Site Photographs:

.1 Site photos from Gypsumville, MB were taken on June 27, 2016, by Architecture49 Inc.

GYPSUMVILLE (DBU 306)

IMG GYP101-001

IMG GYP101-002

IMG GYP101-003

IMG GYP101-004

IMG GYP101-005

IMG GYP101-006

IMG GYP101-007

IMG GYP101-008

IMG GYP101-009

IMG GYP101-010

GYPSUMVILLE (DBU 307)

IMG GYP102-001

IMG GYP102-002

IMG GYP102-003

IMG GYP102-004

IMG GYP102-005

IMG GYP102-006

IMG GYP102-007

IMG GYP-008

IMG GYP102-009

IMG GYP102-010

IMG GYP102-011

IMG GYP102-012

GYPSUMVILLE (DBU 308)

IMG GYP103-001

IMG GYP103-002

IMG GYP103-003

IMG GYP103-004

IMG GYP103-005

IMG GYP103-006

IMG GYP103-007

IMG GYP103-008

IMG GYP103-009

IMG GYP103-010

GYPSUMVILLE (DBU 310)

IMG GYP201-001

IMG GYP201-002

IMG GYP201-003

IMG GYP201-004

IMG GYP201-005

IMG GYP201-006

IMG GYP201-007

IMG GYP201-008

IMG GYP201-009

IMG GYP201-010

GYPSUMVILLE (DBU 309)

IMG GYP202-001

IMG GYP202-002

IMG GYP202-003

IMG GYP202-004

IMG GYP202-005

IMG GYP203-006

IMG GYP202-007

IMG GYP202-008

END OF SECTION

Part 1 General

1.1 TAXES

.1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

1.2 FEES, PERMITS and CERTIFICATES

.1 Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction.

1.3 CONSTRUCTION PROGRESS SCHEDULE

.1 Schedule and execute work with least possible interference or disturbance to the normal use of premises.

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

.3 Carry out work during "regular hour", Monday to Friday from 07:00 to 18:00 hours.

.4 Give the Departmental Representative 48 hours notice for work to be carried out during "off hours".

1.4 SUBMITTAL PROCEDURES

.1 Submit promptly to Departmental Representative submittals listed for review, in orderly sequence to not cause delay in work.

.2 Do not proceed with work affected by submittals until review is complete.

.3 Shop Drawings:

.1 Submit electronic (PDF) copies of shop drawings.

.2 The review is for the sole purpose of ascertaining conformance with the general design concept, and does not mean approval of the design details inherent in the shop drawings, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents.

.4 Product Data:

.1 Submit electronic (PDF) copies of product data: manufacturers catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products.

.2 Cross reference product data information to applicable portions on Contract Documents.

.5 Samples:

.1 Submit samples: examples of materials, equipment, quality, finishes and workmanship.

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

.3 Reviewed and accepted samples will become standard of material and workmanship, against which installed work will be verified.

.6 Submit photographs of interiors, surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims.

1.5 REGULATORY REQUIREMENTS

.1 References and Codes:

.1 Materials shall be new and work shall conform to the minimum applicable standards of the "References" indicated in the specification sections, the National Building Code of Canada (NBC), including all amendments up to tender closing date, and all applicable Provincial and Municipal codes. In the case of conflict or discrepancy the most stringent requirement shall apply.

.2 Building Smoking Environment:

.1 Smoking is not permitted in the Building. Obey smoking restrictions on building property.

1.6 FIRE SAFETY REQUIREMENTS

.1 Comply with both the National Building Code of Canada and the National Fire Code of Canada for safety of persons in buildings in the event of a fire and the protection of buildings from the effects of fire, as follows;

.1 The National Building Code (NBC): for fire safety and fire protection features that are required to be incorporated in a building during construction.

.2 The National Fire Code (NFC):

.1 The on-going maintenance and use of the fire safety and fire protection features incorporated in buildings.

.2 The conduct of activities that might cause fire hazards in and around buildings.

.3 Limitations on hazardous contents in and around buildings.

.4 The establishment of fire safety plans.

.5 Fire safety at construction and demolition sites.

.2 Where work requires interruption or cause activation of fire alarms or fire suppression, extinguishing or protection systems:

.1 Provide "Watchman Service". In general, watchman service is defined as an individual conversant with "Fire Emergency Procedures", performing fire picket duty within an unprotected and unoccupied (no workers) area once per hour.

.2 Immediately upon completion of work, restore fire protection systems to normal operation and verify that all devices are fully operational.

.3 Inform fire alarm system monitoring agency and local Fire Department immediately prior to isolation and immediately upon restoration of normal operation.

1.7 QUALITY CONTROL

.1 Review and Inspection of the Work:

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

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work. Coordinate date and time with regularly scheduled site visits performed by the Consultant and Departmental Representative.

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

.2 Rejected Work:

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

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

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

1.8 HAZARDOUS MATERIALS

.1 Hazardous Materials: product, substance, or organism that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.

.2 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and

regarding labelling and the provision of Material Safety Data Sheets (MSDS) acceptable to Human Resources and Skills Development Canada (HRSDC), Labour Program.

.3 For work in occupied buildings, give the Department Representative 48 hours notice for work involving hazardous substances (Canada Labour Code Part II Section 10), and before painting, caulking or using adhesives and other materials, that cause off gassing.

1.9 TEMPORARY UTILITIES

.1 Existing services required for work, excluding power required for space temporary heating, may be used by the Contractor without charge. Ensure capacity is adequate prior to imposing additional loads. Connect and disconnect at own expense and responsibility.

.2 Connect to existing power supply in accordance with Canadian Electrical Code.

.3 Notify the Departmental Representative and utility companies of intended interruption of services and obtain requisite permission.

.4 Give the Departmental Representative 48 hours notice related to each necessary interruption of any mechanical or electrical service throughout the course of the work. Keep duration of these interruptions to a minimum. Carry out all interruptions after normal hours of the occupants.

1.10 CONSTRUCTION FACILITIES

.1 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 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

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

.5 Remove from site all such work after use.

.2 Access Scaffold:

.1 Scaffolding: in accordance with CSA Z797 – Code of Practice for Access Scaffold.

.2 Provide and maintain scaffolding, ladders and platforms.

.3 Site Storage:

.1 The Departmental Representative will assign storage space that shall be equipped and maintained by the Contractor.

.2 Do not unreasonably encumber site with materials or equipment.

.3 Move stored products or equipment that interferes with operations of Departmental Representative or other contractors.

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

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

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

.5 Sanitary facilities:

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

.2 Others shall not be used.

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

.6 Signage:

.1 Provide common-use signs related to traffic control, information, instruction, use of equipment, public safety devices, etcetera, in both official languages or by the use of commonly understood graphic symbols and to approval of the Departmental Representative.

.2 No advertising will be permitted on this project.

.7 Construction Parking

.1 Parking will be permitted on site provided it does not disrupt performance of Work or access to private parking.

.2 Provide and maintain adequate access to project site.

.8 Protection and Maintenance of Traffic

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

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

.3 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

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

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

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

.7 Construct access roads necessary.

.8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

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

.10 Location, grade, width, and alignment of access roads: subject to approval by Departmental Representative.

.11 Lighting: to assure full and clear visibility for full width of access road and work areas during night work operations.

.12 Provide snow removal during period of Work.

.13 Remove, upon completion of work, access roads designated by Departmental Representative.

1.11 TEMPORARY BARRIERS AND ENCLOSURES

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

.2 Hoarding:

.1 Design, erect and maintain temporary site enclosure, pedestrian walkways and provide protection, complete with signs and electrical lighting as required by authority having jurisdiction.

.3 Weather Enclosures: protect work temporarily until permanent enclosures completed.

.4 Dust Control:

.1 Provide dust tight screens or partitions 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.

.3 Protect all furnishings within work area with 0.102¦mm thick polyethylene film during construction. Remove film during non-construction hours and leave premises in clean, unencumbered and safe manner for normal daytime function.

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

.6 Protection:

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

.2 Provide necessary screens, covers, and hoardings.

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

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

.5 Protect work against damage until take-over.

.6 Protect adjacent work against the spread of dust and dirt beyond the work areas.

.7 Protect operatives and other users of site from all hazards.

1.12 COMMON PRODUCT REQUIREMENTS

.1 Quality of Work:

.1 Carry out work using qualified licenced workers or apprentices in accordance with Provincial Act respecting manpower vocational training and qualification.

.2 Permit employees registered in Provincial apprenticeship program to perform specific tasks only if under direct supervision of qualified licenced workers.

.3 Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties.

.2 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.

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

.3 Manufacturer’s Instructions: 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

.4 Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

.1 Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

.2 Consultant’s Action: If necessary, Consultant will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Consultant will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

.1 Use product specified if Consultant does not issue a decision on use of a comparable product request within time allocated.

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

.6 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.

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

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

.9 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.

.10 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 Consultant 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 Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.13 EXAMINATION AND PREPARATION

.1 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.

.2 Before commencing work, establish location and extent of services lines in area of work and notify Departmental Representative of findings.

.3 Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

.1 Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before work begins.

.2 Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

.3 Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

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

.5 Start of construction or any part thereof constitutes acceptance of existing conditions and implies dimensions have been considered, verified and are acceptable.

1.14 EXECUTION

.1 Cut, Patch and Make Good:

.1 Cut existing surfaces as required to accommodate new work.

.2 Remove all items so shown or specified.

.3 Patch and make good surfaces cut, damaged or disturbed, to Departmental Representative's approval. Match existing material, colour, finish and texture.

.4 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 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.

.2 Sleeves, Hangers and Inserts: co-ordinate setting and packing of sleeves and supply and installation of hangers and inserts. Obtain Departmental Representative's approval before cutting into structure.

.3 Unless otherwise specified, materials for removal become the Contractor's property and shall be taken from site.

.4 Execution:

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

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

.3 Uncover Work to install ill-timed Work.

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

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

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

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

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

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

1.15 WASTE MANAGEMENT

.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.

1.16 CLOSEOUT SUBMITTALS

.1 Submittals:

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

.2 Furnish evidence, if requested, for type, source and quality of products provided.

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

.4 Pay costs of transportation.

.2 Operational and Maintenance Manuals:

.1 Two (2) weeks prior to final inspection of the work, submit to Departmental Representative four (4) copies of approved Operations Data and Maintenance Manual in both official languages, compiled as follows:

.1 Bind data in vinyl hard cover 3 "D" ring type loose-leaf binders for 212 x 275¦mm size paper. Binders must not exceed 75¦mm thick or be more than 2/3 full.

.2 Enclose title sheet labelled "Operation Data and Maintenance Manual," project name, date and list of contents. Project name must appear on binder face and spine.

.3 Organize contents into applicable sections of work to parallel project specifications breakdown. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.

.2 Include following information plus data specified:

.1 Maintenance instruction for finished surface and materials.

.2 Copy of hardware schedules.

.3 Maintenance: use clear drawings, diagrams or manufacturers' literature which specifically apply and detail the following:

.1 lubrication products and schedules;

.2 trouble shooting procedures;

.3 adjustment techniques; and

.4 operational checks.

.4 Suppliers’ names, addresses and telephone numbers and components supplied by them must be included in this section. Components must be identified by a description and manufacturers part number.

.5 Guarantees showing:

.1 name and address of projects;

.2 guarantee commencement date (date of Interim Certificate of Completion);

.3 duration of guarantee;

.4 clear indication of what is being guaranteed and what remedial action will be taken under guarantee; and

.5 signature and seal of Guarantor.

.6 Additional material used in project listed under various Sections showing name of manufacturer and source of supply.

.3 Spare parts: list all recommended spares to be maintained on site to ensure optimum efficiency. List all special tools appropriate to unique application. All parts/tools detailed must be identified as to manufacturer, manufacturer part number and supplier (including address).

.4 Include one complete set of final shop drawings (bound separately) indicating corrections and changes made during fabrication and installation.

.3 Records:

.1 As work progresses, maintain accurate records to show deviations from contract drawings. Just prior to Departmental Representative's inspection for issuance of final certificate of completion, supply to the Departmental Representative one (1) set of white prints and one (1) copy of project manual with all deviations neatly inked in. The Departmental Representative will provide two sets of clean white prints for this purpose.

.4 Guarantees and Warranties:

.1 Before completion of work collect all manufacturer's guarantees or warranties and submit to Departmental Representative.

1.17 CLEANING

.1 Clean up as work progresses. At the end of each work period, and more often if ordered by the Departmental Representative, remove debris from site, neatly stack material for use, and clean up generally.

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

.3 Upon completion remove scaffolding, temporary protection and surplus materials. Make good defects noted at this stage.

.4 Clean and polish glass, mirrors, ceramic tile, aluminum, chrome, stainless steel, baked or porcelain enamel, plastic laminate and other plastic surfaces, floors, hardware and washroom fixtures. Clean manufactured articles in accordance with manufacturer's written instructions.

.5 Clean areas under contract to a condition equal to what previously existed and to approval of Departmental Representative.

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

1.18 SECURITY CHECK

.1 All personnel employed on this project will be subject to security check. Obtain requisite clearance, as instructed, for each individual required to enter the premises.

.2 Personnel will be checked daily at start of work shift and given a pass, which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

1.19 SECURITY CLEARANCE

.1 Contractor's personnel will require satisfactory RCMP initiated security screening in order to complete Work in premises and on site.

.2 Obtain requisite clearance, as instructed, for each individual required to enter premises.

1.20 COST BREAKDOWN

.1 Before submitting first progress claim, submit breakdown of Contract Amount in detail as directed by Departmental Representative and aggregating the Contract Amount. After approval by Departmental Representative cost breakdown will be used as the basis of progress payments.

1.21 PRECEDENCE

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Selective demolition, removal, and disposal of exterior parts of structures and finishes, both above and below grade, related mechanical and electrical services and fixtures to accommodate incorporation of new building envelope.

.2 Salvage of designated materials.

.2 Related Requirements:

.1 Individual product Sections: cutting and patching incidental to work of section. Advance notification to other sections required.

1.2 DEFINITIONS

.1 Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

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

.3 Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged.

.4 Selective Demolition: removal of a portion of an existing structure involving the systematic removal of some construction elements.

1.3 REFERENCES

.1 Comply with National Building Code of Canada, Part 8, "Safety Measures at Construction and Demolition Sites", and Provincial requirements.

.2 National Fire Protection Association (NFPA)

.1 NFPA 241-13, Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Pre-demolition Conference: Conduct conference at Project site.

- .1 Review communication protocols between Contractor and Departmental Representative.
- .2 Inspect and discuss condition of construction to be selectively demolished.
- .3 Review structural load limitations of existing structures.
- .4 Review and finalize selective demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
- .5 Review and finalize protection requirements.
- .6 Review procedures for noise control and dust control.
- .7 Review procedures for protection of existing structure and materials.
- .8 Review procedures for protection of occupied space.
- .9 Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
- .10 Review areas where existing construction is to remain and requires protection.

1.5 SUBMITTALS

.1 Provide demolition drawings in accordance with Section 01 00 10 – General Instructions.

.2 Action Submittals:

- .1 Schedule of Selective Demolition Activities: Indicate the following:
  - .1 Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
  - .2 Interruption of utility services. Indicate how long utility services will be interrupted.
  - .3 Coordination for shutoff, capping, and continuation of utility services.
  - .4 Coordination of continuing occupancy of residence.

.3 Informational Submittals:

- .1 Demolition Drawings:
  - .1 Provide demolition drawing including proposed protection measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for dust control and for noise control. Indicate proposed locations and construction of barriers.

1.6 QUALITY ASSURANCE

.1 Selective demolition work shall be performed by specialists familiar with the materials affected.

.2 Do not damage or endanger any portion of the Work during demolition work.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Storage and Protection:

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

1.8 SITE CONDITIONS

.1 Site Environmental Requirements:

.1 Ensure that selective demolition work does not adversely affect groundwater, or contribute to excess air and noise pollution.

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

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

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

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

.5 Protect trees, plants and foliage on site and adjacent properties.

.2 Existing Conditions:

.1 Should material resembling spray or trowel-applied asbestos or other designated substance be encountered, stop work, take preventative measures, and notify Consultant immediately.

.2 Do not proceed until written instructions have been received from Departmental Representative.

.3 Do not close or obstruct walkways, exits, or other facilities used by occupants of school without written permission from authorities having jurisdiction.

.4 Provide temporary exiting requirements as required by authorities having jurisdiction.

.5 Notify Departmental Representative before disrupting building access or services.

Part 2 Products

2.1 EQUIPMENT

.1 Equipment: Wherever possible use equipment driven by an electric motor. Pneumatic and gas driven equipment are not permitted.

.2 Do not use vibrating equipment for removal of concrete.

Part 3 Execution

3.1 EXAMINATION

.1 Examine existing conditions to ascertain full extent of work and determine existing conditions as well as requirements for protection of adjacent work.

.2 Review record documents of existing construction provided by Departmental Representative. Departmental Representative does not guarantee that existing conditions are same as those indicated in record documents.

.3 Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

.4 When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Departmental Representative.

3.2 PROTECTION

.1 Prevent movement, settlement, or damage to adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring required.

.2 Areas adjacent to demolition areas may be occupied. Keep noise and vibration levels to a minimum. Schedule demolition times with Department Representative.

.3 Protect building systems, services and equipment.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

.5 Do not damage or deface existing construction, equipment or finishes indicated to remain.

3.3 PREPARATION

.1 Inspect building with Department Representative and verify extent and location of items designated for removal, disposal, salvage and items to remain.

.2 Check conditions, obtain and confirm actual site dimensions, examine conditions, services, etc., as required to ensure correct execution of Work. Notify Departmental Representative in writing of matters, discrepancies between actual site conditions and Contract Documents that may hinder proper execution of Work.

.3 Arrange for temporary disruption of existing services with Departmental Representative.

.4 Locate and protect utilities in operating condition.

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

.6 Disconnect, cap, plug or divert, as required, existing utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

.1 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.

.2 Immediately notify Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.4 SELECTIVE DEMOLITION

.1 General: Demolish and remove existing construction only to the extent required by new construction and as indicated.

.2 Departmental Representative to be given first right of refusal on all materials salvageable from the demolition process. Except for items claimed by the Departmental Representative, waste and abandoned materials and equipment are the Contractor's property. Promptly remove from site.

.3 Remove parts of existing walls, roofs, electrical and mechanical services and fixtures as required to permit new construction.

.4 Demolition work indicated on drawings is schematic only. Verify conditions and dimensions on site.

.5 Removed and Salvaged Items:

.1 Refer to demolition drawings and specifications for items and materials to be salvaged for reuse or to be turned over to Departmental Representative.

.2 Remove items designated for salvage before start of demolition work.

.3 Process salvaged items as indicated in other technical specification sections.

.6 Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Departmental Representative, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

.7 Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

.8 Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

.9 Notify Departmental Representative minimum seven (7) working days prior to removal, cutting, drilling or sleeving of structural or load-bearing members including foundation walls. Mark out exact locations and dimensions to allow review. Do not proceed with work until Departmental Representative (Professional Engineer) has reviewed and approved proposed work.

.10 Trim edges of partially demolished building elements to suit future use.

.11 Remove and dispose existing fixtures, accessories, fitments, equipment as indicated, required.

.12 At end of each day's work, leave Work in safe and stable condition.

.13 Protect interiors of parts not to be demolished from exterior elements at all times.

.14 Demolish to minimize dusting. Keep materials wetted as directed by Departmental Representative.

.15 Contain fibrous materials (e.g. Insulation) to minimize release of airborne fibres while being transported within facility.

3.5 REMOVAL FROM SITE

.1 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

.2 Transport material designated for alternate disposal in accordance with applicable regulations.

.3 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section includes:

.1 Rough carpentry materials and accessories.

1.2 REFERENCES

.1 ASTM International

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

.2 CSA International

.1 CSA B111, Wire Nails, Spikes and Staples.
.2 CSA O112.9, Evaluation of Adhesives for Structural Wood Products (Exterior Exposure).
.3 CSA O121, Douglas Fir Plywood.
.4 CSA O141, Softwood Lumber.
.5 CSA O151, Canadian Softwood Plywood.
.6 CSA O325, Construction Sheathing.

.3 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 2010.

1.3 SUBMITTALS

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

.2 Action Submittals:

.1 Product Data:

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

.3 Informational Submittals:

.1 Certificates:

.1 For products treated with preservative by pressure impregnation submit following information certified by authorized signing officer of treatment plant:

.1 Information listed in AWPA M2 and revisions specified in CSA O80 Series, Supplementary Requirement to AWPA M2 applicable to specified treatment.

.2 Moisture content after drying following treatment with water-borne preservative.

.3 Acceptable types of paint, stain, and clear finishes that may be used over treated materials to be finished after treatment.

1.4 QUALITY ASSURANCE

.1 Provide quality control in accordance with Section 01 00 10 – General Instructions.

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

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

.4 Protect building materials from damage by:

.1 Fully covering stored materials.

.2 Elevating stored materials off ground.

.3 Disposing of materials with evidence of moisture damage.

1.5 DELIVERY, STORAGE AND HANDLING

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

.2 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.

.3 Provide construction waste management in accordance with best practice.

Part 2 Products

2.1 SUSTAINABILITY REQUIREMENTS-

.1 Composite wood products must not contain added urea-formaldehyde or resins containing urea-formaldehyde.

2.2 LUMBER MATERIAL

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:

.1 CAN/CSA-O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Dimension lumber:

.1 Light framing: S4S, species SPF, No. 1/No. 2 grade.

.2 Stud: S4S, species group Hem-Fir, stud grade.

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

.1 S2S is acceptable.

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

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

2.3 PANEL MATERIAL

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

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

.1 Grade indicated.

.2 Good two side (Exterior Wood type EW3)

.3 Canadian softwood plywood (CSP): to CSA O151, standard construction, grade indicated.

.4 Fire-retardant: for plywood, to CSA O80.27, to provide:

.1 Flame Spread Classification: FSC 25 or less.

.2 Smoke developed of not more than: 25.

2.4 ACCESSORIES

.1 Sealants: in accordance with Section 07 92 00 - Joint Sealants.

.2 General purpose adhesive: to CSA O112.9.

.3 Nails, spikes and staples: to CSA B111.

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

.5 Air seal: closed cell polyurethane or polyethylene.

.6 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

.7 Joist hangers: minimum 1 mm thick sheet steel, galvanized ZF001coating designation.

.8 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, sheet metal, formed to prevent dishing. Bell or cup shapes not acceptable.

.9 Fastener Finishes

.1 Galvanizing: to ASTM A653, use galvanized fasteners for exterior work and pressure-preservative treated lumber.

Part 3 Execution

3.1 INDOOR AIR QUALITY

.1 Reduce dust contamination by:

.1 Ensuring adjacent HVAC ducts are sealed prior to cutting. Provide cutting and patching in accordance with Section 01 00 10 – General Instructions.

.2 Collecting and bagging dust from tools

.3 Isolating cutting areas from adjacent workspaces

.4 Sweeping and/or vacuuming daily

3.2 EXAMINATION

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

.1 Visually inspect substrate in presence Departmental Representative.

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

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

3.3 PREPARATION

.1 Treat surfaces of material with wood preservative, before installation.

.2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and one minute soak on plywood.

.3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

.4 Treat material as follows:

.1 Wood cants, fascia backing, curbs, nailers, sleepers on roof deck.

.2 Wood furring on outside surface of concrete walls.

3.4 INSTALLATION

.1 Comply with requirements of NBC, supplemented by the following paragraphs.

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

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

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

.5 Install furring and blocking as required to space-out work as required.

.6 Align and plumb faces of furring and blocking to tolerance of 1:600.

.7 Install furring and blocking as required to space-out and support facings, fascia, soffit, siding, electrical equipment mounting boards, and other work as required.

.8 Install furring to support siding applied vertically where there is no blocking and where sheathing is not suitable for direct nailing. Align and plumb faces of furring and blocking to tolerance of 1:600.

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

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

.11 Install sleepers as indicated.

.12 Use dust collectors and high quality respirator masks when cutting or sanding wood siding.

3.5 ERECTION

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

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

.3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.6 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions.

.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 00 10 – General Instructions.

3.7 PROTECTION

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

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Polystyrene insulation

.2 Related Requirements

.1 Section 07 21 19 – Foamed-In-Place Insulation, for spray-foam sealant.
.2 Section 07 27 00 - Air Barriers
.3 Section 07 42 43 - Composite Wall Panels
.4 Section 08 50 00 - Windows

1.2 REFERENCES

.1 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S701, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings
.2 CAN/ULC-S702, Standard for Thermal Insulation Mineral Fibre for Buildings

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting prior to beginning work of this Section and on-site installations

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

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 10 – General Instructions.

.2 Action Submittals:

.1 Product Data: For each insulation or foam sealant product indicated.

.3 Informational Submittals:

.1 Submit test reports in accordance with Section 01 00 10 – General Instructions, verifying properties of foamed-in-place insulation meet or exceed the requirements of this specification.
.2 Qualification data.

1.5 QUALITY ASSURANCE

.1 Provide quality control in accordance with Section 01 00 10 – General Instructions.

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

.3 Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with minimum 10 years documented experience.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Provide construction waste management in accordance with best practice.

Part 2 Products

2.1 INSULATION

.1 Wall Insulation - Extruded polystyrene: to CAN/ULC-S701, thickness indicated.

.1 Type: 3.
.2 Compressive strength: minimum 170 kPa (25 psi).
.3 Thickness: as indicated on drawings.
.4 Thermal Resistance per 25 mm thickness: 0.87 m^2 c/w (R-5 per inch).
.5 Edges: square.

2.2 ACCESSORIES

.1 Insulation Fasteners:

.1 For use with insulation with plywood sheathing on wood stud substrates: impale type fasteners constructed of corrosion-resistant metal spindle and base. Spindle length to suit insulation thickness.

.2 Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates, approved by waterproofing and air vapour barrier manufacturer.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

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

.2 Prior to commencement of work ensure:

.1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

.2 Provide cleaning during construction in accordance with Section 01 00 10 – General Instructions.

3.3 INSTALLATION GENERAL

.1 Install board insulation in accordance with Section 01 00 10 – General Instructions.

.2 Install insulation after building substrate materials are dry.

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

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

.5 Keep combustible insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN4-S604 type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 type B and L vents.

.6 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.

.7 Fasten insulation in place using type of fastener applicable to substrate. Follow manufacturers written installation instructions for minimum fasteners per insulation board.

.1 For impale type fastener, adhere backing plate to substrate with fastener manufacturer’s recommended adhesive.

.8 Offset both vertical and horizontal joints in multiple layer applications.

.9 Leave insulation board joints unbonded over line of expansion and control joints. Bond continuous 150 mm wide 0.15 mm polyethylene strip over expansion and control joints using compatible adhesive before application of insulation.

.10 Apply continuous 6mm beads of adhesive at 150 mm on centre in a horizontal serpentine pattern full width of board, and at top and bottom edges. Apply adhesive fully around protrusions.

.11 Butt insulation tightly together at side and end laps and fill voids entirely with spray-foam sealant to provide complete thermal barrier.

.12 Do not enclose insulation until it has been observed by Departmental Representative.

3.4 CLEANING

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

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Section includes, but is not limited to:

- .1 Foamed-in-place insulation.
- .2 Foamed-in-place sealant.

.2 Related Requirements:

- .1 Section 07 21 13 - Board Insulation
- .2 Section 07 27 10 - Air/Vapour Barrier
- .3 Section 08 50 00 - Windows

1.2 REFERENCES

.1 ASTM International (ASTM)

- .1 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials

.2 Underwriters Laboratories of Canada (ULC)

- .1 CAN/ULC-S701, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings
- .2 CAN/ULC-S705.1, Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Material – Specifications, Includes Amendments 1, 2
- .3 CAN/ULC-S705.2, Standard for Thermal Insulation – Spray Applied Rigid Polyurethane Foam, Medium Density – Application

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 10 – General Instructions.

.2 Action Submittals:

- .1 Product Data: For each insulation or foam sealant product indicated.

.3 Informational Submittals:

- .1 Submit test reports in accordance with Section 01 00 10 – General Instructions, verifying properties of foamed-in-place insulation meet or exceed the requirements of this specification.
- .2 Qualification data.

1.4 QUALITY ASSURANCE

.1 Provide quality control in accordance with Section 01 00 10 – General Instructions.

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

.3 Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with minimum 10 years documented experience.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Store products in strict accordance to manufacturer's instructions in temperature controlled, dry and ventilated area.

.2 Minimize construction waste sent to the landfill, separate and recycle materials in accordance with best practice.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Apply foamed-in-place insulation and sealants only when substrate and ambient temperatures are within prescribed limits.

.2 Ensure temperature is maintained throughout curing period.

Part 2 Products

2.1 MATERIALS

.1 Use of insulation products manufactured with CFCs as blowing agents is prohibited.

.2 Spray Foam Insulation: to CAN/ULC S705.1, closed cell, spray applied rigid cellular polyurethane foam air barrier and thermal insulation, medium 29 kg/cu m density.

.1 Performance criteria:

.1 Fire Performance: less than 500 flame spread, less than 500 smoke developed to CAN/ULC S102.

.2 Water vapour permeance: 42ng/Pa-s-sq m to ASTM E96.

.3 Long term thermal resistance: RSI 1.95 at 50 mm thickness.

.2 Acceptable products: BASF Walltite ECO v2, CertainTeed CertaSpray Closed Cell Foam, Icynene MD-C-200 CDN, Johns Manville JM Corbond III.

.3 Locations: Around protrusions and penetrations through air seal, and other locations indicated.

.3 Spray Foam Sealant – General Purpose: one-component, semi-rigid polyurethane sealant, to CAN/ULC-S701, 16 to 24 kg/m^3, minimum RSI 0.67 per 25 mm thickness:

.1 Basis of Design: Great Stuff Pro Gaps and Cracks Insulating Foam Sealant by Dow Chemical, or comparable product by, but not limited to, RHH Foam Systems Inc., Handi-Foam, Tiger Foam Insulation, and Hilti.

.2 Locations: gaps and cracks up to 75 mm in size.

.4 Spray Foam Sealant – Low Pressure: one-component, semi-flexible polyurethane sealant, to CAN/ULC-S701, 27 kg/m^3:

.1 Basis of Design: Great Stuff Pro Window and Door Insulating Foam Sealant by Dow Chemical, or comparable product by, but not limited to, RHH Foam Systems Inc., Handi-Foam, Tiger Foam Insulation, and Hilti.

.2 Locations: gaps and cracks adjacent to door and window framing.

Part 3 Execution

3.1 PREPARATION

.1 Clean surfaces which are to receive insulation, of dirt, dust, grease, loose material or other foreign matter which may inhibit adhesion.

.2 Provide sufficient ventilation during and until insulation has cured, to ensure safe working conditions. Introduce fresh air and exhaust air continuously during the 24 hour period after application to maintain non-toxic, unpolluted, safe working conditions.

.3 Prior to application, slightly moisten surfaces to which foam in place insulation is being applied, to accelerate curing.

.4 Temporarily brace door frames as may be required to prevent possible bowing of frames due to over expansion of the foamed-in-place insulation.

3.2 PROTECTION

.1 Provide temporary enclosures to prevent spray and noxious vapour from contaminating air beyond application area.

.2 Protect workers as recommended by insulation manufacturer.

.3 Protect adjacent surfaces and equipment from damage by over spray, fall-out, and dusting of insulation materials.

.4 Dispose of waste foam daily in location designated by Departmental Representative and decontaminate empty drums in accordance with foam manufacturer's instructions.

3.3 INSTALLATION, GENERAL

.1 Where spray-foam insulation or sealant is used to maintain continuity of thermal barrier, and is installed in conjunction with membrane air seal/vapour barrier around frames or protrusions, ensure that foamed-in-place insulation is installed on exterior side of membrane air seal/vapour barrier.

.2 Apply materials in accordance with manufacturer's written instructions.

.3 Ensure finished surface is free of voids and imbedded objects.

.4 Apply primer when required to properly prepared substrates for special conditions required by foam insulation manufacturer's requirements.

3.4 INSTALLATION AROUND PROTRUSIONS THROUGH AIR SEAL

.1 Apply by spray method to uniform monolithic density without voids.

.2 Install spray-foam insulation around protrusions including mechanical and electrical protrusions, exhaust systems, heating and cooling ducts, sole plates, top plates, wall sections, and elsewhere as required to achieve and maintain continuity of thermal barrier around such protrusions.

.3 Conduct daily visual inspection, adhesion testing and density measurements as required by CAN/ULC S705.2 and manufacturer's application guidelines.

3.5 INSTALLATION AROUND WINDOWS AND DOOR FRAMING

.1 Install spray foam sealant around window frames, and door frames to maintain continuity of thermal barrier, after air/vapour barrier has been installed and sealed to framing as specified in Section 08 50 00.

.2 Install spray foam sealant around window openings to completely and continuously connect window frame to adjacent air/vapour barrier, to maintain continuity of air/vapour seal.

.3 Ensure that spray foam sealant completely fills spaces, without voids, and that foam is continuous at corners.

3.6 CLEAN-UP

.1 Remove masking materials and overspray from adjacent areas immediately after foam surface has hardened.

.2 Repair damaged areas in accordance with manufacturer's instructions.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Primary air barrier materials and assemblies to provide continuous seal between components of building envelope and building penetrations.

.2 Related Requirements

.1 Section 07 46 26 – Hardboard Siding

1.2 REFERENCES

.1 ASTM International (ASTM)

.1 ASTM E1186, Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Retarder Systems

.2 National Building Code of Canada (NBCC)

.1 NBCC, Part 5 - Environmental Separation

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meeting: Convene prior to commencing Work of this section.

.1 Review air barrier requirements including surface preparation, substrate condition and pretreatment, special details and flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 10 – General Instructions.

.2 Informational Submittals:

.1 Submit manufacturer's installation instructions.

.2 Compatibility: Provide letter(s), provided and signed by manufacturer of membrane air/vapour barrier material(s), that products used on the project are compatible with adjacent materials, and materials with which the membrane will be in contact or sealed.

.3 Qualification Data: For Installer.

.4 Field quality control reports.

.5 Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

.1 Provide quality control in accordance with Section 01 00 10 – General Instructions.

.2 Protect building materials from damage by:

.1 fully covering stored materials.

.2 elevating stored materials off ground.

.3 disposing of materials with evidence of moisture damage.

.3 Installer Qualifications: Company specializing in performing work of this section with minimum 5 years experience with installation of air/vapour barrier systems. Completed installation must be approved by the material manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 00 10 – General Instructions.

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

.3 Provide construction waste management in accordance with best practice.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Provide forced air circulation during installation and curing periods for enclosed applications.

.2 Exercise caution for proper adhesion, curing when temperature below 4 deg C.

.3 Do not install solvent curing sealants or vapour release adhesive materials in enclosed spaces without ventilation.

.4 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

1.8 SEQUENCING

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

.2 Follow construction schedule in accordance with Section 01 00 10 – General Instructions.

1.9 WARRANTY

.1 Extend warranty required by GC 12.3 to period 24 months from date of Substantial Performance.

.2 Forward copy of warranty to Departmental Representative upon Date of Substantial Performance.

Part 2 Products

2.1 PERFORMANCE CRITERIA

.1 Construct air/vapour barrier system of building to provide a continuous, structurally supported plane of materials to contain indoor air (exfiltration) and to prevent outdoor air from entering the building (infiltration) in accordance with the following requirements:

.1 Incorporate a continuous air/vapour barrier system, meeting or exceeding the requirements of the NBCC, Part 5.

.2 Maximum air leakage through the air barrier system within the areas of the exterior walls from the roof to grade is not to exceed 0.002 L/(s·m^2) at 75 Pa pressure differential.

.3 Maximum air leakage through joints between air barrier components of various assemblies (window frames, door frames, roof junction to walls, each other) is not to exceed 0.002 L/s·m at 75 Pa pressure differential.

2.2 MATERIALS

.1 Membrane air barrier: spunbonded polyolefin, non-woven, non-perforated.

.1 Basis of Design: “Tyvek CommercialWrap” as manufactured by DuPont.

.2 Jointing Tape: Air resistant pressure sensitive adhesive tape, type recommended by membrane air barrier manufacturer for sealing joints and penetrations.

.3 Foam Seal: in accordance with 07 21 19 – Foamed-in-Place Insulation.

.4 Sealant: butyl rubber base, single component, solvent release, non-skinning, as recommended by membrane manufacturer.

.5 Vapour Retarder: Polyethylene sheet to CAN/CGSB-51.34, 0.15 mm thick, lengths and widths required for least number of seams.

.6 Substrate cleaner: Non-corrosive type recommended by sealant manufacturer compatible with adjacent materials.

.7 Termination mastic: rubberized asphalt-based mastic.

.8 Adhesive: Compatible with sheet seal and substrate, permanently non-curing.

.9 Surface conditioner: Latex-based, water-dispersible liquid for substrate preparation, as required by project.

.1 Flash point: no flash to boiling point.

.2 Solvent type: water.

.3 Application temperature: -4 deg C and above.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that surfaces and conditions are ready to accept the Work of this section.

.2 Ensure surfaces are clean, dry, sound, smooth, continuous, and comply with air barrier manufacturer’s requirements.

.3 Report unsatisfactory conditions to Departmental Representative in writing.

.4 Do not start work until deficiencies have been corrected. Start of Work implies acceptance of conditions.

3.2 PREPARATION

.1 Remove loose or foreign matter.

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

.3 Ensure substrates are free of surface moisture prior to application of membrane.

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

3.3 INSTALLATION

.1 Install air barrier to dry surfaces at air and surface temperatures of -4 deg C and above in accordance with manufacturer's recommendations, to locations indicated.

.2 Precut pieces of membrane air barrier into easily-handled lengths.

.3 Begin installation at base of wall placing bottom edge of membrane over flashing as indicated.

.4 Overlap adjacent pieces 50 mm and tape seams.

.5 Apply subsequent sheets of membrane above, overlapping sheet below by 50 mm. Stagger vertical joints minimum 300 mm.

.6 Slit membrane to fit over, and around anchors, reinforcing wires, ties.

.7 Seal around all penetrations with termination mastic.

.8 Continue membrane into openings in walls, including but not limited to doors and windows. Terminate at points that will prevent visibility from interior. Continue membrane over junctions, at changes in wall construction, and other construction. Reinforce corners with additional piece of membrane cut and formed to seal corners. Caulk to ensure complete seal. Position lap seal over firm bearing.

.9 At end of each working day seal top edge of membrane air barrier to substrate with termination mastic.

.10 Do not expose membrane air barrier to sunlight for more than thirty days prior to enclosure.

.11 Inspect installation prior to enclosing. Repair punctures, damaged areas and inadequately lapped seams with a patch of membrane sized to extend 150 mm in all directions from perimeter of affected area.

3.4 FIELD QUALITY CONTROL

.1 Membrane air installation will be inspected by Departmental Representative.

.2 Coordinate with Departmental Representative to evaluate membrane air barrier after installation, prior to covering.

.3 Visual inspections will include:

.1 Review and report on the following:

.1 Continuity of membrane air barrier has been achieved throughout the wall and adjacent assemblies with no gaps or holes.

.2 Continuous structural support of membrane air barrier system has been provided.

.3 Site conditions for application temperature and dryness of substrates have been maintained.

.4 Maximum exposure time of materials to UV deterioration has not been exceeded.

.5 Laps in sheet materials have complied with minimum requirements and have been shingled in the correct direction (or mastic applied on exposed edges).

.6 Termination mastic has been applied on cut edges.

.7 Compatible materials have been used.

.8 Transitions at changes in direction and structural support at gaps have been provided.

.9 Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, surface preparation, structural support, integrity, and continuity of seal.

.10 All penetrations have been sealed.

.11 Interfaces between different assemblies, membrane air barrier and openings including door and window tie-in: report specifically on the tie-in methodology and installation between materials.

3.5 PROTECTION, REPAIR, AND CLEANING

.1 Protect work from damage and wear during remainder of construction period.

.2 Correct deficiencies in or remove work that does not comply with requirements; repair substrates, reapply membrane air barrier, and repair flashings.

.3 Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

.4 Provide cleaning during construction in accordance with Section 01 00 10 – General Instructions.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

1.2 REFERENCES

.1 ASTM International

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

.2 ASTM A755M, Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.

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

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

.5 ASTM D6757, specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing

.6 ASTM F1667, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples

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

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

.3 Canadian Roofing Contractors' Association (CRCA)

.1 CRCA Roofing Specification Manual - 2011

.4 CSA International

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

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

.3 CAN3-A123.51-[M85(R2006)], Asphalt Shingle Application on Roof Slopes 1:3 and Steeper.

.4 CAN3-A123.52-[M85(R2006)], Asphalt Shingle Application on Roof Slopes 1:6 to Less Than 1:3.

.5 CSA A123.51-14, Asphalt Shingle Application on Roof Slopes 1:6 and Steeper.

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

.1 Material Safety Data Sheets (MSDS).

.6 National Research Council Canada (NRC)/Institute for Research in Construction (IRC) - Canadian Construction Materials Centre (CCMC)

.1 CCMC-2011, Registry of Product Evaluations.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 00 10 – General Instructions.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for asphalt shingles and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit proof of manufacturer's CCMC listing and listing number.

.3 Manufacturer's Instructions: provide to indicate special handling criteria, installation sequence and cleaning procedures.

.4 Submit 2 copies of WHMIS MSDS in accordance with Section 01 00 10 – General Instructions.

.3 Samples:

.1 Submit duplicate samples of full size specified shingles.

1.4 ENVIRONMENTAL AND PROJECT REQUIREMENTS

.1 Apply each part of the roofing system only when surfaces are clean and dry.

.2 Cover walls and other surfaces in the vicinity of hoisting apparatus (when used) with heavy canvas or other suitable protective material. Any damage caused by this contract shall be repaired to match the original materials and appearance at no cost to the owner.

.3 Conduct operations so as to leave deck exposed for the minimum period of time. Protect the work area as required to prevent water infiltration or environmental damage to building interior.

.4 Maintain all site equipment in good working order.

.5 Maintain one copy of manufacturers' application instructions at the project site.

1.5 QUALITY ASSURANCE

.1 Provide all primary roofing products including shingles, underlayment, and leak barrier by a single manufacturer.

.2 Installer Qualifications: where required for extended limited warranty coverage, the installer must be approved or otherwise authorized by manufacturer to install all roofing products to be installed on this project. Work is to be executed only by those skilled to perform it expeditiously and who has been responsible for satisfactory installations similar to that specified during a period of at least the immediate three (3) years.

1.6 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

- .1 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Remove only in quantities required for same day use.
- .3 Store and protect asphalt shingles from nicks, scratches, and blemishes.
- .4 Replace defective or damaged materials with new.

1.7 EXTRA STOCK MATERIALS

.1 Submit maintenance materials in accordance with Section 01 00 10 – General Instructions.

.2 All unused shingles remain property of Departmental Representative.

1.8 WARRANTY

.1 Manufacturer's Warranty: Provide manufacturer's standard warranty document executed by authorized company official covering performance and finish, including wind uplift and algae.

- .1 Warranty Period, Materials: lifetime from date of Substantial Completion.
  - .1 First 15 years: 100 percent of the material supply and installation labour.
- .2 Warranty Period, Wind Uplift: 15 years from date of Substantial Completion.
  - .1 Wind speed to 177 k/h (110 m/h).
- .3 Warranty Period, Algae: No growth for 10 years from date of Substantial Completion.

Part 2 Products

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications All roofing components shall be provided from a single manufacturer, unless otherwise noted.

- .1 IKO
- .2 Building Products of Canada
- .3 GAF
- .4 Certainteed
- .5 Owens Corning

.2 This Specification is based on Products by IKO. Comparable Products from manufacturers listed herein will be accepted provided they meet requirements of this Specification.

2.2 MATERIALS

.1 Asphalt shingles: to CSA A123.1/A123.5. and ASTM D3462

- .1 Type: Architectural, pattern rectangular, 2 sealant bands.
- .2 Exposure: 152 mm.
- .3 Colours: as selected from manufacturer's standard range by Departmental Representative.
- .4 Texture: as selected from manufacturer's standard range by Departmental Representative.

.2 Ice Dam & Eave Protection Underlayment:

- .1 CSA A123.22 and ASTM D1970, self-adhering, self-sealing bituminous membrane.
- .2 Minimum 914mm wide.

.3 Roofing Underlayment

- .1 Synthetic Underlayment: Inorganic felt underlayment conforming to ASTM D6757, specification for Underlayment Felt Containing Inorganic Fibers Used in Steep-Slope Roofing

.4 Asphaltic Cement:

- .1 Plastic cement: to CAN/CGSB-37.5 and ASTM D4586, Type I or II.
- .2 Lap cement: to CAN/CGSB-37.4 and ASTM D3019, non-asbestos-fibered, Type III.

.5 Nails: to ASTM F1667, of galvanized steel, sufficient length to penetrate 19 mm into deck.

.6 Step Flashing: Hot-dip galvanized steel sheet, complying with ASTM A653/A653M.

.7 Drip and Rake Edge Flashing:

.1 Restricted flatness steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A755M.

.2 Aluminum sheet, min. 0.48 mm

.3 Surface: smooth.

.4 Exposed coil-coated finish: Silicone-modified polyester comprised of epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.005 mm for primer and 0.02 mm for topcoat.

.5 Colour: as selected from manufacturer's standard range by Departmental Representative.

.8 Static Roof Air Vent:

.1 CSA certified - Plastic Type B roof vents, for installation on sloping surfaces.

.2 Construction: Injection molded from pure, high grade polypropylene with premium UV inhibitor additives. Engineered to resist denting, peeling, extreme heat and cold impact to -38 °C.

.3 Colour: as selected from manufacturer's standard range by Departmental Representative.

.9 Continuous Ridge Air Vent:

.1 Lo-Omniroll shingle over roll out ridge vent comprised of injection molded, high impact co-polymer with elastomer and UV stabilization additives.

.2 Internal baffles and drainage openings easily deflect and direct away extreme weather. TriFold flexibility for use on full range of pitches. Code regulated insect grill.

.10 Plumbing Roof Flange:

.1 Thermoplastic base, Ethylene Propylene Diene Terpolymer (EPDM) self-sealing collar

.2 Flange to accommodate roof angles from flat to 45 degrees.

.3 CSA Certified

.4 Colour: as selected from manufacturer's standard range by Departmental Representative.

.11 Conduit Roof Flange:

.1 CSA Certified

.2 Colour: as selected from manufacturer's standard range by Departmental Representative.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate are acceptable for asphalt shingles installation in accordance with manufacturer's written instructions.

- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 REMOVAL OF EXISTING ROOFING

.1 Remove existing roofing, flashings and underlay, and expose sheathing of roof.

.2 Withdraw existing shingle and flashing nails, set those which break off. Leave surfaces free from dirt and loose material.

.3 Departmental Representative to inspect roof sheathing.

.4 Remove portion of sheathing affected by fungal or insect attack as directed by Departmental Representative.

.5 Replace cut out portions of sheathing with sheathing of equal sectional dimensions, and specified grade. Seat each end on rafter, with 25 mm bearing, and secure to rafter.

3.3 APPLICATION

.1 Install roofing products and accessories in accordance with manufacturer’s instructions and in proper relationship with adjacent construction.

.2 Install drip edge along eaves, overhanging 12 mm, with minimum 50 mm flange extending onto roof decking.

- .1 Nail to deck at 400 mm on centre.

.3 Install bottom step flashing (soaker base flashing) interleafed between shingles at vertical junctions.

.4 Install ice dam & eave protection underlayment along eaves and valleys.

- .1 Apply eave protection from the edge of the roof to a line not less than 300 mm inside the inner face of the exterior wall for roof slopes 1:3 or greater.
- .2 For roof slopes 1:6 to 1:3, the eave protection shall extend from the edge of the roof to a line not less than 900 mm inside the inner face of the exterior wall.
- .3 To install underlayment in a valley, first centre a 914 mm wide strip of underlayment in the valley.

.5 Install one ply of roofing underlayment over entire roof deck surface not already covered by eave protection.

.1 Apply underlayment over properly prepared, clean and dry decks.

.2 Lay underlayment parallel to the eaves, starting at eaves or eave protection, lapping each course minimum 50 mm over underlying course.

.3 Secure underlayment with the minimum number of nails to hold it securely in place before shingles are applied. If two or more pieces are required to continue a course, overlap ends minimum 100 mm.

.4 Stagger end laps from those in a preceding course by minimum 150 mm.

.6 Install asphalt shingles in accordance with CSA A123.1/A123.5-05.

.7 Install roof vents per manufacturer's instructions. Unobstructed vent area shall be not less than 1/300 of the insulated ceiling area. Install additional static roof vents if existing ventilation is insufficient.

.8 Install plumbing and conduit flanges and other roofing accessories per manufacturer's instructions.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions.

.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 00 10 – General Instructions.

.3 Waste Management: Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 06 10 00 – Rough Carpentry

.2 07 21 13 – Board Insulation

.3 07 21 19 – Foamed-in-Place Insulation

.4 07 27 00 – Air Barriers

.5 07 92 00 – Joint Sealants

1.2 REFERENCES

.1 American Hardboard Association (AHA):

.1 AHA A135.6; Hardboard Siding.

.2 Canadian General Standards Board (CGSB):

.1 CGSB 11.3 - M87; Hardboard

.2 CGSB 11.5 - M87; Hardboard, Precoated, Factory Finished for Exterior Cladding

.3 CGSB 11.6 - M87; Installation of Exterior Hardboard Cladding

.4 CGSB 51.32 - M77; Sheathing, Membrane, Breather Type

1.3 DESIGN PERFORMANCE REQUIREMENTS

.1 Design hardboard siding assemblies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under condition indicated:

.1 Wind Loads: Assemblies to withstand maximum wind pressure, suction loads acting normal to plane of surface in accordance with National Building Code of Canada 2010 to loads as follows:

.2 Defection Limits: Assemblies to withstand test pressures with deflection no greater than 1/240 of the span and no evidence of material failure, structural distress, or permanent deformation exceeding 0.2 percent of the clear span.

.1 Test Pressures: 150 percent of inward and outward, upward and downward wind-load design pressures.

.2 General Performance: Hardboard siding assemblies shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

.3 Design hardboard siding assemblies to allow for thermal movement of component materials caused by variation in ambient temperature range of 80 degrees C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.4 Maximum deviation from vertical and horizontal alignment of erected panels: 1 to 1000.

1.4 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature for hardboard siding materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Indicate dimensions and thickness of siding, fastening and anchoring methods, detail and location of joints and gaskets, thermal movement provision, wall openings, head, jamb and sill details, materials and finish, compliance with design criteria and requirements of related work.

.4 Samples:

.1 Submit duplicate 100 x 100 mm samples of siding, representative of materials, finishes and colours.

1.5 QUALIFICATION

.1 Manufacturer: company specializing in producing hardboard siding with 5 years documented experience with sufficient capacity to produce and deliver required units without causing delay in work.

.2 Installer: person specializing in hardboard siding installations with 5 years documented experience approved by manufacturer.

.3 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

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

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 00 10 – General Instructions.

.2 Deliver, store and protect material in accordance with panel manufacturer's recommendations.

.3 Store in an unheated structure or under cover until application. Siding may be temporarily stored outside if at least 4 inches off the ground and on a flat, well drained surface protected from moisture with a shed pack or waterproof cover.

1.7 WARRANTY

.1 Manufacturer's Warranty: Provide manufacturer's standard warranty document executed by authorized company official covering performance and finish, including color, fading, and chalking.

.1 Warranty Period, Siding Material: 25 years from date of Substantial Completion

.1 First 5 years: 100 percent of the purchase price of the damaged siding exclusive of installation labor.

.2 Warranty Period, Paint Finish: 15 years from date of Substantial Completion

.1 First 5 years: 100 percent of the cost of labor and materials required to refinish the affected siding or supply replacement material exclusive of installation labor.

Part 2 Products

2.1 MATERIALS

.1 Hardboard Siding: in accordance with CGSB 11.3:

.1 Thickness: 13 mm.

.2 Core: high density fiberboard, 760 kg/m^3.

.3 Joinery: manufactured interlock system.

.4 Size: 303 mm high, simulating 2 – 140 mm planks x maximum possible length.

.5 Front Surface: factory painted, baked on finish coat.

.6 Colour: as selected by Departmental Representative from manufacturer’s complete range.

.7 Acceptable Products: “Naturetech – Prestige Double 5” Dutchlap” as manufactured by KWP Products, “Ridgewood D-5” as manufactured by LP CanExel Products.

.2 Exterior Air Barrier: in accordance with Section 07 27 00 – Air Barriers.

.3 Accessories:

.1 Trim Boards: prefabricated, 19 mm x 101 mm to match siding.

.2 Nails: Mechanically galvanized, to securely and rigidly retain the work permanently in position, pre-finished baked on coating to match siding finish.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

.1 Before installation examine alignment of substrate and notify Departmental Representative in writing if substrate does not comply with requirements of panel installer.

3.3 INSTALLATION

.1 Install siding in accordance with manufacturer's written instructions and shop drawings.

.1 Allow for thermal movement.

.2 Maintain following installation tolerances:

.1 Maximum variation from plane or location shown on shop drawings: 10 mm/10 m of length and up to 20 mm/100 m.

.2 Maximum deviation for vertical member: 3 mm in an 8.5 m run.

.3 Maximum deviation for a horizontal member: 3 mm in an 8.5 m run

.4 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm.

.3 Erect siding plumb, level, and true.

.4 Do not install component parts that are observed to be defective, including warped, bowed, dented, and broken members.

.5 Anchor panels securely per engineering recommendations and in accordance with approved shop drawings to allow for necessary thermal movement and structural support.

3.4 INCIDENTAL SITE FINISHING

.1 Carefully set exposed nails flush with siding coating.

.2 Touch-up blemished siding materials to match siding color.

3.5 CLEANING

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

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

.3 Make sure weep holes and drainage channels are unobstructed and free of dirt and sealants.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 07 31 13 – Asphalt Shingles

.2 Section 07 46 26 – Hardboard Siding

1.2 REFERENCES

.1 American Aluminum Manufacturers Association (AAMA)

.1 AAMA 621-02, Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates

.2 ASTM International (ASTM)

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

.3 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-37.29, Rubber-Asphalt Sealing Compound

.5 Canadian Standards Association (CSA International)

.1 CSA B111, Wire Nails, Spikes and Staples

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 10 – General Instructions.

.2 Action Submittals:

.1 Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

.2 Shop Drawings: Show fabrication and installation layouts of gutters, downspouts, flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work. Include the following:

.1 Identification of material, thickness, weight, and finish for each item and location in Project.

.2 Details for forming gutters, downspouts, flashing and trim, including profiles, shapes, seams, and dimensions.

.3 Details for joining, supporting, and securing all components, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.

.4 Details of termination points and assemblies, including fixed points.

.5 Details of edge conditions.

.6 Details of special conditions.

.7 Details of connections to adjoining work.

.8 Detail formed flashing and trim at a scale of not less than 1:10.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Do not store materials in contact with other materials that might cause staining, denting, or other surface damage. Store materials away from uncured concrete and masonry.

.2 Protect strippable protective covering on gutters, downspouts, flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

.3 Minimize construction waste sent to the landfill, separate and recycle materials in accordance with best practice.

Part 2 Products

2.1 METAL MATERIALS

.1 Zinc coated steel sheet: minimum 0.60 mm thickness, commercial quality to ASTM A653/A653M, hot-dip galvanized with Z275 designation zinc coating. Surface: smooth, flat.

.2 Prefinished sheet steel: coated by the hot-dip process and precoated with Liquid Polyvinlidene Fluoride Steel Sheet Coil Coatings, AAMA 621: 70 percent PVF2 resin, by weight in colour coat. Colour to match existing.

2.2 GUTTER AND DOWNSPOUTS

.1 Continuous roll formed prefinished sheet steel. Free floating design, supported without penetration by suspension from a gutter cleat.

.1 Zinc coated steel sheet: to ASTM A653/A653M, 0.76mm (0.030”) minimum base metal thickness.

.2 Exterior Finish: Polyvinlidene Flouride (PVF2) minimum 70% Kynar, dry film thickness 0.8 mils minimum. Primer: Baked on epoxy primer coat dry film thickness 0.2 mils minimum. Total exterior dry film thickness: 1.0 mils minimum.

.3 Interior finish: Factory standard prime-coat, dry film thickness 0.5 mils minimum.

.4 Bottom 2 m section of downspout to be hinged.

.5 Color: to match hardboard siding.

.2 Galvanized steel brackets: 50 mm wide at 600 mm o/c maximum.

.3 Eave Metal: Metal to match gutter colour and gauge. Profile to interlock between from roof to gutter assembly.

.4 Provide goosenecks, outlets, strainer baskets and necessary fastenings matching gutter.

2.3 ACCESSORIES

.1 Isolation coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

.1 Isolate aluminum from following components, by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Wood.

.2 Mastic: solvent based, containing SBS modified bitumen, fibres and mineral fillers.

.3 Sealing compound: to CAN/CGSB-37.29, rubber asphalt type. Underlay for metal flashing: dry sheathing to CAN/CGSB-51.32.

.4 Sealants: as specified in Section 07 92 00 – Joint Sealants.

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

2.4 FABRICATION

.1 Form individual pieces in longest practical lengths. Make allowances for expansion at joints.

.2 Hem exposed edges on underside 12 mm, mitre and seal.

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

.4 Fabricate flashings, closures, trims, etc. required for application in accordance with recommendations in SMACNA's Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

.1 End Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

.2 Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.

.3 Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

Part 3 Execution

3.1 EXAMINATION

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

3.2 INSTALLATION

.1 Install sheet metal work in accordance with manufacturer’s instructions, and as detailed.

- .1 Install gutters, downspouts, flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
- .2 Install gutters, downspouts, flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- .3 Install exposed gutters, downspouts, flashing and trim without excessive oil canning, buckling, and tool marks.
- .4 Torch cutting is not permitted.
- .5 Do not use graphite pencils to mark metal surfaces.

.2 Use concealed fastenings except where approved before installation.

.3 Lock end joints and caulk with sealant.

.4 Metal protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.

.5 Expansion Provisions: Provide for thermal expansion of exposed gutters, flashing and trim. Space movement joints at a maximum of 3 m with no joints allowed within 600 mm of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 25 mm deep, filled with sealant concealed within joints.

.6 Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 38 mm, except reduce pre-tinning where pre-tinned surface would show in completed Work.

- .1 Do not solder metallic-coated steel and aluminum sheet.
- .2 Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

.7 Where dissimilar flashing materials meet in coplanar arrangement, coordinate material thickness, and profiles to match ensuring a smooth, flat transition.

3.3 CLEANING AND PROTECTION

.1 Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

.2 Clean and neutralize flux materials. Clean off excess solder.

.3 Clean off excess sealants.

.4 Remove temporary protective coverings and strippable films as gutters, downspouts, flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.

.5 Replace gutters, downspouts, flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Materials, preparation and application for caulking and sealants.

.2 Related Requirements:

.1 Section 07 27 00 – Air Barriers
.2 Section 07 31 13 – Asphalt Shingles
.3 Section 07 46 26 – Hardboard Siding
.4 Section 07 71 23 – Manufactured Gutters and Downspouts
.5 Section 08 50 00 – Windows

1.2 REFERENCES

.1 ASTM International (ASTM)

.1 ASTM C834, Standard Specification for Latex Sealants
.2 ASTM C920, Standard Specification for Elastomeric Joint Sealants
.3 ASTM C1193, Standard Guide for Use of Joint Sealants
.4 ASTM C1248, Standard Test Method for Staining of Porous Substrate by Joint Sealants
.5 ASTM C1330, Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants

.2 Canadian General Standards Board (CGSB)

.1 CGSB 19-GP-5M-84, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1)
.2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 10 – General Instructions.

.2 Action Submittals:

.1 Product Data: describing.

.1 Sealant compound.
.2 Primers.
.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other, and in contact with laminated glass.

.2 Samples:

.1 Submit duplicate colour samples of each type of material and colour.

.2 Provide Samples with joint sealants in 13-mm- wide joints formed between two 150-mm- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

.3 Where custom colours are requested, submit colour samples of actual product for review by Departmental Representative.

.3 Informational Submittals:

.1 Manufacturer's instructions for installation of each product specified.

1.4 QUALITY ASSURANCE

.1 Testing: Test sealants in contact with samples of porous materials to be sealed to ensure no staining of material will result in accordance with ASTM C1248.

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 PROJECT CONDITIONS

.1 Environmental Limitations:

.1 Do not proceed with installation of joint sealants under following conditions:

.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.

.2 When joint substrates are wet.

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 Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 Ventilate area of work by use of approved portable supply and exhaust fans.

.1 For work within existing buildings, arrange with Departmental Representative for ventilation system to be operated on maximum outdoor air and exhaust during installation of caulking and sealants.

Part 2 Products

2.1 GENERAL

.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 which offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.

.3 Where sealants are qualified with primers use only those primers.

.4 Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

.5 Colours: match sealant colour to adjacent materials, as selected and approved by the Departmental Representative.

.6 Comply with ASTM C920 and other requirements indicated for each liquid-applied chemically curing sealant, including those referencing ASTM C920 classifications for type, grade, class and uses.

.7 Compatibility: Provide joints sealants, primers and backings that are compatible with one another, and with joint substrates under conditions of service and application as demonstrated by joint sealant manufacturer based on proven test results and field experience.

.8 Sealants: not exude materials that travel into or onto adjacent materials, causing damage, or attracting soiling, which becomes apparent during service life of building.

2.2 SEALANTS

.1 Neutral cure, one part, low modulus silicone, movement range to ±50%, for exterior and interior use on concrete, masonry, stone, metals, glass, porcelain, control joints, expansion joints, between insulating glass units of curtain wall assembly, to ASTM C920, Type S, Grade NS, Class 50 (and inactive CAN/CGSB 19.13), colour selected by Consultant. Test for staining for use with limestone cladding.

.1 Acceptable products: GE SCS2000 Silpruf, Dow Corning 790, Tremco Spectrum 1, Precora 890.

.2 One component, polyurethane, for interior, exterior use in aluminum, wood, glazing, curtain wall joints, heel beads, toe beads, air seals, to CAN/CGSB 19.13, colour selected by Consultant.

.1 Acceptable products: Tremco “Vulkem 116”, Sika Canada “Sikaflex 1-a”, Tremco “Dymonic”.

.3 Acrylics One Part: general purpose, one part, paintable translucent acrylic to CGSB 19-GP-5M, movement range ±10%, for interior use in dry areas around windows, door frames, interior caulking to gypsum board, masonry, and metals.

.1 Acceptable products: Tremco Mono 555, Franklin International Titebond Painters Plus Caulk, GE RCS20 Siliconized Acrylic Sealant.

.4 Joint Cleaner: Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.5 Primer: as recommended by manufacturer, meeting maximum VOC requirements.

.6 Back-up Materials:

.1 Backer rod: polyethylene, closed cell foam backer rod, compatible with sealant, recommended by manufacturer, diameter oversize 30 to 50% to suit joint.

.1 Acceptable products: Dow Chemical “Ethafoam”, Tremco “Sof Rod”.

.2 Bond breaker tape: polyethylene, pressure sensitive bond breaker tape which will not bond to sealant.

.3 Expanding Foam Sealant: Precompressed, open cell, chemically stabilized acrylic impregnation, adhesive backed, high density polyurethane foam, precompressed size indicated, width indicated, grey colour.

.1 Acceptable products: Emseal Joint Systems Ltd. “Backerseal”.

Part 3 Execution

3.1 EXAMINATION

.1 Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.2 Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

3.2 PROTECTION

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

3.3 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

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

.6 Test materials being sealed, caulked for staining, adhesion.

3.4 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.5 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.

3.6 APPLICATION

.1 Sealant:

.1 Apply sealant in accordance with manufacturer's written instructions.
.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
.3 Apply sealant in continuous beads.
.4 Apply sealant using gun with proper size nozzle.
.5 Use sufficient pressure to fill voids and joints solid.
.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
.7 Tool exposed surfaces before skinning begins to give slightly concave shape.
.8 Remove excess compound promptly as work progresses and upon completion.
.9 Apply non-paintable silicone sealants after wall surfaces have been painted.

.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 Cleanup:

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 69 - Metal Storm Door and Frame.

.2 Section 08 80 50 - Glazing

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-12.1-[M90], Tempered or Laminated Safety Glass.

.2 CGSB 82-GP-3M AMEND-[1981], Doors, Aluminum, Combination Storm and Screen.

.2 ASTM International

.1 ASTM E283; Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

.2 ASTM E330; Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Pressure Difference

.3 ASTM E331; Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

.4 ASTM E547; Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference

.3 Underwriters' Laboratories of Canada (ULC)

.1 CAN4-S104: Standard Method for Fire Tests of Door Assemblies.

.4 National Fenestration Rating Council (NFRC)

.1 NFRC 100; Procedure for Determining Fenestration Thermal Properties

.2 NFRC 200; Solar Heat Gain Coefficient and Visible Transmittance

.5 National Fire Protection Association (NFPA)

.1 NFPA 252: Standard Methods of Fire Tests of Doors Assemblies.

.6 Green Seal Environmental Standards

.1 Standard GS-03-[93], Anti-Corrosive Paints.

.2 Standard GS-11-[97], Architectural Paints.

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

.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

.1 Provide product data, shop drawings, and samples in accordance with Section 01 33 00 – Submittal Procedures

.2 Shop Drawings:

.1 Indicate elevation of each door and frame type.

.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, glazed openings, arrangement of hardware, fire rating, and finishes.

.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing, fire rating, and finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.4 COORDINATION

.1 Coordinate hardware preparation requirements.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 00 10 - Common Product Requirements.

.2 Waste Management and Disposal in accordance with Section 01 00 10 – Waste Management.

Part 2 Products

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications.

.1 Jeld-Wen

.2 Masonite

.3 Stanley Doors

.4 All Weather Windows

.5 Paramount

2.2 MATERIALS

.1 Wood Frames: Pine, preservative treated in accordance with WDMA I.S.4.

.2 Steel Skins: 24 gauge cold-rolled galvanized steel.

.3 Stiles and Rails

.1 Wood Edge Construction: 1 inch Laminated Veneer Lumber (LVL).

.2 Steel Edge Construction: 22-gauge continuous roll-formed steel.

.4 Core: Custom-fitted Polystyrene.

2.3 STEEL ENTRANCE DOORS AND SIDELIGHTS

.1 Thickness: 1-3/4 inch

.2 Edge Construction: Steel.

.3 Door Design:

.1 Door Surface: Smooth

.2 Door Shape: Squared Top

.3 Door Style: Paneled and Glass

.4 Door Lite: ¾ Lite

.5 Lite Shape: Rectangle

.6 Simulated Divided Lite (SDL): 1 Lite

.7 Face Pattern: 3-Panel

.8 Finish: Two-coats, low-sheen, baked-on enamel primer, site painted

.9 Colour: as selected by Departmental Representative

.10 Hardware: Prep door for hardware

.11 Hardware Finish: Satin Nickel

.4 Sidelights

.1 Size: Full lite.

.2 Style: Match door style.

.3 Shape: Rectangle

.4 Sticking Profile: [Standard] [Beaded].

.5 Finish: Two-coats, low-sheen, baked-on enamel primer, site painted

.6 Colour: as selected by Departmental Representative

2.4 PREHUNG HARDWOOD SYSTEMS

.1 Profile: Single Door or One Door, One Sidelight

.2 Jamb: Solid pine wood

.3 Profile: Rabbeted

.4 Width: Refer to drawings and site verify

.5 Casing: Brickmould

.6 Hinges: Solid brass concealed-bearing

.1 Finish: Satin Nickel

.7 Sills: Aluminum with polished aluminum finish

2.5 GLAZING

.1 Glass Inserts: as selected from manufacturer's standard range by Departmental Representative.

.2 Transom Glazing: Match glass insert style.

2.6 CONSTRUCTION ACCESSORIES

.1 Flashing

.2 Sealants

.3 Refer to Section 07 92 00 Joint Sealants

.4 Provide manufacturer recommended sealants maintain watertight conditions.

2.7 FABRICATION

.1 One-piece of polystyrene is custom fitted in standard wood stile and rail frame. Back of steel skin is coated with epoxy primer before attachment to core and frame.

Part 3 EXECUTION

3.1 GENERAL

.1 Install doors in accordance with manufacturer’s installation guidelines and recommendations.

3.2 EXAMINATION

.1 Inspect door prior to installation.

.2 Inspect rough opening for compliance with door manufacturer recommendations. Verify rough opening conditions are within recommended tolerances.

3.3 INSTALLATION

.1 Install jamb assembly.

.2 Caulk sill along outside edge and ½ inch in from edge of subfloor.

.3 Set door unit into center of opening and tack in place.

.4 Shim hinge then latch side jambs straight. Inspect jamb for square, level and plumb.

.5 Shim and fasten top of unit where sidelight joins door jamb.

.6 Fasten hinge side jamb to studs.

.7 Verify door opens freely and weatherstrip meets door evenly.

.8 Verify door sweep contacts threshold evenly.

.9 Fasten latch side jamb to studs.

.10 Install transom.

.11 Apply caulk on top of door head jamb.

.12 Set transom jamb on door head jamb and fasten.

.13 Shim transom straight. Inspect transom for square, level and plumb.

.14 Fasten transom to studs.

.15 Caulk outside perimeter of door unit between brickmold and wall face, along front side of threshold, and between jamb sides and threshold.

3.4 PROTECTION

.1 Protect installed doors from damage.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 26 – Steel Doors

.2 Section 08 80 50 – Glazing

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-12.1-[M90], Tempered or Laminated Safety Glass.

.2 CGSB 82-GP-3M AMEND-[1981], Doors, Aluminum, Combination Storm and Screen.

.2 Green Seal Environmental Standards

.1 Standard GS-03-[93], Anti-Corrosive Paints.

.2 Standard GS-11-[97], Architectural Paints.

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

.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 10 - Submittal Procedures.

.2 Provide product data: in accordance with Section 01 00 10 - Submittal Procedures.

.3 Provide shop drawings: in accordance with Section 01 00 10 - Submittal Procedures.

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

.4 Provide samples: in accordance with Section 01 00 10 - Submittal Procedures.

1.4 COORDINATION

.1 Coordinate rekeyable deadbolt lock to match exterior house locks.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 00 10 – Common Product Requirements.

.2 Waste Management and Disposal in accordance with Section 01 00 10 – Waste Management.

Part 2 Products

2.1 GENERAL

.1 Door classification to CGSB 82-GP-3M as follows:

- .1 Type 1 - Self-storing Glass and Screen Inserts.
- .2 Class A - Extruded Aluminum.

2.2 MATERIALS

.1 Door components, including:

- .1 Finish: Baked enamel on exposed aluminum surface
  - .1 Color selected from Manufacturer's Standard Colour Range by Departmental Representative.
- .2 Stiles and rails.
- .3 ¾ light glazing arrangement
- .4 Fixed and operable glass panels.
- .5 Fixed screen.
- .6 Bottom kick panel.

.2 Glass: clear, tempered safety glass to CAN/CGSB 12.1 M90.

.3 Insert Screen: size to suit operable glass panel and to CAN/CGSB 79.1 M91 as follows:

- .1 Type 2 - Heavy Duty.
- .2 Class C - Fixed.
- .3 Style 1 - Aluminum Screening.

.4 Hardware:

- .1 Latchset and hinges.
  - .1 Finish: nickel or brushed nickel
- .2 Door closer.
- .3 Safety door check.
- .4 Weather-stripping, including sweep.
  - .1 Sweep weatherstrip: adjustable, metal strip with insert weatherstrip to CGSB 82-GP-3M.

.5 Manufacturer's nameplates on screen and storm doors are not acceptable.

2.3 FABRICATION

.1 Fabricate aluminum screen and storm doors in accordance with CGSB 82-GP-3M except where specified otherwise.

.2 Glazing Arrangement: ¾ light glazing arrangement. Vertical sliding glass panel centred between fixed glass panels

.3 Size doors to fit into designated doorframes.

.4 Assemble stiles and rails with hairline corner joints, aligned and secured with corner reinforcement.

Part 3 Execution

3.1 INSTALLATION

.1 Install screen and storm doors in accordance with manufacturer's written instructions.

.2 Accurately fit and secure doorframe to door opening. Adjust door and hardware for smooth operation.

.3 Install weather-stripping for continuous seal.

END OF SECTION

Part 1 General

1.1 SUMMARY OF WORK

.1 Work Included: The work of this Section includes the provision of all labour, materials, equipment and services required to fabricate and install windows, as indicated on the drawings, as specified herein and as required for a complete project.

1.2 Related Sections:

.1 Section 07 27 00 - Air Barrier

.2 Section 07 92 00 - Joint Sealants

.3 Section 08 80 50 - Glazing

1.3 REFERENCES

.1 ASTM International

- .1 ASTM D2240, Test Method for Rubber Property - Durometer Hardness
- .2 ASTM E283-09(R2012), Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .3 ASTM E547-00(R2009), Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
- .4 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference.
- .5 ASTM E1748-95(2009), Standard Test Method for Evaluating the Engagement Between Windows and Insect Screens as an Integral System.
- .6 ASTM F588-14, Standard Test Method for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.

.2 CSA Group

- .1 CSA A440-11, NAFS - North American Fenestration Standard for Windows, Doors, and Skylights.
- .2 CSA A440S1-09, Canadian Supplement to AAMA/WDMA/CSA 101/1.S.2/A440, NAFS - North American Fenestration Standard for Windows, Doors, and Skylights.
- .3 CAN/CSA-A440.4-07(R2012), Window, Door, and Skylight Installation
- .4 CAN/CSA-A440.2/A440.3-09, Fenestration energy performance/User guide to CSA A440.2, Fenestration energy performance.

.3 Flat Glass Manufacturers Association (FGMA)

- .1 FGMA Glazing Manual

.4 Screen Manufacturers Association (SMA)

.1 SMA 1201R-2002 Specification for Insect Screens for Windows, Sliding Doors and Swinging Doors.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for windows and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit WHMIS MSDS - Material Safety Data Sheets. Indicate VOC's for glazing materials during application and curing.

.3 Shop Drawings:

.1 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, and description of related components, exposed finishes, fasteners, and caulking. Indicate location of manufacturer's nameplates.

.4 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

.3 Submit one representative model of each type window.

.4 Include frame, sash, sill, glazing and weatherproofing method, insect screens, surface finish and hardware. Show location of manufacturer's nameplates.

.5 Include 300 mm long samples of head, jamb and sill to indicate profile.

.5 Manufacturer's instructions:

.1 Submit manufacturer's installation instructions.

1.5 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 00 10 – General Instructions.

.2 Operation and Maintenance Data: submit operation and maintenance data for windows for incorporation into manual.

1.6 QUALITY ASSURANCE

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

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 00 10 – General Instructions.

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

.3 Storage and Handling Requirements:

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

.2 Store and protect windows from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.8 WARRANTY

.1 Provide manufacturer’s written guarantee for sealed units against failure of hermetic seal for period 20 years from date of Substantial Performance.

.2 Provide manufacturer’s written guarantee that polyvinyl chloride windows will remain leak proof including coverage for complete system failure in accordance with GC 32, but for 25 years from date of Substantial Performance.

.3 Provide manufacturer’s written guarantee that polyvinyl chloride finish, coatings will not develop excessive fading, non-uniformity of colour, shade, will not crack, peel, pit, corrode for period 5 years from date of Substantial Performance.

.1 Excessive fading: change in appearance which is perceptibly objectionable, determined by Consultant when viewed visually in comparison with original colour range standards.

.2 Excessive non-uniformity: non-uniform fading during period of guarantee to extent adjacent panels have colour difference greater than original acceptable colour range.

.3 Will not crack, peel, pit or corrode: no cracking, peeling, pitting, other type of corrosion discernable from distance 3 metres, resulting from natural elements in atmosphere.

Part 2 Products

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications.

.1 Jeld-Wen

.2 All Weather Windows

.3 Paramount

.4 Accurate Dorwin

.5 Duraco Windows

2.2 SYSTEM DESCRIPTION

.1 Performance requirements:

.1 Provide continuity of building enclosure air and vapour barrier using glass and glazing materials as follow:

.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.

.2 Size glass to withstand wind loads, dead loads and positive and negative live loads as measured in accordance with ANSI/ASTM E330.

.3 Limit glass deflection to 1/200 with full recovery of glazing materials.

2.3 MATERIALS

.1 Materials: to CSA A440, supplemented as follows:

.1 All windows by same manufacturer.

.2 Sash: polyvinyl chloride, thermally broken.

.3 Main frame: polyvinyl chloride, thermally broken.

.4 Glass: in accordance with Section 08 80 50 - Glazing.

.5 Bug Screens: to SMA 1201R on the ventilating portion of the windows.

.1 Material: non glare fibreglass mesh.

.2 Insect screening mesh: count 18 x 14.

.3 Fasteners: tamper proof.

.4 Screen frames: aluminum, colour to match window frames.

.5 Mount screen frames for interior replacement.

.6 Isolation coating: alkali resistant bituminous paint.

.7 Sealants:

.1 VOC limit 250 g/L maximum.

.8 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, length of 25mm for each square meter of glazing.

.9 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75mm long x one half height of glazing stop x thickness to suit application. Self-adhesive on one face.

.10 Flashing: zinc coated steel sheet: minimum 0.60 mm thickness, commercial quality to ASTM A653/A653M, hot-dip galvanized with Z275 designation zinc coating. Surface: smooth, flat.

.2 Accessories:

.1 Air Conditioner Window / Panel / Tray System: as per information sheet attached to this Section.

2.4 WINDOW TYPE AND CLASSIFICATION

.1 Window types: as indicated on the drawings.

.2 Classification rating: to CSA A440.

.1 Air Tightness: ASTM E283, maximum A3.

.2 Water Tightness: ASTM E547, maximum B7.

.3 Wind Load Resistance: ASTM E330, maximum C5.

.4 Surface condensation control: compliant with standard CAN/CSA-A440.2/A440.3.

.5 Forced Entry: ASTM F588, maximum F10.

2.5 FABRICATION

.1 Fabricate in accordance with CSA A440 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with 380g/m^2 zinc coating to ASTM A123/A123M.

2.6 VINYL FINISHES

.1 Vinyl finishes: in accordance with CSA A440, including appendices, supplemented as follows:

.1 Colour: as selected by Departmental Representative from complete line.

2.7 ISOLATION COATING

.1 Coatings: in accordance with manufacturer's recommendations for surface conditions.

.1 Coating: VOC limit 250 g/L maximum.

.2 Isolate aluminum from following components, by means of isolation coating:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.8 GLAZING

.1 Glaze windows in accordance with CSA A440.

.2 Glass: sealed insulating units in accordance with Section 08 80 50 Glazing.

2.9 HARDWARE

.1 Hardware: white sash locks and handles to provide security and permit easy operation of units.

.2 Operators:

.1 Awning units: underscreen stay bar assembly.

.2 Casement units: roto operators with locking handle.

.3 Locks: multipoint designed to assist with positive seal.

.4 Hinges: concealed.

Part 3 Execution

3.1 EXAMINATION

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

.1 Visually inspect substrate in presence of Departmental Representative.

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

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

3.2 INSTALLATION

.1 Window installation:

.1 Install in accordance with CSA A440.

.2 Arrange components to prevent abrupt variation in colour.

.3 Perform work in accordance with manufacturer’s instructions. Coordinate work with other Sections to ensure proper sequence of construction.

.4 Ensure installed assemblies are plumb, level and free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.

.5 Use sufficient corrosion-resistant anchorage devices to securely and rigidly fasten windows to building, without causing detrimental effects to shape or performance.

.6 Place foamed-in-place insulation in shim spaces around full perimeter, to maintain continuity of thermal barrier.

.2 Sill installation:

.1 Install sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece lengths at each location.

.2 Cut sills to fit window opening.

.3 Secure sills in place with anchoring devices located at ends and evenly spaced 600 mm on centre in between.

.3 Caulking:

.1 Seal joints between windows and window sills with sealant. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.

.3 Seal joints between frame assemblies and adjacent construction and within glazed assemblies (where required) to maintain weather tightness and integrity of air/vapour barrier.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions.

.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 00 10 – General Instructions.

3.4 PROTECTION

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

.2 Repair damage to adjacent materials caused by window installation.

.3 Remove all protection and labels on completion of the Work. Make good all damage and broken glass due to failure of such protection.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 50 00 – Windows

1.2 REFERENCES

.1 American National Standards Institute (ANSI) / American Society for Testing and Materials International (ASTM)

.1 ANSI/ASTM E330, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

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

.1 ASTM D 2240, Test Method for Rubber Property - Durometer Hardness

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-12.1, Tempered or Laminated Safety Glass

.2 CAN/CGSB-12.3, Flat, Clear Float Glass

.3 CAN/CGSB-12.8, Insulating Glass Units

.4 CAN/CGSB-12.11, Wired Safety Glass

.5 CAN/CGSB-12.12, Plastic Safety Glazing

.4 Canadian Standards Association (CSA International)

.1 CSA A440.2, Energy Performance Evaluation of Windows and Sliding Glass Doors

.2 CSA Certification Program for Windows and Doors

.5 Flat Glass Manufacturers Association (FGMA)

.1 FGMA Glazing Manual

.6 Laminators Safety Glass Association (LSGA)

.1 LSGA Laminated Glass Design Guide

1.3 SYSTEM DESCRIPTION

.1 Performance requirements:

.1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:

.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.

.2 Size glass to withstand wind loads, dead loads and positive and negative live loads as measured in accordance with ANSI/ASTM E330.

.3 Limit glass deflection to 1/200 with full recovery of glazing materials.

1.4 QUALITY ASSURANCE

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

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

1.5 SUBMITTALS

.1 Submit shop drawings, product data and instructions in accordance with Section 01 00 10 – General Instructions.

.2 Product data:

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

.2 Submit WHMIS MSDS - Material Safety Data Sheets. Indicate VOC's for glazing materials during application and curing.

.3 Shop drawings:

.1 Submit shop drawings indicating locations of coloured glazing units.

.4 Manufacturer's instructions:

.1 Submit manufacturer's installation instructions.

1.6 CLOSEOUT SUBMITTALS

.1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 00 10 – General Instructions.

Part 2 Products

2.1 MATERIALS: FLAT GLASS

.1 Float glass: to CAN/CGSB-12.3, Glazing quality, clear, 4 mm thick.

.2 Tempered safety glass: to CAN/CGSB-12.1, clear, tempered, 4 mm thick.

.1 Type 2 – tempered.

.2 Class B – float.

.3 Category II – 540J impact resistance.

.3 Silvered mirror glass: 6 mm thick.

.1 Type 3C film reinforced.

.4 Low emissivity coating (Low E): AGC Energy Select 40. Other manufacturers acceptable upon compliance with thermal property requirements.

2.2 SEALED INSULATING GLASS

.1 Windows (IGU1): insulating glass units to CAN/CGSB-12.8, triple unit, 35 mm overall thickness.

.1 Outer light - minimum 4 mm, clear float, low E #2.
.2 Middle light – minimum 4 mm, clear float.
.3 Inner light – minimum 4 mm, clear tempered, low E #5.
.4 Cavity spaces: 13 mm.
.5 Inert gas fill: Argon 90%.
.6 Visible transmittance (VT): 47%.
.7 Solar heat gain coefficient (SHGC): 0.24.
.8 Overall coefficient of heat transfer (U-factor): 0.68 W/(m^2.K).

.2 Primer, sealers and cleaners: to manufacturer's standard.

.3 Setting blocks: Neoprene, 70-90 Shore A durometer hardness to ASTM D 2240, 100mm long x 6mm high x width to suit glass thickness.

.4 Spacer shims: Neoprene or silicone, 50-60 Shore A durometer hardness to ASTM D 2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self-adhesive on one face.

.5 Glazing tape:

.1 Preformed butyl compound, paper released backed, Tremco manufacturer, "Tremco 440 tape", colour matched to frame.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION: EXTERIOR - DRY METHOD (PREFORMED GLAZING)

.1 Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

.2 Cut glazing tape to length; install on glazing light. Seal corners by butting tape and sealing junctions with sealant.

.3 Place setting blocks at 1/4 points, with edge block maximum 150mm from corners.

.4 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

.5 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.

.6 Trim protruding tape edge.

3.5 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.

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

3.6 PROTECTION OF FINISHED WORK

.1 After installation, mark light with an "X" by using removable plastic tape or paste.

END OF SECTION

Approved: 1999-12-16

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 92 00 - Joint Sealants.

1.2 SHOP DRAWINGS

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

.2 Indicate fabrication and erection details, including anchorage, accessories, and finishes.

1.3 SAMPLES

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

.2 Submit duplicate samples of each type of vent showing colour and finish.

.3 Show frame detail, screening and finish.

Part 2 Products

2.1 MATERIALS

.1 Gable Vents

- .1 Vent: UV stabilized copolymer; colour moulded in; 2.54mm nominal wall
- .2 Shape: Rectangular and triangular
- .3 Baffle Black PP: 0.635mm wall
- .4 Insect screen: Fiberglass mesh
- .5 Paintable/Stainable HIPS
- .6 Color: Color to be selected from the Manufacturer’s Standard Color Range by the Departmental Representative.

2.2 FABRICATION

.1 Gable Vent:

- .1 Single piece molded unit
- .2 Baffle and screen sealed to interior side of unit
- .3 Trim ring single piece molded unit

Part 3 Execution

3.1 INSTALLATION

.1 Install vents where indicated.

.2 Attach bird/insect screen to inside face of vent.

.3 Repair damage to vents to match original finish.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Interior painting and repainting

.2 Exterior painting and repainting

1.2 REFERENCES

.1 Master Painters Institute (MPI).

.1 Architectural Painting Specifications Manual

.2 Repainting Maintenance Manual

.2 Systems and Specifications Manual, SSPC Painting Manual, Volume Two, Society for Protective Coatings (SSPC).

.3 National Fire Code of Canada.

1.3 QUALITY ASSURANCE

.1 Conform to latest MPI requirements for painting work including preparation and priming.

.2 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

.3 Obtain approval of paints, varnishes, protective coatings and materials for mixing and thinning from the Consultant prior to application.

.4 Standard of Acceptance:

.1 Walls: No defects visible from a distance of 1000 mm at 90 degree to surface.

.2 Ceilings: No defects visible from floor at 45 degree to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 00 00 – General Requirements.

.2 Product data: submit list of brand name products that Contractor intends to use on each part of the Work.

.3 Upon completion, submit records of products used. List products in relation to finish system and include the following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour numbers.

.4 Manufacturer's Material Safety Data Sheets (MSDS).

1.5 DELIVERY, HANDLING AND STORAGE

.1 Deliver and store materials in original containers, sealed, with labels intact. Labels shall clearly indicate:

.1 Manufacturer's name and address.

.2 Type of paint or coating.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

.2 Remove damaged, opened and rejected materials from site.

.3 Provide and maintain dry, temperature controlled, secure storage.

.4 Observe manufacturer's recommendations for storage and handling.

.5 Store materials and supplies away from heat generating devices.

.6 Store materials and equipment in a well-ventilated area with temperature range 7 deg C to 30 deg C.

.7 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.8 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.

.9 Remove paint materials from storage only in quantities required for same day use.

.10 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.11 Fire Safety Requirements:

.1 Provide Type ABC fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.6 SITE REQUIREMENTS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces.

.2 Perform no painting work unless adequate and continuous ventilation and is in place to maintain ambient air and substrate temperatures above 15 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation after completion of application of paint.

.4 Coordinate use of existing ventilation system with Owner and ensure its operation during and after application of paint as required.

.5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

.6 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Perform no painting work unless sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 15 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

.2 Do not paint when:

.1 Substrate temperature is over 32 degree C unless paint is specifically formulated for application at high temperatures.

.2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.3 Relative humidity is above 85% or when dew point is less than 3 deg C variance between the air/surface temperature.

.3 Do not paint when maximum moisture content of substrate exceeds:

.1 12% for concrete and masonry (clay and concrete brick/block).

.2 15% for wood.

.3 12% for plaster and gypsum board.

.4 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

.5 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

.1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Additional Exterior Application Requirements:

.1 Apply paint finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.

.2 Do not apply paint when:

.1 Temperature is expected to drop below 10 degrees C before paint has thoroughly cured.

.2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.

.3 Surface to be painted is wet, damp or frosted.

.3 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.

.4 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.

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

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.,) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

.2 Treat material that cannot be reused as hazardous waste, and dispose of in appropriate manner.

.3 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.4 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

Part 2 Products

2.1 MATERIALS

.1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Provide paint materials for paint systems from single manufacturer.

.3 Conform to latest MPI requirements for interior and exterior painting and repainting work including preparation and priming.

.4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual, and MPI

Maintenance Repainting Manual "Approved Product" listing, Premium Grade requirements.

2.2 COLOURS

.1 Colour will be selected by the Departmental Representative.

.2 Selection of colours will be from manufacturers' full ranges of colours.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Consultant's written permission.

.2 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.3 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.

.4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

.1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level G1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level G2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level G3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level G4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level G5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level G6 - Traditional Gloss	70 to 85	
Gloss Level G7 - High Gloss Finish	More than 85	

.2 Gloss level ratings of painted surfaces as indicated.

.3 Repainting and patchwork: gloss level of patchwork to match existing surfaces as closely as possible.

2.5 INTERIOR PAINTING SYSTEMS

.1 Interior metal including doors and frames:

.1 INT 5.4J Alkyd, G4 finish

.2 Interior wood surfaces:

.1 INT 6.3A – High Performance Architectural Latex.

.2 Gloss finish to match existing interior wood surfaces.

.3 Interior gypsum board walls and ceilings:

.1 INT 9.2B High Performance Architectural Latex

.2 Gloss finish to match existing interior gypsum board wall and ceiling surfaces.

2.6 INTERIOR REPAINTING SYSTEMS

.1 Interior gypsum board walls and ceilings:

.1 Transition coat/bonding primer recommended by paint system manufacturer.

.2 RIN 9.2B, High performance architectural

.3 Gloss finish to match existing interior gypsum board wall and ceiling surfaces.

2.7 EXTERIOR PAINTING SYSTEMS

.1 Metal including doors and frames:

.1 EXT 5.4F Alkyd, G4 finish

.2 Exterior wood surfaces:

.1 EXT 6.3A Latex, G4 finish

Part 3 Execution

3.1 GENERAL

.1 Perform preparation and operations for painting in accordance with MPI Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.2 EXISTING CONDITIONS

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Consultant. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.3 Maximum moisture content as follows:

.1 Gypsum Board, concrete, concrete masonry, brick: 12%.

.2 Wood: 15%.

3.3 PROTECTION

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Consultant.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect passing pedestrians, building occupants and general public in and about the building.

.5 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking any painting operations. Securely store items and re-install after painting is completed.

.6 Interior areas:

.1 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.2 As painting operations progress, place "WET PAINT" signs to approval of Consultant.

3.4 PREPARATION

.1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Painting Specification Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by vacuuming, brushes or wiping with dry, clean cloths.

.2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to drain completely and allow to dry thoroughly.

.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.3 Where possible, prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

.1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.

.2 Apply wood filler to nail holes and cracks.

.4 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes or vacuum cleaning.

.5 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.6 Do not apply paint until prepared surfaces have been accepted by Consultant.

3.5 APPLICATION

.1 Method of application to be as approved by Consultant. Apply paint by brush or roller. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Consultant.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Consultant.

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

.5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.7 Number of coats of paint specified are intended to cover surface completely. If necessary apply additional coats until satisfactory coverage is obtained at no additional cost to Contract.

.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.9 Finish closets and alcoves as specified for adjoining rooms.

.10 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 EXISTING WORK

.1 Clean and prepare surfaces in accordance with MPI Maintenance Repainting Manual requirements. Refer to MPI Maintenance Repainting Manual in regard to specific requirements and as follows:

.2 Preparation of previously painted surfaces:

.1 Remove loose or flaked paint or paper.
.2 Remove dirt, dust, grease, oil, etc.
.3 Dull glossy areas with sand paper.
.4 Fill minor cracks with plaster patching compound. Sand smooth and wipe clean.
.5 Spot prime patched areas with finishing coat.
.6 Finish as specified for new work.

.3 Painting of patchwork shall include for painting of existing surfaces up to nearest change in direction or surface interruption (i.e. door jamb, corner, bulkhead). Make neat termination, match paint as closely as possible.

3.7 FIELD QUALITY CONTROL

.1 Field inspection of painting operations to be carried out be independent inspection firm as designated by Consultant.

.2 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.3 Co-operate with inspection firm and provide access to areas of work.

3.8 RESTORATION

.1 Clean and re-install all hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION