**SPECIFICATION FOR:**

# ST. JOHN THE BAPTIST CHURCH, OSHAWA
# PARISH HALL ADDITION

**31 BLOOR STREET EAST**
**OSHAWA, ONTARIO**

**IVAN S. FRANKO ARCHITECT**

**30 November 2018**

**SPECIFICATION OF WORK AND MATERIALS FOR:**

**PARISH HALL ADDITION**
**ST. JOHN THE BAPTIST UKRAINIAN ORTHODOX CHURCH**
**31 BLOOR STREET EAST**
**OSHAWA, ONTARIO**

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| | | |
|---|---|---|
| CLOSING | DATE: | **Friday, 11 January 2019** |
| | TIME: | **1:00 PM Local Time** |
| | DELIVER TO: | **patrick@ifranko.com with copies to** |
| | | **annakobilaski@gmail.com and ivan@ifranko.com** |

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*Address Questions Regarding Tender to:*

IVAN S. FRANKO ARCHITECT
5359 Dundas Street West, Suite 200
Etobicoke, Ontario
M9B 1B1

Tel. (416) 232-0777
Fax (416) 232-0778
e-mail : **patrick@ifranko.com**
cc : ivan@ifranko.com

Contact: Patrick Padilla

**Questions will be answered until Monday, January 7, 2019.**
**Deadline for issuing addenda will be Wednesday, January 9, 2019.**

# SPECIFICATION

**ST. JOHN THE BAPTIST UKRAINIAN ORTHODOX CHURCH**
**PARISH HALL ADDITION**

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# INSTRUCTIONS TO BIDDERS

## 1.0 INVITATION

### 1.1 Call for Bids

.1 Bids for the provision of all the Work will be received by

Ivan S. Franko Architect
5359 Dundas Street West, Suite 200
Etobicoke, ON M9B 1B1

**Attention: Mr. Ivan Franko, Architect**

**Bids to be sent by email to:**
**patrick@ifranko.com and copied to:**

**annakobilaski@gmail.com**
**ivan@ifranko.com**

until 1:00 p.m., LOCAL TIME, Friday, January 11, 2019

.2 Submit the executed Bid (with appendices) on the forms provided.

.3 Bids submitted after the above time may be regarded as informal and subject to rejection.

.4 Amendments to a submitted Bid will be permitted if received in writing prior to Bid Closing and also endorsed by the same parties who signed the sealed offer.

### 1.2 Contract Documents Identification

.1 The Bidding/Contract Documents are identified as:

St. John's Church
Parish Hall Renovations
31 Bloor Street East
Oshawa, Ontario

- *Architectural: Drawings A0 to A17, dated 30 November 2018*
- *Structural: Drawings S1 to S6, dated 15 October 2018*
- *Mechanical: Drawing M1 and M5, dated 26 October 2018*
- *Electrical: Drawing E1 and E4, dated 26 October 2018*
- *Life Safety: Drawing L1 to L5, dated 26 October 2018*

- *Site Grading and Servicing Plan: SG-1, dated 12 January 2018 (Drawings are not updated)*
- *Erosion and Sediment Control Plan, ES-1 dated 12 January 2018 (Drawings are not updated)*
- *Specification, dated 30 November 2018.*
- *Geotechnical Report, dated May 2015.*

## 1.3 Queries - Addenda

.1 Direct questions to **Owner's Representative:**

Patrick Padilla
Ivan S. Franko Architect
Telephone (416) 232-0777
Email: **patrick@ifranko.com**

.2 Questions will be accepted only from invited Bidders. Subcontractors or suppliers shall obtain interpretations and clarifications from the General Contractors to whom they are bidding.

.3 Any interpretation of, or change in the Bidding Documents prior to the date specified for receipt of tenders will be made only by written addenda.

.4 Verbal answers are binding only when confirmed by written addenda.

## 1.4 Site Examination

.1 The site of the proposed Work is located at 31 Bloor Street East, Oshawa, Ontario.

.2 A Pre-bid Meeting is not required as most bidders have already visited the site. If bidders would like to re-visit the site to refresh their memory, please e-mail Jerry Prusinski (lisaprusinski@gmail.com) or contact Anna Kobilaski (annakobilaski@gmail.com) 905-510-3866.

# 2.0 BID SUBMISSION

## 2.1 Bidding Documents Availability

.1 All drawings and specifications will be distributed in PDF format. The Bidder may print at their own expense.

.2 Immediately notify the Owner's Representative should Bidding Documents be incomplete or upon finding discrepancies or omissions.

## 2.2 Bid Submissions

.1 Bidder shall be solely responsible for the delivery and submission of their Tenders in the manner and within the time prescribed.

.2 Bids shall be for a Stipulated Lump Sum without escalation clauses.

# 3.0 BID ENCLOSURES - REQUIREMENTS

## 3.1 Qualifications

.1 Owner reserves the right to reject any and all bids.

.2 It shall be noted that prior to award of the Work a meeting may be held to review the Tender and the Contractor's understanding of the Scope of Work, the conditions which will apply and the requirements of the schedule.

.3 The successful Contractor shall accept Owner's Letter of Award or Purchase Order based on the Stipulated Price Contract Specified herein.

## 4.0 OWNER FURNISHED ITEMS

.1 Other contractors and installers for client purchased items area as follows and are not limited to:

a) Furniture.
b) Kitchen appliances

The contractor shall accommodate the entry of the material into the work when these items are delivered and co-operate and co-ordinate the timing and installation of these items by others.

.2 Confidentiality

All Supplier document information provided herein is to be considered confidential and is not to be copied or made available to others.

## 5.0 SUBSTITUTIONS

.1 Bidders shall note that this is a base bid specification. Products and materials specified shall form the basis of the bid.

## TENDER FORM

**1.0 NAME OF BIDDER**_____

TENDER FOR: Parish Hall Addition,
St. John the Baptist Church
31 Bloor Street East
Oshawa, Ontario

**2.0 TENDER PRICE**

The Undersigned (Hereinafter referred to as "Contractor") proposes to provide all labour, supervision, material, equipment and all other services for the proper completion of the Work of the referenced Contract, in accordance with Conditions, Specifications and Drawings included with the Tendering Documents, as prepared by Ivan S. Franko Architect for the Stipulated Contract Price (hereinafter referred to as "Tender Price") of:

_____

_____/100 Dollars($_____)

in Canadian Funds which includes all prime costs, allowances, freight, duties, and government excise or sales taxes in force at this date. The price above does **not** include the Harmonized Sales Tax (HST).

Harmonized Sales Tax: _____/100 Dollars ($_____)

2.1 Tender Acceptance

The Contractor agrees that this Tender is open to acceptance for a period of sixty (60) days from tender closing date.

2.2 Price Adjustments

The above stated tender price includes fully for all increases, for whatever cause, in cost or price of labour, materials, equipment or fuels. Escalation shall not apply for the duration of the Contract.

2.3 Documents and Addenda

The Contractor submits that he has thoroughly reviewed the Instructions to Bidders, Tender Form and Appendices, General Conditions of Contract, Supplementary Conditions, General Requirements, Drawings, Specifications, Reference Documents and the following Addenda and hereby accepts and agrees to all provisions and conditions stated therein and has included fully all requirements in the Tender Price:

Addendum_____dated_____

Addendum_____dated_____

Note: If no addenda have been received write in "NONE".

2.4 Appendices to Tender

The information to be submitted on Subcontractors and Suppliers, Cost Breakdown, etc. as called for in the Tender Documents form and integral part of this Tender.

2.5 Owner Furnished Items

The Tender Price stated herein fully includes for the installation of Owner furnished items, as well as all other costs for pick up from suppliers, transportation, checking-out, handling, temporary storage if necessary, required to achieve a complete installation including overhead and profit, with no other costs to be added. Note: This is not applicable in this contract – owner supplies furniture will be installed by owner's forces after the completion of construction.

**3.0 FEES FOR CHANGES IN THE WORK**

For all changes in the Work which may be ordered by the Owner, the following percentages shall be used, as applicable, in Contract Price adjustments in accordance with the General Conditions.

3.1 Material

The percentage mark-up on MATERIAL IS: _____5_____%

- Material costs shall be calculated using the actual invoiced cost to Contractor (including P.S.T., if any) plus cost of transportation.

3.2 Labour Rates

The following is the schedule of all-inclusive hourly rates (blended for foreman, journeyman, apprentice) which includes the costs of vacation and statutory holiday pay, burdens, benefits, home office administration and overhead, warranty, small tools and consumable allowance, clean-up, all field overheads including supervision above working foreman level and all other indirect costs, overhead and profit. Rates EXCLUDE only the Harmonized Sales Tax and Bonding.

| | Trade | Straight Time | Overtime |
|---|---|---|---|
| a) | Demolition & Removal | $_____ | $_____ |
| b) | Concrete & Waterproofing | $_____ | $_____ |
| c) | Masonry and Wall Insulation | $_____ | $_____ |
| d) | Structural Steel | $_____ | $_____ |
| e) | Labourer | $_____ | $_____ |
| f) | Framing , Drywall, Acoustic Ceilings | $_____ | $_____ |
| g) | Carpentry | $_____ | $_____ |
| h) | Doors and Hardware | $_____ | $_____ |
| i) | Aluminum Windows and Doors | $_____ | $_____ |
| j) | Roofing | $_____ | $_____ |

| | | | |
|---|---|---|---|
| k) | Flooring | $_____ | $_____ |
| l) | Painting | $_____ | $_____ |
| m) | Electrical Work | $_____ | $_____ |
| n) | Mechanical | $_____ | $_____ |

3.3 Contractor's Subcontractors (Third Party, Arms-Length)

The percentage to be added to the invoiced cost of extra work completed by a Subcontractor to the Contractor is: _____5_____%

- Included in this percentage is the applicable compensation to cover all of Contractor's supervision, overhead, profit and all other costs.

3.4 Subcontractor's Mark-Ups

The percentage mark-ups, used by Contractor's Subcontractor shall not exceed Contractors markup rates specified in 3.1 to 3.3 above, unless prior written authorization has been given by Owner and any such additional authorization shall be for burden adjustments only.

## 4.0 PROJECT STAFF AND LABOUR AGREEMENTS

4.1 The Contractor shall provide full time supervision throughout the duration of the project to the satisfaction of the Owner, for which the Contractor proposes the persons:

Project Manager _____

General Superintendent _____

## 5.0 LIST OF SUBCONTRACTORS AND SUPPLIERS

The following are Subcontractors and Suppliers we propose to use for the items of Work listed hereunder and upon which the Tender is based.

The list is subject to the approval of the Owner and no changes form this list will be allowed without express written permission.

Note: If work performed by Bidder, write in "Own Forces".

| Description of Work | Subcontractor |
|---|---|
| Demolition & Removal | _____ |
| Concrete & Waterproofing | _____ |
| Masonry and Wall Insulation | _____ |
| Structural Steel | _____ |
| Framing & Drywall | _____ |
| Rough Carpentry | _____ |
| Carpentry | _____ |
| Doors and Frames | _____ |
| Hardware | _____ |
| Aluminum Windows and Doors | _____ |
| Roofing | _____ |
| Flooring | _____ |
| Painting | _____ |
| Electrical | _____ |
| Mechanical | _____ |

## 6.0 SCHEDULE

The Contractor submits that he has carefully examined the Drawings and Specifications and the Site of the proposed Work and has satisfied himself as to his ability and the ability of his Subcontractors and Suppliers to meet the requirements for timely progress and completion set out below and to execute the Work in full accordance with Contract Documents.

It is understood and agreed that the Tender Price stated herein includes all costs on account of premium time or overtime work required in order to meet the completion date (and Owner's partial occupancy requirements, if any), whether or not such work is done by the Contractor's own forces or by his Subcontractors.

| | EVENTS | DATES SPECIFIED BY OWNER | DATES SPECIFIED BY CONTRACTOR |
|---|---|---|---|
| .1 | Award of Contract | | _____ |
| .2 | Shop Drawing Submissions | | _____ |
| .3 | Start Work on Site | | |
| .4 | Demolition & Removal | _____ | _____ |
| .5 | Concrete & Waterproofing | _____ | _____ |
| .6 | Structural Steel | _____ | _____ |
| .7 | Masonry and Insulation | _____ | _____ |
| .8 | Framing & Drywall | _____ | _____ |
| .9 | Rough Carpentry | _____ | _____ |
| .10 | Finish Carpentry | _____ | _____ |
| .11 | Doors and Hardware | _____ | _____ |
| .12 | Aluminum Windows | _____ | _____ |
| .13 | Curtain Wall | _____ | _____ |
| .14 | Painting | _____ | _____ |
| .15 | Flooring | _____ | _____ |
| .16 | Electrical | _____ | _____ |
| .17 | Mechanical | _____ | _____ |
| .18 | EIFS Stucco | _____ | _____ |
| .19 | Total Performance | | _____ |
| .20 | Number of days to complete from date of Award of Contract | 6.5 Months | _____ |

## 7.0 COST BREAKDOWN

The following is the Cost Breakdown comprising all items of work included in the Stipulated Tender Price. The amounts listed shall represent a schedule of values of the various parts of the Work, aggregating the total amount of the Contract Price and divided so as to facilitate evaluation of payments.

| Item of Work | Material Price | Labour Price | Totals |
|---|---|---|---|
| Site Servicing, Erosion and Sediment Control | | | |
| Landscaping (both hardscape, softscape and planting ) – not part of scope | | | |
| Mobilization & Supervision | | | |
| Demolition & Removals | | | |
| Asphalt (not part of scope) | | | |
| Concrete (Interior and main structure only) See separate price for sidewalks | | | |
| Structural Steel | | | |
| Masonry and Wall Insulation | | | |
| EIFS Stucco | | | |
| Framing & Drywall | | | |
| Carpentry | | | |
| Interior B/F Ramp Construction | | | |
| Doors & Frames | | | |
| Aluminum Windows and Doors | | | |
| Roofing | | | |
| Painting | | | |
| Electrical | | | |
| Mechanical (Do not include HVAC) HVAC separate price | | | |
| Fire Alarm System | | | |
| Other work, if any | | | |

| | |
|---|---|
| Profit | |
| Hardware allowance - $10,000 | $ 10,000.00 |
| Testing allowance - $10,000 | $ 10,000.00 |
| **TOTAL TENDER PRICE** | **$_____** |
| Harmonized Sales Tax | EXCLUDED |
| Total amount for Provincial Sales Tax (included above) | $_____ |
| Total amount for Premium Time Work (included above) | $_____ |
| Total hours of Premium Time Work (included above) | _____hrs |

**8.0 SEPARATE PRICE**

| | |
|---|---|
| HVAC | **$_____** |
| Engineered hardwood with DMX AIRFLOW underlayment | **$_____** |
| Kitchen Cabinets | **$_____** |
| Building Exterior Signage | **$_____** |
| VCT Floor | **$_____** |
| Concrete Sidewalk<br>At main entrance door D100 only | **$_____** |
| Wheelchair lift in lieu of ramp | **$_____** |
| **TOTAL SEPARATE PRICE** | **$_____** |
| Harmonized Sales Tax | EXCLUDED |

**9.0 BIDDERS UNDERSTANDING**

The Contractor represents that they have had a sufficient opportunity to examine and has carefully examined the Site of the Work and the local conditions and all Drawings and Specifications and Reference Documents which relate to the Work; that they have made all investigations essential to a full understanding of the difficulties which may be encountered, and that they have sufficient equipment, experience and forces to perform the Work in accordance with the Drawings and Specifications and the Terms of this Contract within the Time specified

No allowances or extra consideration on behalf of the Contractor will be allowed by the Owner by reason of additional costs, damages or other difficulties incurred by the Contractor for failure to have fully investigated and determined conditions affecting the Work.

**10.0 EXECUTE CONTRACT**

The Contractor agrees that if this Tender is acceptable to the Owner, he will:

- Accept a Letter of Award (or Purchase Order) as authority to commence work.

- Furnish prior to commencing work, certified copies of Insurance Policies as required by the Conditions of the Contract, naming the Owner as additional insured.

- Furnish within 7 days, a Certificate of Clearance from Workers' Compensation Board of Ontario, indicating the Owner as "Principal".

- Furnish within 2 days, a detailed Schedule of Work, showing dates for preparation and submission of shop drawings, fabrication and erection, and a breakdown of items and stages of the Work.

**11.0 ADDRESS, LEGAL STATUS AND SIGNATURE OF BIDDER**

a) The Contractor does hereby designate the address, given below as the legal address to which all notices, directions or other communications may be served or mailed:

Street _____

City _____Province _____

Postal Code _____ Tel. _____ Email: _____

b) Contact for questions relating to this Tender

Name _____ Title_____

c) The undersigned does hereby declare that the Bidder has legal status checked below:

_____Individual

_____Partnership

_____Corporation incorporated under the laws of

_____ Date_____

d) This Tender is submitted under the name:

_____
(Company Name - Typed)

By _____

Signature

Name_____ Title_____
(Typed)

Signed this_____ day of_____20___

**DIVISION ONE - GENERAL REQUIREMENTS**

**SECTION ONE B - GENERAL WORK**

**1.** Comply with the General Conditions, Supplementary Conditions and the requirements of Division 1.

**2. Schedule of Operations**

.1 The Contractor shall prepare a schedule of operations for review by the Architect and the Owner before commencing the work.

**3. Work Site**

.1 Maintain work site in neat, orderly condition during construction. Upon completion of the work remove, surplus material etc., leaving site in clean, tidy and satisfactory condition.

**4. Site Preparation**

.1 Examine the existing conditions of the work site in accordance with Instructions to Bidders and Division 1A - General Requirements.

**5. Superintendent**

.1 The Contractor is required to provide a full-time Superintendent during the progress of the work.

**6. Construction Facilities**

.1 **Hoarding** - Erect and maintain hoardings and barricades required by public authorities or required to protect the public and workers from injury.

.2 **Light & Electrical** - Provide temporary lighting required for proper execution of the work and to maintain in good working order. Arrange for, obtain, and pay for permits required. Abide by rules of the Canadian Electrical Code.

**7. Fires**

.1 Fires are not permitted on the Site. Remove combustible and non-combustible waste at regular intervals and/or when directed. Precautions shall be taken to avoid fire by spontaneous combustion. **Smoking is prohibited in the building.**

.2 Provide and maintain in good working order at least one Underwriters labelled 2A 10BC Dry Chemical Fire Extinguisher which shall be prominently placed on the job from commencement of work until completion.

**8. Record Drawings**

.1 Maintain as work progresses accurate records of changes to drawings and locations of concealed services. A copy of the floor and site plans will be supplied for making these recordings. Upon completion of project deliver plans to Architect with recordings neatly inked in.

**9. Site Meetings**

.1 Site meetings shall be arranged between all parties at a preconstruction meeting. Site meetings will be held at regular intervals as deemed necessary for the work.

.2 The Contractor shall keep and record minutes of all site meetings and shall distribute copies of minutes to all who were present. Copies of the minutes shall be distributed within one week of the meeting date.

**10. Signs**

.1 Other than signs for safety, caution or instruction, only signs of this Contractor, the Architect, and the Owner will be permitted on the Site.

**11. Safety**

.1 Where drawings or specifications are required by the Contractor for the protection of workmen or others, the responsibility for obtaining such drawings, or specifications shall be that of the Contractor who shall assume all responsibility as to the adequacy thereof.

**12. Clean Up (Final)**

.1 On completion of the work, clean and polish all glass, hardware, brass, and the like.

.2 Remove stains and smudges from all finished surfaces. Leave building broom clean / vacuum clean and to the satisfaction of the Architect.

.3 Remove surplus joint filler, caulking compound, etc., from all surfaces of the work. Remove stains and dirt from all floor areas and sweep / vacuum / wash clean to Architect's approval.

.4 Replace all broken or damaged glass at Contractor's own expense.

.5 On completion of the work, the Contractor shall ensure that all works under this contract are installed and complete and have been inspected, tested and adjusted and are all in acceptable condition.

**13. Enclosures**

.1 **Provide temporary weathertight enclosures for all exterior openings as may be required to protect all work from the weather.**

**14. Permits, Deposits and Responsibilities**

.1 Abide by all local By-laws.

.2 An application has been made for a Building Permit by the Architect as the Authorised Agent for the Client. All other Permits, where required for work in the Contract, shall be the responsibility of the Contractor.

**15. Scope of Work**

.1 The work shall consist of:

a) Demolition and disposal.

b) Excavation and Backfilling of excavated areas related to work shown on Site Servicing Plan – SG1 .

c) Parish Hall: Concrete footings, foundation walls, structural steel, exterior walls and roof. Connections to existing buildings and installation of maintenance of existing drainage tile. Interior stair and ramp with handrails. South exit stair from church with guardrails and handrails, washrooms and kitchen. Windows, doors, frames and hardware. Interior finishing, including drywall,

flooring and painting. Plumbing, HVAC, life safety, fire alarm system and electrical, backfilling, some concrete sidewalks and all site work. All Landscaping (Hardscape and Softscape) will not be part of scope.

d) The existing building on site is used as a church, and has scheduled activities throughout the week. Funerals and other activities may also take place. **These church activities will continue uninterrupted during the course of the construction, and construction to be carried out in a manner so as not to interfere with these activities.**
**St. John the Baptist Church will give the General Contractor a minimum of 24 hours notice of any special events.**

e) The above Scope Work is intended to help orient the contractor. For a full understanding of the work, all drawings and specifications must be carefully studied.

## DIVISION ONE – GENERAL REQUIREMENTS
## SECTION ONE C - SUPPLEMENTARY CONDITIONS

**This modifies Section 1.1.8 of CCDC2 (2008)**

1. Copies of documents will provided to the Contractor in PDF format only.

2. It is acknowledged that the work is being carried out in a place of worship. The Contractor shall ensure that his workmen, agents, subcontractors, and generally any persons permitted by him on the construction site shall maintain appropriate decorum at all times.

3. It is acknowledged that funerals may have to take place in the Church during the time that this Contract is to be performed. The Contractor agrees to stop work at least an hour before any funeral is to commence, and not to resume work until after the completion of the funeral. At least 24 hours advance notice will be provided by the Church.

4. Work shall cease during all religious services and events. **No work shall be carried out on Saturdays after 4:00 p.m. and Sundays. Schedule of Church events will be provided at the start of construction.**

5. While work may continue during special services held between Monday to Friday, no noisy work shall be carried out during this time period. A full schedule of these services will be provided during the addendum period.

**There is to be no profanity or swearing while in the Church or on site; eating and drinking should be done only in the existing Church hall (below the Church), never in the upstairs portion; and there is no smoking permitted anywhere in the Church.**

## 1. GENERAL

### 1.1 GENERAL REQUIREMENTS

.1 Division 1, General Requirements, is a part of this Section and shall apply as if repeated here.

## 2. MATERIALS

### 2.1 MATERIALS

.1 Concrete mixes and materials: to Section 03300 - Cast in Place Concrete.

.2 Granular base: Granular A material conforming in all respects with OPSS 1001 and 1010.

.3 Curing Compound: Clear water emulsion curing compound: W.R. Meadows 1300 clear water-emulsion wax base compound.

.4 Non-staining mineral type form release agent: chemically active release agents containing compounds that react with free lime to provide water soluble soap. W.R. Meadows “Duogard 11" water - emulsion form release agent.

.5 Premoulded expansion joint filler. W.R. Meadows “Asphalt Expansion Joint Filler”. 10mm thick x depth of slab.

## 3. EXECUTION

### 3.1 TESTING

.1 Contractor will be responsible for the coordination and payment for all required testing services out of testing allowance.

.2 During the construction process, compaction testing on the subgrade and granular base will be carried out by an approved testing firm. Any delays caused by failing tests and subsequent remediation work will be the responsibility of the contractor.

### 3.2 GRANULAR BASE

.1 Obtain Consultant’s approval of subgrade before placing granular base.

.2 Place granular base material to lines, widths, and depths as indicated.

.3 Compact granular base to at least 98% of maximum density to ASTM D698.

## 3.3 CONCRETE PAVEMENT

.1 Obtain landscape architect's approval of formwork, granular base and reinforcing steel prior to placing concrete.

.2 Do concrete work in accordance with Section 03300 - Cast in Place Concrete and as specified herein.

## 3.4 CONCRETE MIXING

.1 Control concrete mix and source of materials to ensure batch to batch uniformity. Do not change cement type or manufacturer or source or type of aggregate or sand.

.2 Do not mix less than 3 cu.m. in any one batch. Where possible mix, deliver and place concrete on the same day. Finish at same time duration after placing.

.3 Do not pump concrete.

.4 Ensure minimum 130 revolutions of concrete batch before depositing.

## 3.5 CONCRETE PLACEMENT

.1 Protect adjacent surfaces when placing and finishing concrete and when applying curing compound.

.2 Immediately after floating, give pavements a uniform broom finish to produce regular corrugations not exceeding 2 mm deep, by drawing broom across the direction of travel.

.3 Apply concrete curing compound with airless sprayer at a rate to cover 7-10 sq.m. with a liter.

.4 Place 10M rebar dowel into section of freshly poured concrete, where additional concrete abuts pour. Dowels to be embedded 300mm into fresh concrete and extend 300mm beyond face into proposed abutting concrete. Locate min. 50mm below surface and at 750mm O.C.

## 3.6 CURBS AND EDGES

.1 Verify lines, levels before proceeding with formwork and ensure dimensions agree with drawings.

.2 Construct forms to produce finished concrete conforming to shape, dimensions, locations and levels indicated and within tolerances required by CAN3-A23.1-M77.

.3 Keep form joints to minimum.

.4 Clean formwork in accordance with CAN3-A23.1-M77 before placing concrete.

.5 Concrete edges to receive steel trowel final finish.

.6 Construct ramps for handicapped access as shown and detailed. (N/A)

**3.7 TOLERANCES**

.1 Finish surfaces to within 3 mm in 3 m as measured with straightedge placed on surface.

**3.8 EXPANSION AND CONTRACTION JOINTS**

.1 Saw cut contraction joints in locations in accordance with CAN3-A23.1-M77.

.2 Install expansion joints in accordance with CAN3-A23.1-M77, complete with premoulded expansion joint filler.

.3 Install expansion joints around manholes and catch basins and along length adjacent to concrete curbs, catch basins, buildings, or permanent structures.

.4 Install joint filler in expansion joints in accordance with Section 03300 - Cast in Place Concrete.

.5 Seal expansion joints with sealant approved by Consultant, finished flush with top surface of concrete.

**3.9 CURING**

.1 Cure concrete by sealing moisture in by curing compound approved by Consultant.

.2 Apply curing compound evenly to form continuous film. Follow manufacturer's instructions.

**END OF SECTION**

## 1. GENERAL

### 1.1 GENERAL REQUIREMENTS

.1 Division 1, General Requirements, is a part of this section and shall apply as if repeated here. In the event of any conflict with the specification provided by the Architect's Structural Engineer, then the specification of the Structural Engineer shall be followed.

### 1.2 SCOPE OF WORK

.1 Provide all materials, labour and equipment as necessary to complete the concrete work as shown on the drawings and described herein.

.2 Supply and install any inserts, hangers, anchors, sleeves and accessories as required and provide any chases, openings, slots and holes for the work of other sections. Co-ordinate work with all other sections and trades.

### 1.2 CODES AND STANDARDS

.1 Except where modified by the plans and/or the specifications, all concrete and reinforcing steel work shall conform to the current editions of CSA Standard CAN-A23.1 and RSIO - Reinforcing Steel Manual of Standard Practice and all referenced standards and publications therein.

## 2. PRODUCTS

### 2.1 MATERIALS

.1 Cement shall be normal Portland Cement (Type 10) conforming to CSA Standard CAN-A5-M93.

.2 Mixing water shall be from a municipal supply, clear and free from deleterious substances and salts causing efflorescence.

.3 Fine Aggregate shall be natural sand conforming to CSA Standard CAN-A23.1.

.4. Coarse Aggregate shall be crushed stone or gravel, 20mm maximum size, conforming to CSA Standard CAN-A23.1.

.5 Air-entraining admixture shall conform to the requirements of CSA Standard CAN3-A266.1.

.6 Water-reducing admixtures shall conform to the requirements of CSA Standard CAN3-A266 and shall be non-retarding Type WN.

.7 Plywood and formwork materials shall conform to CAN-A23.1 and associated references thereto. For surfaces exposed to view, use new overlaid plywood.

.8 Reinforcing steel bars shall conform to CSA Standard G30.12, Grade 400.

.9 Welded wire fabric shall conform to CSA Standard G30.5.

.10 All other materials and products shall be supplied in accordance with the current standards approved in accordance with Ontario statutes.

2.2 CONCRETE MIX PROPORTIONS

.1 Portland cement concrete for use on this project shall be normal density, ready-mixed, air-entrained, water-reduced concrete.

.2 The maximum water/cement ratio, by mass, shall be 0.45.

.3 Cement content shall not be less than 320 Kg/$m^3$.

.4 All concrete shall have a minimum compressive strength of 32 MPa at 28 days or as required by the structural drawings.

.5 Concrete shall be placed at the lowest slump compatible with the conditions of placement and shall be measured at the point of discharge into the forms.

.6 Concrete for structural elements, sidewalks and curbs shall have a slump of 80mm $\pm$ 30mm.

.7 All concrete shall be air-entrained. 5 to 8% for 20mm aggregate or 7 to 10% for 10mm aggregate.

.8 If in the opinion of the Contractor other admixtures are also desirable for the production of the required properties, then the Consultant's written approval must be obtained prior to their inclusion in the concrete mix. The use of such additional admixtures shall be at the sole expense of the Contractor.

## 3. EXECUTION

3.1 Formwork and Reinforcing

.1 Install formwork plumb and suitably braced to prevent movement during placing of concrete. Seal all joints to prevent seepage.

.2 Place reinforcing with correct spacing and coverage using plastic support chairs, and other necessary accessories. Steel support chairs are not permitted.

3.2 Temperature Control

.1 Temperatures referred to are ambient air temperatures in the shade.

.2 Extreme rapid or severe drying conditions are those conditions when the rate of evaporation of surface moisture from the concrete exceeds 0.7 kg/$m^2$/hr.

.3 Cold weather means those conditions when the air temperature is at or below 5$^o$C or when the air temperature is likely to fall below 5$^o$C within 24 hours.

.4 Hot weather means those conditions when the air temperature is at or above 27$^o$C or when the air temperature is likely to rise above 27$^o$C within 24 hours.

.5 Cold Weather Concreting:

.1 Provide temporary plant and equipment for heating concrete materials and forms. Protect, insulate and maintain the proper temperature and humidity of the concrete during curing in compliance with CSA Standard CAN3-A23.1.

.2 Concrete temperature at the time of placing shall be between 10$^o$ C and 30$^o$C.

.3 Cold weather concreting shall be inclusive to the price tendered and no further or separate payment will be made.

.6 Hot Weather Concreting:

.1 The maximum concrete temperature at the time of placing shall be:

30$^o$C for high strength concrete
35$^o$C for other concrete.

.2 Where ice is added to achieve the above conditions it shall be completely melted by the time concrete mixing is completed.

.3 Protect and cure in accordance with Section 21 of CSA Standard CAN3-A23.1.

.4 Hot weather concreting will be inclusive to the price tendered and no further or separate payment will be made.

.5 Concrete placed under normal temperature conditions shall be deposited within the temperature range of 10$^o$C and 30$^o$C.

3.3 Examination

.1 Examine surfaces, conditions, and preparations upon which work of this Section depends. Clean, adjust, and supply as required.

.2 Do not place any concrete until Testing Company has inspected and reviewed formwork and reinforcing.

.3 Commencement of work will denote acceptance of surfaces and conditions.

3.4 Placing Concrete

.1 Notify Testing Company and Building Inspector before scheduled placing of concrete.

.2 Methods of conveying and placing are to be such that concrete components do not segregate.

.3 Deposit concrete as close as possible to its final position. Lateral movement of concrete shall be avoided.

.4 Compact concrete with general purpose vibrators so that concrete is evenly and adequately distributed around and between reinforcing and against formwork, without honeycombing.

3.5 Concrete Finishing

.1 All concrete finishing shall be done by experts who specialize in this work and have a minimum of five (5) years of proven experience.

.2 Bring tops of slabs to an even level and/or sloping surface as indicated on the drawings.

3.6 Curing and Protection

.1 Beginning immediately after placement, protect concrete from premature drying, sunshine, excessively hot or cold temperatures, and mechanical injury.

.2 Cure horizontal surfaces by covering with polyethylene sheets with edges taped for at least 4 days. Lap edges 100mm minimum. The use of curing compounds shall be permitted only where specifically noted.

.3 It is the Contractor's responsibility to take all additional and necessary procedures and precautions to ensure the proper curing of the concrete.

**END OF SECTION**

## 1. GENERAL

1.1 GENERAL REQUIREMENTS

.1 Division 1, General Requirements, is a part of this section and shall apply as if repeated here.

1.2 CODES AND STANDARDS

.1 Conform to latest CAN regulations, Masonry Design for Buildings, latest CSA standards for Connectors for Masonry.

## 2. PRODUCTS

2.1 MATERIALS

.1 Load-bearing concrete block: normal-weight, modular, auto-claved units to current version of CAN3-A165. Use Type H/15/A/M for hollow units and Type S/15/A/M for solid units. (N/A)

.2 Mortar: to Property Specifications of CSA Standard A179. Use type S for loadbearing walls (N/A) and Type N for non-loadbearing walls. Test compressive strength of mortar (minimum 3.5Mpa and maximum 8.5 Mpa), and aggregate to cementitous ratio mix under cash allowance for testing.

.3 Grout: to CSA Standard A179-M1976. Use 20 MPa ready-mixed concrete with 0.375 in coarse aggregate max. or mix 1:3:2 cement:sand: pea gravel by volume. Provide 8 in. slump.

## 3. EXECUTION

3.1 INSTALLATION

.1 Lay masonry units in 0.375 inch mortar beds and joints. Dampen units before laying to prevent excessive suction on mortar. Do not lay more than 5'-4" in height in one day. Reject all chipped units.

.2 Install grout in High Lifts or Low Lifts in accordance with CAN3-A371- M84, and as shown on drawings.

.3 Provide horizontal joint reinforcing in every third course of solid masonry.

.4 Erect lintels over openings, and anchor masonry to concrete and structural steel elements as detailed in the Structural drawings and specifications.

.5 Clean masonry and make weather tight and without defects before final inspection.

**END OF SECTION**

## 1. GENERAL

### 1.1 GENERAL REQUIREMENTS

.1 Division 1, General Requirements, is a part of this section and shall apply as if repeated here. In the event of any conflict with the specification provided by the Architect's Structural Engineer, then the specification of the Structural Engineer shall be followed.

### 1.2 CODES AND STANDARDS

.1 Conform to the current CSA Standards for CAN/CSA-S16.1, CAN/CSA-S136, W47.1, W48.1, W55.3, W59 and CAN/CSA G40.20.

## 2. PRODUCTS

### 2.1 MATERIALS

.1 Materials shall conform to the following standards:

1. Structural steel shall conform to the current CSA Standard for CAN/CSA G4O.21, Grade 3OOW.
2. Anchor Bolts shall conform to the currentCAN/CSA Standard for G4O.21-M, Grade 262W.
3. Primer Paint shall conform to CISC/CPMA Specification 2-75.

## 3. EXECUTION

### 3.1 GENERAL

.1 Tolerances: fabrication and erection tolerances shall meet the requirements of CSA Standard S16.1.

.2 Work shall be carried out by a member of the Canadian Institute of Steel Construction. Welding shall be preformed by firms fully approved by the Canadian Welding Bureau under the requirements of the current CSA Standard W47.1.

### 3.2 PREPARATION

.1 Design connections to conform to the current CAN/CSA-S16.1 and the CISC Handbook of Steel Construction for a service capacity in Kips equal to the beam depth in inches multiplied by two, unless a greater reaction is noted on the drawings. Design all splices and connections of tension or compression members for their full capacity. Arrange and pay for nondestructive testing of all unspecified splices in columns, beams and joist components. All connections and details shall be designed by a suitable qualified Registered Professional Engineer licensed to

practice in the Province of Ontario, whose stamp and signature shall be on the shop drawings.

.2 Design and provide bearing plates for a maximum pressure of 16O psi on masonry.

.3 Submit four (4) white prints of erection diagrams and shop details for review prior to fabrication. Review of shop drawings is a precaution against oversight or error. It is not a detailed check and shall not be construed as relieving the Contractor of responsibility for making the work accurate and in conformity with the Contract Documents. Maintain a set of reviewed drawings on site.

3.3 INSTALLATION

.1 Fabrication shall conform to the current CSA Standards for CAN/CSA-S16.1, W59, and W55.3.

.2 Erection shall be carried out by forces of the steel fabricator. Provide all temporary bracing to keep the structure stable until the entire structure is complete.

.3 Provide continuous welding at exposed joints such as door jambs and heads, and grind smooth.

**END OF SECTION**

## 1. GENERAL INSTRUCTIONS

1.1.1. Comply with the General Conditions, Supplementary Conditions and the requirements of Division l.

### 1.2. Related Work Under Other Sections

1.2.1. Drywall specified under Drywall Section 09200.

### 1.3. Co-operation

1.3.1. Attend other trades, do rough and fine cuttings, make good carpentry work as may be required.

### 1.4. Protection

1.4.1. Materials shall be kept under waterproof cover, both in transit and on site.

1.4.2. Materials shall only be stored in areas which are thoroughly dry.

1.4.3. Deliver, store and protect materials and work of this section from damage.

### 1.5. Fastening

1.5.1. Fastening to solid masonry, brick or concrete surfaces shall be with expansion shields and lag screws. Where screws are required use lead or inorganic fibre plugs. Wood or organic plugs are not permitted.

### 1.6. Rough Hardware

1.6.1. Supply rough hardware such as nails, bolts, nuts, washers, lags, pins, screws and the like, including hardware for temporary enclosures as required for a complete job.

## 2. PRODUCTS

### 2.1. Materials

2.1.1. All materials shall be straight, new, dry and clean; shall be properly sized and shaped, to correct dimensions from nominal sizes noted on drawings.

2.1.2. Lumber and moisture content shall conform to the official grading rules of the Canadian Lumbermans Association of Ottawa, Ontario, for each particular lumber and grade.

2.1.3. Lumber: unless otherwise noted; Spruce Species, grade No.2, conforming to current CSA Standard 0141 kiln dried and bearing grading stamp of an Agency approved by Canadian Lumber Standards Association Board.

2.1.4. Nails, Spikes, and Staples: current CS. Standard B111, galvanized for exterior work, plain elsewhere. Nailing of framing unless otherwise noted, shall conform to Ontario Building Code Tables 9.23.3.4 and 9.23.3.5.

## 3. EXECUTION

### 3.1. General Workmanship

3.1.1. Do not commence finished carpentry work in areas where adjacent materials are not thoroughly dry.

3.1.2. Construct all carpentry work as detailed. Where not detailed, work shall be done in accordance with best standard practice.

3.1.3. Accurately fit joints and intersecting members in true planes with adequate fastenings. Locate joints over bearing or supporting surfaces.

3.1.4. Fabricate and erect work square, plumb, straight and true.

3.1.5. Set and fill nail heads occurring in exposed carpentry work.

3.1.6. Sand and remove marks or scrapes from all exposed wood surfaces.

3.1.7. Provide 10 mil polyethylene moisture barrier under all wood products resting on concrete

### 3.2. Rough Framing

3.2.1. Frame according to best standard practice in accordance with Ontario Building Code.

3.2.2. Blocking, grounds, strapping, rough bucks, anchors and other fastenings indicated shall not be regarded as exact or complete. Location and method of securing these pieces is at option of Contractor. Provide adequate fastenings. Erect as required or indicated, to provide true, plumb, rigid, secure and adequate supports. All joints shall occur over bearing or solid backing.

3.2.3. Provide blocking for all washroom wall fixtures, including mirror, toilet paper dispenser, baby change table, sink, and grab bars.

### 3.3. Installation of New Doors

3.3.1. Hang new wood doors. Door shall be hung on 1-1/2 pair butts. Cut, fit and secure latch, closer, and hold-open and the like using templates. All doors shall be hung to swing shut with 1.5 mm clearance at head and jambs and 6.0 mm clearance at thresholds unless otherwise directed. Door to stairs to receive smoke seals.

### 3.4. Installation - Finishing Hardware

3.4.1. Finishing hardware: Set, fit, adjust, and clean hardware according to manufacturer's directions. Hardware shall operate freely. Protect installed items from damage and paint spotting. A copy of the Finished Hardware Schedule shall be kept on the job for Architect's and Owner's reference.

### 3.5. Completion - Adjusting

3.5.1. On completion of all work in the building, all woodwork shall be checked carefully for defects. All working parts shall be adjusted and refinished as required.

### 3.6 Electrical Equipment Backboard

**3.6.1** Provide backboards for mounting electrical equipment. Use 19mm thick plywood on 19x38mm furring around perimeter and at maximum 300 mm intermediate spacing.

**END SECTION**

# 1. GENERAL

## 1.1 GENERAL REQUIREMENTS

1.1.1 Comply with the General Conditions, Supplementary Conditions and the requirements of Division 1.

## 1.2 DELIVERY AND STORAGE

1.2.1 Protect materials against high humidity and moisture at all times.

# 2. PRODUCTS

## 2.1 MATERIALS

2.1.1 Wood materials - straight, sawn square, true, dressed four sides, properly sized and shaped to correct dimensions from nominal sizes indicated or specified.

2.1.2 Lumber grade and moisture content - comply with the official grading rules of NLGA for the particular lumber and grade, and structurally complying with the latest requirements of the Ontario Building Code. Comply with CSA Standard 0141 Softwood Lumber. Use only grade marked lumber.

2.1.3 All wood materials - well seasoned NLGA, free from defects which impair strength and durability. Moisture content limit: S-GRN: Unseasoned; S-DRY: Maximum 19% moisture content: KD: Maximum 15% moisture content.

2.1.4 Hardwood Lumber: Select oak, suitable for clear finish.

2.1.5 Douglas Fir plywood - comply with CSA Standard 0121, COFI Exterior. Western softwood plywood - comply with CSA Standard 0151, COFI Waterproof glue WSP. Exposed two sides shall be grade G25, and exposed one side shall be grade G/Solid.

2.1.6 Hardwood plywood - conforming to CSA 0115 and AWMAC. Birch or maple ply for stain finish, where noted on drawings.

2.1.7 Fasteners:

.1 Wood screws: electroplated, to CSA-B35.4

.2 Nails and Staples: to CSA-B111

## PART 3 - EXECUTION

### 3.1 PREPARATION

3.1.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

### 3.2 INSTALLATION - GENERAL

3.2.1 Provide running members of the longest lengths obtainable.

3.2.2 Slowly feed machine-dressed members using sharp cutters. Provide finished members free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding.

3.2.3 Machine sand surfaces exposed in the finished work and hand sand to an even smooth surface free of scratches.

3.2.4 Properly frame material with tight joints and rigidly secure in place. Use glue-blocks were necessary.

3.2.5 Design construction methods for expansion and contraction of the materials.

3.2.6 Conceal joints and connections wherever possible. Locate prominent joints only where directed.

3.2.7 Match joints made on the site with joints made in the shop.

3.2.8 Unless otherwise specified glue and blind screw or nail all work. Set and fill and plug surface screws using matching wood plugs.

3.2.9 Accurately scribe, cope and mitre members where required to produce hairline joints.

3.2.10 Erect work plumb, level, square and to the required lines.

## 3.3 WOOD SILLS AND DOOR SURROUND

3.3.1 Provide solid wood sills for windows in Meeting Room and door surround at entrances to Meeting Room as shown on drawings.

**END OF SECTION**

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions, the Supplementary Conditions, the Instructions to Bidders and Division 1 General Requirements shall be read in conjunction with and govern this section.

.2 The Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their work.

1.2 SUMMARY

.1 This Section includes requirements for supply and installation of the following, as required for complete and proper installation:
- .1 Fluid Applied Bituminous Dampproofing Membrane
- .2 Flashing Membrane
- .3 Mastics & Termination Sealants
- .4 Protection Board
- .5 Drainage Board
- .6 Auxiliary Materials

1.3 RELATED REQUIREMENTS

.1 Section 03 30 00 - Cast-In-Place Concrete

.2 Section 03 31 00 - Structural Concrete

.3 Section 04 20 00 - Masonry

.4 Section 06 10 00 - Rough Carpentry

.5 Section 07 21 00 - Thermal Insulation

.6 Section 07 62 00 - Sheet Metal Flashing and Trim

.7 Section 07 92 00 - Joint Sealants

1.4 REFERENCES

.1 Specification American Society for Testing and Materials (ASTM):
- .1 ASTM D4479/D4479M, Standard Specification for Asphalt Roof Coatings – Asbestos Free
- .2 ASTM E96, Standard Test Methods for Water Vapor Transmission of Materials

.2 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB 37.2, Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing, and for Roof Coatings
- .2 CAN/CGSB 37.16, Filled Cutback Asphalt for Dampproofing and Waterproofing
- .3 CGSB 37-GP-6M, Asphalt, Cutback, Unfilled for Dampproofing
- .4

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate the Work of this Section with the installation of exterior substrate; Sequence work so that installation of fluid applied bituminous dampproofing membrane coincides with installation of substrate preparation without causing delay to the Work.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery: At the time of delivery, visually inspect all materials for damage. Note any damaged to materials on the receiving ticket and immediately report to the shipping company and the material manufacturer.
- .1 Remove damaged materials from the site immediately.

.2 Storage:
- .1 Store materials as recommended by manufacturer and conforming to applicable safety regulatory agencies. Refer to all applicable data including but not limited to MSDS sheets, Product Data sheets, product labels, and specific instructions for personal protection.
- .2 Store materials off the ground and cover with a weather proof flame resistant sheeting or tarpaulin.
- .3 Store role materials on end in original packaging.
- .4 Store fluid applied bituminous dampproofing in closed containers outdoors.
- .5 Store adhesives and primers at temperatures of 5 deg C (41 deg F) and above to facilitate handling.
- .6 Keep solvent away from open flame or excessive heat.
- .7 Protect rolls from direct sunlight until ready for use.

.3 Handling: Material shall be handled in accordance with sound material handling practices and in accordance with manufacturer's written instructions.

1.7 COORDINATION

.1 Ensure continuity of the water seal throughout the scope of this section.

.2 Ambient Conditions:
- .1 Install materials outlined in this Section after completion of work by other Sections is complete; to provide adequate dry, clean, level, and plumb surfaces for installation and adhesion.
- .2 Apply when ambient air and substrate temperatures are above temperature range indicated by fluid applied bituminous dampproofing membrane manufacturer, during time of install, and for a minimum of forty-eight (48) hours after installation, unless otherwise indicated.
- .3 Ensure surfaces are sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants.
- .4 Ensure surfaces are dry prior to and a minimum of sixteen (16) hours after time of install.
- .5 Do not permit traffic of any kind over unprotected bituminous dampproofing membranes. Apply protection course as soon as possible in accordance with manufacturers written instructions.

1.8 ALTERNATES

.1 Submit requests for alternates for review by architect.

.2 Alternate submission format to include:
- .1 Evidence that alternate materials meet or exceed performance characteristics of product requirements and documentation from an approved independent testing laboratory certifying that the performance of the system including auxiliary components exceed the requirements of the local building code.
- .2 Manufacturer's guide specification.
- .3 Manufacturer's complete set of technical data sheets for assembly.
- .4 Product certification that the assembly components are supplied and warranted by single source manufacturer.
- .5 Sample warranty as specified.

1.9 WARRANTY

.1 Contractor Warranty: Warrant that the fluid applied dampproofing membrane and membrane flashings will stay in place and remain leak proof for two (2) years.

PART 2: PRODUCTS

2.1 MATERIALS MANUFACTURER

.1 Components and auxiliary materials must be obtained as a single-source from the assembly manufacturer to ensure total system compatibility and integrity.

.2 Materials and accessories specified herein are manufactured by:

Henry Company
15 Wallsend Drive,
Scarborough, Ontario, Canada, M1E 3X6
(800) 387 9598
www.henry.com

2.2 MATERIALS

.1 Fluid Applied Bituminous Dampproofing Membrane
- .1 Liquid applied, dampproofing emulsion composed of vacuum-reduced asphalt dispersed in a mineral colloid emulsifier, in compliance with CAN/CGSB 37.2.
  - .1 Colour: Black
  - .2 Solids by Volume: 57%
  - .3 Application Temperature: 5 deg C (40 deg F) minimum.
  - .4 Maximum VOC: 0 g/L
  - .5 Water Vapour Permeance (ASTM E96): 8 ng/Pa.$m^2$.s., (0.14 perms)
  - .6 Basis of Design Product: 700-01 Dampproofing and Waterproofing Asphalt Emulsion by Henry Company.

PART 3: EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions:
- .1 Examine substrates to receive work and surrounding adjacent surfaces for conditions affecting installation.
- .2 Strike masonry joints flush. Concrete surfaces shall be smooth and without large voids, honeycombing, spalled areas or sharp protrusions.
- .3 Notify [engineer] [architect] [consultant] in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrate.

.2 Notify Contractor in writing of any conditions that are not acceptable.

.3 The installing contractor shall examine and determine that surfaces and conditions are ready to accept the Work of this section in accordance with published literature. Commencement of Work or any parts thereof shall mean installers acceptance of the substrate.

3.2 PREPARATION

.1 All surfaces must be sound, clean and free of oil, grease, dirt, excess mortar or other contaminants.

.2 Provide adequate protection of materials and work of this section from damage by weather, backfilling operations and other causes.

.3 Protect adjacent surfaces and Work of other trades from damage resulting from Work of this section. Make good such damage at no additional cost to the Owner.
- .1 Provide sound handling and installation procedures to prevent and protect against overspray of materials specified in this Section.

3.3 INSTALLATION

.1 Fluid Applied Dampproofing and Waterproofing Membrane Application:
- .1 Preparation: Dry surfaces should be dampened with water prior to application.
- .2 Dampproofing Application: Apply dampproofing coating at a rate of 1.5 l/$m^2$ (3.6 gal/100$ft^2$) and let dry.
- .3 Waterproofing Application:
  - .1 Priming: Apply dampproof coating, diluted 20% by volume with clean water at the rate of 0.5 l/$m^2$ and let dry. Priming is not required on insulated concrete forms (ICF) or preserved wood foundations (PWF).
  - .2 Apply fabric reinforcement into dampproof coating at not less than 1.0 l/$m^2$ (2.4 gal/100$ft^2$).
  - .3 Brush fabric reinforcement into place and eliminate wrinkles, air pockets or blisters and obtain full contact.
  - .4 Overlap fabric reinforcement at least 50mm (2”) at all joints.
  - .5 At all corners, angles and junctions, reinforce with two (2) extra coats of dampproof coating and fabric reinforcement, at least 100mm (4”) on each side of the junction.
  - .6 Apply a seal coat of dampproof coating over the entire area at not less than 1.0 l/$m^2$ (2.4 gal/100$ft^2$).

.2 Insulation Installation:
  .1 Co-ordinate with Section [07 21 00 Thermal Insulation] for insulating materials.
  .2 Adhesive (Optional):
    .1 Apply the insulation adhesive in a serpentine pattern to fluid applied dampproofing membrane.
    .2 Immediately embed insulation into the adhesive and press firmly into place to ensure full contact. Apply additional adhesive if allowed to skin over.
    .3 Fully butter all joints of insulation panels with adhesive during installation, except at expansion joints.
    .4 Stagger the end joints of the insulation.
    .5 Cut the insulation to fit closely to all protrusions and obstructions.

3.4 FIELD QUALITY CONTROL

.1 Final Observation and Verification:
  .1 Final inspection of fluid applied dampproofing membrane shall be carried out by the Owner's representative, and the contractor.
  .2 Contact Manufacturer for warranty issuance requirements.

.2 Fluid applied dampproofing membrane is not designed for permanent UV exposure. Apply protection board as soon as possible after installation of fluid applied dampproofing membrane. Refer to manufacturer published literature for product limitations.

3.5 CLEANING AND PROTECTION

.1 Progress Cleaning: Leave work area clean at the end of each work day, ensuring safe movement of passing pedestrians.

.2 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Certified installer shall be responsible for ensuring waste management efforts are practiced.

END OF SECTION 07 11 13.

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes: Provide FOAMULAR® extruded polystyrene rigid board insulation.

### 1.2 REFERENCES

A. Materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:

1. American Society for Testing of Materials (ASTM):
   a. ASTM C 578: Standard Specification for Rigid Cellular Polystyrene Thermal Insulation.
   b. ASTM C 518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
   c. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
2. International Code Council Evaluation Service (ICC-ES), Evaluation Report.

### 1.3 SUBMITTALS

A. Product Data: Submit data on product characteristics, performance criteria, and limitations, including installation instructions.

B. Sustainable Design: Submit manufacturer's sustainable design certifications as indicated.

C. Warranty: Submit documentation for limited product warranty. [___ years or lifetime].

### 1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain exterior building insulation through one source from a single manufacturer.

B. Each insulation board must be labeled with manufacturer's name, product brand name, ASTM material specification reference, and identification of the third party inspection agency used for building code qualification.

### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original packaging.

B. Store and protect products in accordance with manufacturer's instructions. Store in a dry area and protect from water, direct sunlight, flame, and ignition sources. Do not install insulation that has been damaged or wet.
   1. In the event the board insulation becomes wet, wipe dry prior to installation.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

A. Owens Corning Insulating Systems, LLC, Toledo, OH 43659; www.owenscorning.com.

## 2.2 FOAM PLASTIC BOARD INSULATION

A. Extruded Polystyrene Board Insulation: Comply with ASTM C 578, Type [X], 15 psi minimum compressive strength, 1.30 lb/cu. ft. (21 kg/cu. m)] [IV, 25 psi minimum compressive strength, 1.55 lb/cu. ft. (26 kg/cu. m)] [VI, 40 psi minimum compressive strength, 1.80 lb/cu. ft. (29 kg/cu. m)] [VII, 60 psi minimum compressive strength, 2.20 lb/cu. ft. (35 kg/cu. m)] [V, 100 psi compressive strength, 3.00 lb/cu. ft. (48 kg/cu. m)].

1. Thermal Resistance: (180 day real-time aging as mandated by ASTM C578, measured per ASTM C 518 at mean temperature of 75F): [ R-5.0, 5.6 ] per inch of thickness, with 90% lifetime limited warranty on thermal resistance.
2. Blowing Agent Formulation: Zero ozone depleting.
3. Edge Condition: [Square, Tongue & Groove, Ship-Lap].
4. Surface Burning Characteristics (ASTM E 84): Flame spread less than 25, smoke developed less than 450, certified by independent third party such as Underwriters Laboratories (UL).
5. Indoor Air Quality: Compliance certified by independent third party such as GREENGUARD Indoor Air Quality Certified® and/or GREENGUARD Children and Schools Certified.
6. Recycled Content: Minimum 20%, certified by independent third party such as Scientific Certification Systems.
7. Warranty: Limited lifetime warranty covering all ASTM C578 physical properties.
8. Panel Size: Provide thickness as indicated in architectural drawings.

## PART 3 - EXECUTION [Not Used]

END OF SECTION

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes: Provide THERMAPINK 25 extruded polystyrene roof board insulation FOR FLAT ROOF ONLY.

### 1.2 SUBMITTALS

A. Product Data: Submit data on product characteristics, performance criteria, and limitations, including installation instructions.

B. Sustainable Design: Submit manufacturer's sustainable design certifications as indicated.

### 1.3 QUALITY ASSURANCE

A. Installer Qualifications: The installation work of this Section shall be performed by an experienced roofing contractor approved and certified by the roofing system manufacturer.

B. Each insulation board must be labeled with manufacturer's name, product brand name, ASTM material specification reference, and identification of the third party inspection agency used for building code qualification.

### 1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original packaging.

B. Store and protect products in accordance with manufacturer's instructions. Store in a dry area and protect from water, direct sunlight, flame, and ignition sources. Do not install insulation that has been damaged or wet.
1. In the event the board insulation becomes wet, wipe dry prior to installation.

### 1.5 PROJECT CONDITIONS

A. Roof deck shall be free of ponded water, ice or snow. This precaution is to discourage potential future condensation on the underside of the membrane.

B. Do not expose [THERMAPINK®, FOAMULAR®] insulation to surfaces such as vent stacks, pipes or other rooftop appurtenances whose constant temperature is in excess of 165°F. If temperature cycling conditions are anticipated near the maximum recommended use temperature, consult an Owens Corning FOAMULAR® insulation representative for recommendations regarding system components.

C. When insulation is to be exposed to sunlight for prolonged periods due to job site delays, protect the insulation with a light colored opaque covering. Provisions should be made to prevent wind loss of insulation materials at the job site when partially open units of [THERMAPINK 25®, FOAMULAR®] are on hand.

D. Dark membrane ballasted systems must have ballast installed immediately after installation of membrane. This precaution is required to prevent potential damage to the insulation from excessive heat due to prolonged exposure to sunlight

E. Roofs exposed to chemical discharge, or to reflective vertical surfaces adjacent to the roof, require special consideration. Consult this specification for recommendations regarding system components.

F. [Any deteriorated decking shall be repaired or replaced. Existing roof drains must be verified to be open and adequate to promote proper roof drainage.]

## 1.6 WARRANTY

A. A thermal performance warranty shall be issued to the Owner upon completion of the work. Insulation shall be warranted to retain all physical properties and a minimum of 90% of its published R-value for the lifetime of the product.
   1. [A single source full roof covering system warranty shall be issued to the Owner upon completion of the work.]

# PART 2 - PRODUCTS

## 2.1 MANUFACTURER

A. Owens Corning Insulating Systems, LLC, Toledo, OH 43659; www.owenscorning.com.

## 2.2 MATERIALS

A. Extruded Polystyrene (XPS) Insulation:
   1. Physical Properties: [THERMAPINK® 25], closed-cell foam panels with continuous as-extruded skin on the face and back surfaces, conforming to the minimum physical requirements of ASTM C-578, Type [IV,].

   2. Product Criteria:
      a. ASTM C578 type [ IV], certified by independent third party such as RADCO.
      b. Blowing Agent Formulation: Zero ozone depleting.
      c. Compressive Strength (ASTM D 1621): [ 25] psi, minimum.
      d. Edge Condition: Square edge.
      e. Thermal Resistance (180 day real-time aging as mandated by ASTM C 578, measured per ASTM C 518 at mean temperature of 75F): [R-5.0, 5.6] per inch of thickness, with 90% lifetime limited warranty on thermal resistance.
      f. Water Absorption (ASTM C272): Maximum [0.10] percent by volume.
      g. Surface Burning Characteristics (ASTM E 84): Flame spread less than 25, smoke developed less than 450, certified by independent third party such as Underwriters Laboratories (UL).
      h. Indoor Air Quality: Compliance certified by independent third party such as GreenGuard Indoor Air Quality Certified® and/or GreenGuard Children and Schools Certified℠.
      i. Recycle Content: Minimum 20%, certified by independent third party such as Scientific Certification Systems.
      j. Warranty: Limited lifetime warranty covering all ASTM C578 physical properties.
   3. Manufacturers: Subject to compliance with product criteria, the manufacturers whose products may be incorporated into the work include but are not limited to:
      a. DiversiFoam Products.
      b. Dow Chemical Company.
      c. Owens Corning.
      d. Pactiv Corporation.
   4. Panel Size: Provide [see architectural drawings for required thickness] thick by 4 ft. wide by 8 ft. long.

B. [Insulation Fasteners and Stress Plates]: Furnished by membrane manufacturer. FM approved. Fastener head shall be designed to inhibit damage to the membrane. Minimum 3" diameter or square insulation stress plates shall provide for countersunk fastener heads.

C. [Thermal Barrier Material]: Provide one of the following:
   1. DENSDECK BY GEORGIA-PACIFIC ,1/2" (minimum thickness)

D. [Overlayment]: For dark mechanically attached, any color fully adhered, or chemically incompatible membranes, provide the following:
   1. RE-C0VER BOARD BY BAKOR - SEE SECTION 07 52 19

E. Membrane Fastening or Adhesion System: Per membrane manufacturer's specifications.

## PART 3 - EXECUTION

### 3.1 ROOF DECK CRITERIA

A. The deck shall be constructed to drain completely free of water within 48 hours following rainfall.

B. The dead load carrying capability of the deck must be sufficient to support code mandated live loads and dead loads incident on the roof including the entire roof covering/insulation system.

C. The roof deck shall be prepared to provide adequate support for the insulation.

### 3.2 ROOF DECK PREPARATION

A. [Any deteriorated roof decking shall be repaired or replaced].

B. A thorough inspection should be required in the case of total tear off.

C. [Steel Roof Decking]: Install a thermal barrier between [THERMAPINK®, FOAMULAR®] and the steel deck in accordance with construction drawings.

D. THERMAPINK® insulation may be installed directly over steel roof deck in accordance with the details of UL Roof Deck Construction #457,

E. FOAMULAR® insulation in a steel deck application must be underlaid with a thermal barrier as specified by the building code. or, classified by assembly in accordance with UL 1256 or FM 4450. Thermal barriers may be loose-laid or secured to the deck by mechanical fastening depending on design or code requirements.

F. [Structural Concrete (Precast, Poured-In-Place, Gypsum, or Lightweight Insulating)]: The surface must be clean, smooth, free of fins, sharp edges, loose and foreign materials, oil, grease, and fresh roofing cement. Repair any deck joints or cracks, any deck to wall junctions, and any other deck to penetration gaps, which are greater than 1/4".

G. [Composite (Tectum, etc.)]: Install deck and secure in accordance with deck manufacturer's recommendations. The deck must be properly secured with all mechanical fasteners flush with the surface of the deck. The deck must be of sufficient thickness and character to develop adequate fastener holding power. Verify requirements with the membrane manufacturer.

H. [Wood (Plank, Plywood, OSB, etc.)]: Install deck and secure in accordance with construction drawings. The deck must be well secured with all mechanical fasteners flush with the surface of the deck. The deck must be of sufficient thickness to develop adequate fastener holding power. Verify requirements with the membrane manufacturer.

### 3.3 VAPOR RETARDER

A. Install a vapor retarder in accordance with construction drawings. Place the vapor retarder to insure adequate end and side joint laps. When high relative humidities inside the building or other normal climatic conditions create a condensation point within the insulation board, it may be necessary to install a vapor retarder beneath the insulation or thermal barrier. Although THERMAPINK® and FOAMULAR® insulation have vapor retarding qualities, the need for more effective vapor retarding layers must be accessed based on the conditions present on each project THERMAPINK® and FOAMULAR® insulation are compatible with most commonly used asphaltic and sheet film vapor retarding materials. See the American Society of

Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Handbook of Fundamentals for specific design guidelines.)

## 3.4 INSULATION

A. Total roof insulation aged thermal resistance shall be [R ], achieved in the thicknesses and number of layers as shown in the construction documents. R-value chosen is to be specified based on the intended use of each project and design criteria of each project and applicable energy conservation codes. Contact an Owens Corning representative for information regarding ASHRAE 90.1 Energy Code minimum requirements for roof insulation if needed.

B. Insulation joints shall not exceed 1/4" in width. Joints wider than 1/4" shall be filled with the same insulation.

C. Insulation shall be field trimmed to fit tightly around roof protrusions and terminations.

D. Apply only as much [THERMAPINK®, FOAMULAR®] roof insulation as can be covered by the roofing membrane on the same day. Apply roof insulation in parallel rows with end joints staggered. Install side and end joints closely but do not force together. In a two layer application, apply second layer panels parallel to the first layer but with side and end joints staggered in relation to the first layer.

E. Place the [THERMAPINK®, FOAMULAR®] board with the printed logo surface down so that the black lettering is not exposed to potential solar heat gain.

F. [For ballasted roofing systems (including PRMA*) with no cover board over the XPS,] black/dark (non-white) roofing membranes (or filtration fabrics in PRMA) over THERMAPINK® and FOAMULAR® insulation shall be ballasted immediately after placement to prevent potential heat damage from sun exposure and wind displacement of the insulation under the membrane/fabric.

G. [For mechanically attached and fully adhered roofing systems,] in areas where black/dark membranes are used and where "reflected solar energy" is expected to be present, THERMAPINK® and FOAMULAR® need protection in addition to normally specified cover boards. For example, roof areas adjacent to higher walls, particularly walls with reflective surfaces, or near large rooftop HVAC units, or near or in between clusters of mechanical equipment, or near other structures with reflective cladding (metal or glass); or near higher reflective parapets, all such areas should be considered for additional heat protection. Such roof areas must be covered with pavers or ballast. Black/dark (non-white) membranes must be coated with white reflective topping, and maintained white, to avoid damage due to the intensified heat exposure from reflected sun in such areas.

H. Insulation shall be [loosely placed, secured] in accordance with the membrane manufacturers requirements. The insulation below the membrane is to be held in place with [ballast, compatible adhesives, mechanical fasteners in conjunction with the overlayment and/or membrane system]. [Mechanical fasteners shall be of sufficient number and adequate pattern to resist displacement of insulation by wind uplift forces.] When adhering or exposing THERMAPINK® or FOAMULAR® to hot bitumen, the bitumen must be allowed to cool to between 200 and 250 °F.

## 3.5 OVERLAYMENT

A. Only dry overlayment materials shall be used. If overlayment materials become wet, allow them to fully dry before proceeding with roofing application. Requirements for overlayment materials and thickness may vary. Contact membrane manufacturer for their individual requirements.

B. [Rigid overlayment shall be [mechanically attached, adhered with a suitable adhesive] per manufacturer's recommendations.]
   1. Mechanical fastening of insulation and rigid overlayment may coincide so that fastener penetrates overlayment and THERMAPINK® or FOAMULAR® into the structural substrate the minimum distance prescribed for adequate wind uplift resistance by the fastener manufacturer.
   2. [Loose lay flexible sheet overlayment over [THERMAPINK®, FOAMULAR®] and cover with a membrane attached per the manufacturer's recommendations. Edges and ends of rolls shall be lapped a minimum of 6".]

C. When cleaning agents and seam adhesives used are solvent based and capable of causing cavitations of the underlying [THERMAPINK®, FOAMULAR®] insulation, use care when preparing membrane edges for in-field seam splicing.

## 3.6 BALLAST

A. Ballasting Requirements:
   1. Weight of ballast installed must be sufficient to provide protection against wind uplift pressure. The necessary weight per square foot, gradation and application surface areas shall be determined in accordance with ANSI/SPRI RP-4, Wind Design Guide for Ballasted Single-Ply Roofing Systems.
   2. Ballast gradation and quantity installed (i.e., depth) must be adequate to completely cover the membrane. Insulation thickness does not affect the amount of ballast required.
   3. Protect membrane and place ballast in accordance with membrane manufacturer's instructions.

B. [For ballasted roofing systems (including PRMA*) with no cover board over the XPS,] black/dark (non-white) roofing membranes (or filtration fabrics in PRMA) over THERMAPINK® and FOAMULAR® insulation shall be ballasted immediately after placement to prevent potential heat damage from sun exposure and wind displacement of the insulation under the membrane/fabric.

C. [For mechanically attached and fully adhered roofing systems,] in areas where black/dark membranes are used and where "reflected solar energy" is expected to be present, THERMAPINK® and FOAMULAR® insulation need protection in addition to normally specified cover boards. For example, roof areas adjacent to higher walls, particularly walls with reflective surfaces, or near large rooftop HVAC units, or near or in between clusters of mechanical equipment, or near other structures with reflective cladding (metal or glass); or near higher reflective parapets, all such areas should be considered for additional heat protection. Such roof areas must be covered with pavers or ballast. Black/dark (non-white) membranes must be coated with white reflective topping, and maintained white, to avoid damage due to the intensified heat exposure from reflected sun in such areas.

D. [Upon completion of ballasted roof construction the owner's representative must verify that installation is in accordance with design specifications such as adequate ballast gradation, rate of coverage and areas covered.]

## 3.7 MECHANICAL FASTENERS

A. Fastener/stress plate assemblies shall be driven to tightly secure the insulation board and seat the plate but shall not be overdriven so that the [THERMAPINK®, FOAMULAR®] board is crushed beneath the plate.

B. Fasteners which are improperly installed shall be removed or corrected. Improper installation may include overdriving such that the stress plate is concave and cuts a significant depression in the insulation: under driving such that the fastener head Is not properly seated in the stress plate and may puncture the membrane: broken or bent shanks: improper location: or insufficient length.

C. Fasteners shall be embedded in the deck per manufacturer's recommendations to insure adequate withdrawal resistance.

D. [THERMAPINK®, FOAMULAR®] shall be secured with [ ] fasteners and 3" diameter stress plates per 4x8 board.
   1. Four fasteners minimum, (install 2 to 4 more to insure greater flatness) one 6" in from the edges of each corner, are required when THERMAPINK® or FOAMULAR® insulation is installed under white membranes with or without a slip-sheet. Four fasteners, 6" from each corner, are also required when FOAMULAR® insulation is installed under a rigid coverboard. The coverboard and THERMAPINK® or FOAMULAR® insulation may be fastened concurrently. The rigid coverboard may require more than 4 fasteners to meet the recommendation of its manufacturer.

END OF SECTION

# DuROCK PUCCS EIFS

## Exterior Insulation Finish System

## for Residential and Low Rise Construction

### MANUFACTURER'S SPECIFICATION 07 24 13

## PART 1 – GENERAL

### 1.1. RELATED SECTIONS

1.1.1. Specification 03 30 00 – Cast-in-Place Concrete
1.1.2. Specification 04 20 00 – Unit Masonry
1.1.3. Specification 05 40 00 – Cold-Formed Metal Framing
1.1.4. Specification 06 10 00 – Rough Carpentry
1.1.5. Specification 07 27 00 – Air Barriers
1.1.6. Specification 07 60 00 – Flashing & Sheet Metal
1.1.7. Specification 07 90 00 – Joint Protection (Sealants)
1.1.8. Specification 08 00 00 – Openings
1.1.9. Specification 09 28 00 – Backing Boards and Underlayments

### 1.2. SYSTEM DESCRIPTION

1.2.1. PUCCS EIFS is an insulated cladding system that includes first and second planes of protection from precipitation, and a geometrically-defined drainage cavity that is 10 mm deep and 37% open.

1.2.2. PUCCS EIFS is in full compliance with CAN/ULC-S716.1 "Standard for Exterior Insulation and Finish Systems (EIFS) – Materials and Systems" and PUCCS EIFS has been evaluated by the Canadian Construction Materials Centre (CCMC). CCMC Evaluation Report No. 12969-R is available at: http://www.durock.ca/evaluation.pdf .

1.2.3. PUCCS EIFS is combustible cladding that satisfies the test requirements of Article 3.1.5.5 and Article 3.2.3.8 of the National Building Code of Canada. Certification listing is available at: http://www.durock.ca/certification.pdf .

1.2.4. DuROCK Polar Bear moisture barrier meets the air leakage requirements for Air Barrier Materials in accordance with Sentence 5.4.1.2.1) in the National Building Code of Canada.

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| **SPEC NOTE** | *1. Code compliance – the suitability of this system and the incorporation of expanded polystyrene are subject to approval according to Municipal requirements. Check with all authorities having jurisdiction.* |
| **SPEC NOTE** | *2. Fire-resistance ratings are specific to the substrate (supporting walls), not to the EIFS. Fire requirements for wall assemblies incorporating EIFS are addressed in Articles 3.1.4.2, 3.1.5.5, 3.1.5.12, 3.2.3.7, 3.2.3.8, 9.10.14.5, 9.10.15.5, and 9.10.17.10 of the model building code. Ensure the wall assembly complies with the requirements of the applicable article(s). PUCCS EIFS is not intended for use on walls permitted no more than 10% unprotected openings.* |

### 1.3. DESIGN REQUIREMENTS

**1.3.1. Supporting Substrate**

1.3.1.1. Substrate shall be structurally sound and continuously supported.
1.3.1.2. Substrate shall be designed to withstand the anticipated wind loads, and deflect no more than L/240.
1.3.1.3. Substrate shall be continuous, flat and plumb, with surface variations less than 6 mm over 2400mm (1/4 inch over 8 ft).

1.3.1.4. Substrate shall be clean, dry, and free of any deleterious material such as wax, oil, paint, dust and dirt which could negatively affect bonding.
1.3.1.5. Substrate shall be: Plywood sheathing, minimum 12.7 mm (½ inch) thick, compliant with CSA-O325.0, CSA-O121-M, CSA-O151-M, or CSA-O153-M or; Oriented Strand Board (OSB) sheathing, minimum 11.1 mm ($^{7}/_{16}$ inch) thick, compliant with CSA-O437.
1.3.1.6. Sheathing shall be continuously supported by framing, and installed in compliance with Section 9.23 of the model building code, or engineered under Part 4 thereof.
1.3.1.7. Sheathing shall be installed horizontally with vertical joints offset by at least one framing member, installed so that no joints align with corners of openings, such as windows or doors, and installed so that boards are spaced no less than 2 mm (1/12 inch) apart, and no more than 3.2 mm (1/8 inch) apart.

**1.3.2. Substrate Joints, Openings, and Penetrations**

1.3.2.1. Expansion and movement joints in the substrate shall be sealed with a self-adhering membrane.
1.3.2.2. Openings and through wall penetrations shall be sealed with a self-adhering membrane or coated with DuROCK Polar Bear moisture barrier.
1.3.2.3. Self-adhering membranes shall be installed in accordance with manufacturer specifications, including appropriate primers as required.
1.3.2.4. Self-adhering membranes shall not extend more than 150 mm (6 inches) behind PUCCS EIFS.

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| **SPEC NOTE** | *3. DuRock recommends polyester-faced self-adhering EIFS Tape, however polyethylene-faced membranes may be used instead.* |
| **SPEC NOTE** | *4. DuROCK recommends that self-adhering membranes be installed prior to the application of DuROCK moisture barriers, however they may be applied after the DuROCK moisture barrier has dried.* |
| **SPEC NOTE** | *5. DuROCK recommends that self-adhering membranes extend no more than 50 mm (2 inches) behind PUCCS EIFS. Insulation shall be mechanically fastened at locations where polyethylene-faced membranes extend more than 75 mm (3 inches) behind PUCCS EIFS.* |

**1.3.3. Termination and Drainage**

1.3.3.1. PUCCS EIFS shall terminate and drain at least 200 mm (8 inches) above finished grade.
1.3.3.2. PUCCS EIFS shall terminate and drain at least 50 mm (2 inches) above roofing systems, balconies, and other similar conditions.
1.3.3.3. PUCCS EIFS shall terminate and drain above windows, doors, soffits, and other similar conditions.

**1.3.4. Expansion and Termination Joints**

1.3.4.1. Expansion and termination joints shall accommodate expansion and contraction of building materials due to thermal changes, moisture, wind, gravity, vibration, and seismic activity.
1.3.4.2. Expansion joints are required: where expansion joints in the substrate occur; where significant structural movement occurs; where substrate deflection exceeds L/240; where the substrate structural system changes; at deflection tracks in steel frame construction; at floor lines in wood frame construction; and where PUCCS EIFS abuts other cladding systems.
1.3.4.3. Termination joints are required where PUCCS EIFS abuts through wall penetrations such as windows and doors.
1.3.4.4. Expansion joints shall be at least 20 mm (3/4 inch) wide and termination joints shall be at least 13 mm (1/2 inch) wide.
1.3.4.5. Joints shall be sealed to prevent ingress of precipitation, unless otherwise specified.

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| **SPEC NOTE** | *6. Location and joint size are the responsibility of the designer. Joint width should be four times the anticipated range of movement.* |
| **SPEC NOTE** | *7. Wood framed construction that incorporates engineered wood joist systems may not necessarily require expansion joints. It is the Designer's prerogative to omit expansion joints at these locations.* |

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| **SPEC NOTE** | *8. Drained joints employing DuROCK Drainage Accessories do not require sealant. It is the Designer's prerogative to specify sealant at those locations.* |

**1.3.5. Joint Sealant**

1.3.5.1. Sealant shall be used to seal expansion and termination joints, unless otherwise specified.

1.3.5.2. Sealant material shall be low modulus, and shall be compatible with PUCCS EIFS.

1.3.5.3. Sealant shall be installed with closed-cell foam backer rod or bond breaker tape in accordance with manufacturer instructions, and in general conformance with ASTM C 1481.

1.3.5.4. Sealant shall be vented to permit drying and drainage of incidental moisture.

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| **SPEC NOTE** | *9. DuROCK recommends Sikaflex 15LM sealant by Sika, however the following sealants may also be used with DuRock EIFS: Sikasil WS 290 by Sika; 790, 795, and Contractors Concrete by Dow Corning; Spectrem 1, 3, and 4 by Tremco; and Sonolastic 150 by Sonneborn. Designers wishing to specify other sealants should consult DuROCK.* |
| **SPEC NOTE** | *10. Sealant vents should be spaced no more than 3 m (10 ft) apart. Vents should provide a nominal venting area of no less than 1 sq. cm. (0.1550 sq in). Venting may incorporate plastic masonry vents, equivalent pest screens, or vent tubes.* |

**1.3.6. Flashing**

1.3.6.1. Flashing is required at joints where PUCCS EIFS is expected to drain moisture to the exterior and anywhere the exposed top edge of PUCCS EIFS does not have a minimum slope of 1:2.

1.3.6.2. Flashing is required to protect the exposed top edge of PUCCS EIFS underneath wood decks and other similar protrusions.

1.3.6.3. Termination of PUCCS EIFS at roof parapets shall be protected by a waterproof membrane and cap flashing.

1.3.6.4. Flashing material shall be corrosion-resistant.

1.3.6.5. Flashing shall be installed in accordance with the model building code.

**1.3.7. Decorative Elements (mouldings, shapes, trim, window sills, etc.)**

1.3.7.1. Unless protected by metal flashing, the upward facing portion of a projection that is exposed to precipitation shall be sloped not less than 1:2 for projections up to 305 mm (12 inches) wide.

1.3.7.2. Horizontal projections wider than 305 mm (12 inches) shall be protected by structurally supported metal flashing.

1.3.7.3. Horizontal projections shall be designed, consistent with governing codes and standards, such that these will not be configured or construed as roofing or loadbearing (pedestrian or otherwise).

1.3.7.4. Pre-manufactured decorative elements shall be applied after the base coat has dried, and before primer or finish is applied.

**1.3.8. Aesthetic Reveals**

1.3.8.1. Aesthetic reveals may be incorporated into the system provided the insulation thickness behind the reveal is not less than 19 mm (3/4") over and above the 10 mm (3/8") grooved air space on the backside of the insulation board. Maximum reveal depths are: 6 mm (1/4") for 38 mm (1½") insulation; 19 mm (3/4") for 51 mm (2") insulation; 32 mm (1¼") for 64 mm (2½") insulation; etc.

1.3.8.2. Horizontal reveals shall have a minimum slope of 1:2 to shed water.

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| **SPEC NOTE** | *11. Aesthetic reveals should not align with corners of through wall penetrations such as windows and doors.* |

## 1.4. PERFORMANCE REQUIREMENTS

1.4.1. EIFS shall meet the cladding requirements of the model building code.

1.4.2. EIFS shall meet the applicable fire requirements of the model building code.

1.4.3. Where required to meet the requirements of Article 3.2.3.8, EIFS shall be tested in conformance with CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials", and base coats shall be tested in conformance with CAN/ULC-S114, "Noncombustible Material".

1.4.4. Where the moisture barrier is intended to serve as an air barrier, the moisture barrier shall meet the air leakage characteristic identified in the model building code.

## 1.5. SUBMITTALS

1.5.1. Upon request, DuROCK will supply finish coat samples, approximately 200 x 200 mm (8 x 8 inches), providing representation of the texture and colour.

## 1.6. QUALITY ASSURANCE

1.6.1. PUCCS EIFS shall be installed by a competent, knowledgeable, experienced contractor.
1.6.2. PUCCS EIFS shall be installed in accordance with these specifications and the corresponding details.

## 1.7. DELIVERY, STORAGE & HANDLING

1.7.1. All materials and components shall be delivered to the jobsite in the original, unopened packaging with labels clearly identifying each component.
1.7.2. All materials and components shall be inspected upon delivery. Any defective or frozen, materials or components shall not be used.
1.7.3. All materials and components shall be stored off the ground, and protected from precipitation and direct sunlight.
1.7.4. All water-based materials supplied in plastic pails shall be delivered and stored at temperatures above 4°C (40°F) and below 40°C (104°F).
1.7.5. All dry-bagged materials shall be protected from high humidity.

## 1.8. SITE CONDITIONS

1.8.1. Surface and ambient conditions for application of wet-state-materials shall be above 4°C (40°F) and shall remain so for a minimum of 24 hours and until all work has dried. Drying may require more than 24 hours under humid conditions or at low temperatures.
1.8.2. At temperatures below 10°C (50°F), adhesives shall be allowed to dry for a minimum of 48 hours. Drying may require more than 48 hours under humid conditions.
1.8.3. Wet-state-materials shall not be applied in direct sunlight at temperatures exceeding 30°C (86°F), or when the substrate temperature exceeds 40°C (104°F).
1.8.4. All work shall be protected from rain, snow, hail, and wind exceeding 25 km/hr (15 mph) until it has dried.

## 1.9. WARRANTY

1.9.1. PUCCS EIFS is eligible for a limited manufacturer's warranty starting from the date of substantial completion. A formal warranty request shall be submitted to DuROCK upon completion of the work.
1.9.2. DuROCK's warranty is effective only when materials are paid for in full, and the workmanship complies with this specification.
1.9.3. Substitution of materials or components shall void the manufacturer's warranty.

# PART 2 – MATERIALS

## 2.1. GENERAL

2.1.1. All materials and components of PUCCS EIFS shall be supplied by DuROCK Alfacing International Limited, or it's appointed distributors.

## 2.2. MATERIALS

### 2.2.1. Moisture Barriers and Adhesives

2.2.1.1. DuROCK Polar Bear is a vapour permeable moisture barrier, air barrier, and adhesive. It is a non-cementitious, water-based, acrylic dispersion that is factory mixed, and applied with stainless steel trowel or spray equipment.
2.2.1.2. DuROCK Roller Bear is a vapour permeable moisture barrier. It is a factory-blended, ready-to-use, non-cementitious, polymeric, wet mix coating that is applied by spray, brush, or roller.

| SPEC NOTE | *12. DuROCK Polar Bear can be specified as forming part of an air barrier system, however the Designer must indicate this. Continuity of the air seal is the responsibility of the Designer.* |
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**2.2.2. Drainage Accessories**

2.2.2.1. DuROCK Uni-Track – polyvinyl chloride (PVC) extrusion used to facilitate drying and drainage at the base of the wall.

2.2.2.2. DuROCK Uni-Flash – polyvinyl chloride (PVC) extrusion used to facilitate drying and drainage above windows and other similar protrusions.

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| **SPEC NOTE** | *13. DuROCK recommends drainage accessories be employed at all locations where the system is expected to drain, however it is the Designer's responsibility to specify where they shall be used.* |

**2.2.3. Insulation**

2.2.3.1. DuROCK PUCCS insulation is typically Type I Expanded Polystyrene (EPS) [minimum thermal resistance RSI 0.65/25mm (R 3.75/inch) and average density 16 kg/m$^3$ (1 lb/ft$^3$)], however it is also available in Type II EPS [minimum thermal resistance RSI 0.70/25mm (R 4.0/inch) and average density 24 kg/m$^3$ (1.5 lb/ft$^3$)]. Both Types I & II are compliant with CAN/ULC-S701and are made from 100% virgin materials.

2.2.3.2. DuROCK PUCCS insulation is made by a manufacturer approved by DuROCK, and is packaged in bags with DuROCK's logo plainly visible.

2.2.3.3. DuROCK PUCCS insulation is aged and cut according to the requirements of ASTM E 2430, nominal size of sheets being height and width of 610 x 1219 mm (24 x 48 inches).

2.2.3.4. DuROCK PUCCS insulation is available in 51, 64, 76, 89, 102, 114, 127, 140, & 152 mm (2, 2½, 3, 3½, 4, 4½, 5, 5½, & 6 inch) thicknesses.

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| **SPEC NOTE** | *14. It is the Designer's responsibility to specify the insulation thickness, which must be designed to minimize the potential for condensation within the supporting wall.* |
| **SPEC NOTE** | *15. Maximum insulation thickness in accordance with National Building Code of Canada Article 3.1.5.5 is 127 mm (5 inch) for Type I EPS and 76 mm (3 inch) for Type II EPS.* |
| **SPEC NOTE** | *16. Maximum insulation thickness in accordance with National Building Code of Canada Article 3.2.3.8 is 152 mm (6 inch) for Type I EPS and 102 mm (4 inch) for Type II EPS.* |

2.2.3.5. DuROCK PUCCS insulation has router-cut grooves 10 mm (3/8 inch) deep by 16 mm (5/8 inch) wide in 51 mm (2 inch) radii, in such a way that each sheet has seventy-two circles cut equidistantly on 102 mm (4 inches) vertical and horizontal centres, tangentially overlapped.

2.2.3.6. Spray-in-Place Polyurethane Foam, compliant with CAN/ULC-S710.1 - single component, moisture cure, low expansion rate foam, used for insulation board joints as a gap filling material.

**2.2.4. Base Coats**

2.2.4.1. DuROCK Prep Coat base coat - a wet mix, water-based acrylic dispersion that is field mixed with Type 10, 20, or 30 Portland cement 1:1 by weight, applied by stainless steel trowel or spray equipment.

2.2.4.2. DuROCK Prep Coat D base coat – a dry mix, polymer-modified cementitious material that is field mixed with potable water, applied by stainless steel trowel or spray equipment.

**2.2.5. Mechanical Fasteners**

2.2.5.1. Wind-Devil 2 by Wind-Lock Corp. high density plastic washers, 51 mm (2 inches) in diameter, used in combination with corrosion resistant screws that are suitable for the substrate.

**2.2.6. Alkali-Resistant Glass-Fibre Mesh**

2.2.6.1. DuROCK Starter Mesh for Backwrapping– nominal 145 g/m$^2$ (4.3 oz/yd$^2$) weight, supplied in 241 mm (9½ in) wide by 45.7 m (150 ft) long, and 965 mm (38 in) wide by 45.7 m (150 ft) long rolls.

2.2.6.2. DuROCK 5 oz Reinforcing Mesh – nominal weight 174 g/m$^2$ (5.2 oz/yd$^2$), supplied in 965 mm (38 in) wide by 45.7 m (150 ft) long rolls. The DuROCK logo appears on the mesh.

2.2.6.3. DuROCK 15 oz Impact Mesh – nominal weight 522 g/m$^2$ (15.4 oz/yd$^2$), supplied in 965 mm (38 in) wide by 22.8 m (75 ft) long rolls.

2.2.6.4. DuROCK 20 oz Impact Mesh – nominal weight 680 g/m$^2$ (20.1 oz/yd$^2$), supplied in 1 m (39 in) wide by 22.8 m (75 ft) long rolls.

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| **SPEC NOTE** | *17. Reinforcing mesh weight governs the impact resistance of EIFS and 5 oz. mesh is not designed to withstand all impact caused by human force. DuRock recommends 15 or 20 oz. impact mesh plus 5 oz. reinforcing mesh for areas requiring greater impact resistance. It is the Designer's responsibility to specify where 15 oz. and 20 oz. mesh are to be used.* See Architectural Drawings. |
| **SPEC NOTE** | *18. PUCCS EIFS is not designed to withstand vehicular impact. Wherever possible, curbs, bollards, or sidewalks should be employed to create a buffer between PUCCS EIFS and vehicular traffic.* |

**2.2.7. Primer and Finish Coats**

2.2.7.1. DuROCK Base Primer – water-based, colour-pigmented acrylic dispersion used as a primer for DuROCK Finishes, applied by roller, brush, or spray equipment.

2.2.7.2. DuROCK Roll-On – water-based, colour-pigmented acrylic coating with a fine sand texture, used as a finish on decorative trim and mouldings, applied by roller, brush, or spray equipment.

2.2.7.3. DuROCK Finishes – water-based acrylic finish available in several textures and numerous colours, used as a finish on trim and walls, applied by stainless steel trowel or spray equipment.

2.2.7.4. DuROCK Specialty Finishes – water-based, exposed coloured aggregate finishes with integral texture, applied by stainless steel trowel or spray equipment.

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| **SPEC NOTE** | *19. DuROCK recommends the application of primer to enhance the color consistency of the finish, especially for bright, dark, or deep colours. The Designer must specify if primer is required.* Primer Required |

## 2.3. MIXING

2.3.1. DuROCK Polar Bear shall be mixed to a uniform consistency by a medium duty power-drill (400 – 500 RPM) with stainless steel or corrosion-resistant paddle-mixing-blades prior to application. Water shall not be added.

2.3.2. DuROCK Prep Coat shall be mixed by a medium duty power-drill (400 – 500 RPM) with stainless steel or corrosion-resistant paddle-mixing-blades. It shall be mixed to a uniform consistency prior to mixing with Portland cement. 15 kg (33 lbs) of Type 10, 20, or 30 Portland cement shall be gradually added to one-half pail of Prep Coat, mixing continuously until a workable consistency is attained. The mixture shall be allowed to stand for approximately 5 minutes, then remixed again to temper and increase pot life, adding up to 250 mL (8 oz.) of potable water if required to adjust viscosity.

2.3.3. DuROCK Prep Coat D shall be mixed by a medium duty power-drill (400 – 500 RPM) with stainless steel or corrosion-resistant paddle-mixing-blades. One bag of Prep Coat D shall be gradually added to 6 L (1.3 imp gal) of potable water, mixing continuously until a workable consistency is attained. The mixture shall be allowed to stand for approximately 5 minutes, then remixed again to temper and increase pot life, adding up to 250 mL (8 oz.) of potable water if required to adjust viscosity.

2.3.4. DuROCK Roller Bear, Polar Bear, Vapour Block, Base Primer, Roll-On, Finishes, and Specialty Finishes shall be mixed to a uniform consistency by a medium duty power-drill (400 – 500 RPM) with stainless steel or corrosion-resistant paddle-mixing-blades prior to application.

2.3.5. Discard any material that has become stiff or hard.

# PART 3 – EXECUTION

## 3.1. GENERAL

3.1.1. Deficiencies in the substrate shall be rectified prior to commencing the work of this section.

3.1.2. The work of this section shall be co-coordinated with the work of other related sections.

3.1.3. PUCCS EIFS shall be installed in accordance with these specifications and the corresponding details.

3.1.4. The work of other sections shall be protected to ensure the work of this section does not stain or otherwise damage them.

## 3.2. FIRST COAT MOISTURE BARRIER

3.2.1. Sheathing board joints shall not exceed 3.2 mm (1/8 inch). The first coat moisture barrier shall be Roller Bear installed as per 3.2.2 or Polar Bear installed as per 3.2.3.

3.2.2. Polar Bear shall be applied to gaps between sheathing boards and allowed to dry prior to the application of Roller Bear. A continuous, uniform coat of Roller Bear shall be applied to the substrate and allowed to dry. Minimum dry thickness shall be 0.28 mm (11 mils).

3.2.3. A continuous, uniform coat of Polar Bear shall be applied to the substrate and allowed to dry. Minimum dry thickness shall be 1.2 mm (47 mils).

## 3.3. DRAINAGE ACCESSORIES

3.3.1. Accessories shall be either adhesively or mechanically fastened to the substrate at locations indicated on the architectural drawings. Ends shall be butted tightly together, and sealed at termination points and corners.

3.3.2. Moisture barrier shall be applied to the interface of the accessory and the substrate to effectively prevent water from breaching it, and to direct water into its trough.

## 3.4. WRAPPING

3.4.1. Insulation shall be wrapped at all terminations and at all expansion joints.

3.4.2. Wrapping shall encapsulate exposed insulation board edges with mesh-reinforced base coat.

3.4.3. Wrapping shall extend a minimum of 100 mm (4 inches) behind the insulation and should extend at least 50 mm (2 inches) beyond any self-adhering membrane that is present.

3.4.4. Wrapping shall not block the drainage path on the backside of the insulation.

## 3.5. SECOND COAT MOISTURE BARRIER/ADHESIVE AND INSULATION

3.5.1. Polar Bear shall be applied in a continuous, uniform coat at a minimum wet thickness of 1.5 mm (59 mils), and the insulation shall be immediately adhered to it. Mechanical fasteners shall be immediately placed through the dimples on the front of the insulation at locations where the insulation is not in contact with the adhesive. Fasteners shall be seated flush with the insulation board face and installed such that the fasteners penetrate a minimum of 25 mm (1 inch) into the sheathing.

3.5.2. The insulation shall be installed such that boards are butted tightly together, vertical joints are staggered a minimum of 75 mm (3 inches), boards are oriented lengthwise horizontally, and inside and outside corners are interlocked. Insulation board joints shall be offset not less than 150 mm (6 inches) from sheathing board joints. Insulation board joints shall not align with corners of through-wall penetrations such as windows and doors. Adequate space shall be left at termination and expansion joints to allow for wrapping and sealant. Gaps between boards that exceed 1.6 mm (1/16 inch) in width shall be filled with insulation material. Gaps at outside corners shall also be filled with insulation material.

3.5.3. Mechanical fasteners shall be installed where polyethylene-faced self-adhering membranes extend more than 75 mm (3 inches) behind the insulation and wherever wrapping does not extend at least 50 mm (2 inches) beyond any self-adhering membrane that is present.. Fasteners shall be placed at the dimples provided on the front of the insulation board and spaced no more than 305 mm (12 inches) apart. Fasteners shall be seated flush with the insulation board face (not countersunk), and must be installed such that the fasteners penetrate a minimum of 25 mm (1 inch) into the sheathing.

3.5.4. Once the adhesive has dried, the insulation shall be rasped to ensure the surface is plane, smooth, and free of ultraviolet radiation degradation. The minimum insulation thickness after rasping shall be 19 mm (3/4”) over and above the 10 mm (3/8”) grooved air space on the backside of the insulation board.

3.5.5. Aesthetic reveals shall be cut as indicated on the architectural drawings. The minimum insulation thickness behind reveals shall be 19 mm (3/4”) over and above the 10 mm (3/8”) grooved air space on the backside of the insulation board. Horizontal reveals shall be sloped to shed water. Reveals shall not align with insulation board joints. Reveals should not align with corners of through wall penetrations such as windows and doors.

## 3.6. BASE COAT & FIBRE MESH

3.6.1. Mechanical fastener heads should be covered with base coat and allowed to dry prior to coating the wall.

3.6.2. Where specified, impact mesh shall be embedded in base coat and allowed to dry prior to application of the reinforcing mesh. All areas that are treated with impact mesh shall also receive reinforcing mesh. Impact mesh joints shall be butted together and not overlapped.

3.6.3. Base coat shall be applied continuously over the insulation and areas that have been treated with impact mesh, reinforcing mesh shall be immediately embedded into it, and the surface shall be rendered uniform and smooth.

3.6.4. Reinforcing mesh joints shall be overlapped a minimum of 100 mm (4 inches) in the field of the wall and at least 200 mm (8 inches) on both sides of outside corners.
3.6.5. An additional layer of reinforcing mesh shall be installed at a 45$^{o}$ angle to corners of through wall penetrations.
3.6.6. Minimum base coat thickness shall be 2.0 mm (79 mils). Base coat shall be allowed to dry prior to application of primer or finish.

## 3.7. PRIMER & FINISH COAT

3.7.1. Where specified, primer shall be applied to the reinforced base coat and allowed to dry for a minimum of 4 hours prior to finish coat application.
3.7.2. Finish coat shall be applied, and trowel-applied finishes shall be floated, to match the approved texture.
3.7.3. Finish coat shall not be applied onto surfaces that are to receive sealant.
3.7.4. Temporary protection shall remain in place until sealant and flashing are installed.
3.7.5. Leftover materials and debris shall be removed from the jobsite.

End of Specification 07 24 13

## PART 1: GENERAL

1.1 General Requirements

.1 The General Conditions, the Supplementary Conditions, the Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.

.2 The Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their work.

1.2 Description

.1 Supply labour, materials, plant, tools and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:

1. Connections of the walls to the roof air barrier.
2. Connections of the walls to the foundations.
3. Seismic and expansion joints.
4. Openings and penetrations of window and door frames, store front, curtain wall.
5. Piping, conduit, duct and similar penetrations
6. Masonry ties, screws, bolts and similar penetrations.
7. All other air leakage pathways in the building envelope.

.2 Materials and installation methods of the primary air/vapour & rain barrier membrane system.

.3 Materials and installation methods of dampproof coursing and through-wall flashing membranes.

.4 Materials and installation methods for the adhesion of rigid and semi-rigid insulating materials.

1.3 Related Sections

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|---|---|---|
| .1 | Masonry: | Section [04200] |
| .2 | Insulation: | Section [072116] |
| .3 | EIFS: | Section [072413] |
| .4 | Metal Cladding: | Section [074213] |
| .5 | Roofing: | Section [XXXXX] |
| .6 | Door & Window Frames: | Section [XXXXX] |

1.4 REFERENCES

.1 The following standards are applicable to this section:

.1 ASTM E2178: Standard Test Method for Air Permeance of Building Materials.

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

.3 E1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls

.4 ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

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

.6 ASTM E96: Water Vapor Transmission of Materials.

.7 CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.

.8 ASTM 2357 certifying the air leakage and vapour permeance rates for system assembly.

1.5 Submittals

.1 Prior to commencing the Work submit copies of manufacturers' current ISO certification. Membrane, primers, sealants, adhesives and associated auxiliary materials shall be included.

.2 Prior to commencing the Work submit manufacturers' complete set of standard details for the air barrier membrane systems showing a continuous plane of air tightness throughout the building envelope.

.3 Prior to commencing work provide material checklist complete with application rates & minimum thickness of primary membranes.

1.6 Quality Assurance

.1 Submit in writing, a document stating that the applicator of the primary air/vapour barrier membranes specified in this section is recognized by the manufacturer as suitable for the execution

of the Work.

.2 Perform Work in accordance with the manufacturer's written instructions of the air/vapour barrier membrane and this specification.

.3 Maintain one copy of manufacturer's written instructions on site.

.4 At the beginning of the Work and at all times during the execution of the Work, allow access to Work site by the air/vapour barrier membrane manufacturers' representative.

.5 Components used in this section shall be sourced from one manufacturer, including sheet membrane, air/vapour barrier sealants, primers, mastics and adhesives.

1.7 Delivery, Storage and Handling

.1 Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.

.2 Store role materials on end in original packaging.

.3 Store adhesives and primers at temperatures of 5 degrees C and above to facilitate handling.

.4 Keep solvent away from open flame or excessive heat.

.5 Protect rolls from direct sunlight until ready for use.

1.9 Co-ordination

.1 Ensure continuity of the air/vapour barrier membrane system throughout the scope of this section.

1.10 Alternates

.1 Submit requests for alternates in accordance with Section [XXXXX] - [XXXXX].

.2 Alternate submission format to include:

.1 Submit evidence that alternate materials meet or exceed performance characteristics of Product requirements as well as documentation from an approved independent testing laboratory certifying that the air leakage and vapour permeance rates of the air/ vapour barrier membranes, including primary membrane and transition sheets, exceed the requirements of the National Building Code, ASTM E 2357, the Massachusetts Energy Code and in accordance with ASTM E 2178.

.2 Submit copies of the manufacturers' current ISO certification.

.3 Submit references clearly indicating that the membrane manufacturer has successfully completed projects on a annual basis of similar scope and nature for a minimum of fifteen years.

.4 Submit manufacturers' complete set of standard details for air/vapour barrier membrane systems showing a continuous plane of air tightness throughout the building envelope.

.3 Submit requests for alternates to this specification a minimum of ten (10) working days prior to tender closing for evaluation.

.4 Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to tender closing shall not be permitted for use on this project.

1.11 Warranty

.1 Provide manufacturer's standard 5-year material warranty.

## PART 2: PRODUCTS

2.1 Air/vapour barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.

2.2 Membrane Manufacturer: **Henry-Bakor**
15 Wallsend Drive
Scarborough, ON M1E 3X6
Tel: 1-800-523-0268
Fax: 1-866-223-1285
Web Site: www.bakor.com

2.3 Membranes

.1 Primary sheet air/vapour barrier membrane shall be Blueskin® SA manufactured by Henry-Bakor, a SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film. For application temperatures down to -12°C use Blueskin® SA LT. Membrane shall have the following physical properties:

.1 Thickness: 1.0 mm (40 mils),
.2 Air leakage: <0.005 L/s.m² @ 75 Pa to ASTM E283-91,
.3 Tested to ASTM E 2357 for the air barrier assembly,
.4 Water vapour permeance: 1.71 ng/Pa.m².s (0.03 perms) to ASTM E96,
.5 Low temperature flexibility: -30 °C to CGSB 37-GP-56M,
.6 Elongation: 200% to ASTM D412-modifed.

.2 Through-wall flashing membrane and dampproof course (Self-Adhering) shall be Blueskin® TWF manufactured by Henry-Bakor, a SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, having the following physical properties:
.1 Colour: Yellow,
.2 High Temperature Stability: 110 degrees C min. to ASTM D5147 (resistance to flow),
.3 Thickness: 1.0 mm (40 mils),
.4 Air leakage: <0.005 L/s.m² @ 75 Pa to ASTM E283-91,
.5 Water vapour permeance: 1.6 ng/Pa.m².s (0.03 perms) to ASTM E96,
.6 Low temperature flexibility: -30 °C to CGSB 37-GP-56M.

2.4 Adhesive and Primers
.1 Adhesive for self-adhering membranes at temperatures above -12°C shall be Blueskin® Adhesive manufactured by Henry-Bakor, a synthetic rubber based adhesive, quick setting, having the following physical properties:
.1 Colour: Blue,
.2 Weight: 0.8 kg/l,
.3 Solids by weight: 35%,
.4 Drying time (initial set): 30 minutes.

.2 Primer for self-adhering membranes at temperatures above –4 degrees C shall be Aquatac™ Primer manufactured by Henry-Bakor, a polymer emulsion based adhesive, quick setting, having the following physical properties:
.1 Colour: Aqua,
.2 Weight: 1.0 kg/l,
.3 Solids by weight: 53%,
.4 Water based, no solvent odours,
.5 Drying time (initial set): 30 minutes at 50%RH and 20 degrees C.

.3 Adhesive for self-adhering membranes at temperatures above -12°C shall be Blueskin® LVC Adhesive a quick drying, lower volatile organic compound (VOC) formulation, rubber based adhesive designed to enhance the adhesion of self-adhesive membranes such as **Blueskin**®
.1 Colour: Blue
.2 Weight:: 0.9 kg/l
.3 Solids By Weight: 40%
.4 VOC Content: < 250 g / L
.5 Drying Time (initial set): Approximately 30 minutes.

SPEC NOTE: THERMAL SHORT CIRCUITING To reduce heat loss and restrict air convection between the air/vapour barrier membrane and insulating materials, secure the insulation in place with an insulation adhesive applied in a serpentine pattern in addition to butter the joints of all panels. Co-ordinate with the Cavity Wall Insulation Section. Choose 2.4.1 & 3.7 for the insulation adhesive and method of installation.

2.4 Mastics & Termination Sealants
.1 Liquid air seal mastic and insulation adhesive shall be Air-Bloc 21 or 230-21 Insulation Adhesive manufactured by Henry-Bakor, a synthetic, trowel applied, rubber based adhesive, having the following characteristics:
.1 Compatibility: With air/vapour barrier membrane, substrate and insulation.
.2 Air leakage: 0.013 L/s.m² @ 100 Pa.,
.3 Water vapour permeance: 1.7 ng/Pa.m$^2$.s. (0.03 perms),
.4 Long term flexibility: CGSB 71-GP-24M,
.5 Chemical resistance: Alkalis and salt.

.2 Termination Sealant shall be HE925 BES Sealant manufactured by Henry-Bakor, a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
.1 Compatible with sheet air barrier, roofing and waterproofing membranes and substrate,

.2 Complies with Fed. Spec. TT-S-00230C, Type II, Class A,
.3 Complies with ASTM C 920, Type S, Grade NS, Class 25,
.4 Elongation: 450 – 550%,
.5 Remains flexible with aging,
.6 Seals construction joints up to 25mm wide.
.7 For use in concealed or exposed application.

.3 Termination Sealant shall be POLYBITUME® 570-05 Polymer Modified Sealing Compound manufactured by Henry-Bakor, a polymer modified sealing compound having the following characteristics:
.1 Compatible with sheet waterproofing membrane and substrate,
.2 Solids by volume: 70%,
.3 Vapour permeance: 2.9 ng/Pa.m².s, ASTM E96,
.4 Complies with CGSB 37.29,
.5 Remains flexible with ageing,
.6 Chemical resistance: Alkalis, calcium chloride, mild acid and salt solutions.

## PART 3: EXECUTION

3.1 Examination
.1 Verify that surfaces and conditions are ready to accept the Work of this section. Notify [engineer] [architect] [consultant] in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrate.

3.2 .1 All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.
.2 New concrete should be cured for a minimum of 14 days and must be dry before air/vapour barrier membranes are applied.
.3 Where curing compounds are used they must be clear resin based without oil, wax or pigments.

3.3 Adhesive or Primer for Transition and Through-wall Flashing Membrane (Self-Adhering)
.1 Apply adhesive or primer for self-adhering membranes at rate recommended by manufacturer.
.2 Apply to all areas to receive transition sheet and / or through-wall flashing membrane, as indicated on drawings by roller or spray and allow minimum 30 minute open time. Surfaces not covered by self-adhering transition membrane or self-adhering through-wall flashing membrane during the same working day must be re-applied.

3.4 Transition Membrane (Self-Adhering)
.1 Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 50 mm overlap at all end and side laps.
.2 Tie-in to window frames, aluminium screens, hollow metal doorframes, spandrel panels, roofing system and at the interface of dissimilar materials as indicated in drawings
.3 Promptly roll all laps and membrane with a counter top roller to effect seal.
.4 Ensure all preparatory work is complete prior to applying liquid applied air vapour barrier membrane.

3.5 Through-wall Flashing Membrane & Dampproof Course (Self-Adhering)
.1 Apply through-wall flashing and dampproof coursing membrane in accordance with CSA A371-94 Masonry Construction for Buildings; along the base of masonry veneer walls, over windows, doors and other wall openings required to be protected.
.2 Applications shall form a continuous flashing membrane and shall extend up a minimum of 200 mm up the back-up wall.
.3 At the end of each days work seal the top edge of the membrane where it meets the substrate using liquid air seal mastic. Trowel apply a feathered edge to seal termination and shed water.
.4 Ensure through-wall flashing membrane extends fully to the exterior face of the exterior masonry veneer. At locations where flashing terminates or intersects wall openings including door frames, "end dam" flashing to protect openings and redirect water out. Trim off excess as directed by the consultant.
.5 Apply dampproof coursing membrane over slabs on grade, prepare and prime surfaces, align and

position membrane between slab and masonry block work.

.6 Align and position the leading edge of self-adhering through-wall flashing membrane with the front horizontal edge of the foundation walls, self angles and other substrates to be protected, partially remove protective film and roll membrane over surface and up vertically.

.7 Press firmly into place. Ensure minimum 50 mm overlap at all end and side laps. Promptly roll all laps and membrane to affect the seal.

.8 Ensure all preparatory work is complete prior to applying self-adhering through-wall flashing membrane.

.9 Ensure through-wall flashing membrane extends fully to the exterior face of the exterior masonry veneer. Trim off excess as directed by the consultant.

3.6 Air/Vapour Barrier Membrane

.1 Apply self-adhering membrane complete and continuous to prepared and primed substrate in an overlapping shingle fashion and in accordance with manufacturer's recommendations and written instructions. Stagger all vertical joints.

.2 Align and position self-adhering membrane, remove protective film and press firmly into place. Ensure minimum 50 mm overlap at all end and side laps. Promptly roll all laps and membrane with a counter top roller to affect the seal.

.3 At the end of each days work seal the top edge of the membrane where it meets the substrate using liquid air seal mastic. Trowel apply a feathered edge to seal termination and shed water.

.4 Tie-in to window frames, aluminium screens, hollow metal doorframes, spandrel panels, roofing system and at the interface of dissimilar materials as indicated in drawings. Refer to manufacturers' standard details.

.5 Ensure all projections, including wall ties, are properly sealed with a caulk application of liquid air seal mastic.

.6 Mechanically fasten membrane through securement bars to all window, door, louvers and curtain wall sections as recommended by membrane manufacturer where proper adhesion and bonding cannot be maintained.

.7 Membrane applied to the underside of substrate surfaces shall receive special attention on application to ensure maximum surface area adhesion is obtained.

3.7 Installation of Insulation

.1 Co-ordinate with Cavity Wall Insulation Section [] for insulating materials.

.2 Upon the curing of the air/vapour barrier membrane system apply the liquid air seal mastic and insulation adhesive in a serpentine pattern over completed air/vapour barrier membrane system.

.3 Immediately embed insulation into the adhesive and press firmly into place to ensure full contact. Apply additional adhesive if allowed to skin over.

.4 Fully butter all joints of insulation panels with adhesive during installation, except at expansion joints.

3.8 Inspection

.1 Notify [consultant] when sections of work are complete so as to allow for review prior to installing insulation.

3.9 Protection of Finished Work

.1 Air-Bloc and Blueskin® membranes are not designed for permanent exposure. Product designed to withstand reasonable job site exposure, however good practice calls for covering as soon as possible.

.2 Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.

.3 Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane. Drying time varies depending on temperature and relative humidity.

.4 Air barrier membranes are not designed for permanent exposure. Good practice calls for covering as soon as possible.

END OF SECTION

## PART 1: GENERAL

1.1 General Requirements

.1 The General Conditions, the Supplementary Conditions, the Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.

.2 The Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their work.

1.2 Description

.1 Supply labour, materials, plant, tools and equipment to complete the Work as shown on the Drawings and as specified herein including, but not limited to the following:

.1 Steel Roof Deck (by others),
.2 Underlay Board (optional),
.3 Primer & Self-Adhering Air Vapour Barrier Membrane,
.3 Roof Insulation & Tapered Insulation,
.4 Overlay Board Adhesive and Overlay Board,
.5 Self-Adhering Base Sheet & Base Sheet Flashing,
.6 Self-Adhering Cap Sheet & Cap Sheet Flashing,
.7 Metal Flashings and Accessories.

1.3 Related Work

.2 Steel Decking: See Structural Drawings

1.4 References

| | | |
|---|---|---|
| .1 | ASTM C1177-96: | Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing. |
| .2 | ASTM D3273: | Standard Test Method for Resistance to Growth of Mould on the Surface of Interior Coatings in an Environment Chamber |
| .3 | CSA A123.4-[M1979]: | Bitumen for use in Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing systems. |
| .4 | CAN/CSA-A247-[M86]: | Insulating Fibreboard. |
| .5 | CAN/ULC-S704-01: | Standard Specification for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced. |
| .6 | CAN/ULC-S770-00: | Standard Test Method for Determination of Long Term Thermal Resistance (LTTR) of Closed Cell Thermal Insulating Foams |
| .7 | CAN/CGSB-37.9-[83]: | Primer, Asphalt, Unfilled for Asphalt Roofing, Dampproofing and Waterproofing. |
| .8 | CAN/CGSB-37.29-[M89]: | Rubber-Asphalt Sealing Compound. |
| .9 | CGSB 37-GP-56M-[80]: | Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing. |
| .10 | CSA 0121-[M1978]: | Douglas Fir Plywood. |
| .11 | CAN/CGSB-37.29-[M89]: | Rubber-Asphalt Sealing Compound. |

1.5 Shop Drawings

.1 Submit shop drawings in accordance with Section [XXXXX] - [XXXXX].

1.6 Storage and Handling

.1 Store *modified***PLUS**® membranes and accessories in a dry location, in original packaging.

.2 If product is stored outside, it must be elevated on a platform and be protected with a waterproof cover, which will shed water away from the material.

.3 Store all products in an upright position. Do not double stack unless product is on pallets and packaged as received from factory. Never stack more than two pallets high without racking.

.4 In cold weather store *modified***PLUS**® membranes in heated area and take onto roof immediately prior to use.

.5 Store adhesives and primers between 15 degrees C (60 degrees F) and 26 degrees C (80 degrees F), or restore to temperature range before use.

.6 Store combustible materials away from heat and open flame.

.7 Do not store *modified***PLUS**® membranes at ambient temperatures above 49 degrees C (120 degrees F).

1.7 Environmental Requirements

.1 *modified***PLUS**® installations in temperatures below 10 degrees C (50 degrees F) can result in quality concerns.

.2 Verify adhesion regularly during cold temperature applications.

.3 Store rolls in heated location until needed on the roof.

.4 It is recommended that when temperatures remain below +10 degrees C (50 degrees F) application should be suspended.

.5 Minimum working temperatures shall take into consideration a factor for wind chill. Application temperature shall be considered to be the temperature minus half of the wind speed as recommended by the Canadian Roofing Contractors Association (CRCA).

1.8 Protection

.1 Protect membrane from site damage during application. Cover traffic areas with appropriate protection to serve as walkways so as to prevent any damage to the membrane.

1.9 Submittals

.1 Submit in writing, a document stating that the applicator of the primary membranes specified in this Section are recognized by the manufacturer as suitable for the execution of the Work.

.2 Prior to commencing the Work submit copies of manufacturers' current ISO certification. Membrane, primers, sealants, adhesives and associated auxiliary materials shall be included.

.3 Prior to commencing the Work submit references clearly indicating that the membrane manufacturer has successfully completed projects on an annual basis of similar scope and nature for a minimum of fifteen years. Submit references for a minimum of ten projects.

.4 Prior to commencing the Work submit manufacturers' complete set of standard details for the air/vapour barrier and roofing membrane systems showing a continuous plane of air tightness throughout the building envelope.

1.10 Quality Assurance

.1 Perform Work in accordance with the printed requirements of the membrane manufacturer and this specification. Advise designer of any discrepancies prior to commencement of the Work.

.2 Maintain one copy of manufacturers' literature on site throughout the execution of the Work.

.3 At the beginning of the Work and at all times during the execution of the Work, allow access to site by the roofing membrane manufacturers' representative.

.4 Weather application issues and surface conditions can affect adhesion and are beyond Bakor's control. Use of hot air welder may be required to achieve proper adhesion. It is the responsibility of the roofing contractor to ensure adhesion of this product during application. Bakor, therefore, limit our liability to replacement of defective material only.

.5 At the request of the [architect] [engineer] [consultant], submit documentation certifying that the roofing membranes comply with CGSB 37-GP-56M.

.6 Materials used in this Section, including air/vapour barrier membranes, primers, mastics, adhesives and sealants shall be fully compatible and shall be sourced from one manufacturer.

.7 At the request of the [architect] [engineer] [consultant], submit copies of the membrane manufacturers' current certification to ISO 9000.

1.11 Alternates
- .1 Submit requests for alternates in accordance with Section [XXXXX] - [XXXXX].
- .2 Alternate submission format to include:
  - .1 Submit evidence that alternate materials meet or exceed performance characteristics of Product requirements and documentation from an approved independent testing laboratory certifying that the performance of the roofing membrane system including air vapour barrier and transition sheets, exceed the requirements of the National Building Code.
  - .2 Submit copies of manufacturers' current ISO certification.
  - .3 Submit references clearly indicating that the membrane manufacturer has successfully completed projects on a annual basis of similar scope and nature for a minimum of five years.
  - .4 Submit manufacturers' complete set of standard details for the roofing membrane systems showing a continuous plane of air tightness throughout the building envelope.
- .3 Submit requests for alternates to this specification a minimum of fifteen (10) working days prior to tender closing for evaluation. Include a list of 10 projects executed over the past five years.
- .4 Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to tender closing shall not be permitted for use on this project.

1.12 Warranty
- .1 For the Work of this Section, the 12 months warranty period prescribed in subsection GC 32.1 of General Conditions "C" is extended to [24 months] [60 months].
- .2 Contractor hereby warrants that the modified bituminous roofing and membrane flashings will stay in place and remain leakproof in [accordance with GC24], but for two years.
- .3 Roofing membrane manufacturer hereby warrants that the membrane and membrane flashings will remain in a watertight condition and will not leak as a result of faulty materials for a period of [five years] [ten years]. Scope of warranty shall include material required to return the membrane to a watertight condition.
- .4 Roofing membrane manufacturer hereby warrants that the membrane and membrane flashings will remain in a watertight condition and will not leak as a result of faulty materials or faulty workmanship for a period of ten [10] years. Scope of warranty shall include material and labour required to return the membrane to a watertight condition.

## PART 2: PRODUCTS

2.1 Components and materials must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.

2.2 Roofing Membrane Manufacturer: **Henry Canada**,
15 Wallsend Drive
Scarborough, ON M1E 3X6
Tel: 1-800-523-0268
Fax: 1-866-223-1285
Web Site: www.bakor.com

2.3 Roof Underlay Board
- .1 Glass mat faced, Factory primed, water resistant treated core gypsum board. Conforming to ASTM C1177, non-combustible according to ASTM E136/ ULC S114, thermal barrier as tested to ULC-S126, flame spread = 0 and smoke developed = 0 according to ASTM E84/ULC S102. Dens Deck Prime 13 mm thick (1/2 inch).
- .2 Glass Mat Faced Gypsum Board Adhesive shall be 830-05 Fire Resistive Roof and Insulation Adhesive manufactured by Bakor.

2.4 Primers
- .1 Primer for all self-adhering air/vapour barrier membranes shall be Blueskin® Primer manufactured by Bakor and be fully compatible with membranes.
- .2 Primer for roof membrane base sheet applications shall be Aquaprime™ 900-31 manufactured by Bakor and be compatible with membranes.
- .3 Primer for base sheet flashing applications shall be Aquatac™ or Blueskin® Primer manufactured by Bakor and be fully compatible with membranes.

.4 Primer for all metal drip edge, drain and vent flanges shall be Blueskin® Primer.

2.5 Air Vapour Barrier Membranes

.1 Air/Vapour barrier membrane shall be VaporBloc™ SA, Self-Adhered Vapour Barrier Membrane manufactured by Bakor, an SBS modified bitumen self-adhering membrane laminated to a blue cross laminated polyethylene film and having a minimum thickness of 0.8 mm (30 mils).

.2 Air/vapour barrier transition membrane shall be Blueskin® SA manufactured by Bakor, a SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film and having a minimum thickness of 1.0 mm (40 mils).

.3 Liquid Air/Vapour Barrier Mastic shall be 230-21 Insulation Adhesive manufactured by Bakor, a synthetic, trowel applied, rubber based adhesive compatible with insulating material, having an air permeability of 0.013 L/s.m² @ 100 Pa., water vapour permeance of 1.7 ng/Pa.m$^2$.s. (0.03 perms) and long-term flexibility in compliance with CGSB 71-GP-24M.

2.6 Insulation & Overlay Board Adhesive

.1 Cold adhesive for adhering polystyrene insulation and insulation overlay board to membrane shall be Thermostik® 840-10, Internal Setting Roofing Adhesive manufactured by Bakor, a fast setting, 100% solids, solvent free, 2 component elastomeric rubber adhesive, minimum application temperature not to exceed –10 degrees C.

2.7 Roof Insulation

.1 Rigid insulation shall be extruded polystyrene meeting CAN/CGSB-51.20M, Type [IV], to the thickness as detailed. Foamular Thermapink 25

2.8 Tapered Roof Insulation fabricated with a minimum thickness of 25 mm (1/2”) and minimum slope of 1:50 (2%).

2.9 Overlay Board shall be Re-Cover Board p/s with removable poly film manufactured by Bakor. Minimum thickness shall be 3 mm (1/8").

2.10 Wood cants strips with sloped side to measure 140 mm in width. Wood cant strips to be dry and true before use. Wood Blocking including insulation stops and cant strips shall be construction grade spruce

2.11 Membrane base sheet and base sheet flashing shall be NP180 S/S for cold-adhering.

2.12 Membrane cap sheet and cap sheet flashing shall be NP250MUW Ultra-white for cold –adhering.

2.13 Membrane termination sealant in compliance with CAN/CGSB 37.29, shall be POLYBITUME® 570-05 Polymer Modified Sealing Compound manufactured by Bakor.

2.14 Plastic Roof Cement in accordance with of CAN/CGSB-37.5. shall be Bakor 810-21 Wet/Dry Plastic Roof Cement.

2.15 Pitch Pocket Mastic: Non-shrink 100% solids pourable mastic, Thermostik® 840-10 Internal Setting Roof Adhesive in conjunction with Blueskin® Primer Ultra manufactured by Bakor.

## PART 3: EXECUTION

3.1 .1 Examination: Verify that all deck surfaces and substrates are acceptable for installation of the system.

3.2 Roof Underlay Board
- .1 Install roof underlay board where required by NBC for thermal barrier protection.
- .2 Apply a continuous coat of adhesive to steel deck in accordance with manufacturers requirements and lay underlay board into wet adhesive.
- .3 Install only full pieces of underlay board, cut and fit boards to butt tight as recommended by manufacturer. Stagger and offset board joints.

3.3 Air/Vapour Barrier Membrane Applications
- .1 Apply primer by roller or spray to all surfaces as required by manufacturer and allow to cure dry prior to applying membrane. Primer is not required when self-adhering membrane is applied directly to clean and properly prepared metal deck.
- .2 Apply membrane complete and continuous to prepared and primed substrate in an overlapping shingle fashion and in accordance with manufacturer's written instructions. Stagger all vertical joints. Unroll and align air/vapour barrier centered at edge or low point of roof.
- .3 Align and position membrane, remove protective film and press firmly into place. Ensure minimum 50 mm overlap at all end and side laps. Promptly roll all laps and membrane with a counter top roller to affect the seal.
- .4 Extend membrane to form a continuous watertight membrane across the roof deck, upturn at parapets and curbs, tie-into mechanical penetrations, stack vents and roof drains.
- .5 Seal all punctures and penetrations with liquid air vapour barrier mastic prior to installing insulating materials.
- .6 Extend air/vapour at parapets and under insulated raised curb details to tie-into cavity wall air/vapour barrier membrane system.
- .7 Where insulation terminates at curb or parapet details, extend air/vapour barrier up vertical surfaces.

3.4 Insulation and Overlay Board
- .1 Install insulation layers in moderate contact, stagger end joints to provide a smooth surface for application of overlay board and roofing membrane.
- .2 Apply cold adhesive over air vapour barrier membrane at the rate as required by manufacturer and embed insulation in adhesive. Follow manufacturers' recommendations.
- .3 Install tapered insulation and overlay board in cold adhesive as per manufacturers recommendations.
- .4 Install only as much insulation and overlay board as can be covered by roofing membrane in the same day.
- .5 Install cant strips, secure into wood blocking with screws or nails as detailed.

3.5 .1 Self-adhered base sheets: Apply base sheet beginning at the low point of the roof and align membrane along centreline of roof drain. Remove release film and adhere to substrate following manufacturers' printed instructions.
- .2 Carry to base of cant as specified.
- .3 Start all roofing applications at the lowest point to ensure water runs over the laps of the membrane.
- .4 Lap base sheet 65 mm (2 1/2") on sides and 65 mm (2 1/2") on ends.
- .5 Reinforce around all projections and drains using base sheet flashing membranes.
- .6 Use weighted rollers to ensure full membrane contact to substrates and other membranes.
- .7 Use a hot air welder at lap seams and flashing applications as required to ensure adhesion.

3.6 .1 Self-Adhered base sheet flashings: Apply primer by roller at a rate of 7.2 m²/l (300 ft²/ US gal.) and allow to dry. Apply base sheet flashing as per manufacturers' instructions to primed and prepared substrates.
- .2 Begin application 100 mm (4") from toe of cant or vertical and extend vertically as indicated. Mechanically fasten upper edge of base sheet flashing using 25 mm (1") round top nails on 200 mm (8") centres. Refer to manufacturers' standard details.
- .3 Promptly apply firm pressure to the membrane using a roller to ensure full contact and uniform

adhesion.

.4 Use a hot air welder at lap seams and flashing applications as required to ensure adhesion.

3.7 .1 Self-Adhered cap sheets: Apply cap sheets directly to base sheets.

.2 Layout and align membranes. Plan work so that both the side and end laps of the cap sheet are offset from those of the base sheet a minimum of 300 mm (12") for side and 450 mm (18") for end laps.

.3 Lap cap sheet 75 mm (3") on sides and 150 mm (6") on ends.

.4 At all end or head laps of cap sheets, where "T" joint occurs, cut corner of membrane to be overlapped, on a 45 degree angle. Apply termination sealant to cover the granule portion at overlap areas and to fill the step where the membrane overlaps at "T" joints.

.5 Use weighted rollers to ensure full membrane contact to substrates and other membranes.

.6 Use a hot air welder at lap seams and flashing applications as required to ensure adhesion.

3.8 .1 Self-Adhered cap sheet flashings: Begin application 150 mm (6") from toe of cant or vertical and extend vertically as indicated.

.2 Use a hot air welder at lap seams and flashing applications as required to ensure adhesion.

.3 Mechanically fasten upper edge of cap sheet flashing using 25 mm (1") round top nails on 200 mm (8") centres.

**07 92 00**
**JOINT SEALANTS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION:**

A. This section covers interior and exterior sealant and their application, wherever required for complete installation of building materials or systems.

**1.2 RELATED WORK (INCLUDING BUT NOT LIMITED TO THE FOLLOWING):**

//A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.//

//B. Sealing of Site Work Concrete Paving: Section 32 05 23, CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS. //

//C. Masonry Control and Expansion Joint: Section 04 20 00, UNIT MASONRY. //

//D. Firestopping Penetrations: Section 07 84 00, FIRESTOPPING. //

//E. Glazing: Section 08 80 00, GLAZING. //

//F. Glazed Aluminum Curtain Wall: Section 08 44 13, GLAZED ALUMINUM CURTAIN WALLS. //

//G. Sound Rated Gypsum Partitions/Sound Sealants: Section 09 29 00, GYPSUM BOARD. //

//H. Mechanical Work: Section 21 05 11, COMMON WORK RESULTS FOR FIRE SUPPRESSION // Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING// Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION //.

**1.3 QUALITY ASSURANCE:**

A. Installer Qualifications: An experienced installer with a minimum of three (3) years' experience and who has specialized in installing joint sealants similar in material, design, and extent to those indicated for this Project and whose work has resulted in joint-sealant installations with a record of successful in-service performance. Submit qualification.

B. Source Limitations: Obtain each type of joint sealant through one (1) source from a single manufacturer.

**1.5 SUBMITTALS:**

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

F. Cured samples of exposed sealants for each color.

G. Manufacturer's Literature and Data:

1. Primers
2. Sealing compound, each type, including compatibility when different sealants are in contact with each other.

H. Manufacturer warranty.

**1.6 PROJECT CONDITIONS:**

A. Environmental Limitations:

1. Do not proceed with installation of joint sealants under following conditions:
   a. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C (40 degrees F).
   b. When joint substrates are wet.

B. Joint-Width Conditions:

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

C. Joint-Substrate Conditions:

1. Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

**1.7 DELIVERY, HANDLING, AND STORAGE:**

A. Deliver materials in manufacturers' original unopened containers, with brand names, date of manufacture, shelf life, and material designation clearly marked thereon.

B. Carefully handle and store to prevent inclusion of foreign materials.

C. Do not subject to sustained temperatures exceeding 32 degrees C (90 degrees F) or less than 5 degrees C (40 degrees F).

**1.8 DEFINITIONS:**

A. Definitions of terms in accordance with ASTM C717 and as specified.

B. Backing Rod: A type of sealant backing.

C. Bond Breakers: A type of sealant backing.

D. Filler: A sealant backing used behind a back-up rod.

**1.9 WARRANTY:**

A. Construction Warranty: Comply with FAR clause 52.246-21 "Warranty of Construction".

B. Manufacturer Warranty: Manufacturer shall warranty their sealant for a minimum of five (5) // // years from the date of installation and final acceptance by the Government. Submit manufacturer warranty.

**1.10 APPLICABLE PUBLICATIONS:**

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. ASTM International (ASTM):

C509-06..... Elastomeric Cellular Preformed Gasket and Sealing Material
C612-14..... Mineral Fiber Block and Board Thermal Insulation
C717-14a..... Standard Terminology of Building Seals and Sealants
C734-06(R2012) ..... Test Method for Low-Temperature Flexibility of Latex Sealants after Artificial Weathering

C794-10 ..... Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
C919-12. ..... Use of Sealants in Acoustical Applications.
C920-14a ..... Elastomeric Joint Sealants.
C1021-08(R2014) ..... Laboratories Engaged in Testing of Building Sealants
C1193-13 ..... Standard Guide for Use of Joint Sealants.
C1248-08(R2012) ..... Test Method for Staining of Porous Substrate by Joint Sealants
C1330-02(R2013) ..... Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants
C1521-13 ..... Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
D217-10 ..... Test Methods for Cone Penetration of Lubricating Grease
D1056-14 ..... Specification for Flexible Cellular Materials—Sponge or Expanded Rubber
E84-09 ..... Surface Burning Characteristics of Building Materials

C. Sealant, Waterproofing and Restoration Institute (SWRI).
The Professionals' Guide

D. Environmental Protection Agency (EPA):
40 CFR 59(2014) ..... National Volatile Organic Compound Emission Standards for Consumer and Commercial Products

**PART 2 - PRODUCTS**

**2.1 SEALANTS:**

A. Exterior Sealants:

//1. //S-#// Vertical surfaces, provide non-staining ASTM C920, Type S or M, Grade NS, Class 25, // ,// Use NT. //

//2. //S-#// Horizontal surfaces, provide ASTM C920, Type S or M, Grade P, Class 25, Use T. //

3. Provide location(s) of exterior sealant as follows:

a. Joints formed where frames and subsills of windows, doors, louvers, and vents adjoin masonry, concrete, or metal frames. Provide sealant at exterior surfaces of exterior wall penetrations.

b. Metal to metal.

c. Masonry to masonry or stone.

d. Stone to stone.

e. Cast stone to cast stone.

f. Masonry expansion and control joints.

g. Wood to masonry.

h. Masonry joints where shelf angles occur.

i. Voids where items penetrate exterior walls.

j. Metal reglets, where flashing is inserted into masonry joints, and where flashing is penetrated by coping dowels.

B. Floor Joint Sealant:

1. ASTM C920, Type S or M, Grade P, Class 25, // ,// Use T. //S-#//
2. //S-#// Provide location(s) of floor joint sealant as follows.
   a. Seats of metal thresholds exterior doors.
   b. Control and expansion joints in floors, slabs, ceramic tile, and walkways.

C. Interior Sealants:

//1. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system are to comply with the following limits for VOC content when calculated according to 40 CFR 59, (EPA Method 24):
   a. Architectural Sealants: 250 g/L.
   b. Sealant Primers for Nonporous Substrates: 250 g/L.
   c. Sealant Primers for Porous Substrates: 775 g/L.//
2. //S-#// Vertical and Horizontal Surfaces: ASTM C920, Type S or M, Grade NS, Class 25, // ,// Use NT.
3. //S-#// Food Service: Use a Vinyl Acetate Homopolymer, or other low VOC, non-toxic sealant approved for use in food preparation areas.
4. Provide location(s) of interior sealant as follows:
   a. Typical narrow joint 6 mm, (1/4 inch) or less at walls and adjacent components.
   b. Perimeter of doors, windows, access panels which adjoin concrete or masonry surfaces.
   c. Interior surfaces of exterior wall penetrations.
   d. Joints at masonry walls and columns, piers, concrete walls or exterior walls.
   e. Perimeter of lead faced control windows and plaster or gypsum wallboard walls.
   f. Exposed isolation joints at top of full height walls.
   g. Joints between bathtubs and ceramic tile; joints between shower receptors and ceramic tile; joints formed where nonplanar tile surfaces meet.
   h. Joints formed between tile floors and tile base cove; joints between tile and dissimilar materials; joints occurring where substrates change.
   i. Behind escutcheon plates at valve pipe penetrations and showerheads in showers.

D. Acoustical Sealant:

1. Conforming to ASTM C919; flame spread of 25 or less; and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Acoustical sealant have a consistency of 250 to 310 when tested in accordance with ASTM D217; remain flexible and adhesive after 500 hours of accelerated weathering as specified in ASTM C734; and be non-staining.
2. Provide location(s) of acoustical sealant as follows:
   a. Exposed acoustical joint at sound rated partitions.

b. Concealed acoustic joints at sound rated partitions.

c. Joints where item pass-through sound rated partitions.

**2.2 COLOR:**

A. Sealants used with exposed masonry are to match color of mortar joints.

B. Sealants used with unpainted concrete are to match color of adjacent concrete.

C. Color of sealants for other locations to be light gray or aluminum, unless otherwise indicated in construction documents.

**2.3 JOINT SEALANT BACKING:**

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance:

1. Type C: Closed-cell material with a surface skin.

C. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056 or synthetic rubber (ASTM C509), nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 32 degrees C (minus 26 degrees F). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.

D. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

**//2.4 WEEPS:**

A. Weep/Vent Products: Provide the following unless otherwise indicated or approved.

1. Round Plastic Tubing: Medium-density polyethylene, 10 mm (3/8-inch) OD by thickness of stone or masonry veneer. //

**2.5 FILLER:**

A. Mineral fiberboard: ASTM C612, Class 1.

B. Thickness same as joint width.

C. Depth to fill void completely behind back-up rod.

**2.6 PRIMER:**

A. As recommended by manufacturer of caulking or sealant material.

B. Stain free type.

**2.7 CLEANERS-NON POROUS SURFACES:**

A. Chemical cleaners compatible with sealant and acceptable to manufacturer of sealants and sealant backing material. Cleaners to be free of oily residues and other substances capable of

staining or harming joint substrates and adjacent non-porous surfaces and formulated to promote adhesion of sealant and substrates.

**PART 3 - EXECUTION**

**3.1 INSPECTION:**

A. Inspect substrate surface for bond breaker contamination and unsound materials at adherent faces of sealant.

B. Coordinate for repair and resolution of unsound substrate materials.

C. Inspect for uniform joint widths and that dimensions are within tolerance established by sealant manufacturer.

**3.2 PREPARATIONS:**

A. Prepare joints in accordance with manufacturer's instructions and SWRI (The Professionals' Guide).

B. Clean surfaces of joint to receive caulking or sealants leaving joint dry to the touch, free from frost, moisture, grease, oil, wax, lacquer paint, or other foreign matter that would tend to destroy or impair adhesion.

1. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants.
2. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air. Porous joint surfaces include but are not limited to the following:
    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.
3. Remove laitance and form-release agents from concrete.
4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous surfaces include but are not limited to the following:
    a. Metal.
    b. Glass.
    c. Porcelain enamel.
    d. Glazed surfaces of ceramic tile.

C. Do not cut or damage joint edges.

D. Apply non-staining masking tape to face of surfaces adjacent to joints before applying primers, caulking, or sealing compounds.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

E. Apply primer to sides of joints wherever required by compound manufacturer's printed instructions or as indicated by pre-construction joint sealant substrate test.
   1. Apply primer prior to installation of back-up rod or bond breaker tape.
   2. Use brush or other approved means that will reach all parts of joints. Avoid application to or spillage onto adjacent substrate surfaces.

**3.3 BACKING INSTALLATION:**

A. Install backing material, to form joints enclosed on three sides as required for specified depth of sealant.

B. Where deep joints occur, install filler to fill space behind the backing rod and position the rod at proper depth.

C. Cut fillers installed by others to proper depth for installation of backing rod and sealants.

D. Install backing rod, without puncturing the material, to a uniform depth, within plus or minus 3 mm (1/8 inch) for sealant depths specified.

E. Where space for backing rod does not exist, install bond breaker tape strip at bottom (or back) of joint so sealant bonds only to two opposing surfaces.

**3.4 SEALANT DEPTHS AND GEOMETRY:**

A. At widths up to 6 mm (1/4 inch), sealant depth equal to width.

B. At widths over 6 mm (1/4 inch), sealant depth 1/2 of width up to 13 mm (1/2 inch) maximum depth at center of joint with sealant thickness at center of joint approximately 1/2 of depth at adhesion surface.

**3.5 INSTALLATION:**

A. General:
   1. Apply sealants and caulking only when ambient temperature is between 5 degrees C and 38 degrees C (40 degrees and 100 degrees F).
   2. Do not install polysulfide base sealants where sealant may be exposed to fumes from bituminous materials, or where water vapor in continuous contact with cementitious materials may be present.
   3. Do not install sealant type listed by manufacture as not suitable for use in locations specified.
   4. Apply caulking and sealing compound in accordance with manufacturer's printed instructions.
   5. Avoid dropping or smearing compound on adjacent surfaces.
   6. Fill joints solidly with compound and finish compound smooth.
   7. Tool exposed joints to form smooth and uniform beds, with slightly concave surface conforming to joint configuration per Figure 5A in ASTM C1193 unless shown or specified otherwise in construction documents. Remove masking tape immediately after tooling of

sealant and before sealant face starts to “skin” over. Remove any excess sealant from adjacent surfaces of joint, leaving the working in a clean finished condition.

8. Finish paving or floor joints flush unless joint is otherwise detailed.
9. Apply compounds with nozzle size to fit joint width.
10. Test sealants for compatibility with each other and substrate. Use only compatible sealant. Submit test reports.
11. Replace sealant which is damaged during construction process.

//B. Weeps: Place weep holes and vents in joints where moisture may accumulate, including at base of cavity walls, above shelf angles, at all flashing, and as indicated on construction documents.

1. Use round plastic tubing to form weep holes.
2. Space weep holes formed from plastic tubing not more than 406 mm (16 inches) o.c.
3. Trim tubing material used in weep holes flush with exterior wall face after sealant has set.//

C. For application of sealants, follow requirements of ASTM C1193 unless specified otherwise. Take all necessary steps to prevent three-sided adhesion of sealants.

D. Interior Sealants: Where gypsum board partitions are of sound rated, fire rated, or smoke barrier construction, follow requirements of ASTM C919 only to seal all cut-outs and intersections with the adjoining construction unless specified otherwise.

1. Apply a 6 mm (1/4 inch) minimum bead of sealant each side of runners (tracks), including those used at partition intersections with dissimilar wall construction.
2. Coordinate with application of gypsum board to install sealant immediately prior to application of gypsum board.
3. Partition intersections: Seal edges of face layer of gypsum board abutting intersecting partitions, before taping and finishing or application of veneer plaster-joint reinforcing.
4. Openings: Apply a 6 mm (1/4 inch) bead of sealant around all cutouts to seal openings of electrical boxes, ducts, pipes and similar penetrations. To seal electrical boxes, seal sides and backs.
5. Control Joints: Before control joints are installed, apply sealant in back of control joint to reduce flanking path for sound through control joint.

**3.6 FIELD QUALITY CONTROL:**

//A. Field-Adhesion Testing: Field-test joint-sealant adhesion to joint substrates according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.

1. Extent of Testing: Test completed elastomeric sealant joints as follows:
   a. Perform 10 tests for first 305 m (1000 feet) of joint length for each type of elastomeric sealant and joint substrate.
   b. Perform one test for each 305 m (1000 feet) of joint length thereafter or one test per each floor per elevation. //

//B. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field adhesion test log. //

//C. Inspect tested joints and report on following:

1. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate.
2. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
3. Whether sealants filled joint cavities and are free from voids.
4. Whether sealant dimensions and configurations comply with specified requirements.//

//D. Record test results in a field adhesion test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions. //

//E. Repair sealants pulled from test area by applying new sealants following same procedures used to originally seal joints. Ensure that original sealant surfaces are clean and new sealant contacts original sealant. //

//F. Evaluation of Field-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements, will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements. //

**3.7 CLEANING:**

A. Fresh compound accidentally smeared on adjoining surfaces: Scrape off immediately and rub clean with a solvent as recommended by manufacturer of the adjacent material or if not otherwise indicated by the caulking or sealant manufacturer.

B. Leave adjacent surfaces in a clean and unstained condition.

- - - E N D - - -

## 1. GENERAL

### 1.1 SECTION INCLUDES

1.1.1 Supply of hollow metal steel doors and frames for the Work.

### 1.2 RELATED SECTIONS

1.2.1 Section 06100, Carpentry: Installation of steel doors and hardware.

1.2.2 Section 08710, Finish Hardware: Supply of hardware.

1.2.3 Section 09900, Painting: Finish Painting.

### 1.3 QUALITY ASSURANCE

1.3.1 Conform to the requirements of the following:

.1. Canadian Steel Door and Frame Manufacturers' Association Canadian Manufacturing Specifications for Steel Doors and Frames;

.2 Underwriters' Laboratories of Canada requirements for fire doors, frames, materials and accessories, ULC List of Equipment and Materials, Volume II, Building Construction, latest edition;

.3 CGSB 82-GP-5M, Doors, Insulated, Steel;

1.3.2 Doors and frames required to have a fire-rating shall bear, in an inconspicuous but visible place, the label of ULC or Warnock Hersey Professional Services Ltd. certifying the rating of the door or frame as specified.

### 1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

1.4.1 Remove wrappings or coverings from doors upon delivery to Site. Store doors in a vertical position spaced by blocking to permit air circulation between them.

1.4.2 Store materials on planks in a dry area and cover to protect from damage.

## 2. PRODUCTS

### 2.1 MATERIALS

2.1.1 Steel Sheet: Cold rolled, commercial quality, stretcher levelled, conforming to:

.1 Interior doors and frames: ASTM A568-81;

2.1.2 Minimum Metal Core Thickness: Conform to CSDFMA except:

| Item: | Thickness |
|---|---|
| Frames for interior doors | 1.52 mm |
| Door Faces | 1.52 mm |

2.1.3 Door Core Materials:

.1 Uninsulated Doors: Impregnated kraft honeycomb;
.2 Fire-Rated Doors: Conforming to ULC.

2.1.4 Treatment for Galvanized Surfaces to be Painted: Phosphatizing conforming to CGSB 31-GP-105M, or do not passivate galvanized products after galvanizing.

2.1.5 Primer for Ungalvanized Surfaces: CGSB 1-GP-40M.

2.1.6 Frame Profile: To be "slimline" 19.7mm width.

**2.2 FABRICATION**

2.2.1 Manufacture: Work of this Section shall be manufactured in Canada.

2.2.2 Welding:

.1 Conform to CSA W59-1984;
.2 Grind exposed welds smooth and flush. Fill open joints, seams and depressions with filler, or by continuous brazing or welding. Grind smooth to true sharp arises and profiles, and sand down to smooth, true, uniform finish.
.3 Hardware Requirements: Blank, mortise, reinforce, drill and tap doors and frames to receive templated hinges and other hardware as required.

2.2.3 Frames and Screens:

.1 Fabricate frames to sizes and profiles shown.
.2 Mitre corners of frames. Cut frame mitres accurately and weld continuously on inside of frame.
.3 Where site welding or splicing is required due to size of unit, the location of field joints shall be shown on the shop drawings and strictly adhered to.
.4 Protect strike and hinge reinforcements and other openings with mortar guard boxes welded to frame.
.5 Fit frames with channel or angle spreaders, two per frame, to ensure proper frame alignment. Install stiffener plates or spreaders between frame trim where required to prevent bending of trim and to maintain alignment when setting and during construction.
.6 Anchors: One per 600mm of jamb length; in masonry walls where jamb filled with insulation provide rigid welded-in anchors, in other masonry walls where jamb filled with mortar, provide T-strap or wire type, in gypsum board walls provide stud type.
.7 Where floor finishes allow, fabricate frames to extend 38mm below finished floor level. Where frames are to terminate at finished floor level, provide plates for anchorage to slabs;
.8 Construct door frames of labelled fire doors as approved by ULC. Ratings for frames shall match doors. Locate label on the frame jamb midway between the top hinge and the head of door frame, so that it is concealed when the door is closed.

2.2.4 Doors:

.1 Fabricate doors to present one continuous face free from joints, tool markings and abrasions. Assemble by welding.
.2 Reinforce around openings required for glazing. Provide glazing stops with countersunk oval head screws.

.4 Reinforce, stiffen and sound-deaden interior doors with impregnated kraft honeycomb core laminated to the inside faces of panels. The core shall completely fill the inside hollow of the door.
.5 Reinforce exterior doors with vertical stiffeners spaced 150mm o.c. maximum. Rigidly connect stiffeners to internal face of doors. Fill voids in doors with insulation.
.6 Reinforce door edges with channel reinforcing. Form seam between faces and door edges by tack welding, followed by continuous welding and grinding smooth. Bevel stiles 3mm.
.7 Provide sealed flush top edge on exterior doors.
.8 Fabricate fire-rated door assemblies in accordance with ULC or ULI requirements. Provide labels for all fire-rated doors. Locate labels to face just below labels on frames.

2.2.5 Prime Painting: Doors and frames shall be shop-painted, using one of the following systems:

.1 Mill phosphatized and prime painted; or
.2 Shop degreased, phosphatized and prime painted.

## 3. EXECUTION

3.1.1 Fit, hand and adjust doors plumb and true maintaining uniform door widths and heights. Fit all hinges and adjust for ease of operation. Leave 3mm clearance at head and jambs and 19mm between bottom of door and finished floor, excluding floor covering, unless specified otherwise by ULC.

3.1.2 Fill thermally-broken frames with insulation. Fill interior door frames with mortar.

3.1.3 Install jamb anchors provided as specified herein.

**END OF SECTION**

# 1 GENERAL

## 1.01 SUMMARY OF WORK

.1 This Section specifies aluminum swing doors, thermally broken aluminum swing doors and accessories.
  .1 Section does not include framing of door opening.

## 1.03 REFERENCE STANDARDS

.1 Aluminum Association (AA)
  .1 DAF 45 [2003], Designation System For Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA).
  .1 AAMA-2603-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
  .2 AAMA-2604-[2013], Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
  .3 AAMA-2605-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
  .4 AAMA CW-10-[2012], Care and Handling of Architectural Aluminum From Shop to Site.

.3 ASTM International (ASTM).
  .1 ASTM B209-[2010], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  .2 ASTM B221-[2013], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  .3 ASTM C612 – [2014], Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
  .4 ASTM E283-[2012], Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  .5 ASTM E331 - [00], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
  .6 ASTM E1105 – [2008], Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
  .7 ASTM D2240 – [2010], Standard Test Method for Rubber Property—Durometer Hardness.

.5 Canadian General Standards Board (CGSB).
  .1 CAN/CGSB-12.8-[97], Insulating Glass Units.
  .2 CAN/CGSB-12.20-[M89], Structural Design of Glass for Buildings.
  .3 CAN/CGSB-19.13-[M87], Sealing Compound, One-Component, Elastomeric, Chemical Curing.

.6 CSA International (CSA)
  .1 CAN/CSA-S157-[2005], Strength Design in Aluminum.
  .2 CAN/CSA W59.2-[M1991(R2003)], Welded Aluminum Construction.

## 1.04 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

## 1.05 ACTION AND INFORMATIONAL SUBMITTALS

.1 Shop Drawings: Submit drawings for review by Architect.
- .1 Indicate materials and profiles and provide full-size, scaled details of components for each type of door. Indicate:
  - .1 Core thicknesses of components.
  - .2 Type and location of exposed finishes.
  - .3 Size of door opening and tolerances.
  - .4 Arrangement of hardware and required clearances.

## 1.06 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data

## 1.08 DELIVERY STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:
- .1 Deliver material in accordance with Section [01 61 00 - Common Product Requirements].
- .2 Deliver aluminum door materials and components in manufacturer=s original packaging with identification labels intact and in sizes to suit project.

.2 Material Handling: To AAMA CW-10.

.3 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- .1 Material storage: To AAMA CW-10.

## 1.09 WARRANTY

.1 Project Warranty: Refer to Contract Conditions for project warranty provisions.

.2 Manufacturer’s warranty: Submit, for Owner’s acceptance, manufacturer’s standard warranty document executed by authorized company official. Manufacturer’s warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

.3 Warranty period: [2] years commencing on Date of Substantial Performance of Work.
- .1 Insulating glass units: [10] years, on Date of Substantial Performance of Work.

# 2 PRODUCTS

## 2.01 MANUFACTURER

.1 Manufacturer: Alumicor Limited, 290 Humberline Drive, Toronto, Ontario, Canada M9W 5S2, Phone: (416) 745-4222 or (877) ALUMICOR, e-mail: **info@Alumicor.com**, URL: **www.Alumicor.com**.

## 2.02 DESCRIPTION

.1 Aluminum-framed swing door with [glass] insert suitable for inclusion in curtain wall or storefront system.

## 2.03 DESIGN CRITERIA

.1 Design aluminum components to [CAN/CSA S157].

.1 Air infiltration: [0.3] L/s/m$^2$ ([0.63] cfm) maximum of wall area to [AAMA 501] [ASTM E283] at differential pressure across assembly of [300] Pa (0.044 psi).

## 2.04 MATERIALS

.1 Aluminum Door Components:
- .1 Extruded aluminum: To ASTM B221, 6063 alloy with [T5] temper.
- .2 Sheet aluminum: To [ASTM B209], utility grade for unexposed surfaces, anodizing quality for exposed surfaces.
- .3 Fasteners, screws and bolts: Cadmium plated stainless steel [300] series to meet curtain wall requirements and as recommended by manufacturer.
- .4 Vision glass for interior single glazed door: [12] mm clear tempered laminated glass.
- .5 Insulating glass units for exterior glazed door: In accordance with Section [08 80 50 – Glazing].
- .6 Insulating glass units for exterior glazed door: To [CAN/CGSB-12.8], double glazed, hermetically sealed, argon filled insulating glass units with low conductance [black] stainless steel warm edge spacer.
  - .1 Outer lite: [12] mm clear tempered glass with low-E coating on surface two.
  - .3 Inner lite: [6] mm tempered glass
- .7 Aluminum panels: [25.4] mm (1 inch) thick shop fabricated panels.
  - .1 Finish to match doors.

## 2.05 DOOR FABRICATION

.1 Do aluminum welding to CAN/CSA W59.2.

.2 Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated.
- .1 Ensure stiles and rails are tubular extrusions designed for mechanical shear block fastening in combination with SIGMA deep penetration plug welds and fillet welds at all stile/rail connections.

.3 Door Thickness: [44] mm

.4 Construct doors square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.

.5 Fabricate infill panels of aluminum sheet laminated to marine grade plywood.
- .1 Aluminum sheet minimum thickness 3mm (0.125 inches).
- .2 Marine grade plywood thickness 19mm (0.750 inches).

.6 Accurately fit and secure joints and corners.
- .1 Ensure joints are flush and hairline

.7 Use only concealed or semi-concealed fasteners
- .1 Where fasteners cannot be concealed, countersunk screws finished to match adjacent material may be used.

.8 Install door hardware.

.9 Locate manufacturer's labels on exterior side of door bottom rail.

.10 Acceptable Material: Alumicor Limited, Canadiana for Interior Door and Thermaporte 7700 for Exterior door
- .1 Stile width: [146.1]
- .2 Top rail: [142.9]
- .3 Bottom rail [300] mm

## 2.06 FINISHES

.1 Exposed aluminum surfaces: To AA DAF-45-M10C21A31, Architectural Class II, clear anodized [10 µm (0.0004 inches)] minimum thickness.
- .1 Acceptable material: Alumicor Ltd., Class II Anodic Finish.

## 2.07 HARDWARE

ALUMICOR GUIDE NOTE: Use the following paragraph if hardware for doors is specified elsewhere.

.1 Hardware: In accordance with Architectural Drawings – Door Schedule
.2 Ensure hardware is supplied and factory-installed by door manufacturer.

## 2.08 ACCESSORIES

.1 Gasketing: To [CCD-45] EPDM gaskets.

.2 Setting Blocks: To [CCD-45] and [ASTM D2240], [neoprene] [EPDM] [silicone], [80 - 90] Shore A Durometer hardness.

.3 Spacers: To [CCD-45] and [ASTM D2240], [neoprene] [EPDM] [silicone], [50 - 60] Shore A Durometer hardness.

.4 Sealant: To [CAN/CGSB-19.13], Class 40, one-component, cold-applied, non-sagging silicone.
.1 Acceptable material: Dow Corning 795.

.5 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.

## 2.09 PRODUCT SUBSTITUTIONS

.1 Substitutions: [In accordance with Section 01 23 13 - Product Substitution Procedures] [No substitutions permitted].

.2 Ensure components come from one manufacturer.

# 3 EXECUTION

## 3.01 INSTALLERS

.1 Use only [Alumicor authorized installers for] [installers with 2 years minimum experience in work similar to] work of this Section.

## 3.02 EXAMINATION

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

## 3.03 INSTALLATION

.1 Install aluminum swing doors in accordance with manufacturer's written instructions.

## 3.04 ADJUSTING

.1 Adjust operable parts for correct function.

.2 Ensure doors do not bind while opening and closing.

## 3.05 CLEANING

.1 Progress Cleaning: Perform cleanup as work progresses [in accordance with Section 01 74 00 - Cleaning and Waste Management].
  .1 Leave work area clean end of each day.

.2 Final leaning: Upon completion, remove surplus materials, rubbish, tools, and equipment.

.3 Waste Management:
  .1 Co-ordinate recycling of waste materials
  .2 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
  .3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

## 3.06 PROTECTION

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

.2 Repair damage to adjacent materials caused by aluminum door installation.

**END OF SECTION 08 11 17- ALUMINUM DOORS**

## Part 1 General

### 1.1 Section Includes

A. Aluminum Clad Wood Ultimate Casement/Awning Crank Out: Operators, Stationary and Picture units complete with hardware, glazing, weather strip, insect screen, removable screen, grilles-between-the-glass, simulated divided lite, jamb extension, and standard or specified anchors, trim and attachments

B. Aluminum Clad Wood Ultimate Casement/Awning Crank Out Bow and Bay units: Operators, Stationary and Picture units complete with hardware, glazing, weather strip, insect screen, removable screen, grilles-between-the-glass, simulated divided lite, jamb extension, head/seat board and standard or specified anchors, trim and attachments

C. Aluminum Clad Wood Ultimate Casement Polygon (Stationary Units only) units complete with glazing, weather strip, grilles-between-the-glass, simulated divided lite, jamb extension, and standard or specified anchors, trim and attachments

D. Aluminum Clad Wood Ultimate Casement Venting Picture unit capable of opening for ventilation complete with hardware, glazing, weather strip, insect screen, grilles-between-glass, simulated divided lite, jamb extension and standard or specified anchors, trim and attachments

E. Aluminum Clad Wood Ultimate Replacement Casement/Awning Crank Out: Operators, Stationary and Picture units complete with hardware, glazing, weather strip, insect screen, removable screen, grilles-between-the-glass, simulated divided lite, jamb extension, and standard or specified anchors, trim and attachments

F. Aluminum Clad Wood Ultimate Replacement Casement Polygon (Stationary Units only) units complete with glazing, weather strip, grilles-between-the-glass, simulated divided lite, jamb extension, and standard or specified anchors, trim and attachments

### 1.2 Related Sections

A. Section 01 33 23 – Submittal Procedures; Shop Drawings, Product Data and Samples

B. Section 01 62 00 – Product Options

C. Section 01 65 00 – Product Delivery

D. Section 01 66 00 – Storage and Handling Requirements

E. Section 01 71 00 – Examination and Preparation

F. Section 01 73 00 - Execution

G. Section 01 74 00 – Cleaning and Waste Management

H. Section 01 76 00 – Protecting Installed Construction

I. Section 06 22 00 – Millwork: Wood trim other than furnished by window manufacturer

J. Section 07 92 00 – Joint Sealant: Sill sealant and perimeter caulking

K. Section 09 90 00 – Painting and Coatings: Paint and stain other than factory applied finish

## 1.3 References

A. American Society for Testing Materials (ASTM):

1. E 283: Standard Test method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors

2. E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Door by Uniform Static Air Pressure Difference

3. E 547: Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Differential

4. E 2190: Specification for Sealed Insulated Glass Units

5. C 1036: Standard Specification for Flat Glass

6. F 2090-10: Standard Specifications for Windows Fall Prevention Devices with Emergency Escape (egress) Release Mechanisms

B. American Architectural Manufacturer's Association/Window and Door Manufacturer's Association (AAMA/WDMA/CSA):

1. AAMA/WDMA/CSA 101/I.S.2/A440-05 Standard/Specification for Window, Skylights and Doors

2. AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standard/Specification for Windows, Doors and Skylights

3. AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS 2011 – Northern American Fenestration Standard/Specification for Windows, Doors and Skylights

C. WDMA I.S.4: Industry Standard for Water Repellant Preservative Treatment for Millwork

D. Window and Door Manufacturer's Association (WDMA): 101/I.S.2 WDMA Hallmark Certification Program

E. Sealed Insulating Glass Manufacturer's Association/Insulating Glass Certification Council (SIGMA/IGCC)

F. American Architectural Manufacturer's Association (AAMA): 2605: Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels

G. National Fenestration rating Council (NFRC):

1. 101: Procedure for Determining Fenestration Product thermal Properties
2. 200: Procedure for Determining Solar Heat Gain Coefficients at Normal Incidence

## 1.4 System Description

A. Design and Performance Requirements:

| Product | Air Tested to psf | Water Tested to psf | Structural Tested to psf | Certification Rating | Design Pressure (DP) | Max Overall Width | Max Overall Height |
|---|---|---|---|---|---|---|---|
| Clad Ultimate Casement (Full Frame and Replacement) | 1.57 | 7.5 | 75 | CW-PG50-C | 50 | 36" | 96-1/8" |
| Clad Ultimate Casement (Full Frame and Replacement) | 1.57 | 7.5 | 60 | CW-PG40-C | 40 | 36" | 102" |
| Clad Ultimate Casement (Full Frame and Replacement) | 1.57 | 7.5 | 75 | LC-PG50-C | 50 | 40" | 71-1/8" |
| Clad Ultimate Casement (Full Frame and Replacement) | 1.57 | 7.5 | 75 | LC-PG50-C | 50 | 40" | 92" |
| Clad Ultimate Casement (Full Frame and Replacement) | 1.57 | 7.5 | 60 | CW-PG40-C | 40 | 40" | 96-1/8" |
| Clad Ultimate Casement (Full Frame and Replacement) | 1.57 | 7.5 | 75 | LC-PG50-C | 50 | 44" | 71-1/8" |
| Clad Ultimate Casement (Full Frame and Replacement) | 1.57 | 7.5 | 60 | LC-PG40-C | 40 | 44" | 91-1/8" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 75 | LC-PG50-AP | 50 | 40 | 47-1/8" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 75 | CW-PG 50-AP | 50 | 48" | 47-1/8" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 60 | LC-PG40-AP | 40 | 48" | 96" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 75 | LC-PG50-AP | 50 | 56" | 47-1/8" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 45 | LC-PG30-AP | 30 | 64" | 81-1/8" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 75 | LC-PG50-AP | 50 | 72" | 63-1/8" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 45 | LC-PG30-AP | 30 | 81-1/8" | 64" |
| Clad Ultimate Awning (Full Frame and Replacement) | 1.57 | 7.5 | 45 | LC-PG30-AP | 30 | 96" | 48-1/8" |
| Clad Ultimate Awning (Full Frame) | 1.57 | 12 | 75 | LC-PG50-AP | 50 | 48" | 72" |
| Clad Ultimate Awning (Full Frame) | 1.57 | 7.5 | .+75.00/-60.00 | LC-PG40-AP | .+50.0/-40.0 | 72" | 72" |
| Clad Ultimate Casement Picture (Full Frame and Replacement) | 1.57 | 10.5 | 75 | AW-PG50-FW | 50 | 60" | 99" |
| Clad Ultimate Casement Picture (Full Frame and Replacement) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 64" | 96-1/8" |
| Clad Ultimate Casement Picture (Full Frame and Replacement) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 64" | 104" |
| Clad Ultimate Casement Picture (Full Frame and Replacement) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 96-1/8" | 64" |
| Clad Ultimate Casement Picture (Full Frame and Replacement) | 1.57 | 10.5 | 75 | AW-PG50-FW | 50 | 99" | 60" |
| Clad Ultimate Casement Picture (Full Frame and Replacement) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 104" | 64" |
| Clad Ultimate Casement Picture (Full Frame) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 72" | 71-1/8" |
| Clad Ultimate Casement Picture (Full Frame) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 88" | 96-1/8" |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Clad Ultimate Casement Picture (Full Frame) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 96-1/8" | 88" |
| Clad Ultimate Casement Picture (Full Frame) | 1.57 | 7.5 | 60 | CW-PG40-FW | 40 | 80" | 120" |
| Clad Ultimate Casement Picture (Full Frame) | 1.57 | 7.5 | 60 | CW-PG40-FW | 40 | 120" | 80" |

| Product | Air Tested to psf | Water Tested to psf | Structural Tested to psf | Certification Rating | (DP) | Max Overall Width | Max Overall Height |
|---|---|---|---|---|---|---|---|
| Aluminum Clad Ultimate Casement Polygon Stationary (Full Frame and Replacement) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 64" | 96-1/8" |
| Aluminum Clad Ultimate Casement Polygon Stationary (Full Frame) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 72" | 71-1/8" |
| Aluminum Clad Ultimate Casement Polygon Stationary (Full Frame) | 1.57 | 7.5 | 75 | CW-PG50-FW | 50 | 88" | 96-1/8" |

| Product | Air Tested to psf | Water Tested to psf | Structural Tested to psf | Certification Rating | Design Pressure (DP) | Max Overall Width | Max Overall Height |
|---|---|---|---|---|---|---|---|
| Aluminum Clad Ultimate Casement Venting Picture | 1.57 | 7.5 | 60 | LC-PG40-AP | 40 | 40" | 71-1/8" |
| Aluminum Clad Ultimate Casement Venting Picture | 1.57 | 7.5 | 60 | LC-PG40-AP | 40 | 40" | 96-1/8" |
| Aluminum Clad Ultimate Casement Venting Picture | 1.57 | 7.5 | 60 | LC-PG40-AP | 40 | 48" | 71-1/8" |
| Aluminum Clad Ultimate Casement Venting Picture | 1.57 | 7.5 | 60 | LC-PG40-AP | 40 | 72" | 47-1/8" |
| Aluminum Clad Ultimate Casement Venting Picture | 1.57 | 7.5 | 60 | LC-PG40-AP | 40 | 72" | 71-1/8" |

## 1.5 Submittals

A. Shop Drawings: Submit shop drawings for review by architect.

## 1.6 Delivery

A. Comply with provisions of Section 01 65 00

B. Deliver in original packaging and protect from weather

## 1.7 Storage and Handling

A. Prime and seal wood surfaces, including to be concealed by wall construction, if more than thirty (30) days will expire between delivery and installation

B. Store window units in an upright position in a clean and dry storage area above ground to protect from weather under provision of Section 01660

## 1.8 Warranty

Complete and current warranty information is available at marvin.com/warranty. The following summary is subject to the terms, condition, limitations and exclusions set forth in the Marvin Windows and Door Limited Warranty and Products in Coastal Environments Limited Warranty Supplement:

A. Clear insulating glass with stainless steel spacers is warranted against seal failure caused by manufacturing defects and resulting in visible obstruction through the glass for twenty (20) years from the original date of purchase. Glass is warranted against stress cracks caused by manufacturing defects from ten (10) years from the original date of purchase.

B. Standard exterior aluminum cladding finish is warranted against manufacturing defects resulting in chalk, fade and loss of adhesion (peel) per the American Architectural Manufacturer's Association (AAMA) Specification 2605-11 Section 8.4 and 8.9 for twenty (20) years from the original date of purchase.

C. Factory-applied interior finish is warranted to be free from finish defects for a period of five (5) years from the original date of purchase.

D. Hardware and other non-glass components are warranted to be free from manufacturing defects for ten (10) years from the original date of purchase.

# Part 2 Products

## 2.1 Manufactured Units

A. Description: Factory-assembled Aluminum Clad Ultimate Casement/Awning, operating exterior swing window on Casement and a top pivoting awning (stationary or picture units) as manufactured by Marvin Windows and Doors, Warroad, Minnesota.

## 2.2 Frame Description

A. Interior: Non Finger-Jointed Pine or finger-jointed core with non finger-jointed Pine veneer; optional non finger-jointed Douglas Fir or finger-jointed core with non finger-jointed Douglas Fir veneer; optional non finger-jointed White Oak or finger-jointed with non finger-jointed Oak veneer; non finger-jointed Cherry or finger-jointed core with Cherry veneer; non finger-jointed Mahogany or finger-jointed core with non finger-jointed Mahogany veneer; non finger-jointed Vertical Grain Douglas Fir or finger-jointed with non finger-jointed Vertical Grain Douglas Fir veneer.

1. Kiln-dried to moisture content no greater than twelve (12) percent at the time of fabrication

2. Water repellant preservative treated in accordance with WDMA I.S.4.

B. Frame exterior aluminum clad with 0.050 inch (1.3mm) thick extruded aluminum

C. Frame thickness: 1 3/16” (30mm)

D. Frame depths for full frame units have an overall 5 21/32” jamb (144mm). 4 9/16” (116mm) jamb depth from the nailing fin plane to the interior face of the frame for new construction.

E. Frame depth for replacement frame units have an overall 3 ¼” jamb (83mm) for replacement application and 2 3/16” (56mm) jamb depth from the nailing fin plane to the interior face of the frame for new construction

F. Frame bevel: Standard is no bevel, optional available are 8 degree and 14 degree bevel (Replacement frame only)

G. In-Sash Casement Polygon: minimum frame angle15°, minimum short leg of Rough Opening 6” (152mm)

## 2.3 Sash Description

A. Interior: Non Finger-Jointed White Oak

1. Kiln-dried to moisture content no greater than twelve (12) percent at the time of fabrication

2. Water repellant preservative treated with accordance with WDMA I.S.4

B. Sash exterior aluminum clad with 0.050” (1.3mm) thick extruded aluminum

C. Sash thickness: 1 5/8” (41mm) and 1 7/8” (48mm) for full frame units. Replacement frame will have a sash thickness of 1 5/8” (41mm).

D. Stiles and Rails: 2 1/16” (52mm)

E. Sash Option: Optional tall bottom rail: 3 9/16” (90mm)

F. Interior Sash Sticking

1. Standard is: Ogee
2. Optional: Square Sticking and Ovolo profile

## 2.4 Glazing

A. Select quality complying with ASTM C 1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E 2190

B. Glazing method: Insulating glass

C. Glazing seal: Silicone bedding at interior and exterior

D. Insulating glass will be altitude adjusted with capillary tubes for higher elevations. Argon gas is not available for elevations that require capillary tubes

E. Glass Type: Clear,Tempered, Low E2 with Argon

## 2.5 Finish

A. Exterior: Aluminum clad. Fluoropolymer modified acrylic topcoat applied over primer. Meets or exceeds AAMA 2605 requirements.

1. Aluminum clad color options:, Stone White,

B. Interior Finish options:

1. Prime: Factory-applied enamel primer. Available on Pine product only. Meets WDMA TM-11 requirements.
2. Stained Interior Finish. Clear Stain Finish

## 2.6 Hardware

A. Casement operating hardware:

1. Locks: Multi-point sequential concealed locking system in the jamb opposite the hinge side for casement units. Lock handles are removable, non-handed and are available in the same finishes as the handles. Standard tie bars, cams and keepers – steel coated with E-Gard ™. Keeper features a roller for reduce average lock force and does not easily disengage with the cam even under severe loading. Stainless steel packages are available for coastal application.
2. Handles: Standard operating handle is a folding handle, zinc painted with the standard folding cover being molded plastic. Available colors:Satin Nickel (plated),

3. Hinges: One at the sill to bottom rail, one at the head jamb to top rail. Hinges are steel coated with E-Gard™. Hinge track is stainless steel. Unit with a frame OM of 20 inches (508mm) and greater use an 18 inch (457mm) wash/egress hinge to allow the sash to slide across the frame opening which causes the sash exterior to rotate towards the user for easy wash ability. Units under a frame OM of 20 inches (508mm)width use a standard 2 bar hinge which will position the sash when fully open to 90degrees for the user to wash but does not include the feature of sliding the sash across the opening and rotating the exterior towards the user.

4. Factory Installed Window Opening Control Device (WOCD): Minimum frame OSM 26" (660mm) x 19 ¼" (489mm); Maximum frame OSM 40" (1016mm) x 92" (2337mm) – if frame is less than 36" than 36" (914mm) x 96 1/8" (2442mm). WOCD locking assembly: Factory installed. Die Cast. Color: Satin Nickel. WOCD tether assembly: Factory installed. Glass filled nylon. Color: E-Gard™ color match.

B. Awning hardware:

1. Locks: Uses a multipoint sequential concealed locking system in both jambs. Lock handles are removable, non-handed and are available in the same finishes as the handles. Standard tie bars and cams – steel coated with E-Gard™. Standard keepers – steel coated with E-Gard ™. Keeper features a roller for reduce average lock force and dies not easily disengage with the cam even under severe loading.

2. Handles: Standard operating handle is a folding handle, zinc painted with the standard folding cover being molded plastic. Available colors: Satin Nickel (plated

3. Hinges: Two hinges that connect the stiles of the sash to the jambs of the frame. Hinges are steel coated with E-Gard ™ and the hinge track is stainless steel. Hinges designed to support up to a 210 lb sash.

4. Optional: Op-O-Lock Hardware: Requires the folding handle. Minimum frame OM width is 28" (711mm). A minimum frame OM height is 15 1/8" (384mm). Maximum frame OM width is 72" (1829mm). Maximum frame OM height is 47 1/8" (1197mm).

## 2.7 Weather Strip

A. Weather strip at the frame is a hollow-foamed material bent around 90 degree corner to allow for seamless corner joints

1. Color: Beige

B. Sash weather strip bulb shaped glass filled material

1. Color: White

## 2.8 Jamb Extension

A. Jamb extensions are available for various wall thickness factory-applied up to a 12 (305mm) wide

B. Finish: Match interior frame finish

## 2.9 Insect Screen

A. Crank Out

1. Aluminum frame finish : Stone White
2. Retractable Wood Screen with Hi Tran Fiberglass Screen

## 2.10 Accessories and Trim

A. Installation Accessories:

1. Factory-installed vinyl nailing/drip cap
2. Installation brackets: 6 3/8” (162mm), 9 3/8” (283mm), 15 3/8” (390mm)
3. Masonry brackets: 6” (152mm), 10” (254mm)

B. Aluminum Extrusions:

1. Profile: Brick mold casing, flat casing, various special casing, frame expander, jamb extender, mullion cover, mullion expander, subsill, subsill end cap and lineal cap
2. Finish: Fluoropolymer modified acrylic topcoat applied over primer. Meets or exceeds AAMA 2605 requirements.
3. Available in all exterior aluminum clad colors

# Part 3 Execution

## 3.1 Examination

A. Verification of Condition: Before installation, verify openings are plumb, square and of proper dimensions as required in Section 01 71 00. Report frame defects or unsuitable conditions to the General Contractor before proceeding.

B. Acceptance of Condition: Beginning on installation confirms acceptance of existing conditions.

## 3.2 Installation

A. Comply with Section 01 73 00.

B. Assemble and install window/door unit(s) according to manufacturer’s instruction and reviewed shop drawing.

C. Install sealant and related backing materials at perimeter of unit or assembly in accordance with Section 07 92 00 Joint Sealants. Do not use expansive foam sealant.

D. Install accessory items as required.

E. Use finish nails to apply wood trim and mouldings.

## 3.3 Field Quality Control

A. Remove visible labels and adhesive residue according to manufacturer's instruction.

B. Unless otherwise specified, air leakage resistance tests shall be conducted at a uniform static pressure of 75 Pa (~1.57 psf). The maximum allowable rate of air leakage shall not exceed 2.3 $L/sm^2$ (~0.45 $cfm/ft^2$).

C. Unless otherwise specified, water penetration resistance testing shall be conducted per AAMA 502 and ASTM E1105 at 2/3 of the fenestration products design pressure (DP) rating using "Procedure B" – cyclic static air pressure difference. Water penetration shall be defined in accordance with the test method(s) applied.

## 3.4 Cleaning

A. Remove visible labels and adhesive residue according to manufacturer's instruction.

B. Leave windows and glass in a clean condition. Final cleaning as required in Section 01 74 00.

## 3.5 Protecting Installed Construction

A. Comply with Section 07 76 00.

B. Protecting windows from damage by chemicals, solvents, paint or other construction operations that may cause damage.

End of Section

## 1. GENERAL

1.1 GENERAL

.1 Division 1, General Requirements, is a part of this section and shall apply as if repeated here.

1.2 SCOPE OF WORK

.1 Supply and install new gypsum wall board where noted on the drawings.

1.3 CODES AND STANDARDS

.1 Refer to the Ontario Building Code and the National Building Code.

## 2. PRODUCTS

.1 Gypsum Standard Board: CSA A82.27M.

.2 Gypsum Moisture Resistant: CSA A82.27M.

.3 Gypsum Fire Rated: Type X, 5/8" (Do not use Type X, ½").

.4 Corner Beads: 0.55 mm steel, galvanized.

.5 Casing Beads: 0.55 mm steel, galvanized.

.6 Screws: Self-drilling, self-tapping, case-hardened Phillips head drywall screws with corrosion resistant finish: #6 x 1" for one thickness of board and #7 x 1-1/2" for double thickness.

## 3. EXECUTION

3.1 TOLERANCES

.1 Install work within 1/8" of dimensioned location, and flat within 1/8" maximum in 3' and 1/16" maximum in any running 12". For hoistway shafts (N/A) install work within 1/16" maximum on the entire face of travel.

3.2 STORAGE

.1 Store packaged wallboard flat, protected from moisture and with edges protected from bending and denting.

3.3 PREPARATION

.1 Examine work before commencing installation to ensure that services have been installed, and inspected and approved by jurisdictional authorities, that conduits, pipes, cables and outlets are plugged, capped or covered; that fastenings and supports installed by others are in place; and that the work of others will not touch back of wallboard.

.2 Provide all required framing and furring. Framing and furring shown on Drawings is indicative, but do not consider it as exact and complete. Construct work to withstand stresses imposed by use without either distortion of dimensional changes.

3.4 INSTALLATION

.1 Proceed with work only in areas closed and protected against weather completely dried out with no further installation of damp construction contemplated.

.2 Install wallboard into reveals, figments and similar applied products of a fixed nature.

.3 Apply wallboard with long dimension parallel to studs. Back all joints with a framing member. Locate edge joints at opposite sides of partitions on different studs and at least 12" from opening jambs.

.4 Stagger end joints where they are unavoidable. When end joints cannot be avoided, form end joints neatly, cut paper with knife and smooth edges by sanding.

.5 Do not install wallboard in lengths of less than 6' except where total dimension of a run is less. Install wallboard for partitions in full length panels. Secure wallboard to wood framing by screws.

.6 Tape and cement tapered joints between boards. At end of joints double width of coating, and camber finish of cement to a maximum of 1/64". Fill screw holes with a minimum two coat application of filler.

.7 At internal corners fill gaps between boards with joint filler, apply creased tape in joint filler applied 2" along each adjoining surface, imbed tape in a cover coat extending 3.5" along each adjoining surface, apply skim coat treatment on other surface.

.8 At external corners secure corner beads with fastenings 6" o.c. on alternate flanges, and cement in flanges as specified for tapered joints.

.9 Install casing beads secured with fastenings at 12" o.c. and cement in flanges as specified for tapered joints. Locate casing beads at edges of wallboard where exposed to view, and abutting other materials with no trim to conceal junction at perimeter of ceiling surfaces, at tops of partitions stopping at continuous ceilings.

.10 Securely attach finish trim, casings and accessories. Do not install them if dented or deformed.

**END OF SECTION**

## 1. GENERAL

0.1 GENERAL

.1 Division 1, General Requirements, is a part of this section and shall apply as if repeated here.

0.2 SCOPE OF WORK

.1 Provide all materials, labour and equipment as necessary to complete the painting of all new and repaired surfaces:

## 2. PRODUCTS

0.1 MATERIALS

.1 Paint materials shall be the products of Pratt & Lambert, Glidden, Sherwin-Williams, Para or Benjamin Moore and shall be the HIGHEST GRADE manufactured by reach of these companies. Paint to be appropriate to surface being covered.
Colours to be selected later by Architect from standard colour range.

.2 Primer shall be the highest quality supplied by the manufacturer of the finish paint.

.3 Materials shall be delivered to the site in their original containers, with labels intact and seams unbroken. The presence of any unauthorized materials or containers for such, on site, shall be sufficient cause for rejection of ALL paint materials on site at that time.

## 3. EXECUTION

3.1 STORAGE

.1 Store paint materials at a minimum ambient temperature of 7 degrees celsius in a well ventilated and heated area.

.2 Take all precautionary measures necessary to prevent fire hazards and spontaneous combustion. Provide an appropriate fire extinguisher in the storage area.

.3 The Contractor shall be responsible for, and shall safeguard, all materials and equipment being used on the site.

3.2 TEMPORARY PROTECTION

.1 Protect floors, equipment, and other surfaces with temporary protective covers such as dust sheets, tarpaulins, or polyethylene sheeting.

.2 Protect or remove and replace hardware, accessories, lighting fixtures, etc., as required.

3.3 SURFACE PREPARATION

.1 Remove all loose or peeling paint, oil, grease, scale, dirt, etc., prior to commencement of painting operations.

.2 Sand, as required, to produce smooth surfaces. Feather out edges to make touch-up patches inconspicuous.

.3 Spot prime surfaces for touch-up as required.

.4 Prime surfaces not previously painted with primers recommended by the paint manufacturer.

.5 Thoroughly mix materials before application.

3.4 FINISHES

.1 New surfaces shall receive 1 prime coat and 2 finish coats.

.2 Previously painted surfaces shall receive 1 touch-up finish coat and 1 finish coat.

.3 Paint all surfaces to match the existing colours.

3.5 APPLICATION

.1 Apply all materials in strict accordance with the manufacturer's printed instructions, and/or the written instructions of the manufacturer's field representative.

.2 Use only suitable, clean equipment in good condition.

.3 Apply only in dust-free, suitable conditions on surfaces free defects liable to impair the final finish or to prevent production of good results.

.4 Apply materials evenly without runs, sags, wrinkles, overlapping, bristles, overspray, or other evidence of faulty workmanship.

.5 Each coat of paint shall be dry and hard before a following coat is applied.

**END OF SECTION**

SECTION 14 20 20

ELEVATORS AND LIFTS

PART 1. GENERAL

1.1 SECTION INCLUDES

A. Commercial wheelchair lifts.

1.2 RELATED SECTIONS

A. Division 16 Sections for electrical service for elevators to and including disconnect and fused switches at machine room.

B. Division 16 Sections for standby power source, transfer switch, and connection from auxiliary contacts in transfer switch to controller.

C. Section 03300 - Cast-in-Place Concrete: Concrete for elevator machine foundation, and pit.

D. Section 06100 - Rough Carpentry: Hoistway framing, building-in hoistway door frames and overhead hoist beams.

E. Section 08210 - Wood Doors: Hoistway doors.

F. Section 08710 - Door Hardware.

G. Section 09260 - Gypsum Board Assemblies: Gypsum shaft walls.

H. Section 09650 - Resilient Flooring: Floor finish in cab.

I. Section 09900 - Paints and Coatings: Interior transparent wood finish in cab.

J. Section 13850 - Detection and Alarm: Fire and smoke detectors and interconnecting devices.

1.3 REFERENCES

A. American National Standards Institute (ANSI) B-29.2 - Chain Standards for Inverted Tooth (Silent) Chains and Sprockets.

B. American Society of Mechanical Engineers (ASME) A17.1 - Safety Code for Elevators and Escalators.

C. American Society of Mechanical Engineers (ASME) A18.1 - Safety Standard for Platform and Stairway Chair Lifts.

D. CSA B44.1 - Elevator and Escalator Electrical Equipment.

E. CSA B355 - Lifts for Persons with Physical Disabilities.

F. CSA B613 - Private Residence Lifts for Persons with Physical Disabilities.

G. U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)".

H. ICC/ANSI A117.1 - Accessible and Usable Buildings and Facilities.

I. NFPA 70 - National Electric Code.

J. CSA - National Electric Code.

1.4 REQUIREMENTS OF REGULATORY AGENCIES:

A. Fabricate and install work in compliance with applicable jurisdictional authorities.

B. File shop drawings and submissions with local authorities as the information is made available. Company pre-inspection and jurisdictional authority inspections and permits are to be made on timely basis as required.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Provide a complete layout of lift equipment detailing dimensions and clearances as required.

D. Selection Samples: For each finish product specified requiring selection of color or finish, two complete sets of color charts representing manufacturer's full range of available colors and patterns.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:
1. Skilled tradesmen shall be employees of the installing contractor approved by the manufacturer, with demonstrated ability to perform the work on a timely basis.
2. Execute work of this section only by a company that has adequate product liability insurance.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

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

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install systems under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY

A. Coverage - this warranty applies to the repair or replacement, at Manufacturer's option, of parts that fail due to defective material or workmanship. Manufacturer may, at its option, provide factory reconditioned parts. This warranty is provided to

the Authorized Dealer on behalf of the final purchaser of the product and is not transferable. The Manufacturer's warranty does not cover labor charges for the removal, repair or replacement of warranty parts but such costs may be covered for a period of time by Authorized Dealer's warranty, which is provided to purchaser separately.

1. The manufacturer shall offer a 36-month limited warranty on parts from date of shipment.

PART 2. PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Savaria, which is located at: 2 Walker Drive, Brampton, ON, Canada, L6T 5E1; Toll Free Tel: 800-661-5112; Tel: 905-791-5555; Fax: 905-791-2222; Email: request info; Web: www.savaria.com

B. Substitutions: Not permitted.

C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 COMMERCIAL WHEELCHAIR LIFT

A. Hydraulic Vertical Platform Lifts: Savaria V1504-AL/PE Enclosure:
   1. Model:
      a. V-1504 – Tempered Glass Enclosure

B. Hydraulic Vertical Platform Lift: The lift described here, manufactured by Savaria Lifts Inc, is a vertical platform lift consisting of a hydraulic tower with a lifting platform. The platform is made to accommodate a wheelchair user or a person with impaired mobility. The lift can be used indoor or outdoor (with optional package) and in commercial or residential applications.

C. Work described in this section includes providing equipment, incidental material and labor required for complete, operable roped hydraulic wheelchair lift installation. Lifts shall be erected, installed, adjusted, tested and placed in operation by lift system manufacturer, or manufacturer's authorized installer.
   1. Lifts shall be in accordance:
      a. ASME A18.1 and ADAAG compliant (USA)
      b. ASME A18.1 and A117.1 compliant (USA)
      c. ASME 18.1 only (USA)
      d. CSA B355 (Canada)

D. The following preparatory work to receive the lifts specified in this section is part of the work of other sections:
   1. Permanent 120 VAC, 20 amp single phase power to operate lift to be provided from a lockable fused/cartridge type disconnect switch with auxiliary contacts for battery operation. Refer to drawings for permanent power specifications and location of disconnects. Temporary power may be provided to expedite installation of lift.
   2. Provide rough openings per lift contractor's shop drawings.
   3. Provide substantial, level pit floor slab as indicated on the lift contractor's shop drawings.

E. Characteristics:

1. Rated Load: 750 lb (340 kg).
2. Rated Speed: 20 fpm (0.10 m/s).
3. Car Dimensions:
   a. 42 inches W by 60 inches D (1067 mm by 1524 mm)

4. Levels Serviced:
   a. 2.
5. Car Configuration:
   a. Front/rear exit.
6. Travel: _2_feet. Maximum of 14' in US and 23' in Canada.
7. Pit Depth:
   a. 3" – Standard
8. Installation Environment
   a. Indoor (interior install)
9. Powder Coat Finish
   a. Custom Color 2112-30 STONE BROWN BY BENJAMIN MOORE– Provide color sample to manufacturer
10. Operation: Constant pressure.
11. Power Supply: 110 volt, 20 amp, 1 phase, 60 Hz.
12. Drive System: 2:1 Roller chain hydraulic.
13. Emergency Power:
    a. Battery operation in down direction – Standard.
14. Controller: Relay logic based controller.
15. Motor/Pump: Motor/Pump: 3HP (2.24 kw), gear type
16. Manual Lowering: Outside the hoistway at lower landing.

F. Car Enclosure: Side Guards of platform shall have a steel frame with a powder coat finish and steel panel inserts to a minimum of 42 inches (1067 mm) high.

G. Doors and Gates:
   1. First landing door:
      a. Door type: 80" low profile aluminum door with a concealed electro/mechanical interlock.
      b. Flush closing operation with enclosure side.
      c. Operation
         1) Automatic - Surface 24 volt door opener with battery back-up for low profile aluminum door.
      d. Door Width
         1) 42 inches (1067 mm)
   2. Upper landing door/gate:
      a. Door/gate type:
         1) 42" low profile aluminum gate with a concealed electro/mechanical interlock.
      b. Flush closing operation with enclosure side.
      c. Operation
         1) Automatic - Surface 24 volt door opener with battery back-up for low profile aluminum door.
      d. Door/Gate Width
         1) 42 inches (1067 mm)

H. Lift Enclosure:
   1. The enclosure will be made entirely of aluminum for durability against corrosion.
   2. The enclosure frames and panels shall be fully assembled and screwed together from inside the enclosure for ease of assembling and quick installation time.

3. All enclosure inserts shall be replaceable from the inside of the enclosure for ease of service.
4. Fully enclosed unit
   a. No – Lift will be open at upper landing.

I. Call Stations: Provide flush, surface or door frame mounted landing call/send stations.
   1. Call stations will be:
      a. Keyed (removable in off position)

J. Car Operation:
   1. Car Operating Panel shall consist of constant pressure buttons, emergency stop/alarm button, on/off key switch (when applicable) and emergency LED light mounted on a removable stainless steel panel (Type 304 #4 Stainless Steel Finish).
   2. Auxiliary lighting: The car shall be equipped with a battery operated LED light fixture. The battery shall be the rechargeable type with an automatic recharging system.
   3. Telephone: NOT REQUIRED

K. Pumping Unit and Control:
   1. The pumping unit and control shall be enclosed in the tower. The controller and pump unit shall be pre-wired and tested prior to shipment. The controller is to be relay logic based operation for ease of maintenance and service. Pump unit shall incorporate the following features:
   2. Adjustable pressure relief valve.
   3. Manually operable down valve to lower lift in the event of an emergency. This valve shall be activated from outside of the hoistway through a keyed box.
   4. Pressure gauge isolating valve, manually operable.
   5. Gate valve to isolate cylinder from pump unit.
   6. Electrical solenoid for down direction control.
   7. Emergency Operation - A manual lowering device shall be located outside the hoistway in a lockable box positioned at a lower landing.

L. Cylinder And Plunger:
   1. The cylinder shall be constructed of steel pipe of sufficient thickness and suitable safety margin. The top of the cylinder shall be equipped with a cylinder head with an internal guide ring and self-adjusting packing.
   2. The plunger shall be constructed of a steel shaft of proper diameter machined true and smooth. The plunger shall be provided with a stop electrically welded to the bottom to prevent the plunger from leaving the cylinder.

M. Roller Chains: Two No.50 roller chains with 5/8 inch (16 mm) pitch. Minimum breaking strength 6100 lb (2773 kg) each.

N. Leveling Device:
   1. The lift shall be provided with an anti-creep device which will maintain the carriage level within 1/2 inch (12 mm) of each landing.
   2. All limit switch and leveling device switches shall be located in a position to be inaccessible to unauthorized persons. They shall be located behind the mast wall and be accessible through removable panels.

O. Guide Yoke: The 2:1 guide yoke/sprocket assembly shall be supplied with idler sheaves, roller guide shoes, bearings and guards.

P. Terminal Stopping Devices: Normal terminal stopping devices shall be provided at top and bottom of runway to stop the car positively and automatically.

Q. Guide Rails and Brackets: Steel 'C'' guide rails and brackets shall be used to guide the platform and sling. Guide rails shall form part of the structural integrity of the unit and be integral to the mast enclosure, ensuring stability and minimum platform deflection when loaded.

R. Car Sling: Car sling shall be fabricated from steel tubing 44 inches (1116 mm) high with adequate bracing to support the platform and car enclosure. Roller guide shoes shall be mounted on the top and bottom of the car sling to engage the guide rails. Guide shoes shall be roller type with 3 inches (76 mm) diameter wheels. Nylon guide shoes shall not be used for better ride quality and durability.

S. Wiring: All wiring and electrical connections shall comply with applicable codes. Insulated wiring shall have flame-retardant and moisture-proof outer covering and shall be run in conduit or electrical wire ways if located outside the unit enclosure. Quick disconnect harnesses shall be used when possible.

PART 3. EXECUTION

3.1 EXAMINATION

A. Do not begin installation until hoistway and machine room has been properly prepared.

B. Site dimensions shall be taken to verify that tolerances and clearances have been maintained and meet local regulations.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 ELEVATOR INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install the components of the elevator system that are required and that are required by jurisdictional authorities to license the elevator.

A. Trained employees of the elevator contractor shall perform installation work.

B. Adjust elevator for proper operation and clean unit thoroughly.

C. Instruct users in operating procedures and owner's maintenance person in trouble-shooting and maintenance procedures.

3.4 LIFT INSTALLATION

A. Install all the components of the lift system that are specified in this section to be provided, and that are required by jurisdictional authorities to license the lift.

B. Trained employees of the lift contractor shall perform all installation work of this section.

C. Adjust lift for proper operation and clean unit thoroughly.

D. Instruct users in operation procedures and Owner's maintenance person in trouble-shooting and maintenance procedures.

3.5 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

## 1. GENERAL

### 1.1 GENERAL REQUIREMENTS

.1 Division 1, General Requirements, is a part of this section and shall apply as if repeated here.

### 1.2 SCOPE OF WORK

.1 Provide all labour and materials required provide new, or modify the existing, plumbing and drainage systems.

### 1.3 CODES AND STANDARDS

.1 All work shall be done in accordance with the Plumbing Code under Water Resources Act and the local authority having jurisdiction.

### 1.4 PERMITS

.1 Obtain all necessary permits and pay all permit fees in connection with the work.

.2 Submit a copy of the final inspection certificate to the Consultant.

## 2. PRODUCTS

### 2.1 MATERIALS

.1 Supply and install all plumbing equipment shown on drawings.

.2 Include all labour and materials which are necessary to make a complete and operational installation whether or not such labour and material is specifically called for in the specifications or is noted on the drawings.

## 3. EXECUTION

### 3.1 PREPARATION

.1 Obtain site measurements and determine the location of existing plumbing and drainage lines.

### 3.2 EXECUTION - PLUMBING

.1 All work shall be executed in a workmanlike manner.

.2 Cut square, ream and clean tubing ends, clean recesses of fittings and assemble without binding.

.3 All joints shall be soldered. Compression fittings are not acceptable.

.4 Provide new ball valves to shut off the water supply before all new toilets and sinks.

### 3.3 EXECUTION - DRAINAGE

.1 All work shall be executed in a workmanlike manner.

.2 Test all drain piping for leaks before repairs are made to the existing finishes. Eliminate any leaks and remove and replace any defective work.

**END OF SECTION**

## 1. GENERAL

0.1 GENERAL REQUIREMENTS

.1 Division 1, General Requirements, is a part of this section and shall apply as if repeated here.

0.2 SCOPE OF WORK

.1 Provide all labour and materials required provide new, or modify the existing, electrical systems for the following:
- Electrical as indicated on the electrical drawings

0.3 CODES AND STANDARDS

.1 All electrical work shall be performed in strict accordance with the requirements of the latest edition of the Ontario Electrical Code. This code and any additional requirements of the inspection authority shall take precedence, however, the standard established by these specifications and/or drawings shall not be reduced by any of the above.

0.4 PERMITS

.1 Obtain all necessary permits and pay all permit fees for the work.

.2 Submit a copy of the final inspection certificate to the Consultant.

## 2. PRODUCTS

2.1 MATERIALS

.1 The make and quality of all materials used shall be:

.1 Approved by the Canadian Standards Association (CSA) and the local inspection authority.

.2 Subject to the approval of the Consultant and the local authorities having jurisdiction.

.3 New and free from all defects.

.4 Uniform pattern throughout the work.

.5 Standard products of the manufacturers unless indicated otherwise.

.6 Identical units or parts shall be by one manufacturer.

.7 ***New switches and outlets to be white Decora style with stainless steel faceplates***

.2 Include all equipment and materials which are necessary to make a complete and operational installation whether or not such equipment or material is specifically called for in the specifications or is noted on the drawings.

## 3. EXECUTION

3.1 PREPARATION

.1 Obtain site measurements and determine the location of existing electrical equipment.

3.2 EXECUTION

.1 All work shall be executed in a workmanlike manner.

.2 Equipment shall be accurately set, plumbed and leveled, either paralleling or at right angles to the building lines.

**END OF SECTION**