salterpilon architecture

April 16, 2026

St. David Catholic Secondary School Renovation
RFT 2026-08
Addendum #1:

Consultant Clarifications & Question Responses

Question 1:

Itemized Price #3 listed on the Supplementary Form of Tender is for supply and install of security system however security is also listed as part of the Allowances in Section 01 21 00. Please clarify.

Answer 1: Above referenced Supplementary Form of Tender revised and reissued herewith in this addendum

Question 2:

Section 00 21 00 item 1.11.2.4.1 mentions that the fee for the required painting inspection is to be paid from the allowances identified in the General Instructions. However the painting inspection is not listed in the Allowances Section 01 21 00. Please clarify if painting inspection fee costs are to be reimbursed through the allowances.

Answer 2: Above referenced section revised and reissued herewith in this addendum

Question 3:

Does the Metal Roofing (Section 07 61 00) need to be completed by the pre-qualified roofing contractors listed in Section 00 21 00 being it's not a flat roof / Tremco Roof system?

Answer 3: Correct. Work to be performed by pre-qualified roofing contractor as listed in section 00 21 00. Referenced section revised and reissued herewith in this addendum.

Question 4:

The pen settings on the Electrical drawings makes it hard to make out fixture types and lighting control types. Can the pen setting be change for better viewing?

Answer 4: Revised drawings to be included in forthcoming addendum

Question 5:

The are the following fixtures that appear on the floor plan but not on the fixture schedule. Please confirm the fixture type. F3, A1, T2, F4, V1, and X1.

Answer 5: Revised documents to be included in forthcoming addendum

Question 6:

The are the following fixtures that appear on the floor plan but not on the fixture schedule. Please confirm the fixture type. F3, A1, T2, F4, V1, and X1.

Answer 6: Revised documents to be included in forthcoming addendum

Question 7:

I would like to ask for an extension on this tender.

Answer 7: The Board will not entertain an extension of the tender close at this time.

Consultant clarifications:

1. Specifications previously Issued for Tender, prepared by Salter Pilon Architecture Inc., is revised and re-issued herewith as Issued for Addendum #1, dated April 15th 2026

2. Full Architectural Drawing Set, previously issued for Tender, prepared by Salter Pilon Architecture Inc. are revised and re-issued herewith as Issued for Addendum #1, dated April 16th 2026, as follows: Cover Page (A000), A101, A201, A202, A203, A204, A206, A208, A209, A402, A501, A600.

WATERLOO CATHOLIC DISTRICT SCHOOL BOARD (WCDSB)

St. David Catholic Secondary School Renovation
4 High St,
Waterloo, On

RFT 2026-08

salter pilon architecture inc.

Project Manual

Divisions 0-33

Project Number: 25029
Date of Issue: April ***15th***, 2026
Issued for ***Addendum 1***

CONSULTANT'S SEAL This seal governs all Documents and Sections of these Specifications, except Section 00 30 00 – Existing Conditions.	
STRUCTURAL SUBCONSULTANT'S SEAL This seal governs: Section 03 10 00 – Concrete Formwork Section 03 20 00 – Concrete Reinforcement Section 03 30 00 – Cast-in-Place Concrete Section 03 41 00 – Precast Prestressed Hollow Core Slabs Section 04 30 00 – Reinforced Masonry Section 05 12 00 – Structural Steel Section 05 21 00 – Steel Joist Framing Section 05 31 23 – Steel Roof Decking Section 05 32 00 – Steel Floor Deck	

SECTION NO. TITLE NO. OF PAGES

DIVISION 00 PROCUREMENT AND CONTRACTING REQUIREMENTS

00 01 07 Professional Certifications 1
00 01 10 Table of Contents 2
00 30 00 Existing Conditions 1
00 21 00 ***Instructions to Bidders 13***
00 41 00 Form of Tender 6
00 71 00 Supplementary Form of Tender 11
- - ***Supplementary Conditions 56***

DIVISION 01 GENERAL REQUIREMENTS

01 10 00 Summary of Work 1
01 21 00 Allowances 2
01 26 00 Contract Modification Procedures 1
01 29 00 Payment Procedures 2
01 30 00 Administrative Requirements 5
01 32 33 Photographic Documentation 1
01 33 00 Submittal Procedures 3
01 40 00 Quality Requirements 4
01 41 00 Regulatory Requirements 2
01 42 00 References 2
01 50 00 Temporary Facilities and Controls 6
01 51 16 Temporary Fire Control 1
01 57 19 Temporary Environmental Controls 5
01 61 00 Common Product Requirements 5
01 70 00 Execution Requirements 3
01 74 00 Cleaning and Waste Management 2
01 77 00 Closeout Procedures 3
01 78 00 Closeout Submittals 5
01 77 00 Closeout Procedures 3
01 91 00 ***Commissioning Specifications 16***
- Commissioning Plan 14

DIVISION 02 EXISTING CONDITIONS

02 40 00 Demolition and Removals 8

DIVISION 03 CONCRETE

03 51 13 Cementitious Topping 3

DIVISION 04 MASONRY

04 20 00 Concrete & Clay Unit Masonry 12

DIVISION 05 METALS

05 50 00 Miscellaneous and Metal Fabrications 6

DIVISION 06 WOOD, PLASTICS AND COMPOSITES

06 10 00 Rough Carpentry 5
06 20 00 Finish Carpentry & Architectural Woodwork 9

DIVISION 07 THERMAL AND MOISTURE PROTECTION

07 21 00 Thermal Insulation 2
07 26 00 Vapour Retarders 4
07 46 19 Metal Siding 6
07 61 00 Sheet Metal Roofing 7
07 62 00 Flashing and Sheet Metal 3
07 85 00 Firestopping and Smoke Seals 7
07 92 00 Sealants 5

DIVISION 08 DOORS AND OPENINGS

08 11 13 Metal Doors and Frames 6
08 36 13 Sectional Overhead Doors 5
08 70 00 Finish Hardware 5
- - Hardware Schedule 9
08 80 00 Glazing 6

DIVISION 09 FINISHES

09 06 00 ***Project Finish Schedule 10***
09 21 16 Gypsum Board 10
09 24 26 Exterior Stucco Coating 4
09 30 00 Tile 7
09 65 13 Resilient Flooring 5
09 68 16 Tile Carpeting 3
09 91 00 Painting 9

DIVISION 10 SPECIALTIES

10 21 00 Compartments and Cubicles 4
10 28 13 Washroom Accessories 3

DIVISION 11 EQUIPMENT

11 32 00 Supplied and Installed Equipment 4

APPENDICES

- 2025 Asbestos Audit Update 13

END OF SECTION

1 GENERAL

.1 Information on existing conditions made available to bidders under this section, is included in the Bid Documents for information purposes only, and does not form part of the Contract Documents.

.2 The Owner and Consultant assume no responsibility for the scope and accuracy of the information contained in the documents listed herein.

.3 The Contractor shall be responsible for conducting an on-site evaluation of conditions which can be observed and for correlation of these conditions with the information included under this section.

.4 Information contained in documents listed here may be used by the Contractor to assist in an assessment of existing conditions. Evaluation of the information shall remain the responsibility of the Contractor.

2 GEOTECHNICAL REPORT

.1 Geotechnical Investigation of the site for guidance in design and construction was carried out for the Owner and has been appended.

END OF SECTION

1.1 INVITATION

.1 Bid Call

.1 **REGISTERED SUPPLIERS/BIDDERS**

- All Bidders shall have a Bidding System Vendor account and be registered as a Plan Taker for this Bid opportunity, which will enable the Bidder to download the Bid Call Document, to receive Addenda email notifications and download all documents without the watermark "preview" on them.

- To ensure receipt of the latest information and updates via email regarding this bid, or if a Bidder has obtained this Bid Document from a third party, the onus is on the Bidder to create a Bidding System Vendor account and be register as a Plan Taker for the bid opportunity.

.2

ELECTRONIC BID SUBMISSIONS ONLY, shall be received by the Bidding System. Hardcopy submissions are not permitted.

Bidders are cautioned that the timing of their Bid Submission is based on when the Bid is RECEIVED by the Bidding System, not when a Bid is submitted, as Bid transmission can be delayed due to file transfer size, transmission speed, etc.

For the above reasons, it is recommended that sufficient time to complete your Bid Submission and to resolve any issues that may arise. The closing time and date shall be determined by the Bidding System's web clock.

Bidders should contact bids&tenders support listed below, at least twenty-four (24) hours prior to the closing time and date, if they encounter any problems. The Bidding System will send a confirmation email to the Bidder advising that their bid was submitted successfully. If you do not receive a confirmation email, contact bids&tenders support at support@bidsandtenders.ca.

Late Bids are not permitted by the Bidding System.

To ensure receipt of the latest information and updates via email regarding this bid, or if a Bidder has obtained this Bid Document from a third party, the onus is on the Bidder to create a Bidding System Vendor account and register as a Plan Taker for the bid opportunity.

Supplementary Form of Tender to be emailed to:
Stephen.butterworth@wcdsb.ca

.3 Submissions to the bidding system will be on or before 2:00:00pm April 23rd, 2026, local time and Followed by the Supplementary Form of Tender emailed to Stephen.butterworth@wcdsb.ca at 3:00:00 pm April 23rd, 2026 local time

.4 Instructions for tendering must be followed implicitly. Any Tender which does not comply with the *CCDC 2-2020 Stipulated Price Contract, Supplementary Conditions, as attached*, and the Instructions to Bidders may be declared informal and may not be considered.

.5 Stipulated sum tenders, submitted on the Form of Tender supplied, on the Work described in the following specifications and/or shown on the accompanying drawings, including all Addenda issued prior to the closing of Tender.

.6 ALL BLANKS IN THE FORM OF TENDER, INCLUDING SUPPLEMENTAL FORM OF TENDER, SHALL BE FULLY COMPLETED OR THE TENDER MAY BE INVALIDATED. TENDERS NOT COMPLETED IN FULL, MAY, AT THE DISCRETION OF THE BOARD, BE REJECTED. IF A BLANK IS DEEMED TO BE NOT REQUIRED BY THE BIDDER, COMPLETE WITH A "NOT APPLICABLE (N/A)", "OWN FORCES", ETC.

.7 Tenders shall be valid for sixty (60) Calendar Days from the date of closing above.

.8 Tenders must note, and include, on a separate form, any "Separate Prices" requested by the Consultant; any "Alternate Prices to the Base Bid" requested by the Consultant; any "Supplementary Alternate Prices" proposed by the Bidder; as well as all Unit Prices indicated on the *Supplementary Form of Tender.* Tender award to be based on low bid as specified.

.9 Tender award will be determined based on low Bid as specified.

1.2 INTENT

.1 Intent of this Bid call is to obtain an offer to perform work to complete the construction of St. David Catholic Secondary School located at 4 High Street, Waterloo, ON for a Stipulated Price contract, in accordance with Contract Documents.

1.3 CONTRACT/BID DOCUMENTS

.1 Agreement Form

.2 Definitions

.1 Contract Documents: Defined in the *CCDC 2-2020* Stipulated Price Contract, Definitions.

.2 Bid Documents: Contract Documents supplemented with Instructions to Bidders, Project Information, Soils Investigation Data, Form of Tender, and Supplementary Form of Tender identified herein.

.3 Bid, Offer, or Bidding: Act of submitting an offer under seal or signed under witness.

.4 Bid Price: Monetary sum identified in Bid Form as an offer to perform work.

.3 Availability

To obtain documents online please visit https://wcdsb.bidsandtenders.ca/. You can preview the bid documents with a Preview Watermark prior to registering for the opportunity.

.1 Documents are not provided in any other manner.

.2 Documents are made available only for purpose of obtaining offers for this project. Their use does not confer license or grant for other purposes.

.3 A copy of soils investigation report may be found in Bid Documents

.4 Examination

.1 Upon receipt of Bid Documents verify that documents are complete.

.2 Immediately notify, through the bidding system "Submit a Question", upon finding discrepancies or omissions in Bid Documents.

.5 Queries/Questions

.1 Questions related to this bid are to be submitted to the Purchasing representative through the Bidding System only by clicking on the "Submit a Question" button for this specific bid opportunity.

Purchasing Representative

Stephen Butterworth
Purchasing Officer
Waterloo Catholic District School Board

Email: Stephen.Butterworth@wcdsb.ca

Neither the Board nor the Board contact will be responsible for any verbal instructions or clarifications given during the Bidding process. As a result, verbal recollections of discussions, meetings, or telephone conversations will not be considered valid.

.6 Addendums

.1 Bidders shall acknowledge receipt of any addenda through the Bidding System by checking the box for each addenda and any applicable attachment.

It is the responsibility of the Bidder to have received all Addenda that are issued. Bidders should check online at https://wcdsb.bidsandtenders.ca/ prior to submitting their Bid and up until Bid closing time and date in the event additional addenda are issued.

If a Bidder submits their bid prior to the Bid closing time and date and addenda have been issued, the Bidding System shall WITHDRAW the Bid submission and the bid status will change to an INCOMPLETE STATUS and Withdraw the Bid. The Bidder can view this status change in the "MY BIDS" section of the Bidding System.

The Bidder is solely responsible to:

- make any required adjustments to their Bid; and
- acknowledge the addenda; and
- Ensure the re-submitted Bid is RECEIVED by the Bidding System no later than the stated bid closing time and date.

.2 Clarifications requested by bidders must be received by the bidding system, not less than nine (9) days before date set for receipt of Bids. Reply will be in form of an addendum, a copy of which will be forwarded to known bidders no later than seven (7) working days before receipt of Bids

.7 Product/System Options

.1 There are two opportunities for a Bidder to identify Alternates in the Bidder's Tender. The first method is to identify Alternates at the time of the Tender submission on the *Supplementary Form of Tender* to be attached to the Form of Tender. This document is to be entitled ALTERNATE PRICES TO BASE BID:

.1 Wherever possible or practical, the specifications are written on a "Base Bid" principle. When "Base Bid" product or service is identified, a number of "alternates" have been listed. The Bidder must tender on the "Base Bid" and indicate, on a separate sheet, Alternates and a credit to the Contract if one of the specified alternate supplier/manufacturer/installer or material/method of construction is being proposed by the Bidder. Only those identified Alternates in the Specification may be listed on the *Supplementary Form of Tender*. If the Specification identifies a "Base Bid" with a number of Alternates and the Bidder does not identify on the *Supplementary Form of Tender* any of the indicated Alternates with a

credit, then the Contractor shall provide, in all instances, the “Base Bid” supplier/manufacturer/installer or material/method of construction.

.2 The Contractor shall accept full responsibility that a proposed Alternate will not exceed space requirements as indicated on the drawings and that coordination of the Contractor’s own and related work and cost of installation is included in the Contractor’s work. Approved alternate products or assemblies shall comply with all technical and design requirements specified in the “Base Bid”. (E.g. materials, gauge, finish, colour, size, fit, mounting, strength, durability, operation and warranty.) If any additional design fee, either Architectural or Engineering, is required due to a change or substitution requested by the Contractor, the cost of such fee must be paid by the Contractor.

.2 The second method is to identify alternates on the *Supplementary Form of Tender* and submitted, as requested by the Consultant, at the time of Tender. This document is to be entitled. SUPPLEMENTARY ALTERNATE PRICES:

.1 Mechanical and Electrical Alternates may be submitted on the Supplementary Form of Tender.

.2 If proposals for alternates (not already identified as alternates in the specification) are submitted by the Contractor to the Consultant during the tender period in sufficient time to allow for analysis and the issuance of an Addendum to include the proposals, then such proposal may be included in the Form of Tender under *Separate Prices*.

.3 Proposed alternates which are not covered by an Addendum and listed in the Form of Tender under *Separate Prices*, may be considered if the proposed entitled *Supplementary Alternate Prices* accompanies the Supplementary Form of Tender as a separate document on which the Alternate is completely specified and described, and on which is given the reason for substitution.

.4 Any proposed alternates or in lieu of prices will not necessarily be accepted.

.5 The Contractor shall accept full responsibility that a proposed Alternate will not exceed space requirements as indicated on the drawings and that coordination of his own and related work and cost of installation is included in his work. Approved alternate products or assemblies shall comply with all technical and design requirements specified in the “Base Bid”. (E.g. materials, gauge, finish, colour, size, fit, mounting, strength, durability, operation and warranty.) If any additional design fee, either Architectural or Engineering, is required due to a change or substitution requested by the Contractor, the cost of such fee must be paid by the Contractor.

.6 Unless substitutions are submitted in this manner and subsequently accepted, provide products as specified.

1.4 OWNER

.1 The Owner of the Project is:

WATERLOO CATHOLIC DISTRICT SCHOOL BOARD
35 Weber Street West, Unit A
Kitchener, Ontario N2H 3Z1
Phone: (519) 578-3660

1.5 CONSULTANT

.1 The Architect on this Project is:

Salter Pilon Architecture Inc.
151 Feris Lane, Suite 400
Barrie
705 737 3530

mbartolucci@salterpilon.com

1.6 SUB CONSULTANTS

.1 The Structural Engineer for this Project is:

Tacoma Engineers
155 Frobisher Drive, Suite F220
Waterloo
226 647 0109

.2 The Mechanical & Electrical Consultant on this Project is:

Regal Consulting Engineers Inc.
208 Wyecroft Road, Suite 200
Oakville
905 465 5581

1.7 PREQUALIFIED GENERAL CONTRACTORS AND SPECIFIC TRADES

.1 The following General Contractors and Specific Trades have been prequalified by the Board to bid on the work included in this Tender **as per the WCDSB – 2019-24 Mechanical, Electrical, and General Contractors.**

NOTE: This Tender can be tendered by **prequalified General Contractors and Specific Trades ONLY. Tenders received from non-prequalified General Contractors and Specific Trades will not be considered.**

GENERAL CONTRACTORS

Reid and Deleye	Pre Eng Contractors
Dakon Construction	STM Construction
PM Contracting	TRP Construction
Tambro Construction	Devlan Construction
Everstrong Construction	Percon Construction
Nith Valley Construction	Melloul Blamey
Brook Restoration	Norlon Builders
Harbridge and Cross	J.R. Certus
AEC Developments	M J Dixon Construction
CRD Construction	Elgin Contracting
Golden Gate Contracting	Genpro Contracting
S.G. Cunningham	Gateman Milloy

MECHANICAL TRADES

Aim Industrial Inc.	Dependable Mechanical Sys.
Conestoga Mechanical	Superior Boiler Works
Roberts Onsite	Dean Lane
CEC Mechanical	L.J. Barton Mechanical
Soan Mechanical	Linde Mechanical
JMR Electric	Velocity Mechanical
Brenner Mechanical	Kittel Mechanical
Arcadian Mechanical	

ELECTRICAL TRADES

Kraun Electric Inc.	Aim Industrial Inc.
PHE Contractor	Roberts Onsite
T. Lloyd Electric	Juno Electric
Comtrade Ltd	MJM Electric
Energy Network Services	Superior Boiler Works
CEC Services Ltd.	JMR Electric
Arcadian Projects	JM Electrical Contracting

KINETIC NETWORK CONTRACTORS
KINETIC SOLICIATION AND PROPOSAL NUMBER

.1 The Waterloo Catholic District School Board has issued a proposal as listed below to be procured through the Kinetic GPO, Tremco Roofing and Building Maintenance and Weatherproofing Technologies Canada Contract # RFSO 24-06, a pre-competed National Purchasing Agreement (GPO). The formal tender process has been satisfied as outlined in section .5.

1. Customer Proposal Number RFSO 24-06 - (6-digit number)

.2 The Waterloo Catholic District School Board invites Pre-qualified In Network Contractors for Roofing Services to bid for the supply of all labour, materials, equipment, and services required for the completion of the new addition at St. Aloysius Catholic Elementary School in accordance with the drawings and specifications prepared by Grguric Architects Incorporated.

.3 Tremco Roofing and Building Maintenance and Weatherproofing Technologies Canada serves as Program Administrator for the Canadian Cooperative Contractor Network and the Kinetic Roofing Program.

.4 In Network Contractors, having been pre-qualified and authorized by successfully submitting their company's credentials for inclusion in the Canadian Cooperative Contractor Network, may submit competitive proposals for the unique needs of the referenced building(s) outlined within the project documents.

.5 The formal process of the Kinetic GPO Contract #RFSO 24-06 was publicly advertised on Merx, Biddingo, and Bonfire. Responses were evaluated and awarded using a competitive solicitation process consistent with Chapter 5 of the Canadian Free Trade Agreement (CFTA) and other international trade agreements, including the Canada-EU

Comprehensive Economic and Trade Agreement (CETA), as well as the Broader Public Sector (BPS) Procurement Directive.

.6 Competitive Proposals may be called, received, evaluated, accepted, and processed in accordance with the Board's Procurement and Purchasing By-Laws. By submitting a Proposal for this project, the Proposer agrees to be bound by the terms and conditions of such By-Laws and any amendments thereto, as fully as if it were incorporated herein. Any Contract resulting from this Kinetic GPO Competitive Proposal shall be governed by and interpreted in accordance with the laws of the Province of Ontario.

.7 Order of Precedence. The terms and conditions of the Board will take precedent over provisions stated in the Provisions of Kinetic GPO. Conflicts, if any, between Kinetic GPO Provisions and others stipulated within the project documents, require the proposer to adhere to the most stringent requirement published, as determined by the procurement official. The Provisions of Kinetic GPO will govern in absence of any terms and condition in the Specification. In addition, it is incumbent on the Contractor to make any subcontractor(s) performing under the Kinetic GPO contract aware of, and to provide subcontractor(s) with the terms and conditions of the Board as well as the Provisions of Kinetic GPO. The additional Provisions for Kinetic GPO are found attached to the Price Bid Form.

.8 All project documents shall include the Kinetic GPO Customer Proposal Number RFSO 24-06 -350780.

PRE-QUALIFIED KINETIC NETWORK CONTRACTORS

Atlas Apex Roofing	Roque Roofing Inc
Eillen Roofing Inc.	Flynn Canada Ltd. (Cambridge)
Horizon Roofing Ltd.	Lafleche Roofing Ltd.
Provincial Roofing	Semple Gooder Roofing Corporation
Spinton Roofing Ltd.	Trio Roofing Systems Inc.
Triumph Roofing and Sheet Metal Inc.	Wm. Green Roofing Ltd.
Conestoga Roofing and Sheet Metal Ltd.	GRRC Roofing
Goodmen Roofing and Sheet Metal	Pollard Enterprises Ltd.
Tectra Group Inc.	Nortex Roofing Ltd.
	Nedlaw Roofing

1.8 SITE ASSESSMENT

.1 Site Examination

.1 Visit project site and surrounding area before submitting Bid.

.2 Notwithstanding the responsibility, a Site Visit to project site has been arranged for General Contractors and their sub-trades as follows:

.3 At St. David CSS, 4 High Street, Waterloo, on April 13th, 2026 at 3:00pm.

.4 Meet at main entrance door.

.5 Before tendering, the Bidder shall examine the site, and the Reports prepared by separately engaged Consultants, bound into the Specifications for reference only, and shall ascertain the extent and nature of the materials it may be necessary, and shall be sure that the Bidder's determinations are made in accordance with the drawings and specifications and the Reports.

.6 Proposals shall include the cost imposed by existing conditions and limitations of site and the accepted proposal shall be held to have included such costs. NO ALLOWANCE WILL BE MADE FOR FAILURE TO EXAMINE THE EXISTING SITE.

.7 The information shown on the drawings are furnished in good faith for the guidance of the Contractor, but shall in no way relieve the Contractor of the responsibility of ascertaining to the Contractor's own satisfaction the nature of all conditions at the site.

1.9 BID ENCLOSURES/REQUIREMENTS

.1 Security Deposit

.1 Each tender shall be accompanied by a Bid Bond and Agreement to Bond in the most recent form approved by the Canadian Construction Association from a Surety Company, acceptable to the Board. The Bid Bond shall be in the amount of […10% of Base Bid…], together with an Agreement to Bond. The Bid Bond must be valid for a minimum of sixty (60) Calendar Days from the closing date. Tenders not accompanied by a Bid Bond and Agreement to Bond will be declared informal.

.2 This Bid Bond shall be forfeited if the bidder declines to enter into a formal contract in the amount tendered, or as adjusted according to the separate prices included in the tender, and/or to furnish, when called upon to do so, a Performance Bond. This Bid Bond shall be accompanied by an Agreement from the Surety Company that a 50 % Performance Bond and a 50 % Labour and Material Payment Bond will be issued to the Bidder if the Bidder is awarded the contract. The cost of the Bonds shall be included in the amount of the Tender. Refer to the *CCDC 2-2020 Stipulated Price Contract and the Supplementary Conditions, as attached,* for further information.

.3 Retention and use of the Bid Bond, as outlined above, shall not be deemed a penalty, but a consideration to the Board for inviting and considering the Tender and as part payment for sustained damages and costs incurred by the Board, which shall be deemed to be the difference between the bid price of this Bidder and the bid price of the next lowest Bidder acceptable to the Board.

.4 A Performance Bond, equal to 50 % of the contract price, shall be furnished through a Surety Company or Insurance Company approved by the Consultant and the Board according to terms and conditions acceptable to the Board and the Consultant.

.5 On completion of the work, the Performance Bond shall remain in force as a MAINTENANCE BOND for a period of one (1) year from the date of acceptance of the building by the Board. It shall form a guarantee of workmanship and materials for the one (1) year period.

.6 Use latest edition CCDC approved bond forms.

.2 Performance Assurance

.1 The Bidder to whom the contract is awarded must properly sign the contract and furnish a satisfactory Performance Bond, Labour and Material Payment Bond, Insurance Certificate and Workers' Compensation Board Certificate within ten (10) Working Days of acceptance of the tender by the Board, or forfeit the Bid Bond.

.2 Labour and Material Payment Bond, equal to 50 % of contract, to be provided within ten (10) Working Days, stating that the Board will not be held responsible if payment to subcontractors, as certified due by the Consultant, is not made by the General Contractor when due.

.3 Tenders must include all costs involved in having the contract "Substantial Performance" by August 24th 2026**, "**Fit for Legal Occupancy" by August 24th 2026 and having the entire building Totally Completed by September 7th, 2026.

.4 Persons or firms submitting tender proposals shall be actually engaged as their recognized business in the lines of work required by the specifications, and shall be able to refer to work of a similar character which has been satisfactorily performed by them.

.3 Fees for Changes in Work

.1 It must be clearly understood that the Board cannot accept any price variation in the supply or installation of products or labour or materials from those submitted and carried by the Contractor at the time of tender. During the contract period, the Board will not be responsible for, or entertain any price increase in the cost of materials or labour carried in the tender amount.

.2 The tender amount shall not include Harmonized Sales Taxes but shall include all other applicable excise taxes, custom duties, freight, exchange and all other charges in effect and known to come into effect during the construction work described in this Contract.

.3 Unit Prices are exclusive of Harmonized Sales Taxes.

.4 The successful Bidder must provide the Bidder's H.S.T. (Tax) Registration Number and each request for payment must show this number and the amount of H.S.T.(Tax) payable.

.5 At the time of tender submission, include *Separate Prices* listed in the Supplemental Form of Tender for the identified items. Express each In Lieu of Price as a Credit or an Extra to the amount tendered. Contract Amount will be adjusted consistent with their acceptance or rejection by the Board. Separate Prices DO NOT include H.S.T.

.4 Unit Prices

.1 UNIT PRICES FOR ADDITIONAL WORK SHALL NOT EXCEED UNIT PRICES FOR DEDUCTED WORK BY MORE THAN 20%.

.2 Unit prices must be submitted at time of Tender.

.3 The Board reserves the right to accept or reject any or all of the unit prices prior to entering into a contract.

.4 The Board reserves the right to negotiate any or all of the unit prices with the low Bid Contractor prior to signing a contract

.5 Refer to *CCDC 2-2020 Part 6 CHANGES IN THE WORK* regarding valuation of changes not covered by Unit Prices.

.5 Subcontractors

.1 Bidders are required to submit the list of subcontractors. The list is to be submitted with tender, on the *Supplemental Form of Tender* included in the Contract Documents. The Bidder shall name in these lists the subcontractors proposed to perform the work under the contract. No substitutions to these lists shall be made without the written approval of the Consultants.

.2 The selection of Subcontractors must be acceptable to the Board and to the Consultants. If the required substitution of a Subcontractor affects the sub-tender price, an adjustment will be made in the amount of the General Contract by the amount only of the difference in sub-tenders, without additional overhead or profit to the Contractor.

.3 If the Bidder proposes to do work with persons directly employed by the Bidder and not subcontract, then the Bidder shall insert the words *"Own Forces"* provided the Bidder can submit proof that the Bidder's forces have had previous experience in this field.

.4 Subcontractors shall be actually engaged as their own recognized business, in the line of work required by the specifications and shall carry out themselves the work which they are awarded by subcontract. They shall not be permitted to re-subcontract their work or portions thereof, to other contractors.

.6 Fair Wage and Labour

.1 Rate of wages, hours and conditions of work shall be in accordance with Provincial Codes and as generally recognized and accepted in the locality. Building mechanics and labourers resident in the district are to be employed where suitable.

.7 Discrepancies and Omissions

.1 Bidders, including subcontractors, finding specified items unavailable, finding discrepancies in, or omissions from, the drawings or specifications or other contract documents, or having any doubt as to the intent or meaning of any part thereof, shall at once notify the Consultant in writing, who will issue an Addendum to all bidders in explanation of the inquiry if necessary.

.2 All definitions, explanations, corrections or additional information will be issued by the Consultant during the time of bidding in the form of typewritten addenda and such addenda will be available to all Bidders. These shall become part of the contract documents and **must** be shown on the Form of Tender as having been received.

.3 NO ORAL INSTRUCTIONS WILL BE VALID.

.8 Bidding Assumptions

.1 All bids submitted, are assumed to be based upon the complete set of Bid Documents.

.9 Errors in Tender

.1 The Board shall not entertain requests for gratuitous payments arising from errors alleged to have been made in a tender which the Board has accepted

.10 Building Permit

.1 Building Permit has been applied for by the Consultant and shall be paid for by the Board.

.2 The Contractor must, however, pay all other necessary fees, deposits and charges related to Municipal, Provincial and Federal Requirements. The General Contractor is responsible for determining the amounts of these permits, fees, etc.

.11 Contract Documents

.1 The Contract shall be subject to the Requirements of the *CCDC 2-2020* Stipulated Price Contract and the Supplementary Conditions, as attached. The successful Bidder must sign the *CCDC 2-2020* Stipulated Price Contract as amended by the Supplementary Conditions using this document and these specifications and drawings, within ten (10) Working Days of notification of award. Failure to do so may result in termination of the award. The Contractor shall not be entitled to any payment until this document is signed.

.2 All Contractors will be held to have examined and made themselves familiar with the various articles of these Standard Documents and shall be as binding for all sections of the following specifications as though written in full therein.

1.10 OFFER ACCEPTANCE/ REJECTION

.1 Privilege and Waiver of Non-Compliance

.1 Notwithstanding anything elsewhere herein set out, the lowest or any proposal will not necessarily be accepted by the Board, and the Board reserves the right in its sole discretion to reject any and all proposals at any time or to accept any proposal which is considered advantageous by the Board. Proposals which are non-compliant with the requirements of this Tender, or which contain qualifying conditions, may be disqualified or the Board may waive any non-compliance with the Tender documents, and in its sole discretion, retain for consideration proposals which are non-conforming or non-compliant.

.2 Acceptance of Offer

.1 It must be clearly understood that the final acceptance of this contract is subject to approvals of the Board and other bodies and these may delay final approval. There will be no adjustments in the tendered price for a period of sixty (60) Calendar Days from receipt of Tenders due to delays resulting from obtaining necessary approvals.

.3 No Change in Pricing

.1 It must be clearly understood that the Board cannot accept any price variation in the supply or installation of products or labour or materials from those submitted and carried by the Contractor at the time of tender. During the contract period, the Board will not be responsible for, or entertain any price increase, in the cost of materials or labour carried in the tender amount for any reason, including acts of war or world events.

.4 Withdrawl of Bids.

.1 Bidders may edit or withdraw their Bid Submission prior to the closing time and date. However, the Bidder is solely responsible to ensure the re-submitted bid is received by the Bidding System no later than the stated closing time and date.

Bids by hardcopy, telephone, email, or fax will not be accepted.

1.11 SPECIFICATION MANUAL AND INSPECTIONS

.1 The Bidder must be aware that the Board has instructed the Consultant to prepare a painting specification based upon the *Painting Architectural Specification Manual* prepared by the Ontario Painting Contractors' Association**,** 211 Consumers Road, Suite 305, Willowdale, ON, M2J 4G8

~~.2 The Specification consists of three main components~~

~~.1 Evaluation and Choice of Systems – Surface Preparation~~

~~.2 Approved Product/Manufacture Listing – Specification Guide~~

~~.3 Inspection and Guarantee Program~~

~~.4 Refer to the specifications for the first two components listed above. The Inspection Procedure will be complied with in every respect by the successful General Contractor and the Painting Contractor as follows:~~

~~.1 Upon issuance of a subcontract to the Painting Contractor, the General Contractor shall fill out our "*Request for Assignment of an Inspector*" Form. The Inspection fee, which is a percentage charge of the painting subcontract price, will be paid from the *Allowances* identified in the General Instructions. Provide a copy of the properly executed Inspector Form to the Consultant and confirm the accuracy of the subcontractor's painting bid.~~

~~.5 The Form will contain the following information:~~

~~.1 Name of Contractor~~

~~.2 Name and Description of Project~~

~~.3 Name and Address of the Architect~~

~~.4 Job Location~~

~~.5 Project starting date~~

~~.6 Contract Price~~

~~.7 Commencement Date of painting.~~

~~.6 The Association will assign an Inspector to the project.~~

~~.3 The Painting Contractor must advise the Association office of the actual starting date of painting. Painting shall not commence until the Association has been notified and the Inspector makes the initial site visit.~~

~~.4 The Painting Contractor must supply the Inspector with a schedule of materials intended for use on the job at the commencement of the painting.~~

~~.5 During the painting application the frequency of inspections will be sufficient to ensure adequate Quality Control procedures in accordance with the Painting *Architectural Specification Manual* and the Specifications.~~

~~.6 The Inspector will use Interim Inspection Reports during the Project. One copy of each of these reports will be given to the Painting Contractor, one copy to the General Contractor, and two copies to the Association office, one of which will be forwarded to the Consultant. On completion of the job, the final Inspection Report will be made and routed as noted.~~

~~.7 The Inspector will be required to check for proper preparation of surfaces, specified number of coats, as specified in the Specifications and drawings.~~

~~.8 Any deficiencies must be corrected before the Guarantee is issued and final payment for painting made by the Board.~~

~~.9 The Guarantee must cover making good any defects in painting and decorating due to faulty workmanship or defective materials supplied by the Painting and Decorating Subcontractor which appear during a two year period, following "substantial" completion of the Contract or the date of "Fit for Occupancy", whichever occurs first.~~

1.12 MILLWORK SPECIFICATIONS AND INSPECTIONS OR ANY OTHER SPECIFICATIONS REQUIRED BY THE APPROPRIATE CONSULTANTS

.1 Refer to related section and drawings

END OF SECTION

1.1 TENDER INFORMATION

NAME OF BIDDER: _____

TENDER CLOSE: April 23, 2026 at 2:00:00pm

SUPPLEMENTAL TENDER FORM CLOSE:

April 23, 2026 at 3:00:00pm.

NAME OF PROJECT: St David CSS Renovation

PROJECT NUMBER: RFT 2026-08

ELECTRONIC BID SUBMISSIONS ONLY, shall be received by the Bidding System.

Supplementary Form of Tender to be emailed to Stephen.butterworth@wcdsb.ca

1.2 ACKNOWLEDGEMENT RE EXAMINATION OF TENDER DOCUMENTS

.1 Having carefully examined all of the drawings (Architectural, Structural, Mechanical, Electrical, Site Servicing and Landscape) and having carefully examined the Instructions to Bidders, the requirements of the *CCDC 2-2020 Stipulated Price Contract, as amended by the Supplementary Conditions, as attached*, and all of the attached Specifications; (Architectural, Structural, Mechanical, Electrical, Site Servicing and Landscape) including Addenda numbered as follows:

Addenda #……to/and including Addenda #……

and, having visited the sites, investigated and examined all conditions affecting the Work, including soil reports and surveys, and other reports as included in the Tender Documents, the undersigned Bidder makes the offers set out below.

1.3 CASH ALLOWANCES

.1 All allowances specified under Section 01 21 00 only amended as provided hereunder.

The Tender Amount includes the total Cash Allowance of $168,000.00 not including Harmonized Sales Tax (HST). (*HST on Cash Allowance is not to be included in the Tender Amount*)

1.4 TENDER AMOUNT

.1 The undersigned Bidder hereby offers to furnish all materials, labour, plant and equipment and to perform all duties and services called for by the ENTIRE WORK INCLUDING ALL TRADES for the Project named above for the stipulated sum of:

……
(Written Value)

$.....
(Numeric Value)

in lawful money of Canada, excluding Harmonized Sales Tax, but including all other applicable Excise Taxes, Custom Duties, Insurance's, Freight, Exchange and all other charges.

1.5 TENDER VALIDITY

.1 The undersigned Bidder is hereby submitting a valid Tender and will enter into the *CCDC 2-2020 Stipulated Price Contract, as amended by the Supplementary Conditions*, *as attached*, if we are notified in writing of our Tender acceptance by THE BOARD within sixty (60) calendar days from the closing of the Tender.

1.6 BONDING

.1 The undersigned Bidder encloses a Bid Bond in the amount of [10]% made out in the name of WATERLOO CATHOLIC DISTRICT SCHOOL BOARD.

.2 It is a condition of this Agreement that if the above mentioned Tender is accepted, application for a 50% Performance Bond and a 50% Labour and Material Payment Bond must be completed with undersigned within ten (10) days of acceptance of the tender related thereto, otherwise this Agreement shall be null and void.

1.7 CONSTRUCTION SCHEDULE

.1 The undersigned Bidder solemnly undertakes, as an integral part of our proposal and tender to:

(a) Have the buildings "Fit for Occupancy" by August 24th 2026;

(b) Have all buildings and site work completed by August 24th 2026; and

(c) Have the Contract completed in its entirety by September 7th, 2026

.2 The undersigned Bidder confirms that all appropriate costs, such as but not limited to winter heat, inclement weather protection and all overtime costs for all

trades to meet the aforementioned schedule, have been included in our tender price to achieve this date.

.3 The Bidder acknowledges and agrees that so long as a building permit is obtained and the Bidder is directed to commence Work within the sixty (60) calendar days following the Closing Date, even if such direction does not occur until the fifty-ninth (59^{th}) day following the Closing Date, the Bidder shall not be entitled to a delay claim.

.4 The undersigned Bidder acknowledges and agrees to comply with the terms and conditions of the Project Occupancy Requirements as outlined in the Supplementary Conditions, attached hereto

1.8 REQUIRED DOCUMENTS

.1 If notified of the acceptance of this Tender via a Letter of Intent issued by the Board, the undersigned Bidder agrees to provide the prerequisite documentation within ten (10) days.

1.9 FEES FOR CHANGES IN THE WORK

.1 The undersigned Bidder acknowledges and agrees that the fees referred to in *CCDC 2-2020 Stipulated Price Contract, as amended by the Supplementary Conditions*, *as attached*, will apply to changes in the Contract not covered by Unit Prices.

1.10 SUPPLEMENTARY FORM OF TENDER

.1 The undersigned Bidder agrees to submit the *SUPPLEMENTARY FORM OF TENDER*, as attached, at Tender close, which shall including the following:

- BID AND COST BREAKDOWN
- LIST OF SUBCONTRACTORS / SUPPLIERS / INSTALLERS
- SEPARATE PRICES - REQUESTED BY CONSULTANTS
- UNIT PRICES
- ITEMIZED PRICES - REQUESTED BY CONSULTANTS
- ALTERNATE PRICES TO BASE BID
- LIST OF ALTERNATIVE BIDS SUBMITTED FOR CONSIDERATION

1.11 DECLARATION OF NO CONFLICT

.1 The undersigned Bidder hereby declares that this Tender submission is made in good faith and without any connection, knowledge, comparison of figures, or arrangements with any other company, firm, or person making a Tender for the same work and is, in all respects, fair and without collusion with any other bidder for this Contract, and without fraud. The undersigned also represents and warrants that, to the best of the undersigned's knowledge and belief, no actual or potential conflict of interest exists with respect to the submission of the Tender or performance of the Contract other than those disclosed hereunder. The undersigned confirms that, where the Board discovers that the undersigned has

failed to disclose all actual or potential conflicts of interest, the Board may disqualify the undersigned or terminate any Contract awarded to the undersigned pursuant to this Tender process. The undersigned understands that, for the purposes hereof, "conflict of interest" also includes:

(a) in relation to the Tender process, the undersigned has an unfair advantage or engages in conduct, directly or indirectly, that may give the undersigned an unfair advantage, including:

(i) having or having access to information in the preparation of the undersigned's proposal that is confidential to the Board and not available to other bidders;
communicating with any person with a view to influencing preferred treatment in the Tender process; or,
engaging in conduct that compromises or could be seen to compromise the integrity of the open and competitive process and render that process non-competitive and unfair; or,

(b) in relation to the performance of its contractual obligations in a Board contract, the undersigned's other commitments, relationships or financial interests:

(i) could or could not be perceived to exercise an improper influence over the objective, unbiased and impartial exercise of the Board's independent judgment; or,

(ii) could or could not be perceived to compromise, impair or be incompatible with the effective performance of the undersigned's contractual obligations.

1.12 MUNICIPAL FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT

.1 This Tender and supporting documentation shall become the property of the Board. Information in a Tender is subject to potential disclosure to third parties after the award, in accordance with the provisions of the Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990 ("MFOIPOP"). The Bidder acknowledges that any personal or confidential information which Bidders provide is being collected and will be used exclusively for the purposes of analyzing, evaluating and assessing Tenders submitted. Any information a Bidder wishes to identify as proprietary and have maintained as confidential, excluding unit pricing information as well as the total dollar value of the Tender, must be clearly identified as such, and any proposed restrictions on disclosure specified. For the purposes of a report to the Trustees of the Board, pricing information as well as the total dollar value of the Tender may be reported in a public report and will not be considered confidential. In addition, the Board may be ordered by the Information & Privacy Commissioner under the provisions of MFOIPOP to disclose additional information identified by a Bidder as proprietary and confidential.

1.13 LIMITATION OF LIABILITY

.1 By submitting a Tender, the undersigned Bidder acknowledges and agrees that the Board will have no liability or obligation to any Tender except only that of the successful Bidder, if any, awarded the Contract by the Board, in its sole discretion. The Bidder also agrees that if the undersigned is not awarded the Contract, the Board shall be fully and forever released and discharged of all liability and obligations relating to this Request for Tender and all its submission procedures. All Bidders responding to this Request for Tender shall accept the decision of the Board as final and binding.

1.14 SIGNING OF TENDER

The undersigned Bidder is hereby submitting this Stipulated Sum Tender under a Corporate Seal or witnessed by an Individual.

PRINT COMPANY NAME: _____

PRINT ADDRESS OF COMPANY: _____

_____

_____

PRINT NAME OF CONTACT PERSON REGARDING THIS TENDER: _____

CONTACT PERSON'S EMAIL: _____

PHONE NUMBER OF COMPANY: _____

SIGNATURE OF SIGNING OFFICER: _____

DATE: _____

PRINT NAME OF SIGNING OFFICER: _____

PRINT TITLE OF SIGNING OFFICER: _____

SIGNATURE OF WITNESS: _____

PRINT NAME OF WITNESS: _____

AFFIX CORPORATE SEAL (If no individual Witness):

END OF SECTION

Submit this Supplementary Form of Tender at the close of General Tenders.

1.1 TENDER INFORMATION

TENDER CLOSE: April 23rd, 2026 at 2:00:00pm

SUPPLEMENTAL TENDER FORM CLOSE: April 23rd, 2026 at 3:00:00pm

NAME OF PROJECT: St. David CSS Renovation

PROJECT NUMBER: RFT 2026-08

Submission Email Address: stephen.butterworth@wcdsb.ca

1.2 SUPPLEMENTARY LIST OF SUBCONTRACTORS

.1 I/We, the undersigned, propose to use the following Subcontractors and/or suppliers to perform work of this Contract, and I/we confirm that all have been investigated to confirm their reliability and competence to carry out the Work in accordance with the Contract Documents; and I/we agree that no changes from this may be made without the express written approval of the Board.

Extra costs to the Contract will not be considered for a Subcontractor/supplier substitution, regardless of the reason, except where a substitution is requested by the Owner.

Site Services _____

Asphalt Paving _____

Masonry _____

Structural Steel _____

Metal Fabrications _____

Cabinetwork _____

Sprayed Fireproofing _____

Roofing _____

Glazing _____

Gypsum Board and Acoustical Ceilings _____

Ceramic Tile _____

Resilient Flooring _____

Painting _____

Whiteboards and Tackboards _____

Gymnasium Equipment _____

Lift for Disabled _____

Electrical _____

Mechanical _____

1.3 SEPARATE PRICES

.1 Separate Price items do NOT replace or substitute items already in the Bid Documents. Accepted Separate Prices are to be in accordance with Section 002100 (Instructions to Bidders) excluding HST:

.1 All work related to the field house lighting replacements, including but not limited to electrical work, patching, repairing & making good finishes, and as described on drawings:

.2 A101, E2.2, E2.3, E4.2, E4.3

.3 $ _____

1.4 ELECTRICAL UNIT PRICES:

.1 I/We enclose herewith Unit Prices, exclusive of applicable taxes, which are an integral part of the Bid. Unit prices are, in effect, for the duration of this Project's construction period, unit prices are exclusive of applicable taxes.

.2 The following unit costs will apply to all additional or deleted work from the Contract and should include their proportionate share of all labour equipment, materials, accessories, profits, overhead and taxes for a job completely installed. Applications of unit prices will be to the net difference of quantities of individual products and materials in each Proposed Change or Change Order.

.3 The unit prices will be used for additions and deletions. Credit rate for deletions shall be at 80% of original rates listed under sections 1.4, 1.5, 1.6, 1.7, 1.8, 1.9.

.4 Conduit and Cable:

Supply and install the following conduit and cables including fastenings, clips, connectors, coupling boxes, etc. as required based on length as shown.

		MORE WORK
.1	25MM EC/3500mm Length	$_____
.2	2 #12-12mm C/3500mm Length	$_____
.3	3 #12-12mm C/3500mm Length	$_____
.4	2 #10-19mm C/3500mm Length	$_____

.5 3 #10-19mm C/3500mm Length $_____

.6 3 #8- 19mm C/3500mm Length $_____

.5 Receptacles:

Supply and installation of one duplex receptacle, shall include the receptacle box, cover plate, 5000mm of conduit and wiring, including connection to adjacent receptacle and/or outlet box.

MORE WORK

.1 Supply and installation of one duplex receptacle $_____

.6 Light Switches

Supply and installation of light switch shall include the switch box, cover plate, conduit, wiring and connection to box containing the lighting circuit.

MORE WORK

.1 Supply and installation of one 347 volt light switch. $_____

.7 Fire Alarm System:

MORE WORK

.1 Supply and installation of one fire alarm pull station, including conduits, wiring and connections to the nearest fire alarm pull station. (Base conduit and wiring on 1500mm length). $_____

.2 Supply and installation of one fire alarm cone speaker including conduit, wiring and connections to nearest fire alarm cone speaker. (Base conduit and wiring on 1500mm length). $_____

.8 Lighting Fixtures:

Supply and installation of the following lighting fixtures. The supply and installation of lighting fixtures shall include the fixtures, flexible conduit, wiring and connection to nearest outlet box containing 347 and/or 120 volt circuits and the supply and installation of the lamps. (Base conduit and wiring on 4500mm length).

MORE WORK

.1 Supply and installation of one type 'A' fixture $_____

.2 Supply and installation of one type 'B' fixture $_____

.3 Supply and installation of one type 'C' fixture $_____

.4 Supply and installation of one type 'E' fixture $_____

1.5 LABOUR RATES

I/We enclose herewith Labour Rates which are an integral part of the Tender. Labour rates are in effect for the duration of this Project's construction period. The Owner is not obligated to accept Labour rates indicated.

.1 Mechanical Labour Rates

Labour at the following rates should be applied for additions or deletions to the work not covered by unit prices. The prices consist of salary, all agreed local union benefits. The rate quoted represents the net cost to the Contractor, exclusive of overhead and profit and applicable taxes.

.1 Plumbing & Drainage Tradesmen $_____Per Hour

.2 HVAC Piping Tradesman $_____Per Hour

.3 Insulation Tradesmen $_____Per Hour

.4 Sheet Metal Tradesmen

.1 Shop $_____Per Hour

.2 Field $_____Per Hour

.5 (Other) $_____Per Hour

.6 Sprinkler Pipefitter & Installer $_____Per Hour

.7 Sprinkler Work Office/Engineer $_____Per Hour

1.6 SPRINKLER SUB-CONTRACTOR CASA MEMBERSHIP

Sprinkler Contractor shall be a paid member, and in good standing at time of Tender, of the Canadian Automatic Sprinkler Association. Attach membership certificate to this Supplementary Form of Tender.

.1 Labour at the following rates shall be applied for additions or deletions to the work not covered by unit prices. The prices consist of salary, all agreed local union benefits. The rate quoted represents the net cost to the Contractor, exclusive of overhead and profit and applicable taxes.

.1 Journeyman $_____ Per Hour

.2 Foreman $_____ Per Hour

1.7 MECHANICAL MANUFACTURERS AND SUPPLIERS:

I/We enclose herewith a list of Manufacturers and Suppliers to the Mechanical Building Services which is an integral part of the Tender. We hereby agree that the Owner may select from any substitutes that we have offered in our Tender. Our Tender Price is based on the equipment/manufacturers indicated hereunder and we hereby agree that we will not alter the indicated equipment/manufacturers unless specifically authorized by the Owner.

I/We, the undersigned, have inserted below proposed substitutions and prices for the Owner's consideration.

I/We agree that:

.1 all prices submitted take into consideration and allow for changes and adjustments in other work as may be necessary to provide a finished and functional result, unless specifically indicated otherwise;

.2 alternative prices are for work which is not included in the Tender price listed on Form of Tender but which may be substituted by the Owner for work which is included (no price listed shall mean no change in cost);

.3 and that the Board reserves the right to accept or reject any of the prices proposed hereunder;

.4 prices listed hereunder do not include HST

	Product/Equipment Specified	Proposed Substitution	Reduction in Contract Price
.1	_____	_____	$_____
.2	_____	_____	$_____
.3	_____	_____	$_____
.4	_____	_____	$_____
.5	_____	_____	$_____
.6	_____	_____	$_____

Attach additional sheets and supporting documentation, if necessary.

1.8 STANDARDS OF MECHANICAL MATERIALS

BASE BID ITEM	ACCEPTABLE BASIS OF DESIGN	ALTERNATE
Pipe Hangers	Grinnell	Crane, Flamco, Unistrut
Mechanical Grooved Joints	Victaulic	Coupco, Gruvlok
Unions	Crane	Grinnell, Dart
Expansion Joints	Flexonics	Amtrol, Hydroflex Tube Turn
Gate, Globe & Ball Valve	Crane	Jenkins, Toyo/R+W Kitz
Check Valves	Crane	Jenkins, Toyo/R+W Kitz
Plug Valves	DeZurick	NEO
Circuit Balancing Valves	Tour and Andersson	
Butterfly Valves	Crane	Jenkins, Centerline, Kitz,Toyo
Thermal Insulation	Fiberglas Canada	Manson, Knauf Johns-Manville
Pumps & Circulators (Except as noted)	S.A. Armstrong	ITT Fluids
Extended Shaft Coupling VIL Pumps	S.A. Armstrong	ITT Fluids
Strainers	Sarco	Crane, McAvity, Morrison Brass, Braukmann
Suction Guides	S.A. Armstrong	ITT Fluids, Victualic
Automatic Air Vents	Sarco	Amtrol, Braukmann S.A. Armstrong Trerice

BASE BID ITEM	ACCEPTABLE BASIS OF DESIGN	ALTERNATE
Backflow Preventors	Watts	Braukmann, Zurn-Wilkins
Make-Up Assemblies	Watts	S.A. Armstrong, Bell & Gossett, Mueller, Singer
Gauges, Thermometers	Trerice	Ashrcroft, Weiss Weksler, Winters, Wika
Finned Tube Radiation and Convectors	Sigma	Dunham-Bush, Trane Engineered Air
Hot Water Unit Heaters and Cabinet Heaters	Sigma	Dunham-Bush, McQuay, Trane, Engineered Air
Steam Humidifiers	Engineered Air	Dri Steem
Hot Water Boilers	Boderus	
Prefabricated Chimneys	Van-Packer	Metal-Fab, Selkirk, ICC
Water Treatment	Aqurian	Alchem, Mogul, Culligan, Finnan
Fire Dampers	Controlled Air	Air Balance, Canadian Advanced Air, Ruskin
Louvre Insulated Blank-off Panels	Construction Specialties	
Air Terminal Devices (Diffusers, Registers, Grilles By-Pass Boxes)	E.H. Price	Nailor, Kruger, Carnes, Titus Tuttle & Bailey
Air Handling Unit	Engineered Air	McQuay, Trane, Haakon

BASE BID ITEM	ACCEPTABLE BASIS OF DESIGN	ALTERNATE
Heat Recovery Unit	Engineered Air	McQuay, Trane, Haakon
Fan Coil Units	Enviro-Tech	Trane, York
Misc. Fans	Cook	Carnes, Greenheck, ACME, Jenn-Air
Air Filters	Farr	Cambridge, Airguard, Vibron, A.A.F.
Filter Gauges	Dwyer	Airflow Developments (Canada) Ltd.
Dampers (Except low leakage)	Tamco	Johnson, Powers, Kerr Hunt, Honeywell, Barber-Coleman
Low Leakage Dampers	Tamco Series 9000	
ElectricalStarters, Disconnects, MCC's, Alternator Panels	Square 'D'	Allen-Bradley, Klockner-Moeller
Noise and Vibration Control	Vibron	Korfund-Sampson, Vibro-Acoustics, Coolbreeze J.P. Environmental
Electric Pipe Tracing	Raychem	Serge-Baril
Trap Primers	PPP	
Plumbing Fixtures	American Standard	Crane, Kohler, Eljer
Floor Drains, Roof Drains, Cleanouts, Drainage Specialties	Zurn	Ancon J.R. Smith Mifab
Plumbing Trim	Chicago Faucets, Symmons	American Standard, Crane, Cambridge Brass

BASE BID ITEM	ACCEPTABLE BASIS OF DESIGN	ALTERNATE
Toilet Seats	Centoco	Beneke, Moldex, Olsonite
Domestic Water Heaters	Bradford-White	A.O. Smith, John Wood
Fire Extinguishers & Cabinets	National Fire Equipment	Wilson & Cousins
Washfountains	Bradley, Acorn	
S.S. Sinks	Aristaline	Kindred, Architectural Metal
Drinking Fountains	Haws	Sunroc
Emergency Eyewash	Haws	Bradley, Speakman
Mixing Valves	Symmons	Powers
Alarm Valves And Trim	Grinnell, Central	Reliable, Viking, Automatic, Victaulic
Siamese Connections	National Fire Equipment	Wilson & Cousins, Stelpro
Sprinkler Heads	Grinnell, Central	Reliable, Viking, Automatic, Victaulic
Equipment Cabinets	National Fire Equipment	Wilson & Cousins, Stelpro
Excess Pressure Pump	Albany	

1.9 ITEMIZED PRICES

These Itemized Prices will be used to identify the cost of components within the total Bid Sum required for the Owner's own internal auditing, exclusive of HST.

.1 Supply and installation of Fire Alarm System complete with associated components, conduit and wiring as shown on drawing and described in specification.

_____ Dollars ($_____)

.2 Supply and installation of Dimming System complete with associated components, conduit and wiring as shown on drawing and described in specification.

_____ Dollars ($_____)

.3 ~~Supply and installation of Security System complete with associated components, conduit and wiring as shown on drawing and described in specification.~~

~~_____ Dollars ($_____)~~

1.10 SIGNING OF SUPPLEMENTARY FORM OF TENDER

PRINT COMPANY NAME: _____

PRINT NAME OF CONTACT PERSON REGARDING THIS TENDER: _____

PRINT ADDRESS OF COMPANY: _____

_____

_____

PHONE NUMBER OF COMPANY: _____

PRINT NAME OF CONTACT PERSON REGARDING THIS TENDER: _____

CONTACT PERSON'S EMAIL: _____

EMAIL ADDRESS SIGNING OFFICER: _____

SIGNATURE OF SIGNING OFFICER: _____

DATE: _____

PRINT NAME OF SIGNING OFFICER: _____

PRINT TITLE OF SIGNING OFFICER: _____

SIGNATURE OF WITNESS: _____

PRINT NAME OF WITNESS: _____

AFFIX CORPORATE SEAL (If no individual Witness):

END OF SECTION

Waterloo Catholic District School Board

SUPPLEMENTARY CONDITIONS & AMENDMENTS TO STANDARD CONSTRUCTION DOCUMENT CCDC2 -2020 STIPULATED PRICE CONTRACT

(the "Supplementary Conditions")

AGREEMENT, DEFINITIONS, AND GENERAL CONDITIONS

The Standard Construction Document CCDC 2 2020 for a Stipulated Price Contract, English version, consisting of the Agreement Between *Owner* and Contractor, Definitions and General Conditions of the Stipulated Price Contract, Parts 1 to 13 inclusive, governing same, together with the changes with the new *Construction Act* is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications:

AGREEMENT BETWEEN OWNER AND CONTRACTOR

SC1 ARTICLE A-1 – THE WORK

SC1.1	A-1.3	Amend Article A-1.3 by deleting all of the words after *"Contract Documents"* and replace them with the following" "attain .1 *Substantial Performance of the Work* by the __ day of _____ in the year 20__. .2 (if applicable) *Occupancy* by the __ day of _____ in the year 20__, and .3 *Ready-for-Takeover* by the __ day of _____ in the year 20__."

SC2 ARTICLE A-3 – CONTRACT DOCUMENTS

SC2.1	A-3.1	Add the following documents to the list of *Contract Documents* in Article A-3.1: • Waterloo Catholic District School Board's Supplementary Conditions & Amendments to Standard Construction Document CCDC2-2020 Stipulated Price Subcontract, May 2022 Version, including any Special Supplementary Conditions listed in Appendix 2 thereto • *Drawings* • *Specifications* • Performance Bond (Form 32 -Performance Bond under Section 85.1 of the *Act*) • Labour and Material Payment Bond (Form 31 – Labour and Material Payment Bond under Section 85.1 of the *Act*)

SC3 ARTICLE A-4 – CONTRACT PRICE

SC3.1	A-4.4	Delete Article A-4.4 and replace it with the following: "4.4 The *Contract Price* shall remain fixed for the duration of the *Contract Time*, subject only to adjustments as provided for in the *Contract Documents*. For certainty, and without limiting the general application of the preceding sentence, the *Contractor* assumes all risks in connection with cost increases for overhead, *Products, Labour*, and *Construction Equipment* prescribed by the *Contract Documents* for the performance of the *Work*, and the *Contractor* assumes all responsibility for liabilities and additional costs that may arise as a result of the *Contractor's* inclusion of any *Product, Construction Equipment, Supplier*, or *Subcontractor* in its calculation of the *Contract Price*."

SC4 ARTICLE A-5 – PAYMENT

SC4.1	A-5.1	Delete Article A- 5.1 in its entirety including all subparagraphs and replace it with the following:

		"5.1 Subject to the provisions of the *Contract Documents* and the *Construction Act*, the *Owner* shall: .1 make progress payments to the *Contractor* on account of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payments, .2 upon *Substantial Performance of the Work* as certified by the *Consultant*, and on the 61st day after the publication of the certificate of *Substantial Performance of the Work*, in accordance with the *Construction Act*, there being no claims for lien registered against the title to the *Place of the Work* and no written notices of lien delivered to the *Owner*, pay the *Contractor* the unpaid balance of the holdback, together with such *Value Added Taxes* as may be applicable to such payment, less any amount stated in the *Owner's Notice of Non-Payment*. .3 after *Ready-for-Takeover* has been achieved in accordance with the *Contract Documents* and the *Work* is complete, there being no claims for lien registered against the title to the *Place of the Work* and no written notices of lien delivered to the *Owner*, pay the *Contractor* any unpaid balance of the *Contract Price* in accordance with GC 5.5 – FINAL PAYMENT, together with such *Value Added Taxes* as may be applicable to such payment."
SC 4.2	A-5.2.1	Delete subparagraph 5.2.1 in its entirety and replace it with the following: ".1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by arbitration or court, interest shall also become due and payable on such unpaid amounts at the prejudgment interest rate prescribed by the *Courts of Justice Act* (Ontario), as it may change from time to time."

SC5 *NEW* ARTICLE A-9 – CONFLICT OF INTEREST

SC5.1	A-9	Add new ARTICLE A-9 CONFLICT OF INTEREST as follows: "**ARTICLE A-9 CONFLICT OF INTEREST** 9.1 The *Contractor*, *Subcontractors* and *Suppliers* and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services where such activity or the provision of such services creates a conflict of interest (actually or potentially, in the sole opinion of the *Owner*) with the provision of the *Work* pursuant to the *Contract*. The *Contractor* acknowledges and agrees that a conflict of interest, as described in this Article A-9, includes, but is not limited to, the use of *Confidential Information* where the *Owner* has not specifically authorized such use. 9.2 The *Contractor* shall disclose to the *Owner*, in writing, without delay, any actual or potential situation that may be reasonably interpreted as either a conflict of interest or a potential conflict of interest, including the retention of any *Subcontractor* or *Supplier* that is directly or indirectly affiliated with or related to the *Contractor*. 9.3 The *Contractor* covenants and agrees that it will not hire or retain the services of any employee or previous employee of the *Owner* where to do so constitutes a breach by such employee or previous employee of the *Owner's* conflict of interest policy, as it may be amended from time to time, until after completion of the *Work* under the *Contract*. 9.4 It is of the essence of the *Contract* that the *Owner* shall not have direct or indirect liability to any *Subcontractor or Supplier*, and that the *Owner* relies on the maintenance of an arm's-length relationship between the *Contractor* and its

		Subcontractors and Suppliers. Consistent with this fundamental term of the *Contract*, the *Contractor* will not enter into any agreement or understanding with any *Subcontractor or Supplier*, whether as part of any contract or any written or oral collateral agreement, pursuant to which the parties thereto agree to cooperate in the presentation of a claim for payment against the *Owner*, directly or through the *Contractor*, where such claim is, in whole or in part, in respect of a disputed claim by the *Subcontractor or Supplier* against the *Contractor*, where the payment to the *Subcontractor or Supplier* by the *Contractor* is agreed to be conditional or contingent on the ability to recover those amounts or a portion thereof from the *Owner*, failing which the *Contractor* shall be saved harmless from all or a portion of those claims. The *Contractor* acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a conflict of interest. For greater certainty, the *Contractor* shall only be entitled to advance claims against the *Owner* for amounts pertaining to *Subcontractor or Supplier* claims where the *Contractor* has actually paid or unconditionally acknowledged liability for those claims or where those claims are the subject of litigation or binding arbitration between the *Subcontractor or Supplier* and the *Contractor* has been found liable for those claims. 9.5 Notwithstanding paragraph 7.1.2 of GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT, a breach of this Article A-9 by the *Contractor*, any of the *Subcontractors*, or any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall entitle the *Owner* to terminate the *Contract*, in addition to any other rights and remedies that the *Owner* has in the *Contract*, in law, or in equity."

SC6 *NEW* ARTICLE A-10 TIME OF THE ESSENCE

SC6.1	Article A-10	Add the following new Article A-10 as follows: **"ARTICLE A-10 TIME OF THE ESSENCE** 10.1 It is agreed that one of the reasons the *Contractor* was selected by the *Owner* for this *Contract* is the *Contractor's* representation and covenant that it will attain *Substantial Performance, Occupancy (*if applicable), and *Ready-for-Takeover* within the *Contract Time* stated in Article A-1 of this *Contract*. 10.2 The *Contractor* acknowledges and agrees that it is responsible to marshal its resources and those of its *Subcontractors and Suppliers* in a manner which will permit timely attainment of *Substantial Performance, Occupancy (*if applicable), and *Ready-for-Takeover*. The *Contractor* agrees that time is of the essence of this *Contract*."

SC7 DEFINITIONS

Revisions to Existing Definitions		
SC7.1	Consultant	Amend the definition of "Consultant" by adding the following to the end of the definition: "For the purposes of the *Contract*, the terms "*Consultant"*, "*Architect*" and "*Engineer*" shall be considered synonymous."

SC7.2	Payment Legislation/Construction Act	Delete the Definition of *Payment Legislation* and replace it with "Construction Act" as follows: "**Construction Act** *Construction Act* means the *Construction Act*, R.S.O. 1990, c. C.30, as amended, including all regulations passed under it that are enforceable as of the date of execution of this *Contract*. For certainty, the first procurement process for the *Project* (*i.e.*, the "improvement" as that term is defined in the *Construction Act*) was commenced on or after October 1, 2019."
SC7.3	Ready-for-Takeover	Amend the Definition of *Ready-for-Takeover* by deleting all the words after "as verified" and replacing them with "and approved by the *Owner*."
New Definitions		
SC7.4	Adjudication	Add the following definition: "**Adjudication** *Adjudication* means construction dispute interim adjudication as defined under the *Construction Act*."
SC7.5	Close-Out Documentation	Add the following new definition: "**Close-Out Documentation** *Close-Out Documentation* has the meaning given to it under GC 5.4.2."
SC7.6	Confidential Information	Add the following definition: "**Confidential Information** *Confidential Information* means all the information or material of the *Owner* that is of a proprietary or confidential nature, whether it is identified as proprietary or confidential or not, including but not limited to information and material of every kind and description (such as drawings and move-lists) which is communicated to or comes into the possession or control of the *Contractor* at any time, but *Confidential Information* shall not include information that: .1 is or becomes generally available to the public without fault or breach on the part of the *Contractor*, including without limitation breach of any duty of confidentiality owed by the *Contractor* to the *Owner* or to any third party, but only after that information becomes generally available to the public; .2 the *Contractor* can demonstrate to have been rightfully obtained by the *Contractor* from a third party who had the right to transfer or disclose it to the *Contractor* free of any obligation of confidence; .3 the *Contractor* can demonstrate to have been rightfully known to or in the possession of the *Contractor* at the time of disclosure, free of any obligation of confidence; or .4 is independently developed by the *Contractor* without use of any *Confidential Information*."
SC7.7	Construction Schedule	Add the following definition: "**Construction Schedule** *Construction Schedule* means the schedule for the performance of the *Work* provided by the *Contractor*, and approved by the *Owner*, pursuant to GC 3.4.1, including any amendments to the *Construction Schedule* made pursuant to the *Contract Documents*."

SC7.8	Construction Schedule Update	Add the following definition: "**Construction Schedule Update** *Construction Schedule Update* means an update to the *Construction Schedule* by the *Contractor* using Microsoft Project (or other approved scheduling software) that accurately depicts the progress of the *Work* relative to the critical path established in the *Construction Schedule* approved in GC 3.5.1 (or any approved successor *Construction Schedule*), aligns with the currently approved date for *Substantial Performance of the Work*, shows up-to-date projected major activity sequences and durations, and shows any changes or delays in anticipated completion dates of major activities in the *Work* relative to the last *Construction Schedule Update,* and includes the following minimum deliverables: (a) a record version of the updated *Construction Schedule* in .pdf format; (b) an editable copy of the updated original digital file of the *Construction Schedule* (*e.g.*, .mpp format files for Microsoft Project)."
SC7.9	Direct Costs	Add the following definition: "**Direct Costs** *Direct Costs* are the reasonable costs of performing the contract or subcontract including costs related to the additional supply of services or materials (including equipment rentals), insurance and surety bond premiums, and costs resulting from seasonal conditions, that would not have been incurred, but do not include indirect damages suffered, such as loss of profit, productivity or opportunity, or any head office overhead costs."
SC7.10	EFT	Add the following definition: "**EFT** *EFT* has the definition given to it under GC 5.3.2."
SC7.11	Excess Soil	Add the following definition: "**Excess Soil** *Excess Soil* means "excess soil" as that term is defined under section 3 of the *Excess Soil Regulation*."
SC7.12	Excess Soil Regulation	Add the following Definition: "**Excess Soil Regulation** *Excess Soil Regulation* means O. Reg. 406/19: On-Site and Excess Soil Management to the *Environmental Protection Act,* R.S.O. 1990, c. E.19."
SC7.13	Final Pre-Invoice Submission Meeting	Add the following ne definition: "**Final Pre-Invoice Submission Meeting** *Final Pre-Invoice Submission Meeting* has the meaning given to it in GC 5.5.1."

SC7.14	Force Majeure	Add the following definition: "**Force Majeure** *Force Majeure* means any cause, unknown at the effective date of the *Contract* and beyond either party's control, other than financial difficulties, bankruptcy or insolvency, which prevents the performance by a party, or both, of any of their respective obligations under the *Contract* and the event of *Force Majeure* did not arise from a party's default and could not be avoided or mitigated by the exercise of reasonable effort or foresight. *Force Majeure* includes *Labour Disputes*; fire; unusual delay by common carriers or unavoidable casualties; delays in obtaining third-party licences, permits, agreements, or approvals (excluding approvals of any *Subcontractors* or *Suppliers* of any tier); civil disturbance; emergency acts, orders, legislation, regulations or directives of any government or other public authority; acts of a public enemy; war; riot; sabotage; blockage; embargo; lightning; earthquake; adverse weather conditions but only if substantially beyond the weather norms of the *Place of the* Work; acts of God; or declared epidemic or pandemic outbreak or other public health emergency (*e.g*. SARS, COVID-19)."
SC7.15	Install	Add the following definition: "**Install** *Install* means install and connect. *Install* has this meaning whether or not the first letter is capitalized."
SC7.16	Labour Dispute	Add the following definition: "**Labour Dispute** *Labour Dispute* means any lawful or unlawful labour problems, work stoppage, labour disruption, strike, job action, slow down, lock-outs, picketing, refusal to work or continue to work, refusal to supply materials, cessation or work or other labour controversy which does, or might, affect the *Work*."
SC7.17	Notice of Non-Payment	Add the following definition: "**Notice of Non-Payment** *Notice of Non-Payment* means a notice of non-payment of holdback (Form 6) or a notice of non-payment (Form 1.1) under the *Act*, as applicable to the circumstances."
SC7.18	OHSA	Add the following definition: "**OHSA** *OHSA* means the *Occupational Health and Safety Act*, R.S.O. 1990, c. O.1, as amended, including all regulations thereto."
SC7.19	Overhead	Add the following definition: "**Overhead** *Overhead* means all site and head office operations and facilities, all site and head office administration and supervision; all duties and taxes for permits and licenses required by the authorities having jurisdiction at the *Place of the Work*; all requirements of Division 1, including but not limited to submittals, warranty, quality control, calculations, testing and inspections; meals and accommodations; and, tools, expendables and clean-up costs."

SC7.20	Payment Period	Add the following definition: "**Payment Period** *Payment Period* has the definition given to it under GC 5.2.1."
SC7.21	Pre-Invoice Submission Meeting	Add the following definition: "**Pre-Invoice Submission Meeting** *Pre-Invoice Submission Meeting* has the definition given to it under GC 5.2.1."
SC7.22	Proper Invoice	Add the following definition: "**Proper Invoice** *Proper Invoice* means a "proper invoice" as that term is defined in Section 6.1 of the *Act*, including the minimum requirements set out in Appendix "1" of the Supplementary Conditions."
SC7.23	Proper Invoice Submission Date	Add the following definition: "**Proper Invoice Submission Date** *Proper Invoice Submission Date* has the definition given to it under GC 5.2.2.1."
SC7.24	Request for Information (RFI)	Add the following definition: "**Request for Information (RFI)** *Request for Information* or *RFI* means written documentation sent by the *Contractor* to the *Owner* or to the *Owner's* representative or the *Consultant* requesting written clarification(s) and/or interpretation(s) of the *Drawings* and/or *Specifications*, *Contract* requirements and/or other pertinent information required to complete the *Work* of the *Contract* without applying for a change or changes to the *Work*."
SC7.25	Restricted Period	Add the following definition: "**Restricted Period** *Restricted Period* means the (inclusive) period of time between December 1 to January 8 and August 15 to September 15 of any given year throughout the duration of the *Contract*."

GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

Where a General Condition or paragraph of the General Conditions of the *Contract* is deleted by these amendments, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, unless stated otherwise herein, and the numbering of the deleted item will be retained, unused.

PART 1 GENERAL PROVISIONS

SC8 GC 1.1 CONTRACT DOCUMENTS

SC8.1	1.1.3	Delete GC 1.1.3 in its entirety and replace it with the following: "1.1.3 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency, or omission the *Contractor* may discover. Such review by the *Contractor* shall be undertaken with the standard of care described in GC 3.13.1. Except for its obligation to make such review and report the result, the

		Contractor does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. Provided it has exercised the degree of care and skill described in this GC 1.1.3, the *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered through the exercise of the required standard of care."
SC8.2	1.1.4	Delete GC 1.1.4 in its entirety and replace it with the following: "1.1.4 Except for the obligation to complete the review prescribed in GC 1.1.3, and report the results as set out in this GC 1.1.4, the *Contractor* is not responsible for errors, omissions or inconsistencies in the *Contract Documents*. If there are errors, omissions or inconsistencies discovered by or made known to the *Contractor* as part of its review under GC 1.1.3 or at any time during the performance of the *Work*, the *Contractor* shall immediately notify the *Consultant*, and request instructions, a *Supplemental Instruction*, *Change Order*, or *Change Directive*, as the case may require, and shall not proceed with the *Work* affected until the *Contractor* has received corrected or additional information from the *Consultant*. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered through the exercise of care and skill described in GC 3.13."
SC8.3	1.1.5.1	Delete GC 1.1.5.1 and replace with the following: ".1 the order of priority of documents, from highest to lowest, shall be: .1 Supplementary Conditions; .2 the Agreement between the Owner and the Contractor; .3 the Definitions; .4 the General Conditions; .5 Division 01 of the *Specifications* .6 technical *Specifications;* .7 material and finishing schedules; and .8 the *Drawings*.
SC8.4	1.1.5.5	Delete GC 1.1.5.5 and replace with the following: ".5 Noted materials and annotations on the *Drawings* shall govern over the graphic representation of the *Drawings.*"
SC8.5	1.1.5.6 to 1.1.5.8	Add the following new GC 1.1.5.6 to 1.1.5.8 as follows: ".6 Finishes in the room finish schedules shall govern over those shown on the *Drawings.* .7 Architectural drawings shall have precedence over structural, plumbing, mechanical, electrical and landscape drawings insofar as outlining, determining and interpreting conflicts over the required design intent of all architectural layouts and architectural elements of construction, it being understood that the integrity and installation of the systems designed by the *Consultant,* or its sub-*Consultants* are to remain with each of the applicable drawing disciplines. .8 Should reference standards contained in the *Specifications* conflict with the *Specifications*, the *Specifications* shall govern. Should reference standards and *Specifications* conflict with each other or if certain requirements of the *Specifications* conflict with other requirements of the *Specifications*, the more stringent requirements shall govern."

SC8.6	1.1.9	Add the following to the end of GC 1.1.9: "The *Specifications* are divided into divisions and sections for convenience but shall be read as a whole and neither such division nor anything else contained in the *Contract Documents* will be construed to place responsibility on the *Owner* or the *Consultant* to settle disputes among the *Subcontractors* and *Suppliers* with respect to such divisions. The *Drawings* are, in part, diagrammatic and are intended to convey the scope of the *Work* and indicate general and appropriate locations, arrangements and sizes of fixtures, equipment, outlets and other elements. The *Contractor* shall obtain more accurate information about the locations, arrangements and sizes from study and coordination of the *Drawings,* including *Shop Drawings* and shall become familiar with conditions and spaces affecting those matters before proceeding with the *Work.* Where site conditions require reasonable minor changes where the change requires only the additional labour two hours or less, the *Contractor* shall make such changes at no additional cost to the *Owner.* Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the *Contractor* shall include such relocation in the *Work.* The *Contractor* shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible. The schedules are those portions of the *Contract Documents*, wherever located and whenever issued, which compile information of similar content and may consist of drawings, tables and/or lists."
SC8.7	1.1.13	Add new paragraph 1.1.13 as follows: 1.1.13 The *Contractor* shall keep one copy of the current *Contract Documents*, *Supplemental Instructions*, contemplated *Change Orders*, *Change Orders*, *Change Directives*, cash allowance disbursement authorizations, reviewed *Shop Drawings*, submittals, reports and records of meeting at the *Place of the Work*, in good order and available to the *Owner* and *Consultant*."

SC9 GC 1.3 RIGHTS AND REMEDIES

SC9.1	1.3.2	In paragraph 1.3.2 delete the word "No" from the beginning of the paragraph and replace it with the words: "Except with respect to the requirements set out in paragraphs 6.4.1, 6.5.4, 6.6.1 and 8.3.2, no…"

SC10 *NEW* GC 1.5 EXAMINATION OF DOCUMENTS AND SITE

SC10.1	1.5	Add new GC 1.5 – EXAMINATION OF DOCUMENTS AND SITE as follows: "**GC 1.5 EXAMINATION OF DOCUMENTS AND SITE** 1.5.1 The *Contractor* declares and represents that in tendering for the *Work*, and in entering into a Contract with the *Owner* for the performance of the *Work*, it has investigated for itself the character of the *Work t*o be done, based on information generally available from a visit to the *Place of the Work* and to the standard set out under GC 3.14.1 and further represents and warrants and acknowledges that it considered and took into account in the *Contract Price* all reasonably known impacts and restrictions arising from the COVID-19 pandemic, including without limitation corresponding legislative changes that may impact performance of the *Project*, various weather conditions that may affect the *Work*, the availability of supplies and labour or other conditions or risks that the *Contractor* knew about or reasonably ought to have known about prior to the date of the *Contract.* The *Contractor* has assumed and does hereby assume all risk of known conditions now existing or arising in the course of the *Work* which might or could make the Work, or any items

		thereof more expensive in character, or more onerous to fulfil, than was contemplated or known when the tender was made or the *Contract* signed. 1.5.2 The *Contractor* also declares that prior to commencement of the *Work*, where in tendering for the *Work* and in entering into this *Contract*, the *Contractor* relied upon information furnished by the *Owner* or any of its agents or servants respecting the nature or confirmation of the ground at the site of the Work, the Contractor shall review to the standard specified in GC 3.14.1, the accuracy of the information furnished by the *Owner*. If a condition is materially different than what is stated in the information furnished by the *Owner*, the *Contractor* shall, no later than five (5) *Working Days* after the first observation of such condition(s), deliver to the *Owner* and to the *Consultant* a *Notice in Writing* specifying the materially different condition and the *Contractor* shall not proceed with the affected part of the Work until receiving written direction from the *Owner* or the *Consultant*. Where the *Contractor* fails to provide prompt *Notice in Writing* in accordance with this GC 1.5.2, the *Contractor* expressly waives and releases the *Owner* from all claims with respect to the said information with respect to the *Work*.

PART 2 ADMINISTRATION OF THE CONTRACT

SC11 GC 2.2 ROLE OF THE CONSULTANT

SC11.1	2.2.5	Delete paragraph 2.2.4 and replace it with the following: "2.2.4 Upon receipt of an application for payment that satisfies the requirement of a *Proper Invoice*, based on the *Consultant's* observations and evaluation of the *Contractor's* application for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 - PAYMENT, GC 5.3 - PAYMENT, GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK, and GC 5.5 - FINAL PAYMENT. If the *Consultant* determines that the amount payable to the *Contractor* differs from the amount stated in a *Proper Invoice*, the *Consultant* shall notify the *Owner* as provided in GC 5.3.1.2 and prepare a draft of the applicable *Notice of Non-Payment* for the amount in dispute."
SC11.2	2.2.6	In the first sentence of paragraph 2.2.6, delete the words "Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER".
SC11.3	2.2.12	At paragraph 2.2.12, insert the following at end of that paragraph: "If, in the opinion of the *Contractor*, the *Supplemental Instruction* involves an adjustment in the *Contract Price* or in the *Contract Time*, it shall, within ten (10) *Working Days* of receipt of a *Supplemental Instruction*, provide the *Consultant* with a notice in writing to that effect. Failure to provide written notification within the time stipulated in this paragraph 2.2.12 shall be deemed an acceptance of the *Supplemental Instruction* by the *Contractor*, without any adjustment in the *Contract Price* or *Contract Time*."

SC12 GC 2.3 REVIEW AND INSPECTION OF THE WORK

SC12.1	2.3.2	Amend paragraph 2.3.2 by adding the words "and *Owner*" after the words "*Consultant*" in the second and third lines.
SC12.2	2.3.3	Delete paragraph 2.3.3 in its entirety and replace it with the following: "2.3.3 The *Contractor* shall furnish promptly two copies to the *Consultant* and one copy to the *Owner* of all certificates and inspection reports relating to the *Work*."

SC12.3	2.3.4	In paragraph 2.3.4 add the word "review" after the word "inspections" in the first and second lines of paragraph 2.3.4.
SC12.4	2.3.5	In paragraph 2.3.5 in the first line after the word "*Consultant*", add "or the *Owner*".
SC12.5	2.3.8	Add a new paragraph 2.3.8 as follows: "2.3.8 The *Consultant* will conduct periodic reviews of the *Work* in progress, to determine general conformance with the requirements of the *Contract Documents*. Such reviews, or lack thereof, shall not give rise to any claims by the *Contractor* in connection with construction means, methods, techniques, sequences and procedures, nor in connection with construction safety at the *Place of Work*, responsibility for which belongs exclusively to the *Contractor*."

SC13 GC 2.4 DEFECTIVE WORK

SC13.1	2.4.1	Amend GC 2.4.1 by inserting ", the *Owner* and/or its agent" in the first sentence following "rejected by the *Consultant*".
SC13.2	2.4.1.1 to 2.4.1.2	Add new paragraphs 2.4.1.1 and 2.4.1.2 as follows: "2.4.1.1 The *Contractor* shall rectify, in a manner acceptable to the *Consultant* and to the *Owner through the Consultant* all defective work and deficiencies throughout the *Work*, whether or not they are specifically identified by the *Consultant*. 2.4.1.2 The *Contractor* shall prioritize the correction of any defective work, which, in the sole discretion of the *Owner through the Consultant*, adversely affects the day to day operations of the *Owner* or which, in the sole discretion of the *Consultant*, adversely affects the progress of the *Work*."
SC13.3	2.4.2	Delete paragraph 2.4.2 in its entirety and replace it with the following: "2.4.2 The *Contractor* shall promptly pay the *Owner* for costs incurred by the *Owner*, the *Owner's* own forces or the *Owner's* other contractors, for work destroyed or damaged or any alterations necessitated by the *Contractor's* removal, replacement or re-execution of defective work."
SC13.4	2.4.4	Add new paragraph 2.4.4 as follows: "2.4.4 Neither acceptance of the *Work* by the *Consultant* or the *Owner*, nor any failure by the *Consultant* or the *Owner* to identify, observe or warn of defective *Work* or any deficiency in the *Work* shall relieve the *Contractor* from the sole responsibility for rectifying such defect or deficiency at the *Contractor's* sole cost, even where such failure to identify, observe or warn is negligent."

PART 3 EXECUTION OF THE WORK

SC14 GC 3.1 CONTROL OF THE WORK

SC14.1	3.1.2	Amend paragraph 3.1.2 by inserting the words "Construction Schedule" after the word "sequences".
SC14.2	3.1.3 & 3.1.4	Add new paragraphs 3.1.3 and 3.1.4 as follows: "3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the *Contractor* shall verify at the *Place of the Work*, all relevant measurements and

		levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceedings with any part of the affected *Work*. 3.1.4 Notwithstanding the provisions of paragraphs 3.1.1 and 3.1.2, the *Owner* shall have access to the site at all times to monitor all aspects of construction. Such access shall in no circumstances affect the obligations of the *Contractor* to fulfill its contractual obligations."

SC15 GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

SC15.1	3.2.2.1	Delete subparagraph 3.2.2.1 and replace it with "[Intentionally left blank]".
SC15.2	3.2.3.2	Delete subparagraph 3.2.3.2 and replace it with the following: ".2 co-ordinate and schedule the activities and work of other contractors and the *Owner's* own forces, including where other contractors or the Owner's own forces are used after the *Owner* and the *Contractor* cannot reach agreement on the value of a change, with the *Work* of the *Contractor* and connect as specified or shown in the *Contract Documents*."
SC15.3	3.2.3.4	Delete the period at the end of subparagraph 3.2.3.4 and replace it with a semi-colon.
SC15.4	3.2.3.5	Add new subparagraph 3.2.3.5 as follows: ".5 Subject to GC 9.4 CONSTRUCTION SAFETY, for the *Owner's* own forces and for other contractors, assume overall responsibility for compliance with all aspects of the applicable health and safety legislation in force at the *Place of the Work*, including all of the responsibilities of the "constructor", pursuant to the *OHSA*."

SC16 GC 3.3 TEMPORARY WORK

SC16.1	3.3.2	In paragraph 3.3.2, in the second line after the words "where required by law", insert "or by the *Consultant*".

SC17 GC 3.4 CONSTRUCTION SCHEDULE

SC17.1	3.4.1	Delete GC 3.4.1 in its entirety and replace it with the following: "3.4.1 The *Contractor* shall: 1 within five (5) calendar days of receiving written confirmation of the award of the *Contract*, prepare and submit to the *Owner* and the *Consultant* for their review and approval, a construction schedule in the format indicated below that indicates the timing of the activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time* and in accordance with the *Contract Documents.* Such schedule is to include a delivery schedule for *Products* whose delivery is critical to the schedule for the *Work* or are required by the *Contract* to be included in a *Products* delivery schedule. The *Contractor* shall employ construction scheduling software, being the latest version of "Microsoft Project", that permits the progress of the *Work* to be monitored in relation to the critical path established in the schedule. The *Contractor* shall provide such schedule and any successor or revised schedules in

		both original digital file format (*e.g.,* .mpp format for Microsoft Project), portable data file (PDF) format, and hard copy. Once accepted by the *Owner* and the *Consultant*, the construction schedule submitted by the *Contractor* shall become the baseline "**Construction Schedule**"; .2 provide the expertise and resources, such resources including manpower and equipment, as are necessary on a best efforts basis to maintain progress under the accepted baseline *Construction Schedule* or revised construction schedule accepted by the *Owner* pursuant to GC 3.4 CONSTRUCTION SCHEDULE, which includes without limitation, the *Contractor*'s use of all possible and, if necessary, extraordinary measures, to bring the progress of the *Work* into compliance with the *Construction Schedule*, such as (i) increasing the presence of its own forces at the *Place of the Work*; (ii) directing any *Subcontractors* or *Suppliers* to increase their labour forces and equipment; (iii) working overtime and extra shifts; and (iv) providing any additional supervision and coordination of the *Project*, all at the *Contractor's* own cost and expense save and except where GC 6.5.1, 6.5.2, or 6.5.3 apply; and, .3 monitor the progress of the *Work* on a weekly basis relative to the baseline *Construction Schedule*, or any revised *Construction Schedule* accepted by the *Owner* pursuant to GC 3.4 CONSTRUCTION SCHEDULE, deliver a *Construction Schedule Update* to the *Consultant* and *Owner* with each application for payment, at a minimum, or as may be reasonably required by the *Consultant* and advise the *Consultant* and the *Owner* weekly in writing of any variation from the baseline or slippage in the schedule; and, .4 if after applying the expertise and resources required under paragraph 3.4.1.2, the *Contractor* forms the opinion that the slippage in schedule reported in paragraph 3.4.1.3 cannot be recovered by the *Contractor*, it shall, in the same notice provided under paragraph 3.4.1.3, indicate to the *Consultant* if the *Contractor* intends to apply for an extension of *Contract Time* as provided in PART 6 —CHANGES IN THE WORK; and, .5 ensure that the *Contract Price* shall include all costs required to phase or stage the *Work*."
SC17.2	3.4.2	Add new GC 3.4.2 and GC 3.4.3 as follows: "3.4.2 If, at any time, it should appear to the *Owner* or the *Consultant* that the actual progress of the *Work* is behind schedule or is likely to become behind schedule, or if the *Contractor* has given notice of such to the *Owner* or the *Consultant* pursuant to GC 3.4.1.3, the *Contractor* shall, either at the request of the *Owner* or the *Consultant*, or following giving notice pursuant to GC 3.4.1.3, take appropriate steps to cause the actual progress of the *Work* to conform to the schedule or minimize the resulting delay. Within 5 calendar days of the request by the *Owner* or the *Consultant* or the notice being given pursuant to GC 3.4.1.3, the *Contractor* shall produce and present to the *Owner* and the *Consultant* a plan demonstrating how the *Contractor* will recover the performance of the *Work* to align with the currently approved *Construction Schedule*. 3.4.3 The *Contractor* shall not amend the *Construction Schedule* without the prior written consent of the *Owner*.. Any revisions to the *Construction Schedule* approved by the *Owner* shall not be deemed to be an extension of the *Contract Time*. All requests by the Contractor for a revision to the Construction Schedule that include an extension to the *Contract Time* must be approved by the *Owner* through an executed *Change Order*."

SC18 GC 3.5 SUPERVISION

SC18.1	3.5.1	Delete GC 3.5.1 and replace it with the following:

		"3.5.1 The *Contractor* shall employ a competent full-time superintendent, acceptable to the *Owner* and *Consultant*, who shall be in full time attendance at the *Place of the Work* while the *Work* is being performed. The superintendent shall not be changed by the *Contractor* without valid reason which shall be provided in writing and shall not be changed without prior consultation with and agreement by the Owner and the *Consultant*. The *Contractor* shall replace the superintendent within 7 *Working Days* of the *Owner's* written notification, if the superintendent's performance is not acceptable to the *Owner*. The *Contractor* shall provide the *Owner* and the *Consultant* with the names, addresses and telephone numbers of the superintendent referred to in this GC 3.5.1 and other responsible persons who may be contacted for emergency and other reasons during non-working hours. ."
SC18.2	3.5.2	Delete GC 3.5.2 and replace it with the following: "3.5.2 The superintendent, and any project manager appointed by the *Contractor*, shall represent the *Contractor* at the *Place of the Work* and shall have full authority to act on written instructions given by the *Consultant* and/or the *Owner*. Instructions given to the superintendent or the project manager shall be deemed to have been given to the *Contractor* and both the superintendent and any project manager shall have full authority to act on behalf of the *Contractor* and bind the *Contractor* in matters related to the *Contract*."
SC18.3	3.5.3 to 3.5.6	Add new GC 3.5.3, 3.5.4, 3.5.5 and 3.5.6 as follows: "3.5.3 The *Owner* may, at any time during the course of the *Work*, request the replacement of the appointed representative(s). Immediately upon receipt of the request, the *Contractor* shall make arrangements to appoint an acceptable replacement, which is approved by the *Owner*. 3.5.4 The supervisory staff assigned to the *Project* shall also be fully competent to implement efficiently all requirements for scheduling, coordination, field engineering, reviews, inspections and submittals defined in the *Specifications,* and have a minimum 5 years documented "Superintendent/Project Management" experience. 3.5.5 The *Consultant and Owner* shall reserve the right to review the record of experience and credentials of supervisory staff assigned to the *Project* prior to commencement of the *Work*. 3.5.6 A superintendent assigned to the *Work* shall be "Gold Seal Certified" as per the Canadian Construction Association; or a superintendent that can demonstrate the requisite experience and success related to the *Project* to the sole satisfaction of the *Owner*."

SC19 GC 3.6 SUBCONTRACTORS AND SUPPLIERS

SC19.1	3.6.1.1	In paragraph 3.6.1.1 add to the end of the second line the words "including any warranties and service agreements which extend beyond the term of the *Contract*."
SC19.2	3.6.1.2	In subparagraph 3.6.1.2 after the words "the *Contract Documents*" add the words "including any required surety bonding".
SC19.3	3.6.2	Delete paragraph 3.6.2. in its entirety and replace it with the following: "3.6.2 The substitution of any *Subcontractor* and/or *Suppliers* after submission of the *Contractor's* bid will not be accepted unless a valid reason is given in writing to and approved by the *Owner*, whose approval may be arbitrarily withheld. The reason for substitution must be provided to the *Owner* and to the original *Subcontractor* and/or *Supplier* and the *Subcontractor* and/or *Supplier* shall be given the opportunity to reply

		to the *Contractor* and *Owner.* The *Contractor* shall be fully aware of the capability of each *Subcontractor* and/or *Supplier* included in its bid, including but not limited to technical ability, financial stability and ability to maintain the proposed construction schedule."
SC19.4	3.6.7, 3.6.8, 3.6.9 & 3.6.10	Add new paragraphs 3.6.7, 3.6.8, 3.6.9, and 3.6.10 as follows: "3.6.7 The *Contractor* represents and warrants that it has confirmed the availability of its *Subcontractors* for the *Project* and, in particular, for the performance of their respective portions of the *Work* to ensure completion of the *Project* within the *Contract Price* and the *Contract Time*. 3.6.8 The *Consultant* or the *Owner*, acting reasonably, may from time to time require the *Contractor* to remove from the *Project* any personnel of the *Contractor*, including project managers, superintendents or *Subcontractors*. Such persons shall be replaced by the *Contractor* in a timely fashion to the satisfaction of the *Consultant* or the *Owner*, as the case may be, at no cost to the *Owner*. 3.6.9 Where provided in the *Contract*, the *Owner* may assign to the *Contractor*, and the *Contractor* agrees to accept, any contract procured by the *Owner* for *Work* or services required on the *Project* that has been pre-tendered or pre-negotiated by the *Owner*, and upon such assignment, the *Owner* shall have no further liability to any party for such contract. 3.6.10 The *Contractor* covenants that each subcontract or supply contract which the *Contractor* enters into for the purpose of performing the *Work* shall expressly provide for the assignment thereof to the *Owner* (at the option of the *Owner*) and the assumption by the *Owner* of the obligations of the *Contractor* thereunder, upon the termination of the *Contract* and upon written notice by the *Owner* to the other parties to such subcontracts or supply contracts, without the imposition of further terms or conditions; provided, however, that until the *Owner* has given such notice, nothing herein contained shall be deemed to create any contractual or other liability upon the *Owner* for the performance of obligations under such subcontracts or supply contracts and the *Contractor* shall be fully responsible for all of its obligations and liabilities (if any) under such subcontracts and supply contracts."

SC20 GC 3.7 LABOUR AND PRODUCTS

SC20.1	3.7.1	Amend paragraph 3.7.1 by adding the words, "…, agents, *Subcontractors* and *Suppliers*…" after the word "employees" in the first line.
SC20.2	3.7.2	Delete paragraph 3.7.2 and substitute with the following: "3.7.2 *Products* provided shall be new and shall conform to all current applicable specifications of the Canadian Standards Association, Canadian Standards Board or General Standards Board, ASTM, National Building Code, provincial and municipal building codes, fire safety standards, and all governmental authorities and regulatory agencies having jurisdiction at the *Place of the Work*, unless otherwise specified. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*. *Products* brought on to the *Place of the Work* by the *Contractor* shall be deemed to be the property of the *Owner*, but the *Owner* shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said *Products* shall be at the sole risk of the *Contractor*. Workmanship shall be, in every respect, first class and the *Work* shall be performed in accordance with the best modern industry practice."
SC20.3	3.7.4 to 3.7.8	Add new paragraphs 3.7.4, 3.7.5, 3.7.6, 3.7.7, and 3.7.8 as follows:

		"3.7.4 Upon receipt of a *Notice in Writing* from the *Owner,* the *Contractor* shall immediately remove from the *Place of the Work*, tradesmen and labourers or anyone whose conduct jeopardizes the safety of the *Owner's* operations or who are considered by the *Owner* or the *Consultant* to be unskilled or otherwise objectionable. Immediately upon receipt of the request, the *Contractor* shall make arrangements to appoint an acceptable replacement. . 3.7.5 The *Contractor* shall cooperate with the *Owner* and its representatives and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the *Work* at the *Place of the Work*, including cooperation to attempt to avoid *Work* stoppages, trade union jurisdictional disputes and other *Labour Disputes*. Any costs arising from labour disputes shall be at the sole expense of the *Contractor.* 3.7.6 The cost for overtime required beyond the normal *Working Day* to complete individual construction operations of a continuous nature, such as pouring or finishing of concrete or similar work, or *Work* that the *Contractor* elects to perform at overtime rates without the *Owner* requesting it, shall not be chargeable to the *Owner*. 3.7.7 All manufactured *Products* which are identified by their proprietary names or by part or catalogue number in the *Specifications* shall be used by the *Contractor.* No substitutes for such specified *Products* shall be used without the written approval of the *Owner* and the *Consultant*. Substitutes will only be considered by the *Consultant* when submitted in sufficient time to permit proper review and investigation. When requesting approval for the use of substitutes, the *Contractor* shall include in its submission any proposed change in the *Contract Price*. The *Contractor* shall use all proprietary *Products* in strict accordance with the manufacturer's directions. Where there is a choice of proprietary *Products* specified for one use, the *Contractor* may select any one of the *Products* so specified for this use. 3.7.8 Materials, appliances, equipment and other *Products* are sometimes specified by reference to brand names, proprietary names, trademarks or symbols. In such cases, the name of a manufacturer, distributor, *Supplier* or dealer is sometimes given to assist the *Contractor* to find a source *Supplier*. This shall not relieve the *Contractor* from its responsibility from finding its own source of supply even if the source names no longer supplies the *Product* specified. If the *Contractor* is unable to obtain the specified *Product*, the *Contractor* shall supply a substitute product equal to or better than the specified *Product,* as approved by the *Consultant* with no extra compensation. Should the *Contractor* be unable to obtain a substitute *Product* equal to or superior to the specified *Product* and the *Owner* accepts a different Product, the *Contract Price* shall be adjusted accordingly, as approved by the *Consultant*."

SC21 GC 3.8 SHOP DRAWINGS

SC21.1	3.8.1	Delete paragraph 3.8.1 in its entirety and replace with the following: "3.8.1 The *Contractor* shall provide shop drawings as described in the *Contract Documents* and as the *Consultant* may reasonably request."
SC21.2	3.8.3	Delete paragraph 3.8.3 and replace it with the following: "3.8.3 The *Contractor* shall prepare a *Shop Drawings* schedule acceptable to the *Owner* and the *Consultant* prior to the first application for payment. A draft of the proposed *Shop Drawings* schedule shall be submitted by the *Contractor* to the *Consultant* and the *Owner* for approval. The draft *Shop Drawings* schedule shall clearly indicate the phasing of *Shop Drawings* submissions. The *Contractor* shall

		periodically re-submit the *Shop Drawings* schedule to correspond to changes in the *Construction Schedule*."
SC21.3	3.8.5	Delete paragraph 3.8.5 in its entirety and substitute the following: "3.8.5 At the time of providing *Shop Drawings*, the *Contractor* shall advise the *Consultant* in writing of any deviations in *Shop Drawings* from the requirements of the *Contract Documents*. The *Consultant* shall indicate the acceptance of such deviation expressly in writing. Where manufacturers' literature is submitted in lieu of scaled drawings, it shall be clearly marked in ink, to indicate the specific items for which review is requested."
SC21.4	3.8.8 to 3.8.12	Add new paragraphs 3.8.8, 3.8.9, 3.8.10, 3.8.11, and 3.8.12 as follows: "3.8.8 Reviewed *Shop Drawings* shall not authorize a change in the *Contract Price* and/or the *Contract Time*. 3.8.9 Except where the parties have agreed to a different *Shop Drawings* schedule pursuant to paragraph 3.10.3, the *Contractor* shall comply with the requirements for *Shop Drawings* submissions stated in the *Specifications*. 3.8.10 The *Contractor* shall not use the term "by others" on *Shop Drawings* or other submittals. The related trade, *Subcontractor* or *Supplier* shall be stated. 3.8.11 Certain *Specifications* sections require the *Shop Drawings* to bear the seal and signature of a professional engineer. Such professional engineer must be registered in the jurisdiction of the *Place of the Work* and shall have expertise in the area of practice reflected in the *Shop Drawings*. 3.8.12 The *Consultant* will review and return *Shop Drawings* and submittals in accordance with the schedule agreed upon in paragraph 3.10.3, The *Contractor* shall allow the *Consultant* a minimum of 10 *Working Days* to review *Shop Drawings* from the date of receipt. If resubmission of *Shop Drawings* is required, a further 10 *Working Day* period is required for the *Consultant's* review."

SC22 *NEW* GC 3.9 USE OF THE WORK

SC22.1	GC 3.9	Add new GC 3.9 – USE OF THE WORK as follows: "**GC 3.9 USE OF THE WORK** 3.9.1 The *Contractor* shall confine *Construction Equipment*, *Temporary Work*, storage of *Products*, waste products and debris, and operations of employees and *Subcontractors* to limits indicated by laws, ordinances, permits, by the direction of the *Owner* or the *Consultant*, or the *Contract Documents* and shall not unreasonably encumber the *Place of the Work*. 3.9.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety of the *Work*. 3.9.3 The *Owner* shall have the right to enter or occupy the *Place of the Work* in whole or in part for the purpose of placing fittings and equipment, or for other use before *Substantial Performance of the Work*, if, in the opinion of the *Consultant*, such entry and occupation does not prevent or substantially interfere with the *Contractor* in the performance of the *Contract* within the *Contract Time.* Such entry or occupation shall neither be considered as acceptance of the *Work* or in any way relieves the *Contractor* from its responsibility to complete the *Contract*."

"

SC23 *NEW* GC 3.10 CUTTING AND REMEDIAL WORK

SC23.1	GC 3.10	Add new GC 3.10 – CUTTING AND REMEDIAL WORK as follows: "**GC 3.10 CUTTING AND REMEDIAL WORK** 3.10.1 The *Contractor* shall perform the cutting and remedial work required to make the affected parts of the *Work* come together properly. Such cutting and remedial work shall be performed by specialists familiar with the *Products* affected and shall be performed in a manner to neither damage nor endanger the *Work*. 3.10.2 The *Contractor* shall coordinate the *Work* to ensure all cutting and remedial work required is kept to a minimum. 3.10.3 Unless specifically stated otherwise in the *Specifications*, the *Contractor* shall do all cutting and making good necessary for the proper installation and performance of the *Work.* 3.10.4 To avoid unnecessary cutting, the *Contractor* shall lay out its work and advise the *Subcontractors,* when necessary, where to leave holes for installation of pipes and other work."

SC24 *NEW* GC 3.11 CLEAN UP

SC24.1	3.11.1, 3.11.2, 3.11.3, 3.11.4, 3.11.5 & 3.11.6	Add new paragraphs 3.11.1, 3.11.2, 3.11.3, 3.11.4, 3.11.5, and 3.11.6 as follows: "3.11.1 The *Contractor* shall maintain the *Work* in a safe and tidy condition and free rom the accumulation of waste products and debris, other than that caused by the *Owner*, other contractors or their employees. The *Contractor* shall remove accumulated waste and debris at least once a week as a minimum or as required by the nature of the *Work*. 3.11.2 Before applying for *Substantial Performance of the Work*, the *Contractor* shall remove waste products and debris, other than that resulting from the work of the *Owner*, other contractors or their employees, and shall leave the *Place of the Work* clean and suitable for use or occupancy by the *Owner*. The *Contractor* shall remove products, tools, materials, *Construction Equipment,* and *Temporary Work* not required for the performance of the remaining work. 3.11.3 As a condition precedent to submitting its application for final payment, the *Contractor* shall remove any remaining products, tools, materials, *Construction Equipment*, *Temporary Work*, and waste products and debris, other than those resulting from the work of the *Owner*, other contractors or their employees. 3.11.4 The *Contractor* shall clean up garbage during and after construction and maintain the *Place of the Work* in a neat and orderly condition on a daily basis. Prior to leaving the *Place of the Work* and following completion of the *Work*, the *Contractor* shall make good all damage to the building and its components caused by the performance of the *Work* or by any *Subcontractor* or *Supplier*. The *Contractor* shall leave the *Place of the Work* in a clean and finished state; remove all *Construction Equipment* and materials; remove all paint, stains, labels, dirt, etc. from the *Place of the Work*; and touch up all damaged painted areas (if applicable). The *Contractor* shall be responsible for restoring those areas of the *Place of the Work*, impacted by the *Work*, to their original condition."

		3.11.5 Without limitation to or waiver of the *Owner's* other rights and remedies, the *Owner* shall have the right to back charge to the *Contractor* the cost of damage to the site caused by transportation in and out of the *Place of the Work* by the *Contractor*, *Subcontractors* or *Suppliers,* if not repaired before final payment. 3.11.6 The *Contractor* shall dispose of debris at a location and in a manner acceptable to the *Owner* (and to the authorities having jurisdiction at the *Place of the Work* and at the disposal area) and the *Contractor* shall cover containers with tarpaulins."

SC25 *NEW* GC 3.12 EXCESS SOIL MANAGEMENT

SC25.1	GC 3.12	Add new GC 3.12 – EXCESS SOIL MANAGEMENT as follows: "**GC 3.12 EXCESS SOIL MANAGEMENT** 3.12.1 The *Contractor* shall be solely responsible for the proper management of all *Excess Soil* at the *Place of the Work* and for performance of the *Work* in compliance with the rules, regulations and practices required by the *Excess Soil Regulation* until such time as *Ready-for-Takeover* is achieved. Without restricting the generality of the previous sentence, the *Contractor*'s responsibility under this GC 3.12 includes the designation, transportation, tracking, temporary and/or final placement, record keeping, and reporting of all *Excess Soil* in connection with the Work all in compliance with the *Excess Soil Regulation*. 3.12.3 The *Contractor* shall indemnify and save harmless the *Owner*, their agents, officers, directors, administrators, employees, consultants, successors and assigns from and against the consequences of any and all health and safety infractions committed directly by the *Contractor*, or those for whom it is responsible at law, under the *Excess Soil Regulation*, or any environmental protection legislation, including the payment of legal fees and disbursements on a substantial indemnity basis. Such indemnity shall apply to the extent to which the *Owner* is not covered by insurance."

SC26 *NEW* GC 3.13 CONTRACTOR STANDARD OF CARE

SC26.1	3.13	Add a new GC 3.13 – CONTRACTOR STANDARD OF CARE as follows: "**GC 3.13 CONTRACTOR STANDARD OF CARE** "3.13.1 In performing its services and obligations under the *Contract*, the *Contractor* shall exercise the standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that throughout the *Contract,* the performance of the *Contractor's* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of care, skill and diligence in respect of any *Products*, personnel or procedures which it may recommend to the *Owner* or employ on the *Project*. 3.13.2 The *Contractor* further represents, covenants and warrants to the *Owner* that: .1 the personnel it assigns to the *Project* are appropriately experienced; .2 it has a sufficient staff of qualified and competent personnel to replace any of its appointed representatives, subject to the *Owner's* approval, in the event of death, incapacity, removal or resignation; and

		.3 there are no pending, threatened or anticipated claims, liabilities or contingent liabilities that would have a material effect on the financial ability of the *Contractor* to perform its work under the *Contract*."

PART 4 ALLOWANCES

SC27 GC 4.1 CASH ALLOWANCES

SC27.1	4.1.3	In GC 4.1.3 delete the words "through the *Consultant*" and replace them with "in writing."
SC27.2	4.1.4	Delete GC 4.1.4 in its entirety and replace it with the following: "4.1.4 Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, by the *Consultant* at the *Owner*'s direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the *Contract Price* for overhead and profit. Only where the actual cost of the *Work* under all cash allowances exceeds the total amount of all cash allowances shall the *Contractor* be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the *Contract Documents.*"
SC27.3	4.1.7	Delete GC 4.1.7 in its entirety and replace it with the following: "4.1.7 The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order* without any adjustment for the *Contractor's* overhead and profit on such amount."
SC27.4	4.1.8 and 4.1.9	Add new GC 4.1.8 and 4.1.9 as follows: "4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work* to be paid for from cash allowances. 4.1.9 Cash allowances cover the net cost to the *Contractor* of services, *Products*, *Construction Equipment*, freight, unloading, handling, storage, installation, provincial sales tax, and other authorized expenses incurred in performing any *Work* stipulated under the cash allowances but does not include any *Value Added Taxes* payable by the *Owner* and the *Contractor."*

PART 5 PAYMENT

SC28 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

SC28.1	5.1	Delete GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER and all paragraphs thereunder, including any reference to GC 5.1 throughout the *Contract*.

SC29 GC 5.2 APPLICATIONS FOR PAYMENT

SC29.1	5.2.1	Delete GC 5.2.1 and replace it with the following: "5.2.1 Upon execution of the *Contract*, and in any event prior to the *Contractor* submitting its first application for payment, the *Owner* shall issue a purchase order to the *Contractor* for the performance of the *Contract*. The number indicated on such purchase order must be clearly identifiable on all applications for payment.

		Applications for payment shall be dated the last day of each month or an alternative day of each month agreed to in writing by the parties, with each month representing one payment period under the *Contract* (each a "**Payment Period**"). Within 3 calendar days of the end of each *Payment Period*, the *Contractor* will submit a draft application for payment to the *Owner* and the *Consultant*. Upon receipt of the draft application for payment, and within 7 calendar days, a representative of each of the *Contractor*, *Owner*, and the *Consultant* shall attend a meeting to discuss and review the work completed during the *Payment Period*, including quantities, if applicable (the "**Pre-Invoice Submission Meeting**"). In the event that the scheduled date for the *Pre-Invoice Submission Meeting* is not a *Working Day*, the *Pre-Invoice Submission Meeting* shall occur on the next *Working Day*. The *Contractor* shall bring with it to the *Pre-Invoice Submission Meeting* the following: .1 a copy of the draft application for payment; .2 any documents the *Contractor* is required to bring to the *Pre-Invoice Submission Meeting* as stipulated in the *Contract Documents* or as reasonably requested by the *Owner*; and .3 any other documents reasonably requested, in advance, by the *Owner* or the *Consultant*."
SC29.2	5.2.2	Delete GC 5.2.2 in its entirety and replace it with the following: "5.2.2 Applications for payment shall be given in accordance with the following requirements: .1 Within 5 calendar days following the *Pre-Invoice Submission Meeting*, the *Contractor* shall deliver its application for payment to the *Owner* and to the *Consultant* for *Work* performed during the *Payment Period* ("**Proper Invoice Submission Date**") subject to the following: .1 if the fifth calendar day following the *Pre-Invoice Submission Meeting*, to which an invoice relates falls on a day that is not a *Working Day*, the *Proper Invoice Submission Date* shall be deemed to fall on the next *Working Day*. .2 The application for payment must be delivered to the *Owner/WCDSB Lead* and to the *Consultant* in the same manner as a *Notice in Writing* during the hours of 9:00 am to 4:00pm (EST) on the *Proper Invoice Submission Date*. Delivery to the *Owner* shall be to the following email address: .3 If an application for payment is received after 4:00 p.m. (EST) on the applicable *Proper Invoice Submission Date*, the application for payment will not be considered or reviewed by the *Owner* and *Consultant* until the next *Proper Invoice Submission Date.* Notwithstanding the foregoing, the *Owner* in its sole and absolute discretion may elect to accept an application for payment submitted after 4:00 p.m. on the applicable *Proper Invoice Submission Date*; however, such acceptance shall not be construed as a waiver of any of its rights or waive or release the *Contractor*'s obligations to strictly comply with the requirements prescribed in this subparagraph 5.2.2.3. .4 No applications for payment shall be accepted by the *Owner* prior to the *Proper Invoice Submission Date*. .5 All applications for payment shall include all of the requirements for a *Proper Invoice* prescribed by the *Construction Act* and this *Contract* and be dated the last day of the applicable *Payment Period*;"

SC29.3	5.2.3	Delete GC 5.2.3 and replace it with the following: "5.2.3 The amount claimed shall be for the value, proportionate to the amount of the *Contract*, of *Work* performed and *Products* delivered and incorporated into the *Work* as of the last date of the applicable *Payment Period*. Materials may also be deemed to be supplied to an improvement, for payment purposes, when, in the *Owner's* opinion, they are placed and properly secured on the land on which the improvement is made, or placed upon land designated by the *Owner* or agent of the *Owner*, but placing the materials on the land so designated does not, of itself, make that land subject to a lien. No amount claimed shall include products delivered and incorporated into the work, unless the products are free and clear of all security interests, liens and other claims of third parties. No amount claimed shall include *Products* delivered to the *Place of the Work* unless the *Products* are free and clear of all security interests, liens, and other claims of third parties."
SC29.4	5.2.4	After the word "*Consultant*" in GC 5.2.4 add the words "and the *Owner*"
SC29.5	5.2.5	After the word "*Consultant*" in GC 5.2.5 add the words "or the *Owner*".
SC29.6	5.2.6	In GC 5.2.6, delete the word "*Consultant*" and replace it with "*Owner*".
SC29.7	5.2.9	Add new 5.2.9 as follows: "5.2.9 The *Contractor* shall prepare and maintain current as-built drawings which shall consist of the *Drawings* and *Specifications* revised by the *Contractor* during the *Work*, showing changes to the *Drawings* and *Specifications*, which current as-built drawings shall be maintained by the *Contractor* and made available to the *Consultant* for review with each application for progress payment. The *Consultant* shall recommend to the *Owner* that the *Owner* retain a reasonable amount for the value of the as-built drawings not presented for review."

SC30 GC 5.3 PAYMENT

SC30.1	5.3.1	Delete GC 5.3.1 in its entirety, including all subparagraphs thereunder, and replace it with the following: "5.3.1 After receipt by the *Owner* and the *Consultant* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 - APPLICATIONS FOR PAYMENT: .1 the *Consultant* will either: (a) issue to the *Owner* with a copy to the *Contractor*, a progress payment certificate in the amount applied for by the *Contractor* in the *Proper Invoice*, or (b) issue to the *Owner*, with a copy to the *Contractor*, a certificate for payment for an amount determined by the *Consultant* to be properly due to the *Contractor* after applying any credits, withheld amounts, or other set-offs which the *Consultant* has determined that the *Owner* is entitled to notwithstanding any notice of dispute or disagreement that the *Contractor* may have served, along with the *Consultant's* reasons why an amount other than what is claimed in the *Proper Invoice* is properly due to the *Contractor*, which finding the *Owner* may accept or amend prior to the *Owner* issuing a *Notice of Non-Payment*, if any, in accordance with GC 5.3.2;

		.2 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 PAYMENT, (a) in the amount stated in the certificate for payment, or (b) in the amount stated in the certificate for payment less such amount stated in the *Owner's Notice of Non-Payment* issued pursuant to GC 5.3.3, on the 28th calendar day after receipt of a *Proper Invoice*, unless such 28th calendar day lands on a day that is other than a *Working Day*, in which case payment shall be made on the next *Working Day* after such 28th day."
SC30.2	5.3.2 to 5.3.7	Add new paragraphs 5.3.2, 5.3.3, 5.3.4, 5.3.4, 5.3.5, 5.3.6, and 5.3.7 as follows: 5.3.2 All payments to the *Contractor* shall be processed using electronic funds transfer ("**EFT**") and deposited directly to the *Contractor's* bank account unless agreed to otherwise by the *Contractor* and the *Owner* in writing. Prior to the *Contractor* submitting its first application for payment, the *Owner* and the *Contractor* shall exchange such information as is necessary to facilitate *EFT* payments. 5.3.3 In the event that the application for payment delivered by the *Contractor* pursuant to GC 5.2 - APPLICATIONS FOR PAYMENT does not include the requirements for a *Proper Invoice* or where the *Owner* disputes the amount claimed as payable in the *Proper Invoice*, then the *Owner* shall within 14 calendar days of receipt of the application for payment, issue a *Notice of Non-Payment* (Form 1.1). 5.3.4 Where the *Owner* has delivered a *Notice of Non-Payment*, the *Owner* and the *Contractor* shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a *Notice of Non-Payment*, despite good faith efforts by both parties and the assistance of the *Consultant*, the *Owner* and the *Contractor* cannot resolve the dispute, either party may commence an *Adjudication* in accordance with the procedures set out in the *Construction Act.* Any portion of the *Proper Invoice* which is not the subject of the *Notice of Non-Payment* shall be payable within the time period set out in GC 5.3.1.2. 5.3.5 Provided that the *Owner* complies with its obligations under the *Construction Act*, and subject to any interim determination of an adjudicator in accordance with any *Adjudication*, and where applicable, a final determination made in accordance with the dispute resolution processes prescribed by this *Contract*, the *Owner* shall be entitled to claim in a *Notice of Non-Payment* a right to deduct from or, set off against, any payment of the *Contract Price*: .1 any amount expended by the *Owner* in exercising the *Owner's* rights under this *Contract* to perform any of the *Contractor's* obligations that the *Contractor* has failed to perform; .2 any damages, costs or expenses (including, without limitation, reasonable legal fees and expenses) incurred by the *Owner* as a result of the failure of the *Contractor* to perform any of its obligations under the *Contract*; .3 any other amount owing from the *Contractor* to the *Owner* under this *Contract*. 5.3.6 The amounts disputed and described under the *Notice of Non-Payment* shall be held by the *Owner* until all disputed amounts of the *Proper Invoice* have been resolved pursuant to PART 8 – DISPUTE RESOLUTION. 5.3.7 The *Contractor* represents, warrants, and covenants to the *Owner* that it is familiar with its prompt payment and trust obligations under the *Construction Act* and will

		take all required steps and measures to ensure that it complies with the applicable prompt payment and trust provisions under the *Construction Act* including, without limitation, section 8.1 of the *Construction Act*. Evidence of the *Contractor's* compliance under this GC 5.3.7, including evidence demonstrating that all *EFTs* by the *Owner* to the *Contractor* are kept in a bank account in the *Contractor's* name will be made available to the *Owner* within 5 *Working Days* following receipt by the *Contractor* of a *Notice in Writing* making such request."

SC31 GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK- AND PAYMENT OF HOLDBACK

SC31.1	GC 5.4	Delete GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK in its entirety and replace it with the following: "**GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK** 5.4.1 When the *Contractor* considers that *Substantial Performance of the Work* has been achieved, the *Contractor* shall prepare and submit to the *Consultant* and the *Owner* a comprehensive deficiency list of items to be completed or corrected, including any incomplete *Close-Out Documentation*, and apply for a review by the *Consultant* and the *Owner* to establish *Substantial Performance of the Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*. 5.4.2 Prior to, or as part of its written application for *Substantial Performance of the Work* the *Contractor* shall submit to the *Consultant* submit to the *Consultant* all closeout documentation required by the *Contract Documents*, including but not limited to, warranties, manuals, guarantees, as-built drawings and all other relevant literature from suppliers and manufacturers including, but not limited to, where applicable (the "**Close-Out Documentation**"): .1 equipment, maintenance, and operations manuals; .2 equipment specifications, data sheets and brochures, parts lists and assembly drawings, performance curves and other related data; .3 line drawings, value charts and control sheets sequences with description of the sequence of operations; .4 warranty documents; .5 guarantees; .6 certificates; .7 service and maintenance reports; .8 *Specifications*; .9 *Shop Drawings*; .10 coordination drawings; .11 testing and balancing results and reports; .12 *Commissioning* and quality assurance documentation; .13 distribution system diagrams; .14 spare parts; .15 samples; .16 existing reports and correspondence from authorities having jurisdiction in the *Place of the Work*; .17 inspection certificates; .18 red-lined record drawings from the construction trailer in two copies and .19 other materials or documentation required to be submitted under the *Contract.* 5.4.3 The *Consultant* will review the *Work* to verify the validity of the application and shall promptly, and in any event, no later than 30 calendar days after receipt of the *Contractor's* complete deficiency list and application:

.1 prepare a final deficiency list incorporating all items to be completed or corrected, including any incomplete or unsubmitted *Close-Out Documentation*. Each item shall have an indicated value for correction or completion and the determination of the total value of such items shall be determined pursuant to GC 5.8 – DEFICIENCY HOLDBACK. The final deficiency list complete with values is to be included with the *Consultant's* draft verification and shall be reviewed with the *Owner* prior to the *Consultant* rendering a determination in accordance with GC 5.4.3.2

.2 having completed the requirements set out in GC 5.4.3.1,

(a) the *Consultant* shall advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or

(b) the *Consultant* shall state the date of *Substantial Performance of the Work* in a certificate and issue a copy of that certificate to each the *Owner* and the *Contractor.*

5.4.4 Following the issuance of the certificate of *Substantial Performance of the Work* referenced in subparagraph 5.4.3.2(b):

.1 The Contractor shall publish, in a construction trade newspaper in the area of the location of the Work, a copy of the certificate of S*ubstantial Performance of the Work* referred to in GC 5.4.2.2(b) within seven (7) calendar days of receiving a copy of the certificate signed by the *Consultant*, and the *Contractor* shall provide suitable evidence of the publication to the *Consultant* and the *Owner*. If the Contractor fails to publish such notice, the Owner shall be at liberty to publish said certificate and back-charge the Contractor its reasonable costs for doing so;

.2 The *Contractor* shall complete the *Work* within forty (40) calendar days of the date certified as the date of *Substantial Performance of the Work*;

.3 Notwithstanding any other provisions of the *Contract,* no payments will be processed between *Substantial Performance of the Work* and *Ready-for-Takeover*;

.4 The *Owner* reserves the right to contract out any or all unfinished *Work* if it has not been completed within forty (40) days of *Substantial Performance of the Work* using, without limitation, the funds retained in accordance with GC 5.8 - DEFICIENCY HOLDBACK, without prejudice to any other right or remedy and without affecting the warranty period. The cost to the *Owner* of completing the *Work* including *Owner* and *Consultant* wages and materials shall be deducted from the *Contract Price.*

5.4.5 After publication of the certificate of the *Substantial Performance of the Work*, and provided that the *Contractor* has completed performance of the *Work* within the 40 calendar days following certification of *Substantial Performance of the Work*, the *Contractor* may submit an application for payment of the outstanding *Construction Act* holdback amount, which application for payment shall:

.1 include all of the requirements listed in EXHIBIT "1" - PROJECT SPECIFIC REQUIREMENTS FOR A PROPER INVOICE, as applicable to the application for payment of the holdback amount; and

.2 include a statement that the *Contractor* has not received any written notices of lien or any claims for liens from any *Subcontractor* or *Supplier.*

		5.4.6 The *Construction Act* holdback amount shall become due and payable the day immediately following the expiration of the holdback period prescribed by the *Construction Act* (in most cases being the 61st calendar day following the publication of the certificate of *Substantial Performance of the Work* referred to in GC 5.4.4.1), subject to the occurrence of any of the following: .1 the preservation of a lien in respect of the *Project* that has not been satisfied, discharged or otherwise provided for in accordance with the *Construction Act*; .2 receipt by the *Owner* of a written notice of lien that has not been satisfied, discharged or otherwise provided for in accordance with the *Construction Act*; or .3 prior to the expiry of 40 calendar days following the publication of the certificate of *Substantial Performance of the Work,* the *Owner* publishes a *Notice of Non-Payment* of holdback in accordance with the *Construction Act* (Form 6), setting out the amount of holdback that will not be paid, which may include non-payment to secure the correction of deficiencies and/or the completion of the *Work*. 5.4.7 Notwithstanding the *Owner's* obligation to make payment of the holdback amount in accordance with GC 5.4.6, the processing of such payment remains subject to the *Owner's* internal *EFT* timing limitations. The *Owner* covenants, and the *Contractor* agrees, that payment of the holdback shall be made by *EFT* at the first opportunity during the *Owner's* normal processing of *EFTs* upon the holdback becoming due in accordance with GC 5.4.6..

SC32 GC 5.5 FINAL PAYMENT

SC32.1	GC 5.5	Delete GC 5.5 in its entirety, including all subparagraphs thereunder and replace it with the following: "5.5.1 When *Ready-for-Takeover* has been achieved in accordance with GC 12.1 – READY-FOR-TAKEOVER and the *Contractor* considers the *Work* is complete, and after the *Contractor*, the *Owner*, and the *Consultant* have attended a *Pre-Invoice Submission Meeting* analogous to the requirement in GC 5.2.1 (the "***Final Pre-Invoice Submission Meeting***"), the *Contractor* may submit an application for final payment to the *Owner* and to the *Consultant*, which application for payment shall: .1 include all of the requirements set out in GC 5.2.2, including without limitation those requirements listed in APPENDIX "1" - PROJECT SPECIFIC REQUIREMENTS FOR A PROPER INVOICE that are specific to an application for final payment; and .2 if applicable, (a) a certificate from the *Consultant* or written confirmation from the *Owner* that the deficiencies or incomplete *Work* waived by the *Owner* pursuant to GC 12.1.2 have been fully rectified as of the date of the *Contractor's* application for final payment, and/or (b) written confirmation, signed by the *Owner* and the *Contractor,* that the *Contract Price* has been reduced by a specified amount in exchange for the *Owner* releasing the *Contractor* of its obligation to rectify the certain outstanding deficiencies and/or incomplete *Work* waived by the *Owner* pursuant to GC 12.1.2, as detailed in such written confirmation.

5.5.2 No later than 5 calendar days prior to the *Final Pre-Invoice Submission Meeting*, the *Contractor* will, if not already provided, submit to the *Consultant* all *Close-Out Documentation*.

5.5.3 Delivery of all *Close-Out Documentation* is a requirement for the *Proper Invoice* for final payment.

5.5.4 After receipt by the *Owner* and the *Consultant* of an application for payment submitted by the *Contractor* that is a *Proper Invoice* and by no later than 10 calendar days after the receipt of the *Proper Invoice*:

.1 the *Consultant* will either:

(a) issue to the *Owner* with a copy to the *Contractor*, a progress payment certificate in the amount applied for by the *Contractor* in the *Proper Invoice*, or

(b) deliver a finding to the *Owner* with reasons why an amount other than what is claimed in the *Proper Invoice* is properly due to the *Contractor*, which finding the *Owner* may accept or amend prior to issuing a *Notice of Non-Payment* (Form 1.1), if any, in accordance with GC 5.5.2;

.2 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 PAYMENT,

(a) in the amount stated in the certificate for payment, or

(b) in the amount stated in the certificate for payment less such amount stated in the *Owner's Notice of Non-Payment* issued pursuant to GC 5.5.5,

on the 28th calendar day after receipt of a *Proper Invoice*, unless such 28th calendar day lands on a day that is other than a *Working Day*, in which case payment shall be made on the next *Working Day* after such 28th day.

5.5.5 In the event that the application for final payment delivered by the *Contractor* does not include the requirements of GC 5.5.1 (including the requirements for a *Proper Invoice*) and GC 5.5.2 or where the *Owner* disputes the amount claimed as payable in the *Proper Invoice*, then the *Owner* shall within 14 calendar days of receipt of the application for payment, issue a *Notice of Non-Payment*. Where the *Owner* has delivered a *Notice of Non-Payment*, as specified under this GC 5.5.5, the *Owner* and the *Contractor* shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a *Notice of Non-Payment*, despite good faith efforts by both parties with the assistance of the *Consultant*, the *Owner* and the *Contractor* cannot resolve the dispute, either party may commence an *Adjudication* in accordance with the procedures set out in the *Construction Act*. Any portion of the *Proper Invoice* which is not the subject of the *Notice of Non-Payment* shall be payable within the time period set out in GC 5.5.4.2.

5.5.6 Subject to the provisions of the *Construction Act* and any other rights conferred on the *Owner* at law or under this *Contrac*t to withhold payment or backcharge or set-off against payment, the *Owner* shall pay the amount payable under a *Proper Invoice* for final payment in accordance with the *Construction Act*.

5.5.7 When the *Consultant* issues certificate of completion in accordance with GC 5.5.4.1, the *Consultant* shall also issue a certificate for release of any holdback for finishing work amount. In accordance with the *Construction Act,* the *Owner* may retain any amounts which are required by law to satisfy any liens against the *Work*, in respect of any third party claims made to the *Owner* in respect of the *Contract* or the *Work*, and in respect of any claims the *Owner* may have against the *Contractor*. Subject to

		the foregoing, the *Owner* shall release the holdback in accordance with the *Construction Act.*"

SC33 GC 5.6 DEFERRED WORK

SC33.1	5.6.1	Delete paragraph 5.6.1 and replace with the following: "5.6.1 If because of conditions reasonably beyond the control of the *Contractor*, there are items of work that cannot be performed, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, subject to its requirement to issue a *Notice of Non-Payment* under the *Construction Act*, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such remaining work. The remaining work shall be valued as deficient work as defined in GC 5.8.1."

SC34 *NEW* GC 5.8 DEFICIENCY HOLDBACK

SC34.1	5.8.1	Add new GC 5.8 – DEFICIENCY HOLDBACK as follows: "**GC 5.8 DEFICIENCY HOLDBACK** 5.8.1 Notwithstanding any provisions contained in the *Contract Documents* concerning certification and release of monies to the *Contractor*, the *Owner* reserves the right to establish a deficiency holdback, at the time of the review for *Substantial Performance of the Work,* based on a 200% dollar value of the deficiencies listed by the *Consultant*. 5.8.2 In performing the calculation under GC 5.8.1, .1 no individual deficiency will be valued at less than five hundred dollars ($500.00); and .2 for any *Close-Out Documentation* not submitted in advance of or as part of the *Contractor's* application for *Substantial Performance of the Work*, an amount shall be retained by the *Owner* as part of the deficiency holdback that is equal to the estimated time and material costs to retain a third-party to re-create the applicable *Close-Out Documentation*, as determined by the *Consultant*, until such time as the applicable *Close-Out Documentation* is submitted and approved. 5.8.3 The deficiency holdback shall be due and payable to the *Contractor* on the 61st day following completion of all of the deficiencies listed by the *Consultant*, there being no claims for lien registered against the title to the *Place of the Work* issued in accordance with the *Construction Act*, and less any amounts disputed under an *Owner*'s *Notice of Non-Payment* (Form 1.1)."

PART 6 CHANGES IN THE WORK

SC35 GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

SC35.1	6.1.2	Add the following to the end of GC 6.1.2:

		"This requirement is of the essence and it is the express intention of the parties that any claims by the *Contractor* for a change in the *Contract Price* and/or *Contract Time* shall be barred unless there has been strict compliance with PART 6 - CHANGES IN THE WORK. No verbal dealings between the parties and no implied acceptance of alterations or additions to the *Work* and no claims that the *Owner* has been unjustly enriched by any alteration or addition to the *Work*, whether in fact there is any such unjust enrichment or not, shall be the basis of a claim for additional payment under this *Contract,* an increase to the *Contract Price*, or a claim for any extension of the *Contract Time*."
SC35.2	6.1.3 to 6.1.8	Add new paragraphs 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7 and 6.1.8 as follows: "6.1.3 The *Contractor* agrees that changes resulting from construction coordination, including but not limited to, site surface conditions, site coordination, and *Subcontractor and Supplier* coordination are included in the *Contract Price* and the *Contractor* shall be precluded from making any claim for a change in the *Contract Price* as a result of such changes. 6.1.4 Labour costs shall be actual, prevailing rates at the *Place of the Work* paid to workers, plus statutory charges on labour including WSIB, unemployment insurance, Canada pension, vacation pay, hospitalization and medical insurance. The *Contractor* shall provide these rates, when requested by the *Consultant*, for review and/or agreement. 6.1.5 Quotations for changes to the *Work* shall only include *Direct Costs* and be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from *Subcontractors* and *Suppliers,* submitted in a format acceptable to the *Consultant* and shall include any *Direct Costs* associated with extensions in *Contract Time.* 6.1.6 When both additions and deletions covering related *Work* or substitutions are involved in a change to the *Work*, payment, including *Overhead* and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the *Work*. 6.1.7 No extension to the *Contract Time* shall be granted for changes in the *Work* unless the *Contractor* can clearly demonstrate that such changes significantly alter the overall construction schedule submitted at the commencement of the *Work.* Extensions of *Contract Time* and all associated costs, if approved, shall be included in the relevant *Change Order.* 6.1.8 When a change in the *Work* is proposed or required, the *Contractor* shall within 10 calendar days submit to the *Consultant* for review a claim for a change in *Contract Price* and/or *Contract Time.* Should 10 calendar days be insufficient to prepare the submission, the *Contractor* shall within 5 calendar days, advise the *Consultant* in writing of the proposed date of submission of the claim. Claims submitted after the dates prescribed herein will not be considered."

SC36 GC 6.2 CHANGE ORDER

SC36.1	6.2.1	In paragraph 6.2.1 after the last sentence in the paragraph add the following: "The adjustment in the *Contract Time* and the *Contract Price* shall include an adjustment, if any, for delay or for the impact that the change in the *Work* has on the *Work* of the *Contractor*, and once such adjustment is made, the *Contractor* shall be precluded from making any further claims for delay or impact with respect to the change in the *Work.*"

SC36.2	6.2.3 to 6.2.5	Add new paragraphs 6.2.3, 6.2.4, and 6.2.5 as follows: "6.2.3 The value of a change shall be determined in one or more of the following methods as directed by the *Consultant*: .1 by estimate and acceptance of a lump sum; .2 by negotiated unit prices which include the *Contractor's* overhead and profit, or; .3 by the actual *Direct Cost* to the *Owner,* such costs to be the actual cost after all credits included in the change have been deducted, plus the following ranges of mark-up on such costs: .1 for *Change Orders* with a value of $0 to $15,000 the total *Subcontractor/Supplier* mark-up including *Overhead* and profit shall be 10% and the total *Contractor* mark-up including overhead and profit shall be 5%. .2 for *Change Orders* in excess of $15,000, the total *Subcontractor/Supplier* mark-up including *Overhead* and profit shall be 5% and the total *Contractor* mark-up including *Overhead* and profit shall be 3%. 6.2.4 All quotations shall include *Direct Costs* and be submitted in a complete manner listing: .1 quantity of each material, .2 unit cost of each material, .3 man hours involved, .4 cost per hour, .5 *Subcontractor* quotations submitted listing items 1 to 4 above and item 6 below. .6 mark-up. 6.2.5 The *Owner* and the *Consultant* will not be responsible for delays to the *Work* resulting from late, incomplete or inadequately broken-down valuations submitted by the *Contractor.*"

SC37 GC 6.3 CHANGE DIRECTIVE

SC37.1	6.3.6.1	Amend paragraph 6.3.6.1 by deleting the final period and adding the following: ".1 Ten percent (10%) for profit plus five percent (5%) for overhead on work by the *Contractor's* own forces up to the value of $15,000 and five percent (5%) for profit plus three percent (3%) for *Overhead* on work by the *Contractor's* own forces in excess of $15,000 and, .2 Ten percent (10%) fee on amounts paid to *Subcontractors* or *Suppliers* under subparagraph 6.3.7.9 for changes up to the value of $15,000 and five percent (5%) on changes over $15,000. Unless a *Subcontractor's* or *Supplier's* price has been approved by the *Owner,* the *Subcontractor* or *Supplier* shall be entitled to its actual net cost as determined in accordance with paragraph 6.3.7, plus ten percent (10%) for profit and five percent (5%) for *Overhead* on such actual net cost for changes in the *Work*, up to the value of $15,000 and five percent

		(5%) for profit and three percent (3%) for overhead on such actual net cost changes in the *Work* in excess of $15,000."
SC37.2	6.3.6.2	Delete paragraph 6.3.6.2 and replace it with the following: ".2 If a change in the *Work* results in a net decrease in the *Contract Price*, the amount of the credit shall be the net cost, without deduction for *Overhead* or profit."
SC37.3	6.3.7.1(4)	Delete GC 6.3.7.1(4).
SC37.4	6.3.7.7	Amend GC 6.3.7.7 by deleting the words "described in paragraph 6.3.7.1" and replacing them with "approved by the *Owner* in writing and in advance of any such expenses being incurred;"
SC37.5	6.3.7.9	Amend GC 6.3.7.9 by adding the following to the end of the paragraph: "…when specifically requested by the *Owner* or as directed by the *Consultant*;".
SC37.6	6.3.7.10	Amend GC 6.3.7.10 by adding the following to the end of the paragraph: ", provided that such amounts are not caused by negligent acts, omissions, or default of the *Contractor* or *Subcontractor*;".
SC37.7	6.3.7.13	Delete GC 6.3.7.13.
SC37.8	6.3.7.15	Delete GC 6.3.7.15.
SC37.9	6.3.7.17	Delete GC 6.3.7.17 in its entirety including all subparagraphs.
SC37.10	6.3.11	Delete GC 6.3.11 and replace it with the following: "6.3.11 The value of the *Work* performed as a result of a *Change Directive* shall not be eligible to be included in progress payments until the amount, including the method for determining the amount, of such *Change Directive* has been determined."

SC38 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

SC38.1	6.4.1	Delete paragraph 6.4.1 in its entirety and replace with the following: "6.4.1.1 Prior to the submission of the bid on which the Contract was awarded, the Contractor confirms that it carefully investigated the Place of the Work insofar as the Place of Work was available for investigation and, in doing so, applied to that investigation the degree of care and skill required by paragraph 3.14.1 6.4.1.2 No claim by the *Contractor* will be considered by the *Owner* or the *Consultant* in connection with conditions which could reasonably have been ascertained by such investigation or other due diligence undertaken prior to the execution of the *Contract*.
SC38.2	6.4.2	Amend paragraph 6.4.2 by adding a new first sentence as follows: "Having regard to paragraph 6.4.1, if the *Contractor* believes that the conditions of the *Place of the Work* differ materially from those reasonably anticipated, differ materially from those indicated in the *Contract Documents* or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1, it shall provide the *Owner* and the *Consultant* with *Notice in Writing* no later than five (5) *Working Days* after the first observation of such conditions." -and-

		amend the existing second sentence of paragraph 6.4.2 in the second line, following the word "materially" by adding the words "or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1,".
SC38.3	6.4.3	Delete paragraph 6.4.3 in its entirety and substitute the following: "6.4.3 If the *Consultant* makes a finding pursuant to paragraph 6.4.2 that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* shall report in writing the reasons for this finding to the *Owner* and the *Contractor*."
SC38.4	6.4.5	Add new paragraph 6.4.5 as follows: "6.4.5 No claims for additional compensation or for an extension of *Contract Time* shall be allowed if the *Contractor* fails to give *Notice in Writing* to the *Owner* or *Consultant,* as required by paragraph 6.4.2."

SC39 GC 6.5 DELAYS

SC39.1	6.5.1	In paragraph 6.5.1 delete the words after the word "for" in the fourth line and replace them with the words "…reasonable *Direct Costs* directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity)."
SC39.2	6.5.2	Delete GC 6.5.2 in its entirety and replace it with the following: "6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was issued on account of a direct breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes by the *Owner*, *Other Contractor(s)*, or the *Consultant*, and relating to the *Work* or the *Place of the Work*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may determine. The *Contractor* shall be reimbursed by the *Owner* for reasonable *Direct Costs* directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity)."
SC39.3	6.5.3	Delete paragraph 6.5.3 in its entirety and replace with the following: "6.5.3 If either party is delayed in the performance of their obligations under this *Contract* by *Force Majeure*, then the *Contract Time* shall be extended for such reasonable time as the *Owner* and the *Contractor* shall agree. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the parties agree to a shorter extension. Neither party shall be entitled to payment for costs incurred by such delays. Upon reaching agreement on the extension of the *Contract Time* attributable to the *Force Majeure* event, the *Owner* and the *Contractor* shall execute a *Change Order* indicating the length of the extension to the *Contract Time* and confirming that there are no costs payable by the either party for the extension of *Contract Time*. However, if at the time an event of *Force Majeure* arises a party is in default of its obligations under the *Contract* and has received a notice of default pursuant to PART 7 – DEFAULT NOTICE, this paragraph 6.5.3 shall not excuse a party from its obligation to cure the default(s). For greater certainty, the defaulting party, to the extent possible, must continue to address and cure the default notwithstanding an event of *Force Majeure*."
SC39.4	6.5.4	Delete paragraph 6.5.4 in its entirety and replace it with the following:

		"6.5.4 No extension or compensation shall be made for delay or impact on the *Work* unless notice in writing of a claim is given to the *Consultant* not later than ten (10) *Working Days* after the commencement of the delays or impact on the *Work*, provided however, that, in the case of a continuing cause of delay or impact on the *Work*, only one notice of claim shall be necessary."
SC39.5	6.5.6 to 6.5.8	Add new paragraphs 6.5.6, 6.5.7 and 6.5.8 as follows: "6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone directly or indirectly employed or engaged by the *Contractor,* or by any cause within the ***Contractor's*** control, then (i) firstly, at its expense, and to the extent possible, the *Contractor* shall accelerate the work and/or provide overtime work to recover time lost by a delay arising under this paragraph 6.5.6, and (ii) secondly, where it is not possible for the *Contractor* to recover the time lost by implementing acceleration measures and/or overtime work, the *Contract Time* may be extended for such reasonable time as the *Owner* may decide in consultation with the *Consultant* and the *Contractor*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including, but not limited to, Owner's staff costs, the cost of all additional services required by the *Owner* from the *Consultant* or any sub-consultants, project managers, or others employed or engaged by the *Owner*, and in particular, the costs of the ***Consultant's*** services during the period between the date of *Substantial Performance of the Work* stated in Article A-1 herein, as the same may be extended through the provision of these General Conditions, and any later or actual date of *Substantial Performance of the Work* achieved by the *Contractor*. 6.5.7 Without limiting the obligations of the *Contractor* described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS or GC 9.4 – CONSTRUCTION SAFETY, the *Owner* or *Consultant* may, by *Notice in Writing*, direct the *Contractor* to stop the *Work* where the *Owner* or *Consultant* determines that there is an imminent risk to the safety of persons or property at the *Place of the Work*. In the event that the *Contractor* receives such notice, it shall immediately stop the *Work* and secure the site. The *Contractor* shall not be entitled to an extension of the *Contract Time* or to an increase in the *Contract Price* unless the resulting delay, if any, would entitle the *Contractor* to an extension of the *Contact Time* or the reimbursement of the ***Contractor's*** costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3. 6.5.8 No claim for delay shall be made by the *Contractor* and the *Contract Time* shall not be extended due to climatic conditions or arising from the ***Contractor's*** efforts to maintain the *Construction Schedule*."

PART 7 DEFAULT NOTICE

SC40 GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

SC40.1	7.1.2	In GC 7.1.2, delete the words "and if the *Consultant* has given a written statement to the *Owner* and *Contractor* which provides the detail of such neglect to perform the *Work* properly or such failure to comply with the requirements of the *Contract* to a substantial degree".
SC40.2	7.1.3.4	Add a new subparagraph 7.1.3.4 as follows: ".4 an "acceptable schedule" as referred to in subparagraph 7.1.3.2. means a schedule approved by the *Consultant* and the *Owner* wherein the default can be corrected within the balance of the *Contract Time* and shall not cause delay to any other aspect of the

		Work or the work of other contractors, and in no event shall it be deemed to give a right to extend the *Contract Time*."
SC40.3	7.1.4.1	Delete subparagraph 7.1.4.1 and replace it with the following: ".1 correct such default and deduct the cost, including *Owner's* expenses, thereof from any payment then or thereafter due the *Contractor*."
SC40.4	7.1.4.2	Delete subparagraph 7.1.4.2 and replace it with the following: ".2 by providing *Notice in Writing* to the *Contractor*, terminate the *Contractor's* right to continue with the *Work* in whole or in part or terminate the *Contract*, and publish a notice of termination (Form 8) in accordance with the *Act*."
SC40.5	7.1.5.3	In subparagraph 7.1.5.3 delete the words: "however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference"
SC40.6	7.1.6 to 7.1.10	Delete GC 7.1.6 and replace it with new paragraphs 7.1.6, 7.1.7, 7.1.8, 7.1.9 and 7.1.10 as follows: "7.1.6 In addition to its right to terminate the *Contract* set out herein, the *Owner* may terminate this *Contract* at any time for any other reason and without cause upon giving the *Contractor* fifteen (15) *Working Days Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*, but in no event shall the *Contractor* be entitled to be compensated for any loss of profit on unperformed portions of the *Work*, or indirect, special, or consequential damages incurred. 7.1.7 The *Owner* may suspend *Work* under this *Contract* at any time for any reason and without cause upon giving the *Contractor Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of suspension and be compensated for all actual costs incurred arising from the suspension, including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the suspension of the *Work*, but in no event shall the *Contractor* be entitled to be compensated for any indirect, special, or consequential damages incurred. In the event that the suspension continues for more than thirty (30) calendar days, the *Contract* shall be deemed to be terminated and the provisions of paragraph 7.1.6 shall apply. 7.1.8 In the case of either a termination of the *Contract* or a suspension of the *Work* under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall use its best commercial efforts to mitigate the financial consequences to the *Owner* arising out of the termination or suspension, as the case may be. 7.1.9 Upon the resumption of the *Work* following a suspension under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* will endeavour to minimize the delay and financial consequences arising out of the suspension. 7.1.10 The *Contractor's* obligations under the *Contract* as to quality, correction, and warranty of the *Work* performed by the *Contractor* up to the time of termination or

		suspension shall continue after such termination of the *Contract* or suspension of the *Work*."

SC41 GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

SC41.1	7.2.2	Delete paragraph 7.2.2 and replace it with the following: "7.2.2 If the *Work* is suspended or otherwise delayed for a period of 40 consecutive *Working Days* or more under a stop work order issued by a court or other public authority on account of a breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes directly by the *Owner*, the *Owner's* other contractor(s), or the *Consultant*, and relating to the *Work* or the *Place of the Work*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* Notice in *Writing* to that effect."
SC41.2	7.2.3.1	Delete subparagraph 7.2.3.1 in its entirety.
SC41.3	7.2.3.2	Delete subparagraph 7.2.3.2 in its entirety.
SC41.4	7.2.3.4	In subparagraph 7.2.3.4, delete the words "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".
SC41.5	7.2.5	Delete paragraph 7.2.5 and replace it with the following: "7.2.5 If the default cannot be corrected within the 5 *Working Days* specified in paragraph 7.2.4, the *Owner* shall be deemed to have cured the default if it: .1 commences correction of the default within the specified time; .2 provides the *Contractor* with an acceptable schedule for such correction; and, .3 completes the correction in accordance with such schedule."
SC41.6	7.2.6 to 7.2.9	Add new paragraphs 7.2.6, 7.2.7, 7.2.8 and 7.2.9 as follows: "7.2.6 If the *Contractor* terminates the *Contract* under the conditions described in GC 7.2 – CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of termination, as determined by the *Consultant*. The *Contractor* shall also be entitled to recover the direct costs associated with termination, including the costs of demobilization and losses sustained on *Products* and *Construction Equipment*. The *Contractor* shall not be entitled to any recovery for any special, indirect or consequential losses, including loss of profit. 7.2.7 The *Contractor* shall not be entitled to give notice of the *Owner's* default or terminate the *Contract* in the event the *Owner* withholds certificates or payment or both in accordance with the *Contract* because of: .1 the *Contractor's* failure to pay all legitimate claims promptly, or .2 the failure of the *Contractor* to discharge construction liens which are registered against the title to the *Place of the Work.* 7.2.8 The *Contractor's* obligations under the *Contract* as to quality, correction and warranty of the *Work* performed by the *Contractor* up to the effective date of

		termination shall continue in force and shall survive termination of this *Contract* by the *Contractor*. 7.2.9 If the *Contractor* suspends the *Work* or terminates the *Contract* as provided for in GC 7.2 – CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall ensure the site and the *Work* are left in a safe, secure condition as required by authorities having jurisdiction at the *Place of the Work* and the *Contract Documents*."

PART 8 DISPUTE RESOLUTION

SC42 GC 8.1 AUTHORITY OF THE CONSULTANT

SC42.1	8.1.3	Delete paragraph 8.1.3 in its entirety and substitute as follows: "8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instruction as in the *Consultant's* opinion are necessary for the proper performance of the *Work* and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by doing so neither party will jeopardize any claim the party may have."

SC43 GC 8.2 ADJUDICATION

SC43.13	8.2.2 to 8.2.7	Add new GC 8.2.2, 8.2.3, 8.2.4, 8.2.5, 8.2.6, and 8.2.7 as follows: "8.2.2 Save and except where the *Contractor* has given an undertaking, in accordance with the *Act*, to refer a dispute to *Adjudication*, prior to delivering a notice of *Adjudication* in a form prescribed by the *Act*, the parties agree to first address all disputes with at least one in-person meeting with the *Owner's* representative, the *Consultant's* representative, and the *Contractor's* representative. The parties agree that such steps will be taken to resolve any disputes in a timely and cost-effective manner. 8.2.3 Notwithstanding any other provisions in PART 8 DISPUTE RESOLUTION, the parties shall engage in *Adjudication* proceedings as required by, and in accordance with, the *Construction Act*. 8.2.4 The following procedures shall apply to any *Adjudication* the parties engage in under the *Construction Act*: .1 any hearings shall be held at a venue within the jurisdiction of the *Place of the Work* or such other venue as the parties may agree and which is acceptable to the adjudicator; .2 the *Adjudication* shall be conducted in English; .3 each party may be represented by counsel throughout an *Adjudication*; .4 there shall not be any oral communications with respect to issues in dispute that are the subject of an *Adjudication* between a party and the adjudicator unless it is made in the presence of both parties or their legal representatives; and .5 a copy of all written communications between the adjudicator and a party shall be given to the other party at the same time.

8.2.5 Any documents or information disclosed by the parties during an *Adjudication* are confidential and the parties shall not use such documents or information for any purpose other than the *Adjudication* in which they are disclosed and shall not disclose such documents and information to any third party, unless otherwise required by law, save and except the for the adjudicator.

8.2.6 If the *Contractor* fails to comply with any of the notice requirements set out in the *Contract*, including the time limits set out in any of the following:

.1 GC 6.4 – CONCEALED OR UNKNOWN CONDITIONS;
.2 GC 6.5 – DELAYS;
.3 GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE;
.4 PART 8 DISPUTE RESOLUTION
.5 GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES
.6 GC 9.3 – ARTIFACTS AND FOSSILS; or
.7 GC 9.5 - MOULD

in respect of any claim or dispute, the *Contractor* shall have no entitlement whatsoever (including to an increase in the *Contract Price*, or an extension of *Contract Time*) in the context of an *Adjudication* under the *Construction Act* and waives the right to make any such claims or disputes in an *Adjudication*. This GC 8.2.6 shall operate conclusively as an estoppel and bar in the event such claims or disputes are brought in an *Adjudication* and the *Owner* may rely on this GC 8.2.6 as a complete defence to any such claims or disputes.

8.2.7 The parties hereby acknowledge and agree,

.1 that counterclaims, claims of set-off or the exercise or use of other contractual rights that permit the *Owner* to withhold, deduct or retain from monies otherwise owed to the *Contractor* under the *Contract* may be referred to, and included as part of, *Adjudications* under the *Construction Act*;
.2 that disputes related to the termination or abandonment of the *Contract*, as well as any disputes that arise or are advanced following the termination or abandonment of the *Contract*, shall not be referred to *Adjudication* under the *Construction Act*;
.3 that notice(s) of *Adjudication,* with respect to any dispute or claim relating to the *Project,* shall not be given, and no *Adjudication* shall be commenced following *Contract* completion, *Contract* abandonment, or termination of the *Contract*;
.4 that any *Adjudication* between the *Contractor* and a *Subcontractor* or a supplier that relates to an *Adjudication* between the *Owner* and the *Contractor* shall be joined together to be adjudicated by a single adjudicator, provided that the adjudicator agrees to do so, and the *Contractor* shall include a provision in each of its contracts that contain an equivalent obligation to this GC 8.2.7.4; and
.5 that, other than where the *Contractor* is obliged to commence an *Adjudication* pursuant to an undertaking under the *Construction Act,* neither the *Owner* nor the *Contractor* shall commence an *Adjudication* during the *Restricted Period*.

8.2.8 The parties acknowledge and agree that no *Adjudication*, arbitration, action, suit or other proceeding may be brought by the *Contractor* against the *Owner* in respect of a claim for an increase to the *Contract Price* as set out in GC 6.6, before the *Consultant* has issued its findings in respect of same, pursuant to GC 6.6.5. For greater clarity and without limiting the foregoing, the amount applied for in each *Proper Invoice* shall not include any amounts pertaining to the *Contractor's* claim for an increase in *Contract Price* unless and until the *Consultant* has issued a written notice to the *Contractor* regarding the validity of such claim, as provided for in GC 6.6.5. However, nothing in this GC 8.2.8 shall prevent a *Contractor* from commencing an *Adjudication* where, pursuant to the *Construction Act*, the *Contractor* is required

		to give an undertaking to a *Subcontractor* to commence an *Adjudication* following delivery of a *Notice of Non-Payment*."

SC44 GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

SC44.1	8.3.1	Amend paragraph 8.3.1 by changing part of the second line from "shall appoint a *Project Mediator*" to "may appoint a *Project Mediator,* except that such an appointment shall only be made if both the *Owner* and the *Contractor* agree."
SC44.2	8.3.4	Amend paragraph 8.3.4 by changing part of the second line from "the parties shall request the *Project Mediator"* to "and subject to paragraph 8.3.1 the parties may request the *Project Mediator".*
SC44.3	8.3.6 to 8.3.9	Delete paragraphs 8.3.6, 8.3.7 and 8.3.8 in their entirety and replace them with the following new GCs 8.3.6, 8.3.7, 8.3.8, and 8.3.9: "8.3.6 The dispute may be finally resolved by arbitration under the Rules for Arbitration of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing, provided that both the *Contractor* and the *Owner* agree. If the *Contractor* and the *Owner* agree to resolve the dispute by arbitration, the arbitration shall be conducted in the jurisdiction of the *Place of the Work*. 8.3.7 Prior to delivering a notice of *Adjudication* in a form prescribed by the *Act*, the parties agree to first address all disputes by attending at least one meeting with the *Owner*'s representative, the *Consultant*'s representative, and the *Contractor*'s representative, prior to commencing an *Adjudication*. The parties agree that such steps will be taken to resolve any disputes in a timely and cost effective manner. If a resolution to the dispute(s) is not made at such a meeting, any party who plans to commence an *Adjudication* shall provide the other party with 5 *Working Days' Notice in Writing* of its intention to issue a notice of *Adjudication*. 8.3.8 Other than where the *Contractor* is obliged to commence an *Adjudication* pursuant to an undertaking under the *Construction Act*, neither the *Owner* nor the *Contractor* shall commence an *Adjudication* during the *Restricted Period*. 8.3.9 Where either party has delivered a notice of *Adjudication* in a form prescribed by the *Act*, the procedures and rules set out under the *Construction Act* and the regulations thereto shall govern the *Adjudication*."

PART 9 PROTECTION OF PERSONS AND PROPERTY

SC45 GC 9.1 PROTECTION OF WORK AND PROPERTY

SC45.1	9.1.1.1	Delete subparagraph 9.1.1.1 in its entirety and substitute the following: ".1 errors in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.14.1;"
SC45.2	9.1.2	Delete paragraph 9.1.2 in its entirety and substitute as follows: "9.1.2 Before commencing any *Work*, the *Contractor* shall determine the locations of all underground or hidden utilities and structures indicated in or inferable from the *Contract Documents*, or that are inferable from an inspection of the *Place of the Work* exercising the degree of care and skill described in paragraph 3.14.1."
SC45.3	9.1.5	Add new paragraph 9.1.5 as follows:

		"9.1.5 With respect to any damage to which paragraphs 9.1.3 or 9.1.4 apply, the *Contractor* shall neither undertake to repair or replace any damage whatsoever to the work of other contractors, or to adjoining property, nor acknowledge that the same was caused or occasioned by the *Contractor*, without first consulting the *Owner* and receiving written instructions as to the course of action to be followed from either the *Owner* or the *Consultant*. Where, however, there is danger to life, the environment, or public safety, the *Contractor* shall take such emergency action as it deems necessary to remove the danger."

SC46 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

SC46.1	9.2.1	Amend GC 9.2.1 by inserting the following to the end of the paragraph: "For the purposes of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, *Excess Soil* shall not be considered a 'toxic and hazardous substance'."
SC46.2	9.2.5.5	Add a new subparagraph 9.2.5.5 as follows: ".5 in addition to the steps described in subparagraph 9.2.5.3, take any further steps it deems necessary to mitigate or stabilize any conditions resulting from encountering toxic or hazardous substances or materials."
SC46.3	9.2.6	Amend GC 9.2.6 by adding the following words after the word "responsible" in the second line: "or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the *Owner* or others,".
SC46.4	9.2.8	Amend GC 9.2.8 by adding the following words after the word "responsible" in the second line: "or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the *Owner* or others,".
SC46.5	9.2.10	Add new paragraph 9.2.10 as follows: "9.2.10 The *Contractor*, *Subcontractors* and *Suppliers* shall not bring on to the *Place of the Work* any toxic or hazardous substances and materials except as required in order to perform the *Work*. If such toxic or hazardous substances or materials are required, storage in quantities sufficient to allow work to proceed to the end of any current work week only shall be permitted. All such toxic and hazardous materials and substances shall be handled and disposed of only in accordance with all laws and regulations that are applicable at the *Place of the Work*."

SC47 GC 9.4 CONSTRUCTION SAFETY

SC47.1	9.4.1	Delete GC 9.4.1 in its entirety and replace it with the following:

		"9.4.1 The *Contractor* shall be solely responsible for construction safety at the *Place of the Work* and for compliance with the rules, regulations, and practices required by the *OHSA*, including, but not limited to those of the "constructor", and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the *Work*. The *Contractor*'s health and safety program documentation shall be made available for review by the *Owner* or *Consultant* immediately upon request. Without limiting the foregoing, the *Contractor* shall be solely responsible for construction safety in respect of the *Consultant*, *Subcontractors* and *Suppliers*, the *Owner's* own forces, *Other Contractors*, and all persons attending the *Place of the Work* during the course of the *Project*."
SC47.2	9.4.2	Amend GC 9.4.2 by adding the following words after "and the *Contractor*": ", *Subcontractors* and *Suppliers*".
SC47.3	9.4.3	Amend GC 9.4.3 by adding the following words after "and the *Contractor*": ", *Subcontractors* and *Suppliers*".
SC47.4	9.4.4	Delete GC 9.4.4 and replace it with the following: "9.4.4 The *Owner* undertakes to include in its contracts with other contractors and in its instructions to its own forces the requirement that the other contractor or its own forces, as the case may be, comply with the policies and procedures of and the directions and instructions from the *Contractor* with respect to occupational health and safety and related matters."
SC47.5	9.4.5	Delete GC 9.4.5 in its entirety and replace it with the following: "9.4.5 Prior to the commencement of the *Work*, the *Contractor* shall submit to the *Owner*: .1 a current WSIB clearance certificate; .2 copies of the *Contractor*'s insurance policies having application to the *Project* or certificates of insurance, at the option of the *Owner*; .3 documentation setting out the *Contractor*'s in-house safety programs; .4 a copy of the Notice of Project filed with the Ministry of Labour naming itself as "constructor" under the *OHSA*; and . 5 copies of any documentation or notices to be filed or delivered to the authorities having jurisdiction for the regulation of occupational health and safety at the *Place of the Work*;"
SC47.6	9.4.6 to 9.4.12	Add new GC 9.4.6, 9.4.7, 9.4.8, 9.4.9, 9.4.10, 9.4.11, and 9.4.12 as follows: "9.4.6 The *Contractor* shall indemnify and save harmless the *Owner*, its agents, trustees, officers, directors, employees, consultants, successors, appointees, and assigns from and against the consequences of any and all safety infractions committed by the *Contractor* under *OHSA* and any other occupational health and safety legislation in force at the *Place of the Work* including the payment of legal fees and disbursements on a solicitor and client basis. Such indemnity shall apply to the extent to which the *Owner* is not covered by insurance. 9.4.7 If the *Owner* is of the reasonable opinion that the *Contractor* has not taken such precautions as are necessary to ensure compliance with the requirements of paragraph 9.4.1, the *Owner* may take any remedial measures which it deems necessary, including stopping the performance of all or any portion of the *Work,* and

		the *Owner* may use its employees, the *Contractor*, any *Subcontractor* or any other contractors to perform such remedial measures. 9.4.8 The *Contractor* shall file any notices or any similar document required pursuant to the *Contract* or the safety regulations in force at the *Place of the Work*. This duty of the *Contractor* will be considered to be included in the *Work* and no separate payment therefore will be made to the *Contractor*. 9.4.9 Unless otherwise provided in the *Contract Documents*, the *Contactor* shall develop, maintain and supervise for the duration of the *Work* a comprehensive safety program that will effectively incorporate and implement all required safety precautions. The program shall, at a minimum, respond fully to the applicable safety regulations and general construction practices for the safety of persons or property, including, without limitation, any general safety rules and regulations of the *Owner* and any workers' compensation or occupational health and safety statutes or regulations in force at the *Place of the Work*. 9.4.10 The *Contractor* shall provide a copy of the safety program described in GC 9.4.9 hereof to the *Consultant* for delivery to the *Owner* prior to the commencement of the *Work*, and shall, ensure, as far as it is reasonably practical to do so, that every employer and worker performing work in respect of the *Project* complies with such program. 9.4.11 The *Contractor* shall arrange regular safety meetings, and shall supply and maintain, at its own expense, at its office or other well-known place at the job site, safety equipment necessary to protect the workers and general public against accident or injury as prescribed by the authorities having jurisdiction at the *Place of the Work*, including, without limitation, articles necessary for administering first-aid to any person and an emergency procedure for the immediate removal of any inured person to a hospital or a doctor's care. 9.4.12 The *Contractor* shall promptly report in writing to the *Owner* and the *Consultant* all accidents of any sort arising out of or in connection with the performance of the *Work*, whether on or adjacent to the job site, giving full details and statement of witnesses. If death or serious injuries or damages are caused, the accident shall be promptly reported by the *Contractor* to the *Owner* and the *Consultant* by telephone or messenger in addition to any reporting required under the applicable safety regulations."."

PART 10 GOVERNING REGULATIONS

SC48 GC 10.1 TAXES AND DUTIES

SC48.1	10.1.2	Amend paragraph 10.1.2 by adding the following sentence to the end of the paragraph: "For greater certainty, the *Contractor* shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties and the *Owner* shall not be entitled to any credit relating to mark-up for overhead or profit on any decrease in such taxes. The *Contractor* shall provide a detailed breakdown of Additional taxes if requested by the *Owner* in a form satisfactory to the *Owner*."
SC48.2	10.1.3	Add new paragraph 10.1.3 as follows: "10.1.3 Where the *Owner* is entitled to an exemption or a recovery of sales taxes, customs duties, excise taxes or *Value Added Taxes* applicable to the *Contract*, the *Contractor* shall, at the request of the *Owner*, assist with the application for any exemption, recovery or refund of all such taxes and duties and all amounts recovered or exemptions obtained shall be for the sole benefit of the *Owner*. The

		Contractor agrees to endorse over to the *Owner* any cheques received from the federal or provincial governments, or any other taxing authority, as may be required to give effect to this paragraph."

SC49 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

SC49.1	10.2.5	Amend paragraph 10.2.5 by adding the words "Subject to paragraph 3.4" at the beginning of the paragraph. -and- Add the following to the end of the second sentence: "…and no further *Work* on the affected components of the *Contract* shall proceed until these directives have been obtained by the *Contractor* from the *Consultant*."
SC49.2	10.2.6	Amend paragraph 10.2.6 by adding the following sentence to the end of the paragraph: "In the event the *Owner* suffers loss or damage as a result of the *Contractor's* failure to comply with paragraph 10.2.5 and notwithstanding any limitations described in paragraph 12.1.1, the *Contractor* agrees to indemnify and to hold harmless the *Owner* and the *Consultant* from and against any claims, demands, losses, costs, damages, actions suits or proceedings resulting from such failure by the *Contractor*."
SC49.3	10.2.7	Amend paragraph 10.2.7 by inserting the words "which changes were not, or could not have reasonably been known to the *Owner* or to the *Contractor*, as applicable, at the time of bid closing and which changes did not arise as a result of a public emergency or other *Force Majeure* event" to the second line, after the words "authorities having jurisdiction".
SC49.4	10.2.8	Add new paragraph 10.2.8 as follows: "10.2.8 The *Contractor* shall furnish all certificates that are required or given by the appropriate governmental authorities as evidence that the *Work* as installed conforms with the laws and regulations of authorities having jurisdiction, including certificates of compliance for the *Owner's* occupancy or partial occupancy. The certificates are to be final certificates giving complete clearance of the *Work*, in the event that such governmental authorities furnish such certificates."

SC50 GC 10.4 WORKERS' COMPENSATION

SC50.1	10.4.1	Delete paragraph 10.4.1 and replace with the following: "10.4.1 Prior to commencing the *Work*, and with each and every application for payment thereafter, including the *Contractor's* application for payment of the holdback amount following *Substantial Performance of the Work* and again with the *Contractor's* application for final payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation in force at the *Place of the Work*, including payments due thereunder."

SC51 GC 11.1 INSURANCE

SC51.1	11.1	Delete entirety of GC 11.1 and replace with the following: "**GC 11.1 INSURANCE**

11.1.1 Without restricting the generality of GC 12 – INDEMNIFICATION, the *Contractor* shall provide, maintain, and pay for the insurance coverages specified in GC 11.1 – INSURANCE. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the *Work* until the expiration of the warranty periods set out in the *Contract Documents*. Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements.

.1 **General Liability Insurance**

General liability insurance shall be in the name of the *Contractor,* with the *Owner* and the *Consultant* named as Additional insureds, with limits of not less than $10,000,000.00 inclusive per occurrence for bodily injury, death, and damage to property, including loss of use thereof, for itself and each of its employees, *Subcontractors* and/or agents. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent replacement, provided that IBC Form 2100 shall contain the latest edition of the relevant CCDC endorsement form. To achieve the desired limit, umbrella, or excess liability insurance may be used. All liability coverage shall be maintained for completed operations hazards from the date of *Ready-for-Takeover*, as set out in the certificate of *Ready-for-Takeover,* on an ongoing basis for a period of 6 years following *Ready-for-Takeover*. Where the *Contractor* maintains a single, blanket policy, the Addition of the *Owner* and the *Consultant* is limited to liability arising out of the *Project* and all operations necessary or incidental thereto. The policy shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation and of change or amendment restricting coverage.

.2 **Automobile Liability Insurance**

Automobile liability insurance in respect of licensed vehicles shall limits of not less than $5,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, covering all licensed vehicles *owned* or leased by the *Contractor*, and endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation, change or amendment restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor.*

.3 **Aircraft and Watercraft Liability Insurance**

Where determined necessary by the *Contractor*, acting reasonably, aircraft and watercraft liability insurance will be obtained in accordance with the provisions of paragraph 11.1.3. Aircraft and watercraft liability insurance with respect to owned or non-owed aircraft and watercraft if used directly or indirectly in the performance of the *Work*, including use of Additional premises, shall be subject to limits of not less than $2,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, including loss of use thereof and limits of not less than $2,000,000.00 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*. The policies shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of cancellation, change or amendment restricting coverage.

.4 Property and Boiler and Machinery Insurance

(1) Builder's Risk property insurance shall be in the name of the *Contractor* with the *Owner* and the *Consultant* named as Additional insureds. The policy shall

insure against all risks of direct physical loss or damage to the property insured which shall include all property included in the *Work*, whether owned by the *Contractor* or the owner or owned by others, so long as the property forms part of the *Work*. The property insured also includes all materials and supplies necessary to complete the work, whether installed in the work temporarily or permanently, in storage on the project site, or in transit to the project site, as well as temporary buildings, scaffolding, falsework forms, hoardings, excavation, site preparation and similar work. The insurance shall be for not less than the sum of the amount of the contract price and the full value of products that are specified to be provided by the owner for incorporation into the work, if applicable, with the deductible of $10,000.00 payable by the contractor. The insurance shall include the foregoing and, otherwise, shall not be less than the insurance required by IBC Form 4042 or its equivalent replacement provided that the IBC Form 4042 shall include the latest Addition of the relevant CCDC endorsement form. The coverage shall be based on a completed value form and shall be maintained continuously until ten (10) days after the date of the final certificate of payment.

(2) Boiler and machinery insurance shall be in the name of the *Contractor*, with the *Owner* and the *Consultant* named as Additional insureds, for not less than the replacement value of the boilers, pressure vessels and other insurable objects forming part of the *Work*. The insurance provided shall not be less than the insurance provided by the "Comprehensive Boiler and Machinery Form" and shall be maintained continuously from commencement of use or operation of the property insured and until 10 days after the date of the final certificate for payment.

(3) The policies shall allow for partial or total use or occupancy of the *Work.*

(4) The policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. The *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to such reasonable extension of the *Contract Time,* relative to the extent of the loss or damage, as determined by the *Owner*, in its sole discretion.

(5) The *Contractor* shall be entitled to receive from the *Owner*, in Addition to the amount due under the *Contract*, the amount at which the *Owner's* interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. In Addition, the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor's* interest in the restoration of the *Work*.

(6) In the case of loss or damage to the *Work* arising from the work of other contractors, or the *Owner's* own forces, the *Owner*, in accordance with the *Owner's* obligations under paragraph 3.2.2.4 of GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT.

.5 Contractors' Equipment Insurance

"All risks" contractors' equipment insurance covering construction machinery and equipment used by the *Contractor* for the performance of the *Work*, excluding boiler insurance, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner.* The policies shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in

		advance of cancellation, change or amendment restricting coverage. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance of his equipment, the *Owner* agrees to waive the equipment insurance requirement. 11.1.2 The *Contractor* shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the *Contractor's* responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY. 11.1.3 Where the full insurable value of the *Work* is substantially less than the *Contract Price*, the *Owner* may reduce the amount of insurance required to waive the course of construction insurance requirement. 11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right to provide and maintain such insurance and provide evidence of same to the *Contractor*. The *Contractor* shall pay the costs thereof to the *Owner* on demand, or the *Owner* may deduct the amount that is due or may become due to the *Contractor*. 11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*."

SC52 *NEW* GC 11.2 CONTRACT SECURITY

SC52.1	GC 11.2	Add new GC 11.2 – CONTRACT SECURITY as follows: "**GC 11.2 CONTRACT SECURITY** 11.2.1 The *Contractor* shall, prior to the execution of the *Contract*, furnish a performance bond and labour and material payment bond which meets the requirements under paragraph 11.2.2. 11.2.2 The performance bond and labour and material payment bond shall: .1 be issued by a duly licensed surety company, which has been approved by the *Owner* and is permitted under the *Construction Act*, .2 be issued by an insurer licensed under the *Insurance Act* (Ontario) and authorized to transact a business of suretyship in the Province of Ontario; .3 shall be in the form prescribed by the *Construction Act*; .4 have a coverage limit of at least 50 per cent of the *Contract Price*, or such other percentage of the *Contract Price* as stated in the *Contract Documents*; .5 extends protection to *Subcontractors*, *Suppliers,* and any other persons supplying labour or materials to the *Project*; and .6 shall be maintained in good standing until the fulfillment of the *Contract*, including all warranty and maintenance periods set out in the *Contract Documents.*. 11.2.3 It is the intention of the parties that the performance bond shall be applicable to all of the *Contractor's* obligations in the *Contract Document* and, wherever a performance bond is provided with language which conflicts with this intention, it shall be deemed to be amended to comply. The *Contractor* represents and warrants to the *Owner* that it has provided its surety with a copy of the *Contract Documents* prior to the issuance of such bonds.

		11.2.4 Without limiting the foregoing in any way, the bonds shall indemnify and hold harmless the *Owner* for and against costs and expenses (including legal and *Consultant* services and court costs) arising out of or as a consequence of any default of the *Contractor* under this *Contract*. 11.2.4 The *Contractor* shall be responsible for notifying the surety company of any changes made to the *Contract* during the course of construction. 11.2.5 The premiums for bonds required by the *Contract Documents* shall be included in the *Contract Price*. 11.2.6 Should the *Owner* require additional bonds by the *Contractor* or any of his *Subcontractors*, after the receipt of bids for the *Work*, the *Contract Price* shall be increased by all direct costs attributable to providing such bonds. The *Contractor* shall promptly provide the *Owner*, through the *Consultant*, with any such bonds that may be required."

PART 12 OWNER TAKEOVER

SC53 GC 12.1 READY-FOR-TAKEOVER

SC53.1	12.1.1	Delete GC 12.1.1 in its entirety and replace it with the following: "12.1.1 *Ready-for-Takeover* shall be achieved when all of the following has occurred, as verified and approved by the *Owner*: .1 *Substantial Performance of the Work* has been achieved, as certified by the *Consultant*; .2 a permit for occupancy of the *Place of the Work* has been obtained from the authorities having jurisdiction; .3 the *Work* to be performed under the *Contract* has satisfied the requirements for deemed completion in accordance with Section 2(3) of the *Construction Act*, .4 final cleaning and waste removal, as required by the *Contract Documents*; .5 the *Contractor* has delivered to the *Consultant* and the *Owner* all inspection certificates from authorities having jurisdiction with respect to any component of the *Work* which has been completed; .6 subject only to GC 12.1.2, the entire *Work* has been completed to the requirements of the *Contract Documents*, including completion of all items on the punch list prepared at the time of *Substantial Performance of the Work* and the *Work* is being used for its intended purpose, and is so certified by the *Consultant*; .7 subject only to GC 12.1.2, the *Contractor* has submitted to the *Owner* and the *Consultant* in a collated and organized matter, all *Close-Out Documentation* and any other materials or documentation required by the *Contract Documents*; .8 subject only to GC 12.1.2, all *Products*, systems and components of the *Project* have been commissioned and certified for operation and accepted by the *Owner* and *Consultant*, and

		9 subject only to GC 12.1.2, the *Contractor* has submitted to the *Owner* and the *Consultant* full and complete as-built drawings and *Specifications* revised by the *Contractor* to reflect the as-built state of the *Work*, clearly showing changes to the *Drawings* and *Specifications* from the original *Contract Documents*, all of which have been approved by the *Owner* acting reasonably."
SC53.2	12.1.2	Delete GC 12.1.2 in its entirety and replace it with the following: "12.1.2 The *Owner* may, in its sole, absolute, and unfettered discretion, waive compliance with a requirement, or a part thereof, for achieving *Ready-for-Takeover* set out in GC 12.1.1.6 to 12.1.1.9 (inclusive). Where the *Owner* exercises the discretion afforded under this GC 12.1.2, the *Contractor* shall be required to comply with GC 5.5.1.2 as part of its application for final payment and the *Owner* and the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for completing the *Work*."
SC53.3	12.1.3	Delete GC 12.1.3 in its entirety and replace it with the following: "12.1.3 When the *Contractor* considers the *Work Ready-for-Takeover*, it shall submit a written application to the *Owner* and the *Consultant* for review."
SC53.4	12.1.4	In GC 12.1.4, delete the words "list and" from the second line.
SC53.5	12.1.5	Delete GC 12.1.5 in its entirety and replace it with the following: "12.1.5 Following the confirmation of the date of *Ready-for-Takeover* by the *Consultant* and as confirmed by the *Owner*, the *Contractor* may submit a final application for payment in accordance with GC 5.5 – FINAL PAYMENT."
SC53.6	12.1.6	Delete GC 12.1.6 in its entirety.

SC54 GC 12.2 EARLY OCCUPANCY

SC54.1	GC 12.2	Delete GC 12.2 – EARLY OCCUPANCY BY THE OWNER in its entirety, including all subparagraphs thereunder and replace it with the following: "12.2.1 The Owner reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the Project even though the Work may not have reached Substantial Performance of the Work, provided that such taking possession and use will not unduly interfere, in any material way, with the progress of the Work. The taking of possession or use of any such portion of the Project shall not be deemed to be the Owner's acknowledgement or acceptance of the Work or Project nor shall it relieve the Contractor of any of its obligations under the Contract. 12.2.2 Whether the Project contemplates Work by way of renovations in buildings which will be in use or be occupied during the course of the Work or where the Project involves Work that is adjacent to a structure which is in use or is occupied, the Contractor, without in any way limiting its responsibilities under this Contract, shall take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, to suppress dust and noise and to avoid conditions likely to propagate mould or fungus of any kind and all other steps reasonably necessary to promote and maintain the safety and comfort of the users and occupants of such structures or adjacent structures."

SC55 GC 12.3 WARRANTY

SC55.1	12.3.2	Delete from the first line of paragraph 12.3.2 the word "The" and replace it with the words "Subject to GC 1.1.3, the…"
SC55.2	12.3.7 to 12.3.12	Add new paragraphs 12.3.7 to 12.3.12 as follows: "12.3.7 Where required by the *Contract Documents*, the *Contractor* shall provide a maintenance bond as security for the performance of the *Contractor's* obligations as set out in GC 12.3 WARRANTY. 12.3.8 The *Contractor* shall provide fully and properly completed and signed copies of all warranties and guarantees required by the *Contract Documents*, containing: .1 the proper name of the *Owner*; .2 the proper name and address of the *Project*; .3 the date the warranty commences, which shall be at the "*Ready-for-Takeover*" unless otherwise agreed upon by the *Consultant* in writing. .4 a clear definition of what is being warranted and/or guaranteed as required by the *Contract Documents*; and .5 the signature and seal (if required by the governing law of the *Contract*) of the company issuing the warranty, countersigned by the *Contractor*. 12.3.9 Should any *Work* be repaired or replaced during the time period for which it is covered by the specified warranty, a new warranty shall be provided under the same conditions and for the same period as specified herein before. The new warranty shall commence at the completion of the repair or replacement. 12.3.10 The *Contractor* shall ensure that its *Subcontractors* are bound to the requirements of GC 12.3 – WARRANTY for the *Subcontractor's* portion of the *Work.* 12.3.11 The *Contractor* shall ensure that all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor, Supplier* or other person in connection with the *Work* are obtained and available for the direct benefit of the *Owner.* In the alternative, the *Contractor* shall assign to the *Owner* all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor, Supplier* or other person in connection with the *Work* and such assignment shall be with the consent of the assigning party, where required by law, or by the terms of that party's contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the *Owner* under the *Contract Documents*. 12.3.12 The *Contractor* shall commence or correct any deficiency within 2 *Working Days* after receiving a *Notice in Writing* from the *Owner* or the *Consultant*, and shall complete the *Work* as expeditiously as possible, except in the case where the deficiency prevents maintaining security or where basic systems essential to the ongoing business of the *Owner* and/or its tenants cannot be maintained operational as designed. In those circumstances all necessary corrections and/or installations of temporary replacements shall be carried out immediately as an emergency service. Should the *Contractor* fail to provide this emergency service within 8 hours of a request being made during the normal business hours of the *Contractor*, the *Owner* is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the *Contractor's* expense."

PART 13 INDEMNIFICATION AND WAIVER

SC56 GC 13.1 INDEMNIFICATION

SC56.1	GC 13.1	Delete GC 13.1 – INDEMNIFICATION in its entirety and replace it with the following: "13.1.1 The *Contractor* shall indemnify and hold harmless the *Owner*, its parent, subsidiaries and affiliates, their respective partners, trustees, officers, directors, agents and employees and the *Consultant* from and against any and all claims, liabilities, expenses, demands, losses, damages, actions, costs, suits, or proceedings (hereinafter called "claims"), whether in respect of claims suffered by the *Owner* or in respect of claims by third parties, that directly or indirectly arise out of, or are attributable to, the acts or omissions of the *Contractor*, its employees, agents, *Subcontractors*, *Suppliers* or any other persons for whom it is in law responsible (including, without limitation, claims that directly or indirectly arise out of, or are attributable to, loss of use or damage to the *Work*, the *Owner's* property or equipment, the *Contractor's* property or equipment or equipment or property adjacent to the *Place of the Work* or death or injury to the *Contractor's* personnel). 13.1.2 The *Owner* shall indemnify and hold the *Contractor*, its agents and employees harmless from and against claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the *Contractor's* performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work*. 13.1.3 The provisions of GC 13.1 - INDEMNIFICATION shall survive the termination of the *Contract,* howsoever caused and no payment or partial payment, no issuance of a final certificate of payment and no occupancy in whole or in part of the *Work* shall constitute a waiver or release of any of the provisions of GC 13.1 13.1.4 Notwithstanding the provisions of GC1.1 - CONTRACT DOCUMENTS, GC 1.1.6, GC13.1 - INDEMNIFICATION shall govern over the provisions of GC 1.3.1 of GC1.3 – RIGHTS AND REMEDIES."

SC57 GC 13.2 WAIVER OF CLAIMS

SC57.13	13.2.1	In paragraph 13.2.1 in the third line after the word "limitation" add the words "claims for delay pursuant to GC 6.5 DELAYS" -and- add the words "(collectively "**Claims**")" after "*Ready-for-Takeover*" in the fourth line.
SC57.14	13.2.1.1	In subparagraph 13.2.1.1, in each instance change the word "claims" to "Claims" and change the word "claim" to "Claim".
SC57.15	13.2.1.2	In subparagraph 13.2.1.2 change the word "claims" to "Claims".
SC57.16	13.2.1.3	Delete subparagraph 13.2.1.3 in its entirety.
SC57.17	13.2.1.4	In paragraph 13.2.1.4 change the word "claims" to "Claims".
SC57.18	13.2.2.1	In paragraph 13.2.2.1 delete the words "in paragraphs 13.2.1.2 and 13.2.1.3" and replace them with "in paragraph 13.2.1.2" -and- change the word "claims" to "Claims" in both instances and change the word "claim" to "Claim".

SC57.19	13.2.3	Delete paragraph 13.2.3 in its entirety.
SC57.20	13.2.4	Delete paragraph 13.2.4 in its entirety.
SC57.21	13.2.5	Delete paragraph 13.2.5 in its entirety.
SC57.22	13.2.6	In paragraph 13.2.6 change the word “claim” to “Claim” in all instances in the paragraph.
SC57.23	13.2.8	In paragraph 13.2.8 change “The party” to “The *Contractor* -and- change the word “claim” to “Claim” in all instances in the paragraph.
SC57.24	13.2.9	In paragraph 13.2.9 delete the words “under paragraphs 13.2.1 or 13.2.3” and replace them with “under paragraph 13.2.1” -and- change both instances of the words “the party” to “the *Contractor*”. Change the word “claim” to “Claim” in all instances in the paragraph.

SC58 *NEW* PART 14 OTHER PROVISIONS

SC58.1	14.1	Add new PART 14 – OTHER PROVISIONS as follows: “**PART 14 OTHER PROVISIONS** **GC 14.1 OWNERSHIP OF MATERIALS** 14.1.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of the *Contract* shall remain the property of the *Owner*. All *Work* and *Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner.* The *Contractor* shall remove all surplus or rejected materials as its property when notified in writing to do so by the *Consultant*.”
SC58.2	14.2	Add new GC 14.2 – CONSTRUCTION LIENS as follows: **“GC 14.2 LIENS** 14.2.1 Notwithstanding any other provision in the *Contract*, the *Consultant* shall not be obligated to issue a certificate, and the *Owner* shall not be obligated to make payment, subject to the *Owner*’s requirement to issue a *Notice of Non-Payment* (Form 1.1) to the *Contractor*, if at the time such certificate or payment was otherwise due: .1 a claim for lien has been registered against the *Project* lands by a *Subcontractor* or a *Supplier* that has not been vacated or discharged by the *Contractor* in accordance with the requirements of this *Contract*, or .2 if the *Owner* or a mortgagee of the *Project* lands has received a written notice of a lien that has not been resolved by the *Contractor* through the posting of security or otherwise. 14.2.2 In the event a construction lien arising from the performance of the *Work* is registered or preserved against the *Project* lands by a *Subcontractor* or a *Supplier*, or a written notice of a lien is given or a construction lien action is commenced

		against the *Owner* by a *Subcontractor* or a *Supplier*, then the *Contractor* shall, at its own expense: .1 within 10 calendar days of registration of the construction lien, vacate or discharge the lien from title to the premises (i.e. the *Place of the Work*). If the lien is merely vacated, the *Contractor* shall, if requested, undertake the *Owner*'s defence of any subsequent action commenced in respect of the lien, at the *Contractor*'s sole expense; .2 within 10 calendar days of receiving notice of a written notice of a lien, post security with the Ontario Superior Court of Justice so that the written notice of a lien no longer binds the parties upon whom it was served; and .3 satisfy all judgments and pay all costs arising from such construction liens and actions and fully indemnify the *Owner* against all costs and expenses arising from same, including legal costs on a full indemnity basis. 14.2.3 In the event that the *Contractor* fails or refuses to comply with its obligations pursuant to paragraph 14.2.2, the *Owner* shall, at its option, be entitled to take all steps necessary to address any such construction liens including, without limitation and in addition to the *Owner's* rights under paragraph 13.2.4, the posting of security with the Ontario Superior Court of Justice to vacate the claim for lien from title to the *Project* lands, and in so doing will be entitled to a full indemnity from the *Contractor* for all legal fees, security, disbursements and other costs incurred and will be entitled to deduct same from amounts otherwise owing to the *Contractor*. 14.2.4 In the event that any *Subcontractor* or *Supplier* registers any claim for lien with respect to all or part of the *Place of Work*, the *Owner* shall have the right to withhold, in addition to the statutory holdback, the full amount of said claim for lien plus either: (a) $250,000 if the claim for lien is in excess of $1,000,000 or (b) 25% of the value of the claim for lien and to bring a motion to vacate the registration of said claim for lien and any associated certificate of action in respect of that lien, in accordance with Section 44 of the *Act*, by paying into court as security the amount withheld. 14.2.5 Nothing in this GC 14.2 serves to preclude the *Contractor* from preserving and perfecting its lien in the event of non-payment by the *Owner*."

APPENDIX 1
to the Supplementary Conditions

Project-specific requirements for a "*Proper Invoice*"

To satisfy the requirements for a *Proper Invoice*, the following criteria, as may be applicable in each case, must be included with the *Contractor's* application for payment:

.1 the written bill or request for payment must be in writing;

.2 the *Contractor*'s name and current address;

.3 the *Contractor*'s HST registration number;

.4 the date the application for payment was prepared by the *Contractor*;

.5 the period of time in which the services or materials were supplied to the *Owner*;

.6 the purchase order number provided by the *Owner*;

.7 reference to the provisions of the *Contract* under which payment is being sought (e.g. GC 5.3 –PAYMENTS for progress payments, GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK GC 5.5 – FINAL PAYMENT for final payment, etc.);

.8 a description, including quantities where appropriate, of the services or materials, or a portion thereof, that were supplied and form the basis of the *Contractor's* request for payment;

.9 the amount the *Contractor* is requesting to be paid by the *Owner*, set out in a statement based on the schedule of values approved under GC 5.2.4, separating out any statutory or other holdbacks, set-offs and HST;

.10 a sworn Statutory Declaration in the form CCDC 9A-2018, only for second and subsequent progress payments;

.11 a current Workplace Safety Insurance Board clearance certificate;

.12 a pre-approved schedule of values, supplied by the *Contractor*, for Divisions 1 through 14 of the *Specifications* (or equivalent Construction Specifications Institute Masterformat) of the *Work*, aggregating the total amount of the *Contract Price*, including all supporting invoicing;

.13 a separate pre-approved schedule of values, supplied by each *Subcontractor*, for each of Division 15, 16, and 17 of the *Specifications* (or equivalent Construction Specifications Institute Masterformat) of the *Work*, aggregating the total amount of the *Contract Price*, including all supporting invoicing;

.14 invoices and other supporting documentation for all claims against the cash allowance;

.15 a current, acceptable, and up to date *Construction Schedule Update*;

.16 if requested by the *Owner*, a current and valid certificate(s) of insurance as required under GC 11.1 – INSURANCE;

.17 the name, title, telephone number and mailing address of the person at the place of business of the *Contractor* to whom payment is to be directed;

.18 a current, up to date, and approved *Shop Drawing* log;

.19 in the case of the *Contractor's* application for final payment, in addition to the foregoing requirements (as applicable):

(a) any *Close-Out Documentation*, together with complete and final as-built drawings;

(b) the *Contractor's* written request for release of the deficiency holdback, including a statement that no written notices of lien have been received by it;

(c) the *Contractor's* written certification that there are no outstanding claims, pending claims or future claims from the *Contractor* or their *Subcontractors* or *Suppliers*; and

(d) sufficient evidence of the *Contractor's* compliance with GC 3.11.

APPENDIX 2
to the Supplementary Conditions

SPECIAL SUPPLEMENTARY CONDITIONS

The Standard Construction Document CCDC 2 2020 for a Stipulated Price Contract, English version, consisting of the Agreement Between *Owner* and Contractor, Definitions and General Conditions of the Stipulated Price Contract, Parts 1 to 12 inclusive, governing same, together with the changes with the new Construction Act is hereby made part of these Contract Documents, with the following amendments, additions and modifications:

SC59 ARTICLE A-10 TIME OF THE ESSENCE

SC59.1	Article A-10	Delete the header for Article A-10 being "ARTICLE A-10 TIME OF THE ESSENCE" and replace it with the following: "**ARTICLE A-10 TIME OF THE ESSENCE/LIQUIDATED DAMAGES**".
SC59.2	Articles 10.3 to 10.7	Insert the following new Articles 10.3 to 10.7 as follows: "10.3 The *Contractor* further acknowledges that it understands that the *Owner* is responsible and must account to the students and staff of Waterloo Catholic District School Board. A failure by the *Contractor* to attain *Ready-for-Takeover* within the time prescribed in the Contract could result in damages to the *Owner* and to the students and staff of the Waterloo Catholic District School Board, which would be difficult or impractical to quantify but would nevertheless have a significant negative impact on the *Owner* and its ability to provide services the *Owner* is obliged to provide to the students and staff of the Waterloo Catholic District School Board. 10.4 Given the significance of the requirement for the Contractor to achieve *Ready-for-Takeover*, as described in Article A-10.3, without limiting the *Owner's* entitlement to any additional or other damages, if the *Contractor* fails to achieve *Ready-for-Takeover* by the time prescribed in Article A-1, the *Owner* will incur substantial damages and the extent of such damages shall be incapable or very difficult to accurately measure. Nonetheless, the parties acknowledge that as of the effective date of this *Contract*, the amount of liquidated damages set forth in Article A-10.5 below represents a good faith estimate on the part of the parties as to the actual potential damages that the *Owner* would suffer as a result of late completion of the *Project*. The amount of such liquidated damages does not include any penalty. Notwithstanding the foregoing, the *Owner* shall be entitled to the greater of (i) the liquidated damages as calculated pursuant to Article A-10.5, or (ii) in the event that the *Contractor* claims that this liquidated damages provision is invalid or unenforceable and the *Contractor* prevails on such a defence, the damages arising from the delay suffered by the *Owner* including, without limitation, consequential, special, incidental, and indirect damages, costs and expenses incurred or suffered by the *Owner*. 10.5 The *Contractor* shall pay to the *Owner* (or have deducted from *Contract* payments) liquidated damages of **$**_____ **[NTD: Include per diem rate]** for each calendar day of delay beyond the prescribed date for *Ready-for-Takeover*, until *Ready-for-Takeover* is achieved and certified pursuant to the terms of the *Contract*. Liquidated damages will be assessed as incurred and reflected as deductions from amounts that may be due under any applications for payment pending at the time that such liquidated damages are assessed. 10.6 All liquidated damages that have not been deducted from payments prior to final payment shall be deducted from the final payment to be made by the *Owner* to the *Contractor* pursuant to GC 5.5 FINAL PAYMENT, and any amount of liquidated

		damages in excess of the final payment amount, shall be paid by the *Contractor* to the *Owner*, within 30 calendar days following a written demand by the *Owner* for such payment. 10.7 The liquidated damages payable under this Article A-10 are in addition to and without prejudice to any other remedy, action or any other alternative claim that may be available to the *Owner.*"

END OF AMENDMENTS TO CCDC 2 - 2020

1 SUMMARY OF WORK

.1 The project consists of:

.1 Building renovation for St. David Catholic Secondary School. Site located at 4 High St., Waterloo, Ontario.

.2 Work by Owner comprises the following:

.1 Installation of Owner equipment and furnishings.

.3 The words 'by others' when used in the Specifications or on the Drawings shall not mean by someone other than the Trade Contractor. The only means by which something shown or specified shall be indicated as not being in the Contract is by the use of the initials 'NIC' or the works 'Not In (the) Contract' or 'By Owner'.

2 WORK RESTRICTIONS

.1 Contractor's Use of Site

.1 Use of site to the areas designated on the drawings for execution of the Work. Do not unreasonably encumber site with materials or equipment. Move stored products or equipment which interfere with operations of Owner, or other contractors. Obtain and pay for use of off-site additional storage, or work areas as required by the Work.

.2 Hours of Work

.1 Hours of work for this Contract are generally confined to regular daily business hours of 8:00am to 5:00pm, Monday to Friday. Where required by sequencing of the Work, portions of the Work may be required to be performed outside of regular daily business hours, or on weekends, but shall be performed at such times at no additional cost to the Owner.

.2 Once the building is occupied, Contractor access to the building to perform Work to Correct deficiencies or to perform warranty is restricted and work must be done after hours. Any work during school hours will be required to be coordinated with Owner.

3 OFF SITE WORK

.1 All work beyond property lines, adjacent to the site, is included in Contract unless noted otherwise.

END OF SECTION

1 GENERAL

.1 Include all allowances listed below in the Bid Price.

.2 Expend Cash Allowances as directed by the Consultant.

.3 Each Cash Allowance will be adjusted to actual cost as defined hereunder and Contract Price will be amended accordingly by written order.

.4 Progress payments for work and material authorized under Cash Allowances will be made in accordance with GC 5.3 of the Contract.

.5 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.

.6 Include progress payments on accounts of Work authorized under cash allowances in Consultant's monthly certificate for payment.

.7 Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.

.8 Cash allowances <u>do not include H.S.T.</u>

2 MATERIAL ALLOWANCES (SUPPLY ONLY)

.1 Material cash allowance shall include and provide payment for:
- .1 Net cost of material.
- .2 Applicable duties and taxes.
- .3 Delivery to the Place of the Work.

.2 Include in the Bid Price, in addition to the material cash allowance, costs for the following:
- .1 Handling at the Place of the Work, including unloading, uncrating, storage and hoisting.
- .2 Protection from damage by elements or otherwise.
- .3 Labour for installation and finishing.
- .4 Other expenses required to complete installation.
- .5 Overhead and profit.

3 ASSEMBLY ALLOWANCES (SUPPLY AND INSTALL)

.1 Assembly cash allowance shall include and provide payment for:
- .1 Net cost of material.
- .2 Applicable duties and taxes.
- .3 Delivery to the Place of the Work.
- .4 Assembly contractors'/suppliers' <u>only</u>, expenses relating to the following:
  - .1 Handling at site, including unloading, uncrating, storage and hoisting.
  - .2 Protection from damage by elements or otherwise.
  - .3 Labour installation and finishing.
  - .4 Other expenses required to complete installation.
  - .5 Overhead and profit.

.2 Include in the Bid Price any overhead and profit or related General Contractor costs.

4 TESTING & LABORATORY SERVICES

.1 Testing & Laboratory Services allowances shall include and provide payment for:

.1 Transportation costs to and from the Place of the Work,
.2 Personnel & equipment required to perform tests or inspections,
.3 Costs of shipping & handling samples to laboratory for testing,
.4 Applicable duties and taxes.

5 ALLOWANCE AMOUNTS

.1 The Total Cash Allowance to be included in the Stipulated Price is ***two*** hundred and ***forty*** thousand dollars ($***240,000***.00) in Canadian funds.

.2 The Cash Allowance shall cover the following (in general):

.1 Security;
.2 Testing and Inspection;
.3 Abatement;
.4 Terrazzo repair;
.5 Building Automated System;
.6 Door hardware.
.7 Damaged ceiling grid replacement.
.8 Concrete block crack repairs.

END OF SECTION

1 MODIFICATIONS TO CONTRACT

.1 Proposed Change: as issued by the Consultant, will notify the Contractor of an impending or proposed change to the Work, and will require submission of a quotation from the Contractor and all affected Subcontractors for each item noted. Submit quotation within the time period stipulated on the form, and indicate separate line items for labour and materials in each case. Work outlined in a Proposed Change must not proceed without the issuance of a Change Order signed by the Owner.

END OF SECTION

1 APPLICATIONS FOR PAYMENT

.1 Applications for payment on account may be made monthly as the Work progresses, and shall be preceded by the submission of a Schedule of Values for review by the Consultant, in accordance with the Contract.

.2 The second and all subsequent applications for payment shall include a statement based on the Schedule of Values, a statutory declaration (CCDC 9B), and a standard Workers Compensation Certificate of Clearance along with all other required documentation listed in the Supplementary General Conditions.

2 SCHEDULE OF VALUES

.1 Submit Schedule of Values in spreadsheet form acceptable to the Consultant.

.2 Identify on each Schedule of Values, the following information:

.1 Date of Issue
.2 Project name
.3 Owner's name
.4 Contractor's name
.5 Payment period
.6 Payment certificate number

.3 Items of work listed shall include, but not be limited to, separate line items for the following:

.1 General Accounts
.2 Mobilization
.3 Supervision
.4 Bonds and Insurance
.5 Permits and Licenses
.6 Operations and Maintenance Manuals/As-Built Drawings
.7 All trades or portions of the Work, generally in chronological order
.8 Provision of other Products and/or services
.9 Cash Allowance expenditures
.10 Changes in the Work

.4 The total Contract amount for each trade or portion of the Work shall be listed beside each item.

.5 For the purposes of monthly payments, the following values shall be assigned for Operation and Maintenance Manuals and Contractor created Redline and Final electronic As-Built Drawings.

.1 Architectural Maintenance Manuals: $2500.00
.2 Architectural Redline As-Built Drawings: $2500.00
.3 Structural Redline As-Built Drawings: $2500.00
.4 Mechanical Maintenance Manuals: $2500.00
.5 Mechanical Redline and Electronic As-Built Drawings: $2500.00
.6 Electrical Maintenance Manuals: $2500.00
.7 Electrical Redline and Electronic As-Built Drawings: $2500.00
.8 Civil Redline As-Built Drawings: $2500.00

.6 The Values of the Work shall be listed as to the aggregate percentage and dollar value completed, under the following major headings:
- .1 Initial Contract Amounts for each line item,
- .2 Progress to Date,
- .3 Percent Complete,
- .4 Current Holdback Applied,
- .5 Current Invoice less Holdback
- .6 Current Invoice,
- .7 Previous Billings,
- .8 Contract Balance

.7 Work shall be subtotaled under original Contract amounts, Cash Allowance expenditures, and Changes to the Work.

.8 Final totals shall identify:
- .1 Total amount
- .2 Holdback deducted
- .3 Holdback released
- .4 Amount invoiced to date
- .5 Net amount
- .6 HST
- .7 Amount due this Certificate

END OF SECTION

1 PROJECT MANAGEMENT & COORDINATION

.1 Project Coordination

.1 The Contractor is responsible for the overall coordination of the Work. Coordinate the work of all subcontractors, and provide such assistance as is necessary, including but not limited to;

.1 Providing site dimensions and layout,

.2 Providing temporary facilities and controls,

.3 Scheduling subcontractors work to prevent conflicts,

.4 Scheduling and administering regular subtrade scheduling and coordination meetings throughout progress of the Work.

.5 Scheduling and administering regular subtrade safety meetings throughout progress of the Work.

.6 Coordinate construction sequences an schedules including all components of the Work, including all Divisions with interdependent responsibilities.

.2 The Contractor shall facilitate production of interference drawings where necessary for coordination of the Work. Provide such interference drawings to the Consultant for review.

.2 Project Supervision

.1 The Contractor shall provide and maintain full-time supervision on site until Substantial Performance is achieved and the deficiencies have been completed or otherwise agreed with the Owner. The supervisor shall be responsible for the overall day-to-day coordination on site between subtrades.

.2 The supervisor shall coordinate the work of all subcontractors, and provide such assistance as is necessary, including but not limited to;

.1 Layout,

.2 Rough carpentry work for blocking, strapping, nailers, etc.

.3 Project Meetings

.1 Attend all regular bi-weekly project progress meetings throughout progress of work.

.2 Consultant shall chair regular bi-weekly project progress meetings and shall record and distribute same to Owner, Contractor and Subconsultants. Contractor shall forward to appropriate subcontractors.

.4 Project Site Administration

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

.1 Contract drawings.

.2 Project manual.

.3 Addenda and Bid Revisions.

.4 Reviewed shop drawings.

.5 Change orders and other Contract modifications.

.6 Field test and inspection reports.

.7 Approved schedules.

.8 Manufacturer's installation and application instructions.

2 SCHEDULES

.1 Construction Progress Schedule.

.1 Prepare schedule in horizontal chart form, with weekly horizontal time scale identifying first/last work day of each week. Schedule must utilize "crtical path" method.

.2 Indicate separate line for each trade or operation of the Work. Arrange trades in chronological order for commencement of that part of the Work.

.3 Identify projected major milestones in the course of the Work such as completion of foundation work, structure, closing in, major inspections by building officials, Substantial Performance, etc.

.2 Submittal Schedule

.1 Provide schedule for submittal of all Shop Drawings, Product Data and Samples.

.2 Provide complete list of all manufacturered products to be used in the course of the Work, including those amended by addenda.

.3 Submission of Schedules

.1 Submit one copy of each schedule to the Consultant for review, prior to first progress billing. Amend schedule as required.

.2 Submit 4 copies of each subsequent issue of schedules to the Consultant.

.3 Update schedule on a regular basis or as requested by the Consultant.

3 ELECTRONIC FILE AGREEMENT

.1 Electronic files for this project will not be released until the Electronic Files Transfer Agreement, appended to this Section, has been completed and returned to the Consultant.

4 ADDITIONAL DOCUMENTS

.1 Consultant may issue additional documents in the form of drawings, specifications, schedules, or written instructions to assist proper execution of the Work. These documents shall take one of the following forms as defined in the Contract;

.1 Supplemental Instruction: no adjustment in Contract Price or Contract Time.

.2 Change Order: amendment to the Contract recommended by the Consultant, and agreed upon by the Owner and the Contractor.

5 SUBMITTAL PROCEDURES

.1 Submit to Consultant, all items specified for review, with reasonable promptness and in orderly sequence so as to not cause delay in the Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 The Contractor shall schedule a minimum of 10 working days in order for the Consultants to review each submission. This shall also apply to subsequent resubmissions.

.3 Do not proceed with work affected by the submittal until review is complete.

.4 Review all submittals prior to submission to the Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with the requirements of the Work and the Contract Documents. Submittals not stamped, signed, and dated will be returned without review.

.5 Verify field measurements and affected adjacent work are coordinated.

.6 Contractor's responsibility for errors and omissions in submission, or deviations from requirements of Contract Documents, is not relieved by Consultant's review of submittals.

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

.8 Shop Drawings

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

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

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

.4 Make changes in shop drawings as the Consultant may require, consistent with Contract Documents. When resubmitting, notify the Consultant in writing of any revisions other than those requested.

.5 Shop drawings shall be submitted electronically wherever possible. Files shall be in PDF format only.

.6 Shop drawings submitted by FAX, or as copies of FAX transmissions are not acceptable as shop drawings, and will not be reviewed.

.7 Reproductions of Consultants' drawings are not acceptable for the purpose of creating Shop Drawings. Any drawings submitted for review which contain drawings or any parts of drawings produced by the Consultant, will be rejected. The Consultant will not take responsibility for any resulting delays in construction as a result of the above.

.8 Shop drawings not submitted in the scale type of the contract documents (ie. metric for metric drawings) will not be reviewed.

.9 Product Data Sheets

.1 Manufacturer's standard schematics, catalogue sheets, diagrams, schedules, performance charts, illustrations and other descriptive data are acceptable in lieu of shop drawings, where specified.

.2 Product Data Sheets are acceptable provided they conform to the following:

.1 Information not applicable to project has been deleted.
.2 Supplement standard information to provide additional information applicable to project.
.3 Show dimensions and clearances required.
.4 Show performance characteristics and capacities.
.5 Show wiring diagrams, when requested, and controls.

.3 Submit product data sheets or brochures for requirements requested in specification Sections and as the Consultant may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.

.4 Submit Product Data Sheets.

.5 Product data sheets submitted by FAX, or as copies of FAX transmissions will not be accepted.

.10 Return of Submissions

.1 If upon review by the Consultant, no errors or omissions are discovered or if only minor corrections are made, the shop drawing transparency or one copy of the product data will be returned and fabrication and installation of Work may proceed.

.2 If shop drawings or data sheets are rejected, noted copy will be returned and resubmission of corrected shop drawings or data sheets through the same procedure indicated above, shall be performed before fabrication and installation of Work may proceed.

.11 Samples

.1 Submit samples for review, in duplicate, in sizes requested in respective specification sections. Label samples as to origin and intended use in the Work.

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

.3 Deliver samples prepaid to Consultant's office.

.4 Notify the Consultant in writing, at the time of submission of deviations in samples from requirements of Contract Documents.

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

.6 Make changes in samples which the Consultant may require, consistent with Contract Documents.

.7 Reviewed samples or mock-ups will become standards of workmanship and material against which installed work will be checked on project.

.12 Submission Requirements

.1 Accompany submissions with transmittal letter containing:

.1 Date,
.2 Project title and number,
.3 Contractor's name and address,
.4 Drawing/page numbers of each shop drawing or data sheet,
.5 Identification (ie. "Structural Steel Shop Dwgs."), and
.6 Number of copies submitted.

.2 Submissions shall include (where applicable) :

.1 Date and revision date,
.2 Project title and number,
.3 Name of Contractor, Subcontractor(s), Supplier/Manufacturer,
.4 Identification of product or material,
.5 Relation to adjacent structure or materials,
.6 Field dimensions, clearly identified as such,
.7 Reference standards (CSA, CGSB, ASTM, etc.), and
.8 Contractor's stamp, initialled or signed, certifying review of submission, and verification of field measurements.

.13 Distribution of Submittals after Review

.1 Distribute copies of shop drawings and product data which carry Consultant's stamp as follows (where applcable):

.1 Job site file (Record documents),
.2 General Contractor’s office,
.3 Subcontractors, and
.4 Suppliers or Fabricators.

END OF SECTION

1 GENERAL

.1 Provide construction photographs in accordance with procedures and submission requirements specified in this section.

.2 Photographs shall be taken using a digital camera.

.3 Photographs shall be named and grouped by date using the following file name format: STDAVID_CSS - YYYY_MM_DD (##).jpeg

2 PROGRESS PHOTOGRAPHS

.1 Provide 1 digital set of construction photographs, documenting progress of the Work. Submit one digital set with each monthly progress draw.

.2 Submit progress photographs with each monthly progress draw, and at the following milestones;

.1 Completion of excavation and pouring of footings,
.2 Completion of foundations prior to backfilling,
.3 Completion of structural frame,
.4 Completion of rough-in of mechanical and electrical services before concealment.
.5 Completion of each major portion of work
.6 Completion of each major finish item.

.3 Orientation of Photographs: provide photos from 4 general viewpoints, as well as specific views as required by milestones specified above, and as determined by Consultant prior to first Progress Draw.

3 FINAL PHOTOGRAPHS

.1 Submit full digital set of construction photographs taken during course of Work with Operations & Maintenance Manuals at the completion of the project.

.2 Orientation of Photographs: provide final photos as follows:

.1 General viewpoints as defined above,
.2 Views of all exterior elevations,
.3 One view from each street,
.4 Views of site showing parking areas and play surfaces,
.5 Interior views of all major spaces,
.6 One set of views of a typical room,
.7 Specific views as determined by Consultant (Max. 48 views).

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES
- .1 Requirements for quality of work.
- .2 Requirements for for material inspection and testing.
- .3 Requirements for determination of defective materials and work.

1.2 REFERENCE STANDARDS
- .1 CSA A23.1; Concrete Materials and Methods of Concrete Construction.
- .2 CSA A23.2; Methods of Test for Concrete.
- .3 CSA S16.1; Limit States Design of Steel Structures.
- .4 CSA W47.1; Certification of Companies for Fusion Welding of Steel Structures.
- .5 CSA W59; Welded Steel Construction (Metal Arc Welding).
- .6 CISC; Code of Standard Practice for Structural Steel.
- .7 OPSS; Ontario Provincial Standard Specifications.

1.3 REGULATORY REQUIREMENTS
- .1 Products and services provided to complete the Work shall meet or exceed requirements of specified standards, municipal by-laws, building codes and referenced documents.

1.4 INDEPENDENT INSPECTION AND TESTING
- .1 Independent Inspection and Testing Consultants will be engaged by the Owner for the purpose of inspecting and/or testing individual portions of the Work. The initial cost of such services will be borne by the Owner.

1.5 RESPONSIBILITIES
- .1 Inspection and Testing Consultants
  - .1 Inspection and Testing Consultants shall;
    - .1 Provide inspection and testing specified,
    - .2 Inform the Contractor and Consultant immediately upon observance of materials, systems, or procedures not in compliance with the specifications, and
    - .3 Submit complete reports to the Contractor and the Consultant in a timely manner.
- .2 Contractor
  - .1 Contractor shall:
    - .1 Provide access to the Work for Inspection/Testing Consultants, and
    - .2 Inform the Inspection/Testing Consultants in advance of day and time required for inspection and tests.
  - .2 It is the responsibility of the General Contractor to ensure the quality control requirements of the Contract are implemented.
- .3 Consultant
  - .1 The Consultant will make final decisions on changes to the scope of work of inspection and testing that may affect the Contract Price.

.2 When informed of of any material procedure or test result that does not meet or exceed the specifications, the Consultant will respond in an expedient manner to resolve the issue.

1.6 ACCESS TO WORK

.1 Allow inspection & testing companies access to the Work, as well as off site manufacturing and fabrication plants.

1.7 REPORTS

.1 Submit three copies of inspection and test reports to the Consultant.

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

.3 Submit one copy of inspection and test reports to the Building Official having jurisdiction, where required by that official.

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

1.8 CAST-IN-PLACE CONCRETE

.1 All cast-in-place concrete shall be subject to inspection and testing as specified herein. Inspection and Testing shall include:
- .1 Verification of materials delivered to site.
- .2 Slump tests.
- .3 Sampling of cylinders, and compressive strength tests.

1.9 MASONRY MORTAR

.1 All masonry mortar shall be subject to inspection and testing as specified herein. Inspection and Testing shall include:
- .1 Visual inspection of all materials.
- .2 Sampling and testing of mortar cubes.

1.10 STRUCTURAL STEEL

.1 All structural steel shall be subject to inspection and testing as specified herein. Inspection and Testing shall include:
- .1 Confirmation that materials supplied meet specifications.
- .2 Shop inspection during fabrication of steel.
- .3 Checking welders' CWB Certification.
- .4 Checking fabricated members against design member shapes.
- .5 Checking fabricated members against allowable sweep and camber.
- .6 Checking fabricated members against specified camber.
- .7 Visual inspection of all welded connections including spot checking of joint preparation and fit-up.
- .8 Non-destructive testing of welding.
- .9 Sample checking that tolerances are not exceeded during erection including fit-up of field welded joints.
- .10 Inspection of field cutting.
- .11 Inspection and testing of all field bolted connections.

.12 Visual inspection of all welds securing steel deck to structural steel.
.13 Visual inspection of all bearing plate locations.

1.11 PAINTING
.1 All painting shall be subject to inspection and testing as specified herein.

2 PRODUCTS

(RESERVED)

3 EXECUTION

3.1 INSPECTION AND TESTING - GENERAL
.1 Furnish test results and mix designs as may be requested.

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

3.2 INSPECTION AND TESTING - PROCEDURES
.1 Notify the appropriate agency and Consultant in advance of the requirement for tests, in order that attendance arrangements can be made.

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

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

3.3 QUALITY OF THE WORK
.1 Quality of the Work shall be first class, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if required work is such as to make it impractical to produce required results.

.2 Do not employ any unfit person or anyone unskilled in their required duties. The Consultant reserves the right to require the dismissal from the site, of workers deemed incompetent, careless, insubordinate or otherwise objectionable.

3.4 DEFECTIVE MATERIALS AND WORK
.1 Refer to GC 2.4 of CCDC 2-2020.

.2 Where evidence exists that defective work has occurred, or that work has been carried out incorporating defective products, the Consultant may have independent tests, inspections, or surveys performed in order to determine if work is defective.

.3 Tests, inspections, or surveys carried out under these circumstances will be made at the Contractor's expense in the event of defective work, or at the Owner's expense where work is in conformance. Where tests incorporate a number of samples, payment will be assessed, by the Consultant, based on the ratio of conforming to non-conforming results. This does not include re-testing of soil compaction during placement, where evidence exists of non-conformance with the Contract documents, but rather only if re-testing is called for after completion of compaction.

END OF SECTION

1 GENERAL

1 SECTION INCLUDES
- .1 Codes and Standards.
- .2 Authority Having Jurisdiction.
- .3 Health and Safety Guidelines for Work in Occupied Buildings.
- .4 Permits and Fees.
- .5 Relics, Antiquities and Human Remains.

2 CODES AND STANDARDS
- .1 Codes
  - .1 All construction shall conform to the Ontario Building Code, the National Building Code (NBC) and the National Fire Code (NFC) latest editions including all supplements and amendments.
  - .2 Conform to all other codes, by-laws and regulations as specified within individual sections of the specifications.
- .2 Industry Standards
  - .1 Industry Standards are specified within individual sections as applicable to those portions of the Work. The latest editions of all industry standards shall be the standards for which quality of work shall be assessed.
  - .2 Comply with all relevent codes, standards and industry-accepted practices, as specified herein, or as applicable to the Work.

3 AUTHORITIES HAVING JURISDICTION
- .1 The Chief Building Official of the Municipality of the Place of the Work, is the primary Authority Having Jurisdiction for compliance with all codes, by-laws and regulations as they apply to all construction.
- .2 Other Authorities Having Jurisdiction may be required to review and approve certain portions of the Work. The Chief Building Official of the Municipality of the Place of the Work, will determine the requirements for such involvement.

4 HEALTH AND SAFETY GUIDELINES FOR WORK IN OCCUPIED BUILDINGS
- .1 The Contractor shall conform with requirements of WCDSB Health and Safety Guidelines for Work in Occupied Buldings, as appended to this Section.

5 PERMITS AND FEES
- .1 No construction work may commence without a valid, posted Building Permit.
- .2 The Owner is responsible for obtaining all necessary information and applying for the Building Permit, including payment of associated fees.
- .3 The Contractor is responsible for applying for, and obtaining all necessary permits, licenses, or certificates required by the Work.

.4 Authorities Having Jurisdiction may levy fees for issuing permits, licenses, or certificates under their jurisdiction. The Contractor shall pay all such fees as required, and shall include the cost of such fees in their Contract Price.

.5 Furnish certificates and permits from other Authorities Having Jurisdiction when so requested by the Consultant.

.6 Prior to commencement of construction, post the Building Permit at the Place of the Work.

6 RELICS, ANTIQUITIES AND HUMAN REMAINS

.1 Comply with the General Conditions of the Contract with respect to relics, antiquities, and human remains.

.2 Isolate and protect human remains, relics, antiquities, items of historical, archeological or scientific interest such as cornerstones, commemorative plaques, inscribed tablets and other similar objects found during the course of the Work.

.3 If such items are discovered in the course of construction, stop work in the immediate vicinity, and give immediate notice to the Consultant as to the nature of the discovery, and await written instructions before proceeding with work in the area.

.4 Resume work only after the conclusion of any inspection and evaluation by experts engaged by the Owner, and only after being given permission to do so.

.5 Relics, antiquities and items of historical or specific interest remain the Owner's property.

END OF SECTION

Abbreviations listed, when used in the Contract Documents, shall have the following meanings:

ABBREVIATION	**MEANING**
AA	ALUMINUM ASSOCIATION
AAMA	ARCHITECTURAL ALUMINUM MANUFACTURERS` ASSOCIATION
AASHO	AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
ACI	AMERICAN CONCRETE INSTITUTE
AGA	AMERICAN GAS ASSOCIATION
AIA	AMERICAN INSTITUTE OF ARCHITECTS
AIMA	ACOUSTICAL & INSULATING MATERIALS ASSOCIATION
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
AMCA	AIR MOVING AND CONDITIONING ASSOCIATION INC.
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING & AIR CONDITIONING ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWI	ARCHITECTURAL WOODWORK INSTITUTE (USA)
AWMAC	ARCHITECTURAL WOODWORK MANUFACTURERS ASSOCIATION OF CANADA
AWS	AMERICAN WELDING SOCIETY
CCA	CANADIAN CONSTRUCTION ASSOCIATION
CCRC	CANADIAN CODE FOR RESIDENTIAL CONSTRUCTION
CEC	CANADIAN ELECTRICAL CODE
CFUA	CANADIAN FIRE UNDERWRITERS ASSOCIATION
CGA	CANADIAN GAS ASSOCIATION
CGSB	CANADIAN GENERAL STANDARDS BOARD
CIQS	CANADIAN INSTITUTE OF QUANTITY SURVEYORS
CISC	CANADIAN INSTITUTE OF STEEL CONSTRUCTION
CITC	CANADIAN INSTITUTE OF TIMBER CONSTRUCTION
CLA	CANADIAN LUMBERMEN`S ASSOCIATION
CMHC	CANADA MORTGAGE & HOUSING CORPORATION
COFI	COUNCIL OF FOREST INDUSTRIES OF BRITISH COLUMBIA
CPCI	CANADIAN PRESTRESSED CONCRETE INSTITUTE
CRCA	CANADIAN ROOFING CONTRACTORS ASSOCIATION
CSA	CANADIAN STANDARDS ASSOCIATION
CSC	CONSTRUCTION SPECIFICATIONS CANADA
CSI	CONSTRUCTION SPECIFICATIONS INSTITUTE (USA)
CSPI	CORRUGATED STEEL PIPE INSTITUTE
CSSBI	CANADIAN SHEET STEEL BUILDING INSTITUTE
CUA	CANADIAN UNDERWRITERS` ASSOCIATION
CWB	CANADIAN WELDING BUREAU
CWC	CANADIAN WOOD COUNCIL
DND	DEPARTMENT OF NATIONAL DEFENCE, CANADA
FM	FACTORY MUTUAL ENGINEERING CORPORATION
FS	FEDERAL SPECIFICATION (USA)
IES	ILLUMINATING ENGINEERING SOCIETY
IGMAC	INSULATED GLASS MANUFACTURERS ASSOCIATION OF CANADA
LTIC	LAMINATED TIMBER INSTITUTE OF CANADA
MIA	MARBLE INSTITUTE OF AMERICA
MPMDD	MODIFIED PROCTOR MAXIMUM DRY DENSITY
NAAMM	NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (USA)
NBFU	NATIONAL BOARD OF FIRE UNDERWRITERS
NBC	NATIONAL BUILDING CODE OF CANADA

NBS	NATIONAL BUREAU OF STANDARDS (USDC)
NEMA	NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NHLA	NATIONAL HARDWOOD LUMBER ASSOCIATION (USA)
NLGA	NATIONAL LUMBER GRADES AUTHORITY
NRC	NATIONAL RESEARCH COUNCIL
OBC	ONTARIO BUILDING CODE
OHSA	OCCUPATIONAL HEALTH AND SAFETY ACT
OPSS	ONTARIO PROVINCIAL STANDARD SPECIFICATIONS
PCA	PORTLAND CEMENT ASSOCIATION
PCI	PRESTRESSED CONCRETE INSTITUTE
SDI	STEEL DECK INSTITUTE
SPMDD	STANDARD PROCTOR MAXIMUM DRY DENSITY
SSPC	STEEL STRUCTURES PAINTING COUNCIL
TTMAC	TERRAZZO, TILE & MARBLE ASSOCIATION OF CANADA
ULC	UNDERWRITERS LABORATORIES CANADA
UL	UNDERWRITERS LABORATORIES (USA)
USAS	UNITED STATES OF AMERICA STANDARDS INSTITUTE
WSIB	WORKPLACE SAFETY AND INSURANCE BOARD

END OF SECTION

1 REFERENCES

.1 Occupational Health and Safety Act and Regulations for Construction Projects (2000) (Ontario Regulation 213/91, amended by Reg. 631/94, & Reg. 145/00).

.2 National Fire Code of Canada (2005)

.3 Ontario Fire Code (2005)

.4 Ontario Building Code (2012)

2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities, facilities and controls in order to execute the work expeditiously. Remove from site all such work after use.

3 VEHICULAR ACCESS & PARKING

.1 Provide and maintain adequate access to project site.

.2 Build and maintain temporary access roads where indicated or required, and provide snow removal during period of work.

.3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads. Maintenance shall include regular snow removal if not provided under separate contract, and regular power washing to remove mud and dirt.

.4 Where site access for construction vehicles necessitates use of public roads, remove mud and dirt from such roads where contaminated by construction vehicles.

.5 Traffic Control: Provide and maintain flagpersons, traffic signals, barricades and flares, lights, or lanterns as required to perform the work and protect the public.

.6 Construction Parking

.1 Parking for construction equipment vehicles will be limited to the site or immediate areas of work.

.2 Parking for Contractors' and Subcontactors' personal vehicles will be limited to Construction Site provided it does not constitute a safety hazard nor disrupt the performance of Work.

4 TEMPORARY UTILITIES

.1 Temporary Electricity and Lighting

.1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.

.2 Install temporary facilities for power such as pole line and underground cables to approval of local power supply authority.

.3 Electrical power and lighting systems installed under this contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage. Replace lamps which have been used more than a period of 3 months.

.4 Provide temporary lighting in all areas of construction, to the minimum requirements of the Occupational Health and Safety Act, and minimum requirements specified herein.

.2 Temporary Water Supply

.1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.

.2 Permanent water supply system installed under this contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage.

.3 Temporary Heating and Ventilating

.1 Provide and maintain all temporary heat and ventilation necessary during construction, including cost of installation, fuel, operation, attendance and maintenance. Use of direct-fired heaters discharging waste products into work areas will not be permitted unless prior approval is given by Consultant.

.2 Provide temporary heat and ventilation in enclosed areas as required to:

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

.3 Maintain minimum temperature of 10°C or higher where construction is in progress and maintain until acceptance of structure by Consultant.

.4 Ventilating

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

.5 Maintain strict supervision or operation of temporary heating and ventilating equipment.

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.
.3 Prevent abuse of services.
.4 Prevent damage to finishes.
.5 Vent direct-fired combustion units to outside.

.6 The permanent HVAC systems of the building, or portions thereof, may not be used during construction.

5 CONSTRUCTION FACILITIES

.1 Field Office

.1 Provide minimum 2400 x 4800mm office and furnish with desk, drawing layout table, filing cabinet, and coat hooks.

.2 Provide minimum 750 Lx lighting level.

.3 Heat to maintain 22°C inside temperature.

.4 Provide 2 operable windows for cross ventilation, or air condition.

.2 Temporary Communication

.1 Provide and pay for temporary communication systems to be installed in Field Office.

.2 Provide hard wire and wireless high speed internet access.

.3 Cellular telephones are acceptable. Pay telephone is not acceptable.

.3 Equipment, Tools and Materials Storage

.1 Provide adequate weathertight enclosures with raised floors, for storage of materials, tools, and equipment which are subject to damage by weather.

.2 Temporary enclosures required by subtrades as workshops shall be provided by those trades.

.4 Site Storage and Overloading

.1 Confine the Work and the operations of employees to limits indicated by the Contract Documents. Do not unreasonably encumber the premises with products.

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

.5 Sanitary Facilities

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances. Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition. Where portable toilet facilities are provided, empty and sanitize such facilities on a weekly basis, or more frequently if required.

.2 Permanent new facilities shall not used by the Contractor.

6 CONSTRUCTION SAFETY MEASURES

.1 Observe all construction safety measures as required by the General Conditions of the Contract, the Occupational Health and Safety Act and Regulations for Construction Projects, and by all authorities having juridiction, provided that in case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Provide applicable spare safety equipment such as helmets, safety glasses, and harnesses, and enforce their use by Consultants, the Owner, their representatives and any authorized visitors to the site.

.3 Provide and maintain fences, gates and locks, covered walkways, guard rails, barriers, night lights, and appropriate warning signage as required for the protection of the public, and of public and private property; as required by the General Conditions of the Contract, the Occupational Health and Safety Act and Regulations for Construction Projects, and by all authorities having jurisdiction. Erect and maintain sturdy railings around shafts, and the like, to protect workmen and the public from injury.

.4 Workplace Hazardous Materials Information System

.1 Comply with all requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets.

.2 Include copies of all WHMIS data sheets in Operations and Maintenance Manuals.

7 CONSTRUCTION AIDS

.1 Falsework

.1 Design and construct falsework in accordance with CSA S269.1.

.2 Scaffolding

.1 Design, construct and maintain scaffolding in accordance with CSA S269.2.

.2 Erect scaffolding independent of walls. Remove promptly when no longer required.

.3 Hoisting

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

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

8 TEMPORARY BARRIERS & ENCLOSURES

.1 Construction Isolation Fencing

.1 Erect isolation fencing around perimeter of construction areas to protect the public, workers, and the public from injury.

.2 Construction Isolation Fencing shall consist of:

.1 Temporary modular welded wire mesh fencing, minimum 1828 x 2440mm high, by CanFence Rentals Ltd., or equivalent.

.2 Provide lockable gates within hoarding / fencing for access to site by workers and vehicles.

.3 Provide barriers around trees and planting beds designated to remain. Protect from damage.

.4 Enclosure of Structure

.1 Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed.

.2 Erect enclosures to allow access for installation of materials and working inside enclosure.

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

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

.5 Dust Control

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

.2 Dust screens shall consist of, as a minimum, 0.15mm thick fire retardant polyethylene sheets secured to appropriate framing and sealed at all joints and at perimeter to prevent migration of dust

.1 Poly sheet: Polytarp, Super Six by Polytarp Products or approved alternative.

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

.4 Provide dust catching walk-off matting, at all construction entrances.

9 TEMPORARY CONTROLS

.1 Drainage & Erosion Control

.1 Refer to Section 01 57 19 – Temporary Environmental Controls and Site Grading & Servicing drawings.

.2 Tree and Plant Protection

.1 Refer to Section 01 57 19 – Temporary Environmental Controls and Landscape drawings.

.3 Security Measures

.1 Where progress of construction reaches point where building exterior is fully enclosed, provide construction cylinders for doors, and secure building against intrusion. Where installation of fixtures and equipment, or storage of materials and equipment, inside the building has begun prior to installation of exterior windows and doors, provide temporary plywood enclosures for window and door openings to prevent intrusion until permanent closures are in place.

.2 Extent of security services shall be at the sole discretion of the Contractor (except as noted in item .3 below) and all costs incurred shall be paid for by the Contractor. Note that the fit, finish and new appearance of the finished building will not be compromised to accommodate temporary security provisions. Materials, products, finishes, etc. damaged due to vandalism are to be restored and/or replaced to an as-new condition.

.3 Commencing at a date which is four (4) months prior to the scheduled date for Substantial Performance, Contractor shall arrange and pay for the provision of “after hours” manned security at the project site. Security shall provide surveillance and oversite of the building and site areas, during all times when the Contractor’s construction personnel are not in attendance. Continue services until time of substantial completion.

.4 Site Signs and Notices

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

.2 No other signs or advertisements of any description except notices regarding safety and instruction, shall be put up around the building, or site, without the approval of the Consultant.

END OF SECTION

1 REFERENCES
- .1 National Building Code of Canada (2005)
- .2 National Fire Code of Canada (2005)
- .3 Ontario Fire Code (2007)
- .4 Guidelines for Maintaining Fire Safety during Construction in Existing Buildings, (10/31/88) Ontario Ministry of the Solicitor General, Office of the Fire Marshal.
- .5 Ontario Building Code (Regulation 350/06)

2 FIRE SAFETY

.1 Fire Fighting Equipment

.1 Provide and maintain in working order, ULC labelled, 9kg 4A 60BC type fire extinguishers, and locate in prominent positions to approval of authorities having jurisdiction.

.2 Fire Department Access

.1 Provide and maintain fire access routes as designed, as soon as construction sequence will allow. Access routes must have compacted granular subbase, and base in place before superstructure of building may proceed.

.2 Construction activities must not obstruct access routes designated for fire department equipment. If necessary that existing access be obstructed or deleted, alternative access, acceptable to the fire department, must be provided prior to commencement of construction, in accordance with Ontario Building Code location and design criteria for required access routes.

.3 Control of Combustible Materials

.1 The stockpiling of construction materials adjacent to the existing building must be carefully controlled in accordance with the Ontario Fire Code. Materials stored, and their proximity to, equipment used in construction may create a fire hazard. Control of combustibles on a construction site is regulated under the Occupational Health and Safety Act.

.4 Hot Work

.2 Conform to the requirements of the Occupational Health and Safety Act – Regulations for Construction Projects.

.3 Provide all necessary guards and barriers to protect workers, property, and the public when performing hot work such as torching, cutting or coring. Protect all adjacent combustible materials.

.4 Provide a "Fire Watch" for a minimum of 3 hours after each instance of discontinuing hot work.

END OF SECTION

1 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

2 SUBMITTALS

.1 Submittals: in accordance with Submittal Procedures.

.2 Prior to commencing construction activities or delivery of materials to Site, submit Environmental Protection Plan for review and approval by Consultant Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.

.3 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.4 Environmental protection plan: include:

.1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan;

.2 Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from Site;

.3 Name(s) and qualifications of person(s) responsible for training site personnel;

.4 Descriptions of environmental protection personnel training program;

.5 Erosion and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial and Municipal laws and regulations;

.6 Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on Site;

.7 Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plans include measures to minimize amount of mud transported onto paved public roads by vehicles or runoff;

.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas;

.9 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance;

.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris;

.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off-site;

.12 Contaminant prevention plan that: identifies potentially hazardous substances to be used on Site; identifies intended actions to prevent introduction of such materials into air, water or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials;

.13 Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water and water used in flushing of lines;

.14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands;

.15 Pesticide treatment plan: to be included and updated, as required.

3 FIRES

.1 Fires and burning of rubbish on Site is strictly prohibitted.

4 DISPOSAL OF WASTES

.1 Burying of rubbish and waste materials on Site is strictly prohibitted.

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

5 DRAINAGE & EROSION CONTROL

.1 Provide erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided. Plan: include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.2 Storm Water Pollution Prevention Plan (SWPPP) may be substituted for erosion and sedimentations control plan.

.3 Provide temporary drainage and pumping as necessary to keep excavations and Site, free from water.

.4 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.6 Provide and maintain temporary drainage and pumping as necessary to keep excavations and site free from excess water.

.7 Provide silt fencing at site perimeters and where required by local authorities to prevent contamination of adjoining properties from silt and water drainage.

6 TREE AND PLANT PROTECTION

.1 Protect existing trees and plants on all adjacent properties, where in close proximity to construction activities, or where construction access passes within 3m of trees or plants, whether indicated on drawings or not.

.2 Conform to all local By-Laws regarding tree preservation and protection.

.3 Protect existing trees and plants on site as indicated.

.4 Restrict tree removal to those designated by Consultant. Wrap in burlap trees and shrubs adjacent to construction work, storage areas and trucking lanes. Encase trees and shrubs with protective wood framework from grade level to height of 2134mm.

.5 Protect roots to minimum 1m beyond dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones of protected trees. Minimize stripping of topsoil and vegetation.

.6 The Minimum Tree Protection Zone will be the drip line. Within this tree protection zone there will also be no construction activity including but not limited to no root cutting, no alteration or disturbance to existing grades of any kind, no changes to the grade by adding fill, excavating or scraping, no storage of construction materials or equipment, no stockpiling of soil, debris or construction waste, & no movement or storage of heavy vehicles or equipment. Tree protection barriers must be included and priced as part of the project. For short term project (up to 2 months), standard T-bars and plastic safety fence can be used. For a longer term project, use 10 gauge chain link fence and standard T-bars. In all cases, standard T-bars should not be spaced more than 6 to 7 feet apart. These protection barriers must be erected before the project starts, must be maintained throughout the project, and taken down when final inspection and signoffs are completed.

7 WORK ADJACENT TO WATERWAYS/DRAINAGE DITCHES

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid construction materials across waterways.

.6 Avoid indicated spawning beds constructing temporary crossings of waterways.

8 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.

.3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

9 HISTORICAL / ARCHAEOLOGICAL ARTIFACTS

.1 In the event that buried archaeological remains are encountered on the property during construction activities, the Heritage Operations Unit of the Ministry of Tourism and Culture be notified immediately.

.2 In the event that human remains are encountered during construction, the proponent should immediately contact both the Ministry of Tourism and Culture, and the Registrar or Deputy Registrar of Cemeteries at the Cemeteries Regulation Unit, Ministry of Government Services, (416) 326-8404.

10 NOTIFICATION

.1 Consultant will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan. Contractor shall, after receipt of such notice, inform Consultant of proposed corrective action and take such action for approval by Consultant.

.2 Consultant will issue stop order of Work until satisfactory corrective action has been taken.

.3 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

END OF SECTION

1 PRODUCT OPTIONS

.1 Provide products specified under individual specification sections. Where Specification lists two or more products, or two or more manufacturers of the same product, the Contractor may select one of the listed products or manufacturers. Confirm selection of products and manufacturers when requested by the Consultant.

.2 When only one product or manufacturer is listed in the specifications, it is intended that only that product or manufacturer is acceptable.

2 PRODUCT SUBSTITUTION PROCEDURES

.1 Substitution Procedures During Construction

.1 Products may only be substituted during the Construction period for one or more of the following reasons:

.1 Insolvency of the product manufacturer.

.2 Inability of the manufacturer to provide the product(s) in the timeframe required to maintain the construction schedule.

.3 Product specified has been discontinued.

.4 Substitution proposed offers better performance than that specified, at no additional cost.

.5 Substitution offers equivalent performance to that specified, at a reduced cost to the Owner (reduction in Contract Price).

.2 Items 2.1.1.2, and 2.1.1.3 will require a letter from the manufacturer, confirming their inability to provide the products specified, or inability to meet the schedule.

.3 Items 2.1.1.4, and 2.1.1.5 will be at the discretion of the Owner.

3 AVAILABILITY

.1 Immediately upon signing Contract, review Product delivery requirements, and identify lead times for supply of all Products. If lead times in supply of Products may affect the Construction Schedule, notify the Consultant in order that appropriate action may be authorized in ample time to prevent delay in performance of the Work.

.2 The Contractor shall order Products and materials in a timely fashion so as to ensure that delivery of such Products and materials shall coincide with the Construction Schedule. Failure of the Contractor or their Subcontractors to order Products and materials in a timely fashion, shall not be cause for substitution in accordance with the criteria set out under Article 2 – Product Substitution Procedures.

.3 In the event of failure to notify the Consultant of Product delivery problems at the commencement of the Work, and should it appear that the Work may be delayed for such reason, the Consultant reserves the right to substitute more readily available Products of similar character of their chosing, at no increase in Contract Price.

4 REFERENCE STANDARDS

.1 Within the specifications, reference standards are identified. Conform to these standards, in whole or part, as specifically requested.

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

.3 The cost for such testing will be born by the Owner in the event of conformance with Contract Documents or by the Contractor in the event of non-conformance.

.4 Conform to latest date of issue of referenced standards in effect on date of submission of bids, except where a specific date of issue is specifically noted.

5 PRODUCT TRANSPORTATION & DELIVERY

.1 Transportation and delivery costs of Products required in the performance of the Work, are included in the Contract Price.

.2 Transportation and delivery costs of Products supplied by the Owner will be paid for by the Owner. Unload, handle, and store such Products on site.

.3 Products must be appropriately crated, skidded, boxed, shrink-wrapped, or otherwise packaged to protect such products from damage during shipment. Products which arrive at the site in a damaged condition must be rejected and returned to the supplier/manufacturer for immediate replacement.

.4 Advise the Owner 30 days in advance of anticipated delivery dates for materials and equipment supplied by the Owner.

6 PRODUCT STORAGE, HANDLING AND PROTECTION

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

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

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

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

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

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

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

.8 Remove and replace damaged Products at own expense and to the satisfaction of the Consultant.

7 MANUFACTURER'S INSTRUCTIONS

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

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

.3 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes the Consultant to require removal, replacement where necessary, and re-installation at no increase in Contract Price.

8 FASTENINGS

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

.2 Prevent electrolytic action between dissimilar metals and materials.

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

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

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

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

.7 Obtain Consultant's approval before using explosive actuated fastening devices.

9 QUALITY OF MATERIALS

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

.2 Products relying on uniformity of colour and pattern for appearance, such as resilient flooring, carpeting, fabrics, and vinyl wallcovering, shall be from one dye lot for the project. All products delivered to the site must be labeled as to dye lot, or production run number, as well as production date.

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

.4 Should any dispute arise as to the quality or fitness of Products, the Consultant may request additional testing based upon the requirements of the Contract Documents, to confirm acceptability of products or materials. Refer to Article 10 - Defective Materials And Work, and Section 01 40 00.

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

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

10 DEFECTIVE MATERIALS AND WORK

.1 Where evidence exists that defective work has occurred, or that work has been carried out incorporating defective products, the Consultant may have independent tests, inspections, or surveys performed in order to determine if work is defective.

.2 Tests, inspections, or surveys carried out under these circumstances will be made at the Contractor's expense in the event of defective work, or at the Owner's expense where work is in conformance. Where tests incorporate a number of samples, payment will be assessed, by the Consultant, based on the ratio of conforming to non-conforming results. This does not include re-testing of soil compaction during placement, where evidence exists of non-conformance with the Contract documents, but rather only if re-testing is called for after completion of compaction.

12 WARRANTIES & GUARANTEES

.1 Warrant all products and labour forming part of the Work for the period specified in the Contract, unless otherwise specified herein.

.2 Warrant products and assemblies for the specified periods of time where in excess of the Contract Warranty, as specified within their respective sections.

.3 Guarantee aspects of the Work for the specified periods of time where in excess of the Contract Warranty, as specified within their respective sections.

.4 Warranties and Guarantees shall commence at Date of Substantial Performance of the Contract as certified by the Consultant.

.5 Warranties and Guarantees shall be original copies, printed on company letterhead, or on a standard company warranty certificate, bearing the name of the company.

.6 Warranties and Guarantees shall indicate:

.1 Name of the Principal (the Manufacturer/Subcontractor),
.2 Name of the Obligee (the Owner),
.3 Name and address of Project,
.4 Commencement date (Date of Substantial Performance),
.5 Duration of warranty or guarantee,

.6 Clear statement of what is included, and what if any exclusions there are, and

.7 Signature of Principal's representative having signing authority.

END OF SECTION

1 EXAMINATION

.1 Acceptance of Conditions

.1 The General Contractor shall examine all existing or pre-determined conditions, prior to commencing work in that area, and report to the Consultant all conditions unacceptable for work to proceed. Commencement of work shall imply acceptance of conditions as is.

.2 Subcontractors shall examine all existing or pre-determined conditions affecting their portion of the Work, prior to commencing such work, and report to the Contractor all conditions unacceptable for work to proceed. Commencement of work shall imply acceptance of conditions as is.

2 PREPARATION

.1 Field Engineering

.1 Locate, confirm and protect control points prior to starting the Work. Preserve permanent reference points during construction.

.2 Establish reference lines and elevations. Locate and lay out by instrumentation.

.2 Records

.1 Maintain a complete, accurate log of control points and survey work as work progresses.

3 CUTTING AND PATCHING

.1 Submit a written request in advance, for approval of cutting or alteration which affects:

.1 Structural integrity of any element of Project.
.2 Integrity of weather-exposed or moisture-resistant elements.
.3 Efficiency, maintenance, or safety of any operational element.
.4 Visual qualities of sight-exposed elements.
.5 Work of Owner or separate contractor.

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

.3 After uncovering, inspect conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

.4 Perform cutting, fitting and patching, including excavation and fill, to complete the Work. Perform work to avoid damage to other work.

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

.6 Cut rigid materials using power saw or core drill. Pneumatic or impact tools not allowed.

.7 Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. At penetration of fire-rated wall, ceiling, or floor construction, completely seal voids with fire stopping material, full thickness of construction element.

.8 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

.9 Provide all openings greater than 200mm in non-structural elements of work for penetrations of mechanical and electrical work. Mechanical and Electrical Subcontractors shall provide all sleeves and locations for sleeves. The cost of all cutting and patching required by Mechanical and Electrical Subcontractors shall be paid for by those trades.

.10 Ensure that all cutting and patching work, including that by Mechanical and Electrical Subcontractors, is properly performed by the respective trades skilled in that line of work. Restore work with new products in accordance with Contract Documents.

4 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of mechanical and electrical equipment, fixtures and devices indicated or specified, are to be considered as approximate. Final location of such items will be determined on site, based on integration with structural and architectural elements, and as required by coordination with other trades. In the event of a conflict, final determination of location of these items rests with the Consultant.

.2 Prepare and submit for review by the Consultant, interference field drawings, to indicate relative position of various services and equipment, at the following locations as a minimum:

.1 Under all rooftop mechanical units.
.2 At locations of all major ductwork, piping, and conduit crossovers.
.3 Where ductwork passes under major structural elements.

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

.4 Request a review of items by Consultant once rough-in is underway, prior to final installation, and obtain approval for actual locations.

5 CONCEALMENT

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

.2 In existing building, all pipes shall be enclosed in shafts. All conduit shall be placed in accordance with approved conduit shop drawings.

6 LIGHTING FIXTURES AT SUSPENDED CEILINGS

.1 Ensure that secure support is provided for lighting fixtures by suspended ceilings, or by separate hangers, or by both.

.2 Coordinate the ceiling system and lighting fixture installations to provide adequate support.

.3 Submit affidavits with acceptable design information confirming that the installation of the suspended ceiling system and/or separate fixture hangers will provide adequate support for the lighting fixtures without exceeding specified deflection tolerances for the ceiling system.

.4 Conform to current requirements of the Electrical Safety Authority (ESA).

7 EXISTING SERVICES

.1 Where work involves the interruption of, or connection to existing services, carry out such work as directed by governing authorities, with minimum of disturbance to pedestrian and vehicular traffic.

.2 Before commencing work, establish location and extent of service lines in area of work and notify Consultant of findings.

.3 Submit schedule to, and obtain approval from Consultant for any shutdown or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.

.4 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

.5 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

.6 Remove abandoned service lines to distance of 1821mm from foundations. Cap or otherwise seal lines at cut-off points as directed by Consultant.

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

8 PROTECTION OF WORK IN PROGRESS

.1 Adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by the Consultant, at no increase in Contract Price.

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

.3 Protect finished surfaces with overlays of protective materials such as Kraft paper, cardboard, or plywood, as required for individual applications to provide adequate protection.

END OF SECTION

1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances and environmental protection legislation.

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

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

2 CLEANING DURING CONSTRUCTION

.1 Maintain the Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste material and debris from the work areas and deposit in waste container at the end of each working day.

.3 Vacuum clean interior areas prior to start of finishing work. Maintain areas free of dust and other contaminants during finishing operations.

.4 Individual Subcontractors are responsible for the daily clean-up and removal of debris related to, or generated by, their own work. The overall responsibility for project cleanliness rests with the Contractor.

3 WASTE MANAGEMENT

.1 Audit, separate and dispose of construction waste generated by new construction or by demolition of existing structures in whole or in part, in accordance with Ontario Regulations 102/94 and 103/94 made under the Environmental Protection Act.

.2 Fires, and burning of rubbish or waste on site is prohibited.

.3 Burying of rubbish or waste materials, except as specified herein, is prohibited.

.4 Disposal of waste or volatile materials such as mineral spirits, oil, gasoline or paint thinner into ground, waterways, or sewer systems is prohibited.

.5 Empty waste containers on a regular basis to prevent contamination of site and adjacent properties by wind-blown dust or debris.

4 FINAL CLEANING OPERATIONS

.1 Immediately following Date of Substantial Performance, and prior to Owner occupancy of the building or portion of the building affected by the Work, conduct full and complete final cleaning operations.

.2 Final cleaning operations shall be performed by an experienced professional cleaning company, possessing equipment and personnel sufficient to perform full building cleaning operations.

.3 Remove all surplus products, tools, construction machinery and equipment not required for the performance of remaining work, and thereafter remove any remaining materials, equipment, waste and debris.

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

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

.6 Cleaning operations shall include the removal of all stains, spots, scuff marks, dirt, dust, remaining labels, adhesives or other surface imperfections.

.7 Remove all paint spots or overspray from all affected surfaces.

.8 Clean and polish all glass and mirrors. Replace broken, scratched or disfigured glazing. Remove remaining manufacturer's and safety "X" labels.

.9 Clean and polish all finished metal surfaces such as enamelled or stainless steel, chrome, aluminum, brass, and bronze.

.10 Clean and polish all vitreous surfaces such as plumbing fixtures, ceramic tile, porcelain enamel, or other such materials.

.11 Clean all ceramic tile surfaces in accordance with the manufacturer's instructions, and apply final coat of sealer where specified.

.12 Clean inside of all millwork and cabinetry.

.13 Vacuum, clean and dust behind grilles, louvres and screens.

.14 Sealing and waxing of resilient floor surfaces shall be done by Contractor in accordance with manufacturer’s written instructions. Coordinate final cleaning and scheduling of sealing and waxing.

.15 Broom clean and spray wash all exterior paved surfaces.

.16 Remove dirt and other disfiguration from exterior surfaces.

.17 Clean all roofs, gutters, downspouts, areaways, drywells, and drainage systems.

.18 Clean all equipment and fixtures to a sanitary condition, clean or replace filters of mechanical equipment.

END OF SECTION

1 INSPECTION AND DECLARATION PROCEDURES

.1 Arrange for, conduct and document final inspections, close-out and commissioning at the completion of the Work in accordance with the procedures described in the General Conditions of the Contract, and OAA/OGCA Take-Over Procedures.

2 SUBSTANTIAL PERFORMANCE

.1 Contractor's Inspection

.1 Refer to OAA/OGCA Take-Over Procedures.

.2 The Contractor and all Subcontractors shall conduct an inspection of the work, identify deficiencies and defects, and make corrections as required to conform with the Contract Documents. Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made. Request a Consultant's Inspection.

.2 Contractor's Application for Substantial Performance of the Work

.1 Refer to OAA/OGCA Take-Over Procedures.

.2 When the Contractor has carried out the steps in OAA/OGCA Take-Over Procedures, and has determined that the requirements of the Contract have been substantially performed as defined by local Lien legislation, the Contractor shall make application for Substantial Performance of the Work.

.3 In addition to the requirements of OAA/OGCA Take-Over Procedures, the following items shall accompany the Contractor's application for Substantial Performance. These items must be complete in all respects, and all verification certificates and reports having been submitted and approved by the Consultants:

.1 Completed (and accepted) Maintenance Manuals for all disciplines (No. of copies as specified),
.2 As-Built Drawings for all disciplines (No. of copies as specified),
.3 Mechanical, Sprinkler, and Electrical as-built CAD drawings,
.4 Occupancy Permit (where required by Municipality),
.5 Air Balance Report (legible technicians worksheets are acceptable),
.6 Gas fired appliances inspection,
.7 Plumbing Inspection,
.8 Domestic Water Quality Test Report,
.9 Sprinkler dry test verification letter stamped and signed by sprinkler design Engineer,
.10 Mechanical start-up reports (Boilers, HVAC Units, Chillers, Water Softeners, etc.),
.11 Fire Alarm verification (include legible technicians worksheets),
.12 Emergency Lighting verification,
.13 Electrical distribution system inspection,
.14 ESA Hydro Certificate, and
.15 Systems operations have been demonstrated to Owner's personnel.

.3 Consultant's Inspection

.1 The Consultants shall perform an inspection of the Work to assess the validity of the Contractors application, and shall identify in separate lists, unfinished work and deficiencies. Contractor shall correct work accordingly.

.4 Certificate of Substantial Performance

.1 Refer to OAA/OGCA Take-Over Procedures.

.2 Should the Consultant concur with the Contractor's application for Substantial Performance, the Consultant shall notify the Contractor of approval of the application for Substantial Performance and issue a Certificate of Substantial Performance.

.3 The Contractor shall publish a copy of the Certificate of Substantial Performance in a construction trade newspaper, and shall provide the Consultant with proof of the date of publication.

3 LIEN PERIOD AND RELEASE OF BASIC HOLDBACK

.1 Refer to OAA/OGCA Take-Over Procedures.

.2 Commencement of Lien Periods

.1 The day following the date of publication of Certificate of Substantial Performance shall be the date of commencement of the 60 day Lien Period prior to release of basic holdback, unless required otherwise by lien statute of the Place of the Work.

.2 When the Contractor has carried out the required steps in Stages 3 and 4 of OAA/OGCA Take-Over Procedures, the Contractor shall make application for Release of Basic Holdback.

.3 The Consultant shall prepare the Certificate for Payment for release of basic holdback, and promptly upon receipt of the necessary documentation, issue the Certificate for Payment to the Owner.

4 FINAL INSPECTION AND PAYMENT

.1 Refer to OAA/OGCA Take-Over Procedures.

.2 Submit a signed statement stating following have been performed:

.1 Work has been reviewed for compliance with Contract Documents,
.2 All defeciencies have been corrected,
.3 All unfinished work has been completed, and
.4 Work is complete and ready for Final Inspection.

.3 When items noted above are completed, a final inspection of the Work will be performed by the Owner, the Consultants, and the Contractor.

.4 If the Work is deemed to be incomplete, complete outstanding items and request a reinspection.

.5 If the Work is deemed to be complete, the Consultant will issue a Final Certificate for Payment.

5 DEFICIENCY REVIEW

.1 Following the issuance of the Certificate of Substantial Performance and prior to the Contractor's application for Final Payment and release of any monies retained as "Finishing Holdback", the Contractor shall continue to complete unfinished work and correct deficiencies. At the request of the Contractor, the Consultants shall conduct up to two general deficiency reviews during this period.

.2 The first review will be undertaken only if the Contractor has inspected the Work, and states in writing that the unfinished work noted in their application for Substantial Performance has been completed, and at least 50% of all deficiencies have been corrected.

.3 The second review will be undertaken only if the Contractor has inspected the Work, and states in writing that 90% of the deficiencies have been corrected.

.4 Should further review by Consultants be required due to failure of the Work to comply with Contract Documents or the criteria set out herein, the Owner will deduct amount of Consultant's compensation for reinspection services from monies owed to the Contractor.

END OF SECTION

1 REFERENCES
.1 OAA/OGCA Document 100; OAA/OGCA Take-Over Procedures.

2 OPERATION AND MAINTENANCE MANUALS
.1 General
.1 Prepare Operation and Maintenance Manual during the course of construction and have completed prior to Date of Substantial Performance.

.2 Submission
.1 Maintain one copy of the Operation and Maintenance Manual volume(s) for periodic review and comment, as requested by the Consultant during the course of construction.

.2 Submit two (2) final hard copies (one copy for school with all school related documents and two (2) USB device with PDF version of all documents of the final completed volume(s) with the application for Substantial Performance in accordance with OAA/OGCA Document 100.

.3 Format
.1 Bind data in commercial quality, 219 x 279mm, "D" ring binders, having clear cover and spline pockets.

.2 Identify each binder on the cover and spline with the following:
OPERATION & MAINTENANCE MANUALS
St. David Catholic Secondary School
VOLUME ___ OF ___

.3 Provide table of contents and index tab sheets for each volume. Itemize and tabulate contents.

.4 Provide drawings with reinforced punched binder tab, or insert into clear sleeves in folded format. Group drawings as to content, and index for quick reference.

.4 Contents - Each Volume
.1 Table of Contents: provide title of Project, Date of submission and names:
.1 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties;
.2 Schedule of products and systems, indexed to content of volume.

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

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

.4 Operation and Maintenance Manuals shall contain, as a minimum, the following information:
- .1 List of Contents; cross-referenced to each Volume.
- .2 Contact information for maintenance and repairs
- .3 Warranty and guarantee certificates
- .4 Equipment start-up and troubleshooting instructions
- .5 Equipment schematics & diagrams
- .6 Catalogue of all maintenance materials and quantities
- .7 Complete list of Contractor, Subcontractors and suppliers, indicating name, address, telephone & fax numbers, email addresses, name of contact person and description of work done.
- .8 Complete list of products used in the work, indicating product name and manufacturer for each listing.
- .9 Copy of Finish Hardware List, complete with all amendments and revisions, if applicable.
- .10 Schedule of paints and coatings. Include sufficient explanation to fully identify each surface with the applicable paint or coating used. Enclose copy of Colour Schedule.
- .11 All “reviewed” shop drawings.
- .12 Maintenance instructions for all finished surfaces.
- .13 Brochures and cuts of all equipment and fixtures.
- .14 Operating and maintenance instructions for all equipment.
- .15 All Warranties and Guarantees required by the Specifications for this Work.

.5 Refer to Mechanical Drawings for more specific mechanical data required beyond the description of this paragraph.

.6 Refer to Electrical Drawings for more specific electrical data required beyond the description of this paragraph.

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

.8 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3 AS-BUILT DRAWINGS

.1 Record information on a clean set of black line opaque drawings. Contractor will provide 2 USBs, each with a complete CADD set and a complete PDF set of the project drawings, as well as a PDF set of the complete specifications for the purpose of recording as-built conditions.

.2 Maintain as-built drawings on site and update as construction progresses. Allow periodic review by Consultant as requested.

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

.4 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

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

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

4 EQUIPMENT AND SYSTEMS

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

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

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

.6 Provide servicing and lubrication schedule, and list of lubricants required.

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

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

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

.14 Include all test and balancing reports

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

5 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

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

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

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

6 MAINTENANCE MATERIALS, SPARE PARTS & TOOLS

.1 Provide spare parts in quantities specified in individual specification sections. Provide identical items to those installed in the Work.

.2 Provide maintenance materials in quantities specified in individual specification sections. Provide identical items of same manufacturer, dye lot or production run as items in the Work.

.3 Provide special tools in quantities specified in individual specification sections, and tag items identifying their function and equipment or products to which they are associated.

.4 Receive and catalogue all items. Check inventory and include approved listings in Operations and Maintenance Manual.

.5 Obtain receipts for delivered products and submit prior to Substantial Performance.

.6 Quality

.1 Spare parts, maintenance materials and special tools provided shall be new, not damaged or defective, and of the same quality and manufacture as products provided in the Work.

.2 If requested, furnish evidence as to type, source and quality of Products provided.

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

.7 Delivery, Storage, And Handling

.1 Deliver all materials required as maintenance materials, spare parts or special tools, to the site, include shipping costs, and store as directed.

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

.3 Store in original and undamaged containers with manufacturer's seals or labels intact.

.4 Store materials subject to damage from severe climatic changes in a climate-controlled, weatherproof enclosure.

.5 Store paints and freezable materials in a moderately heated and ventilated room.

7 WARRANTIES AND BONDS

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

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

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

.4 Start date for all warranties are to be the Date of Sustantial Performance, regardless if put into use.

.5 Verify that documents are in proper form, contain full information, and are notarized. Co-execute submittals when required.

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

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1 Comply with Section 22 “Plumbing General Requirements”, Section 23 “HVAC General Requirements” & Section 26 “Electrical Contract General Requirements”.

1.1.2 Contractor shall be responsible for proper performance of Work.

1.1.3 Provide all labor, materials, products, equipment and services for commissioning all building systems to ensure building is operating according to requirements of Contract Documents.

1.1.4 Refer to the Commissioning Team Responsibilities for more details.

1.1.5 The Commissioning Authority (CxA) shall develop a Commissioning Plan.

1.2. RELATED SECTIONS

1.2.1. Refer to the following sections:

- Section 22 Mechanical Specifications
- Section 23 Mechanical Specifications
- Section 26 Electrical Specifications

1.3. REFERENCES

1.3.1. CSA Z320-11: Building Commissioning

1.3.2. ASHRAE Standard 202-2024: Commissioning Process for Buildings & Systems

1.3.3. ASHRAE Guideline 0-2019: The Commissioning Process

1.3.4. ASHRAE Guideline 1: Guidelines for Commissioning of HVAC Systems

1.3.5. ASHRAE Guideline 1.1-2007: HVAC&R Technical Requirements for the Commissioning Process

1.3.6. ASHRAE Guideline 4-2019: Preparation of O&M Documentation for Building Systems

1.4. DEFINITIONS and ACRONYMS

1.4.1. Commissioning (Cx): Is a systematic process of ensuring that all building systems designed, installed, functionally tested, performs and capable of being operated and maintained according to the design intent & owner's operational needs.

1.4.2. Commissioning Authority (Cx A): Owner's appointed commissioning professional.

1.4.3. Commissioning Consultant: (See Commissioning authority).

1.4.4. Consultant (Design Team): Member of the professional design team.

1.4.5. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources and documentation requirements of the commissioning process.

1.4.6. ME Contractor: refers to mechanical and /or electrical contractor.

1.4.7. Commissioning team: consist of various participants involved in the commissioning process. The commissioning documentation and tasks of each team member will be coordinated through the Commissioning Authority

1.4.8. Contractor Start-up: Contractor start-up and verification activities are conducted by the contractors and/or their sub-trades and equipment vendors. Contractor / vendor checking of the physical installation of the work and equipment and reviewing the completion of system installation and readiness, is completed prior to the CxA functional performance testing and verification activities.

1.4.9. TAB: Testing, Adjusting and Balancing.

1.4.10. BAS: Building Automation System.

1.4.11. FPT: Functional Performance Test

1.4.12. PFT: Pre-functional test

1.4.13. Pre-Functional & Functional Performance Testing (PF / FPT): Pre-Functional & Functional Performance Tests are specific hands-on tests, used to verify that the equipment and associated systems meet the specified design parameters and operate as fully integrated components or systems through its respective level of automation. This testing also confirms each systems capability of operating to the requirements of the facility and the Owner's Project Requirements.

1.4.14. Sampling: Performing observation, review, testing or other verification on only a fraction of the total number of identical or near identical pieces of equipment, drawings, events, etc. Sampling techniques include random statistical sampling and less formal professional judgment methods

1.4.15. Seasonal testing: Performance tests that are deferred until the system(s) will experience conditions closer to their design criteria based on weather conditions.

1.5. CONSULTANT TEAM

1.5.1. The Consultant Team for the Project is responsible for developing a set of performance objectives and providing a design that meets those objectives. The Consultant Team will be required to assist with developing and witnessing the system tests and integrated systems tests. Consultants are to advise the Contractor as to which tests require witnessing.

1.6. COMMISSIONING TEAM

1.6.1. Members of the team should include the followings:

- Owner Representative(s)
- CxA
- Mechanical Engineer
- Electrical Engineer
- General Contractor
- BAS Contractor/Vendor
- Mechanical Contractor
- Electrical Contractor
- TAB Contractor
- Manufacturer's Representatives

1.7. COMMISSIONING TEAM RESPONSIBILITIES

1.7.1. Owner Representatives:

- Attending commissioning meetings (as required).
- Receive commissioning reports and final commissioning report.
- Engaging a Commissioning Authority that does not include individuals directly responsible for project design or construction management.
- CxA reports directly and receive directions from the Owner representatives.
- Supporting the commissioning process.

1.7.2. Design Team:

- Prepare the contractors' M & E drawings and specifications.
- Reviewing shop drawings.
- Reviewing test reports from the contractors and verifying testing results.
- Inspecting the installations for general conformance with the contract documents, Codes and Standards.
- Review operating and maintenance manuals.
- Witnessing selected contractor's acceptance/demonstration tests.
- Review as-built documentation.
- Review performance testing results for general conformance with the contract documents.

1.7.3. CxA:

- Prepare the commissioning specification section.
- Review of the mechanical and electrical drawings and specifications.
- Develop and implement the commissioning plan
- Review equipment shop drawing submittals
- Chairs the commissioning meetings and records/ distributes meeting minutes.
- Assisting with the commissioning schedule.
- Conducting selected installation reviews as they pertain to commissioning and issuing deficiency reports.
- Review and monitor equipment start-up process.
- Receiving and evaluating the contractors' test forms.
- Preparing FPT forms for contractor (s) use.
- Issuing commissioning progress reports.
- Witness and verify contractor's performance verification tests (sampling technique)
- Co-ordinating with the TAB, BAS contractors and M&E Contractors.
- Reviewing O&M manuals.
- Review training schedule and agenda.
- Final commissioning reporting.
- Verifying seasonal performance during the opposite season of original performance testing.

1.7.4. General Contractor:

- Cooperate fully with CxA in execution of the Commissioning Process and Commissioning Plan.
- Incorporate all commissioning related activities and milestones in the construction schedule.
- Schedule all related commissioning activities in coordination with the CxA, subcontractors and vendors.
- Participating in commissioning meetings.
- Distribute contractors issued shop drawings.
- Include the CxA in all correspondences that affect the commissioning process and activities (e.g. schedules, site instructions, change orders, meeting minutes, etc.)
- Provide CxA with a copy of the ME O&M manuals for their review.
- Coordinates owner training with subcontractors and CxA.
- Ensure that sub-contractors and OEMs (Original Equipment Manufacturers) have completed all system start-ups and documentation as required by individual specification sections.
- Ensures the subcontractors perform their commissioning responsibilities.
- Collects, assembles and manages commissioning documentation from subcontractors.
- Works with subcontractors to correct commissioning deficiencies as quickly as possible.
- Provides support and participate in the functional testing as needed.

1.7.5. ME Contractors:

- Cooperate fully with CxA in execution of the Commissioning process
- Coordinates with the GC to confirm commissioning responsibilities at bid time.
- Review the commissioning plan and provided comments.
- Coordinates with GC on scheduling of commissioning tasks.
- Demonstrates proper system installation and operation.
- Corrects system deficiencies in a timely fashion.
- Preparing equipment start-up and testing schedules.
- Conducting all tests as identified in the mechanical and electrical specifications.
- Notifying all parties of scheduled test dates.
- Completing and sign off all PFT (Pre-Functional Test) forms and make it ready for CxA review and approval.
- Arranging for the CxA and the consultants to attend and witness tests.
- Support CxA with the necessary resources (individuals and equipment) for completing all commissioning testing activities.
- Issuing test forms and progress reports to the CxA on a regular basis.
- Coordinates with vendors for the proper equipment start-up, documentations and report issuing.
- Provide declaration in writing to the CxA that installation is complete and ready for the CxA pre- functional check review and Functional Performance Testing as per the Commissioning Plan.
- ME contractor (s) and vendor(s) shall perform a complete 100% functional performance test for all equipment and systems and provide completed and signed off FPT sheets.
- Cooperate with CxA to assist with implementing all seasonal and deferred commissioning activities.
- Contractor (s)to submit valid calibration certificate for all instruments to be used;
- Preparing operating and maintenance (O&M) manuals.
- Preparing training schedules in coordination with the General Contractor.
- Preparing as-built drawings.
- Conducting acceptance/demonstration tests.

1.7.6. Building Automation System Vendor:

- The BAS Contractor will install, commission, and demonstrate their system to the requirements of the specification.
- BAS contractor to submit valid calibration certificate for all testing instruments to be used
- Provide BAS point to point and other verifications report for CxA and consultants' review.
- The BAS Contractor will coordinate closely with the mechanical contractor, electrical contractor, the TAB Contractor, and the CxA.
- The BAS contractor to provide work progress to the commissioning team.
- Completing and sign off all FPT (Functional Performance Test) forms and make it ready for CxA review and approval.
- Provides detailed operations & maintenance manuals for all aspects related to the Building Automation system.
- Provide list of all schedules and set points
- Coordinates control system functional checks with the CxA and demonstrates the sequences of operation to the CxA as required in the functional check sheets.
- The BAS vendor in cooperation with other contractors and vendors shall perform a complete 100% functional performance test for all equipment and systems related to the BAS and provide completed and signed off FPT sheets.
- Prepare training materials as defined in section 1.4 for operational staff training.
- The BAS Contractor will participate in the CxA performance tests and the seasonal performance tests.
- The BAS will attend selected commissioning /construction meetings.

1.7.7. TAB Contractor:

- Complete an initial project review prior to start any TAB activity to attempt to identify any construction issues preventing proper balancing of the systems.
- Performs a job walk prior to start balancing to identify any construction issues preventing proper balancing.
- The TAB contractor will test and balance the mechanical systems to the requirements of the project specification and in line with TAB standards.
- TAB contractor will prepare a schedule for their work and coordinate with the construction manager to include these activities with in the construction schedule.
- Provides all TAB documentation and associated reports.
- Reports on operation and programming issues discovered in the field while balancing.
- Issue report for the initial project review to the construction manager /mechanical contractor and copied CXA and mechanical engineer.
- The TAB contractor will attend selected commissioning /construction meetings.

- TAB contractor to submit valid calibration certificate for all instruments to be used;
- Coordinate with the CxA to witness selective percentage of the water and air balancing process.

1.7.8. Equipment Vendors

- Provides all documentation on furnished equipment, including complete submittals, equipment data, installation manuals, O&M manuals, start-up procedures, and warranties.
- Performs factory start-up when required.
- Provides support for troubleshooting systems issues.
- Provides technical training services for equipment as supplied, based on outline training program prepared by CxA.
- Conducting acceptance/demonstration tests.
- Contractor will submit completed test forms and attend selected construction meetings when required.

1.8. PRODUCTS

1.8.1. The contractor shall provide all material, equipment and instrumentation to complete the contractors' commissioning process identified in this section and the mechanical and electrical specification sections.

1.9. SUBMITTALS

1.9.1. Submittal Drawings and Equipment Data - to be submitted by contractor – refer to related specification section (s). The Commissioning Authority will review submittals to ensure the systems and equipment being supplied is consistent with the required commissioning test procedures, and if not, that the variances are acceptable to the Team, and that commissioning checklists are revised accordingly.

1.9.2. As- Built Record Drawings- related specification section (s) the various trades shall mark-up the consultants' drawings to clearly indicate the approved changes in the design or layout that took place during construction.

1.9.3. O&M Manuals - related specification section (s). The contractor shall compile as specified in the contract documents. O & M manuals shall be reviewed by the commissioning Authority (CxA).

1.9.4. Training Agenda and training materials, Contractor, through the manufacturers, will provide training agenda and training materials for each system.

1.10. MANUFACTURER'S INSTRUCTIONS

1.10.1. Unless otherwise indicated in the specifications, operate Products in accordance with manufacturer's instructions. Obtain written instructions directly from manufacturers.

1.10.2. Notify the Consultant in writing, of conflicts between the specifications and manufacturer's instructions, so that the Consultant may establish the course of action.

1.10.3. Improper operation of Products, due to failure in complying with these requirements, authorizes the Consultant to require removal and re-installation at no change in Contract Price or Contract Time.

1.11. REPORTS

1.11.1. Submit field test reports for the Project's electrical and mechanical equipment /systems, including but not limited to; boilers, chemical treatment, Rooftop Units, pumps, Switchboards, Panel boards, Transformers, BAS point to point verification, BAS field panels and devices. Also, system's megger test, piping flushing, piping cleaning and piping pressurization test reports.

1.11.2. The Commissioning Authority (CxA) will issue commissioning reports following all commissioning activities on site. The Contractor is responsible for completion of deficiencies as listed in the Commissioning Reports and shall return signed- off copies of issued commissioning reports noting action taken on items.

1.11.3. All commissioning deficiencies will be tracked to resolve and final sign-off by the Commissioning Consultant.

1.11.4. Contractors to feedback on items listed in the commissioning issue log developed by the Commissioning Consultant.

1.12. QUALITY ASSURANCE

1.12.1. Contractors to feedback on items listed in the commissioning issue log developed by the Commissioning Consultant.

1.12.2. Use personnel for starting, equipment and starting procedures who have experience in electrical and mechanical equipment and systems commissioning and are able to interpret results of readings and tests and report state of systems in a clear and concise manner.

1.12.3. Major electrical and mechanical equipment to be started and checked by OEM as defined in section 1.4 certified personnel.

1.12.4. Maintain a file for all PFT and FPT sheets and make it ready for CxA review and approval.

1.12.5. Contractors to submit valid calibration certificate for all testing instruments to be used.

1.13. OPERATION AND MAINTENANCE MANUALS

1.13.1. Provide additional requested documentation, prior to normal O&M manual submittals, to the Commissioning Authority for development of start-up and functional testing procedures. Typically, this will include detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, full details of any Owner-contracted tests, fan and pump curves, full factory testing reports, if any, and full warranty information, including all responsibilities of the Owner to keep the warranty in force clearly identified. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the Commissioning Authority These documents will also be included in the O&M manuals.

1.13.2. The Commissioning Authority may request further documentation necessary for the commissioning process. This data request may be made prior to normal submittals.

PART 2 - EXECUTION

2.1. OVERVIEW

2.1.1. In general terms, commissioning (Cx) is the process of assuring and verifying that all building systems designed, installed, functionally tested, performs and capable of being operated and maintained according to the design intent & owner's operational needs

2.1.2. Contractor shall be responsible for proper performance of work.

2.1.3. The Commissioning Authority (CxA) shall plan, organize and implement the commissioning process.

2.2. COMMISSIONING PROCESS

2.2.1. Commissioning process can be defined as a series of actions and activities by the project participants at various times over the complete life cycle of the project. These actions and activities can be regarded as fundamental to a sound commissioning program and are included in the following phases of the commissioning process shall be responsible for proper performance of work.

2.2.2. Pre-Construction /Design Phase:

- Developing initial outline for the commissioning plan
- Developing Commissioning –Focused design review.
- Review ME drawings and specifications.
- Develop Commissioning Requirements for the Specifications.

2.2.3. Construction Phase:

- Update and implement the commissioning plan.
- Conducting commissioning meetings.
- Commissioning schedule incorporated into the project master schedule
- Reviewing shop drawing submittals for the commissioning related equipment
- Conducting installation inspections
- Reviewing equipment start-up reports
- Reviewing operation and maintenance manuals
- Complete verification checklists
- Issuing site commissioning reports
- Conduct sample functional /performance testing on BAS and mechanical system(s).
- Assist with the coordination and delivery of the training activities. Receive completed attendance sheets and report on the completion of the training requirements.

2.2.4. Occupancy and Operation Phase

- Cx A Develop final commissioning report
- Help resolve outstanding commissioning issues
- Perform seasonal testing in the opposite season of the original performance testing.

2.3. STARTUP AND TESTING COST

2.3.1. Contractors (s) pay costs associated with starting, testing/ re testing, adjusting, preparation for balancing and cleaning, including supply of calibrated instruments, equipment, supplies and consumable materials.

2.4. MANUFACTURER'S RECOMMENDATIONS

2.4.1. Prior to starting equipment or systems, obtain and review manufacturer's installation, starting and operating instructions. Read in conjunction with procedures specified herein.

2.4.2. Use manufacturers' and supplier's trained personnel where necessary to maintain validity of manufacturer's warranty.

2.4.3. Compare actual installation with manufacturer's recommended installation. Record discrepancies. Correct deviations detrimental to equipment performance prior to starting equipment.

2.5. TESTING INSTRUMENTS AND EQUIPMENT

2.5.1. Provide calibrated testing instruments and equipment, and ancillary equipment such as two-way radios and ladders required to perform starting of mechanical equipment and systems.

2.5.2. Instruments used in equipment start-up must be calibrated and accurate. Provide valid calibration certificates if requested by the Commissioning Authority.

2.6. TOLERANCE

2.6.1. As specified by the mechanical engineer, otherwise refer to the below table of acceptable variations from the design value that will be acceptable for the performance verification.

Sensor	Tolerances (±)
Cooling coil, chilled and condenser water temperature	0.4 F
AHU wet bulb or dew point	2F
Hot water coil and boiler water temperature	1.5F
Outside air, space air, duct air temperature	0.4 F
Watt hour, voltage and amperage	1% of design
Pressure (air water and gas)	3% of design
Flow rate. Air	10% of design
Flow rate, water	4% of design
Relative humidity	4% of design
CO sensor	0.01 % pts
Natural gas and oil flow rate	1% of design
Steam flow rate	3% of design

2.7. BUILT-IN CONTROLS

2.7.1. The built-in controls of all equipment will be tested by the respective Supplier/Contractor to prove its intended sequence of operation in presence of the CxA/Consultant. This testing will be carried out in appropriate weather condition as specifiedaccess to all system equipment being commissioned.

2.8. BAS CONTROLS TESTING

2.8.1. The Controls Contractor will submit a point-to-point checklist and calibration verification to CxA for review. CxA may suggest addition/changes to the checklists and the reviewed checklist will be utilized by the Contractor to complete the control's testing.

2.8.2. Contractor will test and record results for each equipment and component of the building automation system. On completion of the test, Contractor will submit a detailed test and calibration report to the Consultant and CxA for verification. CxA will physically verify the test report for at least one of each type of system/equipment commissioned. The non-conformities will be corrected by the Contractor and the test and verification procedure will be repeated for that system.

2.8.3. The controls contractor will test the sequence of operation for all HVAC equipment and devices and submit test reports accordingly. Complete sequence of operation shall be submitted as part of the complete controls shop drawings for engineer's approval and the review of the commissioning authority.

2.8.4. BAS contractor shall submit complete system shop drawings including graphics, system structure, sequence of operation, point list for each equipment/device, controls valves, sensors, etc.

2.9. COMMISSIONING REVIEW

2.9.1. Provide access to all system equipment being commissioned.

2.9.2. Do not conceal or cover equipment or systems prior to scheduling commissioning reviews.

2.10. PRE-FUNCTIONAL AND FUNCTIONAL CHECK SHEETS

2.10.1. Record all data gathered on site on a PFT sheets (start-up report forms) and commissioning check sheets.

2.10.2. Make copies of all starting and testing data before equipment and system start-up personnel leave site. Maintain one copy of all data taken during starting on site.

2.10.3. Maintain one copy of all final starting, testing, adjusting and balancing reports on site up to Substantial Completion of the Work for reference purposes.

2.10.4. Make copies of all red-line record drawings available for Commissioning Agents to review.

2.10.5. Complete and Sign off all PFT and FPT sheets and make it ready for CxA review and approval.

2.11. COMMISSIONING SCHEDULE

2.11.1. The Commissioning Authority will prepare commissioning schedule milestones to be incorporated in the approved project construction schedule by the general contractor.

2.11.2. General contractor will ensure all commissioning related activities and milestones are inserted in the project schedule, including all critical path activities.

2.11.3. The Contractor shall provide schedule for equipment start-up in coordination with the general contractor.

2.11.4. During construction phase, commissioning meetings will be scheduled by the Commissioning Authority on site for coordination of commissioning activities and schedule.

2.11.5. Prior to commencement of each particular testing procedure, coordinate all sub-trades, manufacturers, suppliers and other specialties to ensure all phases of work are properly completed. Establish necessary manpower requirements.

2.12. START-UP

2.12.1. The installing contractor shall under their own direction, plan, execute and document the installation verification and perform start up and checkout (Major systems /equipment start-up by OEM personnel). The contractor needs to verify that other building systems being installed will not compromise the operation and functional performance of the commissioned systems. Notify the Cx A minimum of 5 days in advance of equipment and system start up and/or installation verification testing. The CxA verifies the completed checklists and the startup checks.

2.12.2. Complete and sign off all start up test sheets and make it ready for Cx A review and approval.

2.13. PERFORMANCE VERIFICATION

2.13.1. The contractor(s) and vendor(s) shall be fully responsible for 100% actual system(s) functional performance tests and documentation of this testing. Changes to approved test procedures must be approved by the Cx A. The Cx A will conduct sample verification on tested systems after the Contractor and Controls Vendor have completed their complete Functional Performance Test (FPT).

2.13.2. Provide skilled technicians to execute starting of equipment and to execute the functional performance tests.

2.13.3. Contractor's testing shall include all system and equipment.

2.13.4. Contractor's testing shall include 100% BAS point to point verification, programming, sequence of operation, calibration, scheduling, trending, graphics, commands and any other required test deemed necessary to complete the FPT process.

2.13.5. Contractor(s) and BAS vendor(s) to provide completed and signed off FPT sheets and make it ready for CxA review and approval.

2.14. RE TEST

2.14.1. Deficiency Resolution & Warranty Review: Items of non-compliance in material, installation or setup are corrected at the contractor's expense and the system retested. Failed tests will be repeated as required. Deficiencies, once identified are to be corrected expeditiously. Warranty issues will be identified and resolved by the contractor with the Owner.

2.14.2. Contractor (s) and vendor (s) shall bear all required costs for deficiency correction and retesting.

2.15. TRAINING OF OWNER STAFF

2.15.1. Training is to be led by an OEM factory trained technician directly involved and familiar with the site. Training materials, agenda and O+M manuals are to be provided at least 5 business days prior to training. Training sessions are to occur prior to substantial. Time to be used at owner's discretion.

2.15.2. Provide on-site training sessions including classroom and terminal hands on, half day each, for personnel designated by the owner/owner's service provider prior to and at substantial completion or when system starts affecting conditions in tenant spaces that owner/owners service provider must respond to.

2.15.3. Train the designated staff of owner's representative and owner to enable them to do the following:

a. Day-to-day Operators

b. Proficiently operate the system

c. Understand control system architecture and configuration

d. Operate the BAS workstation, peripherals and other interface terminals

e. System troubleshooting

f. Conduct routine maintenance

g. Understand system drawings and Operation and Maintenance manual

h. Now start-up, normal operation, shut down, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting and alarms

2.16. TESTING, ADJUSTING AND BALANCING

2.16.1. Comply with the TAB Specification and related sections in the contract document.

2.16.2. Contractor will submit a TAB process schedule.

2.16.3. Contractor will submit a preliminary TAB report and correct all deficiencies prior to start the balancing process.

2.16.4. Contractor to submit a final balancing report for all water and air systems.

2.17. COMPLETION OF COMMISSIONING REQUIREMENTS

2.17.1. Upon completion of commissioning, the Independent Commissioning Authority shall ensure the contractor leaves all systems in normal operating mode.

2.17.2. Except for identified seasonal commissioning activities to be conducted during the first year of operation, all commissioning shall be complete prior to Substantial performance of the work.

2.17.3. Commissioning shall be considered complete only when the final Commissioning Report has been received and approved by the client.

2.18. SYSTEMS TO BE COMMISSIONINED

2.18.1. Mechanical

- Rooftop Units
- Wallfins
- Exhaust Fans
- Domestic Hot Water Heater
- Boilers & Circ. Pump
- Variable Air Volume Terminal Units
- Split AC Units

2.18.2. Testing, Adjusting & Balancing work

- Air and Water Balancing

2.18.3. Building Automation System (BAS)

- Controllers
- Field devices
- Networking
- Sequence of operation
- System Graphics
- Hardware systems
- Operator Interface

END OF SECTION

COMMISSIONING PLAN

ST. PAUL CES
ADDITION & RENOVATION

CFMS-West Consulting Inc.

2 Pelham Town Square
Fonthill, Ontario L0S 1E0

905 304 3644
info@cfmswest.ca

CFMS-WEST CONSULTING INC. Serving South Western Ontario

PARTNERING TO PROVIDE **QUALITY CONTROL**

TABLE OF CONTENTS

1. INTRODUCTION & CONTENT 3
2. COMMISSIONING OBJECTIVES & GOALS 3
3. PROJECT INFORMATION AND DESCRIPTION 4
4. DOCUMENTATION PROGRESS UPDATE 4
5. COMMISSIONING TEAM & RESPONSIBILITIES 5
Owner Representative 5
Commissioning Team 5
Responsibilities 6
The Owner 6
The Design Team 6
The Building Commissioning Authority (CxA) 6
Building Automation System Contractor: 7
Testing Adjusting & Balancing Contractor: 7
Responsibility Matrix 8
6. BUILDING COMMISSIONING PROCESS 9
Design Phase (Pre-Construction Phase) 9
Development of Design Documents: 9
The Construction Phase 9
Development of the Commissioning Plan: 9
Commissioning Kick-off Meeting: 9
Submittal Review: 9
Review of Contractor and Vendor Startup Forms: 9
Managing the Construction Schedule: 11
Functional Test Sheets: 12
Commissioning Meetings: 12
On-going Construction Observations & Installation Checks: 12
Static & Dynamic Testing: 12
Air and Water Balancing: 12
Functional Performance Test: 12
Development of the Commissioning Issues List: 13
Operator Training Program: 13
O&M Manuals Review: 14
Commissioning Report: 14
Occupancy and Operation Phase 14
Completion of Seasonal and Deferred Systems tests: 14
7. SYSTEM INCLUDED IN THE COMMISSIONING 14
8. COMMUNICATIONS PROTOCOL 15
9. NEXT STEP 15

1. INTRODUCTION & CONTENT

When implemented effectively, a thorough Commissioning Program contributes towards reducing facility life cycle costs, facilitates the establishment of measurable benchmark standards for all energy related systems, and validates that the project's mechanical, electrical and other building systems have been installed, operated, calibrated and are capable of performing as intended and stated in the Owners Project Requirements.

The Commissioning Plan document has been prepared for the St. Paul CES Addition and Renovation project. hereby titled the Commissioning Authority (CxA), to provide the owner with a detailed description of the building systems commissioning process and the responsibilities of the commissioning team.

The CxA will update the document several times throughout the commissioning process and provide the team with information in a timely manner. As the plan evolves, information to be added will include definitions of commissioning terms, descriptions of project commissioning processes, a comprehensive team directory, detailed information on roles & responsibilities, project and system descriptions, lists of documents related to commissioning, details of commissioning documents, commissioning schedule milestones, detailed commissioning forms, and coordination, communications and resolution pathways.

The commissioning plan will be completed and delivered to the owner with the final commissioning report. This final report will contain a history of all test results and will provide a valuable reference to the owner.

2. COMMISSIONING OBJECTIVES & GOALS

The commissioning process is a quality control program which will be implemented on the project during the Construction and Occupancy & Operation phases.

The commissioning process is conducted by the commissioning team which is made up of the design team, the construction team, CxA, and the Owner's project team. The process is managed by the CxA who will also conduct tasks within the commissioning process.

The commissioning process will begin at the Pre-Construction Phase (Planning & Design) and continues through the first year of operation. The objective is to verify the design intent performance during the heating and cooling seasons and under varying load conditions.

The overall benefits of the commissioning process include:

- Additional control over quality.
- Additional control over construction costs
- Additional control over the construction schedule
- Smooth turnover process.
- Building systems that work.
- Well trained operating staff
- Proper and useful O&M manuals
- Reduced number of problems and complaints

The commissioning plan that follows outlines the process to achieve these objectives and goals.

3. PROJECT INFORMATION AND DESCRIPTION

Refer to the below fact sheet for the building information:

Project Name	St. Paul CES Addition and Renovation
Project Address	45 Birchcliff Avenue, Kitchener, Ontario
Owner /Client	Waterloo Catholic District School Board

4. DOCUMENTATION PROGRESS UPDATE

Refer to the table below for the status of documents pertaining to the project:

	DOCUMENT	STATUS
1	Commissioning Plan	April 6, 2026
2	Commissioning Kickoff Meeting	TBA
3	Shop Drawing Review Reports	TBA
4	Construction Checklists	TBA
5	Equipment Startup Reports	TBA
6	O & M Manuals Review Report	TBA
7	Training Matrix	TBA
8	Functional Performance Test Reports	TBA
9	Final Commissioning Report	TBA

5. COMMISSIONING TEAM & RESPONSIBILITIES

The commissioning team consists of representatives from the owner, the design team, the construction (contractors) team, and the CxA. The CxA will manage the commissioning team and the commissioning process and reporting directly to the owner.

Owner Representative

The owner has overall responsibility for this project and has engaged a Commissioning Authority (CxA) that does not include individuals directly responsible for project design or construction management. The CxA reports directly to the owner and takes direction from project team.

Commissioning Team

Key members of the integrated commissioning team are listed below. These individuals will be extended invitations to all commissioning meetings, as well as testing and training:

Role	Primary Contact	Company	Contact (Email, Cell)
Owner			
Project Manager			
Design Team			
Consultant Representative			
Consultant Representative			
Architect Representative			
Cx Team			
Commissioning Agent	Kevin Pellerin	CFMS-W	kevinpellerin@cfmswest.ca
General Contractor and Subcontractors			
Project Manager			
Site Superintendent			
Mechanical Representative			
Electrical Representative			
BAS/Controls			

Responsibilities

The Owner

The owner's responsibilities consist of:

- Engaging a Commissioning Authority that does not include individuals directly responsible for project design or construction management
- CxA reports directly and receive directions from the Owner /representatives(s) team.
- Attending commissioning meetings (as required)
- Receive commissioning reports and final commissioning report
- Supporting the commissioning process

The Design Team

The design team consists of ME Consultants. Their responsibilities in the commissioning process include:

- Prepare project specifications, including testing requirements
- Providing the design brief for mechanical, electrical and other building systems
- Reviewing shop drawings
- Reviewing test reports from the contractors and verifying results
- Receiving commissioning reports from the CxA
- Inspecting the installations for general conformance with the contract documents, codes and standards
- Review operating and maintenance manuals
- Witnessing selected contractor's acceptance/demonstration tests
- Review/approve as-built documentation
- Review performance testing results for general conformance with the contract documents

The Building Commissioning Authority (CxA)

- Develop and implement the commissioning plan
- Prepare and issue the team responsibility matrix
- Review equipment and systems submittals
- Chairs the commissioning meetings and records/ distributes meeting minutes
- Assisting with the commissioning schedule
- Conducting select installation reviews and issuing deficiency reports
- Review and monitor equipment start-up process
- Receiving and evaluating the contractors' test forms
- Preparing FPT forms for contractor (s) use
- Issuing commissioning progress reports
- Witness and verify contractor's performance verification tests (sampling technique)
- Co-ordinating with the TAB, BAS contractors and M&E Contractors
- Reviewing O&M manuals
- Review training schedule and agenda.
- Final commissioning reporting
- Verifying seasonal performance during the opposite season of original performance testing

Building Automation System Contractor:

- Cooperate fully with CxA in execution of the Commissioning Plan.
- Incorporate all commissioning related activities and milestones in the construction/project schedule
- Directs all subcontractors to provide resolution to constructions issues
- Schedule all related commissioning activities in coordination with subcontractors and vendors
- Participating in commissioning meetings
- Distribution of shop drawings
- Include the CxA in all correspondences that affect the commissioning process and activities (e.g. schedules, site instructions, change orders, meeting minutes, etc.)
- Collects, assembles and manages commissioning documentation
- Provides support and participate for functional testing as needed
- Corrects any installation deficiencies in a timely manner with cooperation with other related contractors
- Provide the CxA with a copy of the O&M manuals for review
- Coordinates owner training with CxA
- The BAS Contractor will install, commission, and demonstrate their system to the requirements of the specification.
- The BAS Contractor will coordinate closely with the mechanical contractor, electrical contractor, the TAB Contractor, and the CxA
- Completing and sign off all PFT (Pre-Functional Test) forms for CxA review and approval
- Provides detailed O&M manuals for all aspects related to Building Automation system
- Provide list of all schedules and set points
- Coordinates control system functional checks with the CxA and demonstrates the sequences of operation to the CxA as required in the functional check sheets
- The BAS contractor and in cooperation with other contractors and vendors shall perform a complete 100% functional performance test for all equipment and systems related to the BAS and provide completed and signed off FPT sheets

Testing Adjusting & Balancing Contractor:

- Complete an initial project review prior to start any TAB activity to attempt to identify any construction issues preventing proper balancing of the systems
- The TAB contractor will test and balance the mechanical systems to the requirements of the project specification and in line with TAB standards
- TAB contractor will prepare a schedule for their work and coordinate with the GC to include these activities with in the construction schedule
- Provides all TAB documentation and associated reports
- Reports on operation and programming issues discovered in the field while balancing
- Issue report for the initial project review to the general contractor/mechanical contractor and copied CxA and mechanical engineer
- The TAB contractor will attend selected commissioning/construction meetings
- TAB contractor to submit valid calibration certificate for all instruments to be used
- Coordinate with CxA to witness selective percentage of water and air balancing process

Responsibility Matrix

Product	Description	Responsibility of:							
		CxA	OR	A/E	GC	MC	EC	BAS	TAB
System design and schematics	Single line diagram, flow diagram and other design considerations, floor plans indicating location of equipment and configuration of system installation.	R		P					
Commissioning Plan	Document includes, commissioning process, team, responsibilities and deliverables.	P	R/A	R/I	R/I	R	R	R	R
Commissioning schedule	Commissioning schedule included in the project work schedule. Including all milestones, other M&E activities.	I/R	R	R	P	P	I	I	I
Commissioning meetings	Cx meetings will be scheduled as needed or on regular basis.	Pe	At	At	At	At	At	At	At
Shop Drawings /Submittals	Reviewing the shop drawings for all equipment under the commissioning scope. Review will be conducted after final approval of the EOR.	R		R		S	S	S	
Pre-Functional Test Forms	Static and dynamic test forms. Will not replace the OEM test sheets.	R		R		Pe	Pe	P/Pe	Pe
Functional test Forms	Performance verification test forms used by the Cx A to verify system operation with the BAS.	P/A				Pe		Pe	
Static testing	Includes, pipe pressure tests, air duct pressure test, flushing and cleaning	R				Pe	Pe		
Installation & above ceiling inspections	Reviewing equipment installation and above ceiling M/E services inspections	R		Pe					
Dust free environment (Clean building)	Achieving a dust free environment is a key step to start air moving devices (AMD)/Equipment.	A			Pe	Pe			
Equipment Start-up and start-up plans, check sheets	This is the OEM starting-up mechanical /electrical equipment and issue report.	R		R		P/Pe			Pe
BAS Programming, Point to point verification and Graphics	This is a process by the BAS vendor to verify all equipment are communicating to BAS	R/W						Pe	
System Air and Water balancing	Process to balance the air and water volume and set the correct designed pressure in the system. Verify the outlet and terminals air quantities.	R		R				Pe	Pe
Functional Performance testing	Complete verification and testing of the system and individual components and as integrated systems.	Pe/W/A		W		Pe		Pe	
Final Commissioning report	Report will outline the commissioning activities and the outcome of this process, listing of all concerns and pending issues.	P/A	R/A						
O & M manuals	This is the equipment and systems operating and maintenance manuals as per technical specifications.	R				P/S	P/S	P/S	I
Training Program	Topics to be covered during the training session	R	At	Pe /W	Pe	Pe	Pe	Pe	
Seasonal Testing	Opposite season test	Pe	At	W	At	At	At	Pe	

Legend:

A	Responsible to Approve	Pe	Responsible to Perform	I	Responsible to give Input	S	Responsible to Submit
At	Responsible to Attend	R:	Responsible for Review	P	Responsible to Prepare	W:	Responsible to Witness

6. BUILDING COMMISSIONING PROCESS

Building Commissioning is the process of bringing the project from a static state to a dynamic operating condition to meet the intended use. More specifically, commissioning includes bringing the project to a working and fully operational condition in compliance with the design intent and project documents. Therefore, commissioning involves those actions and activities that convert the buildings mechanical & electrical components into a fully functioning facility.

Design Phase (Pre-Construction Phase)

Development of Design Documents:
The Design Team shall generate several phases of design documents, including schematics, design development, and various levels of construction documents.

The Construction Phase

Development of the Commissioning Plan:
The Commissioning Plan will be developed for the Cx Team to review. The Commissioning Plan provides an overview of the commissioning process and responsibilities. The Commissioning Plan includes preliminary project specific information on the team, systems to be commissioned, and project schedule milestones. The team shall review the plan and provide comments to the CxA. This plan will continue to be developed and refined through the commissioning process.

Commissioning Kick-off Meeting:
The CxA will schedule a kick-off meeting with the entire Commissioning Team to introduce the players, review commissioning scope, review the commissioning process, discuss team responsibilities, and develop a team specific approach to commissioning.

Submittal Review:
A review encompassing aspects from a commissioning perspective shall be conducted to the submittals of all systems to be commissioned. CxA review of submittals does not relieve the design team of their submittal review responsibilities.

Review of Contractor and Vendor Startup Forms:
The contractor shall provide any standard forms wished to be used during the commissioning process of the project such as contractor standard pressure test documentation, equipment starts-up forms, etc. The CxA will review/approve the forms and incorporate them into the Commissioning Plan. Startup forms can be provided by the contractor or equipment manufacturer. In cases where forms do not exist but are required, the CxA shall provide start-up forms.

Static Test Forms and Reports include:

- Pipe pressure testing
- Flushing and cleaning reports
- Chemical treatment sign off

Dynamic Test Forms are required for all systems identified under submittal review:

- Mechanical Equipment Startup
- BAS Point to Point and Functional Testing Report

Managing the Construction Schedule:

The general contractor develops the project schedule for the project and the CxA shall provide list for commissioning milestones and testing. The CxA also reviews the schedule to look for potential conflicts and to ensure there is sufficient time for testing towards the end of the project.

The CxA will work with the project team to help in preparing contractors commissioning schedules. The schedules will identify equipment and systems by area and the various commissioning tasks. The schedules will include key starting dates such as 'power availability' and 'clean building'. Each Contractor's schedule will be reviewed, and updated as required, at the construction meetings or the commissioning meetings.

Preliminary Commissioning Schedule milestones for the project:

Commissioning Activity	Duration	Estimated Start Date	Estimated Completion Date
Document design intent and basis of design			
Commissioning Plan			
Preliminary Commissioning Plan			
Scoping Meeting			
Final Commissioning Plan			
Submittals and test writing			
Review mechanical submittals			
Write Startup and PF checklists			
DDC program review meeting			
Write FPT Tests			
Construction Observation			
Site observations			
Equipment PF checklist completion			
Equipment startup			
Startup documentation			
Controls system checkout			
Test and Balance			
TAB air side			
TAB water side			
HVAC functional performance testing			
Substantial Completion			
Post Acceptance Phase			
Short-term diagnostic monitoring			
O&M, training, reporting, warranty			
O&M Manuals submitted			
Review O&M manuals			
Review as-built documentation			
Seasonal testing			
Final commissioning report			

Functional Test Sheets:
The functional performance test (FPT) sheets will be developed by the CxA – CFMS West Consulting and to be used with the contractors to fully test the sequences of operation of all commissioned systems. The test forms will include the test procedure and expected results of each test point. The contractors shall review the forms and confirm functional tests can be performed in a manner that does not compromise the safety of the equipment or personnel performing the test. FPT sheets shall be prepared for all systems identified under submittal review.

Commissioning Meetings:
During the early stages of the construction process, the CxA will integrate the first commissioning discussions at the regular site meetings; attendance as required. The initial meetings will deal with the commissioning process, responsibilities, and the reporting methodology.

During the construction process, commissioning issues, scheduling, pre-functional test forms, functional test forms and results will be discussed as required at the construction meetings; attendance as required. During the dynamic testing process and the time leading up to substantial performance, separate commissioning meetings shall be held if required.

On-going Construction Observations & Installation Checks:
The CxA will conduct periodic jobsite visits. During these visits the CxA will perform site inspections, commenting on installation quality and attend site meetings to remain informed on construction progress and to update parties involved in commissioning process. A written jobsite inspection report shall be provided and distributed to the contractors, owner and other team members as determined during the kick- off meeting.

The following list of activities will be performed by the CxA during a visit to the jobsite:

- Attending jobsite meeting
- Complete equipment installation check and above ceiling inspections
- Witness static and dynamic activities
- Verify site cleanness and dust free environment
- Complete required checklists;(PFT)
- Conduct Functional performance test (FPT)

Static & Dynamic Testing:
The CxA will review the static and dynamic testing reports and report on any items of concern from a commissioning or operations point of view.

Air and Water Balancing:
The CxA will co-ordinate with the Balancing Contractor to ensure that a balancing plan and schedule are prepared and reports are submitted. The TAB contractor shall visit the site and issue a report for the visit listing any comments, concerns or requirements for the balancing process. CxA will review the final balancing report and comment.

Functional Performance Test:
The FPT is to verify that equipment, systems, and sub-systems functions and perform to meet the OPR and project documents. They are means to determine that different systems interact as required to achieve an overall operating and functioning facility.

The FPT typically involve forcing the system into a series of operating modes, and observing the system's response. The CxA will accurately record all their activities and observations on the FPT sheets and then ensure all systems returned to a "normal' state. The CxA will use the Issue list to log any performance issues might arise during the test and their resolutions.

If desired, it is possible to have the current or future building operators attend the Functional Performance Testing.*"Having the building operators participate in testing enhances the process and is a unique opportunity to deepen their understanding of the systems and controls".*

Prior to conducting FPT, the following must be satisfied:

- All static and dynamic start-up reports completed successfully;
- Controls system with all its graphics, verifications, calibrations, schedules, alarms and programs are completed and relevant reports and check sheets completed
- Air and water balancing process completed and reports submitted
- All corrections and re starting of start-ups completed successfully
- Maintaining a dust free environment in the building
- Availability of an experienced BAS contractor personnel during the test time
- Test requirements and BAS sequence of operation is provided for FPT form generation
- Occupancy and other schedules are provided
- Set points provided
- Ensuring the FPT can be performed in a manner that does not compromise the safety of the equipment or personnel performing the test or witnessing it

Development of the Commissioning Issues List:

The Cx A will manage, distribute and review a Commissioning Issues of Concern List (IOC) with the team. The Commissioning Issues Log will document all issues impacting the successful completion of the commissioning process. The CxA will assist the commissioning team to bring resolution to commissioning issues in a timely manner.

Operator Training Program:

Operations and maintenance documentation and training are vital to the long-term operational health of the facility. The Commissioning Authority (CxA) reviews agenda with the owner's representative(s) -operators- to ensure that training agendas meet the specifications in the contract documents and the OPR.

The following steps will help the development and implementation of the training program

- The GC shall develop and submit a Training Plan to the project team for review and approve.
- The training plan shall identify systems requiring training, required instructor (s), time period for training, and location of training;
- Technical content for the training exercises shall be provided by a combination of the equipment manufacturers, Sub-trade contractors, and design team personnel;
- The GC shall coordinate with the relevant personnel – including at minimum the OR, A/E, CxA to schedule required training exercises and confirm appropriate personnel to receive training;
- Detailed training agendas will be issued to the commissioning team prior to the scheduled sessions;
- Training Agenda will include at the minimum the following:

    - Review of drawings to demonstrate the relationship between the installed devices and the drawings
    - Provide walk through outlining the major components associated with the training session
    - Overview of the operation of system/component, and its interface with the Building Automation System
    - Preventative maintenance procedures & routines. (Dealing with alarms and trends)
    - Review the SOO and describe the adjustments that can be made by an operator
    - Review system adjustment and calibration
    - Troubleshooting procedure and system diagnostic
    - Review of BAS graphics, programs and trends
    - Attendees Q & A

O&M Manuals Review:
The CxA will review the submitted O&M manuals for commissioned systems to verify compliance with the OPR and contract document. CxA - CFMS West Consulting – will review the O&M manuals for warranty certificates, availability of all reports, maintenance requirements, single line diagrams, valve charts, TAB reports, BAS point list and check sheets, sequence of operation, required contact information and warranties.

The O & M manuals shall include at the minimum the following sections:

- Basis of design document as issued by the EOR
- Warranties and applicable to the project
- Contractors contact list
- Equipment start up reports
- Test reports (Authority test Reports)
- Shop drawings, troubleshooting and PM literatures for all equipment and systems
- Air and water balancing reports and single line diagrams
- Building Automation System shop drawings and sequence of operation

Commissioning Report:
The CxA- CFMS West Consulting will provide a Final Commissioning Report upon completion of all commissioning activities. The final commissioning report will contain the executive summary, summary of the design review process, summary of the submittal review process, the current copy of the Commissioning Plan, completed commissioning issues list, meeting minutes, completed check forms, and O&M documentation and training process.

Occupancy and Operation Phase
The following activities will be performed during the Occupancy and Operation Phase of the project:

Completion of Seasonal and Deferred Systems tests:
The CxA may determine that certain sequences may not be thoroughly tested unless the ambient conditions are correct. These functional tests may be deferred until the appropriate conditions are available. The BAS and mechanical contractors will be conducting this test along with the CxA.

7. SYSTEM INCLUDED IN THE COMMISSIONING

Refer to below list for a full list of the equipment included in the project:

Equipment
Rooftop Units
Wallfins
Exhaust Fans
Domestic Hot Water Heater
Boilers & Circ. Pumps
Variable Air Volume Terminal Units
Split AC Units
Building Automation System

8. COMMUNICATIONS PROTOCOL

CFMS West Consulting as the Commissioning Authority, our primary focus is to act as an advocate for the owner ensuring that modern methods of construction and leading-edge commissioning are successfully delivered. Essential to this process is the establishment of a communications protocol – prepared for and reviewed during the commissioning kick-off session. Below is the communications protocol:

Issue	Communication Protocol
Requests for information (RFI) or formal documentation requests	The CxA goes first: through OR and copied GC, A/E
Minor or verbal information and clarifications:	The CxA goes direct to the GC, with correspondence copied to the OR/ A/E
Notifying contractors of noted Cx issues	The CxA documents issues through the OR & GC, but may not discuss issues with contractors prior to notifying the GC and A/E. Issues Logs are issued regularly to the Commissioning Team.
Scheduling functional tests	The CxA may provide input for and coordination of testing through the OR & GC, but does not directly schedule contractors or subs.
Scheduling commissioning meetings	The CxA with GC selects the date and schedules the meetings with the Owner and Design Team
Making requests for significant changes:	The CxA **has no authority** to issue change orders or direct the contactors or their subs as it pertains to design related modifications. Design Team issues instructions.
Making small changes in specified sequences of operations	The CxA **may not** make small sequences of operations changes to improve efficiency or control or to correct issues, through the responsible contractor. The CxA shall document the change and provide all information of specified sequences to the OR, GC and A/E. The CxA **may not** make changes to specified sequences without approval from the A/E.
Contractors or Subs disagreeing with requests, findings or interpretations by the CxA:	Contractors or Subs will not try and resolve with the CxA first. Contractors or Subs will work through the GC who will work with the CxA directly. The OR will be included in the correspondence /discussion as needed.
Witnessing systems and equipment training	The CxA may provide input for and assistance in the coordination of training and testing through the GC, but **does not** directly schedule contractors or subs.
Weekly site reports and updates	The CxA issues site reports and update documents through the OR, with copy to the, GC and A/E.
Suspected design issues found during the Cx process	The CxA documents issues first through the GC and A/E, but may not discuss design issues with contractors or subs prior to notifying the OR and GC.

9. NEXT STEP

The Commissioning plan is a live document that will be updated throughout the project**.** The OR, A/E, contractors and other project team shall be responsible for providing updates for the information in this document. CFMS West Consulting will review the updates and issue revisions accordingly.

Revision No.	Date Issued	Issued By
R00	April 6, 2026	CFMS-West Consulting

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for demolition and removals Work in accordance with the Contract Documents.

.2 Work included: Requirements for demolishing, salvaging and removing wholly or in part the various items designated on the drawings or required to be removed or partially removed for the receipt of the Work of this Contract, including not necessarily limited to:
- .1 Alteration and renovations to existing building.
- .2 Cutting and removing of walls, floors, ceilings, doors and frames, in the existing buildings as indicated on Drawings.
- .3 Patching, making good openings and chases in walls, floors, ceilings, including the supply and installation of lintels, channels and finishes.
- .4 Removal of rubbish, debris, demolished fixtures, fitments and items not scheduled to remain the Owner's property, resulting from the demolition and preparatory work.
- .5 Remove abandoned services such as conduits, pipes, wiring, ducts, fixtures, equipment, etc. where required for the work or indicated on the drawings.
- .6 Removal of all mechanical items including plumbing fixtures, services etc. where required for the work or indicated on drawings and or where not required to be relocated.
- .7 Removal of existing electrical items including fixtures, etc. where required for the work or indicated on the drawings and not required to be relocated.
- .8 Dust control during the operations of the work of this Section.
- .9 Removal shall mean removal from site and safe disposal in a legal manner.
- .10 Refer to Drawings for all items being alteration and renovations to existing building.

1.2 **REFERENCES**

.1 CSA S350-M, Code of Practice for Safety in Demolition of Structures.

.2 OPSS, Ontario Provincial Standard Specification.

1.3 **SUBMITTALS**

.1 Where required by Authorities having jurisdiction, submit a Fire Plan to local fire department for review and approval.

.2 Submit shop drawings, diagrams and details in accordance with the Conditions of the Contract.

.3 30 calendar days prior to start of demolition and removals work, submit for review, drawings, diagrams or details showing sequence of disassembly work and shoring of supporting structures in accordance with authorities having jurisdiction.

.4 Submit for approval, a plan showing impacts, interruptions and delays to Owners operations.

.5 Have submissions signed and sealed by Professional Engineer licensed in Province of Ontario.

.6 Submit to Consultant, details of where rubble, debris and other materials are to be disposed or reused. Include each disposal/reuse site location, operator's name and business address, type of license under which site operates, and criteria used by site to assess suitability of rubble, debris and other materials for disposal.

.7 Give notice to Utility Authorities controlling services and appurtenances which will be affected by demolition work.

1.4 **QUALITY ASSURANCE**

.1 Prepare waste audits, waste reduction workplans, source separation programs and recycling programs as required by jurisdictional authorities and update programs and implement such programs as required.

.2 Perform the work of this section in accordance with the 'Environmental Protection Act' including Ontario Regulation 102 and the 'Environmental Assessment Act' including Ontario Regulation 103.

.3 Conform to Fire Code, Regulation under the Fire Marshals Act.

.4 The demolition contractor must engage a registered professional engineer who holds a certificate of authorization and an appropriate level of liability insurance to prepare demolition procedures.

.5 As part of the contract requirements, the engineer for the demolition contractor should be required to sign the general review commitment required by city building departments.

1.5 **SITE CONDITIONS**

.1 Interruptions to Owners operations will not be permitted.

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

2 Products

2.1 **MATERIALS**

.1 All materials requiring removal shall become the Contractor's property and shall be removed and disposed of from the site, as the work progresses, unless indicated otherwise.

.2 Temporary Protection:
.1 Provide temporary hoarding consisting of 16 mm plywood sheathing, metal studs and 16 mm plywood sheathing with lock-able access door in areas shown on Drawing.

.3 Salvaged material:
.1 Salvage and stockpile Products, materials, and equipment as specified herein, indicated on Site or indicated on drawings.
.2 Coordinate items to be salvaged with Consultant.
.3 Salvaged materials shall not be chipped, cracked, split, stained or damaged.
.4 Store items off of moist surfaces.

3 Execution

3.1 **GENERAL**

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

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

.3 Remove, handle and transport Products indicated to be salvaged and stored for future use. Transport Products to storage area(s) designated by Consultant. Perform work to prevent any damage to Products during removal and in storage. Products damaged during removal, will be inspected by Consultant. Consultant will determine extent of damage and accept or refuse Products.

.4 List and description of items to be removed and stored or reused:
.1 [...]
.2 All items as per drawings or by the Consultant.

.5 Take precautions to guard against movement, settlement or collapse of adjacent services, sidewalks, driveways, or trees. Be liable for such movement, settlement or collapse caused by failure to take necessary precautions. Repair promptly such damage when ordered.

3.2 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

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

3.3 **PRESERVATION OF REFERENCES**

.1 Record location and designation of survey markers and monuments located within demolition area, prior to removal. Store and restore markers and monuments upon completion of Work or relocate as directed by Consultant.

3.4 **PROTECTION**

.1 Provide, erect and maintain required hoarding, sidewalk sheds, catch platforms, lights and other protection around Site before commencing work. Maintain such areas free of snow, ice, mud, water and debris. Lighting levels shall be equal to that prior to erection.

.2 Provide flagmen where necessary or appropriate to provide effective and safe access to Site to vehicular traffic and protection to pedestrian traffic.

.3 Prevent movement or damage of adjacent structures, services, walks, paving, trees, landscaping, and adjacent grades. Supply and install bracing, and shoring as required. Make good damage caused by demolition to acceptance of Consultant.

.4 Protect adjacent structures and property against damage which might occur from falling debris or other causes. Repair or replace damage caused from work of this Section to acceptance of Consultant.

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

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

.7 If movement or settlement occurs, install additional bracing and shoring as necessary and make good damage to acceptance of Consultant.

.8 Hang tarpaulins where debris and other materials are lowered. Build in around openings with wood and plywood at locations used for removal of debris and materials.

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

.10 Pay particular attention to prevention of fire and elimination of fire hazards which would endanger Work or adjacent structures and premises.

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

.12 Supply, install and maintain legal and necessary barricades, guards, railings, lights, warning signs, security personnel and other safety measures, and fully protect persons and property.

.13 Blasting is not permitted.

3.5 PREPARATION

.1 Disconnect and/or re-route electrical data, communication and telephone service lines entering structures to be demolished. Remove abandoned lines as indicated on Contract Drawings. Post warning signs on electrical lines and equipment which is required to remain energized.

.2 Arrange to disconnect and cap designated mechanical services:
- .1 Natural gas supply lines: As indicated on drawings, to be removed by gas company.
- .2 Sewer and water lines: Remove and dispose of as indicated on Contract Drawings.
- .3 Other underground services: Remove and dispose of as indicated on Contract Drawings.

.3 Disassemble and remove mechanical equipment, ductwork and piping complete with supports and associated components.

.4 Do not disrupt active or energized utilities designated to remain undisturbed.

.5 Perform rodent and vermin control to comply with health regulations.

3.6 CONCRETE CUTTING AND CORING

.1 Prior to cutting or coring any concrete slab, suspended or on grade, or any concrete beam, investigate by telemetrically scanning the element for presence of embedded services (piping, cabling, conduit, etc.), and for locations of reinforcing steel in suspended concrete slabs and beams.

.2 Acceptable telemetric scanning systems include:
- .1 X-Ray scanning of suspended slabs and for concrete beams.
- .2 (Ground-penetrating) radar for slab on grade, for suspended slabs and for concrete beams.

.3 Magnetic radio scanners not acceptable for telemetric scanning.

.4 The term x-rays include gamma ray methods, and procedures that use electrically generated x-rays.

.5 Where x-rays employed:
- .1 Provide Owner minimum 5 working days advance notice of scanning time in order to provide sufficient advance notice to personal that may be affected by the x-ray work.
- .2 Conform to Owner’s radiation protection requirements prior to start of any x-ray work.

.6 Provide Owner and Consultant with inspection agency's written report, summarizing investigations and conclusions.

.7 Obtain Consultant's direction where investigations reveal that cutting or coring required in Contract would cut or damage embedded services, or cut or damage reinforcing steel in suspended concrete slabs or beams.

.8 Execute cutting and coring to prevent damage to all embedded services. Make good all damage arising from cutting embedded services.

.9 Execute cutting and coring to prevent damage (cutting in whole or in part) reinforcing steel in suspended concrete slabs with Consultant's prior authorization.

.10 Make good all damage arising from cutting reinforcing steel in suspended concrete slabs and beams.

3.7 **DEMOLITION**

.1 Perform demolition with extreme care. Confine effects of demolition to those parts which are to be demolished.

.2 Perform work and prevent inconvenience to persons outside those parts which are to be demolished.

.3 Carry out demolition in accordance with the requirements of CSA S350-M.

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

.5 Demolition shall proceed safely in systematic manner from roof to grade and as necessary to accommodate remedial work indicated. Work on each floor level shall be complete before commencing work on supporting structure and safety of its supports are impaired. Parts of building which would otherwise collapse prematurely shall be securely shored. Walls and piers shall not be undermined.

.6 For buildings with basements, demolish buildings including foundations, footing and basement slab.

.7 For buildings without basement, remove concrete slabs or wood floor construction at grade level.

.8 Demolish foundation walls below finished grade.

.9 Fill all equipment pits and depressions with gravel or sand.

.10 Backfill to grade all basements and excavations with recycled granular fill material.

.11 Oversized bricks, concrete chunks and rock can be separated for crushing by mechanical means instead of disposal. Crushed materials can be intermixed with granular material for use as backfill.

.12 Do not overload floor or wall with accumulations of material or debris or by other loads.

.13 Perform work to minimize dusting. Keep work area wetted down with fog sprays to prevent dust and dirt rising. Supply and install temporary water lines and connections that may be required. Upon completion, remove installed temporary water lines. Use covered chutes, water down.

.14 Do not sell or burn materials on Site.

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

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

.17 Drainage and sewer system protection:
- .1 Ensure that no dust, debris or slurry enters drainage and sewer system on Site.
- .2 Remove and dispose of debris and slurry promptly from Site.
- .3 Comply with City of Waterloo Sewer Use By-Law.

.18 Concrete:
- .1 Demolish concrete by methods which avoid impact loads on items which are not to be demolished.
- .2 Where only part or parts of a concrete floor, wall, roof, foundation or other items are to be demolished, use saw cuts to isolate areas which are to be demolished except where existing reinforcing steel is to be left in place. Prior to such isolating, install suitable support to prevent premature movement of area(s) being isolated and undesirable transfer of loads as cutting progresses. If necessary remove area(s) to be demolished by successively isolating small sections.
- .3 Where reinforcing steel is to be left in place, use saw cuts from surface of concrete around perimeter(s) of area(s) to be demolished, chip concrete without damaging reinforcing steel. Retouch damaged epoxy coating of existing reinforcing steel.

.19 Masonry:
- .1 Demolish block walls in small sections of not more than 2 m^2. Do not permit masonry to fall in mass from one level to another.
- .2 Where only part(s) of a wall is to be demolished, install adequate support for adjacent part(s).
- .3 After removal of masonry walls, grind smooth floors ready for new floor finish.

.20 Steel: Where only part or parts of structure is to be demolished, dismantle and maintain structure stable. Do not place excessive loads on components. Install adequate temporary guys and supports to ensure stability and to prevent excessive loading. Support each component being disconnected from structure, and lower, do not drop, component after it is disconnected.

.21 Cut openings through existing walls and partitions. Establish exact location of steel reinforcing in existing concrete walls before cutting. Be responsible for damage to existing steel reinforcing and be liable for structural failure. Make good surfaces disturbed with materials to match existing.

22. Where doors are scheduled to be removed, include:
    1. Removal in re-usable condition of doors and door hardware, and store at the Place of the work.
    2. Removal of door frames.

23. Remove floor finishes, where new finishes are indicated on Room Finish Schedule.
    1. Removal of adhesive applied finishes shall include complete removal to substrate including adhesive. Take adequate care to prevent damage to substrate.

.24 Demolish all other items indicated or required.

3.8 RECYCLING

.1 Whenever possible, all materials shall be recycled. Pay all costs for this work.

.2 Deliver to nearest appropriate recycling depot all materials accepted for recycling by Authorities having jurisdiction over the Place of Work, including but not limited to cardboard, paper, plastic, aluminum, steel, and glass.

3.9 DISPOSAL OF MATERIALS

.1 Remove from Site, rubble, debris, and other materials that can not be recycled resulting from demolition and removals work in accordance with Authorities having Jurisdiction, except where specified or indicated on Contract Drawings to be reused.

.2 Conform to requirements of municipality's Works Department regarding disposal of waste materials.

.3 Materials prohibited from municipality waste management facilities shall be removed from Site and dispose of at recycling companies specializing in recyclable materials.

3.10 RESTORATION

.1 Where demolition removed a structure or installation, rough grade and restore area in accordance with Authorities having Jurisdiction.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for topping work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM C109M, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).

1.3 **SUBMITTALS**

.1 Product data:
  .1 Submit duplicate copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
    .1 Performance criteria, compliance with appropriate reference standard(s), characteristics, and limitations.
    .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
  .1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
    .1 Sections, details, materials, dimensions, thicknesses of each layer, maximum and minimum thicknesses, 3, 7, and 28 day load characteristics, and surface finishes

.3 Certificates: Submit certification from manufacturer, stating that materials proposed for use are compatible with specified floor finishes.

1.4 **QUALITY ASSURANCE**

.1 Installers qualifications: Perform work of this Section by a company that has a minimum of five years proven experience in installations of a similar size and nature and that is approved by manufacturer. Submit to Consultant, applicator’s current certificate of approval by the material manufacturer as proof of compliance.

.2 Mock-up:
  .1 Construct one room mock-up of topping in location acceptable to Consultant.
  .2 Arrange for Consultant's review and acceptance, allow 48 hours after acceptance before proceeding with work.
  .3 Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.
  .4 Upon acceptance, mock-up shall serve as a minimum standard of quality for the balance of the work of this Section.

1.5 **SITE CONDITIONS**

.1 Do not install work of this Section outside of following environmental ranges without Consultant's and Product manufacturer's written acceptance:
.1 Concrete temperature: 10°C minimum.
.2 Ambient air temperature: 16^0C to 30^0C
.3 Precipitation: None.

.2 Supply and install temporary protection and facilities to maintain Product manufacturer's, and above specified environmental requirements for 48 hours before, during, and 48 hours after installation.

2 Products

2.1 **MATERIALS**

.1 Concrete based levelling compound:
.1 Compressive strength to ASTM C1708/1708M, 28 day, 4300 psi.
.2 Flexural strength to ASTM C348: 28 day, min. 850 psi.
.3 Acceptable material: ‘TechLevel 150' by CustomTech or approved alternative by Ardex Engineered Cements.

.2 Latex bonding agent: water based acrylic polymer, 28% solids.
.1 Compressive strength: 31 MPa at 28 days to ASTM C109/C109M.
.2 Freeze/thaw: to ASTM C666, Method A, durability = 102@300_cycles.
.3 Acceptable material: 'Acryl 60' by BASF Building Systems.

.3 Water: potable.

2.2 **MIXES**

.1 Mix toppings in accordance with manufacturer's written instructions.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 **PREPARATION**

.1 Verify substrate surfaces are solid, free from surface water, frozen matter, dust, oil, grease, scaling or laitance, projections and any other foreign matter detrimental to performance.

.2 Prohibit traffic on prepared areas until work of this Section is completed.

.3 Supply and install temporary protection to adjacent surfaces, floor drains, and steel angles to prevent damage resulting from work of this Section.

.4 Prior to application of topping, remove all debris by vacuuming.

3.3 INSTALLATION

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

.2 Bonding agent:
- .1 Mix and apply bonding agent in accordance with manufacturer's written instructions.
- .2 Mix only as much material as can be applied within 15 to 25 minutes.

.3 Levelling topping:
- .1 Install levelling material in accordance with manufacturer's instructions.
- .2 Let cure in accordance with manufacturer's, recommendations.

.4 Epoxy concrete topping: Mix, apply and finish epoxy concrete topping to manufacturer's instructions.

3.4 PROTECTION

.1 Provide temporary protection for surfaces subjected to concentrated loads before they have cured sufficiently to carry them without damage.

.2 Prevent traffic over completed areas, and protect work of this Section from precipitation, freezing, and debris after final installation.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for masonry Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM A82/A82-M, Specification for Steel Wire, Plain, for Concrete Reinforcement.

.2 ASTM C207, Specification for Hydrated Lime for Masonry Purposes.

.3 CAN/CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction, Methods of Test and Standard Practices for Concrete.

.4 CAN/CSA A82, Fired Masonry Brick Made From Clay or Shale.

.5 CSA A123.3, Asphalt Saturated Organic Roofing Felt.

.6 CSA A165 Series, CSA Standards on Concrete Masonry Units.

.7 CSA A179, Mortar and Grout for Unit Masonry.

.8 CSA A370, Connectors for Masonry.

.9 CSA A371, Masonry Construction for Buildings.

.10 CAN/CSA A3000, Cementitious Materials Compendium.

.11 CSA G30.18, Carbon Steel Bars for Concrete Reinforcement.

.12 CSA S304.1, Design of Masonry Structures.

1.3 **SUBMITTALS**

.1 Shop Drawings:
- .1 Submit shop drawings in accordance with the Conditions of the Contract indicating wall sections, details, reinforcing and anchors, special detailing, patterning and locations of control joints.

.2 Samples:
- .1 Submit samples in accordance with the Conditions of the Contract for the following:
- .2 Submit samples of each type and colour of masonry unit used prior to ordering material.
- .3 Submit samples of coloured mortar to match masonry samples.
- .4 Submit samples of each type and size of masonry anchors, ties and horizontal reinforcing.
- .5 Submit 250mm x 200mm samples of dampproof course and through-wall flashing membranes.

.6 Submit samples of all weep holes, cavity wall vents and cavity mortar control.

.3 Source Quality Control:

.1 In accordance with the Conditions of the Contract, manufacturers of concrete masonry units must submit independent laboratory test reports performed within twelve (12) months immediately prior to date of delivery of materials, certifying compliance of masonry units and mortar components with specification requirements.

1.4 QUALITY ASSURANCE

.1 Perform work of this section in strict accordance with these specifications, standards referenced herein and with all warranty requirements.

.2 Work of the section shall be performed by mechanics having a minimum of two (2) years documented experience in laying concrete and clay masonry units. Submit proof of experience if requested by Consultant.

.3 Pre-installation Meeting:

.1 Convene a pre-installation meeting for the work specified in this section, to be attended by the General Contractor (Site Superintendent & Project Manager), Masonry Contractor (Foreman & Project Manager) and Consultant, to review on site conditions and review installation procedures and materials.

.4 Mock-up:

.1 Construct one mock-up panel of unit masonry construction, 2400mm wide x 1600mm high in a location accepted by Consultant.

.2 Demonstrate use of reinforcement, ties, through-wall flashing, weep holes, jointing, coursing, mortar, bonding, control joints and workmanship.

.3 Mock-up may form part of Work if accepted by Consultant. Mock-ups which do not form part of Work are to be removed from Site during final cleanup or when directed by Consultant.

.4 Rejected mock-ups: Correct rejected mock-ups and request re-review by Consultant.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle Products in accordance with the Conditions of the Contract and as specified herein.

.2 Deliver all masonry units cubed and banded on hardwood pallets, with polyethylene 'shrink-wrap' or other non-staining covering.

.3 Deliver mortar materials in original unbroken and undamaged packages with the manufacturer's name and brand distinctly marked thereon and upon delivery, cover and protect from moisture.

.4 Remove unacceptable materials from Site and replace to acceptance of Consultant. Store materials off ground protected from wetting by rain, snow or ground water, or inter-mixture with earth or other materials. Store metal ties and reinforcement to prevent corrosion.

.5 Comply with CSA A371. Do not use salt or calcium-chloride to remove ice from masonry surfaces.

.6 Do not concentrate storage of materials on any part of structure beyond design load, take particular care not to overload unsupported portions of structure which may have not attained their full design strength.

1.6 **SITE CONDITIONS**

.1 Do not lay masonry when ambient temperature is at or below 5°C unless temporary protection and heating is provided. Supply and install temporary protection and heating for installed, uncured unit masonry when ambient conditions are at, below or are likely to go below 5°C, until seven (7) days after installation.

.2 Conform to cold and hot weather masonry requirements of CSA A371 and Recommended Practices of the Ontario Masonry Contractors' Association for cold and hot weather masonry work.

2 Products

2.1 **MATERIALS**

.1 Use same suppliers of masonry units, accessory materials and source of aggregate for entire project.

.2 Portland cement: Type 10 to CSA A5.

.3 Blended cement: to CSA A362.

.4 Aggregates: to CSA A23.1.

.5 Hydrated Lime: to ASTM C207, Type S.

.6 Supplementary Cementing Materials: to CSA A23.5.

2.2 **MASONRY UNITS**

.1 The physical properties of the concrete masonry units at the time of delivery by the manufacturer to the site, shall conform to the requirements of Table 1 of CSA A165.1, as classified herein. Test reports submitted to the Consultant by the manufacturer prior to delivery shall verify conformance, in order for material to be acceptable.

.2 Acceptable Manufacturers:
- .1 Atlas Block
- .2 Boehmers
- .3 Brampton Brick
- .4 Canada Building Materials (CBM)
- .5 Day & Campbell
- .6 Simcoe Block
- .7 Permacon

.8 Richvale York
.9 TCG Materials.

.3 Lightweight Concrete Masonry Units: to CSA A165.1. Use for all fire rated applications and block exposed to view.
.1 Classifications: H/15/D/M, S/15/D/M or Sc/15/D/M as required.
.2 Size: OCBA metric modular, sizes as indicated on drawings.

.4 Standard Weight Concrete Masonry Units: to CSA A165.1. Use for all non-fire rated applications and where concealed.
.1 Classifications: H/15/A/M, S/15/A/M or Sc/15/A/M as required.
.2 Size: OCBA metric modular, sizes as indicated on drawings.

.5 Brick: CAN/CSA A82, Type to be selected by Consultant.

.6 Provide special shapes such as return corners, lintels, universal knock-outs, A-blocks, peirs, bull-nosed blocks, etc., to perform masonry work with minimal cutting or breaking of masonry units.

.7 Provide solid masonry units where required for mechanically fastening blocking, furring, mechanically applied finishes or where noted.

.8 Supply masonry units with exposed surfaces free of cracks, chips, blemishes and broken corners.

2.3 **ACCESSORIES**

.1 Reinforcement: CSA A370, CSA A371 and ASTM A82, all components to be hot dipped galvanized unless otherwise specified, horizontal reinforcement shall be sized to suit width of masonry in accordance with CSA A371. Undersized or oversized reinforcing is not acceptable:
.1 This specification is based on products manufactured by Blok-Lok Ltd. Products by Dur-O-Wal Ltd. and Fero Corporation are approved alternatives.
.2 Type 1 (single wythe): Truss type; 'Blok-Trus BL30'. Wire size shall be Extra Heavy, 4.76 mm diameter side rods x 9 ga cross rods.
.3 Type 2 (cavity wall block back-up): Ladder reinforcement type consisting of 3.76 mm diameter steel wire tie; 'BL-42'.
.4 Connectors: CSA A370 and CSA S304.1.
.5 Reinforcing steel: CSA G30.18, Grade 400, refer to Contract Drawings for number, size and location.
.6 Reinforcing corner units: Provide pre-manufactured 'L' and 'T' corner units, **crimped metal strap ties are not acceptable**.

.2 Cavity wall insulation: In accordance with Section 07 21 00.

.3 Loose steel lintels and lateral support angles: Supplied as part of work of Section 05 50 00.

.4 Air/vapour barrier: In accordance with Section 07 26 00.

.5 Dampproof course and through-wall flashings:
.1 Rubberized underlay membrane: Self-adhesive reinforced SBS rubberized asphalt dampproof flashing over prefinished metal flashing and cut off flush with wall face as detailed on drawings; ‘Blueskin TWF’ by Henry. Must be from same manufacturer of wall air/vapour barrier manufacturer as part of work of Section 07 26 00.
.2 Dampproof course and through-wall flashing membrane primer: Solvent based rubber adhesive primer for self-adhesive membranes; ‘Blueskin Primer’ by Henry. Must be from same manufacturer of membrane.

.6 Compressible filler: 75mm x 6mm thick preformed, polyurethane foam; 25V by Emseal Joint Systems Ltd.

.7 Control joint filler: 10mm thick, preformed, acrylic impregnated sealing foam; BackerSeal (GreyFlex) by Emseal Joint Systems Ltd. or approved alternative.

.8 Control joint bond breaker: CSA A123.3; 15lb, asphalt impregnated, non-perforated felt paper as manufactured by IKO Manufacturing Inc. or approved alternative.

.9 Mortar net: 250mm high x thickness to suit cavity; Mortar Net by Mortar Net USA Ltd.

.10 Weep hole vents and cavity wall vents: Flexible ultra-violet resistant polypropylene-copolymer plastic, 'Cell Vent' by Blok-Lok, 'Mortar Maze Cell Vents' by Advanced Building Products Inc. or approved alternative. Provide manufacturer recommended clear silicone adhesive for suspended applications.

2.4 **MORTAR AND GROUT**

.1 Loadbearing and all interior masonry: CSA A179, Type S, proportion method.

.2 Exterior non-loadbearing masonry: CSA A179, Premixed 1-1-6 Type N, portland cement/lime, proportion method.

.3 Cement: CAN/CSA A3000, normal Portland, Type GU. Provide white cement where required for white or light coloured mortars.

.4 Masonry aggregate: CSA A179. Provide white aggregate where required for white or light coloured mortars.

.5 Water: Clean potable, free from deleterious elements and free from salts that can cause efflorescence.

.6 Mortar Colour
.1 Interior Concrete Block: Natural.
.2 Exterior brick masonry: Coloured mortar pigment; 'Bay Ferrox' by Bayer Inc. or approved alternative by Elementis Pigments. Colour to match approved sample.

.7 Concrete fill and grout: 20MPa concrete in accordance with CAN/CSA A23.1/A23.2.

.8 All mortar products for masonry work shall be pre-mixed products and batch plant mixed on site for quality control.

3 Execution

3.1 **PROTECTION**

.1 Supply and install temporary waterproof, non-staining coverings, secured against displacement, to extend over wall and down sides to protect masonry Work from snow and wind driven rain and from drying too quickly, until masonry Work is completed and protected by flashings and other permanent construction.

.2 Supply and install non-staining, protective coverings on horizontal and vertical surfaces to protect Work of this Section from damage, staining, marking and mortar droppings.

3.2 **QUALITY OF WORK**

.1 Perform masonry work in accordance with CSA A371 and as indicated.

.2 Before commencing masonry work, verify required limitations for wall heights, wall thicknesses, openings, bond, anchorage, lateral support and compressive strengths of masonry units and mortars.

.3 Supply and install masonry Work plumb, level and true to line, with vertical joints in alignment and horizontal courses level, uniform and straight.

.4 Perform masonry mortar and grout work in accordance with CSA A179 except where specified otherwise.

.5 Provide temporary bracing of all masonry walls until permanent bracing is installed.

.6 Lay out coursing and bond to achieve correct coursing heights and continuity of bond above and below openings with minimum of cutting.

.7 Machine cut all masonry units where adjusted in size, to obtain straight, clean, even, unchipped edges. Cut units as required to fit adjoining work neatly or for flush mounted electrical outlets, grilles, pipes, conduit, leaving 3mm maximum clearance. Use full-sized units without cutting wherever possible.

.8 Tolerances in notes to Article 5.3 of CSA A371 apply.

.9 Do not use chipped, cracked, deformed or otherwise damaged units in any masonry work. Exercise caution to ensure exposed faces are free from stains, chips and cracks. Should deficiencies occur after installation, replace damaged units. Patching of damaged units is not acceptable.

.10 Coordinate work of this section with work of mechanical and electrical trades for conduit, piping and other items built into masonry work. Masonry Subcontractor must cooperate with mechanical and electrical trades, for placement of such items within masonry walls.

3.3 MORTAR MIXING

.1 Mix mortar with maximum amount of water consistent with workability for maximum tensile bond strength within capacity of mortar.

.2 Do not use mortar which has begun to set. Use mortar within two (2) hours after initial mixing. Re-temper mortar during two (2) hour period only as required to restore workability.

.3 Do not use admixtures without Consultant's written acceptance.

.4 Add mortar colour and admixtures to requirements of manufacturer's instructions.

.5 Provide uniformity of mix and colouration.

3.4 LAYING MASONRY UNITS

.1 Bond: Set concrete masonry units in Running bond. Tooth bond all intersections of walls and partitions unless otherwise indicated.

.2 Coursing height:
- .1 Concrete masonry units: 200mm for one block and one joint.
- .2 Exterior brick veneer: Coursing pattern to match existing.

.3 Construct all masonry walls full height to underside of structure or deck above, unless otherwise shown. Leave 25 mm void between top of wall and structure above. Fill void with 25 mm x 152 mm mineral wool insulation. Where walls are fire separations, firestop to Section 07 85 00.

.4 Set bearing plates for joists, beams, etc., at locations and elevations indicated and grout into place.

.5 Install a full bed of mortar for first and second courses of masonry, for masonry units 100 mm thick and less and between solid units. For remaining courses, all face beds and end webs shall be fully mortared.

.6 Tool mortar joints slightly concave with non-staining tools where exposed to view unless indicated otherwise. Strike joints flush in non-exposed areas and all joints within wall cavities. Use sufficient force to press mortar tight against masonry units on both sides of joints. Remove excess, remaining mortar material and burrs.

.7 Remove all excess mortar from surface of masonry exposed to view.

.8 Scrape, wire-brush and clean all surfaces of masonry of all dirt, mortar drippings, oil and other deleterious materials that are to receive self-adhesive membrane barriers.

.9 Install special shaped and sized concrete block units as indicated and as required for a complete and coordinated assembly and to minimize cut units.

.10 Provide lightweight block for all fire-rated applications and all block exposed to view.

.11 Provide standard weight block for all non-fire rated applications and where concealed.

.12 Provide solid masonry units where required for mechanically fastening of blocking, furring or mechanically applied finishes.

.13 Do not form chases in loadbearing walls less than 240mm thick. Do not form chases closer than 2m apart in any wall, unless otherwise shown.

.14 Do not construct horizontal chases for piping or conduit unless other reasonable means of allowing for services are impossible. Where horizontal chases are required, construct chases using lintel blocks filled solid with concrete fill as specified.

.15 Build in conduits as required without breaking bond.

.16 Build wall openings, slots and recesses required for ducts, grilles, pipes and other items.

.17 Install steel bench brackets supplied under the Work of section 05 50 00.

.18 Coordinate installation of conduit, outlet boxes and other mechanical and electrical built-ins with Work of Mechanical and Electrical trades.

.19 Where necessary to temporarily stop horizontal runs of masonry and in building corners, step-back masonry diagonally to lowest course previously laid. Do not 'tooth-in' new masonry. Fill in adjacent courses before heights of stepped masonry reach 1200mm.

.20 Brace door jambs to maintain plumbness. Set anchors between metal frames and masonry and fill voids between hollow metal frames and masonry walls with mortar.

3.5 VERTICAL REINFORCING

.1 Refer to Structural drawings.

.2 Place vertical reinforcement in cells of concrete unit masonry as detailed on the drawings. Provide A-blocks where required to facilitate ease of placement.

.3 Place vertical reinforcement accurately and secure against displacement by using ties or clips. Tack welding of reinforcement to secure in place will not be permitted.

.4 Secure vertical reinforcement in wall using sufficient spacers on each face to maintain the requisite distance between reinforcement and wall face and so that vertical bars are plumb. Provide spreader bars spaced at 2m centres in both directions.

.5 Place concrete fill in masonry unit cells, in maximum 2 course lifts. Vibrate to remove all air pockets.

3.6 HORIZONTAL REINFORCING

.1 At all single and double wythe concrete masonry walls, install reinforcing at vertical intervals of 400mm maximum and lapped 152mm at each splice. Provide prefabricated 'L' and 'T' sections at corners and intersections of masonry walls.

.2 Provide reinforcement in the first, second and top bed joints at 200mm vertical spacing, every second joint thereafter.

.3 Provide additional reinforcement immediately above lintel and below sill courses, extending 600mm beyond jamb.

.4 Provide masonry veneer ties at exterior cavity walls with CMU back-up, 400mm maximum each way.

3.7 LINTELS

.1 Install reinforced concrete masonry lintels over all openings in masonry wider than 400mm where steel or reinforced concrete lintels are not indicated.

.2 Reinforced concrete masonry lintels may be formed on the ground and lifted into place.

.3 Install loose steel lintels, as indicated in Contract Drawings. Centre over opening width.

.4 End bearing shall be uniformly distributed and not less than 200mm.

.5 Provide two courses of solid block beneath all lintel bearing.

.6 Install reinforcing steel and concrete fill in block lintels. Maintain sufficient support for reinforced concrete masonry lintels until initial compressive strength of concrete fill is achieved (minimum 7 days).

3.8 **LATERAL SUPPORT AND ANCHORAGE**

.1 Provide lateral support and anchorage in accordance with CAN3 S304 and as indicated on the drawings.

.2 Provide partition stabilization anchors at top of all masonry partitions at underside of structure for full length of wall at 1220mm o.c. maximum in accordance with CAN3 S304.

3.9 **CONTROL JOINTS**

.1 Provide vertical control joints to CSA A371 and as shown on the drawings.

.2 Width of control joint shall be 10mm.

.3 Horizontal reinforcing shall be continuous across control joint at every fourth course.

.4 Control joints shall be continuous across thickness of exterior wall. Where vertical joints in interior and exterior wythes do not align, an offset of maximum 200mm is allowable.

.5 Where not otherwise shown or detailed, the following minimum requirements for vertical control joints in unit masonry shall apply:
- .1 Above all openings in masonry, extending from end point of lintel to top of masonry.
- .2 At all structural column or pilaster locations.
- .3 All locations where structural substrate changes.
- .4 At all uninterrupted panels of masonry, maximum panel width shall be 7m.
- .5 Within 1m each side of changes in direction of wall.

3.10 **THROUGH-WALL FLASHING AND AIR/VAPOUR BARRIER**

.1 Clean, scrape and wire-brush all surfaces to receive through-wall flashing and air/vapour barrier membranes, remove all dirt, oil and loose mortar materials.

.2 Prime all surfaces to receive through-wall flashing and air/vapour barrier at manufacturers recommended rate and allow to dry and flash over prior to application of membranes.

.3 Position membrane to allow for minimum 50mm laps at all edges.

.4 Roll back membrane and remove release paper. Press membrane firmly into primer and roll membrane and all seams to ensure full contact with substrate.

.5 Seal leading edge of all membranes and projections through membranes with mastic approved for use with membranes.

3.11 **MASONRY VENEER**

.1 Prior to the installation of masonry veneer, coordinate the installation of through-wall flashings and air/vapour barriers. Membranes shall be inspected and accepted by Independent Testing & Inspection Authority prior to the application of insulation.

.2 Install cavity wall insulation in accordance with insulation manufacturer's written instructions, install insulation retainers at every veneer tie point as installation of insulation progresses.

.3 Apply mastic to all joints in cavity wall insulation.

.4 Install cavity mortar control before laying first course of masonry veneer.

.5 Lay masonry veneer fully bedded in mortar. Coursing heights and patterns to match existing.

.6 Provide return and finished end units at all corners.

.7 Erect cavity wall construction as shown on Contract Drawings.

.8 Install masonry veneer to prevent mortar droppings and protrusions from impeding drainage and pressure equalization of rainscreen cavities and drained walls.

.9 Apply sufficient mortar on end of stretchers to ensure end joints are compressed full when masonry unit is pressed into place.

.10 Provide weep holes at every 600mm o.c. in the bottom course of all masonry veneer and above all openings. Provide cavity wall vents every 600mm o.c. in the third course of masonry veneer, align weep holes and cavity wall vents at the base of all exterior walls. Provide cavity wall vents at every 600mm o.c. at the top of all exterior masonry walls to promote air movement through the cavitiy.

.11 Obtain and follow unit masonry manufacturer's written instructions for proper cleaning of masonry veneer.

3.12 **BLOCK**

.1 Lay blocks in running bond except as indicated otherwise. Align block webs vertically and install thicker ends of face shells up.

.2 Install a full bed of mortar for first courses of masonry, for masonry units 100 mm thick and less, and between solid units. For remaining courses bed face shells, including vertical end joints, fully in mortar.

.3 Install special shaped and sized concrete block units as indicated and as required for a complete and coordinated assembly and to minimize cut units.

.4 Supply and install two courses of solid block beneath lintel bearing.

.5 Stagger end joints in every course. Align joints plumb over each other in every other course.

.6 Bond intersecting block walls in alternate courses. Where block work abuts concrete, anchor each block course to concrete.

3.13 **FIELD QUALITY CONTROL**

.1 Prior to commencement of construction, the Masonry Subcontractor shall prepare and mix on-site, under supervision of the Consultant and the Testing & Inspection Authority, mortar samples to determine compliance with the specifications.

.2 Tests of such samples shall be determine a ratio-by-mass value of "control value" for mortar mixes.

.3 Masonry mortar shall be tested in accordance with CSA A179; Mortar and Grout for Unit Masonry, supplemented as follows:

.1 Additional cubes shall be poured under on-site conditions for comparison with "ideal" samples.

.4 Subsequent sample ratio tests taken during the course of construction shall not vary from the control value by more than 15%.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Design, labour, Products, equipment and services necessary for the miscellaneous and metal fabrication work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM A123, Specification for Zinc (Hot Dip Galvanized) Coatings on Iron & Steel Products.

.2 ASTM A153, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.3 ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

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

.5 CISC/CPMA 1.73a, A Quick-Drying One-Coat Paint for Use on Structural Steel.

.6 CAN/CSA-G40.20/G40.21-M, General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steels.

.7 CAN/CSA S16.1-M, Limit States Design of Steel Structures.

.8 CSA S136.1-M, Commentary on CAN/CSA S136-M, Cold Formed Steel Structural Members.

.9 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.

.10 CSA W48, Filler Metal and Allied Materials for Metal Arc Welding.

.11 CSA W59-M, Welded Steel Construction (Metal Arc Welding).

.12 CAN/CSA W117.2-M, Safety in Welding, Cutting and Allied Processes.

.13 CAN/CGSB 1.40-M, Primer, Structural Steel, Oil Alkyd Type.

.14 CGSB 85-GP-16M, Painting Galvanized Steel.

.15 Steel Structures Painting Council (SSPC), Steel Structures Painting Manual, Vol. 2.

1.3 **DESIGN REQUIREMENTS**

.1 Design details and connections, where not shown on Drawings, in accordance with CAN/CSA-S16.1 and CSA S136.1.

1.4 **SUBMITTALS**

.1 Shop drawings:
- .1 Submit shop drawings for fabrication and erection of miscellaneous and metal items in accordance with the Conditions of the Contract indicating:
  - .1 Materials, core thicknesses, class of finish (AMP 555), connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
  - .2 Ensure shop drawings are of one uniform size and based on field measurements.

1.5 **QUALITY ASSURANCE**

.1 Retain a Professional Engineer, licensed in the Province of Ontario, with experience in work of comparable complexity and scope, to perform the following services as part of the work of this Section:
- .1 Design metal fabrication items that are required to resist live, dead, lateral, wind, or seismic loads.
- .2 Review, stamp, date and sign shop drawings.

.2 Workmanship: Fabricate work of this Section to meet the required class of workmanship indicated below in accordance with AMP 555, Section 8.
- .1 Class 1: for use on direct exposed to view fabricated items:
  - .1 Exposed surfaces are finished smooth with pitts, mill marks, nicks, burrs, sharp edges, and scratches filled or ground off. Defects should not show when painted, polished, or finished.
  - .2 Welds should be concealed where possible. Exposed welds are ground to small radius with uniform sized cove unless otherwise noted.
  - .3 Distortions should not be visible to the eye.
  - .4 Exposed joints are fitted to a hairline finish.

.3 Execute welding by firms certified in accordance with CSA W47.1 Division 1 or 2.1. Ensure welding operators are licensed per CSA W47.1 for types of welding required by Work.

2 Products

2.1 **MATERIALS**

.1 General:
- .1 All materials under work of this Section, including but not limited to, primers and paints are to have low VOC content limits.
- .2 Unless detailed or specified herein, standard products will be acceptable if construction details and installation meet intent of Drawings and Specifications.
- .3 Include all materials, products, accessories, and supplementary parts necessary to complete assembly and installation of work of this Section.
- .4 Incorporate only metals that are free from defects which impair strength or durability, or which are visible. Install only new metals of best quality, and free from rust or waves and buckles, and that are clean, straight, and with sharp defined profiles.

.2 Structural shapes, plates, and similar items: CAN/CSA-G40.20/G40.21-M, Grade 350W. Hollow structural sections: CAN/CSA-G40.20/G40.21-M, Grade 350W, Class H.

.3 Galvanized sheet steel: ASTM A653/A653M Grade A, Z275 Commercial Quality zinc coating, size and shape as shown.

.4 Welding materials: CSA W48 and CSA W59-M.

.5 Fasteners: Conforming to ASTM A307, Grade A, in areas not exposed to view, use unfinished bolts with hexagon heads and nuts. In areas exposed to view, use bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws and machine bolts Z275 zinc coated in accordance with ASTM A653/A653M. Supply bolts of lengths required to suit thickness of material being joined, but not projecting more than 6 mm beyond nut, without the use of washers.

.6 Primer paint: CAN/CGSB-1.40-M or CPMA 1.73a.

.7 Galvanized primer paint: Inorganic zinc rich primer. For use on galvanized fabrications where touch up is to remain unpainted in finished work; Carbozinc 11WB by Carboline Company, Catha-Coat 305 by Devoe Coatings or Zinc Clad XI by Sherwin Williams.

.8 Drilled inserts: Mega by ITW Construction Products or HSL by Hilti Inc. heavy-duty anchors, sizes as shown.

2.2 **FABRICATION**

.1 Verify dimensions of existing Work before commencing fabrications and report any discrepancies to the Consultant.

.2 Fit and assemble work in shop where possible. Execute work in accordance with details and reviewed shop drawings.

.3 Use self-tapping shake-proof screws on items requiring assembly by screws or as indicated. Use screws for interior metal work. Use welded connections for exterior metal work unless otherwise found acceptable by the Consultant.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Seal exterior steel fabrications against corrosion in accordance with CAN/CSA S16.1-M.

.5 Execute shop welding to requirements specified.

.6 Carefully make and fit details. Take special care with exposed finished work to produce a neat and correct appearance to the Consultant's acceptance.

.7 Assemble members without twists or open joints.

.8 Correctly size holes for connecting work of other trades where such can be determined prior to fabrication. Where possible, show holes on shop drawings. Place holes not to cause appreciable reduction in strength of member.

.9 Draw mechanical joints to hairline tightness and seal countersunk screw and access holes for locking screws with metal filler where these occur on exposed surfaces.

2.3 FABRICATED ITEMS

.1 Refer to Drawings for details of metal fabrication work and related items not specifically listed in this Section.

.2 Where work is required to be built into work of other Sections supply such members to respective Sections.

.3 Provide metal fabrication items indicated below and items not indicated to be supplied under other Sections. The following items includes miscellaneous and metal fabrication including but not limited to the items listed below.

.4 Miscellaneous steel brackets, supports and angles
- .1 Supply and install or supply for installation by trades responsible, all loose steel brackets, supports and angles where indicated, except where such brackets, supports and angles are specified under work of other Sections. Drill for countersunk screws, expansion anchors and anchor bolts.
- .2 Unless otherwise specified, prime paint for interior installation; galvanized finish for exterior installation.

2.4 ANCHORS AND FASTENING

.1 Use weld studs of size not larger than 10 mm for attaching miscellaneous materials and equipment to building steel. If weight of item requires larger fasteners use clips or brackets and secure by welding or through bolting.

.2 Use self drilling expansion type concrete anchors for attaching to masonry and concrete

.3 Do not secure items to steel deck.

.4 Use steel beam clamps of two bolt design to transmit load to beam web. Do not use C and I clamps.

.5 Mount vertical access ladders in accordance with OBC.

2.5 WELDING

.1 Perform welding by electric arc process.

.2 Execute welding to avoid damage or distortion to Work. Execute welding in accordance with following standards:
- .1 CSA W48 - for Electrodes. If rods are used, only coated rods are allowed.
- .2 CSA W59-M and CSA W59S1-M for design of connections and workmanship.
- .3 CAN/CSA W117.2-M - for safety.

.3 Thoroughly clean welded joints and expose steel for a sufficient distance to perform welding operations. Finish welds smooth. Supply continuous and ground welds which will be exposed to view and finish paint.

.4 Test welds for conformance and remove work not meeting specified standards and replace to Consultant's acceptance.

2.6 **SHOP PAINTING**

.1 Clean steel to SSPC SP6 and remove loose mill scale, weld flux and splatter.

.2 Shop prime steel with one coat of primer paint to dry film thickness of 0.07 mm. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 deg C. Paint items under cover and leave under cover until primer is dry. Follow paint manufacturer's recommendations regarding application methods, equipment, temperature, and humidity conditions.

.3 Shop prime galvanized steel in accordance with CGSB 85-GP-16M.

.4 Clean but do not paint surfaces being welded in field.

.5 Do not paint surfaces embedded in concrete, but clean as if they were to be primed.

.6 Do not prime steel to be fireproofed or to receive intumescent paint coating.

.7 Do not prime machine finished surfaces, but apply an effective anti-rust compound.

.8 Take precautions to avoid damage to adjacent surfaces.

2.7 **HOT DIP GALVANIZING**

.1 After fabrication, hot dip galvanize specific miscellaneous steel items as indicated. After galvanizing, plug relief vents air tight with appropriate aluminum plugs as suitable and required for intended metal fabricated item. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with zinc rich primer in accordance with manufacturer's printed directions.

.2 Hot-dip galvanize members in accordance with requirements of the following ASTM, with minimum coating weights or thicknesses as follows:

.1 Rolled, pressed and forged steel shapes, plates, bars and strips: ASTM A123; average weight of zinc coating per square/metre of actual surface, for 4.8 mm and less thickness members 600 g/m^2 for 6 mm and heavier members 640 g/m^2.

.2 Iron and steel hardware: ASTM A153; minimum weight of zinc coating, in ounces per square foot of surface, in accordance with ASTM A153,Table 1 for the various classes of materials used in the Work.

3 Execution

3.1 **EXAMINATION**

.1 Examine previously installed Work, upon which this Section depends, verify dimensions and condition of existing Work, and coordinate repairs, alterations, and rectification if necessary. Commencement of work of this Section is deemed to signify acceptance of existing, prior conditions.

.2 Obtain Consultant's written approval prior to field cutting or altering of structural members.

3.2 **ERECTION**

.1 Install metal fabrications in accordance with reviewed shop drawings and manufacturer's written instructions.

.2 Fit joints and intersecting members accurately. Make work in true planes with adequate fastenings. Build and erect work plumb, true, square, straight, level and accurate to sizes detailed, free from distortion or defects detrimental to appearance or performance.

.3 Perform drilling of concrete and steel as required to fasten work of this Section.

3.3 **FIELD PAINTING**

.1 Paint bolt heads, washers, nuts, field welds and previously unpainted items. Touch up shop primer damaged during transit and installation, with primer to match shop primer.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for rough carpentry work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM A153, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.2 ASTM A325, Specification for Bolts Quenched/Tempered Steel Nominal Thread Diameter M16 - M36 For Structural Steel Joints.

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

.4 ASTM F1667, Driven Fasteners: Nails, Spikes and Staples.

.5 CAN/CSA O80 Series M, Wood Preservation.

.6 CSA O121-M, Douglas Fir Plywood.

.7 CAN/CSA O141, Softwood Lumber.

.8 CAN/ULC-S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.9 NLGA, Standard Grading Rules for Canadian Lumber, National Lumber Grades Authority

1.3 **QUALITY ASSURANCE**

.1 Lumber identification: Grade stamp of an agency certified by the Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: Grade mark in accordance with applicable CSA standards.

.3 Lumber quality: Carefully select individual pieces so that knots and obvious defects will not interfere with placing bolts, proper nailing or making proper connections.

.4 Moisture Content of wood at time of construction shall be 19% maximum.

.5 Each piece of pressure treated lumber and fire retardant treated lumber shall be shop marked with the pressure treatment brand and ULC monogram respectively, in accordance with CAN/CSA O80-M.

6. Dimensions of lumber shall conform to dressed sizes specified in CAN/CSA-0141 unless actual dimensions are otherwise indicated or specified.

7. Dimensional references to lumber on Drawings and in Specifications are to nominal sizes unless actual dimensions are indicated. Such actual dimensions shall be dry size.

.8 Lumber defects: Discard wood with defects which will render a piece unable to serve its intended function. Lumber will be rejected by Consultant for excessive warp, twist, bow, crook, mildew, fungus, or mould, as well as for improper cutting and fitting, whether or not it has been installed.

1.4 **ENVIRONMENTAL REQUIREMENTS**

1. When it is required that wood maintain dimensional stability and tolerances to ensure accurate installation of later work, store and install it only in dry areas, and where no further installation of moist materials is contemplated.

1.5 **PRODUCT DELIVERY, STORAGE AND HANDLING**

.1 Store materials in a dry area. Cover materials with tarpaulins or polyethylene sheets to prevent moisture absorption and impairment of structural and aesthetic properties. Vent to allow air movement. Tie covering to keep in place.

2 Products

2.1 **MATERIALS**

.1 General: All materials under work of this Section, including but not limited to, adhesives are to have low VOC content limits.

.2 Lumber: Softwood, G4S, moisture content 19% or less at time of installation, in accordance with the following:
- .1 Lumber shall be of same species and grade, equally seasoned and shall be processed and stamped at same mill.
- .2 CSA O141 and NLGA Standard Grading Rules for Canadian Lumber.
- .3 Board quality: Construction or better.
- .4 Dimension quality:
  - .1 Structural joists, planks, and framing: No. 1 Select Structural.
  - .2 Light framing: Construction.

.3 Plywood: CSA O121-M, G1S unsanded, T & G, standard construction, laminated with waterproof adhesive, exterior grade, Thickness as indicated on drawings.

.4 Roof lumber: NLGA, Construction grade light framing, Jack Pine, S4S, pressure treated to CAN/CSA-O80 series using copper based waterborne preservative treatment, impregnated to a net retention of 4 kg/ m^3 of preservative unless otherwise specified by preservative manufacturer.

.5 Surface applied wood preservative: Green coloured copper napthenate or 5% pentachlorophenol solution, water repellant preservative or same copper based preservative as used for shop impregnation, in accordance with CAN/CSA O80.

.6 Fire retardant treatment of lumber and plywood: 'Dricon' fire retardant treatment by Biewer Lumber or approved alternative, conforming to CAN/CSA-O80.20 and CAN/CSA-O80.27 respectively, to provide a flame spread rating of 25 or less in accordance with CAN/ULC-S102.

.7 Rough hardware: Conforming to ASTM F1667; Nails, bolts, screws, anchors, expansion shields, and other fastenings required to frame and fix rough carpentry as follows:
- .1 Nails, spikes and staples: Spiral type.
- .2 Bolts: ASTM A325; 12.7 mm diameter minimum with nuts and washers unless noted otherwise.
- .3 Screws: Countersunk head, full thread type.
- .4 Proprietary fasteners: Toggle bolts, expansion shields, lag bolts, screws, inorganic fibre plugs, recommended for purpose by manufacturer.
- .5 Galvanize rough hardware used in fire treated wood and hardware exposed to the atmosphere.

.8 Fasteners for use in pressure treated wood: Provide hot dipped galvanized fasteners complying to ASTM A153 and connectors in accordance with ASTM A653, Class G185 for non-structural members. Provide type 304 or 316 stainless steel fasteners and connectors for use in Structural, pressure treated wood.

3 Execution

3.1 EXAMINATION

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 GENERAL

.1 Lay out work carefully and to accommodate work of others. Cut and fit accurately: erect in position indicated by Drawings.

.2 Install rough carpentry to allow for expansion and contraction of the materials.

.3 Cut work into lengths as long as practicable and with square ends. Align, level, square, plumb, and secure work permanently in place. Brace work temporarily as required. Join work only over solid backing.

.4 Bore holes true to line and to same size as bolts. Drive bolts into place for snug fit, and use plates or washers for bolthead and nut bearings. Turn up bolts and lag screws tightly when installed, and again just before concealed by other work or at completion of Work.

.5 Provide anchors, bolts, and inserts required for attachment of the work of this Section, to those performing the work of other Sections and who are responsible for their installation.

.6 Do not attach work by wood plugs or blocking in concrete or masonry. Use lead shields, expansion shields, or similar methods only as approved by Consultant.

3.3 MISCELLANEOUS WOODWORK

.1 Fit and install wood furring, strapping, grounds and blocking. Adequately size, correctly place and conceal members for finishes, fitments and for work under other Sections. Do not assume that Drawings show required work exactly or completely. Anchor wood members securely in place.

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

.3 Except where steel supports are specifically shown, provide wood blocking and supports in metal stud partitions for fastening of item such as casework and other wall mounted accessories. Have respective trades approve the location of such wood blocking.

.4 Bolt wood blocking or nailing strips to steel framing.

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

.6 Use fire retardant lumber for blocking/framing in ceiling\ spaces, partitions and bulkheads.

3.4 ROOF WOODWORK

.1 Install roof woodwork as indicated on drawings.

.2 Fasten roof woodwork at maximum 400 mm o.c. in staggered pattern unless noted otherwise.

3.5 BACKBOARDS

.1 Install plywood backboards, primed and painted white on both sides, with fire retardant paint.

.2 Use minimum 19 mm thick plywood on 19 x 38 mm furring around perimeter and at maximum 300 mm intermediate spacing.

3.6 FASTENERS

.1 Frame, anchor, fasten, tie and brace members for required strength and rigidity.

.2 Use hot dipped galvanized fasteners for exterior work and work below grade.

.3 Countersink bolts and bolt heads as required for clearance of other work.

.4 Size fasteners to penetrate base member by half of fastener length minimum. Minimize splitting of wood members by staggering nails in direction of grain.

.5 For plywood use spiral, annular or resin coated nails and staples.

3.7 SURFACE-APPLIED WOOD PRESERVATIVE

.1 Treat raw surfaces, drilled holes and cut ends of pressure treated wood with 2 coats of wood preservative immediately after cutting.

.2 Apply preservative by dipping, by brush or by pouring into plugged holes to completely saturate surface.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products equipment and services necessary for the finish carpentry Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ANSI A208.1, Particleboard.

.2 ANSI/NEMA LD 3, High-Pressure Decorative Laminates.

.3 ASTM F1667, Driven Fasteners: Nails, Spikes and Staples.

.4 Architectural Woodwork Manufacturers Association of Canada (AWMAC).

.5 Architectural Woodwork Standards (AWS) - Quality Standards for Architectural Woodwork.

.6 CSA O115-M, Hardwood and Decorative Plywood.

.7 CAN/CSA O141, Softwood Lumber.

.8 CSA O151-M, Canadian Softwood Plywood.

.9 National Hardwood Lumber Association (NHLA) Rules for the Measurement and Inspection of Hardwood and Cypress.

.10 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.

1.3 **SUBMITTALS**

.1 Shop drawings: Submit shop drawings of finish carpentry Work in accordance with the Conditions of the Contract indicating materials, thicknesses, sizes, finishes, wood species, grades, profiles, connection attachments, shop jointing, field jointing, reinforcing, anchorage, fastener types and sizes, location of exposed fastenings, mechanical and electrical service routes, service outlets, cutout locations, and sizes. Include erection drawings, plans, elevations, sections, and details as applicable.

.2 Samples: Submit samples of the following in accordance with the requirements of the Conditions of the Contract:
- .1 Two representative pieces of each type of wood to receive a stained or natural finish.
- .2 Two representative pieces of each type of wood finished as specified.
- .3 Two of each colour, pattern, gloss, and texture of plastic laminate, in manufacturer's standard tag size.
- .4 One of each item of finish carpentry hardware.

1.4 QUALITY ASSURANCE

.1 Execute Work of this Section by member of AWMAC, with 5 years experience in finish carpentry Work of comparable complexity and scope. Submit proof of experience upon Consultant's request.

.2 Fabricate finish carpentry Work in accordance with AWS Quality Standards, Premium Quality materials and installation unless otherwise indicated. Perform Work in accordance with the definition of Good Workmanship as defined in the AWS Quality Standards.

.3 Remove and replace finish carpentry Work which does not conform to the AWS Quality standards or as amended by these Specifications.

.4 Mock-up:

- .1 Shop fabricate one mock-up of a base cabinet, wall cabinet, and counter top for each type of surfacing specified, complete with hardware and shop applied finishes, installed in location acceptable to Consultant.
- .2 Arrange for Consultant's review and acceptance, allow 48 hours after acceptance before proceeding with Work.
- .3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, and handle finish carpentry in accordance with the AWS Quality Standards. Control the temperature and humidity in accordance with the AWS recommendations, before, during, and after finish carpentry delivery, and also during storage and installation.

.2 Cover finished plastic laminated work with heavy kraft paper or put in cartons during shipment. Protect installed surfaces by approved means. Do not remove until immediately before final inspection.

1.6 EXTENDED WARRANTY

.1 Submit an extended warranty for plastic laminate work of this Section in accordance with General Conditions, except that warranty period is extended to 2 years from date of Substantial Performance of the Work.

- .1 Warrant against defects in material and workmanship including but not limited to opening of joints, cracking, shrinkage, warpage, and delamination of plastic laminate.
- .2 Coverage: Complete replacement including affected adjacent Work.

2 Products

2.1 **MATERIALS**

.1 General: All materials under Work of this Section, including but not limited to, adhesives and mastics, are to have low VOC content limits.

.2 Concealed framing lumber: Eastern Spruce, Balsam Fir, or Jack Pine, to CAN/CSA O141, NLGA, and AWS Custom Grade, S4S, average moisture content 7% +/- 2% at installation.

.3 Hardwood lumber (WD-1): maple (solid) to NHLA and AWS Premium Grade, S4S, average moisture content 7% +/- 2% at installation.

.4 Hardwood Plywood (for cabinet frames, stretchers and blocking): Graded in accordance with AWMAC/AWI; average moisture content of 6-8 percent; species and grade as follows:
- .1 Shop sanded veneer core Birch plywood, 19 mm or 25 mm thickness.

.5 Softwood plywood for drawer body construction: Birch veneer core plywood (all laminations Birch veneer), interior grade plywood, G2S, sanded.
- .1 Quality Standard: GOST 3916.1 (Russian), Veneer Grade: BB/BB;
- .2 Thicknesses: 12 mm (nine laminations) and 15 mm (eleven laminations)

.6 Hardwood veneer (WD-2):
- .1 White Maple unless otherwise indicated, conforming to ANSI/HPVA HP-1 having finishes and meeting grades as follows:
  - .1 Post-catalyzed lacquer finish.
- .2 Face veneer cut: Rotary cut.
- .3 Edging: Solid Birch.
- .4 Sizes, thickness, and shapes as indicated.

.7 Shelving: 19 mm thickness for spans up to 700 mm, 25 mm thickness for longer spans, Birch hardwood core veneers, with PVC edge banding.

.8 Cabinet Backs: Birch plywood, 12 mm thickness.

.9 Plastic laminate: Provide plastic laminates conforming to ANSI/NEMA LD 3 as follows:
- .1 Flatwork face sheet: 1.2 mm thick, heavy wear resistance.
- .2 Vertical interior face sheets: 0.8 mm thick.
- .3 Postformed face sheet: 0.8 mm thick.
- .4 Backing sheet: thickness to match face sheet, high pressure laminate, manufactured by same manufacturer as face sheet.
- .5 Plastic laminate: Refer to Colour and Material Schedule for plastic laminate types and colours.

.10 Particle board core (for cabinet door and drawer fronts): ANSI A208.1, Grade M2 of thickness indicated. Particleboard to be bound with waterproof adhesive and meeting the following minimum criteria:
- .1 Density: minimum 705 kg/m^3.
- .2 Internal bond: 0.45 N/mm^2.

.3 Modulus of rupture: 14.5 N/mm^2.
.4 Modulus of elasticity: 2250 N/mm^2.
.5 Face screw holding: 1000 N.
.6 Edge screw holding: 900 N.

.11 Wood door: 35 mm thick solid core wood door with birch veneer faces, finish on all sides to match adjacent cabinetry.

.12 Laminating adhesive: CSA O112 Series, water resistant type, low VOC content, selected by laminate manufacturer for intended end use.

.13 Draw bolts and splines: Type as recommended by fabricator.

.14 Nails and staples: Conforming to ASTM F1667; Size and type to suit application, galvanized for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.

.15 Bolts, nuts, washers, blind fasteners, lags and screws: Size and type to suit application. Stapling is not acceptable.

.16 Adhesive and bituminous mastic: Selected by the millwork fabricator with low VOC content.

.17 Miscellaneous metals: In accordance with Section 05 50 00.

.18 Finishing: In accordance with Section 09 91 00.

.19 Millwork trim (MT-1): Refer to Project Finish Schedule for trim type.

2.2 HARDWARE

.1 The following hardware is the minimum quality standard for the work of this Section. Alternatives may be considered provided they are approved by Consultant prior to ordering of products. Refer to Colour and Material Schedule for additional hardware items.

.2 19 mm Door Hinges: Blum Press–In 170 degree self close full overlay or Salice equivalent. Hinges to be provided with factory installed knock in dowels. For quantity of hinges required per door, refer to hinge manufacturer's manual. Wood screw fastening system will not be accepted.

.3 19 mm Door Hinge Plates: One piece plate with min. 3 mm height adjustment. Hinge plates to be installed using pre-mounted system screws, Euro screw in 5mm pre-drilled hole. Wood screw fastening system will not be accepted.

.4 19 mm Door Dampener: Blumotion 971A with Cruciform Base or Salice equivalent required for all 19mm doors to allow for soft closing.

.5 19 mm Bumpers: Polyurethane 3 mm high X 10 mm diameter / minimum 2 per door and drawer front.

.6 Shelf Standards and Clips: KV 255 pilaster and KV 256 clip – satin nickel finish / Note: Pilasters to be fully recessed into gables.

.7 Drawer and Door Pulls: Stainless Steel D- Pull / 8 mm diameter X 96 mm centres - complete with with 8/32 machine screws.

.8 Coat Rods and Flanges: Richelieu # 122108140 and 1225140.

.9 Coat Hooks: 'CBH 86' by Canadian Builders Hardware Mfg. or approved alternative.

.10 Elbow catches: Richelieu Heavy Duty Elbow Catch # 5540180 / nickel finish / required at all two door units.

.11 Drawer Slides: Accuride 45 kg (100 lbs) #3832EC x length to suit. Finish C - Clear Electroplating.

.12 Locks:
- .1 Cam locks/deadbolt locks complete with lock core by Hafele, type to suit application and installation.
- .2 Each room to be keyed alike.
- .3 All cabinet doors and drawers to be lockable. Provide three keys per key code and five master keys.

.13 Castors: 50 mm, general duty rubber swivel caster with brake and 57 kg (125 lb) weight capacity, 'Model F25086' by Richelieu.

2.3 PLASTIC LAMINATE WORK

.1 Perform plastic laminate Work in accordance with AWS Quality Standards and ANSI/NEMA LD 3.

.2 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.3 Laminate plastic laminates to core materials in accordance with manufacturer's instructions.

.4 Fabricate core surfaces and profiles with continuous support and bond over entire surface to receive plastic laminate.

.5 Apply plastic laminate backing sheets to balance shrinkage stresses induced by plastic laminate face sheets.

.6 Minimize joints in plastic laminate Work; do not install joints in plastic laminate Work in less than 2400 mm o.c. Locate joints minimum 610 mm from cut-outs. Offset core and plastic laminate facing joints.

.7 Form shaped profiles and bends as indicated, using postformed grade laminate to laminate manufacturer's instructions.

.8 Use straight self-edging laminate strip to match adjacent colour, finish, gloss, and pattern to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.

.9 Apply laminated plastic liner sheet to interior of cabinetry and where indicated.

.10 Fabricate units by solid surfacing manufacturer's certified or approved fabricator/ installer. Fabricate built-up profiles as indicated.

2.4 **FABRICATION**

.1 Be responsible for methods of construction and for ensuring that materials are rigidly and securely attached and will not be loosened by the work of other sections.

.2 Coordinate locations of concealed supports and blocking with other parts of Work. Provide cutouts for outlet boxes and other fixtures.

.3 Fabricate work in a manner which will permit expansion and contraction of the materials without visible open joints. Conceal joints and connections in wherever possible.

.4 Set nails and countersink screws, apply wood filler to indentations, sand smooth and leave ready to receive finish.

.5 Mitre exposed corners, no end grain shall be visible in completed installation.

.6 Finish millwork in accordance with Section 09 91 00. Finished millwork shall be free from bruises, blemishes, mineral marks, knots, shakes and other defects and shall be selected for uniformity of colour, grain and texture.

.7 Shop assemble finish carpentry to accommodate delivery and handling and to ensure passage through building openings.

.8 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.9 Fabricate sills, screens, frames and moldings to profiles shown.

.10 Countertops:

- .1 Core material shall be 19 mm thick particleboard with the exception of window stools and countertops with sinks installed, these shall be plywood core.
- .2 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm a.c., 76mm from edges.
- .3 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3050 mm.
- .4 Keep laminate joints 305 mm from sink cutouts. Obtain Consultant's approval for locations of all laminate joints in counter tops prior to fabrication .
- .5 Make joints where approved to hairline width. Offset joints in plastic laminate from joints in substrate.

.6 Provide cutouts as required for inserts, grilles, outlet boxes and other fixtures. Radius internal corners, chamfer laminate edges, and apply uncut shellac sealer to exposed edges of substrate at all cutouts.
.7 Nosing: 32 mm x 3 mm PVC edge band.
.8 Backsplash: square-edged, as detailed on the drawings.

2.5 CABINET FABRICATION

.1 General:
.1 Cabinet Components: As specified in AWMAC QSI Section 400-G as amended by the following requirements;
.2 Hardware: Supply hinges, drawer slides, products and materials as specified.
.3 Door and Drawer Fronts: Particle board core.
.4 Cabinet Boxes: Particle board core.
.5 Rails, Toe Kicks and Cabinet Bases: Hardwood veneer core.
.6 Backs: Particle board core.
.7 Blocking: Solid lumber.
.8 Provide Semi-Exposed surfaces in same quality and finish as Exposed parts.
.9 Adjustable Shelf Techniques/Supports: AWMAC QSI 400B-T-9;
.1 Custom Grade: Adjustable shelf multiple holes (min. 5 mm diameter, single pin).
.10 Joinery of case body members: AWMAC QSI 400B-T-10, stop-dado joints which are glued and mechanically fastened with screws.
.11 All cabinets provided for this project shall meet or exceed the Custom requirements of AWMAC QSI 400-B-C-1 thru 6.

.2 Wood Cabinet Construction: AWMAC QSI Section 400-G-7 (A), flush overlay style, Custom Grade as amended by the following requirements;
.1 Exposed and Semi-Exposed Parts (except countertops): Exposed to be Birch Veneer Semi-Exposed to be Melamine.
.2 Exposed edging solid Birch to match veneer and Semi Exposed Parts: PVC edgebanding. Lapped joint with top and bottom bands lapping side bands.
.3 Wood Veneer Grain Direction: AWMAC QSI Section 400 A-T-1;
.1 Premium Grade: Grain direction to run vertically for all doors, drawer fronts and overhead bulkheads.

.3 Wall Cabinets: Finish to match base cabinets.
.1 Provide top and bottom filler and corner panels.
.2 Provide scribes and fillers with maximum 25 mm exposed dimension.
.3 Underside of Cabinets: Type 'B' flush (one tight line visible).
.4 Cabinet backs: Wall hung cabinet backs must not be relied upon to support the full weight of the cabinet and its anticipated locad for hanging/mounting purposes. Method of back joinery and hanging/mounting mechanisms should transer the load to case body members.

.4 Shelving: AWMAC QSI 400B-T-9 Premium Grade, as amended by the following:
.1 Construction:
.1 Pilasters and clips system.
.2 HPPL on tops and bottoms and 3 mm thick PVC edge banding on exposed edges to match exposed parts.

.3 Core: Hardwood core veneer. 19 mm thickness up to 700 mm spans, 25 mm thickness for spans greater than 700 mm.

.2 Provide adjustable shelves in all cabinets.

3 Execution

3.1 **INSTALLATION**

.1 Install Work in accordance with AWS Quality Standards and tolerances for Architectural Woodwork. Set and secure finish carpentry in place, rigid, plumb, square, and level.

.2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate columns, fixtures, outlets, or other projecting, intersecting or penetrating objects leaving a 0.8 mm gap maximum.

.3 Coordinate cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures, in finish carpentry. Round internal corners of cut-outs and seal exposed cores.

.4 Form joints to conceal shrinkage.

.5 Install draw bolts and splines in laminated plastic counter top joints at maximum spacing 450 mm o.c., and 75 mm from edge. Make joints flush, hairline butt joints.

.6 Install finishing hardware accurately and securely in accordance with manufacturer's directions, adjust and clean.

.7 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.

.8 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.

.9 Hardwood caps:
.1 Provide 13 mm thick plywood blocking mechanically fastened and glued to masonry with hardwood trim in reveal.
.2 Install 38 x 190 mm hardwood cap with rounded exposed edges and ends, glued and mechanically fastened to wood blocking with countersunk fasteners complete with plugs.

.10 Fastening:
.1 Coordinate wall securement, anchorage, and blocking for finish carpentry items.
.2 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
.3 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
.4 Provide heavy duty fixture attachments for wall mounted cabinets.
.5 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round cleanly cut hole and plug with wood plug to match material being secured.

.11 Remove and replace damaged, marked, or stained finish carpentry.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for the thermal insulation work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM C612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

.2 CGSB 71-GP-24M, Flexible Adhesive for Bonding Cellular Polystyrene Insulation.

1.3 **SUBMITTALS**

.1 Product data: Submit manufacturer's Product data in accordance with the Conditions of the Contract indicating characteristics, performance criteria, and limitations. Indicate installation requirements and techniques, storage, and handling criteria and installation procedure acceptable to manufacturer.

.2 Certification: Submit installer's certification verifying compliance with specification requirements.

1.4 **QUALITY ASSURANCE**

.1 Qualifications: Execute work of this Section by company specializing in thermal insulation work with minimum of three years, recent, documented experience, on work of comparable complexity and scope.

2 Products

2.1 **MATERIALS**

.1 All materials under work of this Section, including but not limited to, adhesives are to have low VOC content limits.

.2 Fire-rated/Acoustic Insulation: In accordance with Section 09 21 16.

.3 Cavity wall insulation: Semi-rigid stone wool conforming to ASTM C612, minimum density 70 kg/m^3, thickness as indicated. ‘CladStone 45’ by Johns Manville, ‘Thermafiber Rainbarrier 45' by Owens Corning, and ‘CavityRock’ by Rockwool.

.4 Adhesive for polystyrene insulation: CGSB 71-GP-24M, Type 2, Class A, and approved by air/vapour barrier manufacturer when adhesive is in direct contact with air/vapour barrier membrane.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

.2 Ensure substrate surfaces are dry, clean, suitable to receive adhesive and free from other deleterious substances.

3.2 **INSTALLATION**

.1 Install thermal insulation in longest panel sizes possible in accordance with manufacturer's instructions.

.2 Butt insulation with moderate contact and, cut and fit them tightly around other construction elements. Offset single layer vertical joints and both vertical and horizontal joints in multiple layer applications.

.3 Make thermal insulation continuous, maintain thermal protection continuity and secure to prevent displacement. Ensure that insulation is tight to substrate without air gaps.

.4 Cut and fit thermal insulation tightly around electrical boxes, plumbing and heating pipes and ducts, exterior doors and windows, and other protrusions.

.5 Leave 75 mm separation between thermal insulation and heat emitting devices such as recessed light fixtures.

.6 Cut and trim thermal insulation neatly to fit spaces; do not excessively compress insulation to fit. Install only thermal insulation boards which are free from chipped or broken edges.

.7 Fill miscellaneous cavities with insulation to maintain continuity of thermal barrier. Do not compress insulation to fit.

.8 Arrange for Consultant to review thermal insulation before it is enclosed.

3.3 **SECUREMENT**

.1 Cavity wall insulation:
- .1 Provide insulation tight to the inner wythe starting at the base of the wall in parallel courses with tight butt joints. Stagger end joints in adjacent course.
- .2 Provide finish work level, plumb and true.
- .3 Provide securement for cavity wall insulation with wedge type retainers in accordance with manufacturer’s written instructions.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for air/vapour barriers Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 CAN/CGSB 19.21-M, Sealing and Bedding Compound, Acoustical.

.2 CAN/CGSB-51.34-M, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

1.3 **SUBMITTALS**

.1 Product data:
- .1 Submit duplicate copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, and limitations.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Samples: Submit following samples in accordance with the Conditions of the Contract:
- .1 Two 300 x 300 mm samples of vapour retarders.
- .2 Two samples, 300 mm long, of fastening bar.

1.4 **QUALITY ASSURANCE**

.1 Mock-up:
- .1 Construct one 10 m2 mock-up of each type air/vapour barrier in location acceptable to Consultant indicating as a minimum one lap joint, one inside corner, one window interface, one wall electrical box, and floor pipe penetration.
- .2 Arrange for Consultant's review and acceptance.
- .3 Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.5 **SITE CONDITIONS**

.1 Do not install the work of this Section outside of environmental ranges as recommended by manufacturer without Consultant's and Product manufacturer's written acceptance.

.2 Supply and install temporary protection and facilities to maintain Product manufacturer's, and above specification, environmental requirements before, during, and after installation.

2 Products

2.1 **WALL AIR/VAPOUR BARRIER MATERIALS**

.1 All materials under work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.

.2 Membrane air/vapour retarder: 1.0 mm thick, single-ply, self adhering, self sealing, rubberised asphalt, bonded to a cross-laminated high density polyethylene film. 'Blueskin SA' by Henry Company Canada Inc., or approved alternative by Soprema or W.R. Meadows.
- .1 Primer: 'Blueskin Adhesive' by Henry Company Canada Inc., or approved alternative by Soprema or W.R. Meadows
- .2 Mastic: 'Polybitume 570-05' by Henry Company Canada Inc. or approved alternative by Soprema or W.R. Meadows.
- .3 Fastening bar: Continuous 25 mm wide x 3 mm thick aluminum bar, predrilled for mechanical attachment.
- .4 Fasteners: As specified herein or manufacturer's recommended fastener for attaching to Substrate.

2.2 **SHEET AIR/VAPOUR BARRIER MATERIALS**

.1 Sheet vapour retarder 'Super Six' Polyethylene film to CAN/CGSB-51.34, 0.15 mm (6 mil) thick.
- .1 Joint sealing tape: Air and vapour resistant pressure sensitive adhesive tape, type recommended by sheet vapour retarder manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.
- .2 Sealant: CAN/CGSB 19.21; One-part, non-sag, non-bleeding, non-drying, non-hardening, sealant shall remain tacky for permanent bonding to all surfaces; 'Tremco Acoustical Sealant' by Tremco Ltd. or approved alternative.

3 Execution

3.1 **EXAMINATION AND COORDINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

.2 Verify that existing substrates to receive vapour retarder are clean, dry, sound, smooth, and continuous.

.3 Coordinate installation of vapour retarders with work of other Sections to achieve a vapour tight building envelope.

3.2 **MEMBRANE WALL AIR/VAPOUR RETARDER INSTALLATION**

.1 Fill substrate voids, gaps, depressions, cracks, and joints with mastic until continuous, smooth, substrate for air/vapour barrier is achieved.

.2 Prime substrate surfaces to receive air/vapour barrier in accordance with manufacturer's instructions, at recommended application rate, allow to dry. Vary coverage to suit surface porosity.

.3 Prime surfaces. Re-prime surfaces if not covered with air/vapour barrier within 4 hours.

.4 Install mastic where required to ensure integrity of air/vapour barrier installation at protrusions and other complex details.

.5 Install air/vapour barrier in accordance with manufacturer's instructions in locations indicated.

.6 Lap air/vapour retarder ends and edges 50 mm minimum. Roll air/vapour retarder and laps for continuous adhesion over entire substrate area; use manufacturer's recommended roller.

.7 Extend air/vapour barrier as required to connect to other components of Work comprising air/vapour barrier system.

.8 Provide end-dams and terminations fabricated from same material as membrane air/vapour retarder or material recommended by membrane manufacturer at sills, lintels, openings, and where horizontal surfaces intersect with vertical surfaces to ensure moisture is shed to exterior.

.9 Cut and fit air/vapour retarder as required for passage of protrusions, ensuring continuous adherence to substrate.

.10 At end of days' work, trowel mastic water cut-off along uppermost edge of incomplete air/vapour retarder assembly, to prevent loss of adhesion and damage air/vapour retarder.

.11 Supply and install continuous mechanical fastening bar to clamp air/vapour retarder both sides of unfilled gaps, cracks, and joints.

3.3 SHEET VAPOUR RETARDER INSTALLATION

.1 Ensure services are installed and inspected prior to installation of retarder.

.2 Install sheet vapour retarder on the warm side of exterior wall, roof, and ceiling assemblies, prior to installation of roof insulation or interior finishes to form a continuous vapour retarder.

.3 Use sheets of largest practical size to minimize joints.

.4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

.5 At exterior surface openings, cut vapour retarder to form openings and ensure material is lapped and sealed to frame.

.6 Ensure continuity of vapour retarder is maintained at junctures with other materials.

.7 At perimeter seals, seal perimeter of sheet vapour retarder as follows:
- .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
- .2 Lap sheet over sealant and press into sealant bead.
- .3 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

.8 Seal lap joints of sheet vapour retarder as follows:
- .1 Attach first sheet to substrate.
- .2 Apply continuous bead of sealant over solid backing at joint.
- .3 Lap adjoining sheet minimum 150 mm and press into sealant bead.
- .4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

.9 Seal electrical switch and outlet device boxes that penetrate vapour retarder as follows:
- .1 Wrap boxes with film sheet providing minimum 300 mm perimeter lap flange.
- .2 Apply sealant to seal edges of flange to main vapour retarder and seal wiring penetrations through box cover.

3.4 FIELD QUALITY CONTROL

.1 Inspect vapour retarder continuity immediately prior to installation of subsequent construction. Repair punctures, rips and tears to ensure continuity of vapour retarder.

.2 Where punctures and tears are extensive, replace entire damaged section.

.3 Do not cover or permit to be covered any portion of vapour retarder until it has been inspected by Consultant.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Design, labour, Products, equipment and services necessary for metal siding work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ANSI B18.6.4, Screws, Tapping and Metallic Drive, Inch Series, Thread Forming and Cutting.

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

.3 ASTM C920, Specification for Elastomeric Joint Sealants.

.4 CISC/CPMA 1.73a, A Quick-Drying One-Coat Paint for Use on Structural Steel.

.5 CAN/CSA-G40.20/G40.21M, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.

.6 CSA S136, Cold Formed Steel Structural Members.

.7 CSA S136.1, Commentary on CAN/CSA S136-M, Cold Formed Steel Structural Members.

.8 CAN3-S157-M, Strength Design in Aluminum.

.9 CSA HA-Series-M, CSA Standards for Aluminum and Aluminum Alloys.

1.3 **DESIGN REQUIREMENTS**

.1 Design metal siding system in accordance with CSA S136, S136.1, and to withstand live, dead, lateral, wind, seismic, handling, transportation, and erection loads.

.2 Aluminum wall panel system to be standard building sheet alloy conforming to CSA HA Series -M.

.3 Design metal siding system in accordance with following Climatic Design Data for Waterloo contained in Ontario Building Code.
.1 Design Temperature: January 1%, July 2 ½%.
.2 Wind (Hourly Wind Pressures): 1 in 50 year occurrence.

.4 Design metal siding system to limit deflection under design loads, to L/240.

.5 Design metal siding system to prevent restriction of thermal induced movement which would induce deformation such as warping, buckling, and failure of joint seals and fasteners. Design metal siding system to prevent vibration when subject to the effects of wind.

.6 Design miscellaneous, additional structural framing members and sag rods, required to complete metal siding system, where not indicated on Contract Drawings.

1.4 SUBMITTALS

.1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
- .1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
  - .1 Elevations, details, profiles, dimensions, thickness of materials, finishes, methods of joining, arrangement of sheets, joints, and seams, special shapes, methods of anchoring, anchor and thermal clip details, types of sealants and gaskets, waterproof connections to adjoining work, details of other pertinent components of the work (i.e. windows, penetrations, membranes, etc), and compliance with design criteria and requirements of related work.
  - .2 Louver enclosure details.

.3 Samples:
- .1 Submit samples in accordance with the Conditions of the Contract:
  - .1 600 x 600 mm samples of siding system showing fully assembled components including face sheets, sub-girts, insulation, and concealed sealant. Sample to be fabricated using exact colour and gauges specified.

.4 Reports: Submit written field inspection and test report results after each inspection.

.5 Extended warranty: Submit extended warranties signed and registered by the manufacturer providing the warranties in the name of the Owner for the timeframe and coverage specified in this Section.

1.5 QUALITY ASSURANCE

.1 Retain a licensed Professional Engineer, registered in Province of Ontario, to perform following services for metal siding work:
- .1 Design of metal siding.
- .2 Review, stamp, and sign shop drawings.
- .3 Conduct shop and field inspections and prepare and submit inspection reports.

.2 Mock-up:
- .1 Fabricate, deliver, and erect one full scale 3 m^2 high mock-up panel of metal siding construction, in location acceptable to Consultant.
- .2 Demonstrate finish, colours, and quality of workmanship.
- .3 Mock-up may form part of final Work, if acceptable to Consultant. Remove and dispose of mock-ups which do not form part of Work.

.3 Pre-installation meeting: Arrange with manufacturer's representative, Contractor, and Consultant to inspect substrates, and to review installation procedures 48 hours in advance of installation.

.4 Siding system inspections shall be conducted by Professional Engineer on record when the siding system is 5%, 50% and 100% complete. Inspection reports shall be submitted with 3 days.

1.6 **DELIVERY, STORAGE, AND HANDLING**

.1 Stockpile panels tilted to provide water run-off, free from ground contact on firm, level, non-staining supports extending full width of sheet and spaced not more than 450 mm apart. Cover components with opaque polyethylene sheet. Vent to allow air movement.

1.7 **EXTENDED WARRANTY**

.1 Submit an extended warranty for metal siding work in accordance with General Conditions, except that warranty period is extended to 2 years from date of Substantial Performance of the Work.
- .1 Warrant against warping, twisting, joint, finish failure and water penetration.
- .2 Coverage: Complete replacement including affected adjacent parts.

2 Products

2.1 **MATERIALS**

.1 All materials under work of this Section, including but not limited to, paints and sealants are to have low VOC content limits.

.2 Aluminum siding:
- .1 Aluminum siding; Horizontal D4.75 Driftwood in Pearl Grey colour by Kaycan.
- .2 Provide Kaycan aluminum gutter system, colour to be Commercial Brown.

.3 Structural shapes, plates, sag rods, and similar items: CAN/CSA-G40.20-G40.21-M, Grade 300W.

.4 Hollow structural sections: CAN/CSA-G40.20/G40.21-M Grade 350W, Class H.

.5 Airseal transition membrane: Blueskin SA by Henry Company Canada Inc., ‘Sopraseal Stick 1100' by Soprema, ‘Air-Shield by W. R. Meadows or approved alternative. Primer as recommended by membrane manufacturer.

.6 Z-girts and C channels: CAN/CSA S136-M; Minimum 0.76 mm thick, Z275 galvanized. Depth as indicated on Contract Drawings. Z-girts to be thermally broken at mid-point of insulation thickness.

.7 Insulation: In accordance with Section 07 21 00.

.8 Vapour retarder: In accordance with Section 07 26 00.

.9 Fascia, trim, closures, and flashings: Material, finish, colour, and fasteners to match siding material, 0.76 mm minimum base metal thickness minimum.

.10 Screw fasteners: ANSI B18.6.4, stainless steel Type 304. Exposed locations: With coloured nylon heads to match metal siding.

.11 Primer paint: CISC/CPMA 1.73a.

.12 Isolation coating: Black bituminous coating, acid and alkali resistant material.

.13 Joint backing: Product as recommended by siding sealant manufacturer.

.14 Siding sealant: ASTM C920, Type S, Grade NS; One-part, ultra-low modulus, moisture curing silicone sealant, 'Dowsil 790' by Dow Consumer or Spectrem 1 by Tremco Ltd. Colour: As selected by Consultant.

3 Execution

3.1 EXAMINATION

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 STRUCTURAL FRAMING

.1 Supply and install miscellaneous, additional structural framing members, required to complete metal siding system, where not indicated on Contract Drawings.

3.3 AIRSEAL TRANSITION MEMBRANE

.1 Install primer and airseal transition membrane with 150 mm overlap of metal airseal, continuously onto entire head, jamb, and sill surfaces of openings such as doors, windows, louvres and similar items, and metal siding system perimeter.

.2 Install additional layer of airseal transition membrane to serve as flashing over openings in, and at bottom side termination of metal siding panel system.

.3 Overlap airseal transition membrane 50 mm along sidelaps and 75 mm on end laps and lap in direction of waterflow.

.4 Coordinate airseal transition to adjacent parts of Work.

.5 Provide end-dams and terminations fabricated from same material as airseal transition membrane or material recommended by membrane manufacturer at sills, lintels, openings, and where horizontal surfaces intersect with vertical surfaces to ensure moisture is shed to exterior.

3.4 **GIRTS AND CHANNELS**

.1 Install Z girts, fastened into structural framing beneath and spaced 1500 mm o.c. Orient Z girts to drain water from cavity.

.2 Install C channels to frame openings such as doors, windows, and louvre openings, and orient channel webs to form heads, jambs and sills of openings.

3.5 **SIDING INSULATION**

.1 Install insulation system between girts, supports, and anchoring system in accordance with Section 07 21 00. Ensure there are no gaps between the insulation and girts and supports.

3.6 **VAPOUR RETARDER**

.1 Install vapour retarder in accordance with Section 07 26 00.

3.7 **FASCIA, TRIM, CLOSURES, AND FLASHINGS**

.1 Install fascia and trim including inside and outside corners, flashing, edgings, cap strips, drips, under-sill trim, fillers, closure strips, starter strips, and window or door trim, carefully formed and profiled.

3.8 **METAL SIDING**

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

.2 Install metal siding in one piece, full height, except as indicated otherwise.

.3 Maintain joints in exterior siding, plumb, true to line, tight fitting, hairline joints.

.4 Attach metal siding system components to prevent warping, buckling, and deformation induced by restriction of thermal induced movement.

.5 Install corner pieces, closures, flashings, etc, where shown and where required. Provide formed steel closures around opening.

.6 Bed flashings, closures, and corner pieces in sealant to provide a weathertight installation.

3.9 **JOINT BACKING AND SIDING SEALANT**

.1 Prepare substrate surface and mask as recommended by sealant manufacturer.

.2 Install joint backing and sealant at siding system joints and perimeter for weathertight installation. Tool sealant to concave profile.

3.10 **TOUCH UP**

.1 Touch up marred surfaces with air dry formulation to match pre-finished siding if approved by Consultant, otherwise remove and replace damaged metal siding.

.2 Clean and touch up marred galvanized surfaces after installation, with zinc rich primer.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Design, labour, Products, equipment and services necessary for metal roofing work in accordance with the Contract Documents.

1.2 **REFERENCES**

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

.2 ASTM C612, Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

.3 ASTM C1177M, Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

.4 ASTM E84, Test Method for Surface Burning Characteristics of Building Materials.

.5 CAN/CGSB-19.13-M, Sealing Compound, One Component, Elastomeric, Chemical Curing.

.6 CAN/CSA S136-M, Cold Formed Steel Structural Members.

.7 CAN/CSA S136.1-M, Commentary on CAN/CSA S136-M, Cold Formed Steel Structural Members.

1.3 **SYSTEM DESCRIPTION**

.1 Roof assemblies specified herein are based on a standing seam metal roof system. Roof assembly type referenced are as indicated on Drawings;
- .1 Underlayment board.
- .2 Waterproof membrane.
- .3 Z-Grits.
- .4 Insulation.
- .5 Standing seam metal roof.

1.4 **DESIGN REQUIREMENTS**

.1 Design metal roofing elements in accordance with CAN/CSA S136-M, S136.1-M and to withstand live, dead, lateral, wind, seismic, handling, transportation and erection loads.

.2 Design metal roofing elements in accordance with following Climatic Design Data for Waterloo contained in Ontario Building Code:
- .1 Design temperature: January 1%, July 2 1/2%.
- .2 Wind (Hourly wind pressures): 1 in 50 year occurrence.
- .3 Earthquake: Seismic Data as listed.

.3 Design metal roofing system to limit deflection under design loads to L/240.

.4 Design metal roofing system to prevent restriction of thermal induced movement which would induce deformation such as warping, buckling, and failure of joint seals and fasteners.

.5 Design metal roofing system to prevent the infiltration of water into the roof system and to prevent roofing system components from vibrating due to design wind loads.

.6 Incorporate design of snow fencing into roof design to meet design criteria specified herein. Snow fencing to be of same material and colour as roof system.

1.5 SUBMITTALS

.1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
- .1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
  - .1 Arrangements of sheets and joints, materials, thicknesses, dimensions, layouts, types and locations of supports and fasteners and special shapes.
  - .2 Relationship of panels to structural frame.
  - .3 Details of waterproofing membrane, insulation, connections, snow fencing and all other components in the system.

.3 Samples:
- .1 Submit following samples in accordance with the Conditions of the Contract.
  - .1 Submit 300 x 300 mm samples of each sheet metal material and finish.
  - .2 Waterproofing membrane.
  - .3 Insulation.

.4 Reports: Submit written field inspection and test report results within 3 days after each inspection.

.5 Extended warranty: Submit extended warranty signed and registered by the manufacturer providing the warranty in the name of the Owner for the timeframe and coverage specified in this Section.

1.6 QUALITY ASSURANCE

.1 Installers qualifications: Perform work of this Section by a company that has a minimum of five years proven experience in the installation of metal roofing of a similar size and nature and that is approved by manufacturer. Submit to Consultant, applicator’s current certificate of approval by the material manufacturer as proof of compliance.

.2 Retain a Professional Engineer, licensed in Province of Ontario, with experience in metal roofing work of comparable complexity and scope to perform following services as part of work of this Section:
- .1 Design of metal roofing and snow fencing and framing for snow fencing and attachment.
- .2 Review, stamp, and sign shop drawings.
- .3 Conduct shop and on-Site inspections and prepare and submit inspection reports.

.3 Mock-up:
- .1 Construct one full scale 1200 mm wide x 1800 mm long mock-up panel of metal roofing construction, in location acceptable to Consultant.
- .2 Demonstrate installation of underlay board, insulation, metal roofing, finish, and quality of workmanship.
- .3 Mock-up may form part of final Work, if acceptable to Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Stockpile panels tilted to provide water run-off, free from ground contact on firm, level, non-staining supports extending full width of sheet and spaced not more than 450 mm apart. Cover components with opaque polyethylene sheet. Vent to allow air movement.

1.8 EXTENDED WARRANTY

.1 Submit an extended warranty for metal roofing work In accordance with the General Conditions, except that the warranty is extended to 2 years from date of Substantial Performance of the Work.
- .1 Warrant against panel warping, twisting, failure, jointing, finish failure, water penetration below waterproofing membrane and failure to drain water from rainscreen cavity and painting finishes.
- .2 Coverage: Complete replacement including affected adjacent parts.

2 Products

2.1 MATERIALS

.1 All materials under work of this Section, including but not limited to, sealants and coatings are to have low VOC content limits.

.2 Standing seam metal: ASTM A653M; 0.61 mm (24 Ga.) minimum base metal, Z275, galvanized steel. ‘Tradition 150’ by VicWest Steel. Colour: Regent Grey.

.3 Underlay board: ASTM C1177; 13 mm thick, ‘Dens-Deck Roof Board’ by Georgia-Pacific Corp.; tested to ASTM E84, 0 flame spread, 0 smoke developed, glass fibre faced both sides, silicone treated gypsum core. 1200 mm wide sheets x maximum practical lengths to minimize end joints.

.4 High temperature waterproof membrane: 1.0 mm thick, high temperature composite sheet waterproof membrane, comprised of SBS modified bitumen with woven polyethylene reinforcement. Provide primer as recommended by membrane manufacturer. 'CCW 300 HT' by Carlisle Coatings and Waterproofing, 'Blueskin PE200HT' by Henry Company Canada Inc., 'Lastobond Shield HT' by Soprema or approved alternative.

.5 Z girts and C channels: CAN/CSA S136-M; Minimum 1.2 mm, Z275 galvanized Z girts and C channels. Depth: As indicated on Contract Drawings. Z-girts to be thermally broken at mid-point of insulation thickness.

.6 Insulation: ASTM C612, 96 kg/m^3, Semi-rigid mineral fibre. Thickness as indicated on Contract Drawings. Temporary adhesive: As recommended by insulation manufacturer.
.1 'Rockboard 60' by Rockwool Inc.
.2 Or approved alternative by Owens Corning Canada Inc.

.7 Seam clips: ASTM A653M; Z275 galvanized steel, thermal clip system.

.8 Fascia, trim, closure, and flashings: Material, finish, colour, hidden fastener and thickness to match metal roofing material.

.9 Gutters and downspouts: Provide Kaycan aluminum gutter system, colour to be Commercial Brown.

.10 Snow fencing: Two bar system fabricated from galvanized steel and prefinished to match metal roof; 'Snow Fence' by TRA Snow Fences Inc., 'DualGuard' by S-5!, or approved alternative.

.11 Screw fasteners: Hot dipped galvanized steel fasteners. All fasteners to be concealed and hidden. Exposed screws shall be self-sealing. Fasteners to be complete with coloured heads to match metal roofing.

.12 Sealant: CAN/CGSB-19.13-M. Primer as recommended by sealant manufacturer.

2.2 FABRICATION

.1 Fabricate roof components in accordance with reviewed shop drawings factory-ready for field installation.

.2 Fabricate individual metal roofing panels in maximum lengths.

.3 Fabricate metal roofing panels square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.4 Notch Z girts and C channels as required to allow for drainage of rainscreen cavity.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 **UNDERLAY BOARD**

.1 Stagger underlay board joints at least 25% of full board length. Orient long side of boards as shown on Shop Drawings.

.2 Do not install imperfect, damaged or damp boards. Butt boards together with no spaces between boards.

.3 Screw fasten underlay board to substrate at 600 mm o.c. and continuously around perimeter of each board at 300 mm o.c.. Maintain 15 mm minimum from edge of board to centre of screw.

3.3 **HIGH TEMPERATURE WATERPROOFING MEMBRANE**

.1 Install primer and waterproof membrane continuously over plywood sheathing, in accordance with manufacturer's instructions.

.2 Overlap waterproof membrane 50 mm along side laps and 75 mm on end laps and lap in direction of waterflow.

3.4 **GIRTS AND CHANNELS**

.1 Install Z girts, fastened through waterproof membrane and into structural framing beneath. Orient Z girts to drain water from rainscreen cavity.

.2 Frame roofing system edges, with C channels and orient channel webs to face outwards.

3.5 **METAL ROOF INSULATION**

.1 Prior to installation of insulation, examine waterproofing membrane and make good damage.

.2 Install metal roof insulation in continuous contact with waterproof membrane and fitted between Z girts and C channels. Butt boards together with no spaces between boards. Areas of insulation system having voids will be rejected.

.3 When cutting insulation board, cut completely though board thickness and trim to provide plain but joints. Do not break or tear insulation board to fit detail.

3.6 FASCIA, TRIM, CLOSURES, AND FLASHINGS

.1 Form and profile fascia and trim including inside and outside corners, flashing, edgings, cap strips, drips, fillers, closure strips, and starter strips in accordance with the drawings.

.2 Flashings to utilize a “S” locking joint for concealed fastening.

.3 Cut neat holes in metal roofing to accommodate roof penetrations and install flashing for a watertight installation.

3.7 GUTTERS AND DOWNSPOUTS

.1 Fabricate and install gutters and downspouts in accordance with reviewed shop drawing and manufacturer's written instructions.

3.8 METAL ROOFING (STANDING SEAM)

.1 Install metal roofing in accordance with reviewed shop drawings and manufacturer’s written instructions. Used concealed fasteners unless otherwise approved by the Consultant.

.2 Install seam clips spaced as indicated on reviewed shop drawings to comply with design criteria. Secure cleats with two fasteners each minimum, into Z girts or substrate.

.3 Apply sheet metal roofing beginning at eaves. Loose lock pans to valley flashing and edge strips at eaves and gable rakes.

.4 Fold lower ends of seams at eaves over at 45° angle. Terminate standing seams at ridge and hips by turning down in tapered fold.

.5 Install metal roofing panels in one piece, for entire slope, except as indicated otherwise. In locations that roof panels cannot be installed in one piece, provide 100 mm starter strip to join the panels together. Provide a continuous sealant bead under starter strip.

.6 Metal roof panels terminating at eaves or valleys shall not have a raw metal edge or exposed fasteners. Fold panel ends and install in accordance with reviewed shop drawings.

.7 Insert metal roof panels terminating at hips or ridges into concealed metal closures. Metal closures shall allow for expansion of the metal roof panel and also act as a starter strip for hip or ridge flashings.

.8 Install valley sheets not exceeding 3 m in length. Shingle lap joints 150 mm in direction of flow. Extend valley sheet minimum 150 mm under roofing sheets. Double fold valley and roofing sheets and secure at 450 mm oc.

.9 Install snow fencing in accordance with manufacturer’s instructions and reviewed shop drawings.

.10 Apply isolation coating to metal surfaces in contact with concrete or mortar.

.11 Remove and replace damaged metal roofing. Do not touch-up damaged panels.

3.9 **SEALANT**

.1 Seal where necessary to form weathertight seal between flashing and adjoining surfaces and between flashing and other work. Sealing work consists of bedding between members where possible. Dry tool sealant to concave profile where exposed.

3.10 **CLEANING AND TOUCH-UP**

.1 Clean exposed finished surfaces of complete installation free of dirt, grease and smudges.

.2 Touch-up scratches with air dry formulation of coating system to match original factory finish.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for flashing and sheet metal Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 CSA A123.3-M Asphalt or Tar Saturated Roofing Felt.

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

.3 ASTM C920, Specification for Elastomeric Joint Sealants.

.4 OIRCA, Ontario Industrial Roofing Contractors Association.

1.3 **DESIGN REQUIREMENTS**

.1 Design flashing elements and fastenings to withstand wind loading and perimeter and corner uplift pressures for roof system in accordance with CSA A123.21.

1.4 **SUBMITTALS**

.1 Shop drawings:
  .1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
    .1 Proposed method of shaping, forming, jointing.
    .2 Fastening, and application of flashing and sheet metal Work.

.2 Samples:
  .1 Submit following samples in accordance with the Conditions of the Contract:
    .1 50 x 50 mm samples of sheet metal material, colour and finish.
    .2 Representative sample section of prepainted metal flashing illustrating S locking jointing method, minimum 600 mm long.

1.5 **EXTENDED WARRANTY**

.1 Submit an extended warranty for flashing and sheet metal work in accordance with General Conditions, except that warranty period is extended to 5 years from date of Substantial Performance of the Work.
  .1 Warrant against warping, twisting, joint, finish failure and water penetration.
  .2 Coverage: Complete replacement including affected adjacent parts.

2 Products

2.1 **MATERIALS**

.1 All materials under Work of this Section, including but not limited to, sealants and paints are to have low VOC content limits.

.2 Prepainted sheet steel: ASTM A653/A653M; Classification LFQ, Grade A, Z275 zinc coating designation, 0.76 mm (22 ga.) minimum base steel thickness, commercial quality, prefinished with Perspectra Series coating system by U.S. Steel Canada, or WeatherX by Vicwest Steel. Colour: To be selected by Consultant.

.3 Plastic cement: Trowel grade asphalt mastic.

.4 Sealant: ASTM C920, Type S, Grade NS, Class 25; High-performance, medium-modulus, one-part, neutral-cure silicone sealant. 'CWS' by Dow Corning, 'Sikasil 305CN' by Sika, or 'Tremsil 400' by Tremco.

.5 Cleats and starter strips: Starter strips to be continuous, of same material as flashing used, 1.2 mm thick.

.6 Fasteners: Flat head roofing nails of length, type and thickness suitable for metal flashing application.

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

.8 Touch-up paint: Same colour and material as prepainted sheet steel, as recommended by prefinished coating manufacturer.

2.2 **FABRICATION**

.1 Fabricate copings, flashings, curb counter flashings, starter strips, scuppers and miscellaneous flashings in accordance with OIRCA and to details shown.

.2 Breakform prepainted sheet material at shop to shapes shown. Make end joints where adjacent lengths of metal flashing meet, in accordance with jointing method specified.

.3 Form pieces in 2400 mm maximum practical lengths. Make allowance for expansion at joints.

.4 Hem exposed edges 13 mm minimum on underside for appearance and stiffness. Mitre and seal corners with sealant.

.5 Reglets and Cap flashing: Form flashings of as detailed and in accordance with OIRCA. Provide slotted fixing holes and steel/plastic washer fasteners.

.6 Scuppers:
- .1 Form scuppers from prefinished steel sheet metal.
- .2 Sizes and profiles as indicated.
- .3 Provide necessary fastenings.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.2 **INSTALLATION**

.1 Install coping flashings, curb counter flashings, starter strips, scuppers and miscellaneous flashings to details shown on the Contract Drawings and in accordance with OIRCA.

.2 Use concealed fasteners. Exposed fasteners such as pop rivets are not allowed.

.3 Install continuous starter strips to present a true, non-waving, leading edge. Anchor to back-up for a rigid, secure installation.

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

.5 Make end joints using an S lock joint. Execute by inserting end coping length in 25 mm deep S lock formed in end of adjacent length. Extend concealed portion of S lock 25 mm outwards and nail to substrate. Face nailing of joints will not be permitted.

.6 Seal where necessary to form weathertight seal between flashing and adjoining surfaces and between flashing and other Work. Sealing Work consists of bedding between members where possible. Tool sealant to concave profile where exposed.

.7 Insert metal flashing under cap flashing to form weathertight junction.

.8 Caulk flashing at cap flashing with sealant.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for firestopping and smoke seals Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM E814, Test Method for Fire Tests of Through-Penetration Fire Stops.

.2 CAN/CGSB 19.13, Sealing Compound, One Component, Elastomeric, Chemical Curing.

.3 CAN/ULC S102, Surface Burning Characteristics of Building Materials and Assemblies.

.4 CAN/ULC S115, Standard Method of Fire Tests of Firestop Systems.

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

1.3 **DEFINITIONS**

.1 Fire Separation: A construction assembly, plane or device, either vertical or horizontal, which is required to prevent the passage of fire and smoke for a prescribed period of time. Proof of compliance to required time rating shall be by ULC, Warnock Hersey (or similar approved) certification or shall be as listed in the Ontario Building Code Supplementary Standard SB-2.

.2 Smoke Separation: A construction assembly, plane or device, either vertical or horizontal, which is not required to prevent the passage of fire for a prescribed period of time but is required to prevent the passage of smoke. A "Smoke Separation" is also known as a "Fire Separation with No Rating" or a "Zero Hour Rated Separation".

.3 Non-Rated Separation: A construction assembly, plane or device, either vertical or horizontal, which is not required to prevent the passage of fire for a prescribed period of time and is not required to prevent the passage of smoke.

1.4 **SUBMITTALS**

.1 Product data:
  .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
    .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations.
    .2 Product transportation, storage, handling and installation requirements.
    .3 Submit firestop and smoke seal manufacturer's Product data for materials and prefabricated devices, including manufacturer's printed installation instructions.

.2 Shop drawings:
.1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
.1 Fire rated and smoke sealed systems for each typical application.
.2 Construction details, accurately reflecting actual job conditions.
.3 ULC or Intertek Testing assembly listing.

.3 Certification:
.1 Submit certified documentation from manufacturer for each worker performing Work of this Section.
.2 Submit installer's and Product manufacturer's certification verifying compliance with the Contract Documents and conformance with ASTM E814 and CAN/ULC S115.

1.5 QUALITY ASSURANCE

.1 Perform Work of this Section by manufacturer-approved, skilled, qualified, and experienced workers trained in installation of Work of this Section.

1.6 SITE CONDITIONS

.1 Conform to manufacturer's requirements and maintain a minimum temperature of 5^0 C for a minimum period of 24 h before application, during, and until application is fully cured.

.2 Maintain sealant at a minimum 18° C for best workability.

2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Acceptable manufacturers of rated systems include:
.1 AD Fire Protection Systems Inc.
.2 Hilti Canada Corporation.
.3 3M Canada Inc.
.4 Tremco Ltd.

2.2 MATERIALS

.1 All materials under Work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.

.2 Firestop sealant: single component, low modulus, silicone rubber, moisture curing, ULC labelled to CAN/CGSB 19.13-M and CAN/ULC S115.

.3 Firestop insulation: to CAN/ULC-S702, Type 2; mineral fibre manufactured from rock or slag, suitable for manual application.
.1 Density: Minimum 64 kg/m^3 when tested to ASTM C303.
.2 Combustibility: Noncombustible to CAN/ULC S114.
.3 Melt temperature: >1175 degrees C.

.4 Surface burning characteristics: to CAN/ULC S102, maximum flame spread of 0, smoke developed of 0.
.5 Moisture Absorption: 0.04 percent when tested to ASTM C1104.
.6 Smoulder Resistance: 0.01 percent when tested to CAN/ULC S129.

.4 Damming, back-up, supports, and anchorage: In accordance with manufacturer's fire rated systems and to acceptance of authorities having jurisdiction.

.5 Primer: As recommended by firestopping sealant manufacturer.

2.3 **SYSTEMS**

.1 Firestopping and smoke seals: ULC or Intertek Testing Services listed Products and systems in accordance with CAN/ULC S115 suitable to actual application and installation conditions.

.2 Do not use Products containing asbestos.

.3 Firestopping components shall not contain volatile solvents or require special application to protect plastic pipe from firestopping compound.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

.2 Verify that substrates and surfaces to receive firestopping and smoke seals are clean, dry, and frost free.

3.2 **FIRESTOP AND SMOKE SEAL LOCATIONS AND RATINGS**

.1 Install ULC firestop and smoke seal systems rated to match fire resistance design rating of assemblies into which they are installed.

.2 Install firestop and smoke seal systems. Use systems with required ratings at following typical locations, including but not limited to:
.1 Gaps at intersections of fire-resistance rated masonry and gypsum board partitions.
.2 Control and sway joints in fire-resistance rated walls and partitions such as masonry and gypsum board.
.3 Gaps at top of fire-resistance rated partitions such as masonry and gypsum board partitions.
.4 Penetrations through fire-resistance rated walls and partitions including mechanical and electrical services and openings and sleeves for future use.
.5 Penetrations through fire-resistance rated floor slabs, ceilings, and roofs.
.6 Gaps at edge of floor slabs at exterior walls such as curtain wall and precast concrete panels.

.7 Perimeter of retaining angles on rigid ducts greater than 0.012 m^2, firestopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

3.3 **PREPARATION**

.1 Prepare, modify, and adjust void sizes, proportions, and conditions to conform to fire rated and smoke sealed assembly requirements such as assembly opening size and dimensional restrictions.

.2 Mask adjacent surfaces to avoid spillage and over-coating of adjacent surfaces. Remove stains from adjacent surfaces.

3.4 **INSTALLATION**

.1 Install firestopping and smoke seal systems in accordance with manufacturer's instructions and fire rated assembly to establish continuity and integrity of fire separations.

.2 Install firestop insulation in compacted thicknesses required by ULC design. Compress insulation approximately 50 percent.

.3 Install primers as recommended by firestop and smoke seal Product manufacturers.

.4 Install temporary forming, damming, back-up as required, remove after materials have achieved initial cure and will resist displacement.

.5 Install firestop and smoke seal filler in horizontal joints providing 25% compression fit.

.6 Use resilient, elastomeric firestopping and smoke seal systems in following locations:
.1 Openings and sleeves for future use.
.2 Penetration systems subject to vibration or thermal movement.
.3 Penetration systems in acoustical containment enclosures.

.7 Trowel and tool exposed firestop and smoke seal Product surfaces to uniform, smooth finish.

.8 Repair damaged firestopped and smoke sealed surfaces to acceptance of Consultant.

.9 Identify each firestop and smoke seal penetration assembly with permanent label listing following:
.1 Assembly and rating in hours.
.2 Date of installation.
.3 Installing company's name and telephone number.

.10 Do not cover materials until full cure has taken place.

3.5 **CLEAN-UP**

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for sealant Work in accordance with the Contract Documents.

.2 Work of this Section does not include sealants in firestopping and smoke sealed assemblies.

.3 Work of this Section does not include sealant work identified in individual specification sections.

1.2 **REFERENCES**

.1 ASTM C834, Specification for Latex Sealants.

.2 ASTM C920, Specification for Elastomeric Joint Sealants.

.3 ASTM C1330, Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

1.3 **SUBMITTALS**

.1 Product data: Submit copies of Product data in accordance with the Conditions of the Contract describing type, composition and recommendations or directions for surface preparation, material preparation and material installation.

.2 Samples:
.1 Submit following samples in accordance with the Conditions of the Contract.
.1 Two samples of sealant/caulking, for colour selection.
.2 Two samples of back-up material and primer for physical characteristics.

1.4 **QUALITY ASSURANCE**

.1 Qualifications: Work of this Section shall be executed by trained applicators approved by sealant manufacturer and having a minimum of 5 years proven experience.

1.5 **SITE CONDITIONS**

.1 Do not install materials when ambient air temperature is less than 5°C, when recesses are wet or damp, or to manufacturer's recommendations.

1.6 **DELIVERY, STORAGE AND HANDLING**

.1 Arrange delivery of materials in original, unopened packages with labels intact, including batch number, and ensure that on-site storage is kept to a minimum. Do not store materials on site where there exists any danger of damage from moisture, direct sunlight, freezing and other contaminants.

1.7 **EXTENDED WARRANTY**

.1 Submit a extended warranty for Sealant Work in accordance with General Conditions, except that warranty period is extended to 5 years. Warrant against leakage, cracking, crumbling, melting, shrinkage, running, loss of adhesion and staining adjacent surfaces. Warranty shall be for complete replacement including affected adjacent Work.

2 Products

2.1 **MATERIALS**

.1 General:
- .1 All materials under Work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.
- .2 Use materials as received from manufacturers, without additives or adulterations. Use one manufacturer's Product for each kind of Product specified.

.2 Sealant **Type 1**: ASTM C920, Type M, Grade NS, Class 50; Multi-Component, polyurethane sealant, in standard colours selected.
- .1 'DC CWS' by Dow Corning Inc.
- .2 'Dymeric 240' by Tremco.
- .3 Or approved alternative by Sika.

.3 Sealant **Type 2**: ASTM C920, Type S, Grade NS, Class 25; One-Component, polyurethane sealant, in standard colours selected.
- .1 'DC CWS' by Dow Corning Inc.
- .2 'Dymonic' by Tremco.
- .3 'Novalink' by Chemlink Advanced Architectural Products.

.4 Sealant **Type 3**: ASTM C834; Pure acrylic siliconized sealant; in standard white colour (paintable).
- .1 'Tremflex 834 Silconized Sealant' by Tremco Ltd.
- .2 Or approved alternative by Dow Corning Inc. or Sika.

.5 Sealant **Type 4**: ASTM C920, Type S, Grade NS; One-part mildew-resistant silicone, in standard colours selected.
- .1 '786 Mildew Resistant Silicone Sealant' by Dow Corning Inc.
- .2 'Tremsil 200 Silicone Sealant' by Tremco Ltd.
- .3 Or approved alternative by Sika.

.6 Sealant **Type 5**: ASTM C920, Type S, Grade NS, Class 50; One-part neutral-cure silicone, in standard colours selected.
- .1 '795 Weather Sealant' by Dow Corning Inc.
- .2 'Spectrum 2' by Tremco Ltd.
- .3 Or approved alternative by Sika.

.7 Sealant **Type 6**: Acoustical sealant in accordance with Section 09 21 16.

2.2 **ACCESSORIES**

.1 Primers: Type recommended by material manufacturers for various substrates, primers to prevent staining of adjacent surfaces encountered on project.

.2 Joint backing: ASTM C1330; Round, solid section, closed cell, skinned surface, soft polyethylene foam gasket stock, compatible with primer and sealant materials, 30 to 50% oversized, Shore A hardness of 20, tensile strength 140 to 200 kPa. Bond breaker type surface.

.3 Bond breaker: Type recommended by material manufacturers.

.4 Void filler around the window frames to be one part expanding polyurethane foam.

.5 Cleaning agents: As recommended by material manufacturer, non-staining, harmless to substrates and adjacent finished surfaces.

2.3 **MIXING**

.1 Follow manufacturers instructions on mixing, shelf and pot life.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.2 **PREPARATION**

.1 Prepare joints to receive sealants to manufacturer's instructions. Ensure that joints are clean and dry and ferrous surfaces are free from rust and oil.

.2 Clean recesses to receive sealant, to be free of dirt, dust, loose material, oil, grease, form release agents and other substances detrimental to sealant's performance.
- .1 Remove lacquer or other protective coatings from metal surfaces, without damaging metal finish, using oil-free solvents. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sand blasting.
- .2 Ensure recess is dry.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings. Remove incompatible coatings as required.

.3 Ensure that all materials in contact with sealant are compatible. Test substrate for adhesion.

.4 Depth of recess: Maintain depth to ½ joint width up to a maximum of 13 mm and not less than 6 mm at centre of joint. For greater depth, use joint backing under. Where recess is less than specified depth, cut back surface of recess to specified recess depth.

.5 Install polyethylene backing rod in joints 6 mm or more in width. Roll backing rod into joint. Do not stretch or bend backing rod. Install bond breaker to back of recess.

.6 Prime sides of recess, in accordance with sealant manufacturer's instructions.

.7 Condition products for use in accordance with manufacturer’s recommendations.

3.3 INSTALLATION

.1 Apply sealant immediately after adjoining Work is in condition to receive such Work. Apply sealant in continuous bead using gun with correctly sized nozzle. Use sufficient pressure to evenly fill joint.

.2 Ensure sealant has full uniform contact with, and adhesion to, side surfaces of recess. Superficial painting with skin bead is not acceptable. Tool sealant to smooth surface, free from ridges, wrinkles, sags, air pockets, embedded impurities, dirt, stains or other defects.

.1 At recesses in angular surfaces, finish sealant with flat profile, flush with face of material at each side.

.2 At recesses in flush surfaces, finish compound with concave face, flush with face of material at each side.

.3 Make sealant bead uniform in colour.

.4 Cure sealants in accordance with sealant manufacturer's instructions. Do not cover up sealants until proper curing has taken place.

.5 Immediately remove excess compound or droppings which would set up or become difficult to remove from adjacent finished surfaces, using recommended cleaners, as work progresses. Do not use scrapers, chemicals or other tools which could damage finished surfaces. Remove defective sealant.

.6 Clean recesses and re-apply sealant.

.7 Remove masking tape immediately after joints have been sealed and tooled.

3.4 CLEANING

.1 Clean surfaces adjacent to joints, remove sealant smears or other soiling resulting from application of sealants. At metal surfaces, remove residue. Do not mar or damage finishes on materials adjacent to joints. Repair or replace marred or damaged materials.

3.5 SCHEDULE OF LOCATIONS

.1 Following sealant location schedule is included for convenience and may not be complete. Examine Contract Drawings and other specification sections and determine entire extent of Work of this Section. Generally seal following locations:

.1 Concrete, masonry and wood to metal.

.2 Wood to masonry and concrete.

.3 Metal to metal.

.4 All dissimilar materials.

.2 Sealant **Type 1 or Type 2**:
- .1 Interior joints between dissimilar materials.
- .2 Interior joints at perimeter of all built-in equipment.
- .3 Interior joints at perimeter of metal door and window frames.

.3 Sealant **Type 3**:
- .1 Interior non-movement joints 6mm or less for painting (painter's caulk).

.4 Sealant **Type 4**:
- .1 Interior joints where mildew resistance is required.
- .2 Interior joints at perimeter of all plumbing fixtures.

.5 Sealant **Type 5:**
- .1 Glass to glass joints.
- .2 Glass to metal joints.
- .3 Interior face of metal panel joints.

.6 Sealant **Type 6:**
- .1 Perimeter of all gypsum board partitions where sound insulation is indicated.
- .2 All vapour barrier seams and seals.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for the metal doors and frames Work in accordance with the Contract Documents.

1.2 **REFERENCES**

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

.2 ASTM A568/A568M, Specification for General Requirements for Steel, Carbon and High-Strength Low-Alloy, Hot-Rolled Sheet and Cold-Rolled Sheet.

.3 CAN/ULS-S102, Standard Method of Test for Surface Burning Characteristics of building Materials and Assemblies.

.4 CAN4/ULC-S104M, Standard Method for Fire Test of Door Assemblies.

.5 CAN4/ULC-S105M, Standard Specification for Fire Door Frames, Meeting the Performance Required by CAN4/ULC-S104M.

.6 CAN/ULC-S704, Standard For Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.

.7 CAN/CGSB-1.198, Cementitious Primer, (for Galvanized Surfaces).

.8 CGSB 41-GP-19Ma, Rigid Vinyl Extrusions for Windows and Doors.

.9 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.

.10 CSA W59-M, Welded Steel Construction (Metal Arc Welding).

.11 NFPA 80, Standard for Fire Doors and Other Opening Protectives.

.12 NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

1.3 **DESIGN REQUIREMENTS**

.1 Design exterior frame assemblies to accommodate expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.

1.4 **SUBMITTALS**

.1 Product data: Submit manufacturer's Product data in accordance with the Conditions of the Contract indicating door and frame construction.

.2 Shop drawings:
- .1 Submit shop drawings in accordance with the Conditions of the Contract for each type of door and frame indicating:
  - .1 Thickness and type of steel.
  - .2 Thickness and type of core.
  - .3 Thickness and type of steel stiffeners and location of them within the door.
  - .4 Thickness and type of metal facing on edges of door and method of fastening.
  - .5 Location of mortises, reinforcement, anchorages, joining, welding, sleeving, exposed fasteners, openings and arrangement for hardware.
- .2 Include schedule identifying each unit with door marks and numbers relating to numbering on Contract Drawings and in door schedule. Indicate doors and frames to be fire rated.

1.5 QUALITY ASSURANCE

.1 Perform Work in accordance with requirements by a member of the Canadian Steel Door and Frame Manufacturers Association.

.2 Label and list fire rated doors and frames by an organization acceptable to authorities having jurisdiction and accredited by the Standards Council of Canada in conformance with CAN4/ULC-S104M and CAN4/ULC-S105M for ratings indicated, Labelling shall be in accordance with NFPA 80.

2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Baron Metal Industries Inc.

.2 Daybar Industries Limited

.3 Fleming Doors Products.

2.2 MATERIALS

.1 General:
- .1 All materials under Work of this Section, including but not limited to, primers are to have low VOC content limits.
- .2 Wherever possible, metals used in work of this Section are to contain recycled content.

.2 Steel: ASTM A568/A568M, Class 1; Commercial grade steel, hot dip galvanized to ASTM A653/A653M, Z90 galvanized coating for exterior doors and frames.

.3 Minimum base steel thickness:

.1	Frames	1.6 mm
.2	Typical doors	1.2 mm
.3	Interior stiffeners	0.9 mm

.4	Lock/strike reinforcements	1.6 mm
.5	Hinge reinforcements	2.7 mm
.6	All other reinforcement	1.6 mm
.7	Top and bottom channels	1.2 mm
.8	Glazing stops	0.9 mm
.9	Guard boxes	0.9 mm
.10	Jamb spreaders	0.9 mm

.4 Top caps and thermal breaks: CGSB 41-GP-19Ma; Rigid PVC extrusions.

.5 Primer: CAN/CGSB 1.198.

.6 Core material:
- .1 Exterior doors: Polyisocyanurate to CAN/ULC-S704, Type 1, Class 1 closed-cell polyisocyanurate foam manufactured using HCFC-free blowing agents and as follows;
  - .1 Compressive strength: 140kPa minimum.
  - .2 Flame Spread: 500 to CAN/ULC-S102.
  - .3 Vapour Permeance: 1.5 ng/Pa-s-m² maximum.
  - .4 Dimensional stability: 1.5% maximum linear change at 70°C and 97% relative humidity for 7 days.
  - .5 Curing Time: minimum 24 hours, plus 24 hours per 25 mm of thickness before shipment from manufacturer.
  - .6 Long Term Thermal Resistance (LTTR)
    - .1 RSI 1.04 for 25mm board thickness.
    - .2 RSI 2.09 for 50mm board thickness.
    - .3 RSI 3.18 for 75mm board thickness.

.7 Screws: Stainless steel screws with countersunk flat head.

.8 Door silencers: Type 6-180, black neoprene.

.9 Frame anchors:
- .1 Frames in masonry: 1.2 mm minimum, adjustable T-strap jamb anchors.
- .2 Labeled frames: In accordance with ULC requirements.

.10 Floor anchors: 1.6 mm minimum adjustable floor clip angles with 2 holes for anchorage to floor.

.11 Labels for fire doors and door frame: Brass plate, riveted to door and door frame.

.12 Glass and glazing: In accordance with Section 08 80 00.

.13 Door hardware: In accordance with Section 08 70 00.

2.3 FABRICATION

.1 General
- .1 Fabricate doors and frames in accordance with reviewed shop drawings.
- .2 Welding: CSA W59-M to produce a finished unit with no visible seams or joints, square, true and free of distortion.

.3 Welding: Continuous unless specified otherwise. Execute welding by a firm fully acceptable to the Canadian Welding Bureau to requirements of CSA W47.1.
.4 Form profiles accurately to details shown on Contract Drawings.
.5 Ream and remove burrs from drilled and punched holes.
.6 Grind welded corners and joints to a flat plane and fill with metallic filler and sand to a uniform smooth finish. Apply one coat of primer.
.7 Provide weather strip for exterior doors in accordance with Section 08 70 00 and door manufacturer.

.2 Frames:
.1 Fabricate frames of welded construction. Cut mitres and joints accurately and weld continuously on inside of frame profile. Exterior frames to be thermally broken.
.2 Construct large frame sections with provision for on Site assembly to suit Site conditions.
.3 Blank, reinforce, drill and tap frames for mortised, templated hardware. Protect mortised cut-outs with guard boxes.
.4 Reinforce frames where required for surface mounted hardware.
.5 Reinforce frames over 1200 mm wide with roll formed steel channels or hollow structural sections specified in Section 05 50 00 and as indicated on drawings.
.6 Furnish exterior door frames with a continuously welded integral steel weather drip at head of frame.
.7 Prepare each door opening for single stud rubber door silencers, 3 for single door openings located in strike jamb, and 2 for double door openings located in head.
.8 Install 2 channel or angle spreaders per frame, to ensure correct frame alignment. Install stiffener plates or spreaders between frame trim where required, to prevent bending of trim and to maintain alignment when setting in place.
.9 Form channel glazing stops minimum 16 mm height, accurately cut, mitred, fitted and fastened to frame sections with stainless steel counter-sunk, flat head screws spaced at maximum 450 mm throughout and 50 mm from each end.
.10 Provide the following requirements for electrified frame applications:
.1 Low voltage wire conduit for required electrified hardware devices.
.2 Junction boxes for all frame mounted electrified hardware devices, complete with required connectors to in frame low voltage wire conduit.

.3 Anchorage:
.1 Anchor units to floor and wall construction. Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb, minimum number of anchors for each jamb:
.1 Frames up to 2285 mm 3 anchors.
.2 Frames from 2285 mm to 2440 mm 4 anchors.
.2 Where frames are to be set in masonry or concrete, supply adjustable anchors to trade installing frame.
.3 Fabricate frames for installation in steel stud partitions with steel anchors of suitable design, minimum number of anchors for each jamb:
.1 Frames up to 2285 mm height 4 anchors.
.2 Frames 2285 mm to 2440 mm 5 anchors.

.4 General Door Requirements:
- .1 Hollow steel construction, flush swing type, of sizes to conform to details, schedules and reviewed shop drawings with provisions for cut-outs for glass and grilles and reinforced to receive hardware fastenings.
- .2 Blank, reinforce, drill and tap doors for mortised, templated hardware. Where required, reinforce doors for surface mounted hardware and door closers.
- .3 Reinforce oversized doors with steel channels and plates specified in Section 05 50 00 and as indicated on drawings.
- .4 Where openings are required, form integral cut-outs with framing, glass stop moldings and division bars.
- .5 Install grilles to fit tight and secure into openings.
- .6 Bevel both stiles of single doors 1 in 16.
- .7 Reinforce doors with galvanized metal stiffeners at 150 mm o.c.
- .8 Provide the following requirements for electrified door applications:
  - .1 In door low voltage wire raceways.
  - .2 Steel astragals for hollow metal doors.
  - .3 Reinforcement for all door mounted electrified hardware devices as required and as indicated on Contract Drawings.

.5 Exterior Doors:
- .1 Supply and install inverted, recessed, mechanically interlocked with tack welded channels at top and bottom of doors.
- .2 Fabricate doors with joints between front and back panels meeting on stile edges. Make joints mechanically interlocked and tack welded for entire height of door. After welding has been completed, grind joints smooth to match metal. Ensure that no filler is used in joints.
- .3 Fill void between door faces with polyisocyanurate insulation as specified, thermally bonded to door skins.

3 Execution

3.1 EXAMINATION

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.2 HOLLOW METAL DOOR AND FRAME INSTALLATION

.1 Install hollow metal doors and frames plumb, square, level, secure, and at correct elevation.

.2 Install doors clear of floor finishes, and with the correct rebate opening for the door installation. Install door silencers.

.3 Secure anchorages and connections to adjacent construction. Brace frames rigidly in position while building-in. Remove temporary steel shipping jamb spreaders. Install wood spreaders at third points of frame rebate height to maintain frame width. Supply and install vertical supports as indicated on drawings for openings over 1200 mm in width. Remove wood spreaders after frames have been built-in.

.4 Allow for structural deflection and prevent structural loads from being transmitted to hollow metal frames.

.5 Touch-up areas where galvanized coating has been removed or damaged with primer.

.6 Door hardware: In accordance with Section 08 70 00.

3.3 **ADJUSTING AND CLEANING**

.1 Adjust doors for smooth and balanced door movement.

.2 Clean doors and frames.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Design, labour, Products, equipment and services necessary for sectional overhead door work in accordance with the Contract Documents.

1.2 **REFERENCES**

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

.2 ASTM D523, Test Method for Specular Gloss.

.3 ASTM D822, Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.

.4 CAN/CSA-G40.20/G40.21-M, General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steels.

.5 CAN/CSA G164-M, Hot Dip Galvanizing of Irregularly Shaped Articles.

.6 CSA S136.1-M, Commentary on CAN/CSA S136-M, Cold Formed Steel Structural Members.

.7 CAN/CGSB 1.181, Coating, Zinc-Rich, Organic, Ready Mixed.

1.3 **DESIGN REQUIREMENTS**

.1 Provide a thermally broken insulated flush overhead door, manually operated complete with safety edge.

.2 Design door assembly to withstand wind loads in closed position of 1 kPa positive 0.6 kPa negative, with operators to function against 0.4 kPa wind load. Maximum deflection under full design load to be 1/240 of opening width.

.3 Calculate properties of steel sections and allowable stresses used in determination of structural performance in accordance with CSA S136.1-M.

.4 Design door assembly to withstand minimum 10,000 cycles per annum, and 20 years total life cycle. Design door panel assemblies with thermal insulation factor minimum 2.32 RSI.

1.4 **SUBMITTALS**

.1 Product data:
  .1 Submit duplicate copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
    .1 Performance criteria, compliance with appropriate reference standards, characteristics, limitations, and trouble shooting protocol.

.2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
.1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
.1 Elevations, materials, sections and details, operating components, dimensions, gauges, hardware, accessories, finishes, and service rating.
.2 Complete engineering design data to confirm that door meets design criteria specified.

.3 Closeout submittals:
.1 Submit following for each Product for incorporation into Operations and Maintenance Manuals in accordance with the Conditions of the Contract:
.1 Identification: Manufacturing name, type, year, and serial number.
.2 Performance criteria and maintenance data.
.3 Operating instructions and precautions.
.4 Safety precautions.
.5 Component parts availability including names and addresses of spare part suppliers.
.6 Lubrication schedule indicating lubrication points and type of lubricant recommended.

1.5 EXTENDED WARRANTY

.1 Submit an extended warranty for work of this Section in accordance with General Conditions, except that warranty period is extended to 3 years.
.1 Warrant against failure to meet design criteria and specified requirements.
.2 Coverage: Complete replacement including affected adjacent work.

2 Products

2.1 ACCEPTABLE PRODUCTS AND MANUFACTURERS

.1 Model 432 by Overhead Door Company or approved alternative.

2.2 MATERIALS

.1 All materials under work of this Section, including but not limited to, paints are to have low VOC content limits.

.2 Steel angles, shapes, plates, and similar items: CAN/CSA-G40.20/G40.21-M, Grade 350W.

.3 Galvanized steel sheet: Pre-finished, commercial quality to ASTM A653/A653M with Z275 zinc coating. Minimum sheet thickness to be 0.5 mm.

.4 Insulation: 50 mm thick continuous polyurethane insulated core of high density foam.

.5 Weather stripping:
- .1 Sills: bulb type full width extruded neoprene weatherstrip.
- .2 Jambs and head: extruded aluminum and arctic grade vinyl weatherstrip to manufacturer's standard.

2.3 HARDWARE

.1 Track: standard lift hardware with 16 ga. vertical and horizontal galvanized steel track.

.2 Track Supports: 16 ga. continuous galvanized steel angle track supports.

.3 Spring counter balance: heavy duty oil tempered torsion spring with manufacturers standard brackets.
- .1 Drum: Die cast aluminum, size as recommended by door manufacturer to suit intended application.
- .2 Shaft: 25 mm diameter solid steel.

.4 Top roller carrier: galvanized steel minimum 2.3 mm thick, adjustable.

.5 Rollers: full floating, grease packed hardened steel, ball bearing minimum 75 mm diameter, stamped tire.

.6 Roller brackets: adjustable, galvanized steel, minimum 2.5 mm thick.

.7 Hinges: standard duty industrial 14 ga. galvanized steel.

.8 Cable: minimum 4 mm diameter multi-strand galvanized steel aircraft cable with a safety factor of 8:1.

.9 Slide lock: Type as recommended by Consultant.

.10 Chain Operator Unit: Hand-chain actuated unit of type appropriate for the track type used. Furnish endless chain of sufficient length to come within 600mm of floor and furnish a wall mounted keeper. Design gear reduction unit to reduce pull required on the hand chain to 35 pounds maximum.

2.4 FABRICATION

.1 Verify dimensions of existing work before commencing fabrications and report discrepancies to Consultant.

.2 Fabricate work in accordance with Contract Drawings and reviewed shop drawings. Fabricate, fit and assemble work in shop where possible. Provide vision panels as shown on Shop Drawings.

.3 Fabricate work free from defects impairing function, appearance, strength and durability.

.4 Fabricate panel frames in a continuous box frame with vertical stiffeners at 600 mm centres.

.5 Fabricate doors from prepainted steel stock.

.6 Provide full view glazing panels to match Architectural Elevations.

2.5 **FINISHES**

.1 Prefinish sheet steel: 2 coat factory applied silicone modified polyester conforming to the following:
- .1 Colour: Smooth White.
- .2 Specular gloss: 30 units +/- 5 in accordance with ASTM D523.
- .3 Coating thickness: Not less than 25 micrometres.
- .4 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 as follows:
  - .1 Outdoor exposure period 1000 hours.
  - .2 Humidity resistance exposure period 1000 hours.

.2 Steel: Hot dip galvanized in accordance with CAN/CSA G164-M.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 **INSTALLATION**

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

.2 Use anchorage devices to securely fasten unit assembly to wall construction and building and building framing without distortion or stress.

.3 Fit and align assembly including hardware; level and plumb, to provide smooth operation. Install door to fit tight at all edges of jambs and heads of frames.

.4 Lubricate and adjust door operating components to ensure smooth opening and closing of doors.

.5 Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 92 00.

.6 Touch-up steel doors with primer where galvanized finish damaged during fabrication.

.7 Adjust weatherstripping to form a weathertight seal.

3.3 ERECTION TOLERANCES

.1 Maintain dimensional tolerances and alignment with adjacent work.

.2 Maximum variation and alignment from plumb: 1.5 mm.

.3 Maximum variation from level: 1.5 mm.

.4 Longitudinal or diagonal warp: Plus or minus 3 mm per 3 m straight edge.

3.4 FIELD QUALITY CONTROL

.1 Testing: Test operate door and demonstrate the operation of same to the satisfaction of the Consultant.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for finish hardware work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 BHMA, Builders Hardware Manufacturing Association.

.2 NFPA 80, Standard for Fire Doors and Other Opening Protectives.

1.3 **SUBMITTALS**

.1 Product data: Submit manufacturer's Product data in accordance with the Conditions of the Contract indicating compliance with reference standards, transportation, storage, handling and installation requirements.

.2 Shop Drawings:
- .1 Submit Shop Drawings and 3 complete hardware lists in accordance with the Conditions of the Contract indicating:
  - .1 Door locations, sizes, hardware manufacturer's catalogue numbers, finish symbols and quantities required.
  - .2 Locations and mounting heights of each type of hardware.
- .2 Supply templates and required information to door and frame manufacturer to enable accurate sizes, locations of cut-outs and reinforcement for hardware.
- .3 Submit templates to required trade to arrange for provisions for accurate setting and fitting of hardware.

.3 Samples:
- .1 Submit 2 samples in accordance with the Conditions of the Contract of each item that is different from hardware specified and include manufacturer's parts lists and installation instructions.
- .2 Submit hardware component samples illustrating style, colour and finish. Tag samples identifying applicable Specification article number, brand name and number, finish, building location, date and catalogue number.
- .3 Do not order hardware until samples have been accepted. Submit new samples to replace rejected samples. Supply hardware and finishes identical to each accepted sample.

.4 Closeout submittals:
- .1 Submit the following in accordance with the Conditions of the Contract for each Product for incorporation into Operation and Maintenance Manual:
  - .1 Maintenance data.
  - .2 Operating instructions and safety precautions.
  - .3 Parts list with name and address of supplier.
  - .4 Lubrication schedule and type of lubricant recommended.
  - .5 Keys, tools and special devices.
  - .6 Inspection procedures related to preventive maintenance.

1.4 **QUALITY ASSURANCE**

.1 General:
- .1 Manufacturers: Companies specializing in manufacturing door hardware and registered with BHMA.
- .2 Hardware supplier: Company specializing in supplying commercial door hardware and acceptable to manufacturer.

.2 Certifications:
- .1 Employ an Architectural Hardware Consultant to inspect completed installation and certify that hardware has been installed in accordance with manufacturer's printed instructions, Authorities having Jurisdiction and as specified.
- .2 Submit manufacturer's certificate that finish hardware and fire rated hardware meets specified requirements.

1.5 **DELIVERY, STORAGE, AND HANDLING**

.1 Be responsible for packaging of hardware, on a set by set basis. As material is received from various manufacturers identify it to correspond to Hardware List symbols.

.2 Label packages legibly, indicating manufacturer's number, types, sizes, opening number and Hardware List reference number. Wrap hardware and include in package, screws, bolts and fastening necessary for correct installation. If hardware package is not complete, pay additional charges incurred by installer.

.3 Deliver hardware to Site packaged, labelled and cross-referenced to hardware list for each item and its scheduled installation location.

.4 Accept Products of this Section on Site and ensure that each item is undamaged.

.5 Catalogue and store hardware in secure area.

2 Products

2.1 **GENERAL**

.1 Carefully check and verify Hardware List against Contract Drawings to ensure that hardware listed can be used as specified. Inform Consultant of concerns regarding quality, quantity, operation or function of hardware selected:
- .1 Verify hand of doors, examine details on Contract Drawings and at Site to ensure hardware supplied can be correctly installed and is correct for work as constructed.
- .2 Select hardware in accordance with applicable codes and regulations and to approval of local Fire Marshal.
- .3 Replace and pay for defective hardware including hardware which was incorrectly selected, and remedial and installation costs.

.2 Ensure that hardware selected will function correctly, meets Contract requirements and Ontario Building Code and authorities having jurisdiction.

.3 Ensure that each hardware item is of same type, design and by same manufacturer.

.4 Manufacturer's names or trade marks are not permitted on exposed surfaces of hardware.

.5 Include in packing slip a list of parts, name of supplier and door number in which lock is to be installed.

.6 Hardware for fire rated and labelled door and frame assemblies: ULC listed or as accepted by authorities having jurisdiction.

.7 Fire rated assemblies:
- .1 Hardware: Selected and installed in accordance with applicable codes and regulations, NFPA-80 and to approval of Ontario Fire Marshal.
- .2 Fire rated doors: ULC labelled hardware. Submit written certification of conformance to ULC requirements for each type of hardware prior to delivery.
- .3 Locksets and latchsets on fire rated doors: 19 mm throw minimum.

2.2 ACCESSORIES

.1 Items to be attached to masonry or concrete with expandable shields, lag screws, bolts or other fastening devices as required. Exposed screws: Stainless steel, Phillips or Robertson heads.

2.3 FINISHES

.1 Metal finishes: Free from defects, clean, unstained and of a uniform colour for each type of finish required. Exposed surfaces and anchors: Specified finish symbol of item.

3 Execution

3.1 EXAMINATION

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 INSTALLATION

.1 Install hardware in accordance with reviewed Shop Drawings, manufacturer's installation instructions, and applicable Codes and regulations.

.2 Install hardware in accordance with hardware templates.

.3 Adjust fixed and operable hardware for correct clearances and function.

.4 Mount hardware measured from finished floor to centre of hardware, unless indicated otherwise or required by Code:
- .1 Top hinge: 250 mm from head of door to top.
- .2 Bottom hinge: 265 mm from finished floor to bottom of hinge.

.3 Intermediate hinge: Equal distance between top and bottom hinge.
.4 Locksets, latchsets: 1000 mm.
.5 Panic device crossbar: 1000 mm.
.6 Push plates: 1100 mm to bottom of plates.
.7 Guard bars: 1100 mm.
.8 Door pulls: 1100 mm to bottom of pulls.
.9 Blank strike: 1450 mm.
.10 Blank fronts: 1450 mm.

.5 Include for supply and installation of wiring for electric strikes from electrical junction box to electric strike hardware.

.6 Locate door stops to contact doors 75 mm from latch edge.

.7 Install hardware and trim square and plumb to doors.

.8 Replace wrappings for hardware provided by manufacturer after installation.

.9 Safeguard keys to keep them out of unauthorized hands, tag them with door number, and deliver them to person designated by Consultant at building completion.

3.3 FIELD QUALITY CONTROL

.1 Have hardware inspected after installation by hardware supplier's representative, obtain certification in writing that hardware has been supplied and installed in accordance with Specifications and hardware manufacturer's instructions and is functioning correctly.

.2 Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements and Authorities having Jurisdiction.

.3 Test access control system and electrified hardware devices for proper operation. Verify electric door release hardware operates properly upon activation of fire alarm system.

3.4 ADJUSTING

.1 Verify under work of this Section, that installed hardware functions properly.

.2 Adjust hardware so that latches and locks operate smoothly and without binding, and closers act positively with the least possible resistance in use. Lubricate hardware if required by manufacturer's instructions.

.3 Adjust doors with self closing devices or automatic closing devices for proper operation after the HVAC system is balanced and adjusted. Verify spring power of non sized door closers is properly adjusted.

3.5 CLEANING

.1 Remove wrappings at completion of the Project and clean hardware in accordance with manufacturer's instructions.

3.6 HARDWARE GROUPS/SCHEDULE

.1 Hardware groups/schedule: Refer to hardware groups/schedule appended to this Section.

END OF SECTION

2090 Shirley Drive Kitchener Ontario N2B 0A3
Phone: (519) 578.1000 Toll Free: (800) 265.8959 Fax: (519) 578.3262

Schedule of Finish Hardware

ARCHITECT/DESIGNER: SALTER PILON ARCHITECTURE
151 FERRIS LANE, SUITE 400
BARRIE ON L4M 6C1
PHONE - 705-737-3530
FAX - 705-737-3539

CONTRACTOR:

PHONE -
FAX -

PROJECT: WCDSB - ST. DAVID CSS RENO
4 HIGH ST.
WATERLOO ON N2L 3X5
8072

PROJECT CONSULTANT: VISHAL KACHCHHI

PREPARED: March 27, 2026

REVISED: March 27, 2026 SUBMITTAL

Scan to check out our website

www.knells.ca

DOOR INDEX

Mark	Heading #	Mark	Heading #	Mark	Heading #
370	370				
371	371				
372	372				
373	373				
374	374				
375	375				
378	378				
379	379				
380	380				
381	381				
382	382				
383	383				
384	384				
403	403				
405	405				

Hardware Finishes

Finish	Description
26D	SATIN CHROMIUM PLATED
32D	SATIN STAINLESS STEEL, 300 SERIES
626	SATIN CHROMIUM
630	SATIN STAINLESS STEEL
689	POWDER COAT, ALUMINUM
ALUMINUM	ALUMINUM
C.A.	CLEAR ANODIZED
C26D	SATIN CHROMIUM
C32D	STAINLESS STEEL, SATIN
CL	CLEAR
PC	PRIME COAT
SP28	POWDER COAT ALUMINUM
US26D	SATIN CHROME, PLATED
US32D	SATIN STAINLESS STEEL

HARDWARE SCHEDULE - CODE # 8072

WCDSB - ST. DAVID CSS RENO

4 HIGH ST.

Heading # 370

1 SGL DOOR 370 EXTERIOR FROM EX. STAIR #2 — 90º RHR

950 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, HVY WT	MPB99 114MM X 114MM X NRP	32D	MCK
1	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	LD-8810J 950MMW X NO TRIM X 649	US32D	SAR
1	OVERHEAD STOP	904S	US32D	GLY
1	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
1	WEATHER STRIPPING	W-52S X 950MM X 2150MM	C.A.	KNC
1	DOOR SWEEP	W-38S X 950MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 950MM	ALUMINUM	KNC
1	MISCELLANEOUS	4040XP-18G.689	689	LCN

Heading # 371

1 SGL DOOR 371 EXTERIOR FROM EX. STAIR #2 — 90º LHR

950 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, HVY WT	MPB99 114MM X 114MM X NRP	32D	MCK
1	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	LD-8810J 950MMW X NO TRIM X 649	US32D	SAR
1	OVERHEAD STOP	904S	US32D	GLY
1	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
1	WEATHER STRIPPING	W-52S X 950MM X 2150MM	C.A.	KNC
1	DOOR SWEEP	W-38S X 950MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 950MM	ALUMINUM	KNC
1	MISCELLANEOUS	4040XP-18G.689	689	LCN

HARDWARE SCHEDULE - CODE # 8072

WCDSB - ST. DAVID CSS RENO

4 HIGH ST.

Heading # 372

1 SGL DOOR 372 EXTERIOR FROM EX. TRANSFORMER ROOM — 90º — LHR

950 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, HVY WT	MPB99 114MM X 114MM X NRP	32D	MCK
1	STOREROOM LOCK	175F X E7 X G3	US26D	MRK
1	CYLINDER	20J200V1-26-DQM (AB,F)	626	G&A
1	OVERHEAD STOP	904S	US32D	GLY
1	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
1	WEATHER STRIPPING	W-52S X 950MM X 2150MM	C.A.	KNC
1	DOOR SWEEP	W-38S X 950MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 950MM	ALUMINUM	KNC
1	MISCELLANEOUS	4040XP-18G.689	689	LCN
1	LATCH GUARD	LB6SSL 6 SS LATCH BLOCKER PLATE (13BL)	SS	ROA

Heading # 373

1 SGL DOOR 373 EXTERIOR FROM EX. CONSTRUCTION TECHNOLOGY — 90º — RHR

950 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, HVY WT	MPB99 114MM X 114MM X NRP	32D	MCK
1	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	16-8810J 950MMW X NO TRIM X 649 (DEVCYL-NONE)	US32D	SAR
1	CYLINDER	10J0200-26-DQM-Z20	626	G&A
1	PULL	GSH 1180-2 X #2	C32D	GAL
1	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
1	KICK PLATE	GSH 80A X 2-SIDED TAPE X 203MM X 910MM	C32D	GAL
1	WEATHER STRIPPING	W-52S X 950MM X 2150MM	C.A.	KNC
1	DOOR SWEEP	W-38S X 950MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 950MM	ALUMINUM	KNC

HARDWARE SCHEDULE - CODE # 8072

WCDSB - ST. DAVID CSS RENO

4 HIGH ST.

Heading # 374

1 SGL DOOR 374 EXTERIOR FROM EX. TRANSPORTATION TECHNOLOGY — 90º RHR

950 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, HVY WT	MPB99 114MM X 114MM X NRP	32D	MCK
1	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	16-8810J 950MMW X NO TRIM X 649 (DEVCYL-NONE)	US32D	SAR
1	CYLINDER	10J0200-26-DQM-Z20	626	G&A
1	PULL	GSH 1180-2 X #2	C32D	GAL
1	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
1	KICK PLATE	GSH 80A X 2-SIDED TAPE X 203MM X 910MM	C32D	GAL
1	WEATHER STRIPPING	W-52S X 950MM X 2150MM	C.A.	KNC
1	DOOR SWEEP	W-38S X 950MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 950MM	ALUMINUM	KNC

Heading # 375

1 PR DOORS 375 EXTERIOR FROM EX. STAIRS #5 — 90º RHR,LHR

900/900 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

6	HINGE, 4 1/2, STD WT	MPB91 114MM X 102MM X NRP	32D	MCK
1	MULLION	980S X 86	PC	SAR
2	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	16-8810J 950MMW X NO TRIM X 649 (DEVCYL-NONE)	US32D	SAR
2	CYLINDER	10J0200-26-DQM-Z20	626	G&A
1	ELECTRIC STRIKE	9600-12/24D-630	630	ES-CD
2	PULL	GSH 1180-2 X #2	C32D	GAL
2	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
2	KICK PLATE	GSH 80A X 2-SIDED TAPE X 203MM X 862MM	C32D	GAL
2	WEATHER STRIPPING	W-52S X 900MM X 2150MM	C.A.	KNC
2	DOOR SWEEP	W-38S X 900MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 1800MM	ALUMINUM	KNC

CARD READER BY SECURITY.

Heading # 378

1 OHD 378 EX. REFUSE — 90º

2000 x 2050 x 45 OHD Door/ SF Frame — NON-RTD Door/NON-RTD Frame

GARAGE DOOR HARDWARE BY DOOR SUPPLIER.

HARDWARE SCHEDULE - CODE # 8072

WCDSB - ST. DAVID CSS RENO

4 HIGH ST.

Heading # 379

1 PR DOORS 379 EXTERIOR FROM EX. STAIR #4 — 90º RHR,LHR

900/900 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

6	HINGE, 4 1/2, STD WT	MPB91 114MM X 102MM X NRP	32D	MCK
1	MULLION	980S X 86	PC	SAR
2	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	16-8810J 950MMW X NO TRIM X 649 (DEVCYL-NONE)	US32D	SAR
2	CYLINDER	10J0200-26-DQM-Z20	626	G&A
1	ELECTRIC STRIKE	9600-12/24D-630	630	ES-CD
2	PULL	GSH 1180-2 X #2	C32D	GAL
2	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
2	KICK PLATE	GSH 80A X 2-SIDED TAPE X 203MM X 862MM	C32D	GAL
2	WEATHER STRIPPING	W-52S X 900MM X 2150MM	C.A.	KNC
2	DOOR SWEEP	W-38S X 900MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 1800MM	ALUMINUM	KNC

CARD READER BY SECURITY.

Heading # 380

1 PR DOORS 380 EXTERIOR FROM EX. STAIR #3 — 90º RHR,LHR

900/900 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

6	HINGE, 4 1/2, STD WT	MPB91 114MM X 102MM X NRP	32D	MCK
1	MULLION	980S X 86	PC	SAR
2	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	16-8810J 950MMW X NO TRIM X 649 (DEVCYL-NONE)	US32D	SAR
2	CYLINDER	10J0200-26-DQM-Z20	626	G&A
2	PULL	GSH 1180-2 X #2	C32D	GAL
2	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
2	KICK PLATE	GSH 80A X 2-SIDED TAPE X 203MM X 862MM	C32D	GAL
2	WEATHER STRIPPING	W-52S X 900MM X 2150MM	C.A.	KNC
2	DOOR SWEEP	W-38S X 900MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 1800MM	ALUMINUM	KNC

HARDWARE SCHEDULE - CODE # 8072

WCDSB - ST. DAVID CSS RENO

4 HIGH ST.

Heading # 381

1 SGL DOOR 381 EXTERIOR FROM EX. STORAGE — 90º — LHR

950 x 2150 x 45 HMDI Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, HVY WT	MPB99 114MM X 114MM X NRP	32D	MCK
1	STOREROOM LOCK	175F X E7 X G3	US26D	MRK
1	CYLINDER	20J200V1-26-DQM (AB,F)	626	G&A
1	OVERHEAD STOP	904S	US32D	GLY
1	CLOSER, PARALLEL ARM	4040XP.SCUSH.689.SRT	689	LCN
1	WEATHER STRIPPING	W-52S X 950MM X 2150MM	C.A.	KNC
1	DOOR SWEEP	W-38S X 950MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 950MM	ALUMINUM	KNC
1	MISCELLANEOUS	4040XP-18G.689	689	LCN
1	LATCH GUARD	LB6SSL 6 SS LATCH BLOCKER PLATE (13BL)	SS	ROA

Heading # 382

1 SGL DOOR 382 GEN. OFFICE CORRIDOR TO CONFERENCE ROOM — 90º — RH

900 x 2150 x 45 WD Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, STD WT	MPB79 114MM X 102MM	26D	MCK
1	ENTRY LOCK	175AB X E7 X G3	US26D	MRK
1	CYLINDER	20J200V1-26-DQM (AB,F)	626	G&A
1	KICK PLATE	GSH 80A X 2-SIDED TAPE X 203MM X 862MM	C32D	GAL
1	WALL STOP	GSH 240	C26D	GAL

Heading # 383

1 PR DOORS 383 EXTERIOR FROM EX. STAIR #16 — 90º — RHR,LHR

900/900 x 2136 x 57 ALD Door/ ALF Frame — NON-RTD Door/NON-RTD Frame

2	CONTINUOUS HINGE	SL26 CL LL X 2128MM X SDTF	CL	SEL
2	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	31-16-8810J 950 W X NO TRIM X 649 X 2-1/4 DR THICKNESS (DEVCYL-NONE)	US32D	SAR
2	CYLINDER	10J0200-26-DQM-Z20	26	G&A
2	PULL	GSH 1180-2 X #2	C32D	GAL
2	OVERHEAD STOP	104S	SP28	GLY
2	CLOSER	4040XP.RWPA.689.SRT	689	LCN
2	DOOR SWEEP	W-38S X 900MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 1800MM	ALUMINUM	KNC
2	DROP PLATE	4040XP-18G.689	689	LCN

INTEGRAL WEATHERSTRIP BY ALUMINUM SUPPLIER.

HARDWARE SCHEDULE - CODE # 8072

WCDSB - ST. DAVID CSS RENO

4 HIGH ST.

Heading # 384

1 PR DOORS 384 EXTERIOR FROM EX. STAIR #13 — 90º RHR,LHR

900/900 x 2136 x 57 ALD Door/ ALF Frame — NON-RTD Door/NON-RTD Frame

2	CONTINUOUS HINGE	SL26 CL LL X 2128MM X SDTF	CL	SEL
2	RIM EXIT DEVICE EXIT ONLY OR DUMMY TRIM	31-16-8810J 950 W X NO TRIM X 649 X 2-1/4 DR THICKNESS (DEVCYL-NONE)	US32D	SAR
2	CYLINDER	10J0200-26-DQM-Z20	26	G&A
2	PULL	GSH 1180-2 X #2	C32D	GAL
2	OVERHEAD STOP	104S	SP28	GLY
2	CLOSER	4040XP.RWPA.689.SRT	689	LCN
2	DOOR SWEEP	W-38S X 900MMW	C.A.	KNC
1	THRESHOLD	CT-75 X 1800MM	ALUMINUM	KNC
2	DROP PLATE	4040XP-18G.689	689	LCN

INTEGRAL WEATHERSTRIP BY ALUMINUM SUPPLIER.

Heading # 403

1 OHD 403 EX. RECEIVING — 90º

2000 x 2150 x 45 OHD Door/ SF Frame — NON-RTD Door/NON-RTD Frame

GARAGE DOOR HARDWARE BY DOOR SUPPLIER.

Heading # 405

1 SGL DOOR 405 GEN. OFFICE CORRIDOR TO NEW OFFICE — 90º LH

900 x 2150 x 45 WD Door/ HMF Frame — NON-RTD Door/NON-RTD Frame

3	HINGE, 4 1/2, STD WT	MPB79 114MM X 102MM	26D	MCK
1	ENTRY LOCK	175AB X E7 X G3	US26D	MRK
1	CYLINDER	20J200V1-26-DQM (AB,F)	626	G&A
1	KICK PLATE	GSH 80A X 2-SIDED TAPE X 203MM X 862MM	C32D	GAL
1	WALL STOP	GSH 240	C26D	GAL

---

1 General

1.1 **SECTION INCLUDES**

.1 Design, labour, Products, equipment, tools, and services necessary for glass and glazing Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM D2240, Test Method for Rubber Property - Durometer Hardness.

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

.3 CAN/CGSB-12.8, Insulating Glass Units.

.4 Glass Association of North America (GANA) Glazing Manual.

1.3 **DESIGN REQUIREMENTS**

.1 Glass Design:
- .1 Design glass using a probability of breakage of 8 lites per 1000 at the first application of design load.
- .2 Perform stress analysis. Design units to accommodate live, dead, lateral, wind, seismic, handling, transportation, and erection loads.
- .3 Perform a thermal stress analysis on each glass unit with Low-E coating and provide heat strengthening and/or tempered units as necessary to prevent thermal breakage.
- .4 Perform a thermal stress analysis on each insulating thermal unit and provide heat strengthening and/or tempered units as necessary to prevent thermal breakage.
- .5 Where required, design glazing units so as not to allow thermal stress fracture due to heat build-up behind insulating units.

.2 Limit glass deflection to flexural limit of glass with full recovery of glazing materials.

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

1.4 **SUBMITTALS**

.1 Shop drawings:
- .1 Submit shop drawings in accordance with the Conditions of the Contract indicating as a minimum:
  - .1 Fabrication and erection of glazing elements indicating materials, thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
  - .2 To sealant manufacturer for their review and approval of tensile bead contact/bite dimension and thickness.

.2 Samples:
- .1 Submit following samples in accordance with the Conditions of the Contract.

.2 Submit one sample of each type of glass.
.1 300 x 300 mm of each type of insulating glass unit, complete with each different Low-E coating.

.3 Certificates: Submit manufacturer's certification that glass and glazing materials are compatible.

.3 Reports:
.1 Submit compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed for adhesion.
.2 Compatibility test report from manufacturer of insulating glass edge sealant, indicating that glass edge sealants were tested for compatibility with other glazing materials including sealants, setting blocks, edge blocks and any other material that contacts or can affect the edge seal.

.4 IGMA Compliance Audit: Submit in accordance with the Conditions of the Contract, a written certification of successful completion of a Compliance Audit within the last six months.

1.5 QUALITY ASSURANCE

.1 Insulating glass unit fabricators shall be a certified member of the Insulating Glass Manufacturer's Alliance (IGMA). IGMA members must participate in the certification program and shall have successfully passed a Compliance Audit within the last six months.

.2 Installers qualifications: Perform Work of this Section by a company that has a minimum of five years proven experience in the installation of glazing units of a similar size and nature.

1.6 SITE CONDITIONS

.1 Glaze with compounds, sealants, or tapes only when glazing surfaces are at temperatures over 4°C, and when positive that no moisture is accumulating on them from rain, mist, or condensation.

.2 When temperature of glazing surfaces is below 4°C, obtain from Consultant approval of glazing methods and protective measures which will be used during glazing operations.

1.7 **EXTENDED WARRANTY**

.1 Glazing:
.1 Provide a 10 year warranty, commencing from date of Substantial Performance, against defects in the insulating glass units and warrant them to be free from material obstruction of vision as a result of dust or film formation on the internal glass surfaces by any cause, under normal design conditions. Warrant the following:
.1 The insulating glass units shall be free from condensation, fogging material obstruction of vision as a result of dust or film formation on the internal glass surfaces by any cause under design conditions.
.2 The insulating glass units shall not change their mechanical design properties and shall not in any way deteriorate, degrade, delaminate or change their visual appearance.
.3 The glass units will not break due to thermal shock and temperature differential due to inherent glass faults, other than extrinsic glass breakage.
.4 Internal fogging shall be deemed to occur when light transmission of the glass is reduced by 5% ina any 50 mm x 50 mm area.
.5 Failure will be deemed to occur when the internal dew point exceeds -40oC in a 21oC ambient temperature (when tested in accordance with ASTM E576).
.2 Warrant that glazing work is water and weather tight and free from distortion; that glazing materials will not deteriorate from exposure to the atmosphere and weather, will not be displaced, and will be free from permanent deformation under load; and that glass and insulating glass units will not be broken, cracked or scratched by causes resulting from defects in material, workmanship or design of glazing installation.
.3 Cracked or scratched glass, shrinking, cracking, staining, hardening, sagging of glazing materials; loosening or rattling of glass; and leaking of glazed joints will be considered defective work.
.4 Warranty shall provide for the removal of defective Products, replacement with new Products conforming to the specifications, and restoration of work damaged by removal and replacement including labour and installation costs.

2 Products

2.1 **ACCEPTABLE MANUFACTURERS**

.1 Glass manufacturers:
.1 AGC Flat Glass.
.2 Cardinal Glass Industries.
.3 Guardian Industries.
.4 PPG Industries Ltd.
.5 Viracon Inc.

2.2 **MATERIALS**

.1 All materials under Work of this Section, including but not limited to, primers, coatings, sealers, sealants, adhesives and cleaners are to have low VOC content limits.

.2 Tempered glass **(TGL)**: CAN/CGSB-12.1-M, Type 2, Class B, Category II, clear, minimum 6 mm thick.

.3 Insulating glass units: To CAN/CGSB-12.8-M and IGMA requirements utilizing approved non-metallic PVC or Fibreglass edge spacer in black. Dual seal with a PIB primary seal and silicone secondary seal.

.4 Argon gas: 90% argon and 10% air mixture. Argon gas to be used to fill air space at all insulated glass units.

.5 Low-E coating: High performance sputtered low-E coating. Provide insulating glass units with low-E coating edge deletion and low-E coating. Apply low-E coating to second surface unless otherwise indicated. 'Solarban 90' clear by PPG Industries Inc.

.6 Glazing and film types:
.1 GL-1: 6 mm clear TGL exterior lite with low-E coating, argon filled air space, 6 mm clear TGL interior lite. Standard throughout unless noted otherwise. 25 mm overall thickness.

.7 Glazing and rebate primers, sealants, sealers, and cleaners: Compatible with each other. Type as recommended by glass manufacturer.

.8 Glazing sealant: Silicone sealant as recommended by glazing manufacturer. Verify compatibility with insulating glass unit secondary sealant.

.9 Heel & toe bead: Silicone sealant as recommended by glazing manufacturer.

.10 Glazing gasket: 'Visionstrip' by Tremco Ltd., extruded composite glazing seal, size as recommended by manufacturer.

.11 Glazing tape: 'Polyshim II' glazing tape EPDM shim.

.12 Glazing splines: EPDM or neoprene, extruded shape to suit glazing channel retaining slot, colour as selected.

.13 Setting blocks (regular): EPDM, 80 - 90 Shore A durometer hardness to ASTM D2240, sized to suit glazing method, glass unit weight and area.

.14 Edge blocks: EPDM, 60-70 Shore A Durometer hardness, sized with 3 mm clearance from glass edge and spanning glass thickness(es). Capable of withstanding weight of glass unit, self adhesive on face.

.15 Glass presence markers: Easily removable, non-residue depositing.

.16 Screws, bolts and fasteners: Type 304 stainless steel.

2.3 FABRICATION

.1 Verify glazing dimensions on Site.

.2 Clearly label each glass lite with maker's name and glass type. Ensure labels are easily removable, non-residue depositing type. Do not remove labels until after Work is accepted by Consultant.

.3 Fabricate glazing not less than 3 mm smaller than rebate size in either dimension; allow for edge spacers, shims, and setting blocks as necessary.

.4 Work shall have smooth finished surfaces free from distortion and defects detrimental to appearance and performance.

.5 Carefully make and fit details. Take special care with exposed finished Work to produce a neat and correct appearance to the Consultant's acceptance.

.6 Fabricate argon filled thermal units with air space filled minimum 90% with argon gas.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

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

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

3.2 **PREPARATION**

.1 Clean contact surfaces with solvent and wipe dry.

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

.3 Prime surfaces scheduled to receive sealant.

3.3 **INSTALLATION**

.1 Provide glazing in accordance with IGMA recommendations. Provide continuous contact between glazing tapes and gasket to the glazing.

.2 Install glazing to the Work of Section 08 11 13.

.3 Provide neat, straight sight lines. Trim excess glazing material flush with top of stops and fixed leg of frames.

.4 Remove protective coatings, glazing stops, clean rebate and glass contact surfaces with solvent, wipe dry.

.5 Apply primer/sealer to contact surfaces, prior to glazing.

.6 Apply glazing tape as per manufacturer's instructions including recommended corner sealant.

.7 Use setting blocks at 1/4 points and spacers to centre glass unit in frame.

.8 Install glazing in accordance with reviewed shop drawings and manufacturer's written instructions. Install glazing with full contact and adhesion at perimeter. Maintain edge clearance recommended by glass manufacturer.

.9 Apply a continuous heel bead of sealant around perimeter of inboard lite of the sealed unit and the metal framing.

.10 Re-install glazing stops ensuring continuous contact and rattle-free installation. Do not distort glass. Trim tape protruding more than 2 mm above stop.

.11 Install glazing gasket in accordance with manufacturer's recommendations.

.12 Do not cut or abrade tempered, heat treated, or coated glass.

.13 Install glass presence markers in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

.14 Remove, dispose of, and replace broken, cut, abraded glass, and defective glass including but not limited to production dimples, 'tiger-stripping', chips, cracks, etc.

.15 Exterior glass: Glaze units with gasket on exterior side and glazing tape on interior side. Seal gap between glazing and stop with sealant to depth equal to bite of frame. Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.4 CLEANING

.1 Immediately remove sealant and compound droppings from finished surfaces.

.2 Remove labels, protective material, and glass presence markers from prefinished surfaces.

.3 Clean glass surfaces with cleaning agents and methods in accordance with Manufacturer's written instructions.

END OF SECTION

Issued For Addendum #1, April 16, 2026

1. GENERAL NOTES:

1. Read Room Finish & Colour Schedule in conjunction with full specifications and drawings.

2. It is the sub trades' responsibility to review the Room Finish & Colour Schedule and bring to the attention of the consultant any discrepancies, errors or inconsistencies. Those proceeding with work are responsible to correct mistakes.

3. Where specified products have more than one approved manufacturer, colour selections are indicated for each manufacturer. No alternates will be allowed where finishes are single sourced.

4. Provide paint finish on all exposed interior surfaces and components as described in specification section 09 91 00 – Painting. This includes architectural, structural, mechanical and some electrical components. Exposed deck and structure throughout to be painted PT-3 including all mechanical/electrical exposed conduit, ducts, piping and sprinkler piping. All exposed ceiling services must be painted out.

5. Grout to match existing. Tile pattern as indicated on drawings.

6. All interior Hollow Metal doors, frames and screens in Corridors to be painted PT-2. All exterior HM doors and frames to be painted to match existing.

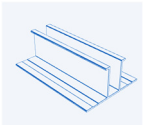
7. Where flooring has a direction/ pattern the subtrade must confirm Consultants intent prior to installing. Those proceeding without written confirmation will be responsible to correct mistakes. All flooring to be feathered to meet flush with adjacent finishes.

8. All flooring to be feathered up to meet flush with adjacent flooring surfaces.

1. ABBREVIATIONS:

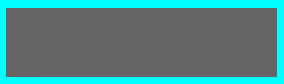
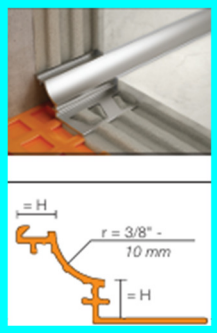
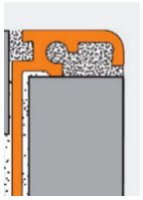
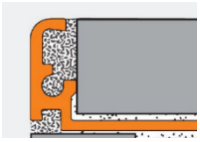
*	REFER TO REMARKS COLUMN
AL or ALUM	ALUMINUM
A.BLK	ARCHITECTURAL BLOCK
ACT	ACOUSTIC CEILING TILE
BFPB	BARRIER FREE PUSH BUTTON
BH	BREAKAWAY HOOKS
BL or BLK	BLOCK
BKHD	BULKHEAD
BN	BULLNOSE
BR	BRICK
CC	COVE CAP
CL or CLR	CLEAR (NO FINISH)
CONC	CONCRETE
CPT	CARPET TILE
CT	CERAMIC TILE
CW	CURTAIN WALL
EP	EPOXY PAINT
EPC	EXPOSED PRECAST CONCRETE
ES	EXPOSED STRUCTURE
EX or EXIST	EXISTING
EXP	EXPOSED
FEC	FIRE EXTINGUISHER CABINET
FF	FACTORY FINISH
GL	GLAZING
GWB	GYPSUM WALL BOARD
HM	HOLLOW METAL
HT	HEIGHT
LVT	LUXURY VINYL TILE
OWSJ	OPEN WEB STEEL JOIST
PT	PAINT
PL or PLAM	PLASTIC LAMINATE
RB	RESILIENT BASE
RSF	RESILIENT SHEET FLOORING
STN	STAIN
W/	WITH
WD	WOOD

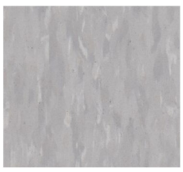
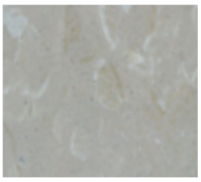
2. FINISHES SELECTION

06 20 00 Finish Carpentry			
Code	Material	Remarks	Image
PL-1 (Countertop)	Supplier: Formica Product: High Pressure Laminate Colour: Citadel Warp 5882-58 Finish: Matte		
	OR		
	Supplier: Wilsonart Product: High Pressure Laminate Colour: French Linen 5016-38 Finish: Velvet		
	OR		
	Supplier: Arborite Product: High Pressure Laminate Colour: Chambray Ombre P414-CA Finish: Cashmere		
WD-1 (Wood Cap @ Lower Library Curb including End Cap to Stair and Ramp Curb)	Hardwood Maple (Solid)	1.Post-catalyzed Lacquer Finish -STN-1	
WD-2 (Library Reading Pit Walls)	Wood Veneer ½" White Maple Rotary Cut Architectural Grade A1 Hardwood Veneer A4 Core Plywood Finish: Post-Catalyzed Lacquer Finish. Effect: Open Pore Sheen: Flat 10° Note: Flitch to be one flitch for the entire project. Flitch sample to be submitted and approved by Interior Design Consultant prior to close of tender.	1.Post-catalyzed Lacquer Finish-STN-1	
MT - 1	Millwork Trim – Fry Reglet Product: MWC5050 Millwork Reveal W/Return Keys Finish: Clear Anodized Material: Aluminum Width: To Suit Material		

WD-3 (Millwork)	Wood Veneer Birch hardwood veneer c/w solid Birch edging	1.Post-catalyzed Lacquer Finish -STN-1	

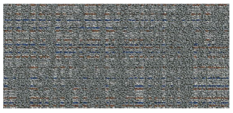
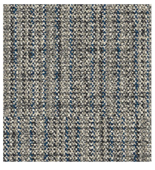
09 30 00 Tiling			
Code	Material	Remarks	Image
T-1	Supplier: Centura Product: Glocal Collection Size: 300mm x 600mm Colour: Ideal Finish: Matte	1. Grout Colour: Kiesel Servoperl Royale Manhatten 2.Tile to be Installed in a **stack pattern** 3.Tile and adjacent flooring to be flush.	
	Supplier: Stone Tile Product: Kursaal Collection Size: 300mm x 600mm Colour: Neutral Finish: Matte	1. Grout Colour: Kiesel Servoperl Royale Universal Grey 2.Tile to be Installed in a **stack pattern** 3.Tile and adjacent flooring to be flush.	
	OR		
	Supplier: Revigres Tile Distributed by Holten Impex Product: Cityzen Collection Size: 300mm x 600mm Colour: Cityzen Gris Finish: Matte Rectified	1. Grout Colour: Kiesel Servoperl Royale Stone Grey 2.Tile to be Installed in a **stack pattern** 3.Tile and adjacent flooring to be flush.	
TB-1 (Base Tile Where T-1 is Indicated)	Supplier: Centura Product: Glocal Collection Colour: Ideal Size: 100mm x 300mm (Cut To Suit) Finish: Matte	1. Grout Colour: Kiesel Servoperl Royale Middle Grey 2. DM-1/DM-2	
	OR		
	Supplier: Stone Tile Product: Kursaal Collection Size: 300mm x 600mm Colour: Rust Finish: Matte	1. Grout Colour: Kiesel Servoperl Royale Middle Grey 2. DM-1/DM-2	
	OR		

	Supplier: Revigres Tile Distributed by Holten Impex Product: Cityzen Collection Size: 300mm x 600mm Colour: Cityzen Gris Finish: Matte Rectified	1. Grout Colour: Kiesel Servoperl Royale Stone Grey 2. DM-1/DM-2	
~~**WT-1**~~ **Issued For Addendum #1 , April 16, 2026**	~~Supplier: Centura~~ ~~Product: Rainbow Collection Wall Tile~~ ~~Colour: Fog~~ ~~Size: 100mm x 400mm~~ ~~Finish: Glossy~~	~~1. Grout Colour: Kiesel Servoperl Royale TBD~~	
~~**DM-1**~~ ~~(Cove Between Floor and Wall Tile)~~ **Issued For Addendum #1 , April 16, 2026**	~~Supplier: Schluter Systems~~ ~~Product: DILEX-AHK~~ ~~Colour: Satin Anodized Aluminum (AE)~~ ~~Size: To Suit Material~~ ~~Finish: Satin Anodized~~	~~1.DM-1 cove to be used between floor and wall junctions~~	
DM-2 (Tile Base Cap and Tile Edge Protection)	Supplier: Schluter Systems Product: Scheine Colour: Aluminum Size: To Suit Material Finish: Satin Anodized	1.DM-1 to be used as an end cap to all exposed edges of porcelain tile base 2.DM-1 to be used as a tile edge protection between Tile and VCT junctions, and Tile and CPT-1	 

09 65 00/09 65 16/09 65 19 Resilient Flooring, Resilient Base and Accessories and Resilient Tile Flooring			
	Material	Remarks	Image
VCT-1	Supplier: Armstrong Product: Standard Excelon Imperial Texture Colour: 51861 Soft Warm Gray Size: 305mm x 305mm Thickness: 3.2mm	1.Project to be from one Dye Lot. 2. Floor to be feathered up to meet flush with tile	
	OR		
	Supplier: Tarkett Product: VCT II Colour: 557 Shooting Star Size: 305mm x 305mm Thickness: 3.2mm	1. Project to be from one Dye Lot. 2. Floor to be feathered up to meet flush with tile	
	OR		
	Approved Equal		
RB-1 (To be used with VCT-1)	Supplier: Johnsonite Product: Baseworks Thermoset Rubber Wall Base With Toe 4”H x 0.125” Thick Colour: 40 Black		
	OR		
	Supplier: Roppe Product: 700 Series Wall base With Toe 4”H x 0.125” Thick Colour: 100 Black		
	OR		
	Approved Equal		
RB-2 (To be used with CPT-1)	Supplier: Johnsonite Product: Baseworks Thermoset Rubber Wall Base Toeless 4”H x 0.125” Thick Colour: TB1 Peppercorn		
	OR		

	Supplier: Roppe Product: 700 Series Wall base Toeless 4”H x 0.125” Thick Colour: 193 Black Brown		
	OR		
	Approved Equal		
RB-3 (To be used in Lower Library and around Upper Library Curb where WD-2 is used)	Supplier: Johnsonite Product: Mascarade Rubber Wall Base Style: Exhibit 108mm”H x 6.35mm” Thick Colour: MW3 FS Midline		
	OR		
	Approved Equal		
Rubber Stringers (Lower Library Stairs as Noted)	Supplier: Johnsonite/Tarkett Product: Rubber Stringer Solid Colour Colour: Stair C to be 32 Pebble. Colour TBC Size: 10” X 6’		
	OR		
	Approved Equal		
RT-1	Supplier: Johnsonite/Tarkett Product: Angle Fit Rubber Stair Treads with Integrated Riser For the Visually Impaired and Risers Raised Round Profile with Solid Rubber Insert in 40 Black Colour: 32 Pebble	1. Stair Tread Nosing and Rubber Tile on Landings to match	
	OR		

	Supplier: Roppe Product: #92 Low Profile Raised Circular Design Rubber Stair Treads with Integrated Riser For the Visually Impaired and Risers Raised Round Profile with Solid Rubber Insert in KK Black Colour: 178 Pewter	1. Stair Tread Nosing and Rubber Tile on Landings to match	
	OR		
	Supplier: Nora by Interface Product: norament round stairtread with visually impaired insert. Colour: 0882 Platinum Grey Smooth VI 0597 Black Insert	1. Stair Tread Nosing and Rubber Tile on Landings to match	
RTI-1 Resilient Tactile Indicator (Stairs with RT-1 as Noted)	Supplier: Johnsonite/Tarkett Product: Tactile Warning Surface - Rubber Colour: 40 Black		
	OR		
	Supplier: Eon Tile Product: Tactile Attention Indicator with Truncated Domes Colour: Vogue Black Size: 305 mm x 305 mm Thickness: To Suit Material		
	OR		
	Approved Equal		

09 68 00 Tile Carpeting			
Code	Material	Remarks	Image
CPT-1 (As Noted)	Supplier: Mannington Timestamp Collection Product: Polarized Colour: 13821 Bokeh Size: 304mm X 600 modular tile Installation Pattern: Vertical Ashlar		
	Supplier: Interface Product: Crafted Connections Collection Thread Lightly Colour: 108552 Mica/Ocean Size: 500mm 500 mm modular tile Installation Pattern: Monolithic		
	OR		
	Approved Equal		

06 91 00 Painting			
Code	Material	Remarks	Image
PT-1 (Main Paint Colour)	Supplier: Benjamin Moore Product: Latex Acrylic Colour: To match existing Finish: Eggshell	1.Benjamin Moore Interior Paint Colours Given for Reference. 2.Colour to match existing	
PT-2 (Hollow Metal Doors & Frames,)	Supplier: Benjamin Moore Product: Latex Acrylic Colour: To Match Existing Finish: Semi-Gloss	1.Benjamin Moore Interior Paint Colours Given for Reference. 2.Colour to match existing	
PT-3 (Ceilings & Bulkheads)	Supplier: Benjamin Moore Product: Latex Acrylic Colour: OC-65 Chantilly Lace Finish: Flat	1.Benjamin Moore Interior Paint Colours Given for Reference.	
STN-1 (All Millwork)	Supplier-M. L. Campbell Krystal Product: Post-Catalyzed Lacquer Colour: Clear Finish: Satin	1**.** M.L. Campbell Krystal product given to prevent yellowing of wood**.**	

10 21 13 Toilet Compartments			
Code	Material	Remarks	Image
TP-1 (Washrooms)	Supplier: Bobrick Product: DuraLine Series 3182G.67P Floor Mounted, Overhead Braced Extended System 25mm Off Floor for Toilet Partitions and Urinals Door & Panel Height: 1855mm to 2438mm Gap Free Doors and Stiles Heavy Duty Full Height Stainless Steel Brackets Class A Compact Laminate Colour: Citadel Warp 5882-58		
	OR		

	Approved Equal

4. SCHEDULE:
.1 See schedule on drawing.

1 General

1.1 **SECTION INCLUDES**

.1 Design, labour, Products, equipment and services necessary for gypsum board Work.

1.2 **REFERENCES**

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

.2 ASTM C475, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.3 ASTM C645, Specification for Nonstructural Steel Framing Members.

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

.5 ASTM C754, Specification for Steel Framing Members to Receive Screw-Attached Gypsum Board.

.6 ASTM C834, Standard Specification for Latex Sealants.

.7 ASTM C840, Specification for Application and Finishing of Gypsum Board.

.8 ASTM C1002, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

.9 ASTM C1178, Specification for Glass Mat Water-Resistant Gypsum Backing Board.

.10 ASTM C1278, Specification for Fiber-Reinforced Gypsum Panel.

.11 ASTM C1396, Specification for Gypsum Board.

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

1.3 **DESIGN REQUIREMENTS**

.1 Design gypsum board wall and ceiling systems with a maximum deflection of l/360.

.2 Design ceiling suspension system in accordance with manufacturer's printed directions and ASTM C754.

.3 Design ceiling system for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.

.4 Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.

.5 Design suspension system to support weight of mechanical and electrical items such as air handling boots and lighting fixtures, and with adequate support to allow rotation/relocation of light fixtures.

.6 Design subframing as necessary to accommodate, and to circumvent, conflicts and interferences where ducts or other equipment prevent the regular spacing of hangers.

.7 Design of wall assemblies with a height greater than 3000 mm incorporating non-standard gypsum board assemblies including, but not limited to, assemblies incorporating abuse resistant gypsum board and large format tile applications.

1.4 REGULATORY REQUIREMENTS

1. Provide fire separations and fire protection exactly as specified in test design specification that validates the specified rating. Verify that work specified in other Sections, as a part of the entire assembly, meets applicable validating test design specification.

1.5 SUBMITTALS

.1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, and limitations.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
- .1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
  - .1 Wall assemblies, suspension systems, adjacent construction, elevations, sections and details, dimensions, thickness, finishes and relationship to adjacent construction.
  - .2 Framing and blocking for items being supported of wall systems.
  - .3 Fire rated designs.

.3 Certifications: Submit written certification stating that suspended ceiling system is designed for adequate support of electrical fixtures as required by the current bulletin of the Electrical Safety Authority.

1.6 QUALITY ASSURANCE

.1 Qualifications: Execute the Work of this Section by skilled, qualified, and experienced workers trained in the installation of the Work of this Section.

.2 Retain a Professional Engineer, licensed in Province of Ontario, with experience in Work of comparable complexity and scope, to perform following services as part of Work of this Section:
- .1 Design of wall systems with height greater than 3000 mm and at non-standard gypsum board assemblies including, but not limited to, assemblies incorporating abuse resistant gypsum board and large format tile applications.

.2 Design of suspended gypsum board assemblies.
.3 Review, stamp, and sign Shop Drawings and design calculations.
.4 Conduct shop and on-site inspections, prepare and submit written inspection reports verifying that this part of Work is in accordance with Contract Documents and reviewed Shop Drawings.

1.7 **SITE CONDITIONS**

.1 Do not begin Work of this Section until:
.1 Mechanical and electrical Work above the ceiling is complete.
.2 Substrate and ambient temperature is above 15°C.
.3 Relative humidity is below 80 %.
.4 Ventilation is adequate to remove excess moisture.

.2 Install temporary protection and facilities to maintain Product manufacturer's, and above specification, environmental requirements 24 h before, during, and 24 h after installation.

2 Products

2.1 **MATERIALS**

.1 General: All materials under Work of this Section, including but not limited to, sealants, adhesives, and primers are to have low VOC content limits.

.2 Steel framing: ASTM C754; ASTM A653/A653-M, Z275; cold rolled, galvanized steel sheet.
.1 Bailey Metal Products Limited
.2 Corus Metal Profiles

.3 Steel studs and track runners: ASTM C645; Galvanized steel studs and runners, 32 mm wide x depth as indicated on Contract Drawings. Formed from galvanized steel sheet, thicknesses as follows:
.1 Studs less than 3000 mm: Minimum 0.53 mm (25 ga.).
.2 Studs greater than 3000 mm and non-standard assemblies: Minimum 0.91 mm (20 ga.), unless stud thickness of greater thickness is required to accommodate intended loading, spans, or conditions.
.3 Track runners and ancillary components to match stud thickness.

.4 Main carrying channels: ASTM C645; Formed from galvanized steel sheet, 38 x 19 mm cold rolled, channels.

.5 Resilient channel: ASTM C645; 0.5 mm thick galvanized metal, 57 mm wide x 12 mm deep for walls and ceiling to reduce sound transmission.

.6 Furring channels: ASTM C645; Formed from galvanized steel sheet, 22 mm winged flange type, cold rolled.

.7 Furring channels (hat type): ASTM C645; 0.5 mm base steel thickness, galvanized. 70 mm wide x 22 mm deep hat shaped channel.

.8 Heavy duty furring channels: ASTM C645; 0.9 mm steel thickness, galvanized hat shaped channel with a wider and deeper size as required by manufacturers.

.9 Hanger wires: 4.1 mm minimum diameter galvanized pencil rod.

.10 Tie wire: 1.6 mm thick minimum diameter, soft annealed, galvanized steel wire.

.11 Corner bead, casing bead, and special shapes: Formed from 0.6 mm thick minimum, galvanized steel sheet, designed to be concealed by joint compound.

.12 Control joint strip: Roll formed from galvanized steel sheet, with a tape protected recess, 6 mm wide x 11 mm deep.

.13 Screw fasteners: ASTM C1002 Type S; Corrosion resistant.

.14 Concrete anchors: tie wire sleeve anchors, 'Redi-Drive Anchors' by ITW Red Head or approved alternative.

.15 Acoustic/Fire insulation: ASTM C665, Paperless, semi-rigid, spun stone wool fibre mats, of thickness as indicated on Contract Drawings, 'MinWool SAFB' by Johns Manville, 'SAFB Thermafiber' by Owens Corning Inc. or 'Rockwool AFB' by Rockwool.

.16 Sealants:

.1 Acoustic sealant (non-rated): Non-hardening acoustic sealant for use at non-rated assemblies, ASTM C834; Acrylic, mould resistant sealant, paintable. 'Smoke and Acoustic Sealant CP506' by Hilti or approved alternative by Sika or Tremco.

.2 Sealant (fire-rated): Non-hardening sealant for use at fire-rated assemblies: ASTM E84; Acrylic based firestop sealant, colour: red or white as selected by Consultant. 'Flexible Firestop Sealant CP606' by Hilti or approved alternative by Sika or Tremco.

.3 Standard sealants: In accordance with Section 07 92 00.

.17 Gypsum board: ASTM C1396; gypsum board 12.7 mm thick of maximum practical lengths to minimize end joints, unless indicated otherwise. Furnish Board by Certainteed Gypsum Canada, CGC Inc., or Georgia-Pacific Canada LP.

.18 Fire rated gypsum board: ASTM C1396; gypsum board 15.9 mm thick of maximum practical lengths to minimize end joints, unless indicated otherwise. Furnish Type X Board by Certainteed Gypsum Canada, CGC Inc., or Georgia-Pacific Canada LP.

19. Primer: Where indicated by board manufacturer, provide primer as required to achieve finishes as defined in ASTM C840.

.20 Joint reinforcing tape: ASTM C475; 50 mm wide x 0.25 mm thick, perforated paper, with chamfered edges.

.21 Joint and patching compound: ASTM C475; Asbestos-free, supplied by manufacturer of gypsum board used.

.22 Fast setting patching compound: ASTM C475; Asbestos-free, Sheetrock or Durabond by CGC Inc., 'Moisture and Mold Resistant Setting Compound with M2Tech' by Certainteed Gypsum Canada or approved alternative.

.23 Access doors: Supplied by other Sections for installation as part of the Work of this Section.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.2 **SUSPENSION FRAMING**

.1 Install ceiling systems in accordance with reviewed Shop Drawings and manufacturer's written instructions.

.2 Install hanger wires plumb and securely anchored to the building structural framing, independent of walls, pipes, ducts, and metal deck; install additional framing and hangers to bridge interference items.

.3 Install hanger wires at 1200 mm maximum centres along carrying channels, not less than 25 mm, and not more than 150 mm from channel ends.

.4 Install additional hangers at lighting fixture and ductwork locations. Do not attach hanger wires to mechanical or electrical equipment. Do not support mechanical and electrical fixtures and fitting on ceiling without the ceiling manufacturer's written acceptance.

.5 Install main carrying channels transverse to structural framing members. Lap main carrying channels 200 mm minimum at splices and wire each end with two loops and prevent clustering or lining-up of splices.

.6 Install furring channels at 400 mm o.c., not less than 25 mm, and not more than 150 mm from perimeter walls, at openings, at interruptions in ceiling continuity, and at change in plane. Install furring channels to a tolerance of 3 mm maximum in 3600 mm.

.7 Install additional main carrying and furring channels to frame and to reinforce openings such as recessed lighting fixtures, access hatches, ceiling grilles, outlet boxes, ventilating outlets and similar items.

3.3 **STEEL STUDS AND FURRING**

.1 Install steel studs and furring in accordance with reviewed Shop Drawings and manufacturer's written instructions.

.2 Install steel stud partitions to underside of structure unless indicated otherwise.

.3 Install track runners at floors, ceilings, and underside of structure; align track runners accurately and secure to structure at 600 mm centres maximum.

.4 Install double top track runner assembly to prevent the transmission of structural loads to steel studs.

.5 Install steel studs vertically at 400 mm o.c., unless otherwise indicated, and not more than 50 mm from abutting walls, at openings, and at each side of corners. Install studs securely to track runners.

.6 Schedule and coordinate steel framing installation with mechanical and electrical services installation.

.7 Install full height, double studs at door and service openings, fastened together and stiffened back to the structure to prevent vibration when doors close.

.8 Provide double studs boxed together at all openings, sill, head and jambs and at door jambs, fastened together and stiffened back to the structure to prevent vibration. At each opening exceeding 900 mm in width, double studs shall be 20 ga. extending to structure above, and adequately anchored at each end. Provide steel studs above and below openings spaced at 400 mm oc maximum. All metal stud partitions above doors and screens over 1220 mm wide shall be secured to structure over and reinforced with sway bracing to stabilize walls to prevent lateral movement.

.9 Erect three studs at corner and intermediate intersections of partitions. Space 50 mm apart and brace together with wired 19 mm channels.

.10 Stiffen partitions over 2440 mm high or 3000 mm long, or both, with horizontal bracing extended for full length of partitions. Provide one line of bracing in partitions. Space lines to provide equal unbraced panels. Provide bracing for portions of partitions over door openings in partitions over 3000 mm high, and bracing both above and below openings in partitions located no greater than 150 mm from top and bottom of opening, and extending two stud spaces beyond each edge of opening for both doors and windows. Wire tie or weld bracing to studs.

.11 Frame control joints using back to back double studs at abutting structural elements, at dissimilar backup interface, at dissimilar walls and ceilings, at structural expansion and control joints, at door and other openings, and at 9000 mm maximum spacing in continuous runs. Install control joint strips and secure in place.

.12 Install additional support framing at openings and cutouts for built-in equipment, upper cabinet support, access panels and similar items.

.13 Attach to framing adequate steel reinforcing members or an 1.2 mm (18 ga.) steel stud mounted horizontally and notched around furring members to support the load of, and to withstand the withdrawal and shear forces imposed by, items installed upon the work of this Section. Such items include, but are not restricted to, miscellaneous metals, coat hooks, washroom accessories, handrail anchors, rub rails, grab bars, guards, wall-hung cabinets and fitments, shelving, curtain and drape tracks, miscellaneous specialties; Owner supplied equipment; and minor mechanical and electrical work. Heavy mechanical and electrical equipment shall be self-supporting in Divisions 21, 22, 23 and 26.

.14 Provide for support and incorporation of flush-mounted and recessed mechanical and electrical equipment and fixtures only after consultation and verification of methods with those performing the work of Divisions 21, 22, 23 and 26.

.15 Install cross bracing in accordance with the steel stud manufacturer's recommendations.

3.4 FIRE RATED ASSEMBLIES

.1 Install Products in fire rated assemblies in strict accordance with reviewed Shop Drawings and applicable tested and approved designs required by Authorities Having Jurisdiction.

.2 Install firestop fill material behind fire rated acoustical sealant and provide firestop identification tag.

.3 Stiffen fire rated walls over 3.66 m high, where linear length of wall is greater than 2.44 m between perpendicular wall supports, with diagonal bracing above the ceiling extending perpendicular to wall at a 45° angle to structure above. Locate diagonal bracing at maximum 2.44 m o.c.

.4 Where double layers of gypsum board are shown, and required for fire rating, screw first layer to studs and furring and laminate the second layer to the first using joint filler as an adhesive. Stagger joints between first and second layers.

3.5 ACOUSTICAL INSULATION

.1 Install acoustic insulation in partitions, between steel studs, and as indicated on Contract Drawings and in accordance with the manufacturer's instructions. Fill stud cavities to full height of partitions and carefully cut and fit acoustic insulation around services and protrusions.

3.6 ACOUSTICAL SEALANT

.1 Install acoustical sealant to acoustically insulated partitions in accordance with the manufacturer's instructions and Contract Drawings.

.2 Install acoustical sealant under floor runner track, at partition perimeter both sides and at openings, cut-outs, and penetrations, concealed from view in the final installation.

.3 Install firestop fill material behind fire rated acoustical sealant and provide firestop identification tag.

.4 Smooth acoustical sealant with trowel prior to skin forming.

3.7 GYPSUM BOARD

.1 Comply with ASTM C840. Install gypsum board in accordance with reviewed Shop Drawings and manufacturer's written instructions.

.2 Install gypsum board vertically or horizontally, whichever results in fewer end joints. Locate end joints over supporting members.

.3 Install gypsum board in lightly butted contact at edges and ends and with 1.6 mm maximum open space between boards; do not force gypsum board into place. Do not install imperfect, damaged or damp boards.

.4 Install gypsum board butting paired tapered edge joints, and mill-cut or field-cut end joints; do not place tapered edges against cut edges or ends.

.5 Install vertical joints minimum 300 mm from the jamb lines of openings and stagger vertical joints over different studs on opposite sides of partitions.

.6 Do not locate joints within 200 mm of corners or openings, except where control joints occur at jamb lines or where openings occur adjacent to corners. Where necessary, place a single vertical joint over the centre of wide openings.

.7 Cut, drill and patch gypsum board as may be necessary to accommodate the Work of other trades.

8. Fire Separations:
   1. Construct gypsum board assemblies, where located, in accordance with tested assemblies to obtain required or indicated fire rated assemblies. As a minimum fire separations shall consist of metal framing covered on both sides by fire-rated gypsum board.
   2. Install assemblies tightly to enclosing constructions to maintain integrity of the separations. Install casing beads at all perimeter edges.

3.8 CORNER, CASING BEADS AND TRIM

.1 Corner reinforcing bead: Install along all external angles, erect plumb, level and with a minimum of joints. Secure with screws at 225 mm o.c. apply filler over flanges flush with nose of the bead and extending at least 75 mm onto surface of board each side of corner. When filler dries, apply a thin coat of topping cement and blend onto adjoining surfaces.

.2 Casing bead: Install where wallboard butts against a surface having no trim concealing the juncture and where shown on drawings. Erect casing beads plumb or level, with minimum joints, and secure with screws at 300 mm o.c. apply filler over flange flush with bead and extending at least 75 mm onto surface of board. When dry, apply a thin coat of topping cement and blend onto adjoining surfaces.

.3 Recess channels and trim: Install recess channels and special metal trim where shown. Secure to substrate. Provide casing beads full height on wallboard edges at recess channels and metal trim.

3.9 JOINT TAPING AND FINISHING

.1 Install reinforcing tape and a minimum of 3 coats of joint compound over gypsum board joints, metal trim and accessories, and screw fasteners in accordance with the gypsum board manufacturer's instructions.

.2 Fill gaps between ,and any imperfections in, gypsum boards with joint compound, allow to dry, and sand smooth ready for painting.

.3 Install finished gypsum board Work smooth, seamless, plumb, true, flush, and with square, plumb, and neat corners.

.4 Finish gypsum board in accordance with ASTM C840 to the following grades:

1. Level 0: No taping, finishing, or accessories required. Use above suspended ceilings and within other concealed spaces, unless the assembly is fire rated, sound rated, sound or smoke controlled, or unless the space serves as an air plenum.
2. Level 1: At joints and interior angles embed tape in joint compound. Leave surface free of excess joint compound. Tool marks and ridges are acceptable. Use above suspended ceilings and within other concealed spaces if the gypsum board assembly is fire rated, sound rated, sound or smoke controlled, or the space serves as an air plenum.
3. Level 2: At joints and interior angles embed tape in joint compound with one separate coat of joint compound applied over joints, angles, fastener heads, and accessories. Use for water resistant gypsum board indicated for use as a substrate for ceramic tile.
4. Level 3: At joints and interior angles embed tape in joint compound with two separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply joint compound smooth and free of tool marks and ridges. Use where heavy grade wall coverings are the final decoration.
5. Level 4: At joints and interior angles embed tape in joint compound with three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply joint compound smooth and free of tool marks and ridges. Use for all locations except those indicated for other finish levels.
6. Level 5: At joints and interior angles embed tape in joint compound with three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. Apply a thin skim coat of joint compound, or a material manufactured especially for this purpose, to the entire surface. Leave surface smooth and free of tool marks and ridges. Use where semi-gloss or gloss finish coatings are the final decoration.

3.10 ACCESS DOORS

.1 Install access doors, supplied as part of other parts of the Work, in accordance with manufacturer’s written instructions.

3.11 SITE TOLERANCES

.1 Install metal support systems to ensure that, within a tolerance of +3 mm and -1.5 mm for plaster thickness, finish surfaces will be flat within 3 mm under a 3 m straightedge, and with no variation greater than 1.5 mm in any running 300 mm, and that surface planes shall be within 3 mm of dimensioned location.

3.12 WORK IN EXISTING AREAS

.1 In existing areas, where existing gypsum board work has been demolished and/or damaged and repair work is required, provide new gypsum board finish.

.2 Thoroughly prepare areas to be repaired. Provide neat, clean and straight cuts.

.3 Finish all repair work as specified for new work.

.4 In existing areas where existing openings are to be filled in with gypsum board, provide new gypsum board wall and ceiling construction. Ensure new board faces are flush with faces of abutting existing walls and ceilings.

3.13 REPAIR

1. Make good cut-outs for services and other work, fill in defective joints, holes and other depressions with joint compound.

2. Make good defective work, and ensure that surfaces are smooth, evenly textured and within specified tolerances to receive finish treatments.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Design, labour, Products, tools, equipment and services necessary for exterior stucco system work at underside of balconies in accordance with the Contract Documents.

1.2 **SUBMITTALS**

.1 Product data:
- .1 Submit duplicate copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, and system limitations.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Samples: Submit two 300 x 300 mm samples of complete stucco system and of each colour of finished wall system in accordance with the Conditions of the Contract.

.3 Reports: Submit written inspection reports within 5 working days after each inspection.

.4 Extended warranty: Submit extended warranty signed and registered by the manufacturer providing the warranty in the name of the Owner for the timeframe and coverage specified in this Section.

.5 Closeout submittals: Submit maintenance and cleaning instructions for stucco for incorporation into Operations and Maintenance Manuals in accordance with the Conditions of the Contract.

1.3 **QUALITY ASSURANCE**

.1 Installers qualifications: Perform work of this Section by a company that has a minimum of five years proven experience applying stucco systems of similar size and nature and that is approved by system manufacturer. Submit to Consultant, applicator’s current certificate of approval by the material manufacturer as proof of compliance.

.2 Stucco manufacturer shall conduct Site inspections, prepare and submit written inspection reports verifying that this part of Work is in accordance with Contract Documents and reviewed shop drawings. Perform inspections once per week minimum.

.3 Mock-up:
- .1 Construct one 3 m^2 mock-up minimum of stucco in location acceptable to Consultant.
- .2 Arrange for Consultant's review and acceptance, allow 48 hours after acceptance before proceeding with work.
- .3 Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.

.4 Pre-installation meeting: Arrange with manufacturer's representative, Stucco Subcontractor, and Consultant to inspect substrates, review installation procedures and site specific details minimum 48 hours in advance of installation.

1.4 **SITE CONDITIONS**

.1 Do not install work of this Section outside of following environmental ranges without Consultant's and Product manufacturer's written acceptance:
- .1 Ambient air and surface temperature: 5^0C to 35^0C
- .2 Precipitation: None.

.2 Supply and install temporary protection and facilities to maintain Product manufacturer's, and above specified environmental requirements for 24 hours before, during, and 24 hours after installation.

.3 Do not proceed with application of materials immediately prior to, during or immediately after inclement conditions, or if wet weather is anticipated within 24 hours after application. Do not apply materials to wet, frozen, or frosted surfaces.

.4 Protect applied coatings from rapid evaporation during dry and hot weather.

1.5 **EXTENDED WARRANTY**

.1 Submit extended warranty for Stucco work in accordance with the General Conditions, except that the warranty period is extended to 5 years from date of Substantial Performance.
- .1 Warrant against failure to meet the design criteria and requirements such as peel, flake, chip, cracking, warping, leakage, finish degradation, and sealant failure.
- .2 Coverage: Complete replacement including affected adjacent work.

2 Products

2.1 **MATERIALS**

.1 All materials under work of this Section, including but not limited to, coatings, sealants, primers, and sealers are to have low VOC content limits.

.2 Water: Potable.

.3 Skim coat: Polymer-based, water resistant cementitious coating system, colour grey. 'Dryflex' by Dryvit, 'Prep Coat Fine with Base Primer' by DuRock or approved alternative by Master Builders Solutions.

.4 Finish coat: Flexible, 100% acrylic elastomeric exterior finish containing aggregates, with dirt pickup resistance, colour and texture to be selected by Consultant. 'Weatherlastic' by Dryvit, 'Unigum' by DuRock or approved alternative by Master Builders Solutions.

.5 Sealant and sealant primer: ASTM C920, Type S, Grade NS; ‘Dowsil 790' by Dow Corning Corporation or ‘Spectrem 3' by Tremco Limited complete with primer recommended by manufacturer.

.6 Joint filler: extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 - 200 kPa, outsized 30 to 50%.

2.2 **MIXES**

.1 Measure and batch materials by either volume or weight only, to accurately control and maintain proportions. Mix and prepare materials in accordance with manufacturer's written instructions.

.2 Do not add any additional additives, rapid binders, antifreeze, accelerators, fillers or pigments without the written approval of the stucco manufacturer and Consultant.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 **PREPARATION**

.1 Verify substrate surfaces are solid, free from surface water, frozen matter, dust, and other foreign matter detrimental to performance. Ensure environmental and site conditions are suitable for installation of system.

.2 Supply and install temporary protection to adjacent surfaces to prevent damage resulting from work of this Section.

.3 Prepare surfaces in accordance with manufacturer's written instructions.

.4 Protect finished work at end of each day or on completion of each section of work from water penetration. Protect top of walls, and openings until flashings and trim are installed. Protect completed installation from moisture for 48 hours minimum.

3.3 **FINISH SYSTEM**

.1 Install stucco in accordance with reviewed shop drawings and manufacturer's written instructions. Comply with system manufacturer’s requirements regarding terminations at end of each days work and resumption of work.

.2 Apply skim coat of continuously over substrate to provide a smooth surface.

.3 Allow 24 hours minimum for curing and drying, protect base coat from contamination and other damage detrimental to system appearance and performance.

.4 Trowel apply finish coat to thickness slightly thicker than aggregate size and hand float surface applying light pressure in circular motion. Maintain wet edge and avoid cold joints or staging marks. Achieve final colour and texture free from defects detrimental to appearance and performance to match accepted sample.

.5 Protect finish coat from weather, contaminants, and other damage detrimental to system appearance and performance until cured.

3.4 CONTROL JOINTS

.1 Unless otherwise indicated on drawings, install 12.7 mm control joints to divide wall area into maximum 20 m² panels with maximum 10 m horizontally and 3 m vertically in any direction, at dissimilar substrates, and at masonry wall joints as indicated on drawings.

.2 Caulk all control joints and joints between stucco and adjacent construction in accordance with manufacturer's written instruction.

3.5 CLEANING

.1 Clean any spots or blemishes from surface of work and leave system in clean condition. Re-apply stucco finish to damaged surfaces only if approved by Consultant, and to no additional cost to the Owner.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for tile Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ANSI A108/A118/A136.1, Installation of Ceramic Tile.

.2 ANSI A137.1, Specifications for Ceramic Tile.

.3 ASTM C144, Specification for Aggregate for Masonry Mortar.

.4 CAN/CSA A3000, Cementitious Materials Compendium.

.5 CAN/CGSB 25.20, Surface Sealer for Floors .

.6 TTMAC Specification Guide 09 30 00 Tile Installation Manual.

.7 TTMAC, Maintenance Guide.

1.3 **SUBMITTALS**

.1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations and warranties.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
- .1 Submit shop drawings in accordance with the Conditions of the Contract indicating:
  - .1 Tile layout, patterns, and colour arrangement.
  - .2 Perimeter conditions, junctions with dissimilar materials.
  - .3 Setting details.

.3 Samples:
- .1 Submit following sample panels in accordance with the Conditions of the Contract.
  - .1 Each colour, texture, size, and pattern of tile.
  - .2 Adhere tile samples to 400 x 400 x 12.5 mm thick cement board complete with selected grout colour in joints.

.4 Certificates: Submit manufacturer's certificates stating that materials supplied are in accordance with this specification.

.5 Closeout submittals: Submit recommended maintenance instructions and listing of recommended maintenance Products for incorporation into Operations and Maintenance Manuals in accordance with the Conditions of the Contract.

1.4 **QUALITY ASSURANCE**

.1 Perform Work of this Section by a company that is a member in good standing of the Terrazzo Tile and Marble Association of Canada with proven, acceptable experience on installations of similar complexity and scope.

1.5 **DELIVERY, STORAGE AND HANDLING**

.1 Deliver materials in adequate crates or containers with manufacturer's name and product description clearly marked.

.2 Handle and store tiles in a manner to avoid chipping, breakage or the instruction of foreign matter. Take precautions to protect the mortar and grout admixtures from freezing or from excessive heat.

1.6 **SITE CONDITIONS**

.1 Do not install Work of this Section outside of the following environmental ranges without the Consultant's and Product manufacturer's written acceptance:
.1 Ambient air and surface temperature: 15^0C to 45^0C.
.2 Precipitation: None.

.2 Install temporary protection and facilities to maintain the Product manufacturer's, and specified, environmental requirements for 7 Days before, during, and 7 Days after installation.

1.7 **MAINTENANCE**

.1 Submit extra tile amounting to 3% of gross area covered, allowing proportionately for each pattern and type specified and which are part of the same Production run as installed Products. Store maintenance Products as directed by the Consultant.

2 Products

2.1 **MATERIALS**

.1 General: All materials under Work of this Section, including but not limited to, sealants, adhesives, and sealers are to have low VOC content limits.

.2 Tile:
.1 To ANSI A137.1.
.2 Supply coves, caps, inside and outside corners and bullnose tile as required.
.3 Where unfinished tile edge is exposed, supply cap to Consultant's selection.
.4 Refer to Project Finish Schedule for tile types.

.3 Floor divider strip: Stainless steel edge, continuous at all exposed tile edges, depth as required to suit tile thickness. 'Schiene-E' by Schluter Systems or approved alternative.

.4 Wall edge protection: Aluminum edge protection with trapezoid-perforated anchoring leg and an anodized finish, continuous at all exposed tile edges, depth as required to suit tile thickness. 'Jolly' by Schluter Systems or approved alternative.

2.2 **ACCESSORIES**

.1 Metal trims and caps: Metal trims with trapezoid anchoring by Schluter or approved alternative by Shur Trim. Locations, profiles, materials and finish as per the Project Finish Schedule.

.2 Cement: CAN/CSA A3000, Type GU.

.3 Sand: ASTM C144.

.4 Water: Potable and free of minerals and other contaminants which are detrimental to mortar and grout mixes.

.5 Polymer additive: Keralastic by Mapei Inc or approved alternative by Flextile Ltd., Kiesel or Laticrete International.

.6 Pre-mixed thin-set mortar: ANSI A108/A118/A136.1:
- .1 'Kerabond with Keralastic Latex Additive' by Mapei Inc., 'Servoflex Pro' by Kiesel or approved alternative by Flextile Ltd., Kiesel or Laticrete International unless otherwise recommended by grout manufacturer to suit tile size or application.
- .2 White coloured mortar shall be provided at appropriate tile types including, but not limited to; glass tile, light coloured marble, green marble and light coloured granite.

.7 Thick bed sloped topping: Factory mixed blend of portland cement and aggregates with latex admix. 'Ardex X32 Microtec' by Ardex, '226 thick bed mortar with 3701 admix' by Laticrete, 'Topcem with Planicrete AC Admixture' by Mapei Inc., or 'Servocret RS' by Kiesel.

.8 Primer: To meet specified requirements of adhesive manufacturer.

.9 Cleaner: In accordance with TTMAC's requirements and as recommended by tile manufacturer.

.10 Waterproof Membrane: Waterproof Membrane System made from black, cold-applied, self-curing, liquid rubber polymer and an integral reinforcing fabric.'92040 Waterproof and Anti-Fracture' by Custom Building Products, '9235 Waterproofing' by Laticrete International Inc. or 'Maplelastic Aqua Defence with Fiberglass' by Mapei Inc.

.11 Grout:
- .1 Floors and bases: 'Servoperl Royal' by Kiesel.
- .2 Grout colour: Refer to Project Finish Schedule.

.12 Sealer: CAN/CGSB-25.20, penetrating, type as recommended by tile manufacturer.

.13 Tile sealant: In accordance with Section 07 92 00.

2.3 **MIXES**

.1 Levelling bed mix:
- .1 1 part Portland cement.
- .2 4 parts sand.
- .3 1 part water (including polymer additive), adjusted for water content of sand.
- .4 1/10 part polymer additive.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.2 **SURFACE PREPARATION**

.1 Clean and dry surfaces thoroughly. Remove oil, wax, grease, dust, dirt, paint, tar, primers, form release agents, curing compound, and other foreign material from substrate surfaces which may prevent or reduce adhesion.

.2 Neutralize any trace of strong acids or alkali from the substrate.

3.3 **CONTROL JOINTS**

.1 Provide control, expansion and isolation joints in accordance with TTMAC specification 301MJ and as indicated on drawings. Install in locations indicated on drawings and specified herein.

.2 Continue control, construction, and cold joints in the structural substrate up through the tile finish, and align with mortar joints where possible. Review joint locations on Site with the Consultant.

.3 Install joint widths to match grout joint widths, except where a minimum width is indicated.

.4 Install control joints in the following typical locations:
- .1 Aligned over changes in type of substrate.
- .2 At the restraining perimeters such as walls and columns.
- .3 Interior areas (not subject to sunlight): 6 mm minimum width, at 7320 mm o.c. maximum.
- .4 Interior areas (subject to sunlight): 6 mm minimum width, at 3660 mm o.c maximum.
- .5 As indicated on the Contract Drawings.

.5 Seal control joints in accordance with Section 07 92 00.

3.4 LEVELLING BED

.1 Install a levelling bed on uneven substrate surfaces, level and plumb substrates in accordance with the following tolerances:
- .1 Vertical surfaces: 3 mm in 2.4 m maximum .
- .2 Horizontal surfaces: 6 mm in 3 m from finished levels of the surface, or better.

.2 Clean structural substrate control joints and blow-clean with compressed air. Grout fill control joints flush to slab with levelling bed.

.3 Provide slopes to drains in washrooms and as indicated on drawings.

3.5 WATERPROOFING MEMBRANE

.1 Apply with a trowel on prepared substrate to a total dry film thickness of 1.143 mm in accordance with manufacturer's printed directions. Carry up walls to 50 mm high.

3.6 GENERAL INSTALLATION REQUIREMENTS

.1 Install tiles in accordance with manufacturer's instructions and TTMAC Specification Guide 09300 Tile Installation Manual. Manufacturer's installation instructions govern over TTMAC Installation Manual.

.2 Lay out Work to produce a symmetrical pattern with minimum amount of cutting. Ensure cut tile at room perimeter and at joints is not less than ½ full size.

.3 Install trim to be placed under tile in locations indicated on Drawings.

.4 Set tiles in place and rap or beat with a beating block as necessary to ensure a proper bond and to level surface. Align tile for uniform joints and allow to set until firm. Clean excess mortar from surface of tile with a wet cloth or sponge while mortar is fresh.

.5 Ensure following minimum mortar contact coverage to back of tiles. Contact must be evenly distributed to give full support of the tile.
- .1 90% for interior applications.
- .2 100% for large format tile.

.6 Adjust joints between units uniform, plumb, straight, even, and true, with adjacent tile flush. Align grout joints in both directions unless indicated otherwise.

.7 Align floor and base grout joints.

.8 Install tile accessory fittings for a complete and fully coordinated tile assembly.

.9 Do not place tile, trim, and accessories over control, expansion, or isolation joints. Stop materials in either side on joints and provide control, expansion and isolation joints as specified.

.10 Cut and fit tile neatly around piping, fittings, joints, projections and around recesses items e.g. washroom accessories. Where surface mounted equipment and accessories are installed on tile surfaces, extend tile over surfaces. Cut edges smooth, even, and free from chipping; chipped and broken edges are not acceptable.

.11 Do not proceed with grouting until minimum 48 hours after tile has set, to prevent displacement of tiles.

.12 Apply grout in accordance with grout manufacturer's directions to produce watertight, filled joints without voids, cracks and excess grout. Thoroughly compact and tool floor grout. Finish grout flush to edge thickness of tile and remove excess grout with soft burlap or sponge moistened with clean water.

3.7 CLEANING

.1 Clean off excess grout with soft burlap or sponge moistened with clean water.

.2 Polish floor tile after grout has cured in accordance with TTMAC recommendations in the Maintenance Guide; do not use acid for cleaning.

.3 Apply 2 coats of sealer to unglazed floor tile in accordance with sealer manufacturer’s printed directions.

.4 Re-point joints after cleaning as required to eliminate imperfections, then re-clean as necessary. Avoid scratching tile surfaces.

3.8 JOINT BACKING AND TILE SEALANT

.1 Install joint backing under sealant as necessary.

.2 Install tile sealant around piping and fittings extending through tiled surfaces.

.3 Seal tile control joints.

.4 Seal internal tile to tile junctions. Tool to a smooth, flush surface, free from air bubbles and contamination.

3.9 PROTECTION

.1 Prevent traffic over tiled areas, and protect tiled assemblies from weather, freezing, and water immersion, for 72 hours minimum, after final installation.

.2 Prevent direct impact, vibration and heavy hammering on adjacent and opposite walls for 24 hours minimum, after final installation.

.3 Cover work temporarily with building paper properly lapped and taped at joints until work has been approved by Consultant.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for resilient flooring Work and accessories in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

.2 ASTM F1861, Specification for Resilient Wall Base.

.3 ASTM F1869, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Cloride.

.4 ASTM F 2170, Standard Test Method for Determining Relative Humidity in Concrete Slabs Using in-situ Probes.

1.3 **SUBMITTALS**

.1 Product data:
  .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
    .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations.
    .2 Product transportation, storage, handling and installation requirements.

.2 Samples:
  .1 Submit following samples in accordance with the Conditions of the Contract:
    .1 Two 250 x 200 mm samples of each type of resilient material and colour.
    .2 Two 250 mm long samples of resilient base.
    .3 Two 250 mm long samples of each accessory and colour.

.3 Closeout submittals: Submit maintenance and cleaning data for incorporation into Operations and Maintenance Manuals in accordance with the Conditions of the Contract.

1.4 **SITE CONDITIONS**

.1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hr before, during and 48 hr after installation.

.2 Store materials for 2 days prior to installation in area of Work to achieve temperature stability.

.3 Do not lay flooring in conditions of high humidity or where exposed to cold drafts. In hot weather, protect from direct sunlight.

.4 Provide adequate ventilation during installation.

1.5 **MAINTENANCE**

.1 Submit extra 5% or to nearest full carton of each colour, pattern and type of flooring material required for maintenance use. Identify each carton. Store where directed.

2 Products

2.1 **MATERIALS**

.1 All materials under Work of this Section, including but not limited to, primers, adhesives, sealers, and waxes are to have low VOC content limits.

.2 Refer to Project Finish Schedule for the following:
- .1 Vinyl composite tile.
- .2 Rubber base.
- .3 Rubber stringers.
- .4 Rubber stair treads with integrated riser.
- .5 Resilient tactile indicator.

.3 Reducing edge strips, transition strips, thresholds, etc.: Nitrile rubber plasticized vinyl, 80-95 Shore A Durometer, adhesive recommended by flooring manufacturer.
- .1 ‘Finishing Accessories’ by Tarkett or approved alternative by Roppe.

.4 Primers and adhesives: Low VOC, waterproof, for specific material on applicable substrate, above, at or below grade; ‘Ultrabond ECO 711' by Mapei or approved alternative by Henry or Roberts.

.5 Concrete skim coat compound: High-performance, rapid-setting cement based skim coating compound. 'Ultra SkimCoat' by Mapei or approved alternative by Ardex or Laticrete, for filling minor voids and leveling existing substrate.

.6 Sealer and wax: As recommended by flooring manufacturer.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

.2 Ensure concrete floors meet the minimum requirements of the flooring manufacturer. Do not proceed with placement of the adhesive and resilient flooring until surfaces and conditions comply with the manufacturers requirements indicated in each of the manufacturers’ instructions and good work practices. Adhesive and Resilient Flooring Manufacturers to provide their acceptance in writing to Contractor, Consultant, and Owner that the conditions are acceptable for installation.

.3 Ensure that sub-floors have been provided as specified without holes, protrusions, cracks, depressions or other major defects.

.4 Ensure that control joints have been filled and levelled.

.5 Defective Work resulting from application to unsatisfactory surfaces will be considered the responsibility of those performing the Work of this Section.

3.2 SUBFLOOR TREATMENT

.1 Flooring shall be installed over subfloors conforming to ASTM F710 for concrete.

.2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.3 Apply sub-floor filler to low spots and cracks to achieve floor level to a tolerance of 1:1000, allow to cure.

.4 Sub-floor shall be feathered up to meet adjacent floor finishes to ensure a smooth, flush transition.

.5 Meet ASTM F710 Standard for Concrete or other monolithic floors.

.6 Clean and remove all deleterious materials from surfaces to receive this Work in accordance with the adhesive manufacturer's recommendations.

.7 Prime concrete to flooring manufacturer's printed instructions.

3.3 TILE APPLICATION

.1 Install resilient tile flooring in accordance with manufacturer’s written instructions.

.2 Install flooring wall to wall before installation of floor-set cabinets, casework, furniture, equipment, etc. Extend flooring into toe spaces, door recesses, closets and similar openings.

.3 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive that can be covered by flooring before initial set takes place.

.4 Make tile joints flush, uniform, in moderate contact, in straight lines and as inconspicuous as possible. Lay tile patterns of adjacent tiles parallel to each other. In general, grain pattern and continuous joints will run in one direction of room, staggered joints will run in opposite direction. Verify with Consultant on site which way grain pattern and joints will run in each room.

.5 Install flooring to square grid pattern with all joints aligned.

.6 As installation progresses, and after installation, roll flooring in 2 directions with minimum 45 kg minimum roller to ensure full adhesion.

.7 Remove adhesive seepage at seams or surface while adhesive is still wet, in accordance with manufacturer's recommendation.

.8 Cut tile and fit neatly around fixed objects.

.9 Install feature strips and floor markings where indicated. Fit joints tightly.

.10 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

.11 Install reducing edge strips at unprotected or exposed edges where flooring terminates and at edges where there are two finishes of different thicknesses.

3.4 RESILIENT BASE APPLICATION

.1 Install resilient base in accordance with manufacturer’s written instructions.

.2 Lay out base to keep number of joints at minimum.

.3 Prior to installing base, fill cracks and irregularities with a filler recommended by base manufacturer.

.4 Set base in adhesive using a 3 kg hand roller, against wall and floor surfaces.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions.

.7 Cope internal corners.

3.5 CLEANING AND WAXING

.1 Damp mop entire floor area, remove dust and construction marks prior to sealing.

.2 Apply two coats of Enviro Solutions Barricade Floor Sealer #82 and two coats of Swish Green and Clean Floor Finish wax, in accordance with manufacturers' instructions.

.3 Baseboards are not to be waxed. When applying the floor wax there must be clearance of plus or minus 25 mm, within reasonable tolerance, from the baseboard and wall.

.4 Finished floors to be free from streaks and embedded dirt particles

3.6 PROTECTION OF FINISHED WORK

.1 Protect floors from time of final set of adhesive until final cleaning inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

.3 Cover waxed and polished surfaces with fibre reinforced, clean, non-staining kraft paper. Secure in position with gummed tape to prevent drifting. Remove covering when directed by Consultant.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for tile carpet work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 Canadian Carpet Institute (CCI), Contract Carpet Manual, No. 001.

1.3 **SUBMITTALS**

.1 Product data:
- .1 Submit two copies of manufacturer's Product data for each product specified in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, characteristics, and limitations.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings: Submit shop drawings indicating carpeted floor areas, carpet selection, pile direction, location and direction of seams, cross joints, and other details required by Consultant to clarify work in accordance with the Conditions of the Contract.

.3 Samples: Submit duplicate 300 mm square pieces of each type carpet specified, 150 mm lengths of moulding in accordance with the Conditions of the Contract.

.4 Certification:
- .1 Submit certification that tile carpet has been tested and passed the Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Canadian Carpet Institute.
- .2 Four weeks after Notification of Award, Submit certification from carpet manufacturer that carpet has been ordered.
- .3 Submit program parameters for recycling.

.5 Closeout submittals: Submit maintenance and cleaning data for incorporation into Operations and Maintenance Manuals in accordance with the Conditions of the Contract.

1.4 **SITE CONDITIONS**

.1 Do not install work of this Section when the ambient air and surface temperature is below 18^0C or above 40^0C without Consultant's and Product manufacturer's written acceptance.

.2 Supply and install temporary protection and facilities to maintain Product manufacturer's, and above specified environmental requirements for 24 hours before, during, and 24 hours after installation.

1.5 **MAINTENANCE**

.1 Submit extra 3% each colour, pattern and type of flooring material required for maintenance use. Extra materials to be from same production run as installed materials and clearly labelled. Provide in one continuous full width roll. Store where directed.

.2 Upon completion of the work of this Section, bundle and wrap all large remnant pieces of carpet tile remaining and store where directed by Consultant.

2 Products

2.1 **MATERIALS**

.1 General: All materials under work of this Section, including but not limited to, adhesives are to have low VOC content limits.

.2 Carpet tile: Refer to Project Finish Schedule for carpet tile types.

.3 Seaming tape: Types recommended by carpet tile manufacturer for purpose intended.

.4 Adhesive: Non-release type: recommended by carpet tile manufacturer for direct glue down installation, low odour, free of volatile hydrocarbons such as toluene and mineral spirits.

.5 Reducing edge strips, thresholds: Nitrile rubber plasticized vinyl, 80-95 Shore A Durometer, adhesive as recommended by manufacturer.

.6 Carpet protection: Non-staining heavy duty kraft paper.

.7 Concrete skim coat compound: High-performance, rapid-setting cement based skim coating compound. 'Ultra SkimCoat' by Mapei or approved alternative by Ardex or Laticrete for filling minor voids and leveling existing substrate.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

3.2 **PREPARATION**

.1 Verify substrate surfaces are solid, free from surface water, dust, oil, grease, scaling or laitance, projections and other foreign matter detrimental to performance.

.2 Repair depressions and cracks with latex base compound or water putty crack filler. Sweep and vacuum surfaces before laying carpet.

.3 Pre-condition carpeting following manufacturer's printed instructions.

3.3 CARPET TILE INSTALLATION

.1 Install floor carpet in accordance with pattern layout and reviewed shop drawings, manufacturer's printed instructions and in accordance with Contract Carpet Manual, Standard for Installation of Textile Floor covering Materials No. 001.

.2 Cut and install carpet to fit tightly and neatly around perimeter of carpeted areas, around permanent fixtures and around projections through the floor.

.3 Adhesive method:

.1 Apply adhesive and install carpeting in accordance with manufacturer's written instructions by direct glue-down method.

.2 Spread full bed of adhesive evenly over substrate surfaces and install carpet tile over adhesive. Roll carpet with approved type roller to remove air pockets, ripples and other defects.

.4 Butt all carpet tiles to tight contact to make all joints as inconspicuous as possible.

.5 Finish installation to present smooth wearing surface free from mis-alignment, lifting, burring and other faults.

.6 Use material from same dye lot. Ensure colour, pattern and texture match within any one visual area. Maintain constant pile direction.

.7 Continue carpeting through passageways and extend carpet into recesses, such as closets, and under movable casework, equipment and other movable items.

.8 Terminate carpeting at centerline of door, in closed position, in openings where adjacent floor finish or colour is dissimilar.

3.4 CLEANING AND PROTECTION

.1 Vacuum carpets clean immediately after completion of installation. Protect traffic areas.

.2 Prohibit traffic on carpet until adhesive is cured.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for painting Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 Master Painters Institute (MPI), Painting Specification Manual.

.2 SSPC Steel Structures Painting Council, Standards.

1.3 **SUBMITTALS**

.1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations.
  - .2 Product transportation, storage, handling and installation requirements.
- .2 Submit listing of manufacturer's Product types, Product codes, and Product names, number of coats, and dry film thicknesses, corresponding to each Painting Schedule code; submit listing minimum of 8 weeks before materials are required.
- .3 If requested, submit a list of all painting materials to the Consultant and the Paint Inspection Agency for review prior to ordering materials. If requested, provide an invoice list of all paint materials ordered for project work to Paint Inspection Agency indicating manufacturer, types and quantities for verification and compliance with specification and design requirements.

.2 Samples:
- .1 Submit following samples in accordance with the Conditions of the Contract.
  - .1 Three 300 x 150 mm draw downs of each colour minimum 4 weeks before paints are required.
  - .2 Identify each sample with Contract number and title, colour reference, sheen, date, and name of applicator.

.3 Certificates:
- .1 Submit certification from paint manufacturer, on company letterhead, indicating each product proposed for use is Manufacture's premium grade, first line Product.
- .2 Submit certified documentation to confirm each airless spray painter has minimum of 5 years experience on applications of similar complexity and scope.
- .3 Submit certified documentation to confirm each worker has Provincial Tradesman Qualification certificate of proficiency.

.4 Reports:
- .1 Submit written field inspection and test report results after each inspection.
- .2 Submit Field Quality Control test result reports for alkali content, substrate moisture, and dry film thickness.
- .3 Submit electronic moisture meter manufacturer's specifications including tolerances. Submit record of latest meter calibration to meet manufacturer's recommendations.

1.4 QUALITY ASSURANCE

.1 Finishing Work: Perform work to MPI requirements for premium grade.

.2 Supervision: Have Work supervised by a full-time qualified foreperson who has 10 years minimum experience on Contracts of similar complexity and scope.

.3 Mock-up:
- .1 Construct three 10 m^2 mock-ups of different Paint Schedule code systems, selected by Consultant, in locations acceptable to Consultant to demonstrate installation workmanship, colour, and hiding power of Products.
- .2 Obtain Consultant's acceptance in writing before proceeding with the Work of this Section.
- .3 Mock-ups may remain as part of the Work if acceptable to Consultant and will serve as a standard for similar code systems.
- .4 Repaint over mock-ups which do not form part of the Work.

.4 All painting and decorating work shall be inspected by a Paint Inspection Agency (inspector) acceptable to the specifying authority and the local MPI Accredited Quality Assurance Association. The painting contractor shall notify the Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of the project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.

.5 All surfaces requiring painting shall be inspected by the Paint Inspection Agency who shall notify the Consultant and General Contractor in writing of any defects or problems, prior to commencing painting work, or after the prime coat shows defects in the substrate.

.6 The painting contractor shall receive written confirmation of the specific surface preparation procedures and primers used for all fabricated steel items from the fabricator / supplier to ascertain appropriate and manufacturer compatible finish coat materials to be used before painting any such work.

1.5 REGULATORY REQUIREMENTS

.1 Notify the Paint Inspection Agency on award of contract and make application for assignment of an Inspector using appropriate forms supplied by the Agency as well as provide a copy of the project painting specification, drawings, color schedule and list of proposed materials for review purposes prior to commencement of work.

.2 Fully cooperate at all times with the requirements of the Paint Inspection Agency in the performance of their duties, including providing access and assistance as required to complete inspection work.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Install correct, safe temporary storage for paint, thinner, solvents, and other volatile, corrosive, hazardous, and explosive materials in accordance with requirements of authorities having jurisdiction.

.2 Post hazard warning signage in areas of storage and mixing. Install and maintain sufficient CO_2 fire extinguishers of minimum 9 kg capacity, accessible in each storage mixing and storage areas.

.3 Maintain storage enclosures at minimum 10°C ambient temperature and to manufacturer's instructions.

1.7 SITE CONDITIONS

.1 Apply coatings under the following conditions:
- .1 Exterior coatings (except Latex): 5° C minimum.
- .2 Exterior latex coatings: 10°C minimum.
- .3 24 hours minimum after rain, frost, condensation, or dew.
- .4 When no condensation is possible (unless specifically formulated against condensation).
- .5 Interior coatings: 7°C minimum.
- .6 Relative humidity: 85% maximum.
- .7 Not in direct exposure to sun light.

.2 Maintain temperature conditions indicated above for 24 hours before, during and 24 hours after painting.

.3 Install clean plywood sheets to protect floors and walls in storage and mixing areas, from paint drips, spatters, and spills.

.4 Apply sufficient masking, clean drop cloths, and protective coverings for full protection of Work not being painted including, but not limited to, the following:
- .1 Light fixtures, fire and smoke detectors.
- .2 Sprinkler heads.
- .3 Prepainted diffusers and registers.
- .4 Prepainted equipment.
- .5 Fire rating labels and equipment specification plates.
- .6 Finished surfaces.

1.8 EXTENDED WARRANTY

.1 Furnish either the local MPI Accredited Quality Assurance Association's two (2) year warranty, or, alternatively, a 100% two (2) year Maintenance Bond - both in accordance with MPI Painting Manual requirements. The Maintenance Bond shall warrant that all painting work has been performed in accordance with MPI Painting Manual requirements.

.2 All painting and decorating work shall be in accordance with MPI Painting Manual requirements and shall be inspected by the local MPI Accredited Quality Assurance Association's Paint Inspection Agency (inspector), whether using either the MPI Accredited Quality Assurance Association's warranty, or the Maintenance Bond option. The cost for such inspections, and for either the local MPI Accredited Quality Assurance Association's Guarantee, or the Maintenance Bond, shall be included in the Base Bid Price.

1.9 **ENVIRONMENTAL PERFORMANCE REQUIREMENTS**

1. Provide paint products meeting MPI "Green Performance Standard GPS-1-05".

1.10 **MAINTENANCE**

1. Deliver to Owner's place of storage on completion of work, sealed containers of each finish painting material applied, and in each colour. Label each container as for original, including mixing formula. Provide the following:
   .1 1 L of extra materials when less than 50 L are used for Project;
   .2 3.78 L of extra stock when 50 to 200 L are used;
   .3 7.57 L of extra stock when over 200 L are used.

2 Products

2.1 **MATERIALS**

.1 Paint:
   .1 All materials under Work of this Section, including but not limited to, primers, stains, and paints are to have low VOC content limits.
   .2 Products in accordance with the MPI Painting Specification Manual, Exterior and Interior Systems;
      .1 Manufacture's premium grade, first line Products is to be use.
      .2 Uniform dispersion of pigment in a homogeneous mixture.
      .3 Ready-mixed and tinted whenever possible.
   .3 Products within each MPI paint system code: From single manufacturer.
   .4 Acceptable manufacturers:
      .1 Benjamin Moore.
      .2 Dulux Paints/PPG.
      .3 Para Painting & Coatings.
      .4 Sherwin Williams.

2.2 **COLOUR SCHEDULE**

.1 Refer to Project Finish Schedule for selected colour references and gloss.

.2 Conform to gloss reflectance definitions listed in MPI Specification Manual.

2.3 PAINTING AND FINISHING SCHEDULE

.1 Refer to Table 1, MPI Painting and Finishing Schedule coded systems, comply with MPI Painting Specification Manual.

Table 1: Painting and Finishing Schedule

EXTERIOR SUBSTRATES	Typical substrates (Including but not limited to)	MPI Manual Ref.	MPI Finish System Code	Sheen	Topcoat
Galvanized steel	HM doors & frames	EXT 5.3	EXT 5.3B	-	Alkyd
INTERIOR SUBSTRATES	Typical substrates (Including but not limited to)	MPI Manual Ref.	MPI Finish System Code	Sheen	Topcoat
Structural Steel and metal deck		INT 5.1	INT 5.1C	Flat	Latex Dryfall
Concrete block masonry		INT 4.2	INT 4.2A	Semi-gloss	Latex
Galvanized metal	HM doors & door frames	INT 5.3	INT 5.3B	Semi-Gloss	WB light industrial coating
Wood paneling & casework	Partitions, panels, millwork	INT 6.4	INT 6.4C	Satin	Semi-transparent stain
Wood paneling & casework	Partitions, panels, millwork	INT 6.4	INT 6.4E	Satin	Poly-urethane
Gypsum board,	Drywall, walls	INT 9.2	INT 9.2A	Satin	Latex
Gypsum board,	Wet areas	INT 9.2	INT 9.2F	Semi-Gloss	Epoxy-modified latex
Gypsum board,	Ceilings	INT 9.2	INT 9.2A	Flat	Latex

3 Execution

3.1 **EXAMINATION**

.1 Verify condition of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.2 **PREPARATION**

.1 General:
- .1 Clean substrate surfaces free from, dust, grease, soiling, or extraneous matter, which are detrimental to finish.
- .2 Patch, repair, and smoothen minor substrate defects and deficiencies e.g. machine, tool and sand paper marks, shallow gouges, marks, and nibs.
- .3 Clean, sweep, and vacuum floors and surfaces to be painted, debris and dust-free prior to painting.
- .4 Refer to MPI Painting Specification Manual for surface preparation requirements of substrates not listed here.

.2 Where finish hardware has been installed remove, store, re-install finish hardware, to accommodate painting. Do not clean hardware with solvent that will remove permanent lacquer finishes.

.3 Alkali Content tests and neutralization:
- .1 Test for ph level using litmus paper on dampened substrate.
- .2 Neutralize surfaces over 8.5 ph with 4% solution of Zinc Sulphate for solvent based systems and tetrapotassium pyrophosphate for latex based systems, to below 8.0 ph, and allow to dry.
- .3 Brush-off any residual Zinc Sulphate crystals.
- .4 Coordinate paint system primer / sealer to be alkali-resistant.

.4 Substrate moisture tests:
- .1 Test for moisture content over entire surface to be painted, minimum one test/ 2 m^2 in field areas and one test/600 mm along inside corners including at ceiling to wall juncture.
- .2 If any test registers above 10% allow entire substrate surfaces, within the plane, to dry further before paint system application. Install temporary drying fans if necessary.
- .3 Re-test employing same criteria.

.5 Mildew removal: Scrub with solution of trisodium phosphate and sodium hypochlorite (Javex) bleach, rinse with water, and allow to dry completely.

.6 Masonry (Concrete, block):
- .1 Allow 28 days cure before painting.
- .2 Coordinate repair of protrusion-chipping and grinding, and honeycomb filling with responsible trades.
- .3 Remove dirt, loose mortar, scale, powder, efflorescence, and other foreign matter.

.4 Remove form oil and grease with trisodium phosphate, rinse, and allow to dry thoroughly.
.5 Remove rust stains with solution of sodium metasilicate after thorough wetting; allow to dry thoroughly.

.7 Galvanized steel sheet:
.1 Z275 (Satin & Spangled Sheet): SSPC SP7 brush blast.
.2 ZF075 (Wiped Coat): Remove contamination, wash with Xylene solvent.
.3 Touch-up damaged galvanized areas with organic zinc rich primer.

.8 Galvanized iron and steel: Prepare galvanized and ungalvanized metal surfaces as follows:
.1 Unpassivated, unweathered and weathered: Remove contamination, wash with Xylene or Toluol solvent, allow to dry thoroughly. Make paint system primer/sealer an etching type primer.
.2 Manufacturer pre-treated (including passivated): SSPC SP7.
.3 Touch-up damaged galvanized areas with organic zinc rich primer.

.9 Structural steel and miscellaneous metal fabrications:
.1 Coordinate the following with the responsible trades:
.1 Rust, mars, mill scale, and weld-burn touch-ups.
.2 Oil, grease, weld flux and other residue removal.
.2 Prime paint items, not otherwise indicated to be primed as part of another Section.
.3 Touch-up damaged galvanized areas with organic zinc rich primer.

.10 Wood and Millwork:
.1 Wood surfaces to be clean and dry with a moisture content of less than 15%.
.2 Remove foreign matter prior to prime coat; spot coat knots, pitch streaks and sappy sections with sealer.
.3 Fill nail holes and fine cracks after primer has dried.
.4 Backprime interior and exterior woodwork.

.11 Factory primed surfaces:
.1 Touch up damaged areas.
.2 Clean as required for top coat.

.12 Gypsum board:
.1 Apply primer/sealer paint to reveal defects and deficiencies and to equalize absorption areas.
.2 Coordinate repairs and touch-ups with the responsible trade.
.3 Re-prime repairs.

.13 Coordinate with other trades to prevent:
.1 Damage, and inadvertent activation of fire and smoke detectors.
.2 Odour and dust distribution by permanent HVAC systems including fouling of ducts and filters.

.14 Field-mix Products in accordance with manufacturer's written instructions.

3.3 **APPLICATION**

.1 Apply painting systems in accordance with the MPI Painting Specification Manual. Apply each Product to manufacturer's recommended dry film thickness.

.2 Painting systems listed are required minima, apply additional coats if necessary to obtain substrate hiding acceptable to the Consultant.

.3 Tint intermediate coats lighter than final top coats for identification of each succeeding coat and to facilitate inspections. Include only manufacturer's recommended reducing and tinting accessories. Do not add adulterants.

.4 Primer to be specialized primer coating system as required by manufacturer for selected colour. Standard primer being tinted shall be tinted to a maximum of 1.5% by volume.

.5 Sand lightly between coats to achieve a tooth or anchor for subsequent coats.

.6 Unless otherwise approved by the painting inspection agency, apply a minimum of four coats of paint where deep or bright colours are used to achieve satisfactory results.

.7 Apply paint uniformly in thickness, colour, texture, and gloss, as determined by the Consultant under adequate illumination and viewed at a distance of 1500 mm. Apply finishes free of defects in materials and application which, in the opinion of the Consultant, affect appearance and performance. Defects include, but are not limited to:
- .1 Improper cleaning and preparation of surfaces.
- .2 Entrapped dust, dirt, rust.
- .3 Alligatoring, blisters, peeling.
- .4 Scratches, blemishes.
- .5 Uneven coverage, misses, drips, runs, and poor cutting in.

.8 Do not apply coatings on substrates which are not sufficiently dry. Unless indicated otherwise, allow each painting system coat to cure dry and hard before following coats are applied.

.9 Repaint entire areas of damaged or incompletely covered surfaces, to the nearest inside or outside corner; patching will not be permitted.

.10 Miscellaneous painting requirements:
- .1 Paint projecting ledges, and tops, bottoms and sides of doors both above and below sight lines to match adjacent surfaces.
- .2 Paint door frames, access doors and frames, door grilles, prime coated butts, and prime coated door closers to match surface in which they occur.
- .3 Finish closets and alcoves as specified for adjoining rooms.
- .4 Paint light coves white whether a light lense is installed or not, unless otherwise indicated.
- .5 Paint interior columns to match walls of room.
- .6 Allow for:
  - .1 2 wall colours per room, one ceiling colour per room.
  - .2 Different door colours in each functionally different area.
  - .3 Different colours on both sides of same door.

.11 Mechanical, electrical and other painting coordination:
- .1 Paint mechanical services in accordance with Mechanical Drawings.
- .2 Coordinate painting of pipes, ducts, and coverings in accordance with Mechanical Drawings to precede pipe colour banding, flow arrows, and other pipe identification labeling installation.
- .3 Paint exposed conduit, pipes, hangers, ductwork, grilles, gratings, louvres, access panels, fire hose cabinets, registers, convector and radiator covers, enclosures, and other mechanical and electrical equipment including services concealed inside cupboard and cabinet Work; apply colour and sheen to match adjacent surfaces, except as noted otherwise.
- .4 Paint portions of surfaces such as duct interiors, piping, ductwork, hangers, insulation, walls, and similar items, visible through grilles, louvres, convector covers etc., matte black in colour.
- .5 Remove the following to accommodate painting, carefully store, clean, then re-install on completion of each area and when dry:
  - .1 Switch and receptacle plates, fittings and fastenings, grilles, gratings, louvres, access panels, convector covers, and enclosures.

3.4 FIELD QUALITY CONTROL

.1 Dry film thickness tests:
- .1 Test for film thickness over entire surface to be painted, minimum one test/2 m^2 in field areas and one test/600 mm along inside corners including at ceiling to wall juncture.
- .2 If any test registers below specified thickness, re-apply paint to entire surface to nearest inside and outside corners.
- .3 If test registers more than 50% above specified thickness, consult with paint manufacturer, determine if problem exists, offer solutions to Consultant, and repair as directed.
- .4 Re-test employing same criteria after repair.

3.5 CLEANING

.1 Remove spilled, splashed, and spattered paint promptly as Work proceeds and on completion of Work. Clean surfaces soiled by paint spillage and paint spatters. Repair or replace damaged Work, as directed by Consultant.

3.6 PROTECTION

.1 Post Wet Paint signs during drying and restrict or prevent traffic where necessary.

.2 Post sign, after Consultant's inspection and acceptance of each room, reading: PAINTING COMPLETE - NO ADMITTANCE WITHOUT CONTRACTOR'S PERMISSION.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for compartments and cubicles Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM A167, Specification for Stainless Steel and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 CAN/CSA B651-M, Accessible Design for the Built Environment.

1.3 **SUBMITTALS**

.1 Shop drawings: Submit shop drawings in accordance with the Conditions of the Contract indicating fabrication and erection details, plans, elevations, hardware, and installation details.

.2 Samples:
.1 Submit samples in accordance with the Conditions of the Contract.
.1 Submit 300 x 300 mm samples for each colour.
.2 Submit samples of each hardware item, including brackets, fastenings, and trim.

1.4 **MAINTENANCE DATA**

.1 Provide maintenance data for maintenance of finished work for incorporation into Maintenance Manual specified in the Conditions of the Contract.

1.5 **PROTECTION**

.1 Cover finished surfaces with heavy Kraft paper or put in cartons during shipment. Protect installed surfaces by approved means. Do not remove until immediately prior to final inspection.

2 Products

2.1 **ACCEPTABLE MANUFACTURERS**

.1 Floor mounted overhead braced;
.1 Duraline Series by Bobrick or approved alternative by Hadrian Manufacturing W.G. Wood Sales Company Limited or Global Partitions/Watrous.

2.2 **MATERIALS**

.1 All materials under Work of this Section, including but not limited to, adhesives are to have low VOC content limits.

.2 Phenolic partitions: 19 mm thick consisting of multiple resin-impregnated kraft paper core with colour and clear melamine surface sheets, fused at high temperature. No brown core permitted. Refer to Project Finish Schedule for colour type.

.3 Hardware:
- .1 Hinges: concealed, heavy duty aluminum or stainless steel casting, self-lubricating inward swing.
- .2 Slide bolt and keeper: Aluminum or stainless steel casting or extrusion, equipped for emergency access.
- .3 Door stop: Aluminum or stainless steel casting or extrusion with rubber insert.
- .4 Connecting brackets: channel shaped, stainless steel extrusion or casting, continuous.
- .5 Coat hook: combination hook and door bumper, aluminum or stainless steel casting.

.4 Stainless steel sheet metal: ASTM A167, Type 304 with No. 4 satin finish.

.5 Fasteners: Stainless steel tamperproof type screws and bolts.

2.3 FABRICATION

.1 Toilet partitions shall be floor mounted, overhead braced.

.2 Fabricate stiles and doors of 19 mm thick solid phenolic core and panels of 13 mm thick solid phenolic core with decorative plastic laminate facing. Multiple resin-impregnated kraft and surface sheets shall be fused at high temperature and pressure with all edges finished and polished.

.3 Fabricate and provide non-see-through style doors and pilasters by fabricating doors and pilasters with 45 deg. bevelled edges, with 6 mm gap between door and pilaster.

.4 Unless otherwise indicated or required, doors shall be nominal 610 mm wide. Doors to meet barrier-free requirements shall be nominal 900 mm wide, with 860 mm clear opening when door is in open position.

.5 Fabricate headrail of brake formed anti-grip 1.5 mm thick clear anodized aluminum.

.6 Fabricate pilaster boot assembly for both top and bottom junctions of 1.5 mm thick die formed stainless steel. Fabricate assembly in size to suit pilaster.

.7 Fabricate wall hung screen panel same as toilet partitions, except size shall be 19 mm thick, 760 mm deep by 1067 mm high unless indicated otherwise.

3 Execution

3.1 EXAMINATION

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

.2 Verify there is adequate supports and/or blocking in gypsum board assemblies prior to installation of toilet partitions and urinal screens.

3.2 INSTALLATION

.1 Install compartments and cubicles in accordance with manufacturer's details and reviewed shop drawings, for a secure, plumb, square, and rigid installation.

.2 Provide connecting brackets and secure to building structure and to pilasters. Insert edge of panels and closure pilasters into brackets and secure with through type sleeve bolt and nut.

.3 Install doors with 6 mm to 10 mm maximum space between door panel and pilasters.

.4 Install panels with 6 mm maximum space between panels and walls.

.5 Install hardware in accordance with manufacturers' instructions and CAN/CSA B651-M.

.6 Make compartments adjustable with screw jack through steel saddles made integral with pilaster. Conceal fixings with stainless steel shoes.

.7 Provide for adjustment of floor variations with screw jack through steel saddles made integral with pilaster. Conceal floor fixings with stainless steel boot assemblies.

.8 Install door tops edges aligned parallel with top edges of side partitions; determine alignment when doors are in closed position.

.9 Provide templates for locating threaded studs through finished ceilings.

.10 Brace through top of pilasters with rectangular shaped anti-grip headrail and fasten with stainless steel sheet metal screws.

.11 Set panels and doors level and in line, raised approximately 300 mm above finished floor.

.12 Hang doors to remain stationary at open position.

.13 Equip each door with hardware. Adjust and align hardware for easy, proper function.

.14 Provide closure pilasters, as required, at end units of compartment bank.

.15 Remove and replace damaged components not acceptable to Consultant.

3.3 SCREEN ERECTION

.1 Provide urinal stall screens consisting of panel and framing/supports as specified for toilet compartments.

.2 Anchor screen panels to walls with wall hung urinal screen brackets at 25 mm above floor finish.

3.4 **ADJUSTING**

.1 Adjust operating hardware to work smoothly and without force. Adjust hinges of compartment doors so that all doors remain open to the same degree when unlatched, except doors at handicapped cubicles shall close automatically.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services for washroom accessories Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 ASTM A167, Specification for Stainless Steel and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 ASTM A312, Specification for Seamless and Welded Austenitic Stainless Steel Pipes.

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

.4 CAN/CSA B651-M, Barrier Free Design.

1.3 **SUBMITTALS**

.1 Product data: Submit Product data to requirements of the Conditions of the Contract indicating each washroom accessory describing size, finish, details of function, attachment methods, hardware and locks, description of rough-in frame, and building-in details of anchors for grab bars.

1.4 **DELIVERY, STORAGE AND HANDLING**

.1 Deliver materials in sealed cartons and containers with manufacturer's name and product description clearly marked.

1.5 **EXTENDED WARRANTY**

.1 Submit a warranty for washroom accessories Work in accordance with the General Conditions, except that the warranty period is extended to 10 years.
- .1 Against cracked or scratched mirrors, spoiling or deterioration of silvering or backing, loosening of fastenings or adhesive
- .2 Coverage: complete replacement including effected adjacent Work.

2 Products

2.1 **MATERIALS**

.1 Stainless steel:
- .1 Sheet metal: ASTM A167, Type 304.
- .2 Tubing: ASTM A312, Type 304.

.2 Sheet steel: ASTM A653M, Z275; Cold rolled, commercial quality, surface preparation and pretreatment as required for applied finish.

.3 Fasteners, screws and bolts: ASTM A167, Type 304 stainless steel, tamper-proof.

.4 Glazing: In accordance with Section 08 80 00.

2.2 **ACCESSORIES**

.1 The following Products are by Bobrick Washroom Equipment of Canada Ltd. except where noted. Quantity and location of accessories as shown on Contract Drawings. Equivalent Products from ASI/Watrous and Bradley are acceptable.

.2 Toilet tissue dispenser: Supplied by Owner.

.3 Soap dispenser: Supplied by Owner.

.4 Hand Dryer:
- .1 Xlerator Model XL-W; surface mounted, automatic hand dryer by Excel Dryer Inc. or approved alternative, one-piece, heavy-duty, die-cast zinc allow, motor shall be thermally protected 5/8 hp providing a minimum air velocity at the outlet of 16,000 LFM, complete with automatic thermal overload, automatic sensor and lockout feature.
- .2 Finish: white, high gloss, acid-resistant epoxy.

.5 Grab bar:
- .1 Series B-6806-99 by Bobrick or #3800-P Series by ASI Group Canada; 38 mm diameter, 1.2 mm thick, concealed mounting with snap flange, complete with escutcheons. Lengths and configurations as indicated on drawings.
- .2 Finish: Type 304 stainless steel with a satin finish and peened grip.

.6 Grab bar (L-shaped):
- .1 'Series 6806-99 - L30x30' by Bobrick Washroom Equipment or approved alternative; 38 mm diameter, 1.2 mm thick, concealed mounting with snap flange, complete with escutcheons.
- .2 Length and configuration: 762 x 762 mm, in L-shaped configuration as shown on Contract Drawings.
- .3 Finish: Type 304 stainless steel with a satin finish and peened grip.

.7 Stainless steel shelf:
- .1 #20692 Series by ASI Group Canada or approved alternative; shelf fabricated from 18 ga. thick stainless steel with 13 mm return edge and front edge hemmed for safety.
- .2 Shelf complete with brackets fabricated from 1.2 mm thick stainless steel.
- .3 Size: 150 mm wide x 600 mm long.
- .4 Finish: Type 304 stainless steel, satin finish.

.8 Mirror: 6 mm thick, mirror quality float glass
- .1 #B-165 Series by Bobrick or #20650 series by ASI Group Canada; mitred corners welded, and polished smooth.
- .2 Dimensions: 610 mm x 762 mm.
- .3 Frame finish: Type 304 stainless steel satin finish.

.9 Grab bar rail with padded backrest:

.1 Provide barrier-free grab bar rail with padded backrest in washrooms where shown on Contract Drawings.

.2 Grab bar rail to be fabricated from 30 mm o.d. stainless steel tubing having a satin finish, complete with concealed mounting and a white coloured polyurethane integral foam secured to grab bar.

.3 B-5892 by Bobrick or approved alternative by ASI Group Canada.

.

3 Execution

3.1 **INSTALLATION**

.1 Verify and coordinate templates, inserts, and rough-in frames and verify exact location of washroom accessories for installation.

.2 Verify there is adequate supports and/or blocking in gypsum wall assemblies prior to installation of washroom accessories.

.3 Provide fastening and mounting kits for washroom accessories.

.4 Locate washroom accessories where indicated on Drawings and where directed by Consultant.

.5 Install washroom accessory fixtures, accessories, and items in accordance with manufacturer's instructions and CAN/CSA B651-M. Provide exposed tamper-proof screws of stainless steel to match units.

.6 Install washroom accessories plumb, level, and securely and rigidly anchored to substrate surfaces and framing. Adjust accessories for proper operation and verify mechanisms function smoothly.

.7 Install grab bars to withstand minimum load of 1.3 kN applied vertically or horizontally. Provide necessary reinforcements as required.

.8 Clean and polish exposed surfaces and fill accessories with necessary supplies prior to acceptance by Consultant.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for supplied and installed equipment work in accordance with the Contract Documents.

1.2 **SUBMITTALS**

.1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with the Conditions of the Contract indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations and warranties.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Samples:
- .1 Submit following sample panels in accordance with the Conditions of the Contract
  - .1 Colour and finish of each item.

.3 Certificates: Submit manufacturer's certificates stating that products are in accordance with this specification.

.4 Closeout submittals: Submit recommended maintenance instructions and listing of recommended maintenance Products for incorporation into Operations and Maintenance Manuals in accordance with the Conditions of the Contract.

1.3 **QUALITY ASSURANCE**

1. Regulatory Requirements: All electrical equipment shall have attached labels attesting to CSA or Electrical Safety Authority approval, and shall have magnetic starters for motors, transformers, and overload protection.

1.4 **DELIVERY, STORAGE AND HANDLING**

1. Package or crate, and brace products to prevent damage or distortion of equipment in shipment and handling. Label packages and crates, and protect finish surfaces by sturdy wrappings or equivalent protection. Provide temporary skids under large or heavy units.

2. Do not deliver products to site until conditions are such that no damage will occur to them while in storage.

3. Store equipment at site in a manner to prevent damage to equipment.

4. Uncrate equipment only before installation.

1.5 **SCHEDULING**

1. Provide equipment or its parts ready for installation in accordance with construction schedule. Verify required delivery date sufficiently before delivery to ensure that construction is not delayed.

2 Products

2.1 **EQUIPMENT**

1. Provide reinforcing and anchorage for built-in products.

2. Insulate between dissimilar metals, and metal and masonry, to prevent electrolysis.

3. Equipment shall include all electrical components required by jurisdictional authorities, and to protect the equipment from damage during operation.

4. Equipment shall include all components, connections, devices and controls required to make it fully and safely operable.

2.2 **FABRICATION**

1. Fit joints and junctions between components tightly, in true planes, and to prevent entry of water to collect in component voids. Cap open ends of sections exposed to view.

2. Fabricate work with materials and component sizes, metal gauges, reinforcing anchors, and fastenings of adequate strength to ensure that it will remain free of warping, buckling, opening of joints and seams, and distortion within limits of intended and specified use. Conceal and weld connections wherever possible.

3. Cleanly and smoothly finish exposed edges of materials including holes and cutouts.

4. Provide reinforcing and attached anchorage for built-in products.

5. Provide holes and connections for work installed under other Sections.

3 Execution

3.1 **EXAMINATION**

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of work of this Section means acceptance of existing conditions.

2. Before installation commences, ensure that mounting devices, members and surfaces are satisfactory for fitting, and adequate for securing of work.

3. Take site measurements of construction to which work of this Section must conform, and through which access must be made, before work is delivered to site, to ensure that adaptation is not required which would result in construction delay.

3.2 **INSTALLATION**

1. Obtain from manufacturer or supplier, anchorage information, roughing-in dimensions, templates and service requirements for installation of work of this Section. Also obtain assistance from manufacturer or supplier, for the setting of anchorage devices, and construction of other work incorporated with equipment specified in this Section in order that they function as intended.

2. Install work to meet manufacturer's recommended specifications, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.

3. Work shall include rough hardware, fastenings and other items necessary for secure installation.

4. Use only fastenings suitable for materials. Do not use through fastening at floors or walls.

5. Install work straight, plumb, level, and secured to prevent distortion or displacement, or both. Shim as necessary with concealed shims. Where required, use grout on which iron oxide deposits will not form.

6. Secure fixed equipment to building structure or construction as required to maintain it permanently in place, and so that it functions properly with no damaging vibration to the building or itself.

7. Install equipment with connections provided as required for plumbing and electrical services.

8. Provision of mechanical services and connection of equipment to mechanical work is specified on Mechanical Drawings.

9. Provision of electrical service and connections of equipment to the services is specified on Electrical Drawings.

3.3 **REPAIR**

1. Refinish damaged or defective work so that no variation in surface appearance is discernible. Refinish work at site only if approved by Architect.

3.4 **ADJUSTING**

1. Verify under work of this Section that installed products function properly, and adjust them accordingly to ensure satisfactory operation.

2. Lubricate equipment as specified by equipment manufacturer.

3.5 CLEANING

1. Clean and polish all surfaces that are exposed to view from any location on completion of installation.

2. Remove packaging materials and debris from installation from the site.

3.6 DEMONSTRATION

1. After start-up, adjusting and cleaning, demonstrate operation of equipment to Owner and Architect, prior to Substantial Performance of the Work. Demonstrations shall be made:
   .1 When the Work is certified complete by the Architect.
   .2 When the Work is turned over to the Owner.

2. Knowledgeable representatives of the manufacturers and installers of the equipment being demonstrated shall be present at time of demonstrations.

END OF SECTION