

Community Living Renewal Project
Newmarket, Ontario

Date: November 15, 2017
Project No.: 15215

INTENT

This Addendum is issued prior to receipt of Bid to provide clarifications and revisions to the Contract Documents. This Addendum forms part of the Contract Documents and shall be read in conjunction therewith. This Addendum modifies the Contract Documents.

Although the following does not dispense the contractor from thoroughly reviewing the drawing set in its entirety for revisions associated with this addendum, a non-exhausting summary of revisions and clarifications has been provided:

DOCUMENTS AND SPECIFICATIONS

- 1.1 Refer to Section 00 21 13 – Instructions to Bidders, and delete item 23 SAFETY CERTIFICATION, including all related sub-items. See marked-up Section 00 21 13(R1) attached.
- 1.2 Refer to Section 00 40 50 – Bid Form, and delete and replace with new Section 00 40 50(R1) - Bid Form, dated November 15, 2017, as attached.
- 1.3 Refer to Section 00 45 00 – Information Submittal Forms, and delete and replace with new Section 00 45 00(R1) – Information Submittal Forms, dated November 15, 2017, as attached.
- 1.4 Refer to Section 08 44 13 – Glazed Aluminum Framing Systems, and delete and replace with new Section 08 44 13(R1) - Glazed Aluminum Framing Systems, dated November 15, 2017, as attached.
- 1.5 Refer to Section 09 30 13 – Tiling, and delete and replace with revised Section 09 30 13(R1) - Tiling, dated November 15, 2017, as attached. Revisions shown in bold font and deletions in strikethroughs.

ARCHITECTURAL DRAWINGS

- 1.1 **DRAWING A440 INTERIOR SECTION DETAILS; REVISED, RE-ISSUED (Revisions shown clouded).**
 - .1 Detail 5, Sec. Detail at Threshold/Floor Grill
 - .1 Foot grille and slab depression detail revised.
 - .2 Clarification of floor finishes.
 - .2 Detail 7, Sec. Detail at Flooring Cove
 - .1 Clarification of wall and floor finishes.

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- .2 Clarification of cove cap annotation.
 - .3 Added aluminum tile edge trim.
 - .3 Detail 8, Typ. Corner Detail at Tile
 - .1 Revised annotation to read "Alum. tile corner trim".
 - .2 Clarification of wall finish.
 - .4 Detail 9, Typ. Corner Guard Detail – "CG1"
 - .1 Added annotation "S.S. corner guard".
 - .5 Added new Detail 12, Typ. Corner Guard Detail – "CG2" at Washrm. Entrance.
-

END OF DOCUMENT 00 90 01

1 INVITATION ONLY BID

- .1 Owner will accept only Bids from invited General Contract Bidders.
- .2 Potential Bidders are advised that they are under no obligation to submit a Bid, and those who do, do so at their own economic risk.

2 SUMMARY

- .1 Intent of this Bid call is to solicit and receive formal offers from invited General Contract bidders only to complete the Work for the following Project:

Community Living Renewal Project
575 Penrose Street
Newmarket, Ontario L3Y 5L5

- .2 Bids shall be prepared and submitted, and Bidding process administered in accordance with these Bidding requirements.

3 BID SUBMISSION

- .1 Bids will be received on behalf of the Owner, prior to **3:00 pm local time on THURSDAY, November 30, 2017**, in an opaque envelope marked "**BID FORM FOR COMMUNITY LIVING RENEWAL PROJECT, 575 PENROSE STREET, NEWMARKET, ONTARIO**" and with bidder's name clearly shown, at:

Main Reception Desk

ARCHITECTS + RESEARCH + KNOWLEDGE INC.

82 Peter Street, Suite 100
Toronto, Ontario
M5V 2G5

- .2 Submit the following Bid Submission documents:
 - .1 Completed Bid Form (section 00 40 50 – Bid Form).
 - .2 Bid bond.
 - .3 Agreement to bond.
 - .4 Completed Section 00 45 00 – Information Submittal Forms:
 - Information Submittal Form A – List of Subcontractors and Suppliers and Itemized Prices.
 - Information Submittal Form B - Contractor Proposed Substitutions.
 - Information Submittal Form C - Breakout Prices.
 - Information Submittal Form D - Separate Prices.
 - Information Submittal Form E - Unit Prices.
 - Information Submittal Form F - Alternate Prices.
 - Information Submittal Form G - Division 27 Communications Tender Form (included by reference).
 - Information Submittal Form H – Audio-Video Price Breakdowns.
- Completed Section 00 45 00.01 – Mechanical Division 20 Tender Form.
- Completed Section 00 45 43 – Wage Rates Form.
- Completed Division 27 Communications Tender Form.
- Resumes of Key Contractor Personnel including Site Superintendent and Project Manager.

- Preliminary project Master Plan in accordance with the requirements of Section 01 32 16 – Construction Schedule.
- .3 Fill in all blank spaces on Bid Form in ink, typewritten or printed, providing the information requested therein and ensure that all forms are signed by an authorized person or persons. Incorporated companies must affix their corporate seal under the signature of their proper officers.
- .4 Information provided by bidders on Bid Form may be amended, if required, provided corrections are initialled by person authorized by bidder. Other modifications, erasures, additions, conditions or qualifications may cause a bid to be declared non-compliant.
- .5 Combined Bid price shall be provided in written and numeric form. In case of discrepancy the written form shall govern.
- .6 Oral, telephoned, telegram, fax, or e mail Bids will not be accepted nor acknowledged.
- .7 Phones and space will not be available for use by the Contractors and Subcontractors at place of Bid closing.
- .8 Failure to submit Bid Form or within time required or incomplete submissions may lead to disqualification of Bid.

4 OWNER'S RIGHT REGARDING BIDS

- .1 The Owner reserves the right to accept or reject any or all Bids. The lowest Bid will not necessarily be accepted.

5 BID DOCUMENTS

- .1 The following documents form the basis of this Bid and shall be examined by Bidders:
 - Section 00 21 13 – Instructions to Bidders.
 - Section 00 40 50 – Bid Form.
 - Section 00 45 00 – Information Submittal Forms.
 - Information Submittal Form A – List of Subcontractors and Suppliers and Itemized Prices.
 - Information Submittal Form B - Contractor Proposed Substitutions.
 - Information Submittal Form C - Breakout Prices
 - Information Submittal Form D - Separate Prices.
 - Information Submittal Form E - Unit Prices.
 - Information Submittal Form F - Alternate Prices.
 - Information Submittal Form G - Division 27 Communications Tender Form (included by reference).
 - Information Submittal Form H - Audio-Video Price Breakdowns.
 - Section 00 45 00.01 – Mechanical Division 20 Tender Form.
 - Division 27 Communications Tender Form
 - Section 00 45 43 – Wage Rates Form.

Section 00 60 00 – Bonding.

Section 00 70 00 – General Conditions.

- Standard Construction Document CCDC 2 2008 (Included by reference).

Section 00 80 00 – Supplementary General Conditions.

- Construction Management Plan.
 - o Appendix A Erosion and Sediment Control Plan.
 - o Appendix B Arborist Report.

Specifications – Divisions 1 through 33 inclusive as listed in Section 00 01 10 – Table of Contents – Volume 1 and Section 19 01 10 – Table of Contents – Volume 2.

Drawings as listed in Section 00 01 15 – List of Drawings.

Addenda Issued prior to Bid Closing.

- .2 Bid Documents will be supplied electronically to prequalified bidders only.
- .3 If printed copies have been provided to Bidders, unsuccessful bidders shall return their Drawings, Project Manuals, and CDs to the Consultant within 1 week of Tender award. PDF files shall not be saved, reproduced, or distributed for any reason other than to complete the Tender process.

6 ELIGIBILITY OF BIDDERS

- .1 In addition to the requirements of GC 3.7 - SUBCONTRACTORS AND SUPPLIERS, and prior to the closing date and time of Bids, The Owner and Contractor reserve the right to restrict the companies bidding work to those they may select. Furthermore, they may, in like manner, specifically exclude certain companies from bidding at their sole discretion without explanation.

7 BID ANALYSIS

- .1 Bidders, if successful, agree to provide a general analysis of their Bid Price, prior to award of Contract, in whatever form the Consultant on behalf of the Owner may reasonably request. This analysis will form part of the "Schedule of Values" referred to in GC 5.2 - APPLICATIONS FOR PROGRESS PAYMENT.

8 SITE CONDITIONS

- .1 In submitting a Bid, it is mandatory that the Bidder has carefully examined the site of the proposed Work, and has fully informed themselves regarding existing conditions and limitations, and included in the Bid Price the complete cost of the Work contemplated by the Drawings and Specifications.
- .2 **Mandatory site visit for General Contractors** will take place at **10:00:00 AM on WEDNESDAY, November 15, 2017**. Meet at project site, 575 Penrose Street, Newmarket, Ontario. **General Contractor: ATTENDANCE MANDATORY**. Sub-contractor attendance optional.

9 ADDENDA

- .1 Bidders finding discrepancies, ambiguities or omissions in the Drawings, Specifications, or both, or having doubt regarding the meaning or intent thereof, shall immediately notify the Consultant, who may issue instructions, clarifications, or both, in the form of Addenda to all Bidders. Bidders may also, during the Bidding Period, be advised by Addenda of any additions, deletions or alterations to the Drawings, Specifications, or both. All such Addenda are part of the Bid Documents. Last Addenda will be issued no later than 5 days prior to close of bidding.

10 ENQUIRIES

- .1 Direct enquiries during the Bid Period to the Consultant:

ARK

Architects + Research + Knowledge Inc.
82 Peter Street, Suite 100
Toronto, Ontario
M5V 2G5
Tel: (647) 777-3500, ex. 3505
Fax: (647) 777-3531
Attention: Jeanette Gamboa, Project Architect
e-mail: jgamboa@arkinc.ca
Direct Line: (647) 777-3505

11 CONTRACT

- .1 The successful Bidder shall enter into a formal contract with the Owner based on the Terms and Conditions of the Bid Form, the Instructions to Bidders and all other Contract Documents described therein. The Bidder shall sign triplicate copies of the Contract Documents.

12 LIST OF SUBCONTRACTORS

- .1 The Contractor shall list in section 00 45 00 – Information Submittal Forms: Information Submittal Form A – List of Subcontractors and Suppliers and Itemized Prices, the names of all Subcontractors proposing to employ along with itemized prices.
- .2 No deviation from this list will be permitted after the acceptance of the Bid without the approval of both the Owner and the Consultant.
- .3 No names, either of subcontractors or "Own Forces" may be changed after submission of section 00 45 00 – Information Submittal Forms, unless written approval is received from Owner. Such approval will only be considered upon submission by Contractor letter requesting change with full explanations or reasons for change and accompanied by letter from named subcontractor agreeing to withdraw with no consequence to Owner.

13 BID BOND AND AGREEMENT TO BOND

- .1 Security Deposit
 - .1 Bids shall be accompanied by security deposit as follows: Bid Bond in an amount not less than 10 percent of Bid price.
 - .2 Endorse Bid Bond in name of Owner as obligee, signed and sealed by principal (Contractor) and surety.

- .3 Use latest edition CCDC approved bond forms.
- .4 Security deposit will be returned after delivery to Owner of required Performance and Labour and Materials Payment Bond(s) by accepted bidder.
- .5 If no contract is awarded, all security deposits will be returned.
- .2 Each Bid shall be accompanied by an Agreement to provide a Performance Bond and a Labour and Material Payment Bond, issued by a recognized surety company, stating that, if awarded the Contract, the Bidder will execute and enter into a formal agreement within the time required. Each Bond shall be in the amount of 50% of the Bid Price.
- .3 Include Cost of Bonds in the total Bid Price, and shown as breakout price in section 00 45 00 – Information Submittal Forms: Information Submittal Form C – Breakout Prices.
- .4 Bids not accompanied by a Bid Bond and Agreement to Bond shall be declared non-compliant.

14 BID OPENING AND ACCEPTANCE

- .1 It shall be understood by all Bidders that the Bid, including submissions under section 00 45 00 – Information Submittal Forms and section 00 45 43 – Wage Rates Form, shall be valid and subject to acceptance by the Owner and that no adjustment shall be made to the Bid Price for a period of up to and including sixty (60) calendar days from the date of closing of Bids.
- .2 Bid opening is not public. Bids not accompanied by a Bid Bond and Agreement to Bond, and, within 24 hours of Bid closing, submissions under section 00 45 00 – Information Submittal Forms, section 00 45 43 – Wage Rates Form, and Resumes of Key Contractor Personnel including Site Superintendent and Project Manager, may be returned to bidder unopened.
- .3 A Bid may not be withdrawn at or after time and date fixed for receiving Bids and that Bid shall be held irrevocable and open to acceptance by Owner until:
 - .1 Some other person, firm or corporation has entered into a Contract with Owner for performance of Work or,
 - .2 Sixty (60) days after time and date fixed for receiving Bids, whichever occurs first.
 - .1 60-day period referred to above shall commence at 12:00 AM midnight of the day fixed for receiving Bids and shall terminate at 12:00 AM midnight of the 60th day thereafter. If the 60th day falls on Saturday or a Sunday, or on a statutory holiday, such day or days shall be omitted from the computation.

15 TAXES

- .1 Include in the Contract Price, all applicable Provincial Taxes and all other Customs Duties, Excise Taxes, excluding Harmonized Sales Tax (HST). Harmonized Sales Tax (HST) shall be included in the space(s) provided in section 00 40 50 – Bid Form.

16 PERMITS

- .1 The Contractor shall obtain all necessary permits for the Work herein specified, except that the Owner will obtain and pay for the building permit. All other permits required shall be at the expense of the Contractor.
- .2 The Contractor shall be responsible for ensuring that the requirements of the Construction Management Plan are met at all times.

17 LABOUR RATES

- .1 Submit where indicated in section 00 45 43 Wage Rates Form for various trades to be used as adjustments to stipulated sum Bid Price on account of additions or deletions to the Work authorized by Owner or Consultant. These rates shall be submitted within 24 hours following Bid Closing

18 BREAKOUT, SEPARATE, UNIT AND ALTERNATE PRICES

- .1 Submit prices as required in section 00 45 00 – Information Submittal Forms.
- .2 If a Bidder desires to submit substitutes to materials, equipment or workmanship specified or indicated, he may include the proposed substitute on section 00 45 00 – Information Submittal Forms: Information Submittal Form B – Contractor Proposed Substitutions, in the place provided, along with supporting documentation. Notwithstanding any proposed substitutions, unless accepted by Addendum, the specified products found in the Bid Documents shall be included in the Bid Price.

19 CONTRACT TIME

- .1 Contract Time: refer to the requirements of Section 01 11 00 – Summary of Work, item 3 CONTRACT TIME.

20 WORKPLACE SAFETY AND INSURANCE BOARD (WSIB)

- .1 Submit certificate of account with Workplace Safety and Insurance Board (WSIB) with Bid.

21 INSURANCE

- .1 Submit current proof of insurance with Bid.

22 WORKPLACE HARASSMENT AND VIOLENCE

- .1 Submit copy of Workplace Harassment and Violence policy(ies).

23 CONSTRUCTION PERSONNEL INFORMATION

- .1 Selection of construction personnel may be a deciding factor in award of this Contract. Therefore, it is imperative that Contractors submit resumes of the project manager, general superintendent and safety coordinator that shall perform Work of this Contract. Construction personnel information shall be clearly typed and formatted to present vital and relevant information in a logical manner, with the Contractor's name prominently shown. Submit construction personnel information with Bid Form.

24

DEBRIEFING

- .1 Bidders may request a debriefing after receipt of notification of award. All requests must be in writing to the Consultant and must be made within sixty (60) days of notification of award. The intent of the debriefing information session is to aid the bidder in presenting a better proposal in subsequent procurement opportunities. Any debriefing provided is not for the purpose of providing an opportunity to challenge the procurement process.

END OF SECTION

SUBMIT TO: **Architects + Research + Knowledge Inc.**
82 Peter Street, Suite 100
Toronto, Ontario M5V 2G5

On behalf of the Owner

Community Living Newmarket / Aurora District (CLNAD)
575 Penrose Street
Newmarket, Ontario L3Y 5L5

PROJECT: **Community Living Renewal Project, Project Number 15215**

BIDDER: _____
(Legal Name)

(Street Address)

(City, Province, Postal Code)

1 Bid Price

1.1 Having examined the site, the Bid Documents, and addenda numbered _____ to _____ issued by the Consultant. Bidder to fill in blanks for addenda received.

1.2 Confirming that our Bid Price is based on specified provisions only,

1.3 Confirming that our Bid Price excludes HST,

1.4 I/We hereby offer to enter into a Contract to perform the Work required by the Bid Documents, and to furnish all materials, plant and labour necessary for the proper completion of the Work for the Bid Price indicated below in lawful money of Canada.

_____ Dollars
BID PRICE: (Bid Price in words, including allowance if any, excluding HST)

(\$ _____)
BID PRICE: (Bid Price in figures, including allowance if any, excluding HST)

1.5 Submitted this _____ day of _____ 20____.

2 **Declarations**

- 2.1 I/We agree to comply with the dates indicated in Section 01 11 00, item 3
CONTRACT TIME.
- 2.2 I/We state that no person, firm or corporation other than the undersigned has any interest, financial or otherwise, in this Bid or in the proposed Contract for which the Bid is made.
- 2.3 I/We hold that this bid shall be held irrevocable and is open to acceptance by the Owner until 60 days after the bid closing date.
- 2.4 In submitting this Bid I/We understand that a Bid Revision will not be called if minor changes to the Bid Documents are contemplated by the Owner, or after, Bid Closing.
- 2.5 I/We agree that all bid form supplements called for by the Bid Documents form an integral part of this Bid.
- 2.6 I/We hold that our Bid Price includes allowance(s) if any, excluding HST.
- 2.7 The Owner reserves the right to request a Bid Revision from any or all Bidders where significant modifications to the Bid Documents become apparent at, or after, Bid Closing.
- 2.8 I/We agree that within 5 days after notification in writing by the Owner of the acceptance of this Bid, within the time limits of the bid acceptance period stated above, that we will:
- .1 Execute the Agreement between Owner and Contractor as specified in Section 00 70 00 – General Conditions.
 - .2 Furnish and pay for a Performance Security, in the form of a bond for an amount equal to fifty percent (50%) of the total Contract Price.
 - .3 Furnish and pay for a Labour and Material Payment Security, in the form of a bond for an amount equal to fifty percent (50%) of the total Contract Price.

3 **Declarations**

- 3.1 This Bid includes the following:
- .1 Consent of Surety issued by a company licensed to carry on such business in Ontario for Performance Bond and Labour and Materials Payment Bond in the amounts listed in Section 00 60 00 – Bonding;
 - .2 Certificate of account with Province of Ontario Workplace Safety and Insurance Board (WSIB).
 - .3 Current proof of insurance, valid in Ontario and issued by an insurance company licensed to carry on such business in Ontario.
 - .4 Copy of Workplace Harassment and Violence policies and procedures.

- 3.2 We, the undersigned, agree to submit within 24 hours of this Bid submission, the following forms, filled out as required and signed by the same person(s) whose signature(s) appear(s) on this Bid Form.
- .1 Completed Section 00 45 00 – Information Submittal Forms.
 - .2 Completed Section 00 45 00.01 – Mechanical Division 20 Tender Form.
 - .3 Completed Section 00 43 43 – Wage Rates form.
 - .4 Completed Division 27 Communications Tender Form.
 - .5 Resumes of Key Contractor Personnel including Site Superintendent and Project Manager.

4 Signatures

SIGNED, SEALED AND SUBMITTED for and on the behalf of:

signature of Bidder's authorized representative

name of Bidder's authorized representative

title or status of person signing above
(print or type)

witness's signature or
corporate seal

name and title of witness

END OF SECTION

SUBMIT TO: **Architects + Research + Knowledge Inc.**
82 Peter Street
Toronto, Ontario M5V 2G5

On behalf of the Owner

**Community Living
Newmarket / Aurora District
757 Bogart Avenue
Newmarket, ON L3Y 2A7**

PROJECT: **Community Living Renewal Project, Project Number 15215**

BIDDER: _____
(Legal Name)

(Street Address)

(City, Province, Postal Code)

Part 1 Information Submittal Forms

1.1 Provide the following Information Submittal Forms to the Owner with Bid Submission:

- .1 Information Submittal Form A – List of Subcontractors and Suppliers and Itemized Prices.
- .2 Information Submittal Form B – Contractor Proposed Substitutions.
- .3 Information Submittal Form C – Breakout Prices
- .4 Information Submittal Form D – Separate Prices.
- .5 Information Submittal Form E – Unit Prices.
- .6 Information Submittal Form F – Alternate Prices.
- .7 Information Submittal Form G - Division 27 Communications Tender Form.
- .8 Information Submittal Form H – Audio-Video Price Breakdowns.

1.2 Information contained on these forms will not be used for assessment of conformity of Bids.

Bidders' Initials

INFORMATION SUBMITTAL FORM A – LIST OF SUBCONTRACTORS AND SUPPLIERS AND ITEMIZED PRICES

PROJECT: Community Living Renewal Project, Project Number 15215

Note: Where the bidder does not intend to employ a subcontractor, insert "Own Forces" in space provided.

Item of Work	Subcontractor / Supplier	Itemized Price Amount (\$)
DIVISION 01		
General Requirements		\$
Mobilization / Demobilization		\$
Bonds, Insurance, Warranties		\$
All other items not itemized above		\$
Division 01 Sub-Total		\$
HAZMAT ABATEMENT – APPENDIX A		
HAZMAT Abatement Subcontractor		\$
HAZMAT Sub-Total		\$
DIVISION 02		
Selective Site Demolition		\$
Selective Demolition		\$
Division 02 Sub-Total		\$
DIVISION 03		
Concrete Formwork		\$
Concrete Reinforcement and Accessories		\$
Cast-in-Place Concrete		\$
Concrete Finishing		\$
Concrete Floor Preparation		\$
Division 03 Sub-Total		\$
DIVISION 04		
Unit Masonry		\$
Division 04 Sub-Total		\$
DIVISION 05		
Structural Steel Framing		\$
Structural Joist Framing		\$
Steel Decking		\$
Metal Fabrications		\$
Metal Stairs and Ladders		\$
Decorative Metal Railings		\$
Division 05 Sub-Total		\$

Bidders' Initials

DIVISION 06		
Rough Carpentry		\$
Finish Carpentry		\$
Architectural Woodwork		\$
Division 06 Sub-Total		\$
DIVISION 07		
Roof Replacement: Section 07 52 00 - Modified Bituminous Membrane Roofing		
Identify only the price for the Alternative selected by Bidder and carried in Bid Price, and cross out the Alternative not used	Alternative A	\$
	Alternative B	\$
Crystalline Waterproofing		\$
Sprayed Polyurethane Foam Insulation		\$
Air Barriers and Vapour Retarders		\$
Insulated Metal Wall Panels		\$
Soffit Panels		\$
Sheet Metal Flashing and Trim		\$
Firestopping and Smoke seals		\$
Division 07 Sub-Total		\$
DIVISION 08		
Metal Doors and Frames		\$
Glazed Aluminum Framing Systems		\$
Door Hardware		\$
Glazing		\$
Louvres		\$
Louvred Equipment Enclosures		\$
Division 08 Sub-Total		\$
DIVISION 09		
Gypsum Board Assemblies		\$
Tiling		\$
Acoustic Panel Ceilings		\$
Resilient Flooring		\$
Painting		\$
Division 09 Sub-Total		\$
DIVISION 10		
Visual Display Surfaces		\$
Toilet Compartments		\$
Moveable Partition System		\$
Toilet Accessories		\$

Bidders' Initials

Division 10 Sub-Total		\$
DIVISION 11		
Kitchen Equipment		\$
Division 11 Sub-Total		\$
DIVISION 14		
Passenger Elevator		\$
Division 14 Sub-Total		\$
DIVISIONS 20 – 25		
Testing and Balancing		\$
Insulation		\$
HVAC Controls		\$
Ventilation and Sheet Metal		\$
Plumbing		\$
All Mechanical Items not included above		
Mechanical Work Sub-Total		\$
DIVISIONS 26 – 28		
Wiring Methods		\$
Electrical Power		\$
Transmission and Distribution		\$
Low Voltage Distribution		\$
Lighting		\$
Audio-Video		\$
Lighting Fixtures		\$
All Electrical Items not included above		
Electrical Work Sub-Total		\$
DIVISION 31		
Site Works		\$
Division 31 Sub-Total		\$
DIVISION 32		
Tree Preservation		\$
Concrete Paving		\$
Wood Construction-Landscape		\$
Cast in Place Concrete		\$
Topsoil & Finish Grading		\$
Site Furnishings		\$
Trees, Shrubs & Groundcover		\$
Division 32 Sub-Total		\$
DIVISION 33		
Manholes and Catch Basin Structures		\$
Site Water Utility Distribution Piping		\$

Bidders' Initials

Public Sanitary Utility Sewerage Piping		\$
Storm Utility Drainage Piping		\$
Division 33 Sub-Total		\$
MISCELLANEOUS ITEMS		
Cost of All Other Items of Work Not Itemized Above (place a dash mark if space not used)		\$
Miscellaneous Items Sub-Total		\$
BID PRICE		
Total BID PRICE (excluding HST) (Total of All Itemized Items Above)		\$

SIGNATURE OF AUTHORIZED REPRESENTATIVE _____

Corporate Seal

Bidders' Initials

INFORMATION SUBMITTAL FORM B – CONTRACTOR PROPOSED SUBSTITUTIONS

PROJECT: Community Living Renewal Project, Project Number 15215

The following are our prices for proposed Substitution Work listed hereunder. Such proposed Substitution Work and amounts are NOT INCLUDED in our Bid Price and DO NOT include HST.

Specification Section Number	Description of <u>Proposed Substitution</u>	Effect on Bid Price (\$)	
		<u>Addition</u>	<u>Deletion</u>
		\$	\$
		\$	\$
		\$	\$

Attach additional sheets as necessary to complete Contractor’s list of Substitutions

Bidders’ Initials

INFORMATION SUBMITTAL FORM C – BREAKOUT PRICES

PROJECT: Community Living Renewal Project, Project Number 15215

Breakout Prices ARE INCLUDED in our Bid Price, and the item(s) involved shall be deleted only on the written instruction, and at the sole discretion, of the Owner, for which a credit will be offered by the Contractor, equal to the breakout pricing detailed below (prices DO NOT include HST):

Section	Description of Item	Breakout Price
Communications Appendix A	Labour to install equipment supplied by Owner per Appendix A – Cabling Contractor Additional Responsibilities Matrix	\$ _____
Section 12 48 40 - Entrance Mats	Supply and install Entrance Mats	\$ _____
Section 00 60 00 - Bonding	Cost of supplying and maintaining Performance Bond	\$ _____
Section 00 60 00 - Bonding	Cost of supplying and maintaining Labour and Material Bond	\$ _____
Electrical	Supply cost of all light fixtures, not including exit signs or emergency lights.	\$ _____
Electrical	Supply cost of all electrical distribution equipment (switchboard, panel boards, transformers, splitters, disconnect switches, etc).	\$ _____

Bidders' Initials

INFORMATION SUBMITTAL FORM D – SEPARATE PRICES

PROJECT: Community Living Renewal Project, Project Number 15215

The following are our Separate Prices for the Work listed hereunder. Such Work and amounts are NOT INCLUDED in our Bid Price and DO NOT include HST.

The Prices listed are firm until date of Substantial Performance of the Project. These prices include all labour, material, equipment, supervision, transportation, financing, overhead and fees to complete the work as listed, and may be added to Contract by Owner at Owner’s sole discretion.

Work Category	Description of Work	Separate Price (add or delete)
Section 12 21 16 - Roller Shades	Supply and install Roller Shades	\$ _____
Electrical	Supply and Install Heat tracing at exterior ramp and stairs to main entry; do not include roughing-in for the Separate Price item; roughing-in to be included in Base Bid.	\$ _____

Bidders' Initials

PROCUREMENT FORM SUPPLEMENT E – UNIT PRICES

PROJECT: Community Living Renewal Project, Project Number 15215

The following are our Unit Prices for Units of Work listed hereunder. Unit Prices listed are firm until date of Substantial Performance of Project.

Listed Unit Prices will be used to adjusting Contract Price where adjustments are required.

These unit prices include labour, material, equipment, supervision, transportation, financing, overhead, and fees to complete Work and DO NOT include HST. Indicate Unit Price per unit of measurement as an addition and as a deletion to Contract Price.

	Work Category	Description of Work	Units	Effect on Bid Price (\$)	
				Addition	Deletion
7	Electrical	The hourly labour cost of providing a journeyman electrician in a normal work time.		\$ _____	\$ _____
8	Electrical	The hourly labour cost of providing a journeyman electrician in a premium time (after hours).		\$ _____	\$ _____
9	Electrical	The hourly labour cost of providing a site supervisor in a normal work time.		\$ _____	\$ _____
10	Electrical	The hourly labour cost of providing a site supervisor in a premium time (after hours).		\$ _____	\$ _____
11	Electrical	Provide 15A, 120V receptacle on new circuit, complete with 3m of 21mm BX cable.		\$ _____	\$ _____
12	Electrical	Provide data outlet complete with 3m of 35mm EMT.		\$ _____	\$ _____
13	Electrical	Provide 3m of 21mm EMT conduit complete with 2#12AWG + #12AWG GND wiring.		\$ _____	\$ _____
14	Electrical	Provide 3m of 102mm EMT conduit.		\$ _____	\$ _____
15	Electrical	Provide 3m of 35mm EMT.		\$ _____	\$ _____
16	Electrical	Provide 3m of 305mm x 100mm mesh cable tray.		\$ _____	\$ _____

Bidders' Initials

PROCUREMENT FORM SUPPLEMENT F – LIST OF ALTERNATE PRICES

PROJECT: Community Living Renewal Project, Project Number 15215

The following are our prices for the alternative work listed hereunder. Such alternate work and amounts are NOT included in our Bid Price. The amount to be added to, or deducted from, our Bid Price (as entered in the Bid Form) is entered for each requested alternative. All alternative prices exclude HST. If there is no change to the Bid Price for an alternative, we have so indicated. It is understood that:

- a. the Owner may accept any of the alternatives and corresponding alternative prices in any order or combination, including all or none,
- b. alternatives and alternative prices are open for acceptance by the Owner for the same period of time as the stipulated price,
- c. the Work of the Contract and the Contract Price will reflect the alternatives and alternative prices, if any, accepted by the Owner at the time of contract award, and
- d. acceptance of any alternatives will not affect the contract completion time (Schedule), unless we have specifically indicated an increase or decrease in time, in number of days, on account of a particular alternative.

DESCRIPTION OF ALTERNATE PRICE ITEMS	EFFECT ON STIPULATED PRICE	
	ADD	DEDUCT
Fluorescent lighting system	\$	\$
Provide plastic laminate countertops in lieu of solid surface countertops	\$	\$

Bidders' Initials

INFORMATION SUBMITTAL FORM G – DIVISION 27 COMMUNICATIONS TENDER FORM

PROJECT: Community Living Renewal Project, Project Number 15215

Refer to Division 27 Communications Information, complete form and submit as specified within 24 hours of Bid Submission.

Bidders' Initials

INFORMATION SUBMITTAL FORM H – AUDIO-VIDEO PRICE BREAKDOWNS

PROJECT: Community Living Renewal Project, Project Number 15215

The Combined Total (Labour + Hardware) Price IS INCLUDED in our Bid Price, and the item(s) involved shall be deleted only on the written instruction, and at the sole discretion, of the Owner, for which a credit will be offered by the Contractor, equal to the pricing totals detailed below (prices DO NOT include HST):

AUDIO-VIDEO PRICE BREAKDOWNS			
System Type	Labour	Hardware	Totals
TYPE 1 - MULTI-PURPOSE ROOM 129	\$	\$	\$
TYPE 2 - ART ROOM 125 AND LITERACY/CURRENT EVENTS ROOM 107 (2X LOCATIONS)	\$	\$	\$
TYPE 4 - EXERCISE ROOM (1 LOCATION)	\$	\$	\$
TYPE 5A - SMALL MEETING ROOMS 216 AND 227 (2X LOCATIONS)	\$	\$	\$
TYPE 5B - LARGE MEETING ROOM 211 (1X LOCATION)	\$	\$	\$
TYPE 6 - COMBINING RESOURCE ROOMS 212 AND 213 (1X LOCATION)	\$	\$	\$
TYPE 7 - DIGITAL SIGNAGE - RECEPTION 128 / WAITING AREA 230 (2X LOCATIONS)	\$	\$	\$
COMBINED TOTALS:	\$	\$	\$

END OF SECTION

Bidders' Initials

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 05 50 00 – Metal Fabrications.
- .2 Section 07 21 19 – Foamed-In-Place Insulation
- .3 Section 07 25 10 – Air Barriers and Vapour Retarders.
- .4 Section 07 62 00 – Metal Flashing and Trim.
- .5 Section 07 92 00 – Joint Sealants.
- .6 Section 08 71 00 – Door Hardware.
- .7 Section 08 80 50 – Glazing.
- .8 Schedules.

1.2 REFERENCES

- .1 American Architectural Manufacturers Association (AAMA)
 - .1 AAMA CW-10-15, Care and Handling of Architectural Aluminum from Shop to Site.
 - .2 AAMA CWG-1-89, Installation of Aluminum Curtain Walls.
 - .3 AAMA 503-14, Voluntary Specification for Field Testing of Metal Storefronts, Curtain Wall and Sloped Glazing Systems.
 - .4 AAMA 609 & 610-15, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.
 - .5 AAMA 701/702-11, Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals.
- .2 ASTM International (ASTM)
 - .1 ASTM A123/A123M-15, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A666-15, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - .3 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
 - .4 ASTM B209-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .5 ASTM B221-14, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - .6 ASTM B429/B429M-10e1, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
 - .7 ASTM C864 - 05(2011), Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
 - .8 ASTM E783 - 02(2010), Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

- .9 ASTM E1105-00(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.
- .10 ASTM E2112 - 07(2016), Standard Practice for Installation of Exterior Windows, Doors and Skylights.
- .3 CSA Group (CSA)
 - .1 CAN/CSA G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
 - .2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA W59.2-M1991(R2003), Welded Aluminum Construction.
- .4 Society for Protective Coatings (SSPC)
 - .1 Surface Preparation Guidelines:
 - .1 SSPC-SP COM Surface Preparation Commentary for Steel and Concrete Substrates.
 - .2 SSPC-PS Guide 12.00, Guide to Zinc-Rich Coating Systems.
 - .2 SSPC - Paint 20 Zinc Rich Coating.
 - .3 SSPC - Paint 25 Alkyd, Zinc Oxide Linseed Oil and Primer for Use Over Hand Cleaned Steel Type 1 and Type 2.

1.3 DESIGN RESPONSIBILITY

- .1 Drawings and details are diagrammatic and are intended to show design concept, configuration, components and arrangements; they are not intended to identify nor solve completely the problems of thermal and structural movements, air pressure equalization, air and vapour barriers, assembly framing, fixings and anchorages, moisture disposal, water penetration, orientation of walls, shading factors, size and shape of glazing, location of convectors, location of blinds, and problems at the glass line associated with glazing installation, movements, pressure fracture or thermal shock and weather seal.
- .2 The design, engineering, procurement, fabrication and erection of the curtain wall assemblies, as required to meet these performance specifications shall be the complete responsibility of the Contractor.

1.4 PERFORMANCE CRITERIA

- .1 Glazed aluminum curtain walls shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads. Failure also includes the following:
 - .1 Thermal stresses transferring to building structure.
 - .2 Glass breakage.
 - .3 Loosening or weakening of fasteners, attachments, and other components.
- .2 Meet the requirements of the Ontario Building Code 2012 plus amendments and the National Energy Code of Canada for Buildings (NECB), current editions.

- .3 Minimum Erection Tolerances:
 - .1 Design and install the curtain wall to accommodate tolerances of related work not included in this section. This requirement is in addition to building structure movements and deflections.
 - .2 Fabricate components to provide a plumb, square, level and true installation, and to accommodate allowable tolerances for work of other sections upon which work of this section depends.
 - .3 Erection tolerances for frame assemblies relate to the structural grid of the building, and apply to each individual assembly as follows:
 - .1 Vertical position: +3 mm;
 - .2 Horizontal position: +3 mm;
 - .3 Deviation from plumb: 3 mm maximum each plane;
 - .4 Racking of face: 6 mm maximum;
 - .5 Racking in elevation: Nil;
 - .6 Offset from true alignment between two identical members abutting end to end in line: 0.8 mm;
 - .7 Tolerances shall not be accumulative;
 - .8 Erection tolerances for operable elements: consistent with smooth operation and weatherproof performance.

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-installation Meetings: Convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with Contractor, Consultant, installer, and manufacturer's representative in accordance with Section 01 31 19 – Project Meetings to:
 - .1 Verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements;
 - .2 Review location and alignment of vertical and horizontal elements as they relate to the aesthetic criteria indicated on the Drawings, and the technical requirements indicated on the shop drawings.
- .2 Coordination: Coordinate installation of system with work specified in other Sections to ensure proper placement and installation of vapour barrier, insulation and flashing in order that air, vapour and thermal barrier of building is intact and moisture will be diverted to the exterior, and as follows:
 - .1 Coordinate installation of sealants so that ambient and surface temperatures are greater than 5°C from time of application until sealants have cured.
 - .2 Coordinate connection of curtain wall system structural connections at floor slabs to vertical members.

1.6 ACTION AND INFORMATION SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 – Submittal Procedures:
 - .1 Submit manufacturer's printed product literature, specifications and technical data sheet.
 - .2 Submit product data indicating construction details, material descriptions, dimensions of individual components and profiles, finishes, anchorage and fasteners, glass and infill, internal drainage details.
- .2 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures:
 - .1 Submit shop drawings, signed and sealed by manufacturer's engineer, detailing fabrication and assembly of glazed aluminum curtain wall systems clearly indicating all construction details including; but not limited to, the following:
 - .1 Fully dimensioned layouts for positioning of secondary support members and anchorage of tie-back devices to structures.
 - .2 Large scale details of members and materials, of brackets and anchorage devices and of connection and jointing details.
 - .3 Fully dimensioned layouts for positioning of brackets and anchorage devices to structures.
 - .4 Dimensions, gauges, thicknesses.
 - .5 Type, size and spacing of fastening devices.
 - .6 Glazing details.
 - .7 Air/vapour barrier details, acoustic control details, aluminum alloy and temper designations, metal finishing specifications and other pertinent data and information.
 - .8 Internal drainage.
 - .9 Show details of connecting work of this section with work of adjacent sections.
- .3 Submit samples in accordance with Section 01 33 00 – Submittal Procedures:
 - .1 Submit samples of materials for Consultant's verification of specified finishes including; but not limited to, the following:
 - .1 300 mm x 450 mm for sheets, plates and glass;
 - .2 300 mm long for extrusions and formed or rolled shapes;
 - .3 300 mm long for tapes and gaskets;
 - .4 150 mm long for sealants;
 - .5 Samples shall fully represent physical and chemical properties, finish, and colours of materials to be supplied.
 - .2 Submit a sample of each finish hardware item that is to be supplied under this section.
 - .3 Submit two samples 610 x 610 mm in size illustrating window frame section, insulation, vapour barrier, glass, vents and sealant.

- .4 Closeout Submittals: Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals and as follows:
 - .1 Submit data for cleaning of aluminum finishes and maintenance of structural silicone glazing system and operational hardware;
 - .2 Instruction for replacement of glass units (insulating and structural glass).

1.7 QUALITY ASSURANCE

- .1 Sole Source for Aluminum Products:
 - .1 Use same manufacturer for exterior aluminum framing and entrances.
 - .2 Use same manufacturer for interior aluminum screens and doors.
- .2 Qualifications: The firm producing and executing the Work of this Section shall have a minimum of 10 years' successful experience in the fabrication and erection of systems of similar sizes, shapes and finishes to the units required for this project and shall have ample facilities to produce, furnish and supply the units as required for installation without delay to the Work.

1.8 MOCK-UP

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Mock-up: Construct full size 3 x 3 m (10 x 10 ft) mock-up of vertical glazed aluminum curtain wall using proposed procedures, materials and quality of work where directed by Consultant and in accordance with Section 01 45 00 - Quality Control.
- .3 Include framing components, glass, and insulated infill panel.
- .4 Assemble to illustrate component assembly including glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.
- .5 Purpose: To judge quality of work and material installation.
- .6 Allow Consultant 24 hour's minimum prior to inspection of mock-up.
- .7 Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.
- .8 When accepted, mock-up will demonstrate minimum standard of quality required for work of this Section.
- .9 Approved mock-up will remain part of finished work.

1.9 DELIVERY, STORAGE, AND HANDLING

- .1 Comply with AAMA CW-10 for care and handling of all aluminum Products through the entire manufacturing, finishing, fabrication, delivery and installation phases.
- .2 Protect metal and metal finishes to prevent damage during fabrication, storage, shipping, handling and installation.
- .3 Protect insulating glass units during shipment. Repair or replace damaged components or units as required to meet Contract requirements, and replace any gas leakage during shipping to specified concentrations.

- .4 Deliver, handle and store units by methods approved by manufacturer. Store units at site on wood platforms raised above grade or in enclosures protected from elements and corrosive materials. Stack units vertically in manner to prevent racking. Do not remove from crates or other protective covering until ready for installation.

1.10 SITE CONDITIONS

- .1 Site Measurements: Verify dimensions of other construction by site measurements before fabrication and indicate measurements on shop drawings where aluminum curtain wall systems are indicated to fit to other construction.
- .2 Established Dimensions: Establish dimensions and proceed with fabricating aluminum curtain wall without site measurements where site measurements cannot be made without delaying the Work, coordinated with other construction to ensure that actual dimensions correspond to established dimensions.
- .3 Ambient Conditions: Confirm installation requirements for ambient and surface temperatures of sealants with manufacturer and apply sealants when temperatures are greater than manufacturer's stated minimum from time of application until sealants have cured.

1.11 WARRANTY

- .1 Provide manufacturers written guarantee, signed and issued in the name of Owner, to replace the following items for defective material and workmanship for the time stated from date of Substantial Performance:
 - .1 Framing, panels and glazing: failure of performance requirements specified in Contract Documents; 2 years.
 - .2 Sealants, caulking: failure to maintain seal; 2 years.
 - .3 Structural silicone glazing; 20 years.
 - .4 Aluminum brake shapes: oil-canning and delamination; 2 years.
- .2 Provide Warranty for aluminum windows to include in maintenance manuals as specified in Section 01 78 00 – Operations and Maintenance Data Manuals.

Part 2 Products

2.1 SYSTEMS BASIS-OF-DESIGN

- .1 Where specific products are named, supply that system or similar with same or better physical properties and performance characteristics that suites the design concept of the project and meets or exceeds the requirements of this specification Section.
- .2 Aluminum Framed Curtainwall:
 - .1 Basis-of-Design:
 - .1 Alumicor ThermaWall 2600, Kawneer 1600UT, CRL HP3252, or similar, with same or better physical properties and performance criteria.

- .2 Infill panels:
 - .2 Miscellaneous infill locations and building corner transitions: clear anodized aluminum fascia or breakshapes to suit; metal closures and corner guards as required.
- .3 Aluminum Exterior Operable Windows: top hung awning windows.**
 - .1 Basis-of-Design: Alumicor Univent 1350.**
- .4 Aluminum Interior Screens and Swing Doors:
 - .1 Basis-of-Design:
 - .1 Aluminum Framing: PC350 Elite Glazing System.
 - .2 Aluminum Swing Doors without electrical devices:
 - .1 PC350 Series 200-P2.
 - .3 Aluminum Swing Doors with electrical devices:
 - .1 PC350 Series 200-P5.
 - .4 Finishes as selected by Consultant from manufacturer's full range.
- .5 Aluminum swing doors (door hardware per Section 08 71 00 – Door Hardware).
 - .1 Acceptable Materials:
 - .1 ThermaPorte 7700 100B.
 - .2 Kawneer AA™250 Thermal Entrances, with intermediate centre rail similar to ThermaPorte 7700 100B.

2.2 MATERIALS

- .1 Aluminum materials:
 - .1 Extruded aluminum: to CSA HA-Series 6063 alloy, T5 or T6 temper, free from perceptible distortions, waves, twists, buckling or other deficiencies of appearance or performance.
 - .2 Sheet, unexposed: utility sheet to CSA HA-Series 6063 alloy, T5 or T6 temper.
 - .3 Sheet, exposed: to ASTM B209/B209M, anodizing quality to AA-1100 series.
 - .4 Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
 - .5 Sheet and plate: to ASTM B209/B209M, anodizing quality, alloy and temper suitable for purpose and finish required, special hardness for flat panel application, re-squared saw cut edges, free from perceptible distortions, waves, twists, buckling or other deficiencies in appearance or performance.
 - .1 Panels, copings, soffits, sills, trims, closures and other such components shall be minimum 3 mm thick; 1.5 mm thickness may be used for flashings. Finish to match exterior curtain wall finish.

- .6 Extruded bars, rods, profiles, and tubes: In accordance with ASTM B221/B221M, and AA-6063-T5 or T6 temper, anodizing quality.
- .7 Aluminum extruded structural pipe and tubes: In accordance with ASTM B429, and AA6063-T6 temper, anodizing quality.
- .8 Structural Profiles: In accordance with ASTM B308/B308M, anodizing quality.
- .9 Aluminum welding: to CSA W59.2.
- .2 Steel: to CSA G40.20/G40.21, 300W hot dipped galvanized after fabrication to ASTM A653/A653M, minimum coating of 600 g/m² shapes to suit mullion sections.
- .3 Galvanizing, unless otherwise specified: hot dipped galvanizing, with minimum zinc coating of 600 g/m² to ASTM A653/A653M.
- .4 Stainless steel: to ASTM A666, Type 304 or 316; of one type throughout.
- .5 Anchors: 3-way adjustable hot-dip galvanized cast iron.
- .6 Fasteners: to ASTM A666, stainless steel, type 304 as recommended by curtain wall manufacturer selected to prevent galvanic action with the components fastened, of suitable size to withstand imposed loads.
- .7 Anti-rotation spacers: manufacturer's extruded aluminum spacers with integral gaskets as required at frame transitions and termination points.
- .8 Grout fill for anchor pockets: non-shrink Masterflow 713 Plus, by BASF, or SikaGrout 212, by Sika Canada.
- .9 Primers and Adhesives: as recommended by curtain wall manufacturer.
- .10 Thermal barrier consisting of 1" (25 mm) separation between the interior and exterior metal members in a typical condition, while maintaining a continuous watertight seal. Thermal barrier assembly shall be tested to the thermal cycling requirements of ASTM E2692 and show no sign of degradation following the test.
 - .1 Thermal separators (thermal break): Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion, of size to conform to the extruded aluminum members or other locations where required, and having a minimum tensile strength of 14 MPa (2000 psi) and Durometer A Hardness of 60, +/- 5.
- .11 Concealed flashing: manufacturer's standard corrosion-resistant, non-staining, non-bleeding flashing compatible with adjacent materials.
- .12 Transition membranes: full-length mechanically anchored, extruded silicone rubber transition membrane to perimeter of frame profile to provide continuous air/vapour retarder to adjacent wall construction, compatible with adjacent materials and systems.
 - .1 Acceptable Materials:
 - .1 Dow Corning Silicone Transition Strip.
 - .2 GE UltraSpan UST Silicone Transition.
 - .3 Pecora XL-Span 100% Silicone Extruded Transition Membrane.

- .13 Gaskets: glazing gaskets shall be silicone-compatible EPDM to ASTM C864, with dimensional tolerances and durometer hardness and of suitable size and shape to meet the requirements of the specifications and their specific application, designed to remain flexible at low temperatures, and provides for silicone adhesion; heat-resistant where required due to proximity of heating units.
- .14 Isolation coating: alkali resistant bituminous paint.
- .15 Primer for ferrous metals: CISC/CPMA 2-75.
- .16 Zinc chromate primer, by PPG Industries, Inc. or similar.
- .17 Touch up primer for galvanized steel: organic zinc rich primer, by Sherwin Williams Company of Canada Ltd. or similar.
- .18 Insulation for miscellaneous voids and cavities: CurtainRock 80 by Roxul Inc., or Fibrex Safing, friction fit, or held in place by miscellaneous metal angle or sheet metal flashing, as required.
- .19 Flexible flashing, flexible air/vapour retarder:
 - .1 Flashing as recommended by the curtain wall manufacturer, compatible with adjacent materials and systems.
 - .2 Adhesive, tapes, primers and sealant: as recommended by the flexible flashing manufacturer.
- .20 Sheet metal air/vapour barrier to be bonded to glazing frame and extended behind mounting frame. Seal to maintain continuity of seal. Install flexible flashing with continuous metal retaining strip to lap to interior wall assembly.
 - .1 Sheet metal for metal air/vapour barriers and air seals: ASTM A653 / A853M, minimum 1 mm sheet steel, galvanized, stretcher-levelled, minimum coating weight 380 g/m².
- .21 Sealants, including primer, joint filler: as specified in section 07 92 10, augmented as follows:
 - .1 Sealants used in structural joints shall have adequate strength to retain insulating units to the metal framing or each other under design conditions.
 - .2 Sealants shall be from the same manufacturer for all work of this Section.
 - .3 Materials used in the work shall be resistant to rodents, vermin, mildew, fungus and algae.
- .22 Fire Safety Materials: to Section 07 84 00 – Firestopping and Smoke seals.
- .23 Flashing: matching aluminum flashing as recommended by manufacturer, and as follows:
 - .1 Flashing: roll formed aluminum, 0.019" thick, mill finish.
 - .2 Aluminum sheet to conform to Federal Specification QQ-A-359, Alloy 3003.
- .24 Glass and Glazing: to section 08 80 50 – Glazing.

2.3 ALUMINUM ENTRANCES

- .1 Aluminum Extrusions: as recommended by curtain wall manufacturer, and not less than 2.3 mm wall thickness at any location for the main frame and sash members.
- .2 Fasteners: Aluminum or nonmagnetic stainless steel aluminum-framed glass door members, trim hardware, anchors, and other components.
- .3 Anchors, Clips, and Accessories: Aluminum or nonmagnetic stainless steel, providing sufficient strength to withstand design pressures.
- .4 Reinforcing Members: Aluminum or nonmagnetic stainless steel, providing sufficient strength to withstand design pressures.
- .5 Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.
- .6 Door stile and rail face dimensions of entrances shall match curtain wall framing. Provide manufacturer's heavy-duty commercial door adaptors.
- .7 Major portions of the door members to be 3.2 mm nominal in thickness and glazing molding to be 1.3 mm thick.
- .8 Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
- .9 Provide adjustable glass jacks to help center the glass in the door opening.

2.4 FABRICATION – GENERAL

- .1 Do not start fabrication until samples, shop and erection drawings have been reviewed.
- .2 Insofar as practical, execute fitting and assembly in the shop with the various parts or assemblies ready for erection at the building site.
- .3 Where possible, take field measurements and levels required to verify or supplement those shown on the drawings for the proper layout and installation of the work. Coordinate dimensional tolerances in adjacent building elements and confirm prior to the commencement of the Work.
- .4 Weld aluminum, where required, with inert metal arc equipment. Welders to qualify according to CSA W47.2. Make exposed welds continuous and flush with adjacent surface. Do not mar surface finishes with welds in back of exposed aluminum. Do not deform the exposed metal and finish way by welding.
- .5 Weld steel, where required, to CSA W59. Welded joints to be of adequate strength and durability with jointing tight and flush. Welders to be fully approved by the Canadian Welding Bureau and to comply with CSA W47.1. Where it is necessary to weld components already galvanized, remove galvanizing for 50 mm around weld.
- .6 If curtain wall framing extends up to top of roof parapets, the headrail and glazing cap shall be reinforced to withstand force from window cleaner's suspension chair ropes, which will extend over the top of the parapet and down the face of the building.

- .7 Make provisions in doors and frames to suit requirements of electrically operated hardware and security devices, as applicable, provided under other trades or sections. Blank, drill, reinforce and tap to receive hardware, security and electrical devices. Provide removable plates or knockouts for electrical contacts. Provide fish wires as required.
- .8 Equip perimeter framing with factory installed air and vapour barrier material as required for sealing to building air and vapour barrier, and as follows:
 - .1 Material: identical to, or compatible with, building air barrier and vapour retarder materials to provide required air tightness and vapour diffusion control throughout exterior envelope assembly.
 - .2 Material width: adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder from interior.

2.5 FABRICATION – FRAMING MEMBERS

- .1 Fabricate members to the profiles shown on the drawings. Wall thickness of extrusions to be as required to meet the design requirements. Frames that are to receive insulating glass units shall have a continuous thermal break.
- .2 Accurately machine file and fit, and rigidly frame together joints, corners and mitres. Match components carefully to produce perfect continuity of line and design. Make exterior joints watertight and interior joints airtight in accordance with specified allowances. Metal in contact to have hairline joints. Locations of exposed joints to be subject to the approval of the Consultant.
- .3 Sill Trim: Provide continuous extruded "U" trim to inside of bottom rail at each level with provision for receiving steel base and convactor covers, as detailed
- .4 Reinforce frames and assemblies by concealed means as necessary to meet the specified design requirements and as shown. Reinforcing to be hot-rolled mild steel and be securely anchored to horizontal and vertical members by approved positive mechanical means.
- .5 Seal hairline joints at junctions of frame members. Gun-inject sealant from inside ensuring a continuous seal of the joint. Ensure that bead in the glazing space does not impair seating of glazing materials. Remove excess sealant that is forced onto face of frame assembly.
- .6 Location of joints and pressure equalizing drain vents to be subject to consultant's acceptance.
- .7 Provide sheet continuous air/vapour barrier between framing and building structure. Overlap corner joints. Apply barriers and retain with continuous aluminum or galvanized steel plates or bars and non-corrosive mechanical fasteners. Where indicated, fill void between frame and other building components solid with foamed in place polyurethane foam insulation.
- .8 Develop drainage holes with moisture path to exterior.
- .9 Prepare components to receive anchor devices. Fabricate anchorage items.
- .10 Arrange fasteners, attachments, and jointing to ensure concealment from view.
- .11 Cope, notch and drill to provide minimum tolerance throughout system and to fit with hairline joints.

- .12 Conceal interconnecting members and fastenings in completed assembly. Provide pressure-equalizing holes in members and condensation drains.
- .13 Framing members and associated sealing shall combine to form airtight vapour barrier for entire interior skin of curtain wall system. Cooperate and coordinate with other sections to ensure continuous thermal and air barrier seal at interfaces with adjacent materials.
- .14 Provide for vertical expansions and construction joints as necessary and install air cut-offs in continuous vertical members to prevent stack effect of enclosed air columns.
- .15 Jointing and intersections of metals shall be accurately cut, fitted to a tolerance of 0.8 mm, in true planes with adequate concealed beads where required.
- .16 Fabricate expansion joints between mullion sections with formed extruded aluminum internal sleeve sections, secure to permit joint function and maintain true alignment of sections.
- .17 Fabricate sections to accommodate and interface with work of other trades by means of rabbets, interlocks, miscellaneous angles, trim and filler sections as required.
- .18 Fabricate mullions not less than one storey height with fully fashioned expansion joints adequate for expansion and contraction required. Avoid chimney effect inside mullions by stopping voids at each floor level with packing consisting of rigid insulation.
- .19 Brake form parapet caps and sills out of 3 mm thick aluminum sheet.
- .20 Reinforce mullions with structural steel sections where required with adequate anchorage to structure.
- .21 Provide internal reinforcement in horizontal window mullions to satisfy wind loads and to maintain rigidity.
- .22 Perform fitting and assembly of component parts in shop insofar as practicable. Work that cannot be permanently shop assembled shall be fitted, assembled, marked and disassembled to assure proper fitting in field. Identify shop assembled components on shop drawings for location and erection at site.
- .23 Isolate aluminum in contact with other metals, masonry, concrete, plaster or mortar to prevent corrosion.
- .24 Verify wall openings and adjoining air and vapour seal materials are ready to receive work of this section.
- .25 Beginning installation means acceptance of site conditions.
- .26 Provide airtight vapour seals in curtain wall framing.

2.6 FABRICATION – ALUMINUM ENTRANCES

- .1 Fabricate aluminum-framed glass entrances in sizes indicated using curtain wall framing. Include a complete system for assembling components and anchoring doors.
- .2 Fabricate aluminum-framed glass doors that can be glazed without dismantling perimeter framing.

- .3 Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" (29 mm) long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
- .4 Accurately fit and secure joints and corners. Make joints hairline in appearance.
- .5 Prepare components with internal reinforcement for door hardware.
- .6 Arrange fasteners and attachments to conceal from view.
- .7 Hardware for Entrances: refer to Section 08 71 00 – Door Hardware and Hardware Group Schedule and as follows:
 - .1 Door Pulls: manufacturer's heavy-duty architectural hardware.
 - .2 Weather Seal: Manufacturer's standard replaceable components, and as follows:
 - .1 Moulded neoprene meeting ASTM D2000 or moulded PVC meeting ASTM D2287.
 - .3 Keying as indicated in Section 08 71 05.

2.7 ALUMINUM FLASHINGS

- .1 Aluminum flashing: tension-levelled, commercial quality aluminum sheet in accordance with ASTM B209 and ANSI H35.1 alloy designation 5005 H14 or 3003 H14 as required, finished to match adjacent framing.
- .2 Form sheet materials to profiles required.
- .3 Fabricate in accordance with AAI Aluminum Sheet Metal Work in Building Construction. Back-paint aluminum flashing in contact with concrete or masonry, or dissimilar metal, with bituminous paint prior to installation.
- .4 Form sections square, true, and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .5 Strengthen free edges of flashings by folding to form a 13 mm hem.
- .6 All bends machine made. Form sections square, true, and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .7 Install as required, and to Section 07 62 00 general execution requirements.
- .8 **Form aluminum flashing, parapet coping and cap flashing as detailed and to locations indicated. Prevent damage by window washing equipment, ladders, etc., by reinforcing edges of copings and caps.**

2.8 FINISHES

- .1 Aluminum Finishes:
 - .1 Exposed Aluminum: refer to Schedules.
 - .1 Curtain Wall Framing and Doors: Coloured Anodized Finish: Exposed aluminum surfaces shall be Aluminum Association (AA) Architectural Class I, AA M12C22A44, colours to match Kawneer #18 – Champagne.
 - .2 Unexposed aluminum: Mill finish.

- .2 Steel exposed to exterior conditions that is on cold-in-winter side of air/vapour barrier, but not exposed to view, shall be blast cleaned and hot dip galvanized in accordance with CAN/CSA G164, minimum coating mass 381 g/m². Thread dimensions to be such that nuts will thread over bolts without re-threading or chasing galvanized threads.
- .3 Galvanize after fabrication where possible. Follow standard precautions to avoid making the base metal brittle by over pickling, overheating or during galvanizing.
- .4 Colour appearance to be uniform with no variations detectable by the naked eye at a distance of 1525 mm under natural lighting.
- .5 Shop and touch-up primer for steel components: SSPC 25 Paint red oxide.
- .6 Touch-up primer for galvanized steel surfaces: SSPC 20 Paint zinc rich.
- .7 Concealed steel items: galvanized in accordance with ASTM A123 to 600 gm/m².
- .8 Apply one coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

Part 3 Execution

3.1 EXAMINATION

- .1 Inspect Work and conditions affecting the Work of this Section. Proceed only after deficiencies have been corrected.
- .2 Ensure that all flashings built in or provided by others integrate with system to divert moisture to exterior.
- .3 Ensure that all anchor blocks or inserts required to receive system are correctly located and installed.
- .4 Ensure that all anchors and setting or installing components provided by this Section for installation are properly located and installed.
- .5 Ensure that building air and vapour retarding membranes can be sealed to window units to maintain system integrity. Coordinate with materials installation specified in Section 07 25 19 – Foam-In-Place Insulation and Section 07 27 13 – Air and Vapour Barriers.

3.2 PREPARATION

- .1 Coordinate dimensions, tolerances, and method of attachment with other work.
- .2 Supply anchorage devices and inserts to the appropriate sections where required for building in or casting-in-place and instruct as to proper location and position. Anchors shall have three-way adjustments.
- .3 Remove dust and other loose material from openings.
- .4 Verify that surfaces are ready to receive work and floor-to-floor dimensions are as indicated on shop drawings.

3.3 INSTALLATION

- .1 Compliance: comply with AAMA CWG-1 and ASTM E2112 recommendations, and manufacturer's printed installation instructions, standard and job-specific details, and data sheets.
- .2 Use only concealed fasteners, type 304 or 316 stainless steel, unless otherwise specified.
- .3 Erect all work plumb and true and in proper alignment and relationship to established lines and grades.
- .4 Devices for anchoring the frame assemblies shall have sufficient adjustment to permit correct and accurate alignment. After alignment, positively secure anchorage devices to prevent movement other than those designed for expansion and contraction. Take into consideration climatic conditions prevailing at time of installation.
- .5 Perform welding and drilling of concrete as required to install fixings. Repair, concrete chipped by drilling or fixing operations.
- .6 Group components with shop applied finishes so that those that relate most closely to one another, with regard to colour and appearance, shall be installed adjacent to each other.
- .7 Coordinate work of this section with, and provide connection for, compartmentalization of air spaces provided under other sections.
- .8 Provide thermal insulation and air/vapour barriers compatible and continuous with adjacent thermal and air/vapour barrier systems.
- .9 Apply continuous butyl sealing tape between sheets at lap and between steel and other materials. Screw sheets to each other and metal framing with type 304 stainless steel sheet metal screws, 150 mm o.c. maximum. Continuously seal perimeter of panels with tape and sealant. Place type 304 stainless steel washers over rubber washers under screw heads and cover with sealant to make fastenings air and vapour tight.
- .10 Seal joints of metal, apertures and protrusions of any kind with specified sealant to produce homogeneous air/vapour barrier seal. Joints shall be air, water and weathertight.
- .11 Apply a continuous bead of sealant to all joints and air/vapour barrier junctions with adjacent construction. Liberally butter screw fastenings with sealant.
- .12 Apply silicone sealant and foam rubber joint plugs (end dams) as required at frame corners to fill and seal the joinery.
- .13 Supply and install flexible, continuous gasket air/vapour barrier seals between work of this section and adjacent construction, and at deflection and expansion connections, where required. Prime substrates, apply gaskets to framing and to concrete and masonry with adhesive and retain with continuous aluminum or stainless steel plates or bars and non-corrosive mechanical fasteners. Ensure a continuous permanent seal at joints.
- .14 Provide airtight seals at penetrations in air/vapour barriers.

- .15 Apply insulation to the cold in winter side of air/vapour barriers. Ensure tight butt joints.
- .16 Adhere stick clips to metal air/vapour barriers at 300 mm o.c. both ways. As an alternative, gun weld pins to metal substrates in lieu of stick clips, provided clips do not easily break off and weld burn-through does not occur.
- .17 Support adhesive-applied clips in place until adhesive has set.
- .18 Isolate metal air/vapour barriers with thermal breaks and spacers.
- .19 Locate vapour barrier on the warm-in-winter side of the insulation.
- .20 Ensure a uniform, continuous thermal and vapour barrier effect. Where adjacent insulation and vapour barriers are to be provided under other sections, coordinate the work such that thermal and vapour barrier continuity is achieved. Ensure compatibility with adjacent thermal and air/vapour barrier systems. Ensure compatibility between tapes, sealants and air/vapour barriers.
- .21 Cut insulation as required and fit snugly to penetrations, obstructions, openings and corners. Butt insulation boards tightly. Cut out back of board insulation as required to accommodate substrate irregularities and build up over cut out areas on the other side as required to ensure thermal barrier uniformity unless otherwise approved.
- .22 Install insulation to thicknesses shown on the Drawings, or as required to achieve continuity of thermal insulation performance.
- .23 Press insulation boards firmly to barrier or substrate impaling them on clips without bending clips. Butt insulation boards tightly. Install retainers to clips.
- .24 Fill irregular shaped voids within assemblies with slag/rock mineral fibrous packing insulation to maintain continuity of thermal barrier.
- .25 Install operable windows and related hardware, at locations indicated and ensure weathertight, rattle-free closure when units are in the closed and locked position. Perform drilling required to install stops and other hardware items fixed to adjacent construction.**
- .26 Protect exterior finished surfaces by installing snap-on caps only when building is closed in, and when the possibility of damage due to construction has been minimized, to the approval of the Consultant.
- .27 Provide structural steel framing and supports required to support work of this Section unless indicated to be supplied under other Sections. Provide structural steel support or reinforcement for anchorage of railings.
- .28 Supply and install galvanized formed steel coping supports.
- .29 Supply and install sheet waterproofing membrane at copings and parapets as indicated. Lap, adhere, and seal joints in membrane in accordance with recommendations of the membrane manufacturer to provide a watertight, continuous membrane.
- .30 Gun-apply three continuous beads of sealant under extruded aluminum thresholds. Make bead diameter sufficient to ensure a full width seal. Remove excess sealant.
- .31 Entrances:

- .1 Comply with Drawings and manufacturer's printed installation instructions for installing aluminum swing entrance doors, manufacturer's architectural hardware, accessories, and other components.
- .2 Install aluminum swing entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- .3 Set sill threshold in bed of sealant, as indicated, for weather tight construction.
- .4 Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.4 FIELD GLAZING

- .1 Install glass and insulating glass units to Section 08 50 00 – Glazing.
- .2 **Install windows, vents, doors and skylights to AAMA/WDMA/CSA 101/I.S.2/A440.**
- .3 **Install glass and insulating glass units to GANA Glazing Manual recommendations, minimum, and as required to meet or exceed specified performance criteria.**
- .4 **Fabricate units accurately to size allowing 6 mm clearance between frame and glass edge. Butt joints shall be plumb and square, uniformly spaced. Ensure that glass rebates/glazing surfaces are clean and dry before placing glass and glazing gaskets and in place.**
- .5 **Apply structural glazing tape to faces of back-up mullions and setting blocks to top of horizontal rails, to evenly distribute weight.**
- .6 **Clean edges of glass units with recommended cleaner and lift them in place. Press into place to assure good contact between glazing gaskets/structural glazing tape and glass, and secure with temporary pressure plates/clamps. Align glass, as necessary; butt joints to be aligned and plumbed and centred on back-up mullion. Vertical joints shall be aligned top to bottom of curtain wall.**
- .7 **Run a continuous bead of structural sealant into void space between glass and backup mullion filling same completely. Tool/wipe flush with face of mullion. Install insulated back-pans behind spandrel panels. Fit flanges tight to frames and seal junctions.**
- .8 **Face seal butt joint behind horizontal pressure plates.**
- .9 **Remove temporary clamps/plates after silicone has set. Apply pressure plates and caps to horizontals to secure glass.**
- .10 **Excepting corner joints, open faces of vertical joints shall be covered with a snap-in-place, neoprene face seal gasket, colour matched to glass spandrels. Cut and fit ends tight to glazing caps. Corner joints shall be packed and sealed with structural silicone; tool surface and wipe off excess each side of joint.**

3.5 JOINT SEALANTS

- .1 General:
 - .1 Seal joints between frame assemblies and adjacent construction except where specified to be done under other sections, and within glazed assemblies where required to maintain water tightness and integrity of air/vapour barrier. Seal junctions in sheet metal air/vapour barriers and between air/vapour barriers and adjacent construction.
- .2 Preparation:
 - .1 Ensure that joint conditions are suitable for the materials to be installed.
 - .2 Ensure that surfaces to be sealed are sound, dry, free from dirt, water, frost, loose scale, corrosion, or other contaminants which may adversely affect the performance of the sealant materials. Remove protective oil coatings and other oil or grease films.
 - .3 Perform cleaning to the extent required to achieve acceptable joint surfaces.
 - .4 Protect cleaned and primed surfaces from further contamination by oil, dust, rain, condensation and other materials detrimental to sealant bonding strength. Re clean and re prime contaminated surfaces.
 - .5 Install joint filler strips as backup for sealant to provide optimum joint profile, but not less than 6 mm depth of sealant bead. Provide bond breaker tapes where required.
 - .6 Mask areas adjacent to the joints to prevent contamination of adjacent surfaces. Remove masking promptly after the joint has been completed.
 - .7 If recommended by the manufacturer of the sealant materials, prime joints to prevent staining, or to assist the bond.
 - .8 Apply primer with a brush which will permit all joint surfaces to be primed. Perform priming immediately before installation of sealant.
- .3 Cleaning and Priming for Structural Silicone Glazing:
 - .1 Do not clean and prime surfaces for structural glazing that cannot be glazed within two hours.
 - .2 Use clean, soft, absorbent, lint-free cloth for cleaning and priming. Each piece of cloth shall be used only once.
 - .3 Do not use brush for cleaning operation.
 - .4 Pour cleaning solvent from container onto cloth to avoid contamination, do not dip cloth into solvent. Wipe surfaces to remove surface contaminants.
 - .5 Dry wipe immediately before cleaning solvent evaporates and dries on the substrate.
 - .6 Prime all surfaces to receive glazing materials unless recommended specifically to the contrary, in writing, by the sealant manufacturer.
 - .7 Apply a thin film (one pass) of primer, remove excess primer by wiping with a clean dry cloth.

- .4 Installation:
- .1 Install SSG structural silicone in accordance with manufacturer's installation instructions and data sheet.
 - .2 Obtain approval from the sealant manufacturer for the priming, cleaning and application techniques at commencement of the sealant installation.
 - .3 Before sealant installation is commenced, test the sealant for adhesion to substrates.
 - .4 Install materials in compliance with the recommendations of their manufacturers.
 - .5 Do not exceed shelf life and pot life of materials, nor installation times, as stated by the manufacturer. Ensure sealant manufacturer's on-site quality control procedures are maintained.
 - .6 Be familiar with the work life of the sealant to be used. Do not mix multiple component materials until required for use.
 - .7 Mix sealants thoroughly with a mechanical mixer without mixing air into the materials. Continue mixing until the material is a uniform colour and free from streaks of unmixed material.
 - .8 Before any sealing is commenced, test the materials for indications of staining or poor adhesion.
 - .9 Sealants shall be of gun grade or knife grade consistency to suit the joint condition. Use gun nozzles of the proper sizes to suit the joints and the sealant material.
 - .10 Install sealant with pressure operated guns.
 - .11 Use sufficient pressure to fill all voids and joints full. Sealants shall bond to all sides of joint except where filler or bond breaker material is used. Where filler or bond break material is used, sealant shall bond to both sides of joints and shall not adhere to the filler or bond break material.
 - .12 Ensure that the correct sealant depth is maintained. Superficial painting with a skin bead will not be accepted.
 - .13 Sealant installations shall be a full bead free from air pockets and embedded impurities and having smooth surfaces, free from ridges, wrinkles and sags.
 - .14 After joints have been completely filled, tool them neatly to a slightly concave surface.
 - .15 If joints are masked, remove masking immediately after tooling and before sealants begin to cure.
 - .16 Install exposed structural silicone sealants at glazing so that top surfaces of the beads are formed to drain water away from the glass.
 - .17 Clean excess sealants from glass and framing surfaces immediately after installation.
 - .18 Cover all fasteners penetrating the air/vapour barriers with sealant.
 - .19 Immediately clean adjacent surfaces that have been soiled and leave work in a neat, clean condition. Remove excess materials and droppings using recommended cleaners and solvents.

3.6 FIELD QUALITY CONTROL

- .1 Field Tests: to Section 01 29 83 – Payment Procedures for Testing Laboratory Services, conducted by Owner's third party testing agency if elected. Consultant may, at its sole discretion, select portions of the installation to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. If elected, conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.
 - .1 Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency.
 - .2 Air Infiltration Tests: Conduct tests in accordance with ASTM E783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater.
 - .3 Water Infiltration Tests: Conduct tests in accordance with ASTM E1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 10 psf (479 Pa).
- .2 Manufacturer's Field Services: Provide periodic site visit by manufacturer's field service representative.
 - .1 Schedule site visits to review work at stages listed:
 - .2 After delivery and storage of vapour retarder and components, and when preparatory work on which work of this Section depends is complete, but before installation begins.
 - .3 Once during progress of work.
 - .4 Upon completion of work of this section and prior to pouring of concrete.
 - .5 Obtain reports within three days of review, and submit immediately to Consultant.

3.7 ADJUSTING

- .1 Adjust operating entrances, hardware and accessories for a tight fit at contact points and weather stripping for smooth operation and weather tight closure. Lubricate hardware and moving parts.
- .2 Replace defective materials and materials damaged due to faulty installation, careless handling or other causes resulting from work of this section.
- .3 Upon completion of the work and just prior to final review, or at a time as directed, inspect units for damage and correct same immediately.
- .4 Test and adjust hardware and replace or repair faulty items.
- .5 Adjust weather-stripping to leave each opening unit in its most watertight position.
- .6 Test operable elements and ensure easy and smooth operation.

3.8 CLEANING

- .1 Cleaning of aluminum components shall be to AAMA 609.
- .2 Remove protective material from pre-finished aluminum surfaces, interior and exterior.
- .3 Remove, as work progresses, corrosive and foreign materials that may set or become difficult to remove at time of final cleaning or that may damage members. Inspect minimum monthly to ensure cleanliness.
- .4 Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- .5 Wash exposed surfaces with a pre-approved cleaning solution approved by manufacturers of glass and aluminum. Take care to remove dirt from corners. Wipe surfaces clean.
- .6 Select, apply and maintain cleaning and protective methods to ensure finishes will not become uneven or impaired as a result of unequal exposure to light and weathering conditions.
- .7 Perform final cleaning after completion of entire installation when approved by the Consultant. Remove dirt and stains where such does not respond to the washing or cleaning specified in Section 01 74 11 – Cleaning, refer the condition to the Consultant, with recommendations as to the remedial action required; but do not undertake any cleaning procedure of a more severe nature without the written approval.
- .8 Cleaning shall include the interior/exterior surfaces of materials installed under this section.
- .9 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.
- .10 Final cleaning shall be performed under work of Section 01 74 11 – Cleaning.
- .11 Upon completion of the work of this section, remove debris, equipment and excess material resulting from the work of this section from the site.
- .12 Provide the Owner with instructions for proper method and materials to be used in maintenance cleaning of finished surfaces.
- .13 Manage and dispose of demolition and construction waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

3.9 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00 – Cast-In-Place Concrete.
- .2 Section 03 35 00 – Concrete Finishing.
- .3 Section 07 92 00 – Joint Sealants.
- .4 Section 09 21 16 – Gypsum Board Assemblies.
- .5 Schedules.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI) / Ceramic Tile Institute (CTI)
 - .1 ANSI A137.1:2012, American National Standards Specifications for Ceramic Tile.
- .2 ASTM International (ASTM)
 - .1 ASTM C979/C979M-16, Standard Specification for Pigments for Integrally Colored Concrete.
- .3 International Organization for Standardization (ISO)
 - .1 ISO 13007:2004, Classifications for Adhesives and Grouts.
- .4 Terrazzo Tile and Marble Association of Canada (TTMAC)
 - .1 Tile Specification Guide 09 30 00, 2016-2017, Tile Installation Manual.
 - .2 TTMAC Hard Surface Maintenance Guide.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, installation instructions, specifications and technical datasheets.
 - .2 Include manufacturer's information on:
 - .1 Ceramic tile, marked to show each type, size, and shape required.
 - .2 Cementitious backer unit.
 - .3 Dry-set cement mortar and grout.
 - .4 Divider strip.
 - .5 Elastomeric membrane and bond coat.
 - .6 Reinforcing tape.
 - .7 Levelling compound.
 - .8 Latex cement mortar and grout.
 - .9 Commercial cement grout.
 - .10 Organic adhesive.
 - .11 Slip resistant tile.
 - .12 Waterproofing isolation membrane.
 - .13 Fasteners.

- .3 Shop Drawings:
 - .1 Submit shop drawings and indicate the following:
 - .1 Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, thresholds, and setting details.
 - .2 Locate and detail movement joints.
- .4 Samples:
 - .1 Tile: Submit actual tile samples illustrating colour, texture, size and pattern for each type of tile specified.
 - .2 Grout: Submit manufacturer's full range of colours available for each type of grout specified.
 - .3 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.
 - .4 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

1.4 EXTRA MATERIALS

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use, but no less than 2 boxes. Store where directed.
- .3 Maintenance material same production run as installed material.

1.5 QUALITY ASSURANCE

- .1 Conform to requirements of Terrazzo, Tile and Marble Association of Canada (TTMAC).
- .2 Obtain each type of tile material required from single source. For colour consistency, ensure the supplier has capacity to provide products from the same production run, dye lot, calibre and batch number.
- .3 Obtain setting and grouting materials from one manufacturer to ensure compatibility.
- .4 Installer Qualifications: Specializing in tile work having minimum of 5 years successful documented experience with work comparable to that required for this project. Installer must be registered as a member in good standing with the Terrazzo, Tile and Marble Association of Canada.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials in containers with labels legible and intact and grade-seals unbroken.
- .2 Store materials so as to prevent damage or contamination.
- .3 Store materials in a dry area, protected from freezing, staining and damage.
- .4 Store cementitious materials on a dry surface.

1.7 SITE CONDITIONS

- .1 Surfaces for tile installation must be clean, dimensionally stable, cured, level, plumb and free of contaminants such as oil, sealers and curing compounds.
- .2 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation. Tile and setting material stored at same conditions 48 hours before and 7 days after application.
- .3 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .4 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

Part 2 Products

2.1 DESIGN AND PERFORMANCE CRITERIA

- .1 Factory blend tile that exhibits colour variations within the ranges selected and package so tile units taken from one package show the same range in colours as those taken from other packages.
- .2 Provide tile products manufactured in accordance with ANSI A137.1 as appropriate to the colour and texture specifications established by the general design concept for the project.
- .3 Floor Level Tolerances: Provide materials as required to attain floor levelness tolerances required by this Section; calculate quantity of materials based on the difference between the specified tolerance and as found site conditions.

2.1 TILE MATERIALS

- .1 **C.T.-1 and C.T.-2:** Subject to the requirements of Section 01 62 00 - Product Options and Substitutions, refer to Schedules for basis-of-design tile and grout requirements; supply tiles and grout as required. Coordinate with Schedules and Drawings.

2.2 STANDARDS

- .1 Porcelain Tile: shall meet or exceed the requirements of ASTM C1027, colour-body (through-body) porcelain tile, rectified edges.

2.3 MORTAR AND GROUT MANUFACTURERS

- .1 Acceptable Manufacturers: Subject to the requirements of Section 01 62 00 - Product Options and this specification Section, provide Products from the following manufacturers:
 - .1 Custom Building Products.
 - .2 Kiesel.
 - .3 Laticrete International Inc.
 - .4 Mapei Corporation Inc.
 - .5 Flextile Ltd.

- .2 Single Source: for each Product type, supply that Product from a single manufacturer.

2.4 MORTAR AND ADHESIVE MATERIALS

- .1 Thick Set Beds: Portland Cement With Latex Additive (for application over waterproofing and crack isolation membranes):
 - .1 Portland Cement: to ASTM C150, Type I, from one source only, non-staining and non air-entraining.
 - .2 Mortar Sand: ASTM C144, free of deleterious materials, well graded.
 - .3 Setting Bed Sand: ASTM C136, 100 percent passing No. 4 sieve.
 - .4 Latex Additive:
 - .1 Description: latex additive serving as replacement for gauging water, for use with site mixed Portland cement mortar.
 - .2 Quantity: as recommended by latex additive manufacturer to produce workable consistency.
 - .5 Acceptable Products:
 - .1 Description: latex additive serving as replacement for gauging water, for use with site mixed Portland cement mortar.
 - .2 Quantity: as recommended by latex additive manufacturer to produce workable consistency.
- .2 Thin Set Mortar: professional-grade, single-component, high-performance, polymer-modified thin-set mortar for interior and exterior installations of ceramic, porcelain and dimensional natural-stone tile, to ISO 13007 classification C2EP1.
 - .1 Acceptable Materials:
 - .1 Ultraflex 2, by Mapei, or similar with same or better material properties and performance characteristics, and approved for application at showers and wet areas.
 - .2 Kiesel Servoflex Trio Thin & Medium Mortar for floors
 - .3 Kiesel Servolight Thin Set Mortar for walls.

2.5 GROUT

- .1 **GROUT-1:** Grout Colours: Submit samples to Consultant for verification of colour purposes prior to ordering materials.
- .2 Colouring Pigments:
 - .1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
 - .2 Colouring pigments to be added to grout by manufacturer.
 - .3 Job-coloured grout not acceptable.
- .3 Unsanded Latex Portland Cement Grout for Wall Joints less than 3 mm and Glass Tile: latex-modified, factory blended, mildew resistant, non-sanded grout consisting of Portland cement and additives; comply with ANSI A118.6.
 - .1 Latex Additive: Type as recommended by latex mortar manufacturer.

- .4 Sanded Latex Portland Cement Grout for Wall and Floor Joints greater than 3 mm: latex-modified, factory blended, mildew resistant, sanded grout consisting of Portland cements, graded quartz and additives; comply with ANSI A118.7.
 - .1 Latex Additive: Type as recommended by latex mortar manufacturer.

2.6 ACCESSORIES

- .1 Trim shapes:
 - .1 Conform to applicable requirements of adjoining floor and wall tile.
 - .2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.
 - .3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
 - .4 At all unfinished outside corners **and exposed edges** of wall tile provide Schluter®-RONDEC **EV/RO 80 AT Satin Nickel Anodized Aluminum** and related accessories (~~clear anodized aluminum finish~~).
 - .5 At wall tile ~~base~~ **where it meets the resilient flooring covered base**, provide Schluter®-**RONDEC Jolly A 80 AT** and related accessories (clear anodized aluminum finish) at inside and outside corners, terminations, and at top edge of base.
 - .6 **Edge trim of C.T.-1 tile at where it meets R.F.-1 (Vestibule/Reception area at Lower level and Vestibule/Elevator Lobby area at Upper Level): Schluter®-Schiene AE 100.**
~~For dissimilar transition from ceramic tile to other floor finishes (painted floor, vinyl tile, etc.): Schluter®-DECO for same height transitions, Schluter®-SCHIENE for finishing and edge protection, and Schluter®-RENO-V for edge protection profile abutting tile to lower transitions, and related accessories (clear anodized aluminum finish for all aluminum components).~~
- .2 Control Joints:
 - .1 Rigid PVC anchoring legs and side sections, with soft CPE top and bottom movement zones which is also the only visible surface, 5 mm wide overall; Schluter DILEX-BT. Thickness to suit tile, colour to later selection. Install every 4500 mm maximum in each direction and/or as indicated on drawings, Install at slab control joints, and in accordance manufacturer's specifications.
- .3 Floor sealer and protective coating: to CAN/CGSB-25.20, Type 1 to tile and grout manufacturer's recommendations.
- .4 Sealants: to Section 07 92 00 – Joint Sealants.
- .5 Uncoupling Membrane (supply and install at Lower Level floor slab on grade at tiling locations): Rigid polyethylene membrane with a grid structure of square cavities 3 mm high each cut back in a dovetail configuration having anchoring fleece laminated to underside or non-directional, non-deteriorating woven mat 10 mm complete with manufacturers recommended floor adhesives and setting materials:
 - .1 Basis-of-Design:

- .1 Schlüter Ditra.
- .2 Mapelastic Aquadefense by Mapei.
- .3 LevelQuik Waterproofing & Anti-Fracture Membrane by Custom Building Products.
- .2 Accessories:
 - .1 Manufacturer's recommended accessories as required for a complete installation.

2.7 PATCHING AND LEVELLING COMPOUND

- .1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- .2 Have not less than the following physical properties:
 - .1 Compressive strength - 25 MPa.
 - .2 Tensile strength - 7 MPa.
 - .3 Flexural strength - 7 MPa.
- .3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- .4 Ready for use in 48 hours after application.
- .5 Acceptable materials:
 - .1 Ultraplan Easy by Mapei, or similar with same or better material properties and performance characteristics.

2.8 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: install in accordance with manufacturer's printed installation instructions, technical datasheets, standard details, and specifications.

3.2 INSTALLATION – GENERAL

- .1 Installation shall meet or exceed the requirements of TTMAC 09 30 00 – Tile Installation Manual.
- .2 Apply tile to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

- .4 Maximum surface tolerance 1:800.
- .5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square, external angles bull nosed.
- .9 Use bullnose edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .10 Install divider strips at junction of tile flooring and dissimilar materials.
- .11 Allow minimum 24 h after installation of tiles, before grouting.
- .12 Clean installed tile surfaces after installation and grouting cured.
- .13 Make control joints at 4500 mm in each direction. Make joint width same as tile joints. Use product specified in Part 2.
- .14 Caulk joints as intersections of floor and wall and inside corners of wall tile, colour to match grout.
- .15 Protect installed areas from traffic until setting materials have cured for periods specified in TTMAC 09 30 00 – Tile Installation Manual.

3.3 UNCOUPLING MEMBRANES

- .1 Prepare surfaces as recommended by manufacturer.
- .2 Install waterproofing and uncoupling membranes in accordance with manufacturer's printed instructions as required to produce membrane installations of uniform thickness bonded securely to substrate.
- .3 Install tiling after liquid applied membranes are cured.

3.4 FLOOR TILE

- .1 Install in accordance with TTMAC, detail 319SR (over uncoupling membrane), and detail 311F elsewhere.

3.5 WALL TILE

- .1 Install in accordance with TTMAC, details 303W (over masonry or concrete), 305W (over cementitious or glass mat faced tile back board), as suitable to substrate and application.

3.6 BASE TILE

- .1 Install as scheduled.

3.7 FLOOR SEALER AND PROTECTIVE COATING

- .1 Apply in accordance with manufacturer's instructions.

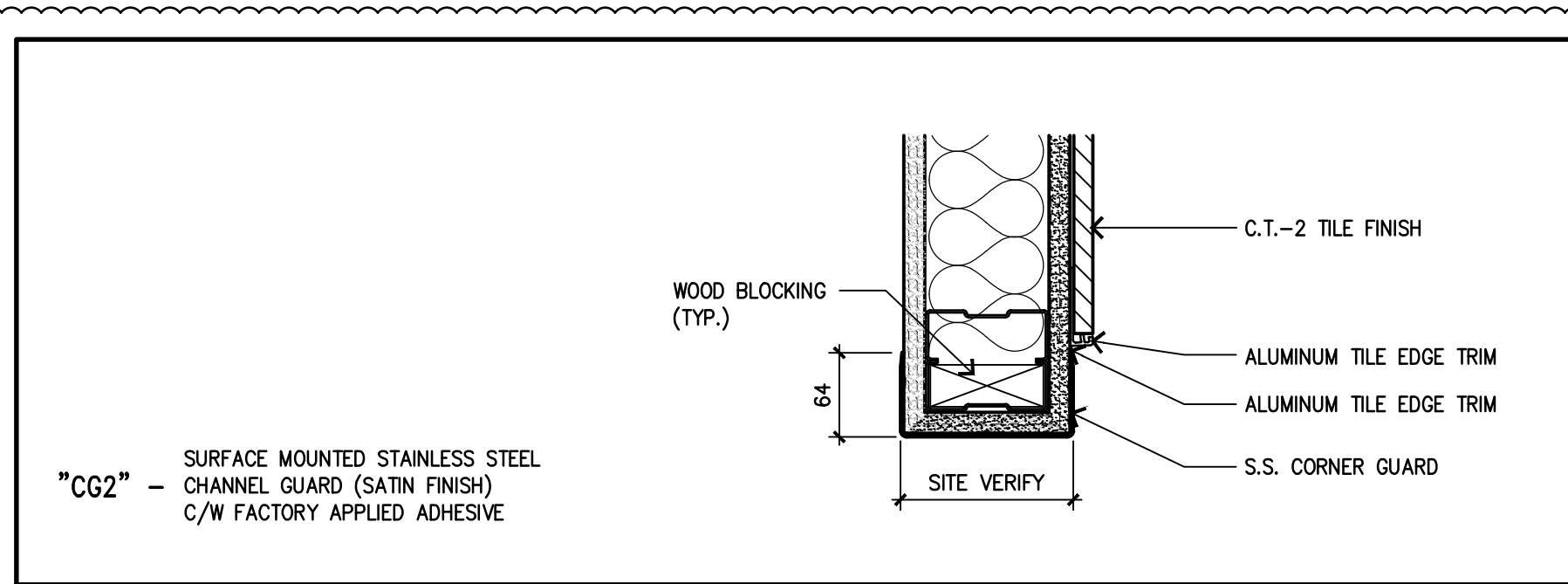
3.8 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Manage and dispose of demolition and construction waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

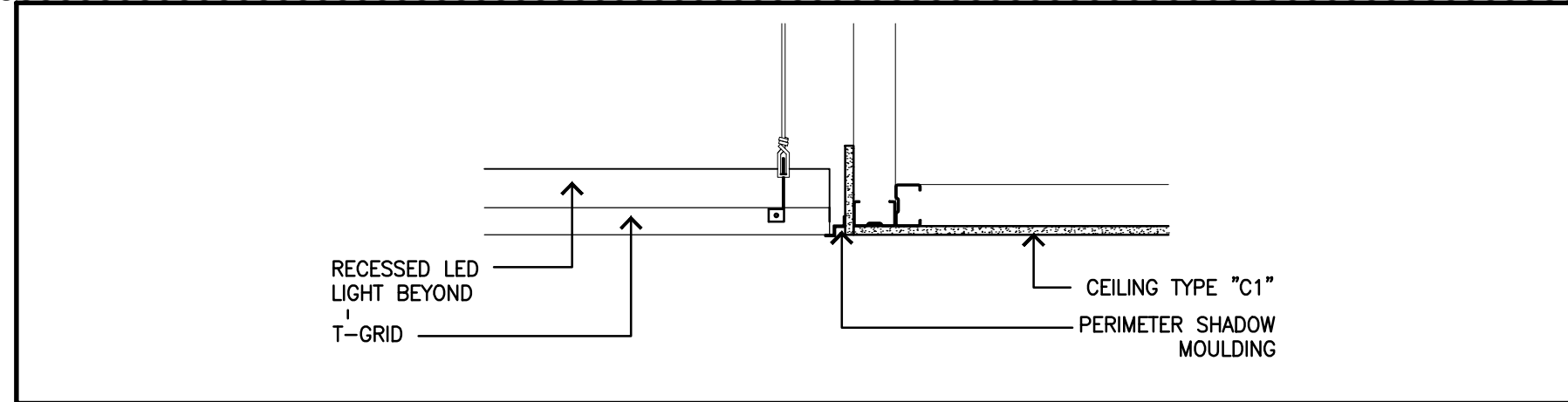
3.9 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

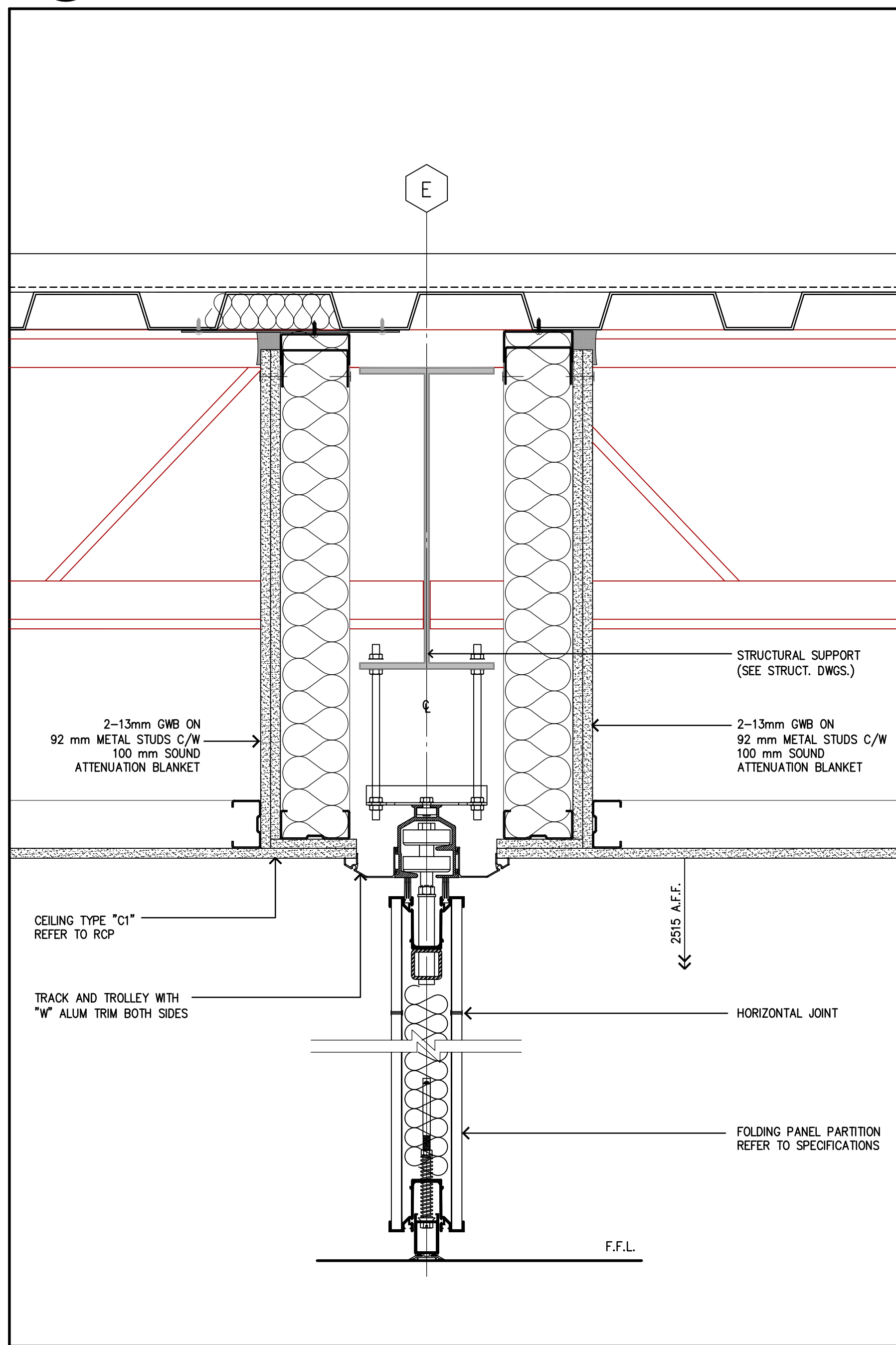
END OF SECTION



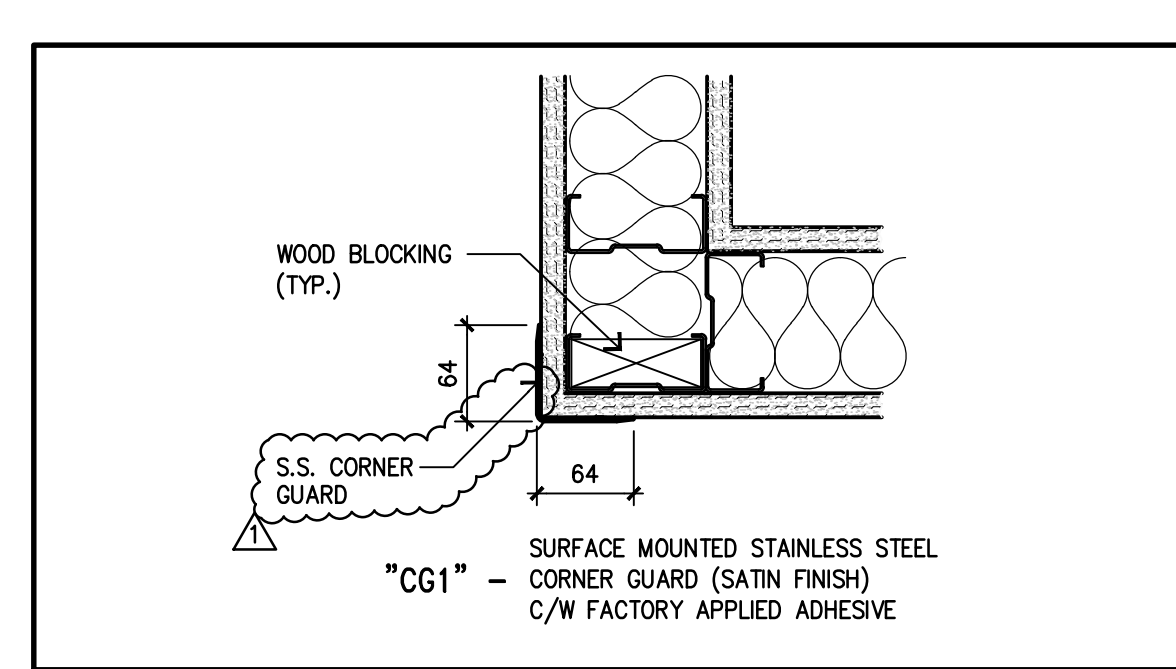
12 TYP. CORNER GUARD DETAIL - "CG2" AT WASHRM. ENTRANCE
A440 SCALE: 1:10



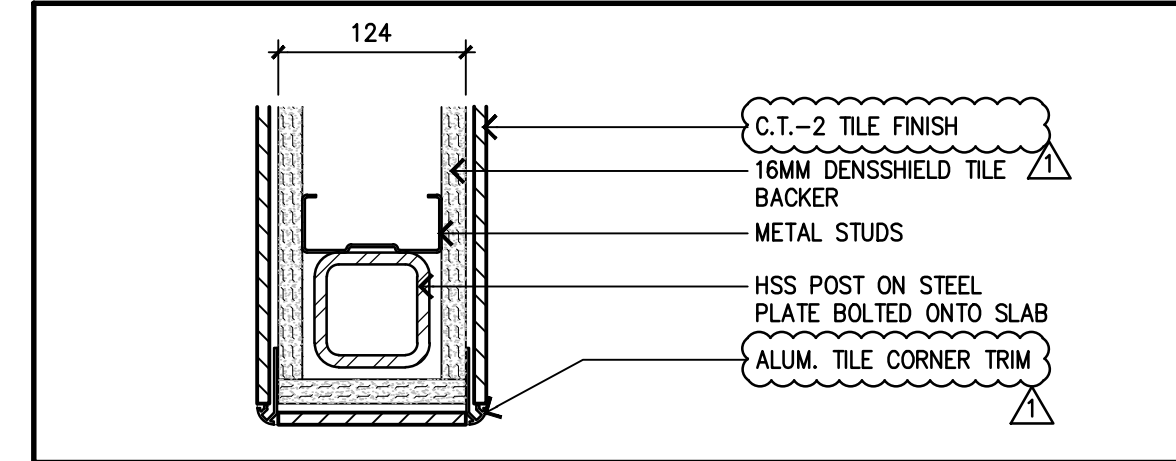
11 CEILING DETAIL
A440 SCALE: 1 : 10



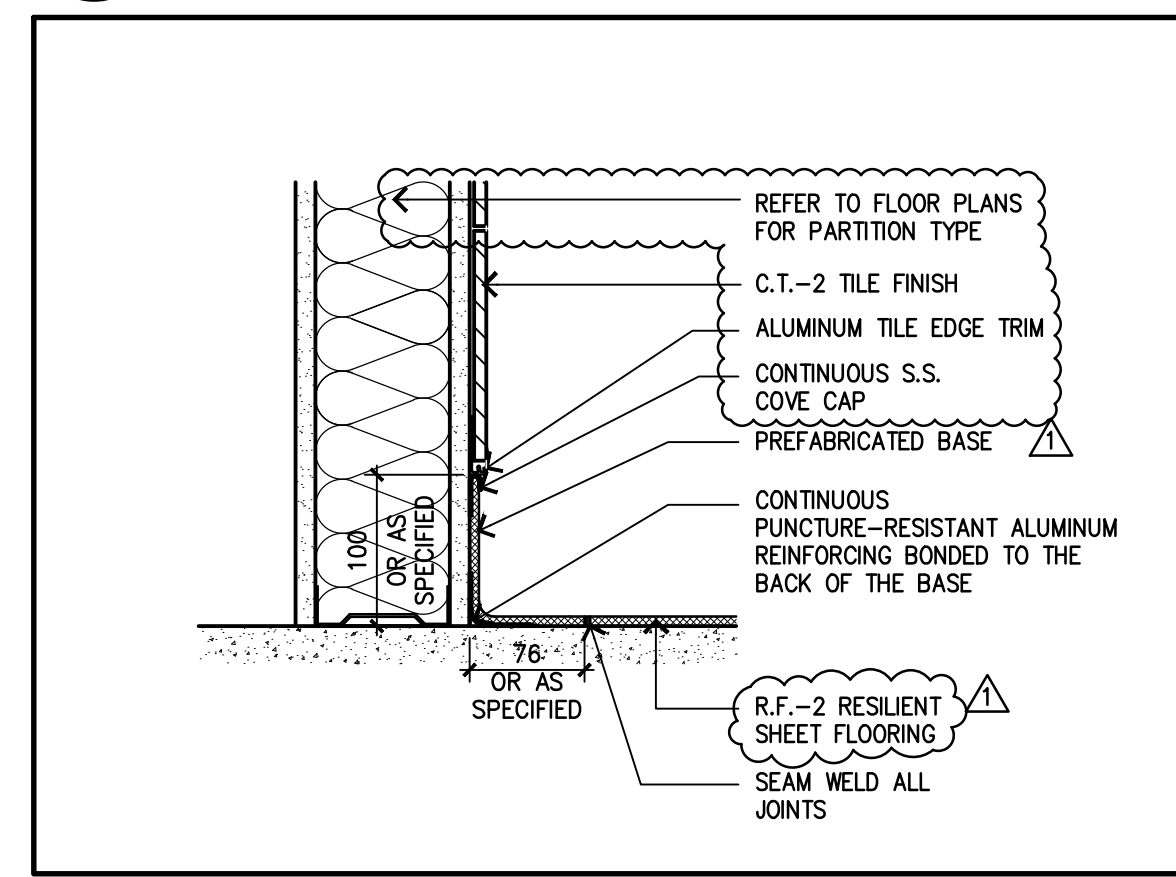
10 DETAIL SECTION - TYP. FOLDING PARTITION AT ROLLER TRACK
A440 SCALE: 1 : 5



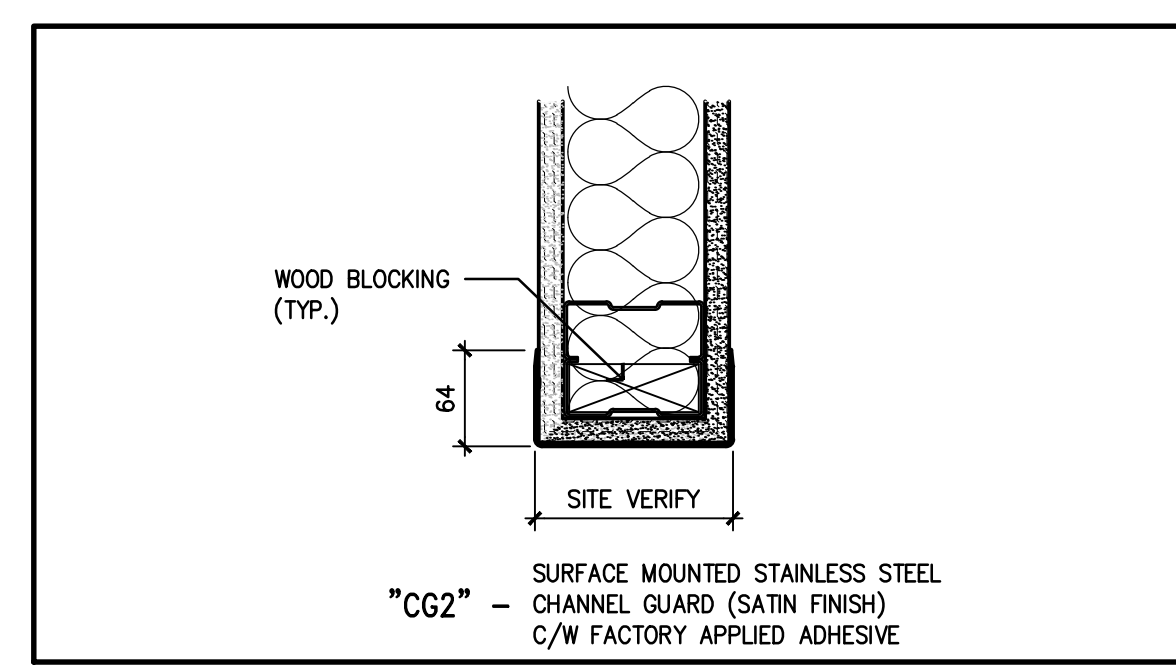
9 TYP. CORNER GUARD DETAIL - "CG1"
A440 SCALE: 1:10



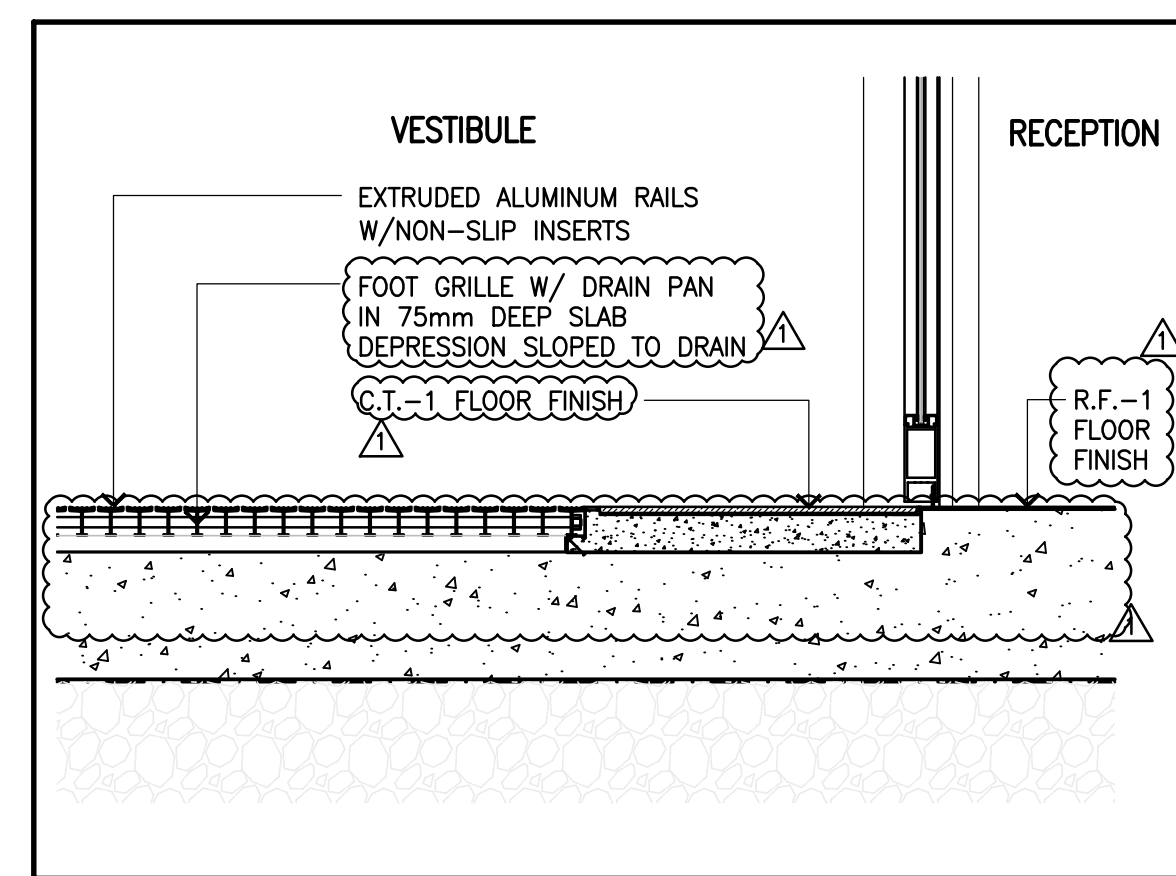
8 TYP. CORNER DETAIL AT TILE
A440 SCALE: 1:10



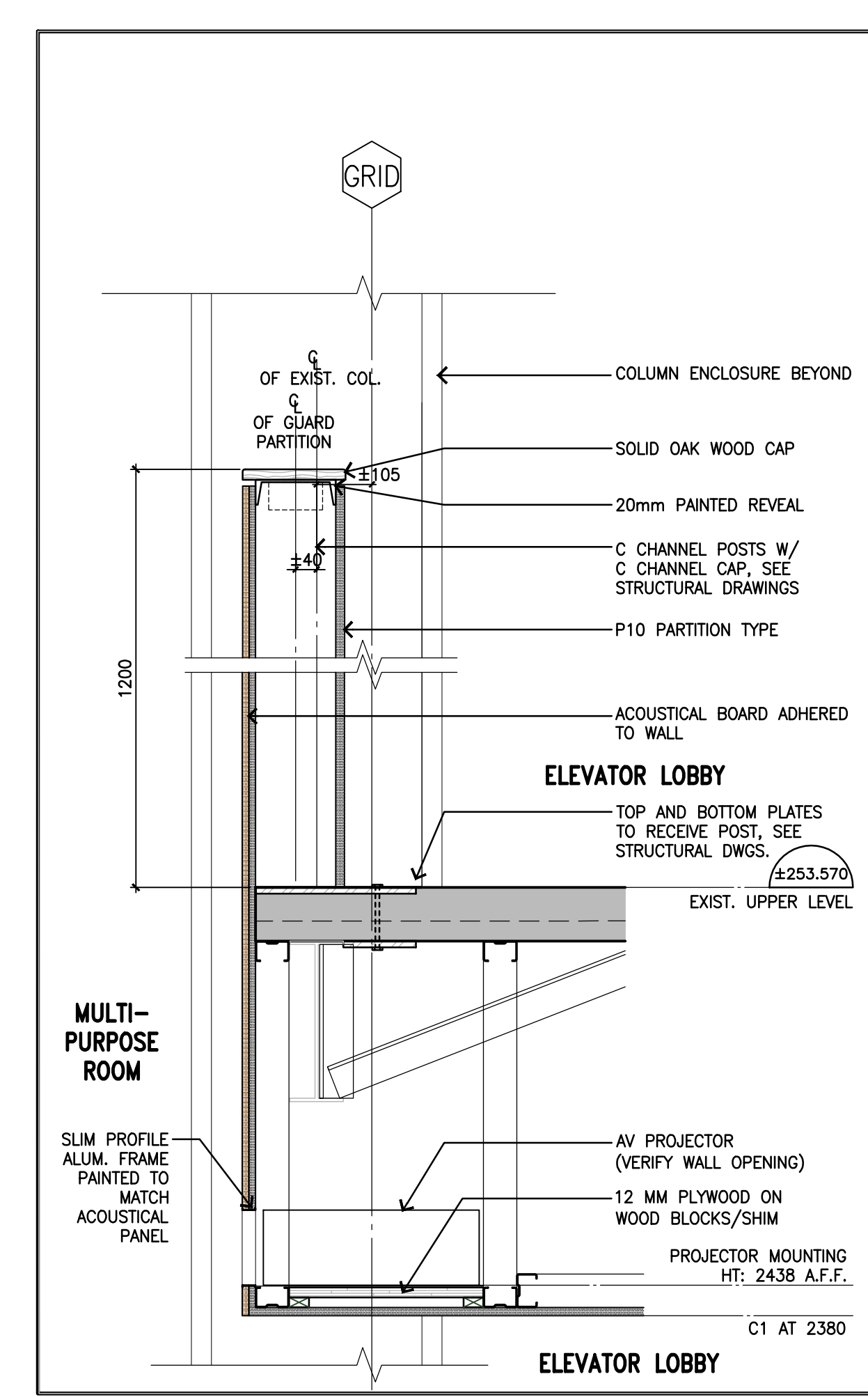
7 SEC. DETAIL AT FLOORING COVE
A440 SCALE: 1:10



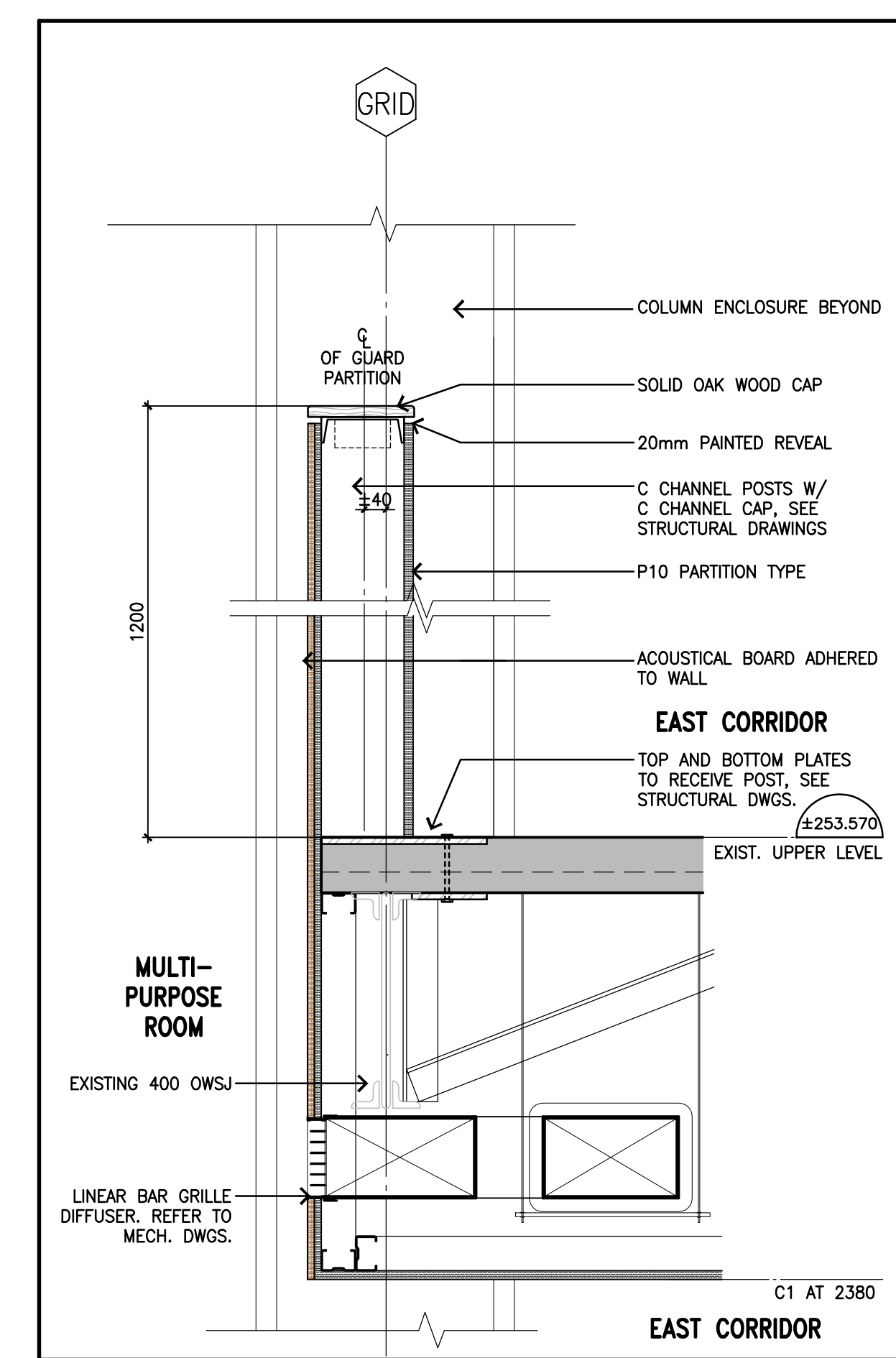
6 TYP. CORNER GUARD DETAIL - "CG2"
A440 SCALE: 1:10



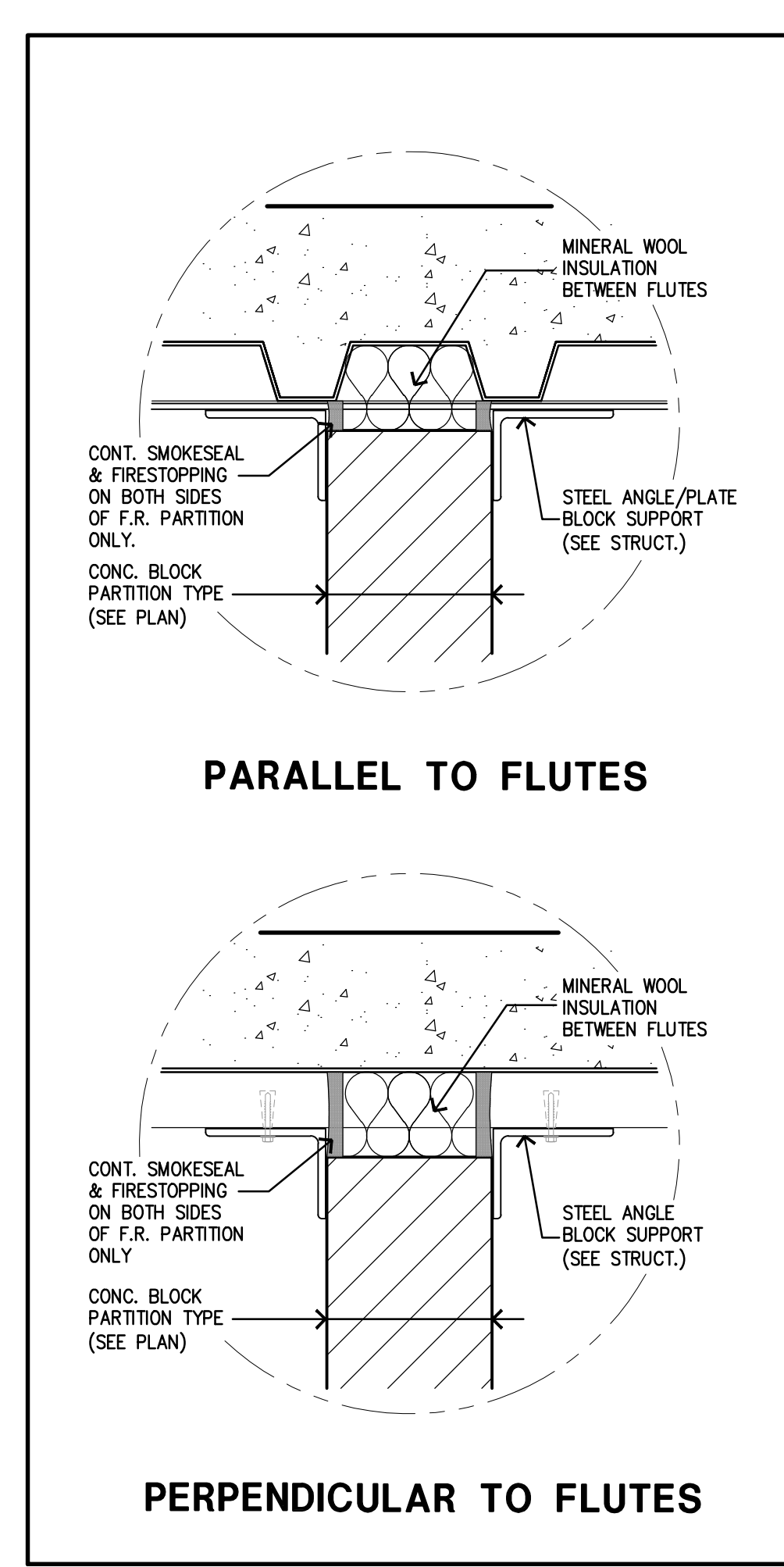
5 SEC. DETAIL AT THRESHOLD/FLOOR GRILL
A440 SCALE: 1:10



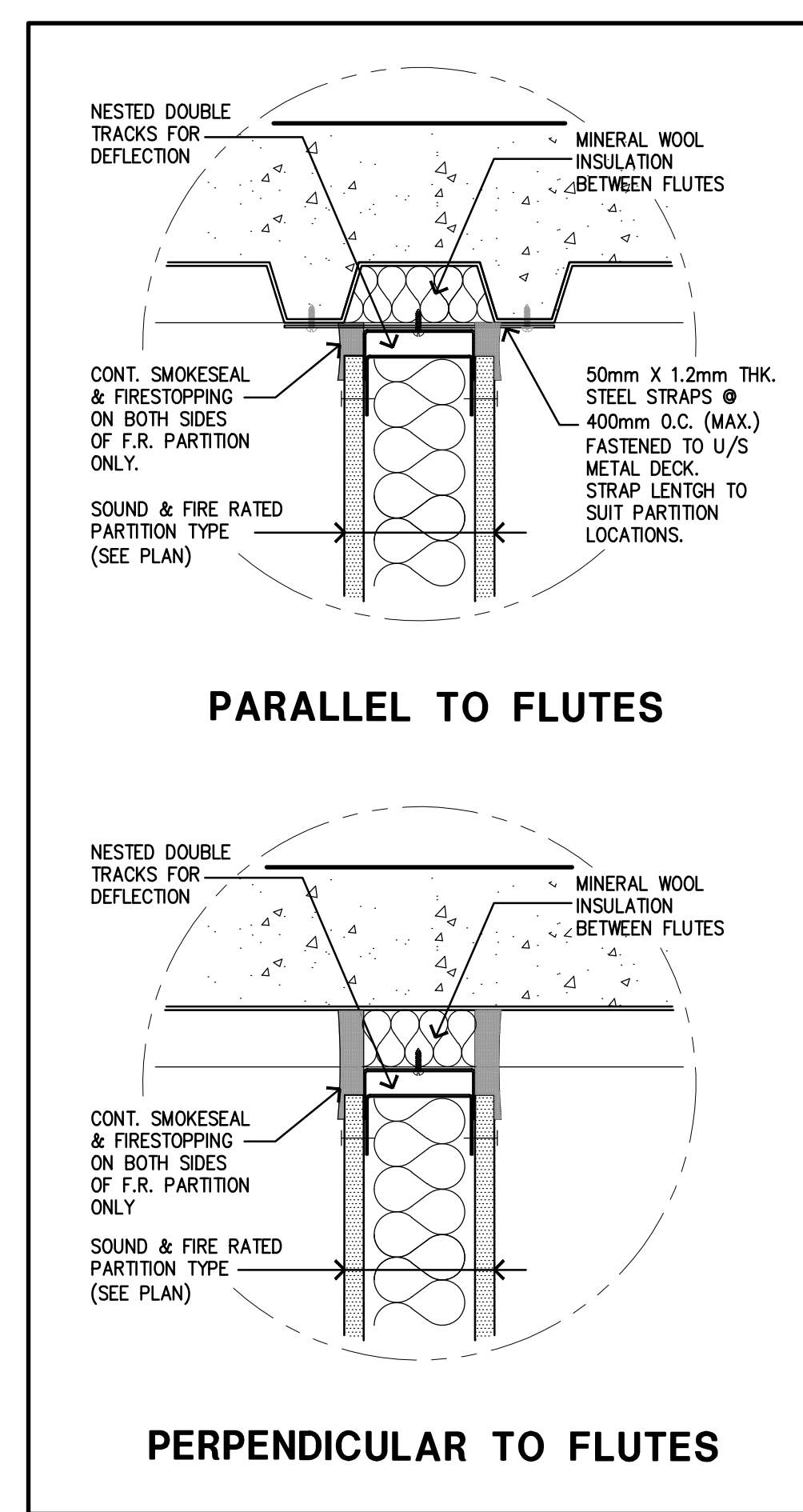
4 DET. SECTION - GUARD WALL AT NORTH OF MULTI-PURPOSE ROOM
A440 SCALE: 1 : 10



3 DET. SECTION - GUARD WALL AT EAST OF MULTI-PURPOSE ROOM
A440 SCALE: 1 : 10



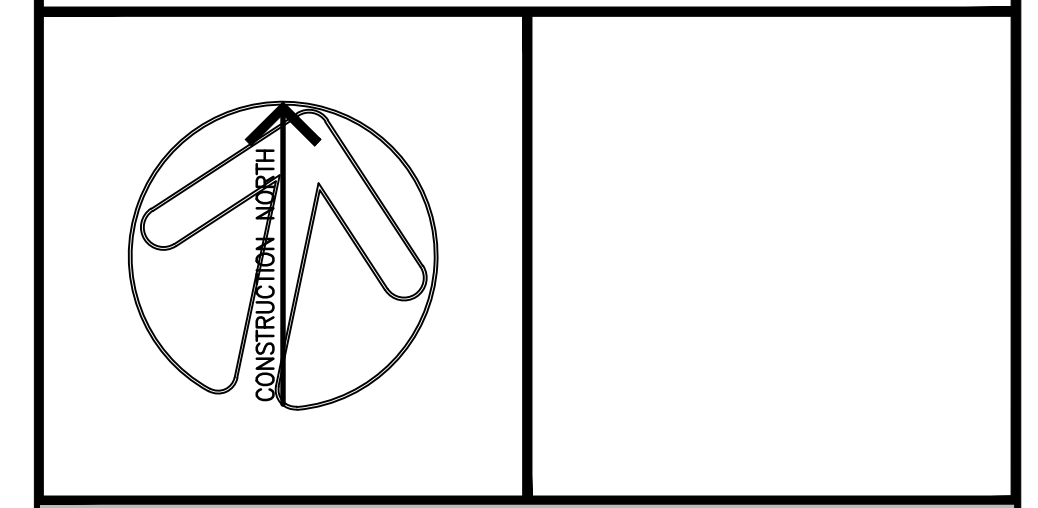
2 TYP. HEAD DETAILS AT CONC. BLOCK PARTITIONS
A440 SCALE: 1 : 5



1 TYP. HEAD DETAILS AT SOUND & F.R. G.W.B. PARTITIONS
A440 SCALE: 1 : 5

1	ISSUED FOR ADDENDUM 1	NOV-15-17	JG
2	ISSUED FOR TENDER	NOV-06-17	JG
1	ISSUED FOR OWNER'S REVIEW	OCT-13-17	JG
NO.	REVISIONS	MARK VOID ALL COPIES PREVIOUS FINAL DATE	DATE BY

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INTERIOR SECTION DETAILS
SCALE: AS SHOWN

COMMUNITY LIVING RENEWAL PROJECT
575 PENROSE STREET
NEWMARKET, ONTARIO L3Y 5L5
For: CLNAD

DRAWN BY	JG	PROJECT NO.	15215
CHECKED BY	JG	DWG. NO.	A440
DATE	09-19-17		
ISSUED	11-15-17		