+VG ARCHITECTS
THE VENTIN GROUP LTD

Issued for Tender

Interior Renovations at Central York Firehall 4-1

984 Gorham St, Newmarket, ON L3Y 1L8

TECHNICAL SPECIFICATION

Prepared for the Town of Newmarket
Prepared by +VG Architects

22nd September 2025

+VG Architects Project Number: 22528

BOOK 1: ARCHITECTURAL SPECIFICATIONS

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+VG

Index of Specifications for:
Interior Renovations at Central York Firehall 4-1
984 Gorham St, Newmarket, ON L3Y 1L8
Client: The Town of Newmarket

Introductory Information and Architectural Specifications prepared by:
+VG ARCHITECTS (Toronto Ltd) – 52 Scarsdale Road, Suite 212, Toronto, Ontario M3B 2R7,
Tel. 416 588 6370; Fax. 416 588 6327

Mechanical, Electrical, Communications & Electronic Safety & Security Specifications prepared by:
Smith & Andersen Consulting, 1100 - 100 Sheppard Ave. East, Toronto, ON M2N 6N5
Tel. 416 487 8151; Fax. 416 487 9104

INTRODUCTORY INFORMATION:

ARCHITECTURAL:

MECHANICAL:

	20 05 00.00	General Instructions for Mechanical Sections
	20 05 02.00	As-built Drawings
	20 05 03.00	Shop Drawings
	20 05 05.00	Selective Demolition for Mechanical Services
	20 05 29.00	Hangers and Supports
	20 05 48.00	Vibration and Noise Control
	20 05 88.00	Cutting and Patching
	20 07 00.00	Insulation
	20 08 02.00	Cleaning and Protection
21	21 25 00.00	Portable Fire Extinguishers
22	22 11 23.29	Circulators
	22 13 19.13	Floor Drains
	22 33 00.00	Domestic Electric Hot Water Heaters
	22 42 00.00	Fixtures and Trim
	22 42 46.00	Fixture Carriers
23	23 05 93.16	Testing and Balancing Piping Systems
	23 05 93.26	Testing and Balancing Air Systems
	23 11 23.00	Natural Gas Piping Systems
	23 31 13.00	Ductwork and Specialties
	23 37 13.00	Diffusers, Grilles and Registers

ELECTRICAL AND COMMUNICATIONS:

SECTION	NUMBER	NAME
26	26 00 00.00	Index
	26 01 00.00	Operating and Maintenance Instructions
	26 05 01.00	General Instructions for Electrical Sections
	26 05 03.00	As-Built Drawings
	26 05 04.00	Submittals – Shop Drawings
	26 05 05.00	Mounting Heights
	26 05 21.00	Wires and Cables Under 2000 V
	26 05 29.00	Hangers and Supports
	26 05 31.00	Splitters, Junction, Pull Boxes and Cabinets
	26 05 32.00	Outlet Boxes, Conduit Boxes and Fittings
	26 05 34.00	Conduits, Conduit Fasteners and Fittings
	26 05 53.00	Identification
	26 05 83.00	Sleeves
	26 05 88.00	Cutting and Patching
	26 08 00.00	Commissioning
	26 24 17.00	Panelboards – Breaker Type
	26 27 19.00	Multi-Outlet Assemblies
	26 27 26.00	Wiring Devices
	26 28 14.00	Fuses Low Voltage
	26 28 21.00	Moulded Case and Insulated Case Circuit Breakers
	26 28 23.00	Disconnect Switches – Fused and Non-Fused
	26 29 00.00	Motor Starters to 600 V
	26 51 13.00	Lighting Equipment
	26 52 01.00	Unit Equipment for Emergency Lighting
28	28 05 00.00	Raceways for Security System

END OF SECTION

Door Schedule

PROVISIONAL - FOR TENDER

Door NO.	ROOM NAME	DOOR						FRAME		WALL TYPE	FIRE RATING (MIN)	GL	SECURITY	BF OPER.	HARDWARE	COMMENTS
		WIDTH	HEIGHT	THK	MAT'L	FINISH	TYPE	MAT'L	FIN							
Lower Level																
100	Entrance															Not in Scope
S101	New Board Rm	3940	2738	50	HM/GL							✓				Hollow Metal Frame With glazed secitons
101	Lobby															Not in Scope
104	B.F. Washroom	900	2150	50	HM	PT		HM	PT	EX			DC	✓	BFP,DC, PDO, ES, LVR, KP	
106A	New Reception	900	2150	50	HM	PT		HM	PT	1					CR, ES, CL, LVR,	
106B	Fire Prevention Hub Rm	900	2150	50	HM	PT		HM	PT	1					LVR, DS	
107	Office #5															Not in Scope
108	Equipment Rm															Not in Scope
110	Corridor															Not in Scope
111	Office #2															Not in Scope
112	Office #3															Not in Scope
113	Office #4															Not in Scope
114	New Dormitory	900	2150	50	HM	PT		HM	PT	1	60					
115	Utility Rm															Not in Scope
118	New Captain's Office	965	2150	50	HM	PT		HM	PT	1	60				LVR, DS	
119	Office #1															Not in Scope
120	Corridor	RX			HM	PT		HM	PT	EX	60		RX		BFP,DC, PDO, ES, LVR, KP	Existing Opening
121	Stairwell															Not in Scope
122	Truck Bay															Not in Scope
130A	Stairwell	RX			HM	PT		HM	PT		0					
Upper Level																
203	New Kitchen															AHC
204	New WC Male & Locker Rm	RX			HM	PT		HM	PT	EX.			RX			
206A	New WC Female & Locker Rm	965	2150	50	HM	PT		HM	PT							
206B	New WC Female & Locker Rm	965	2150	50	HM	PT		HM	PT		60					
207	Closet	1330	2150	50	HM	PT		HM	PT							
208	Closet	1098	2150	50	HM	PT		HM	PT							

LEGEND:

AHC	Architectural Hardware Consultant
AL	Aluminum
ANOD	Anodized Aluminum
BF	Barrier Free
BFP	Barrier Free Push Buttom
CL	Overhead Closer
CR	Card Reader
DC	Door Contact
DS	Dome Door Stop
ES	Electric Strike
EX	Existing
FB	Flush Bolts
GL	Glass
HG	Hinge (to mach existing adjacent)
HM	Hollow Metal
KP	Stainless Steel Kick Plate
LOCK	Storage room/ Closet Lockset (Deadlock from outside, Trim inside retracts latchbolt)
LVR	Lever Set
PB	Panic Bar
PDO	Power Door Operator
PT	Paint
REX	Request to Exit
RX	Retain Existing
ST	Stained
WD	Wood

Door Schedule

PROVISIONAL - FOR TENDER

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WD	Wood

List of Drawings for:
Interior Renovations at Central York Firehall 4-1
984 Gorham St, Newmarket, ON L3Y 1L8
Client: The Town of Newmarket

Architectural Drawings Prepared by:
+VG ARCHITECTS (Toronto Ltd) – 52 Scarsdale Road, Suite 212, Toronto, Ontario M3B 2R7,
Tel. 416 588 6370; Fax. 416 588 6327

Mechanical, Electrical & Communications Drawings prepared by:
Smith & Andersen Consulting, 1100 - 100 Sheppard Ave. East, Toronto, ON M2N 6N5
Tel. 416 487 8151; Fax. 416 487 9104

ARCHITECTURAL DRAWING LIST

A0.0- O.B.C. NOTES, SCOPE & SPECIFICATION NOTES,SITE PLAN
D2.1- GROUND FLOOR DEMOLITION PLAN
D2.2- SECOND FLOOR DEMOLITION PLAN
A2.1- GROUND FLOOR PLAN
A2.2- SECOND FLOOR PLAN
A6.1- REFLECTED CEILING PLAN - GROUND FLOOR
A6.2- REFLECTED CEILING PLAN - SECOND FLOOR
A7.1- WASHROOM PLAN AND ELEVATIONS - GROUND FLOOR
A8.1- INTERIOR SCREENS, WINDOW, DOOR AND
FRAME TYPES - GROUND FLOOR
A8.2- DOOR AND FRAME TYPES - SECOND FLOOR
A9.1- MILLWORK PLAN & DETAILS
A9.2- MILLWORK PLAN & DETAILS
A9.3- MILLWORK PLAN & DETAILS
A9.4- MILLWORK PLAN & DETAILS
A9.5- MILLWORK PLAN & DETAILS

STRUCTURAL DRAWING LIST

S1.1- STRUCTURAL NOTES
S2.1- LIBRARY ROOF FRAMING PLAN AND DETAILS

SECURITY SYSTEM

TESS-0.1- DRAWING LIST, GENERAL NOTES, ABBREVIATIONS, LEGENDS AND DETAILS
TESS-0.2- SECURITY DOOR DETAILS
TESS-0.3- SECURITY DRAWING SPECIFICATIONS
TESS-.1.1- 1ST FLOOR SECURITY LAYOU**T**

COMMUNICATION DRAWING LIST

TC-0.1- DRAWING LIST, GENERAL NOTES, ABBREVIATIONS, LEGENDS AND DETAILS
TC-0.2- COMMUNICATIONS TELECOM ROOM DETAILS
TC-0.3- COMMUNICATIONS DRAWING SPECIFICATIONS
TC-1.1- 1ST FLOOR COMMUNICATIONS LAYOUT
TC-1.2- 1ST FLOOR WIRELESS ACCESS POINT PLAN
TC-2.1- 2ND FLOOR COMMUNICATIONS LAYOUT

TC-2.2- 2ND FLOOR WIRELESS ACCESS POINT PLAN

ELECTRICAL

TE-0.1- DRAWING LIST AND LEGENDS
TE-0.2- ELECTRICAL LEGENDS AND DETAILS
TE-0.3- ELECTRICAL DETAILS
TE-0.4- ELECTRICAL DETAILS
TE-1.1- 1ST FLOOR LIGHTING AND FIRE ALARM LAYOUT
TE-1.2- 1ST FLOOR POWER AND SYSTEMS LAYOUT
TE-1.3- 1ST FLOOR LIGHTING AND FIRE ALARM DEMOLITION LAYOUT
TE-1.4- 1ST FLOOR POWER AND SYSTEMS DEMOLITION LAYOUT
TE-2.1- 2ND FLOOR LIGHTING AND FIRE ALARM LAYOUT
TE-2.2- 2ND FLOOR POWER AND SYSTEMS LAYOUT
TE-2.3- 2ND FLOOR LIGHTING AND FIRE ALARM DEMOLITION LAYOUT
TE-2.4- 2ND FLOOR POWER AND SYSTEMS DEMOLITION LAYOUT

MECHANICAL

TM-0.1- MECHANICAL DRAWING LIST AND LEGENDS
TM-02- MECHANICAL STANDARD DETAILS
TM-1.1.2- 1ST FLOOR - PLUMBING AND PIPING DEMOLITION LAYOUT
TM-1.1.3- 1ST FLOOR - H.V.A.C. DEMOLITION LAYOUT
TM-2.1.2- 2ND FLOOR - PLUMBING AND PIPING DEMOLITION LAYOUT
TM-2.1.3- 2ND FLOOR - H.V.A.C. DEMOLITION LAYOUT
TM-1.2- 1ST FLOOR - PLUMBING AND PIPING LAYOUT
TM-2.2- 2ND FLOOR - PLUMBING AND PIPING LAYOUT
TM-1.3- 1ST FLOOR - H.V.A.C. LAYOUT
TM-2.3- 2ND FLOOR - H.V.A.C. LAYOUT
TM-R.3- ROOF LAYOUT
TM-1.4- 1ST FLOOR - FIRE PROTECTION LAYOUT
TM-2.4- 2ND FLOOR - FIRE PROTECTION LAYOUT

PART1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SPECIFICATIONFORMAT

1.2.1. Specifications are addressed to the Contractor. Specifications are not intended as detailed description of installation methods but serve to indicate particular requirements in completing the Work.

1.2.2. Where the Contract Documents do not provide sufficient information for complete installation of item, then as supplement, comply with manufacturer's written instructions for quality of work.

1.2.3. Portions of Specifications are written in short form. Therefore, it shall be understood that where item of the Work is stated in heading followed by material, equipment, component, or operation, words "shall be", "shall consist of" or similar words or phrases are implied which denote supply, fabricate and supply, install, provide or commission of such materials, equipment or operations for component of the Work designated by heading.

1.2.4. Where items in the Contract Documents are referred to in singular, provide as many as required to complete the Work. Words used in 1 gender only shall mean females as well as males and conversely.

1.2.5. Drawings, Lists or Schedules of Items are intended to show scope and arrangement of work. For location of item described refer to such Drawings, Lists or Schedules unless location stipulated in Specifications.

1.3. DISCREPANCIES/CONFLICTS/OMISSIONS

1.3.1. If discrepancies or conflicts in, or omissions from the Drawings, Specifications or other Contract Documents are suspected, or if there is doubt as to meaning or intent thereof, notify the Consultant at once. Where there is conflict between the Contract Documents, the most stringent requirement shall prevail.

1.3.2. The Drawings, Specifications and other Contract Documents are intended to be in compliance with federal, provincial and municipal laws, by-laws, regulations and other requirements of authorities having jurisdiction. Perform work in conformity with such requirements. If discrepancies, conflicts or omissions are suspected, notify the Consultant at once.

1.3.3. Comply with the Consultant's written instructions or explanations.

1.3.4. Promptly and not later than within 5 working Days of becoming aware of circumstances which may require a change in the Work or other directions, give written notice to the Consultant outlining such circumstances and request written directions. Do no work in affected area, or that would prevent the Consultant from properly assessing

situation or evaluating change, without its prior written approval. The Consultant will act promptly to give the Contractor directions so the Work is not unreasonably delayed.

1.3.5. Throughout the project, examine the work of all trades and promptly notify the Consultant if any conditions do not or will not comply with the Drawings and specifications

1.4. DESCRIPTION OF THE WORK

1.4.1. Work of this the Contract includes furnishing labour, materials, equipment, services and other related expenses to execute the minor modifications and upgrades of the Archives Room at York Region Administration Building, as specified and described in the Drawings and Contract Documents.

1.4.2. Term "NIC" means Work of this Project which is not being performed or provided under this Contract; term means "Not In this Contract" or "Not a Part of the Work to be Performed or Provided by the Contractor".

1.4.3. "NIC" work may be specified or indicated on the Drawings as an aid to the Contractor in scheduling amount of time and materials necessary for completion of the Contract.

1.5. SCHEDULING

1.5.1. The owner shall remove and relocate shelving and racking in the CRC area. The Contractor shall coordinate their schedule and facilitate this work.

1.5.2. Allow for un-schedule interruption to schedule of the Work and suspend parts of the Work affected to permit the Owner to relocate furniture and equipment from the Place of the Work, into finished spaces. The Owner will coordinate this interruption.

1.6. COMPLETION DEADLINES

1.6.1. Phase and schedule the Work to meet deadlines specified in the Contract Documents.

1.7. INTERRUPTIONS IN THE WORK SCHEDULE

1.7.1. Suspend parts of the Work affected as required to allow the Consultant to review and accept mock- ups and to establish standards of workmanship for remainder of Work.

1.8. PLACE OF THE WORK

1.8.1. This is an occupied facility, the Contractor will at all times avoid disruption to the occupants and shall co-ordinate all activities with the occupants to eliminate excessive noise.

1.8.2. Keep place of work safe and secure , denying access to unauthorised personel

1.8.3. Confine extent of construction activities to area indicated on the Drawings as the Place of the Work and/or within area defined by property lines. Confine all equipment, materials, debris, offices, storage areas to area previously defined.

1.8.4. Should the Contractor require that boundaries of the Place of the Work be temporarily

extended, obtain approval of the Consultant and the Region.

1.8.5. Certain restrictions are specified as to use by the Contractor of various portions of Place of the Work. Become familiar with these restrictions and establish work plan to accommodate these restrictions. No claims for extra costs due to such restrictions will be considered by the Owner.

1.8.6. Assume responsibility for care, custody and control of property which is assigned for performance of the Work. Assume responsibility for and Make Good damage to existing property attributable to performance of the Work.

1.8.7. Operational Limitations

1.8.7.1. The Existing building will remain in full use and occupancy throughout the Work, except for those parts of the building that have been vacated for the Work

1.8.7.2. Contractors use of the Place of Work is limited to the permit regular use of the Owner's facilities to continue with the least amount interference and disruptions possible

1.8.7.3. In consultation with and to the acceptance of the consultant in the presence of The Owner , designate an entrance and a circulation route that workers shall use and that shall not be used by the Owner's staff, building occupants or the Public.

1.8.8. Dust Tight enclosure and partition doors and entrance doors to the Place of Work shall remain closed.

1.8.9. Areas of the existing building adjacent to the Place of Work or areas affected by the work including circulation and access routes shall be maintained in a clean state equivalent to the level of cleanliness maintained in the existing building, and in accordance with section 01 70 00

1.9. SETTING OUT THE WORK

1.9.1. Locate and fix grid lines and locations of walls, partitions, shafts and all parts of the construction as work proceeds

1.9.1.1. Verify grades, lines, levels and dimensions indicated, and report any errors or inconsistencies to the Consultant before commencing work. Confirm job dimensions at once to allow prompt checking of shop and other drawing

1.9.1.2. As work progresses, provide and maintain bench marks, giving exact elevation of finished floor.

1.10. SITE DIMENSIONS

1.10.1. Before proceeding with Shop Drawings, fabrication, or supply of each new part of the Work, examine installed parts of the Work and verify as-built site dimensions to coordinate previously built construction with pending construction.

1.11. SIGNS, ADVERTISING AND PUBLICATIONS

1.11.1. Do not erect or display devices, signs or advertisements of labour, materials or services provided to the Work. Signs relative to fire, danger and safety are exempted from this requirement.

1.11.2. Do not consent to advertising of the Work, of any kind, without the Region's and the Consultant's written approval. Do not consent to mention of the Work in any advertising or articles in any publication relating to the Work without approval of copy and written permission from the Region and the Consultant.

1.12. PROCEDURE AND SUPPLY OF CRITICAL MATERIALS

1.12.1. Supply Products in ample time to be installed into the Work together with templates, measurements and other information required for placement.

1.13. RESTRICTIONS

1.13.1. The Work shall be confined to the Work site limits indicated on the Drawings and/or within area defined by property lines. Work on municipal property shall be carried out under regulations of respective municipality and the Authorities Having Jurisdiction including without any limitations any associated fees, permits, insurance or bonding required.

1.14. EXISTING SITE SERVICES

1.14.1. Before commencing the Work, establish location and extent of existing services in area of the Work and notify the Consultant of findings.

1.14.2. Consult public and service companies' records and become fully informed of locations and extent of buried and overhead services and utilities.

1.14.3. If disruption of services which affects operation of existing building is necessary, give a minimum of 5 Working Days' notice to the Consultant and the Region. Provide temporary services and obtain prior acceptance from the Consultant and the Owner with regard to timing and methods for providing temporary services.

1.14.4. Should any piping, sewers, cables, or similar services be encountered during work of this the Contract that are not known from the Owner's and utility companies' records, notify the Consultant and do not proceed with removal or cutting until permitted by the Consultant.

1.14.5. In no instances shall interruptions affect the entire building

1.14.6. As far as possible coordinate interruptions with the Owner's regular maintenance of building services and systems

1.14.7. Areas adversely affected by changes in airflow outside the construction areas as a result of a required shutdown of portions of existing HVAC system within the Construction areas are to be re-balanced to comfortable levels as advised by the Consultant.

END OF SECTION

PART1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. REFERENCES

1.2.1. Abbreviations and Acronyms:

1.2.1.1. CCO: Contemplated Change Order.

1.2.1.2. CD: Change Directive.

1.2.1.3. CO: Change Order.

1.2.1.4. VAT: Value Added Taxes.

1.3. CASH FLOW SCHEDULE

1.3.1. Prior to commencement of the Work, submit a detailed cash flow projection schedule indicating anticipated billings on a month-by-month basis for duration of the Work, including timing of holdback release.

1.3.2. Update cash flow schedule monthly, recording cumulative as well as monthly totals.

1.4. PROGRESS BILLING BREAKDOWN

1.4.1. Prior to commencement of the Work, submit a detailed progress billing breakdown and obtain approval of the Consultant and the Town.

1.4.2. Ensure progress billing breakdown includes itemized values, (each excluding VAT), applied against each of following:

1.4.2.1. mobilization and start-up.

1.4.2.2. general site expenses.

1.4.2.3. Cash Allowance amount.

1.4.2.4. progress photographs in accordance with Section 01 30 00.

1.4.2.5. each Section of Specifications (Divisions 2 - 49 inclusive).

1.4.2.6. as-built D r a w i n g s broken down by Architectural, Mechanical and Electrical disciplines (minimum 0.5% of Contract Price).

1.4.2.7. deficiencies (minimum 0.5% of Contract Price).

1.4.2.8. Project closeout, comprising separate sums for (minimum 0.5% of Contract Price):

1.4.2.8.1. manuals.

1.4.2.8.2. maintenance materials.

1.4.2.8.3. commissioning and training/demonstration for the Owner's staff.

1.5. CHANGES IN THE WORK DUE TO A SUPPLEMENTAL INSTRUCTION

1.5.1. Supplemental Instruction does not normally include any change in the Contract Price nor in the Contract Time. The Contractor shall formally notify the Consultant in writing within 10 Days that Supplemental Instruction requires an amendment in the Contract Price and/or the Contract Time. If satisfied, Consultant will issue a CCO for processing, or if notification has not been received within 10 Days, it is understood that there are no anticipated changes in the Contract Price and the Contract Time.

1.6. CONTRACT MODIFICATION PROCEDURES

1.6.1. Further to GC 6.1 of the General Conditions of the Contract, promptly and not later than 5 working days after becoming aware of circumstances which may require a change in Work or other directions, give written notice to the Consultant outlining such circumstances and requesting proposed change. Do no work in affected area, or that would prevent the Consultant from properly evaluating circumstances and proposed change, without obtaining written approval. The Consultant will act promptly to give the Contractor directions so the Work is not unreasonably delayed.

1.6.2. Advise the Consultant in writing of any contradictions, discrepancies, omissions or errors discovered or revealed. Do not proceed before obtaining clarifications and directions from the Consultant in writing. Failure to follow this results in the Contractor assuming full responsibility for resulting circumstances and costs.

1.7. CHANGE ORDER AND CHANGE DIRECTIVE

1.7.1. Any variation in the Contract involving a change in total amount of the Contract Price or in the Contract Time shall be initiated through the Consultant in form of a CCO describing work proposed under variation and requesting a quotation from the Contractor.

1.7.2. Three copies of CCOs or CDs will be issued to the Contractor. Additional copies of these documents, including referenced the Drawings and Schedules, shall be provided by the Contractor. Issuance of electronic Drawing files (Revit, AutoCAD, etc.) with a CCO, CO and CD are at the Contractor's cost.

1.7.3. Immediately inform relevant Subcontractors and Suppliers of proposed change.

1.7.4. Upon receipt of a CCO by the Contractor and where specifically directed by Consultant, suspend work affected by proposed change until a CO is issued, or until CCO is cancelled.

1.7.5. Upon receipt of a CD, begin work described therein as soon as possible and prepare a quotation for the work.

1.7.6. Return 1 copy of the CCO or CD with a quotation for the work.

1.7.7. Include work described in CCO and other work caused, however incidental it may be, by proposed change. Once CO is issued by the Owner, no further claims for extra costs or time extensions will be accepted.

1.7.8. If quotation received is unacceptable, the Consultant will reject quotation and request revised quotation from the Contractor.

1.7.9. When the Consultant deems quotation acceptable, it will prepare a CO.

1.7.10. Value of changes in work shall be determined and processed in accordance with General Conditions of the Contract.

END OF SECTION

PART1- GENERAL

1.1. GENERALINSTRUCTIONS

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1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. PROJECTCOORDINATION

1.2.1. Study the Contract Documents to determine extent of work required by each Section and upon which work of other Sections depend and coordinate scope and extent of work to be performed by each trade. Neither organization of Specifications into Divisions and 3-part Section format nor arrangements of the Drawings, Schedules and Standard Drawings shall affect in any way the Contractor's control in, or diminish its responsibility for, dividing the Work or establishing each trade's scope of work. Claims for additional compensation arising from disputes between trades due to lack of coordination by the Contractor will not be considered.

1.2.2. Coordinate work of each Section as required for satisfactory and expeditious completion of the Work. Take field dimensions required. Take into account existing installations to assure best arrangements of components in available space. Consult before commencing Work in critical locations. Fabricate and erect Work to suit field dimensions and field conditions.

1.2.3. Provide forms, templates, anchors, sleeves, inserts and accessories or other components required to be fixed to or inserted in the Work. As applicable set them in place or instruct related Sections as to their location.

1.2.4. Pay cost of extra work caused by and make up time lost as result of failure to comply with these requirements at proper time.

1.2.5. Coordinate work of all trades including construction sequence, schedule and interfacing of all work. Coordinate work as required to incorporate metric modular components. Coordinate work of each trade as required for satisfactory and expeditious completion of the Work. Ensure components to be built in are supplied in time with setting drawings and other related information. Fabricate and erect Work to suit field dimensions and field conditions.

1.2.6. Ensure the Contract Documents are fully coordinated with respect to architectural, structural, mechanical, electrical and other specialty requirements.

1.2.7. Cooperate and coordinate with the Consultant for moving The Owner's equipment into building when the Work or substantial part thereof is ready for use for purpose intended.

1.3. DOCUMENTS ON SITE

1.3.1. Further to GC 3.9, maintain in good condition and order on site 1 copy of Addenda, proposed changes in the Work, Change Orders, test reports, manufacturer's installation and application instructions, progress photographs, as-built drawings, approved progress schedules, minutes of site meetings and other modifications to the

Contract Documents.

1.4. START-UP MEETING

1.4.1. Presided over by the Consultant, after award of the Contract.

1.4.2. Attendees:

1.4.2.1. Consultant(s).

1.4.2.2. Contractor.

1.4.2.3. Contractor's Superintendent.

1.4.2.4. Subcontractors (Mechanical, Electrical).

1.4.2.5. Major Equipment Suppliers.

1.4.2.6. Others as appropriate.

1.4.3. Minimum Agenda:

1.4.3.1. List of major Subcontractors and Suppliers.

1.4.3.2. Tentative construction progress schedules.

1.4.3.3. Start date; submission of schedules; long term delivery items.

1.4.3.4. Insurance Certificates, Cash Flow Schedule, Construction Schedule, Shop Drawing submission schedule, bonds including Value Added Taxes, Trade Breakdown including value for Close Out, Work place and Safety & Insurance Board Clearance Certificate, Project Sign.

1.4.3.5. Critical work sequencing.

1.4.3.6. Major equipment and Product deliveries and priorities.

1.4.3.7. Designation of responsible personnel.

1.4.3.8. Building Permit status.

1.4.3.9. Procedures for maintaining record documents.

1.4.3.10. Use of Premises: Office, keys, work and storage areas; the Owner's requirements (storage delivery, path of construction activities, vehicle, by foot, carts, exterior and interior, elevator use, washrooms, bin location).

1.4.3.11. Construction facilities, controls, temporary hoarding, dust partitions, parking, hours, noisy work, interruption of services, smoking, cell phone usage and construction aids.

1.4.3.12. Construction scheduling (particularly drying time for concrete slabs).

1.4.3.13. Temporary utilities.

1.4.3.14. Safety and first-aid procedures.

1.4.3.15. Security procedures.

1.4.3.16. Housekeeping procedures.

1.5. SITE COORDINATION AND PROGRESS MEETINGS

1.5.1. Further to GC 3.1, conduct site meetings at regular intervals (every 2 weeks), to identify and resolve construction coordination items, record minutes including significant proceedings and decisions and identify "action by" parties; and reproduce and distribute to meeting participants, copies of minutes within 3 Working Days after each meeting. The Consultant also reserves right to call additional special emergency site meetings on short notice without any cost to the Owner.

1.5.2. Attendees:

1.5.2.1. Contractor's project manager and site superintendent.

1.5.2.2. Mechanical and Electrical Subcontractors.

1.5.2.3. Subcontractors invited by the Contractor.

1.5.2.4. Owner and/or Consultant(s).

1.5.3. Chair: the Contractor.

1.5.4. Include following:

1.5.4.1. Prepare agenda for meetings.

1.5.4.2. Distribute written notice of each meeting minimum 7 Days in advance of meeting date, stating time and place, to persons whose presence is required.

1.5.4.3. Make physical arrangements for meetings.

1.5.4.4. Record minutes and attendees; include significant proceedings and decisions.

1.5.4.5. Reproduce and distribute copies of minutes after each meeting to parties attending meeting, to parties affected by decisions made at meeting and to the Consultant.

1.5.4.6. Ensure representatives of the Contractor, the Contractor's consultants, Subcontractors and Suppliers attending meetings are qualified and authorized to act on behalf of entity each represents.

1.5.4.7. Ensure relative information is available to allow meetings to be conducted efficiently.

1.5.4.8. The Consultant may attend meetings to ascertain Work is consistent with the Contract.

1.5.4.9. Documents and Construction Progress Schedule.

1.5.4.10. Construction Progress Schedule may be reviewed to ensure rapid and efficient completion of the Work in accordance with the Contract requirements. Keep he Consultant informed of progress, of delays and of potential delays during all

stages of Work.

1.5.4.11. Review, approval or correction of minutes of previous meeting.

1.5.4.12. Review of work progress since previous meeting.

1.5.4.13. Field observations, problems, conflicts.

1.5.4.14. Problems which impede Construction Progress Schedule.

1.5.4.15. Review of off-site fabrication, delivery schedules.

1.5.4.16. Review of submittals schedules.

1.5.4.17. Review of mock-up and sample installation requirements and schedules.

1.5.4.18. Corrective measures and procedures to regain projected schedules.

1.5.4.19. Quality standards.

1.5.4.20. Pending changes and substitutions.

1.5.4.21. Other business.

1.6. PREINSTALLATION TRADE MEETINGS

1.6.1. If a trade requires a meeting prior to starting work, arrange for such meeting of all parties associated with trade as designated in the Contract Documents or as requested by the Consultant. Presided over by the Contractor, include the Consultant who may attend, include Subcontractor performing work of trade involved, and the Contractor's consultants of applicable discipline. Review Contract Documents for work included under trade and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of concrete placement and other matters affecting construction, to permit compliance with intent of trade under consideration.

1.7. PLAN OF ACTION

1.7.1.1. Submit "Plan of Action" immediately after award of the Contract for review by the Consultant.

1.7.2. Coordinate demolition times, security requirements and access with the Owner

1.8. SCHEDULE OF THE WORK

1.8.1. Submit a detailed “Gantt Chart” construction schedule with activities itemized to enable the Contractor, the Town and the Consultant to monitor progress of the Work.

1.8.2. Schedule shall indicate without limitations dates for:

1.8.2.1. erection and dismantling of temporary facilities.

1.8.2.2. submission of Shop Drawings for various divisions of Work.

1.8.2.3. submission of mechanical and electrical trades coordination and interference drawings.

1.8.2.4. submission of samples and installation dates for mock-ups and sample installations.

1.8.2.5. commencement and completion of each major division of the Work, including work to be done by Subcontractors.

1.8.2.6. critical work sequencing.

1.8.2.7. major equipment deliveries and priorities.

1.8.2.8. final completion date.

1.8.3. Update and resubmit schedule on a monthly basis.

1.9. SHORT TERM SCHEDULE

1.9.1. On a bi-weekly basis, provide the Owner with a 2 week short term schedule based on above schedule, indicating important construction activities as the Owner and the Consultant may see suitable for the Project requirements.

1.10. PROGRESS PHOTOGRAPHS

1.10.1. Submit progress photographs in digital formats, from date of commencement of the Work until date of Substantial Performance of the Work.

1.10.2. Submit colour, glossy, 200 mm x 250 mm (8" x 10") photographs in a clear sheet protector suitable for storage in a binder with a white patch in bottom, right corner indicating name of Project, compass direction of exposure, subject title, date and time of exposure.

1.10.3. Prior to commencement of Work, submit six 6 photographs of the Place of the Work and six 6 photographs along the lines forming the perimeter of the Place of the Work.

1.10.4. During Work, submit 10 photographs reproduced in duplicate, each month, taken from different vantage points to illustrate progress of the Work, both exterior and interior.

1.10.5. Submit 4 exterior and 24 interior photographs when the Work has been certified by the Consultant as Substantially Performed.

1.11. PERSONNEL APPOINTMENT

1.11.1. Appoint a senior member of staff, with full authority to commit the Contractor to methods and schedules for construction, to participate actively in administration and maintenance of detailed construction schedule. Provide necessary information on progress of the Work to enable a status report to be produced every 2 weeks.

1.12. GENERAL REVIEW

1.12.1. The Consultant will conduct periodic field review to review the Work for general conformance with the Contract Documents, Code and the Authorities Having Jurisdiction.

1.12.2. Review includes review of Shop Drawings, review of field work and review of reports produced by various inspection and testing agencies.

1.12.3. Record each review in manner suitable for submission to Consultant at completion of Project along with inspection and testing reports at site meetings every second week.

1.13. PRODUCT SUBSTITUTION PROPOSALS

1.13.1. After award of Construction Contract, Product substitution proposals will not be reviewed nor accepted except in cases where written proof from Product manufacturer/distributor has been submitted to verify specified Products:

1.13.1.1. are unavailable (providing reasons why).

1.13.1.2. were ordered in advance and in accordance with manufacturer's recommendations for lead time but timely delivery of specified Products is not possible in order to maintain construction schedule.

1.13.2. The Contractor shall submit following for each Product substitution proposal:

1.13.2.1. reason for the Product substitution proposal (for example, where the specified Products were ordered in advance but its timely delivery is not possible to maintain the construction schedule)

1.13.2.2. fully detailed and clear description of Products, systems and assemblies proposed with a complete comparison made against original Products, systems and assemblies.

1.13.2.3. Shop Drawings, including full details.

1.13.2.4. technical Product data.

1.13.2.5. samples.

1.13.2.6. on site mock-up for review by the Consultant prior to acceptance of substitution.

1.13.2.7. difference in price, if any, in form of certified quotations of both selected and proposed substitutions.

1.13.3. Submit the Contractor's written acceptance of use of substituted Products and certification substituted Products:

1.13.3.1. will not exceed space requirements allocated for originally specified Products or, if they do, the Contractor is including with substitution submission, design drawings, to accommodate substituted Product.

1.13.3.2. are compatible with and inert to adjacent materials.

1.13.3.3. will not affect the Project schedule due to delays in delivery and installation.

1.13.3.4. have been priced to include design adjustments required to accommodate substituted Products.

1.13.4. Proposed substitutions require the Consultant's review and acceptance in writing and, if there is a difference in price, extra or credit requires the Owner's acceptance.

1.13.5. Acceptance of proposed substitution by the Consultant and/or the Owner does not relieve the Contractor of his responsibility and cost for any affect proposed substitution has on other Products, systems and/or assemblies.

1.14. CERTIFICATES AND TRANSCRIPTS

1.14.1. Immediately after receiving notification of the award of the Contract, submit Workplace Safety & Insurance Certificate status, transcription of insurances and other certificates and transcripts required by the Contract Documents or Consultant.

1.15. CONTRACTOR'S PERSONNEL AND SUBCONTRACTORS

1.15.1. Submit complete list of the Contractor's Subcontractors with addresses, phone numbers and personnel along with the Contractor's list of personnel.

1.16. SUBMITTAL PROCEDURES

1.16.1. Submit to the Consultant and the Authorities Having Jurisdiction as required, documents listed to be submitted for review. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work. Failure to submit in ample time is not considered sufficient reason for an extension of the Contract Time or extra costs and no claim for extension of the Contract Time or increase to the Contract Price by reason of such default will be allowed. Obtain final approval of authorities having jurisdiction, where required, prior to submitting Shop Drawing or other documentation to the Consultant.

1.16.2. Prior to submission to the Consultant, the Contractor shall review submittals. Submittals not stamped, signed, dated and identified as to specific Project will be returned without being examined and considered rejected. Verify field measurements and ensure affected adjacent Work is coordinated. Confirm and correlate information pertaining to fabrication processes, quantities, techniques of construction and installation and similar information.

1.17. REQUEST FOR INTERPRETATION (RFI)

1.17.1. RFI is a formal process used to request an interpretation to information already provided in the Contract Documents from the Consultant during the Work.

1.17.2. RFI is not used to expand the Contract between the Owner and the Contractor or to add any additional work resulting in an increase in the Contract Price or the Contract Time. It is only for routine interpretation of the Contract Documents.

1.17.3. Submit RFI by email in standard format as accepted by the Consultant.

1.17.4. Submit necessary supporting information with RFI.

1.17.5. RFI Log: Maintain tracking log of RFIs sent to and responses received from the Consultant complete with corresponding dates.

1.17.6. Submit RFIs sufficiently in advance of affected parts of the Work so not to cause a delay in the Work. Any costs resulting from failure to do this will not be paid by the Owner.

1.17.7. Submit RFIs to the Consultant only.

1.17.8. Number RFIs consecutively in 1 sequence in order submitted.

1.17.9. Consultant requires 7 Days for review of RFI from time of the Consultant's receipt to time of the Consultant's return to the Contractor. The Contractor will establish a steady flow of RFIs for review and avoid accumulation of an excessive quantity of RFIs in a single submission.

1.17.10. The Consultant's response is not considered a Change Order or Change Directive, nor does it authorize changes in the Contract Price or the Contract Time or changes in the Work.

1.17.11. Undertake a thorough review of the Contract Documents to satisfy a claim, dispute or other matters in question relating to performance of the Work or interpretation of the Contract Documents cannot be resolved by direct reference to the Contract Documents. Describe in detail this review on RFI form as part of RFI submission. RFIs lacking such detailed review description or where detail provided is in opinion of the Consultant insufficient, the Consultant will not review RFI and reject it.

1.18. SHOP DRAWINGS

1.18.1. Shop Drawing Schedule: Submit a Shop Drawing schedule in accordance with GC 3.10.

1.18.2. Fabrication: Do not fabricate until Shop Drawings are indicated as "REVIEWED" or "REVIEWED AS NOTED".

1.18.3. The Consultant's Shop Drawing Review:

1.18.3.1. The Consultant's review of Shop Drawings is for sole purpose of ascertaining conformance with general design concept.

1.18.3.2. The Consultant's review does not provide approval of items which remain the Contractor's responsibility.

1.18.3.3. Without limitation, among other things, Contractor remains responsible for:

1.17.3.3.1. detail design inherent in Shop Drawings.

1.17.3.3.2. errors and omissions in Shop Drawings.

1.17.3.3.3. meeting requirements of the Contract Documents.

1.17.3.3.4. confirmed and correlated site dimensions.

1.17.3.3.5. information that pertains solely to fabrication processes, techniques of construction and installation.

1.17.3.3.6. co-ordination of work of all trades.

1.17.4. Shop Drawing Requirements:

1.17.4.1.0. Indicate following minimum requirements as applicable:

1.17.4.1.1. plans, sections and details.

1.17.4.1.2. verified site dimensions.

1.17.4.1.3. materials thicknesses and finishes.

1.17.4.1.4. methods of setting and sealing.

1.17.4.1.5. methods of securing, fastening and anchoring including field connections.

1.17.4.1.6. signed and sealed Shop Drawings and calculations where specifically required herein.

1.17.4.2. Do not make Product substitutions on Shop Drawings without the Consultant's written acceptance in accordance with Product substitution proposal process or they will be rejected. Replace unaccepted Product substitutions and complete the Work in accordance with the Contract Documents.

1.17.4.3. Determine which Shop Drawings the local Building Department will require for its approval and submit 2 final copies of each Shop Drawing to local Building Department. Obtain approval and pay associated charges and fees.

1.17.5. Shop Drawing Procedures:

1.17.5.1. Execute following prior to submitting Shop Drawings to Consultant:

1.17.5.1.1. review, check and mark-up Shop Drawings with comments and revisions and re-direct back to Subcontractor (“REVISE AND RESUBMIT”, etc.) in the first instance if required prior to forwarding to Consultant.

1.17.5.1.2. stamp each Shop Drawing with Shop Drawing stamp.

1.17.5.1.3. insert applicable Specification Section reference, e.g. "10 28 00" for Section 10 28 00, Washroom Specialties.

1.17.5.1.4. insert next consecutive Shop Drawing number within that Section, e.g. "002" for second Drawing within Section 10 28 00.

1.17.5.1.5. insert the Contractor's review date and signature of Contractor's reviewer.

1.17.5.2. Submit following for Consultant's review:

1.17.5.3. 1 print of each stamped Shop Drawing, to be returned to the Contractor.
3 prints of each stamped Shop Drawing, not returned to the Contractor.
If catalogue cuts acceptable to the Consultant, submit as many copies of catalogue cuts for review as agreed to. Only 1 set to be returned to the Contractor.

1.17.5.3. Reproductions of the Consultant’s Drawings or Contract Documents are not acceptable as Shop Drawings.

1.17.5.4. Shop Drawings not conforming to above criteria will be automatically returned without review. Any resulting delays will be the Contractor's responsibility.

1.17.5.5. Shop Drawings submitted without specified licensed engineer’s design and stamp will be automatically returned without review. Any resulting delays will be the Contractor's responsibility.

1.17.5.6. Do not resubmit Shop Drawings indicated as "REVIEWED" and "REVIEWED AS NOTED".

1.17.5.7. Resubmit Shop Drawings indicated as "REVISE AND RESUBMIT" with required changes and comments addressed. Insert letter "R" after Shop Drawing number on resubmitted

Shop Drawings, re-date and re-sign. Identify revisions from earlier submissions graphically on revised Shop Drawings.

1.17.5.8. The Consultant requires 7 Days for review of Shop Drawing from time of Consultant's receipt to time of Consultant's return to Contractor. Contractor will establish a steady flow of Shop Drawings for review and avoid accumulation of an excessive quantity of Shop Drawings in a single submission.

1.17.5.9. Provide Shop Drawings required by the Contract Documents.

1.18. INTERFERENCE DRAWINGS

1.18.1. Prepare drawings indicating relationship of new and existing and/or unforeseen conditions at congested areas prior to commencement of work in area.

1.18.2. For congested locations, before commencing installation, prepare drawings showing relationship of ductwork, conduit, piping, sprinklers, ceiling supports and framing, communication and specialized equipment located within ceiling and shaft spaces.

1.18.3. Indicate locations of visible items such as air handling outlets, light fixtures, smoke detectors, sprinkler heads, communication grilles and access panels occurring at these locations.

1.18.4. Ensure interference drawings are initialed by a responsible person of each Subcontractor involved along with Contractor's signature and submitted to Consultant for review and record purposes.

1.19. SAMPLES

1.19.1. Prior to fabrication or supply of Products, submit samples for the Consultant's review. Remove and discard Products whose samples have not been reviewed and accepted by the Consultant.

1.19.2. Deliver samples to the Consultant as directed with charges prepaid and allow for 1 of samples to be kept by the Consultant.

1.19.3. Unless otherwise specified in the Contract Documents, submit samples in duplicate.

1.19.4. Identify each sample with:

1.19.4.1. Project name and Project number.

1.19.4.2. date of sample submission.

1.19.4.3. component name using the Specification's terminology.

1.19.4.4. material (including alloy).

1.19.4.5. finish including colour, sheen, texture.

1.19.4.6. dimensions including thickness.

1.19.5. Exhibit each of following for each sample:

1.19.5.1. materials.

1.19.5.2. finishes:

1.19.5.2.1. material.

1.19.5.2.4. colour including maximum colour range within each specified colour.

1.19.5.2.3. sheen, tone.

1.19.5.2.5. texture.

1.19.5.2.6. range of blemishes and other markings.

1.19.6. Alter, refinish or provide additional samples until they are reviewed and accepted by the Consultant.

1.19.7. Fabricate samples using same tools and techniques to be employed in actual installation of the Work.

1.19.8. Provide Products in the Work which are identical to accepted samples.

1.19.9. Provide samples required by the Contract Documents.

1.20. ACCESS PANELS AND ACCESS DOORS

1.20.1. Before commencing installation of mechanical and electrical work, prepare, together with mechanical and electrical Subcontractors, on a set of Drawings provided for that purpose, a complete lay-out of all access panels and access doors which will be required. Submit these lay-outs for review as specified for Shop Drawings and show exact sizes and locations of access panels and doors. Revisions may be required to lay-out before final review. Allow the Consultant to revise layout or quantity of access doors and panels, by relocating related building services a maximum of 2000 mm (6' - 7") at no extra cost to the Owner. Should relocation exceed this measurement then the Contract Price will be adjusted in accordance with provisions for changes in the Contract Documents.

1.20.2. Finish access panels and doors to match adjacent wall and/or ceiling finish unless otherwise specified or indicated on the Drawings.

1.21. COLOURS

1.21.1. Colour and gloss value selection by the Consultant. Obtain direction on colour and gloss value in advance of need. If requested, submit samples for colour and gloss selection. Follow colour schedule provided by the Consultant and use colours and gloss designated.

1.22. RECORD DRAWINGS AND SPECIFICATIONS

1.22.1. Keep 1 set of the Drawing prints and Specifications on site for use in maintaining record information. Ensure these Drawings and Specifications are kept on site at all times available for review by the Owner and/or the Consultant at any given time.

1.22.2. Accurately and neatly record deviations from the Contract Documents, including

Addenda, Site Instructions and Change Orders, caused by site conditions.

1.22.3. Record information concurrently with construction progress. Do not conceal actual work until required information is recorded.

1.22.4. Legibly indicate each item to record actual construction including:

1.22.4.1. Field changes of dimension and details.

1.22.4.2. Details or information not on the original Contract Drawings.

1.22.5. Catalogue field review reports and cross reference to relevant trade, building area and component. Submit inspection and testing reports in accordance with requirements of Specifications. Highlight unsatisfactory inspection and testing results with supplementary instructions issued by the Consultant.

1.22.6. Identify Drawings as "Project Record Copy", maintained and available for inspection on site by the Consultant.

1.22.7. Prior to applying for Certificate of Substantial Performance submit record Drawings and Specifications to the Consultant.

1.23. AS-BUILT DRAWINGS

1.23.1. Prior to applying for Certification of Substantial Performance, the Contractor will provide an electronic set of requested Drawings for As-Built purposes.

1.23.2. Disks of Drawings may be obtained from the Consultant at an agree cost plus Value Added Taxes, per Drawing.

1.23.3. The Contractor is responsible for:

1.23.3.1. maintaining As-Builts during progress of work, in complete sets, at the Place of the Work.

1.23.3.2. including additional changes over and above those included in any Addenda, Site Instructions and Change Orders.

1.23.3.3. including accurate locations, depths, sizes and types of underground utilities and concealed services in the As-Built Drawings.

1.23.3.4. having changes recorded in a manner consistent with the original Drawings' software.

1.23.3.5. ensuring outline clouds and notations are removed from the Drawings.

1.23.3.6. having 1 set As-Built Drawing prints submitted to the Consultant for review before final submission.

1.23.3.7. incorporating any review comments made by the Consultant.

1.23.4. resubmitting final reviewed set in following format:
1.23.5. 1 set on electronic disc in CAD and PDF formats.
1.23.6. 2 set of white prints (1 set is for Owner).
1.23.7. Refer to mechanical and electrical Divisions for supplementary requirements.

1.24. OPERATION AND MAINTENANCE INSTRUCTIONS MANUAL

1.24.1. Upon completion of the Work, submit 3 sets and/or 1 digital copy of operation and maintenance instructions manual to the Consultant. Include following:

1.24.1.1. data books and literature.

1.24.1.2. maintenance instructions, specifying warnings of any maintenance practice that may damage or disfigure specified Products.

1.24.1.3. operational information on Products, cleaning and lubrication schedules, filters, overhaul and adjustment schedules and similar maintenance information.

1.24.1.4. recommended maintenance Products.

1.24.2. Submit instructions in plain language to guide Owner in proper operation and maintenance of building components.

1.24.3. Organize contents into applicable categories of the Work, numbered to match the Specification Section numbering system.

1.24.4. Bind contents of operation and maintenance instructions manual in 3-ring, hard-covered, vinyl jacketed binders, label spine "OPERATION AND MAINTENANCE INSTRUCTIONS MANUAL" and include following:

1.24.4.1. title sheet, labelled "OPERATION AND MAINTENANCE INSTRUCTIONS", containing Project name and completion date.

1.24.4.2. list of contents.

1.24.4.3. list of names, addresses and telephone numbers of installing Subcontractors and Suppliers for future repair or maintenance.

1.24.4.4. schedule of Finishes (as-built) listing paints, colours and fabrics provided.

1.24.5. Refer to mechanical and electrical Divisions for supplementary requirements.

1.24.6. Provide Operation and Maintenance Instructions as required by the Contract Documents.

1.25. MISCELLANEOUSSUBMITTALS

1.25.1. Supply submittals required by the Contract Documents (e.g. plans, reports, certifications, results, records, etc.) for the Consultant's review.

END OF SECTION

PART1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.1.2. Be responsible for arranging, obtaining and paying for any permit necessary for temporary facilities and controls. Provide and maintain all temporary facilities and controls. Remove them when directed and/or when no longer required. Payment for temporary facilities and controls shall be made by the Contractor unless specified otherwise in the contract Documents.

1.1.3. Provide and maintain adequate temporary supports, structures, light, power and water in accordance with GC 3.3, as required by all trades and to produce environment for Work to proceed without delay at all times of year. Cost of temporary light, power and water shall be included in the Contract Price. Pay for installation, light, power and water used, maintenance and removal.

1.2. CONSTRUCTIONFACILITIES

1.2.1. The Contractor's Field Office: Provide The Contractor's field offices and storage within the Place of the Work only. Coordinate location with the Owner.

1.2.1.1. Supply field office with vertical drawing racks to hold sets of the Contract Drawings.

1.2.2. Designated Lunch Area:

1.2.2.1. Provide designated temporary lunch areas to be used by workers on Site.

1.2.3. Safety Program:

1.2.3.1. Conform to GC 3.6, undertake role of "Constructor" as defined under The Occupational Health and Safety Act, as amended. Be responsible to provide full safety program for anyone who gets paid for services on site including management, labour, delivery drivers, service personnel and others involved for services on site. Arrange for pre-project meeting related to safety, joint safety inspections with Contractor's consultant where required, site safety training and safety committees complete with accident investigation procedures.

1.2.3.2. Prior to commencement of construction, design fire safety plan in conjunction with local Fire Chief. Post fire plan throughout construction as recommended. Do not allow accumulation of waste that may constitute fire hazard.

1.2.3.3. Conform to Construction Safety Association of Ontario's Manual on Propane in construction. Watch work area for minimum of 30 minutes after hot work is completed. Provide site fire security when required by local building department and/or

municipal fire department. Ensure water supply is adequate for fire fighting.

1.2.3.4. Provide on site such equipment and medical facilities as are necessary to furnish first aid to anyone who may be injured in connection with Work in accordance with regulations of Occupational Health and Safety Act (Ontario).

1.2.3.5. Promptly report in writing to the Consultant all accidents arising out of or in connection with performance of Work, whether on or adjacent to site, which caused death, personal injury or property damage, giving full details and statements of witnesses. In addition, in case of death, serious injuries or damages, report accident immediately by telephone or messenger to the Consultant.

1.2.3.6. If any claim is made by anyone against the Contractor or any Subcontractor on account of any accident or damage, promptly report facts in writing to the Consultant, giving full details of claim.

1.3. CONSTRUCTION AIDS

1.3.1. Construction Hoists: Provide, install, maintain, locate where directed and pay costs for hoisting equipment if required. Position equipment so not to interfere with Work. Operate equipment by qualified hoist operator along with well trained flag and signal persons. Trade Sections shall make their own financial and schedule arrangements with the Contractor for use thereof. Provide concrete pads for hoisting equipment.

1.3.2. Scaffolding: Erect fixed or mobile scaffolding as applicable independent of walls. Use it in manner as to interfere as little as possible with other Sections. When not in use, move it as necessary to permit installation of other work. Construct and maintain scaffolding in rigid, secure and safe manner. Remove it promptly when no longer required or remove it at end of each Day and store in secure place as directed.

1.4. VEHICULAR ACCESS AND PARKING

1.4.1. Parking for the Contractor's vehicles shall be arranged with the Owner. Illegally Parked vehicles will be ticketed and /or towed at the vehicle owner's expense. The Owner will not be responsible for parking fines incurred by the Contractor, Subcontractors or their employees.

1.4.2. Parking for workers is available on a first-come, first-served basis at the Owner's Existing Parking Lot

1.4.3. Throughout the Work, ensure there is no interference with the operation of the existing Premises and that the existing Road system remain free and clear of obstructions

1.4.4. Do not be nuisance to public traffic any time. Manage construction traffic by using designated roads and by providing trained flag persons to direct public traffic as appropriate.

1.5. TEMPORARY BARRIERS AND ENCLOSURES

1.5.1.1. Arrange for and provide hoarding and barricades around areas occupying public property, (within and outside the boundary of the Place of the Work), required to

execute the Work. Comply with requirements of the Authorities Having Jurisdiction.

1.5.1.2. Take precautions to protect openings made in existing building(s) from entry of elements and of persons during construction and to protect existing structure and finishes from damage. Protection of exterior enclosure shall be air tight and have minimum thermal resistance value of R = 5 (RSI = 1).

1.5.2. Barricades:

1.5.2.1. Erect sturdy railings around shafts, stairwells and in similar areas to protect workers and public from injury

1.6. TEMPORARY CONTROLS

1.6.1. Pollution Control: Take appropriate dust control measures to avoid contamination of adjacent areas near site from dust. Respond immediately to complaints of dust received from the Owner, the Authorities Having Jurisdiction or the Consultant.

1.6.2. Noise and Vibration Control: Control noise and vibration generated by the Work. Respond immediately to complaints of noise and vibration received from the Owner, the Authorities Having Jurisdiction or the Consultant.

1.7. SECURITY:

1.7.1. Provide security for the place of Work by methods compatible with the Security system for the existing building

1.7.2. Contractor shall coordinate the Work Carefully with the Consultant in the presence of the Owner in order to ensure no disruption to the existing buildings security system.

1.7.3. Where the existing building's security system is breached due to the Contractor's activities the Contractor shall be responsible for any damage or theft of property regardless if area where damage or theft occurred is under Contractor's control or not

1.8. USE OF EXISTING FACILITIES

1.8.1. Restrict access parking material deliveries execution of the Work operations and procedures to designated locations and times and do not deviate from designated procedures without prior acceptance by the Consultant in the Presence of the Owner

1.8.2. Periodically review proposed construction operations with the Consultant in the presence of the Owner and cooperate as required to ensure that The Owners interests and requirements are not unduly compromised with regard to the normal operation and function of occupied areas of the existing building

1.8.3. Traffic through occupied areas of the existing building shall be kept to a minimum and shall be via the most direct route.

1.8.4. Noise, Dust debris and odours transfers shall be minimised. Corrective action shall be implemented immediately upon notification by the Consultant or Owner

1.8.5. Use of existing containers and garbage bins shall not be permitted

1.8.6. Use of existing elevators shall be permitted with prior written approval of the Owner. For movement of materials or equipment elevators may only be used after regular business hours and elevator protectors shall be installed.

1.8.7. Existing Fire Protection equipment:

1.8.7.1. Existing Fire Protection equipment shall only be used in an emergency situation

1.8.7.2. Do not remove existing fire protection equipment unless indicated elsewhere on the drawing or permitted in the contract documents

1.8.7.3. If any existing Fire Protection equipment is used or interfered with in any way, the Owners Fire equipment inspector shall be retained to inspect, test recharge, and otherwise repair such equipment at no additional cost to the Owner

1.9. SANITARY FACILITIES:

1.9.1.1. Existing building washrooms may be used by agreement and as directed by the Owner provided they are kept clean and serviced.

1.9.1.2. The Contractor shall immediately repair any damage to the washrooms caused by its employees or Subcontractors at its own expense.

1.9.1.3. The Owner reserves the right to back charge the Contractor for additional cleaning of the washrooms if they are not kept clean by the Contractor's employees or Subcontractors.

1.9.1.4. The Contractor shall ensure that its employees and subcontractors maintain cleanliness and hygiene in the Owner's facilities , failing which the Owner shall have the right to require that the Contractor provides temporary facilities for all workers

1.10. EMERGENCY AND FIRE PROTECTION

1.10.1. The Contractor shall coordinate the carefully with The Owner in order to ensure no disruption to the existing fire detection and annunciation system. Failure to provide such coordination shall result in The Contractor incurring the responsibilities and expenses associated with disruption to the existing fire detection and annunciation systems at no additional cost to The Owner

1.10.1.1. Provide Fire watch when existing Fire detection systems are not operational or on bypass

1.10.1.2. Whenever a changeover time occurs which is an outage time of at least a portion of the fire alarm system, the municipal fire department shall be notified of the temporary shutdown and alternative measures shall be devised.

1.10.2. The Contractor shall coordinate The Work carefully with the Consultant in the presence of The Owner in order to prevent in order to prevent unapproved disruptions to the Sprinkler system or other fire protection systems.

1.10.2.1. Where temporary Shutdown is necessitated, such shutdown shall be in accordance with the requirements of authorities having jurisdiction and the O.B.C.

1.10.3. Fire Separations

1.10.3.1. Maintain the integrity of all fire separations, smoke separations, fire protection systems and fire rated assemblies

1.10.3.2. Make good fire separations, smoke separations and fire rated assemblies compromised as a result of The Work

1.10.4. Maintain existing building exit facilities serving the existing building

1.10.4.1. Where an exit is blocked off or deleted as a result of the Work, an alternative exit shall be provided that is acceptable to the consultant, The Owner and authorities having jurisdiction.

1.10.4.2. Where it is necessary for access to be gained to an exit through the place of work, an alternative exit shall be clearly defined and protected so that it is separated from the construction areas by a smoke tight fire separation equivalent to a minimum of 1 hour fire resistance rating, unless otherwise indicated in the construction documents

END OF SECTION

PART1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. EXAMINATION

1.2.1. Acceptance of Conditions:

1.2.1.1. Examine site at no cost or risk to The Owner for all matters relating to Work, extent of Work, means of access and egress, all obstacles, rights and interests of other parties which may be interfered with during execution of Work, all conditions and limitations Contractor to take into consideration in performing The Work, including obstructions, existing structures or facilities, local conditions, actual levels, character and nature of the Project and any other consideration which may affect performance of Work.

1.2.1.2. Where available obtain existing drawings pertaining existing building layout, architectural, structural, mechanical, electrical details and assess impact in performing work of this Contract.

1.2.1.3. Examine existing conditions at no additional cost to The Owner, surfaces and substrata upon which your work depends. Drawings are, in part, diagrammatic and are intended to convey scope of Work and indicate general and approximate location, arrangement and sizes of fixtures, equipment, ducts, piping, conduit and outlets and similar items. Obtain more accurate information about locations, arrangement and sizes from study and coordination of Drawings, including Shop Drawings and manufacturers' literature and become familiar with conditions and spaces affecting these matters before proceeding with Work.

1.2.1.4. Ensure each Subcontractor has full understanding of extent of its work. Report in writing defects in such work and notify Subcontractors responsible for unfavourable and unsatisfactory conditions. Do not commence Work until unsatisfactory conditions have been corrected. Verify corrected work prior to commencing work. Execution and application of your work shall be deemed acceptance of work upon which your work depends.

1.3. MATERIALS

1.3.1. Where Specification requirements include design of a Product or system, and minimum material requirements are specified, design of such Product or system shall employ materials specified within applicable Section. Where materials or components are not specified, The Contractor shall augment materials with those of its choice within applicable Code limitations while maintaining integrity of design and architectural requirements.

1.3.2. Defective Products, whenever identified prior to completion of Work, will be rejected, regardless of previous reviews. Review does not relieve responsibility, but is a precaution against oversight or error. Remove and replace defective and/or damaged Products at own expense and be responsible for delays and expenses caused by

rejection.

1.3.3. Ensure new materials used to repair damage are compatible with existing work.

1.4. PREPARATION

1.4.1. Planning, Scheduling and Coordination of Alterations:

1.4.1.1. Plan and schedule alterations to accommodate anticipated difficulties, indicated on and inferrable from the Contract Documents.

1.4.1.2. Plan, schedule and coordinate alterations to accommodate on-going operations of The Owner with minimal disruption.

1.4.1.3. Plan, schedule and coordinate alterations, required in Owner-occupied spaces or adjoining or below the Place of the Work, on a room-by-room basis and in accordance with a schedule mutually agreed upon with Owner. Requests for access to occupied areas shall be made to Owner a minimum of 1 week in advance of requested access time.

1.4.1.4. Co-ordinate alterations with all relevant Subcontractors and proceed with the Work expeditiously.

1.4.2. Surveying:

1.4.2.1. Owner may supply drawings to show line of Place of the Work.

1.4.3. Access for Large Equipment:

1.4.3.1. Where new mechanical and electrical equipment is located in existing areas of building, do necessary cutting, dismantling and reassembling of equipment, modifications to equipment, hoisting, shoring and patching required for installation of such equipment in space provided.

1.5. EXECUTION

1.5.1. Existing Conditions:

1.5.1.1. Make Good surfaces and finishes damaged or disturbed due to Work of this Contract to match existing. Ensure materials used to repair damage are compatible with existing work.

1.5.1.2. Restore the Site to condition equal to or, if specified elsewhere, to condition better than existing conditions.

1.5.1.3. Restore areas outside of limits of Work which are disturbed due to Work to original condition in addition to complying with requirements of General Conditions of the Contract.

1.5.2. Installation:

1.5.2.1. Except where specified otherwise, use each Product in accordance with manufacturer's published or written instructions, Specifications or recommendations regarding

handling, storage, preparation, site conditions, ancillary Products or accessories, methods of installation, protection and cleaning. Submit copy of such instructions and indicate if and where there is discrepancy between them and requirements of Specifications and obtain direction.

1.5.2.2. Whenever specific reference to following manufacturer's directions or instructions is made in Specifications, submit copies as requested thereof for review before commencing such work.

1.5.2.3. Do Work in accordance with industry practice for type of work unless Contract Documents stipulate more precise requirements. Do not let unskilled, incompetent workers perform work.

1.5.2.4. Do Work in neat and careful manner to retain Work plumb, square and straight.

1.5.2.5. Ensure Work is properly related to form close joints and appropriately aligned junctions, edges and surfaces and is free of warp, twist, wind, wave or other irregularities.

1.5.2.6. When required by Specifications or by manufacturer's recommendations, have manufacturer, supplier or accredited agent inspect work which incorporates their Products.

1.5.2.7. Do not permit materials to come in contact with other materials whether in presence of moisture or otherwise if conditions will result in corrosion, stain or discolouration or deterioration of completed Work. Provide compatible, durable separators where such contact is unavoidable.

1.5.2.8. Load no part of structure during construction with load greater than it is calculated to bear safely when completed. Make every temporary support as strong as permanent support. Place no load on concrete structure until it has sufficient strength to safely carry such load.

1.5.2.9. Conceal pipes, ducts, conduits, tubing, wiring and other items requiring concealment in floor, wall and ceiling construction of finished areas except where indicated or specified otherwise. If in doubt as to method of concealment, or intention of Contract Documents in this connection, request clarification from Consultant before proceeding with work in question

1.5.2.10. Install and arrange fixtures, equipment, ducts, piping and conduit to conserve as much headroom and space as possible, and avoid interference and obstruction of access. Observe good installation practice for safety, access, maintenance and follow manufacturer's recommendations. Location of fixtures, access panels, outlets and mechanical and electrical components indicated are approximate. Make changes requested to comply with these requirements at no additional cost to Owner.

1.5.2.11. If requested by Consultant, and before their installation, relocate equipment, services, doors, openings, furring and other work at no additional cost to Owner; provided such relocation involves only reasonable minor adjustments and reasonable advance notice is given in writing. Ensure identification of electrical and mechanical system installations and other automated systems or equipment shall be provided in accordance with Contract Documents.

1.5.3. Lay out mechanical and electrical work in advance of partition placement and furring installation to allow for its proper concealment.

1.5.4. Test and inspect work before applying pipe covering and before Work is concealed.

1.6. ALTERATIONS AND REPAIRS

1.6.1. Refer to Section 02 41 00. Conform to Owner's Policies and Procedures for Contractors and shut down protocol where applicable.

1.6.2. Perform work in a manner such as to cause a minimum of noise and interference to use of existing premises and services. Provide maximum safety for occupants during work.

1.6.3. Throughout entire construction period, provide proper and safe means of fire exit from all zones of existing building at all times, to approval of authorities having jurisdiction.

1.6.4. Wherever it becomes necessary to cut or interfere in any manner with existing apparatus for short periods of time, do work at such times as agreed upon with Owner and Consultant.

1.6.5. If unscheduled disturbance to use of existing premises and services is required to complete work, inform Owner with advance notice of 1 week minimum. Provide information of requirements and perform work at times directed by Owner.

1.6.6. Make provisions to join new work to existing and to install new supporting members, anchors and other items necessary for completion of work. Provide temporary bracing where required.

1.6.7. Proceed with demolition of or alterations to any portion of existing building only after approval of Consultant has been obtained and after weather tight and dustproof screens have been erected to provide thorough protection to adjoining areas and rooms.

1.6.8. When permission has been granted to proceed with alterations in existing building, carry out work expeditiously and continuously to completion.

1.6.9. Carry out work so as to minimize dust migration. Protect items sensitive to and which could be damaged by dust. Where practical, keep demolition areas wetted.

1.6.10. During performance of work, adequately protect work completed and in progress and existing work to remain, such as floors, finishes, trim and similar components, as completely as possible to minimize replacement of damaged work by each Subcontractor and trade. Work damaged or defaced due to failure to provide adequate protection shall be repaired, or removed and replaced as directed by Consultant.

1.6.11. Properly coordinate work of various S p e c i f i c a t i o n Sections and trades. Take into consideration existing installations to assure best arrangement of pipes, conduits, ducts and mechanical, electrical and other equipment and items, in available space. Under no circumstances will any extra payment be allowed due to failure by Contractor to coordinate work.

1.6.12. Remove, store and reinstall existing fixed equipment, fixtures and components which

interfere with construction work.

1.6.13. Cutting, patching and making good of existing work to accommodate new work and requirements specified under other Specification Sections shall be done in conjunction with work specified herein. Coordinate such work.

1.6.14. Employ tradesmen qualified in work being cut and patched to perform work correctly and skillfully.

1.6.15. Do not undermine, damage or endanger existing structure, footings, foundations, pipe lines, electrical conduit and wiring by digging, cutting or any other operation in performance of Work of this Contract. Immediately repair and Make Good existing work so affected, including working after regular working hours, to Consultant's approval, recommendation and satisfaction at no additional cost to the Town.

1.6.16. Cut off, cap, divert or remove existing services in areas being altered which are affected by changes as required or as directed by municipal authorities and utility company concerned and Consultant. Protect and maintain active services to existing building.

1.6.17. Where new work connects with existing and where existing work is altered, perform necessary cutting and fitting required to make satisfactory connections with existing work under this Contract, so as to leave entire work in a finished condition. Match new Work exactly with existing work in material, form, construction and finish unless otherwise noted or specified. Make joining work inconspicuous.

1.6.18. Make Good materials, surfaces and finishes damaged or disturbed due to the Work of this Contract.

1.6.19. Except where structural requirements are indicated on Drawings, do not cut, drill or sleeve load bearing members without first obtaining Consultant's written authorization for each condition.

1.6.20. Perform drilling of existing work carefully, leaving a clean hole no larger than required.

1.6.21. Make cuts clean and true with smooth edges. Fit units to tolerances established by existing work and in conformance with best standard practice for applicable class of work.

1.6.22. Work shown on Drawings, Schedules and Specifications may or may not be all work required to be done in existing building. Make Good and execute all necessary work including incidentals to make a complete job of alterations work.

1.6.23. Alterations(Changes/modifications):

1.6.23.1. Provide alterations indicated on and inferrable from the Contract Documents.

1.6.23.2. Demolish existing, obsolete construction as part of alterations, in accordance with Section 02 41 00 and prepare areas to receive new work.

1.6.23.3. Refer to mechanical and electrical Drawings for removal, capping, and alterations to work, e.g., conduit, wiring, fixtures, ducts, piping and other service lines.

1.6.23.4. Protect active services which are intended to remain and which pass through spaces involved in alterations and repairs.

1.6.23.5. Conceal piping, duct, conduit and other service alterations in ceilings, walls and furred spaces if possible.

1.6.24. Cutting and Patching - General:

1.6.24.1. Coordinate openings to avoid unnecessary cutting and patching.

1.6.24.2. Coordinate cutting and patching with Subcontractors to avoid unscheduled cutting and patching work.

1.6.24.3. Prior to cutting, sawing, breaking and core drilling provide integrated penetrating system to detect conduits, cables, pipes and similar items in suspended floor slabs and in walls where applicable. Carry out scanning to detect location of live power or energy transmitted from power source such as feeds for electric motors, compressors, heating and cooling systems prior to core drilling and sawing of typical slab on grade.

1.6.24.4. Prior to cutting, sawing, breaking and core drilling through concrete, structural masonry and steel and load bearing members, including floors, ceilings, columns, beams and walls, obtain Consultant's written acceptance.

1.6.24.5. Execute cutting neatly and carefully, no larger than necessary, employing workers skilled in erection of the part of the Work being cut.

1.6.24.6. Patch parts of the Work to match adjacent construction and finishes unless otherwise specified or indicated on Drawings.

1.6.24.7. Provide patching Products equal to existing finishes.

1.6.24.8. Join new work to existing in neat, accurate manner.

1.6.24.9. Provide soundproof interior junctions.

1.6.24.10. Provide weathertight exterior work.

1.6.24.11. Design and provide permanent and temporary reinforcement and supports, as directed by Consultant.

1.6.24.12. Maintain fire separations and provide fire and smoke penetration sealants in cut and patched parts of the Work.

1.6.24.13. Unless otherwise indicated in the Contract Documents, run piping, ducts and conduit in ceilings and furred spaces. Conceal conduit in walls.

1.6.24.14. Saw-cut floors, walls and ceilings accurately. Provide holes and openings no larger than necessary to minimize damage. Core drill circular holes in concrete. Accurately cut new openings for electrical outlets and other recessed items in walls.

1.6.24.15. After cutting and patching is completed, refinish surfaces to minimum 100 mm (4") outside patch perimeter, floor to ceiling and to nearest break in wall surfaces,

such as inside and outside corners. Match patch finish to existing adjacent surfaces to completely conceal patch.

1.6.25. Cutting and Patching - Structural Alterations:

1.6.25.1. Prior to cutting and drilling through structural and load bearing members, (e.g. slabs, columns, beams and shear walls), obtain Consultant's review and written acceptance of cut location and layout.

1.6.25.2. Locate existing reinforcement and conduit and obtain approval of Consultant before coring or cutting existing or new slabs, beams or walls. Retain an independent testing company to locate existing reinforcement and conduit in the areas of proposed openings and to mark locations of surfaces of slabs and walls on which cores and cuts are started. Scan concrete using non- destructive methods to accurately locate reinforcement and conduit. Remove toppings prior to locating reinforcement and conduit. Mark locations and sizes of cores and openings and locations of reinforcement and conduit using indelible markers with red for top bars, green for bottom bars and black for cores, openings and conduit. Consultant will review marked-up locations once a week. If locations are not acceptable to Consultant, relocate proposed openings and repeat process at no extra cost to the Contract.

1.6.26. Cutting and Patching - Mechanical and Electrical Alterations:

1.6.26.1. Provide cutting and patching required for access to execute services' alterations. Conceal capped services unless specifically indicated to remain exposed. Patch to conceal altered and capped services.

1.6.26.2. Provide cutting, e.g., core drilling of existing concrete and masonry walls and slabs, required to pass services through existing assemblies to accommodate alterations.

1.7. CLEANING

1.7.1. Progress Cleaning:

1.7.1.1. Keep access areas to Work in tidy condition, free from accumulation of waste products and debris during construction and on completion, other than caused by Owner's crew or other contractors. Do not dispose of volatile fluid wastes (such as mineral spirits, oil or paint thinner) in storm or sanitary sewer systems or into streams or waterways.

1.7.1.2. Keep site and building, including concealed spaces, free from accumulation of dirt, debris, garbage and excess material. Remove oily rags and waste from premises at close of each Day work is performed, or more often if required.

1.7.1.3. Remove waste material and debris from site at end of each Working Day. Remove from finished surfaces deposits which could stain, harden, set or become difficult to remove.

1.7.1.4. Remove rubbish and surplus materials promptly and dispose of in a legal manner. Do not allow scrap piles to accumulate. Do not permit fires.

1.7.1.5. Lower waste materials in a controlled manner with minimum handling; do not drop or throw materials from heights. Schedule cleaning operations so dust and other contaminants resulting from cleaning process will not fall on wet, newly painted

surfaces. Sprinkle dusty debris with water.

1.7.1.6. A demolition bin will be allowed on site where indicated on Drawings and as coordinated with Owner.

1.7.1.7. Sweep adjacent roads and sidewalks daily to remove dirt and clods of earth deposited on adjacent public and private properties by construction traffic.

1.7.1.8. Vacuum-clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.

1.7.2. Final Cleaning:

1.7.2.1. Prior to occupancy, clean the Place of the Work thoroughly, free of rubbish and surplus material. Dispose of rubbish and debris. Vacate the Place of the Work in a clean and tidy condition satisfactory to Consultant.

1.7.2.2. Dismantle and remove work of Section 01 50 00 from the Place of the Work.

1.7.2.3. Prior to cleaning, submit to Consultant a complete list of manufacturers' cleaning/ maintenance instructions for all components of the Work.

1.7.2.4. Final finishing is in addition to and compatible with cleaning and finishing specified in trade Sections.

1.7.2.5. Clean new and existing components in accordance with manufacturers' recommendations including, but not limited to:

1.7.2.5.1. floors:

1.7.2.5.1.1. Tile/Terrazzo/Vinyl/linoleum Flooring: Sweep floor free of debris; clean corners and base boards free of marks and dirt. Scrub new flooring using appropriate solutions to remove factory installed protective coatings. Strip existing flooring using appropriate chemical solution to remove any existing floor finish coating and base seal coatings. Apply to new and existing flooring 2 coats of sealer recommended by manufacturer of flooring materials. Let floor completely dry between coats. Use prime quality top line Products. Do not apply finish to baseboards.

1.7.2.5.1.2. Vacuum carpet flooring using power brush equipped vacuum cleaner. Remove stains using approved stain removal methodology. Where carpet is exposed to extensive dry wall dust and other fine dust particles, carpet shall be pile lifted using rotary pile lifting machine. In addition, carpet shall be cleaned using extraction method approved by manufacturer.

1.7.2.5.2. Walls: shall be completely dusted and all marks removed. Where necessary wall shall be washed if painting is not an option.

1.7.2.5.3. ceilings.

1.7.2.5.4. doors and frames.

1.7.2.5.5. electrical switch gear.

1.7.2.5.6. exposed interior and exterior glazed surfaces.

1.7.2.5.7. hardware.

1.7.2.5.8. mechanical and electrical fixtures and equipment.

1.7.2.5.9. stainless steel, anodized aluminum, brass, bronze and other metals.

1.7.2.5.10. the Place of the Work outside building envelope: remove debris, rake sod, sweep sidewalks and pavement.

1.7.2.6. Use experienced cleaners or professional cleaners for final cleaning. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

1.7.2.7. Final cleaning includes, without limitations, requirements specified herein, removal of surplus materials, tools, construction machinery and equipment from site. Carry out final cleaning in accordance with manufacturer's instructions for each material. Clean Work in accordance with applicable Sections and/or manufacturer's directions.

1.7.2.8. Remove stains, spots, marks, dust, smudges caused by Work within work areas of this Contract. Remove from decorative work, electrical and mechanical fixtures, furniture fitments, walls, ceiling and floors.

1.7.2.9. Clean and polish interior and exterior glass, windows, mirrors, hardware, wall tile, stainless steel, chrome, porcelain, baked enamel, plastic laminate, mechanical, plumbing fixtures and electrical fixtures.

1.7.2.10. Vacuum clean and dust building interiors, behind grilles, louvres and screens. Vacuum clean ducts, fans, blowers and coils if units were operated without filters during construction.

1.7.2.11. Broom clean and wash interior as well as exterior walks, paved surfaces, concrete floors, steps and other similar surfaces.

1.7.2.12. Make Good any damage caused outside work area. Include doing necessary cleaning required due to Work.

1.7.2.13. Use appropriate apparatus and cleaning materials.

1.7.2.14. Close rooms and areas finished by cleaners, painters and decorators to all but authorized persons.

1.7.2.15. Upon completion of final cleaning, remove cleaning equipment, excess materials and debris from building and the Site.

1.8. PROTECTING INSTALLED CONSTRUCTION

1.8.1. Protection of Work During Construction:

1.8.1.1. Provide continuous protection to public, Work, Owner's property and adjacent property during construction. Protect work of other trades from damage while performing subsequent work.

1.8.1.2. Protect finished flooring from damage. Make special efforts and take measures when

moving heavy loads or equipment over them. Keep floors free of oils, grime, grease or other materials likely to discolour them or affect bond of applied surfaces.

1.8.1.3. Protect, relocate and maintain existing, active services wherever they are encountered. Wherever inactive services are encountered, cap them off and remove unwanted portion, with approval of authorities having jurisdiction or public utility concerned in manner approved by them.

1.8.1.4. Adequately protect floors and roofs from damage. Take special measures when moving heavy loads or equipment on them.

1.8.1.5. Keep floors free of oils, grease or other materials likely to discolour them or affect bond of applied surfaces including fumes generated by temporary heating devices. Take care not to spill or allow oil, grease, gasoline, diesel and fuel oil, chemicals and other substances to contaminate soil or water on or adjacent to site. Should such contamination accidentally occur report it immediately and clean up to satisfaction of Consultant.

1.8.1.6. Protect work of other Sections from damage resulting from your work.

1.8.1.7. Damaged work shall be made good wherever possible by Section whose work is damaged but at expense of those causing damage.

1.8.1.8. Protect glass and other finishes against heat, slag and weld splatter using suitable protective shields or covers.

1.8.1.9. Take precautions to protect openings made in existing building(s) from entry of elements and of persons during construction and to protect existing structure and finishes from damage. Protection of exterior enclosure shall be air tight and have minimum thermal resistance value of R = 5 (RSI = 1).

1.8.1.10. Provide and maintain in working order, suitable Underwriters' labelled fire extinguishers and locate in suitable positions, to approval of authorities having jurisdiction.

1.8.1.11. Provide minimum of 3 safety helmets for Consultant and any other authorized visitors to site if required.

1.8.1.12. Protect public and those employed on Work from injury. Equipment (mobile) when not in use shall have keys removed and locked up in secure location.

1.8.2. Correction after Completion: In conformance with General Conditions of the Contract, Make Good any defects and deficiencies due to faulty materials or quality of performance that become apparent in Work within 24 months from date of Certificate of Substantial Performance or for such longer period as specified for certain Products in Contract Documents. Conform to requirements of General Conditions of the Contract and provide Warranty for 24 month period and for extended period where applicable, in writing in an approved form acceptable to Consultant signed by authorized official of Contractor.

1.9. CLOSEOUTPROCEDURES

1.9.1. Final Site Review: Consultant will perform final review in accordance with provisions

relating to final Certificate for Payment in the Contract. Conform to the requirements of the Construction Act for commencement, procedure and release of hold back fund. Lien Period commencement, procedure and release of hold back monies will be in accordance with the Construction Act.

1.9.2. Takeover Procedure:

1.9.3. Conform to requirements of following General Conditions of Contract for take-over procedure:

1.9.4. Comply also with recommended takeover procedures contained in OAA/OGCA Document No. 100, except as modified by the Contract Documents. In case of conflict with the Contract Documents conform to more stringent requirements. Procedure described in document consists of following stages:

Stage 1	Contract Submissions
Stage 2	Contractor's Inspection for Substantial Performance
Stage 3	Contractor's Application for Certificate of Substantial Performance
Stage 4	Certificate of Substantial Performance
Stage 5	Certificate for Payment of Basic Statutory Holdback Monies
Stage 6	Contractor’s Completion of the Contract
Stage 7	Certificate for Payment of Monies for Finishing Holdback
Stage 8	Final Payment Certificate
Stage 9	Warranty-Guarantee Period(s)

All stages will be reviewed at first Coordination Site Meeting to ensure all parties understand their responsibilities.

1.12.3. Substantial Performance Review: Provide a written request to Consultant for Substantial Performance review of Work. Such request shall include a reconciliation of compliance with money test given in Clause 2 (1) (b) of the Construction Act in addition to all documentation specified in Contract Documents.

1.12.4. Certification of Substantial Performance: Prepare Certificate of Substantial Performance in a form required by the Construction Act. When issued attach a normal progress Certificate showing statement of account to date and sub-titled "SUBSTANTIAL PERFORMANCE". Wherever practicable, accompany it with Final Change Order, sub-titled "FINAL". Consolidate all expenditures from cash allowances.

1.12.5. The draft Certificate of Substantial Performance shall be submitted to the Town for review and approval prior to publication.

1.12.6. Defect and Deficiency:

1.12.6.1. A defect is an item of Work required by Contract which has been installed but requires repair and/or replacement at a specific time.

1.12.6.2. A deficiency is an item of Work required by Contract which has not been installed or put into operating condition.

1.12.6.3. A warranty item is an item of Work, installed under Contract which manufacturer or installer agrees to maintain in, or restore to perfect condition for a specific period of

time, after Owner's acceptance of Work as being substantially performed.

1.12.6.4. When, in Consultant's opinion, Work under Contract is substantially performed and prior to final review by Owner, a preliminary review shall be made at which time defects and deficiencies are listed, taking care to distinguish between preliminary and final reviews.

1.12.7. Deficiency Review:

1.12.7.1. Provide a written request to Consultant for deficiency review of Work. Ensure such request includes a statement by Contractor that Work to be reviewed by Consultant for deficiencies is, to best of his knowledge, in compliance with Contract Documents, reviewed Shop Drawings, samples and previously instructed corrections by Consultant have been corrected.

1.12.7.2. Provide a schedule of planned deficiency reviews having regard to foregoing.

1.12.8. Deficiency Lists:

1.12.8.1. Neither Owner's representatives, nor Consultant will be responsible for issue of extensive lists of deficiencies. Contractor assumes prime responsibility for ensuring items shown on Drawings and described in Specifications are completely his. Any reviews to approve Certificates of Substantial Performance will be immediately canceled if it becomes obvious that extensive deficiencies are outstanding.

1.12.8.2. Promptly correct deficiencies noted by Consultant. Do not proceed with installation of subsequent parts of Work until deficiencies have been corrected. Make every effort to ensure both defects and deficiencies are Made Good prior to final review.

1.12.8.3. During review, a decision will be made as to which elements must be completed at a later date due to uncontrollable circumstances such as weather, which defects must be rectified before the Work can be accepted and which defects are to be treated as warranty items.

1.12.8.4. Make Good deficiencies before Contract is considered complete.

1.12.9. Contractor will provide Consultant an electronic punch list prior to conducting their review. Ensure punch list includes a complete list of items identified in Contract that Contractor and his Subcontractors feel still incomplete or deficient in any way. Effectively identify each room or area so Consultant can reference that room or area in punch list during their review of Work. Deficiency list is made up of items identified in punch list plus any other items found by Consultant deemed to be incomplete or deficient.

1.12.10. Notification of Correction of Deficiencies: Advise Consultant in writing, upon completion of rectification of deficiencies noted by Consultant. Failure to provide such notification may be cause to withhold final payment.

1.12.11. Documents:

1.12.11.1. Within 21 Days of commencement of Work, Contractor shall make first submittal required by OAA/OGCA Document No. 100.

1.12.11.2. Submit documents in accordance with requirements of Contract Documents.

1.12.11.3. Submit required documents along with request for Certificate of Substantial Performance. Consultant's review for Substantial Performance is not required until such submittal is received.

1.12.12. Final Review for Final Payment:

1.12.12.1. Further to requirements of GC 5.4, final review of Work shall constitute review precedent to issuance of final certificate of payment.

1.12.12.2. If there are any further deficiencies determined by this review, they shall be listed by Consultant and provided to Contractor. This list shall be recognized as final deficiency list for purposes of acceptance of Work under Contract.

1.12.12.3. Such deficiencies shall be corrected by a date mutually agreed upon between Consultant and Contractor, unless a specific date is required by Contract and a re-review by Consultant shall be called for by Contractor following its own review to take place within 7 Days from date of request.

1.12.12.4. Contractor shall thereafter submit its invoice for final payment.

1.12.13. End of Warranty Period Review:

1.12.13.1. At beginning of 24th month of the Warranty Period in accordance with Article A-15 – Warranty Period of the Agreement between Owner and Contractor and GC12.3, the Owner, the Contractor and the Consultant, along with key Subcontractors as designated by the Consultant, will carry out a complete review of building and its systems to determine which deficiencies are to be rectified under warranty.

1.12.13.2. Prior to completion of warranty period, arrange with Consultant to carry out complete review of defects and deficiencies which have been observed during warranty period to determine which are to be corrected.

1.13. CLOSEOUTSUBMITTALS

1.13.1. Certificate of Substantial Performance:

1.13.1.1. The Contractor shall submit a draft Certificate of Substantial Performance to the Town for review and approval prior to publication. Failure to comply with this mandatory requirement may result in re-publication of the Certificate at the Contractor’s expense.

1.13.1.2. Once the draft Certificate of Substantial Performance is approved by the Town, the Contractor shall publish it in a construction trade newspaper in accordance with the Construction Act.

1.13.1.3. Submit promptly copies of construction trade newspaper containing publication of copy of Certificate of Substantial Performance.

1.13.2. Environmental Consultant’s Report:

1.13.2.1. Retain services of recognized environmental consultant acceptable to the Consultant to submit report confirming the Place of the Work is free from mould contamination.

1.13.2.2. Submit above report along with mould preventative maintenance plan and recommendations to Consultant prior to the Town using the Place of the Work for the purpose intended or obtaining Certificate of Substantial Performance of the Work, whichever date comes first.

1.13.3. Product Record Documents:

1.13.3.1. Obtain from Consultant and pay cost for 1 copy of Specifications and 1 set of white prints of Contract Drawings at commencement of Work and 10 Days prior to date of Substantial Performance of the Work; Submit “as-built” site set of white prints and Specifications; “as built” CAD system discs based on AutoCad as instructed by Consultant and 1 set of reproducible transparencies of Contract Drawings, for "as-built" record purposes produced from discs.

1.13.3.2. Have items relating to mechanical and electrical work recorded by respective trade.

1.13.3.3. Print lettering and numbers in size to match original. Lines may be drawn free hand provided they are neat and accurate. Add "AS-BUILT RECORD" at each drawing title block and on title page of Specifications.

1.13.4.1.

1.13.4.2. Record following changes and deviations on record drawings:

1.13.4.3. field changes of dimensions.

1.13.4.4. other significant deviations and changes which are concealed in construction and cannot be identified by visual review.

1.13.4.5. show actual locations of following on record drawings:

1.13.4.6. access doors and panels.

1.13.4.7. inverts of services at key points within building, at points where entering and leaving building, and at property lines. Dimension services in relation to structure and building grid lines.

1.13.4.8. duct work, piping, conduit, mechanical and electrical equipment and associated work concealed piping, conduit, equipment and conveying systems, including such items provided for future use.

1.13.4.9. record following information on record

1.13.4.10. Specifications

1.13.4.11. Products, materials and other items selected from those specified.

1.13.4.12. approved substitutions and accepted alternatives.

1.13.4.13. other approved changes and deviations to items specified.

1.13.5. Maintenance Instructions and Data Book: Provide Consultant with 3 sets and/or 1 digital copy of operating and maintenance instructions and data books, 10 Days prior to advising Consultant that Work is substantially performed which include:

1.13.5.1. Complete listing of Subcontractors' names, addresses and telephone numbers with notation as to which portions of Contract have been provided by them.

1.13.5.2. Complete listing of materials, Products and equipment including serial numbers, manufacturer's names and sources of supply.

1.13.5.3. Description of each system, with description of each major component of systems.

1.13.5.4. Operation and installation instructions for each assembly, component and system.

1.13.5.5. Complete cleaning and maintenance instructions for each finish, assembly, component and system, including warnings of harmful practices.

1.13.5.6. Lists of spare parts for each assembly, component and system complete with names, addresses and telephone numbers of Suppliers.

1.13.5.7. Operating curves of mechanical and electrical equipment.

1.13.5.8. A lubrication schedule of all equipment.

1.13.5.9. Page-size Valve Tag Schedule and Flow Diagrams.

1.13.5.10. Water treatment procedures and tests.

1.13.5.11. Final balancing reports for mechanical systems.

1.13.5.12. Installation manual or installation instructions for each mechanical, electrical or architectural item, stamped and signed by Subcontractors submitting them.

1.13.5.13. Record drawings of mechanical, electrical and special installations.

1.13.5.14. Final reviewed Shop Drawings.

1.13.5.15. Copies of all warranties, properly executed.

1.13.5.16. Provide books consisting of 3-ring hard cover loose-leaf binders, indexed as to contents and identified on binding edges as "Maintenance Instructions and Data Book, for (Project name)". Ensure binders contain name of Contractor and date of Substantial Performance of the Work.

1.13.5.17. Organize and label contents into applicable categories of work, parallel to Specification Sections and provide a Table of Contents.

1.13.5.18. Use consistent terminology in books.

1.13.5.19. Submit maintenance and operation instructions which are manufacturer's latest published editions at date of submission.

1.13.5.20. Should any finish, Product or assembly be injured or damaged by faulty maintenance materials, practices not warned against in maintenance manual or by failure to provide proper maintenance manuals in time, rectify such damage or injury at no additional cost to Owner.

1.13.6. Distribution System Diagrams: Prior to date of Substantial Performance of the Work, submit framed single line diagrams of electrical distribution systems.

1.14. DEMONSTRATIONS FOR OWNER'S PERSONNEL

1.14.1. Provide qualified technicians to demonstrate operation and/or maintenance of systems to Owner's staff.

1.15. MISCELLANEOUS CLOSEOUT SUBMITTALS

1.15.1. Submit following to Owner:

1.15.1.1. keys.

1.15.1.2. hydro certificate.

1.15.1.3. electrical panel directories, inside panels.

1.16. PRODUCT WARRANTIES

1.16.1. Examine Sections of the Specifications to ensure inclusion of Warranties specified.

1.16.2. In addition to requirements of Article A-15 – Warranty Period of the Agreement between Owner and Contractor and GC 12.3 - WARRANTY of the General Conditions, Contractor shall note extended warranty periods required by Contract Documents for certain Products, systems and assemblies as specified under their respective Sections.

1.16.3. Typical clause: Similar clause applies to trades listed herein as applicable:

"**WARRANTY**: Warrant Work of ____ against defects and deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to failure of system to remain completely weather tight, leaking in excess of specified tolerances and limits, deformation of members, failure of insulated glass units, glass breakage, condensation in excess of specified tolerances and limits, mechanical failure and discolouration of finishes."

1.16.4. Spare Parts:

1.16.4.1. Supply extra maintenance materials and/or spare parts and store in a locked room as directed by Owner.

1.16.4.2. Suitably package maintenance materials in accordance with manufacturer's instructions and label to identify Product type, manufacturer, Product name, colour number, dye lot and quantity.

1.16.4.3. Store maintenance materials, e.g., positioning, proper side up, etc., in accordance with manufacturer's recommendations.

END OF SECTION

PART 1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide demolition and salvage including but not limited to following:

1.2.1.1. selective demolition and removals to accommodate the alterations shown in the Contract Drawings .

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Section 01 10 00, General Requirements

1.2.2.2. Alteration and repair requirements: Section 01 70 00, Execution and Closeout Requirements.

1.2.2.3. Firestopping and smoke seals: Section 07 84 00, Firestopping and Smoke Seals.

1.2.2.4. Demolition and removal of mechanical equipment services designated for removal on Drawings and as required by Work. Disconnecting and capping prior to authorizing removal: Mechanical.

1.2.2.5. Demolition and removal of electrical equipment services designated for removal on Drawings and as required by Work. Disconnecting and capping prior to authorizing removal: Electrical.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. OBC: Ontario Building Code.

1.3.1.2. PCB: Polychlorinated Biphenyls.

1.3.1.3. CSA – Canadian Standards Association

1.3.2. Definitions:

1.3.2.1. Hand Demolition: Systematic demolition of structures by workers using hand-held tools.

1.3.2.2. Mechanical Demolition: Systematic demolition of structures using powered equipment.

1.3.2.3. Systematic Demolition: Methodical dismantling of structure piece by piece, usually carried out in reverse order of construction.

1.3.3. Reference Standards:

1.3.3.1. CSA S350-M80(03) - Code of Practice for Safety in Demolition of Structures

1.4. ADMINISTRATIVEREQUIREMENTS

1.4.1. Pre-Demolition Meeting:

1.4.1.1. Prior to start of work, arrange for site meeting of all parties associated with work of this Section. Presided over by Consultant, meeting shall include Contractor, demolition Subcontractor, testing company's representative and structural engineer.

1.4.1.2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, inspection of construction to be demolished, methods to be used, sequence and quality control, Project staffing, restrictions due to environmental protection requirements and other matters affecting demolition, to permit compliance with intent of this Section. Review structural load limitations of existing structures. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays. Review and finalize protection requirements.

1.4.2. Scheduling:

1.4.2.1. Where practicable, remove or neutralize hazardous or toxic materials identified in Reports before demolition begins.

1.4.2.2. Phase selective demolition as indicated on Drawings to accommodate new construction.

1.5. SUBMITTALS

1.5.1. Plan of Action:

1.5.1.1. Submit in accordance with Section 01 30 00.

1.5.1.2. Submit "Plan of Action" immediately after award of Contract for review by Consultant.

1.5.1.3. Coordinate demolition times, security requirements and access with Owner.

1.5.2. Shop Drawings:

1.5.2.1. Where required by authorities having jurisdiction, submit Shop Drawings, diagrams or details showing sequence of dismantling work and shoring of structures during demolition.

1.5.2.2. For structural elements, ensure a licensed engineer specified herein is responsible for:

1.5.2.2.1. production and review of Shop Drawings.

1.5.2.2.2. sealing and signing each Shop Drawing and any associated calculations performed.

1.6. QUALITY ASSURANCE

1.6.1. Qualifications:

1.6.1.1. De-Installers: Employ for this work, a demolition company having a 5 years' experience in this type of work satisfactory to Consultant. If requested, submit proof of experience

1.6.2. Mock-Ups: When and where required, remove materials indicated to assess conditions and to confirm removal methodology and accuracy of cut locations findings.

1.7. SITE CONDITIONS

1.7.1. Ambient Conditions:

1.7.1.1. Demolition performed on this Project in areas which may be partially occupied. Take care and provisions for protection of workers on site and occupants of 50 High Tech Road during progress of work.

1.7.1.2. Schedule noisy operations with consideration for the ongoing operations of 50 High Tech Road

1.7.1.3. Do not close or obstruct roads, streets, sidewalks, passageways without permits. Do not place or store materials in streets or passageways. Conduct operations with minimum interference with roads, streets, driveways and passageways.

PART2- PRODUCTS

2.1. MATERIALS

2.1.1. Description:

2.1.1.1. Regulatory Requirements:

2.1.1.1.1. Conform to The Occupational Health and Safety Act and Regulation for Construction Projects

2.1.1.1.2. Conform to OBC, especially Division C, Part 1, Article 1.2.2.3 as applicable.

2.1.1.1.3. Conform to Fire Code, Regulation under Fire Marshal Act especially Part 8.

2.1.1.1.4. Conform to requirements of Section 01 50 00 in particular, Article on engineering requirements for Temporary Construction.

2.1.2. Provide materials necessary for temporary bracing and shoring. On completion, remove temporary materials from site.

PART3- EXECUTION

3.1. EXAMINATION

3.1.1. Preliminary Survey:

3.1.1.1. Before commencing demolition operations, examine the Site and when requested, provide survey to determine type of construction, condition of structure and site conditions. Assess strength and stability of damaged or deteriorated structures.

3.1.1.2. Assess potential effect of removal of any part or parts on remainder of structure before such part(s) are removed.

3.1.1.3. Assess effects of demolition on adjacent properties and consider need for underpinning, shoring and/or bracing.

3.1.1.4. Investigate for following conditions:

3.1.1.4.1. load-bearing walls and floors.

3.1.1.4.2. structure suspended from another.

3.1.1.4.3. cantilevered construction.

3.1.1.4.4. presence of prestressed or post-tensioned elements.

3.1.1.4.5. basements, tunnels, vaults or similar underground construction extending beyond perimeter of structure to be demolished.

3.1.1.4.6. presence of hazardous materials.

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

3.2.1.1. Post danger signs conspicuously around area of work. If requested, provide a watchman for patrolling site when work is not in progress to prevent public entering danger zone and to maintain barricades.

3.2.1.2. Provide fire extinguishers acceptable to fire prevention authorities in locations and of type suitable to enable personnel to deal with fire occurring during progress of work.

3.3. APPLICATION

3.3.1. Restrictions-

3.3.1.1. Following methods of demolition will not be permitted in the Work of this Contract:

3.3.1.1.1. Use of rapid progress failure methods (explosives).

3.3.2. Demolition action plans may indicate only general scope of work to be demolished and removed. It is Contractor's sole responsibility to determine exact extent of demolition required. Contractor may not rely solely on Drawings to limit scope of selective demolition work required. Review site conditions and assess exact scope of demolition and removal.

3.3.3. Examine and review existing conditions prior to starting demolition. Initially perform demolition only in selected and designated test areas prior to proceeding full scale demolition work. Obtain approval on technique of demolition in test areas from Consultant. Only after approval, proceed in other areas.

3.3.4. Materials and debris shall not be stacked in building to extent that overloading of any part of structure will occur.

3.3.5. At end of each Day's work leave work in safe condition ensuring no parts of structure are in danger of collapsing.

3.3.6. Demolition:

3.3.6.1. Carry out demolition in accordance with CSA S350-M. Demolish structure and remove

materials from site. Use hand tools or pneumatic or hydraulic equipment. Do not use swinging apparatus or explosives. Adhere to manufacturer's recommendations in use of hand held tools while conforming to the Occupational Health and Safety Act requirements.

3.3.6.2. Do not demolish spray or trowel-applied friable materials, materials suspected of containing PCBs or other hazardous materials. Where such materials are encountered notify Consultant immediately. Do not proceed until written instructions have been received from Consultant.

3.3.6.3. Remove mechanical and electrical items indicated to be removed.

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

3.3.6.5. Separate attached structures by hand demolition prior to general demolition. Remove and lower structural members and other heavy objects with safe and suitable equipment.

3.3.6.6. Demolish and remove interior partitions, walls, ceilings, flooring down to concrete substrate, except those specified and/or indicated to remain.

3.3.6.7. Keep work wetted down to minimize dust.

3.3.6.8. Minimize noise. Avoid use of noisy machinery during working hours.

3.3.6.9. Provide protection around exterior openings.

3.3.6.10. Where required, provide structural supports for adjacent structures.

3.3.6.11. Firestopping and Smoke Seal: In event work of this Section impacts on integrity of fire separations, ensure trade performing firestopping is notified.

3.3.7. Building Services:

3.3.7.1. Arrange with Owner to disconnect existing building services. Cut-off and cap existing building services under Owner's supervision. Provide caps to abandoned services.

3.3.7.2. Prevent demolition debris from entering building drains.

3.3.8. Except as indicated on Drawings or designated on site by Consultant, materials forming permanent part of structure being demolished shall become property of this Section. Remove from the Site.

3.3.9. Coordinate with mechanical and electrical Divisions respectively for removal, relocation and reinstallation of mechanical and electrical items.

3.3.10. Remove electrical equipment scheduled for removal on Drawings and as required by Work.

3.3.11. Remove sewer and water lines to extent indicated on Drawing and cap to prevent leakage.

3.4. CLEANING

3.4.1. Waste Management:

3.4.1.1. Clear away dirt, rubbish and loose litter resulting from work of this Section, minimum daily. Keep dust to a minimum. When necessary and practical demolition works shall be sprayed periodically with water to reduce dust. Wet down debris from time to time to control dust. Maintain roadways, lanes and street sidewalks in the vicinity of the premises safe and clear.

3.4.1.2. Selling or burning of materials on site is not permitted.

3.4.1.3. Conform to requirements of the Authorities Having Jurisdiction regarding disposal of waste materials.

3.4.1.4. Materials prohibited from municipality waste management facilities shall be removed from site and dispose of at recycling companies specializing in recyclable materials.

3.4.1.5. Any additional materials prohibited from waste management facilities shall be removed from site and disposed of according to requirements of authorities having jurisdiction without any additional cost to Owner.

3.5. PROTECTION

3.5.1. Do not interfere with use and activities of occupants where applicable and adjacent buildings. Maintain free and safe passage to and from site. Maintain integrity of existing fire exits.

3.5.2. Protect existing adjacent work against damages which might occur from falling debris or other causes due to work of this Section.

3.5.3. Provide, erect and maintain required hoarding, sidewalk sheds if applicable, 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.

3.5.4. Provide flagmen where necessary or appropriate to provide effective and safe access to site to vehicular traffic and protection to pedestrian traffic.

3.5.5. Ensure scaffolds, ladders, equipment and other such equipment are not accessible to public. Protect with adequate fencing or remove and dismantle at end of each Day or when no longer required.

3.5.6. Where demolition operations prevent normal access to adjacent areas of the building, provide and maintain suitable alternative access.

3.5.7. If at any time safety of adjacent structures appear to be endangered, cease operations and notify Consultant; take precautions to support structures; do not resume operations until permission is granted by Consultant.

3.5.8. If Consultant considers additional bracing and shoring necessary to safeguard and prevent such movement or settlement, install bracing or shoring upon Consultant's orders. Failure to comply promptly with such request, additional bracing or shoring may be placed

by Consultant at Contractor's expense.

3.5.9. Erect and maintain partitions as required to prevent spread of dust, fumes and smoke to other parts of building. Maintain fire exits from the Site. On completion, remove partitions and Make Good surfaces to match adjacent surfaces of building.

3.5.10. Before starting demolition, ensure required dust-tight partitions have been installed where necessary.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide architectural woodwork including but not limited to following:

1.2.1.1. New Ground floor and second floor Kitchen millwork, New Pantry millwork , New dormitory 'murphy' beds

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Rough Carpentry; Section 06 10 00

1.2.2.2. Supply of door hardware: Section 08 71 00, Door Hardware.

1.2.2.3. Building in and anchoring of steel frames in gypsum board partitions: Section 09 21 00, Gypsum Board Assemblies.

1.2.2.4. Filling nail holes and provision of finish painting: Section 09 91 00, Painting.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. AWI/AWMAC/WI: American Woodwork institute/Architectural Woodwork Manufacturers Association of Canada/Woodwork Institute; www.awmac.com.

1.3.1.2. AWS: Architectural Woodwork Standards, Edition 1, 2009, as amended.

1.3.1.3. FSC (Forest Stewardship Council) – All wood products designated in the specification as "FSC certified"

1.3.1.4. HUD: Department of Housing and Urban Development.

1.3.1.5. MDF: Medium Density Fibreboard.

1.3.1.6. NEMA: National Electrical Manufacturers Association; www.nema.org.

1.3.1.7. NPA: National Particle board Association

1.3.1.8. ULC: Underwriters Laboratories of Canada; www.ulc.ca.

1.3.2. Reference Standards:

1.3.2.1.	24 CFR Part 3280 Standards	- Manufactured Home Construction and Safety
1.3.2.2.	ANSI/NPA A208.2-09 Applications	- Medium Density Fiberboard (MDF) For Interior

1.3.2.3.	ANSI/NEMA LD 3-05	- High-Pressure Decorative Laminates
1.3.3.	ASTM E84-15a	- Standard Test Method for Surface Burning Characteristics of Building Materials
1.3.3.1.	CSA O112 Series-M77(06)	- CSA Standards for Wood Adhesives
1.3.3.2.	CSA O153-M80(08)	- Poplar Plywood

1.4. SUBMITTALS

1.4.1. Samples: Submit samples in accordance with Section 01 30 00 samples in following sizes:

1.4.1.1. minimum 300 mm (12") long x 400 mm (16") wide x 25 mm (1") sample with veneer finish

1.4.1.2. Laminate finish

1.4.2. See section 2.3

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

1.5.1.1. Provide work of this Section in accordance with Sections 10 and 11 of AWS produced by AWI/AWMAC/WI, except as specified otherwise herein and by reference are hereby made a part of this Section. Ensure any reference to grades and terminology in this Section is as defined in AWS.

1.5.1.2. Requirements of this Section govern and modify AWS.

1.5.1.3. Installers: Provide work of this Section executed by competent installers with a minimum of 5 years' experience in the application of Products, systems and assemblies specified and be a member of AWI/AWMAC/WI.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements:

1.6.1.1. Do not deliver finished Products during rainy or damp weather.

1.6.1.2. Do not deliver work of this Section until building and storage areas are sufficiently dry so Products will not be damaged by excessive changes in moisture content.

1.6.1.3. Deliver Products of this Section in accordance with Section 2, Rule 4.1.1 of AWS.

1.6.1.4. Do not deliver damaged Products.

1.6.2. Storage and Handling Requirements:

1.6.2.1. Store and handle Products of this Section in accordance with Section 2, Rule 4.1.2 of AWS.

1.6.2.2. Cover finished plastic laminate surfaces and varnished surfaces with heavy kraft paper and put in cartons for protection. Protect installed plastic laminate surfaces by acceptable means. Do not remove protective covers until immediately prior to final cleaning.

1.7. WARRANTY

1.7.1. Manufacturer Warranty: Warrant work of this Section for a period of 2 years against defects and/or deficiencies in accordance with Article A-15 –Warranty Period of the Agreement between Owner and Contractor. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of the Consultant and at no expense to the Owner. Defects include but are not limited to, delamination of plastic laminate, opening of seams, warpage and extensive colour fading.

PART2- PRODUCTS

2.1. MATERIALS

2.1.1. Use of FSC certified forest products during performance of the Work is required,

2.1.2. All wood products designated as "FSC certified" in this specification shall be certified according to the rules of the Forest Stewardship Council (www.fscus.org).

2.1.3. Performance/Design Requirements: Ensure millwork (e.g. countertops, wall cabinets, etc.) are capable of supporting structural loads without deflection in accordance with Casework Integrity in Appendix A of AWS.

2.1.4. Framing Lumber: Select Merchantable Douglas Fir, kiln dried, or sound material of any species may be used for concealed members, free from sap, shakes, knots, splits and other defects. FSC certified,

2.1.5. Architectural Lumber: FSC certified, Clear, straight, kiln dried, Select painted finish Plywood for fitments and door jambs. Provide kiln dried lumber to 7% moisture content, free from blemishes that would be apparent after finish is applied.

2.1.6. Finishing:

2.1.6.1. Prime unexposed surfaces including backs of fitments against walls and underside of fitments.

2.1.6.2. Before priming, treat knots and sap streaks, with a coat of shellac and then prime with a wood primer.

2.1.6.2.1. Shop finish natural finished wood surfaces.

2.2. COMPONENTS

2.2.1. Supply casework conforming to Section 10 of AWS as applicable.

2.2.2. Casework for Stained Finish:

2.2.2.1. AWI/AWMAC/WI Quality Grade: Premium.

Construction: Ensure casework conforms to Section 10 of AWS

2.3. FSC CERTIFICATION

2.3.1. For all wood products designated in this specification as "FSC certified," provide evidence of compliance with FSC standards as follows:

2.3.1.1. Demonstrate that products are FSC certified by providing vendor invoices. Invoices will contain the vendor's Chain-of-Custody (COC) number and identify each FSC certified product on a line-item basis. A "vendor" is defined as the company that furnishes wood products to project contractors and/or subcontractors for on-site installation

2.3.1.2. The FSC content shall be at least 70% FSC certified when provided by an FSC Certified mill/manufacturer, and 100% FSC certified if provided by a non-FSC certified mill/manufacturer.

2.3.1.3. Ensure that all suppliers and wood materials to be ordered have documentation to support the FSC Certified Wood content claims (~~see Schedule C~~). This documentation shall be provided to the Consultant prior to ordering of any materials or products.

2.3.2. Wood products without submittal of acceptable documentation will be rejected

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Install work of this Section in accordance with appropriate Section of AWS.

3.2.2. Provide work of this Section true and straight and securely fastened in place.

3.2.3. Mitre exposed corners and butt joints.

3.2.4. Thoroughly fix and anchor work of this Section into position.

3.2.5. Mechanical and Electrical Fittings:

3.2.5.1. Provide openings required to accommodate mechanical and electrical fittings as part of the work of this Section and provide a core sealant to protect counter cores which are exposed to accommodate:

3.2.6. Do not install damaged Products.

3.3. SITE QUALITY CONTROL

3.3.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide rough carpentry including but not limited to following:

1.2.1.1. miscellaneous interior carpentry.

1.2.1.2. equipment mounting panels.

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Section 01 70 00, Execution and Closeout Requirements

1.2.2.2. Provision of architectural woodwork: Section 06 40 00, Architectural Woodwork.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. CCA: Chromated Copper Arsenate.

1.3.1.2. COFI: Council of Forest Industries; www.cofi.org.

1.3.1.3. FSC (Forest Stewardship Council) – All wood products designated in the specification as "FSC certified"

1.3.1.4. NLGA: National Lumber Grades Authority; www.nlga.org

1.3.1.5. ULC: Underwriters Laboratories of Canada; www.ulc.ca.

1.3.1.6. UL: Underwriters Laboratories Inc.; www.ul.com.

1.3.1.7. LHC Log and Timber Homes Council

1.3.2. Definitions:

1.3.2.1. Exposed Framing: Framing not concealed by other construction.

1.3.2.2. Dimension Lumber: Lumber of 50 mm (2") nominal or greater but less than 5" nominal in least dimension.

1.3.2.3. Timber: Lumber of 125 mm (5") nominal or greater in least dimension.

1.3.3. Reference Standards:

1.3.3.1. CSA O80 Series-08 - Wood Preservation

1.3.3.2.	CSA O121-08	- Douglas Fir Plywood
1.3.3.3.	CAN/ULC-S102-10 Characteristics	- Standard Method of Test for Surface Burning of Building Materials and Assemblies

1.4. QUALITY ASSURANCE

1.4.1. Certifications:

1.4.1.1. Grading:

1.4.1.1.1. Provide lumber bearing the grading stamps of an agency certified by the Canadian Lumber Standards Administration Board for identification.

1.4.1.1.2. Provide "treated" and "fire treated" wood and plywood bearing the stamp of the Canadian Wood Preservers Bureau.

1.4.1.2. Wood products to be FSC certified from Certified Well-Managed Forests: Forests certified to be in compliance with the standards endorsed by the Forest Stewardship Council (FSC)

1.4.1.2.1. Certified Well-Managed Forests: Forests certified to be in compliance with the standards endorsed by the Forest Stewardship Council (FSC)

1.4.1.2.2. Submittal Procedures; ensure that FSC Chain-of-Custody (COC) certificates are submitted from qualified manufacturers, fabricators, or suppliers before products are purchased. Provide upon request

1.5. DELIVERY, STORAGE AND HANDLING

1.5.1. Storage and Handling Requirements:

1.5.1.1. Store lumber in a dry place and protect from dampness and damage.

1.5.1.2. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Use of FSC certified forest products during performance of the Work is required,

2.1.2. All wood products designated as “FSC certified” in this specification shall be certified according to the rules of the Forest Stewardship Council (www.fscus.org).

2.1.3. Softwood Lumber: Of grades conforming to NLGA’s "Standard Grading Rules for Canadian Lumber", graded as follows:

2.1.3.1. Light Framing: Species Group D, Standard Grade. FSC certified

2.1.3.2. Studding: Species Group D, Stud Grade. FSC certified

2.1.3.3. Structural Light Framing: Species Group D, No. 1 Grade. FSC certified

2.1.3.4. Appearance Lumber: Species Group B, Appearance Grade. FSC certified

2.1.4. Hardwood Lumber: FSC certified, Of grades conforming to grading rules of U.S. National Hardwood Lumber Association, solid Yellow Birch, select or better.

2.1.5. Concealed Framing Lumber: No. 2 White Pine, No. 2 Red Pine, or No. 1 Construction Eastern Spruce, Balsam Fir or Jack Pine, kiln dried, free from sap, shakes, splits, knots and other defects. FSC certified

2.1.6. Grounds, Nailing Strips and Blocking: No. 2 White Pine, No. 2 Red Pine, or No. 1 Construction Eastern Spruce, kiln dried, free from sap, shakes, splits, knots and other defects. FSC certified

2.1.7. Glue: Waterproof.

2.1.8. Field Applied Wood Preservative: For field cut ends, supply “Wolman End Cut” by Koppers Company Inc. or same CCA preservative as used for shop impregnation.

2.1.9. Rough Hardware: Supply rough hardware to frame and fix rough carpentry. This includes bolts, anchors, nails, expansion shields and other fastenings required. Hot dip galvanize hardware for exterior work; elsewhere, provide cadmium plated hardware. Provide spiral thread nails except as indicated otherwise.

2.1.10. "Treated" Wood and Plywood (Decay and Termite Resistant) FSC certified:

2.1.10.1. Koppers Company Inc., Wolmanized, distributed by Hickson Building Products Limited. or equivalent.

2.1.10.2. Timber Specialties K-33.

2.1.10.3. Provide vacuum/pressure impregnated lumber treated in accordance with CSA O80.

2.1.10.4. Retention/Penetration Standards: Conform to CSA O80.

2.1.10.5. Provide treated wood kiln dried to maximum 12% moisture content.

2.1.10.6. Cut end liquid wood preservative as recommended by manufacturer of treated wood.

2.1.11. "Fire Treated" Wood and Plywood:

2.1.11.1. Koppers Company Inc., Dricon, distributed by Hickson Building Products Limited. or equivalent.

2.1.11.2. Timber Specialties Flame Proof LHC.

2.1.11.3. Flame Spread: Max 25 in 30 minutes in accordance with CAN/ULC-S102.

2.1.11.4. Provide fire treated wood kiln dried to max 19% moisture content.

2.1.11.5. Do not resurface or rip fire treated wood if it affects the ULC Label.

2.1.11.6. Provide fire treated material bearing stamp of Canadian Wood Preservers Bureau and ULC stamp.

2.1.11.7. Interior Fire Retardant Treated Lumber and Plywood: Pressure treated lumber and plywood with fire retardant chemicals to meet an UL FR-5 rating with a surface-burning characteristics rating of 25 or less for flamespread, fuel contributed and smoke

developed. Ensure each piece of fire retardant treated lumber and plywood bears a ULC label or imprint attesting to this rating.

2.2. FSC CERTIFICATION

2.2.1. For all wood products designated in this specification as "FSC certified," provide evidence of compliance with FSC standards as follows:

2.2.1.1. Demonstrate that products are FSC certified by providing vendor invoices. Invoices will contain the vendor's Chain-of-Custody (COC) number and identify each FSC certified product on a line-item basis. A "vendor" is defined as the company that furnishes wood products to project contractors and/or subcontractors for on-site installation

2.2.1.2. The FSC content shall be at least 70% FSC certified when provided by an FSC Certified mill/manufacturer, and 100% FSC certified if provided by a non-FSC certified mill/manufacturer.

2.2.1.3. Ensure that all suppliers and wood materials to be ordered have documentation to support the FSC Certified Wood content claims (see Schedule C). This documentation shall be provided to the Consultant prior to ordering of any materials or products.

2.2.2. Wood products without submittal of acceptable documentation will be rejected

PART3- EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Properly frame together parts of the Work with members accurately cut to size, closely fitted, well spiked and erected in a substantial manner, plumb, level, square and true to dimension.

3.2.2. Locate joints over bearing or supporting surfaces.

3.2.3. Provide running members full length wherever possible.

3.2.4. Design for expansion and contraction of the materials.

3.2.5. After cutting, drilling and fitting "treated" wood and plywood but before installation, apply 1 full coat of wood preservative to exposed surfaces, including ends of blocking, furring, nailers and rough carpentry.

3.2.6. Provide fasteners and rough hardware for a rigid and secure installation.

3.2.7. Miscellaneous Interior Carpentry: Provide plywood, blocking, furring, nailers, rough carpentry, grounds and nailing strips as indicated and/or as required for proper installation.

3.2.8. Equipment Mounting Panels:

3.2.8.1. Provide 19 mm (3/4") thick exposed plywood backboard panels. Refer to the Electrical Drawings for sizes and locations and securely mount panels to wall surfaces.

3.2.8.2. Provide "fire treated" plywood.

3.2.9. Roof Carpentry: Provide plywood, sheathing, blocking, furring, nailers, rough carpentry, grounds and nailing strips as indicated and/or as required for proper installation.

3.3. SITE QUALITY CONTROL

3.3.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.4. PROTECTION

3.4.1. Protect rough carpentry from weather.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 – 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide solid surfacing fabrications including but not limited to following:

1.2.1.1. millwork counter tops.

1.2.1.2. millwork counter tops with sinks and cove backsplashes.

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Provision of finish carpentry and architectural woodwork: Section 06 40 00, Architectural Woodwork.

1.2.2.2. Provision of elastomeric joint sealants: Section 07 92 00, Joint Sealants.

1.2.2.3. Provision of tile work: Section 09 30 00, Tiling.

1.2.2.4. Provision of plumbing and plumbing fixtures: Mechanical.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. MDF: Medium Density Fibreboard.
1.3.1.2. NFPA National Fire Protection Association
1.3.1.3. NFA – National Sanitation Foundation
1.3.1.4. UL -Underwriters Laboratories

1.3.2. Definitions:

1.3.2.1. Solid Polymer Surface: Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.3.3. Reference Standards:

1.3.3.1.	ANSI/NEMA LD 3-05	- High-Pressure Decorative Laminates (HPDL)
1.3.3.2.	ANSI/NPA A208.2-09	- Medium Density Fiberboard (MDF) For Interior Applications
1.3.3.3.	ASTM C920-14a	- Standard Specification for Elastomeric Joint Sealants
1.3.3.4.	ASTM D638-10	- Standard Test Method for Tensile Properties of Plastics

•		ASTM D785-08 - Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials
1.3.3.5.	ASTM D790-10 Properties	- Standard Test Methods for Flexural of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
1.3.3.7.	ASTM E84-14	- Standard Test Method for Surface Burning Characteristics of Building Materials
1.3.3.8.	ASTM E228-11	- Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer
1.3.3.9.	ASTM G21-13	- Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
1.3.3.10.	ASTM G22-76(96)	- Standard Practice for Determining Resistance of Plastics to Bacteria
1.3.3.11.	ASTM G155-13	- Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
1.3.3.12.	CSA B45.5-11/ IAPMO Z124-2011	- Plastic Plumbing Fixtures
1.3.3.13.	CSA O115-M82	- Hardwood and Decorative Plywood
1.3.3.14.	NFPA 255-06	- Standard Method of Test of Surface Burning Characteristics of Building Materials
1.3.3.15.	NSF/ANSI 51-07	- Food Equipment Materials
1.3.3.16.	CAN/ULC-S102-07	- Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
1.3.3.17.	UL 723	- Test for Surface Burning Characteristics of Building Materials
1.3.3.18.	UL 2824	-GREENGUARD Certification Program, Method Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers

1.4. ADMINISTRATIVEREQUIREMENTS

1.4.1. Preinstallation Meetings: Arrange preinstallation meeting 1 week prior to commencing work with all parties associated with trade as designated in the Contract Documents or as requested by the Consultant. Presided over by the Contractor, include the Consultant who may attend, Subcontractor performing work of this trade, the Owner's representative, testing company's representative and consultants of applicable discipline. Review the Contract Documents for the work included under this trade and determine complete understanding of requirements and responsibilities relative to the work included, storage and handling of materials, materials to be used, installation of materials, sequence and

quality control, the Project staffing, restrictions on areas of the Work and other matters affecting construction, to permit compliance with intent of the work of this Section.

1.5. SUBMITTALS

1.5.1. Product Data: Indicate Product description including solid surface sheets, sinks, bowls and illustrating full range of standard colours, fabrication information and compliance with specified performance requirements. Submit Product data with resistance to list of chemicals.

1.5.2. Shop Drawings: Submit Shop Drawings for the work of this Section in accordance with Section 01 30 00. Indicate plans, sections, dimensions, component sizes, edge details, thermosetting requirements, fabrication details, attachment provisions, sizes of furring, blocking, including concealed blocking and coordination requirements with adjacent work. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacles and other items installed in solid surface.

1.5.3. Coordination Drawings: Submit coordination drawings indicating plumbing and miscellaneous steel work indicating locations of wall rated or non-rated, blocking requirements, locations and recessed wall items and similar items.

1.5.4. Samples: Submit samples in accordance with Section 01 30 00. Submit minimum 150 mm x 150 mm (6" x 6") samples. Cut sample and seam together for representation of inconspicuous seam. Indicate full range of colour and pattern variation. Approved samples will be retained as standards for work.

1.5.5. Test and Evaluation Reports: Submit flammability test reports and food preparation zone test certifications confirming compliance with NSF/ANSI 51. Refer to www.nsf.org for the latest compliance to NSF/ANSI 51 for food zone — all food types.

1.6. CLOSEOUT SUBMITTALS

1.6.1. Operation and Maintenance Data:

1.6.1.1. Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in the Project closeout documents.

1.6.1.2. Provide a commercial care and maintenance kit and video. Review maintenance procedures and warranty details with the Owner upon completion.

1.7. QUALITY ASSURANCE

1.7.1. Qualifications:

1.7.1.1. Installers: Provide the work of this Section executed by competent installers with a minimum of 5 years' experience in application of the Products, systems and assemblies specified and with approval and training of the Product manufacturers. Ensure fabricator and installer are approved by solid polymer manufacturer.

1.7.2. Mock-Ups:

1.7.2.1. Prior to final acceptance of Shop Drawings, erect 1 full size mock-up of each component at the Project Site demonstrating quality of materials and execution for the Consultant's review.

1.7.2.2. Should mock-up not be accepted, rework or remake until acceptance is secured. Remove rejected units from the Project Site.

1.7.2.3. Accepted mock-up will be used as standard for acceptance of subsequent work.

1.7.2.4. Accepted mock-ups may remain as part of finished work.

1.8. DELIVERY, STORAGE AND HANDLING

1.8.1. Delivery and Acceptance Requirements: Deliver no components to the Project Site until areas are ready for installation.

1.8.2. Storage and Handling Requirements:

1.8.2.1. Store components indoors prior to installation.

1.8.2.2. Handle materials to prevent damage to finished surfaces.

1.9. WARRANTY

1.9.1. Manufacturer Warranty: Provide manufacturer's standard warranty for material only for period of 10 years against defects and/or deficiencies in accordance with the General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within the warranty period, to satisfaction of the Consultant and at no expense to the Owner.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. Corian® by DuPont; www.corian.com

2.1.1.2. Lotte Advanced Materials USA; www.staron.com

2.1.1.3. Wilsonart LLC-Contract; www.wilsonartcontract.com

2.1.2. Substitution Limitations: This Specification is based on DuPont's Products. Comparable Products from manufacturers listed herein or equivalent will be accepted provided they meet requirements of this Specification.

2.2. MATERIALS

2.2.1. Performance/Design Criteria:

Property Requirement	**Test Procedure min or max**	
Solid Polymer Based Products:		
Tensile Strength	6000 psi min	ASTM D638
Tensile Modulus	1.5 x 106 psi min	ASTM D638

Tensile Elongation	0.4% min.	ASTM D638
Flexural Strength	10000 psi min	ASTM D790
Flexural Modulus	1.2 x 106 psi min	ASTM D790
Hardness	>85-Rockwell "M" scale min.	ASTM D785
Thermal Expansion	3.90 x 10-5 in./in./0C	ASTM E228
		(2.2 x 10-5 in./in./0F)
Fungi and Bacteria	Does not support microbial growth	ASTM G21 & G22
Microbial Resistance	Highly resistant to mould growth	UL 2824
Ball Impact	No fracture - 1/2 lb. Ball:	NEMA LD3,1/4"

slab - 36" drop Method 3.8 1/2"* slab - 144" drop* - approximate weight per sq ft

Weatherability	ΔE^*_{94}<5 in 1,000 hrs	ASTM G155
Flammability	ASTM E84,	NFPA 255 & UL723

	All Colours		
	1/4"	**1/2”**	**3/4"**
Flame Spread	<25	<25	<25
Smoke Developed	<25	<25	<25
Class	1 and A	1 and A	1 and A

* NEMA results based on the NEMA LD 3

2.2.2. Solid Surfacing Material:

2.2.2.1. Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction; meeting following criteria:

2.2.2.1.1. Flammability: Flame Spread Index: 0 and Smoke Development Index: 5 when tested to CAN/ULC-S102.

2.2.2.1.2. Food Equipment Material Compliance: Food zone to NSF/ANSI 51.

2.2.2.2. Ensure material has minimum physical and performance properties specified under “Performance/Design Criteria”.

2.2.2.3. Ensure superficial damage to a depth of 0.25 mm (0.010") is repairable by sanding and polishing.

2.2.3. Adhesive for Bonding to Other Products: One component silicone to ASTM C920.

2.2.4. Sealant: A standard mildew-resistant, FDA/UL® and NSF/ANSI 51 compliant in food zone area, recognized silicone colour matched sealant or clear silicone sealant.

2.2.5. Sink/Bowl Mounting Hardware: Manufacturer's approved bowl clips, brass inserts and fasteners for attachment of undermount sinks/bowls.

2.3. COMPONENTS

2.3.1. Countertops: 38 mm (1-1/2") thick solid surfacing material, adhesively joined with inconspicuous seams, edge details as indicated on the Drawings. Colour: “Portoro” by Corian (Servery) and “Nebula” by Corian or equivalent

2.3.2. Counter Perimeter Frame: Ensure 13 mm (1/2") thick, moisture resistant cores for counter tops in wet areas having sinks or lavatories are 19 mm (3/4") thick exterior grade plywood with waterproof adhesive, CSA O115-M (G/SO) Fir or Poplar plywood, veneer core only. MDF core conforming to ANSI/NPA A208.2 balanced design, manufactured from recycled materials, meeting ANSI Standards for emissions, of minimum density of 770 kg/m^3, (48 lb/cu ft) and surface character to match sample approved by the Consultant. Ensure fire retardant Product contains fire-retardant chemicals injected with raw materials during manufacturing and achieves a maximum flame-spread rating of 25 with a maximum smoke development of 200 when tested to ASTM E84. Acceptable Product by Uniboard Canada or The Canfibre Group Limited or equivalent.

2.3.3. Fabrication:

2.3.3.1. Fabricate components in shop to greatest extent practical to sizes and shapes indicated, in accordance with approved Shop Drawings and solid surfacing manufacturer requirements. Form joints between components to create inconspicuous seams using manufacturer’s standard joint adhesive. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the Drawings.

2.3.3.2. Where indicated, thermoform corners and edges or other objects to shapes and sizes indicated on the Drawings, prior to seaming and joining. Cut components larger than finished dimensions and sand edges to remove nicks and scratches. Heat entire component uniformly prior to forming.

2.3.3.3. Ensure no blistering, whitening and cracking of components during forming.

2.3.3.4. Fabricate backsplashes from solid surfacing material with optional radius cove where counter and backsplashes meet as indicated on the Drawings. Backsplashes for most colours may be fabricated by traditional means discussed in K-25294 Backsplashes. Colours with metallic/mica particle or veined colours creating directional aesthetics (K-26833 Directional Aesthetics) may require the techniques in Technical Bulletin K-28235 Thermoformed Backsplash.

2.3.3.5. Form joints between components using manufacturer's standard joint adhesive. Ensure joints are inconspicuous in appearance and without voids. Attach 50 mm (2") wide reinforcing strip of solid polymer material under each joint.

2.3.3.6. Provide holes and cutouts for plumbing and bath accessories as indicated on the Drawings.

2.3.3.7. Rout and finish component edges to a smooth, uniform finish. Rout cutouts, then sand edges smooth. Repair or reject defective or inaccurate work.

2.3.3.8. Finish: Ensure surfaces have uniform finish:

2.3.3.8.1. Matte, with a 60° gloss rating of 5 - 20.

2.3.3.9. Fabrication Tolerances:

2.3.3.9.1. Variation in Component Size: +/-3 mm (+/-1/8").

2.3.3.9.2. Location of Openings: +/-3 mm (+/-1/8") from indicated location.

PART3- EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.1.1.2. Verify actual site dimensions and location of adjacent materials prior to commencing work.

3.1.1.3. Examine cabinets upon which counter tops are to be installed. Verify cabinets are level to within 3 mm in 3 m (1/8" in 10' - 0").

3.1.1.4. Notify the Consultant in writing of any conditions which would be detrimental to installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed Shop Drawings and Product installation details.

3.2.2. Fabricate field joints using manufacturer's recommended adhesive, with joints being inconspicuous in finished work. Exposed joints/seams are not permitted. Keep components and hands clean when making joints. Reinforce field joints as specified herein. Cut and finish component edges with clean, sharp returns.

3.2.3. Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer’s written recommendations using adhesive in colour to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.

3.2.4. Install countertops with no more than 3 mm (1/8") sag, bow or other variation from a straight line.

3.2.5. Adhere undermount/submount/bevel mount sinks/bowls to countertops using manufacturer's recommended adhesive and mounting hardware.

3.2.6. Seal between wall and components with joint sealant as specified herein and in Section 07 92 00, as applicable.

3.2.7. Provide backsplashes and endsplashes as indicated on the Drawings. Adhere to countertops using a standard colour-coordinated silicone sealant. Adhere applied

sidesplashes to countertops using a standard colour-coordinated silicone sealant. Provide coved backsplashes and sidesplashes at walls and adjacent millwork. Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on reviewed Shop Drawings. Adhere to countertops using manufacturer's standard colour-coordinated joint adhesive.

3.2.8. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Performance of the Work.

3.2.9. Coordinate connections of plumbing fixtures with Mechanical. Make plumbing connections to sinks in accordance with Mechanical.

3.3. REPAIR

3.3.1. Repair minor imperfections and cracked seams and replace areas of severely damaged surfaces in accordance with manufacturer's "Fabrication and Installation Manual".

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.5. CLEANING

3.5.1. Remove excess adhesive and sealant from visible surfaces.

3.5.2. Clean surfaces in accordance with manufacturer's "Care and Maintenance Instructions".

3.6. PROTECTION

3.6.1. Provide protective coverings to prevent physical damage or staining following installation for duration of the Contract.

3.6.2. Protect surfaces from damage until date of Substantial Performance of the Work.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide firestopping and smoke seals including but not limited to following:

1.2.2. Firestopping and smoke sealing in accordance with Ontario Building Code requirements around existing floor boxes and penetrations within the Archives room.

1.2.3. Firestopping of any existing openings in fire rated partitions or floors as uncovered by the work – A cash allowance will be provided for this work as it is unforeseen

1.2.3.1. firestopping and smoke seals in accordance with Ontario Building Code requirements, at openings and around penetrations, at un-penetrated openings, at projecting and recessed items and at openings and joints within fire separations and assemblies having fire resistance rating, excluding those inside sealed mechanical and electrical assemblies (e.g. inside ducts, dampers, bus ducts, etc.).

1.2.3.2. firestopping and smoke seals in accordance with Ontario Building Code requirements, at openings and spaces at perimeter edge conditions, excluding those inside sealed mechanical and electrical assemblies (e.g. inside ducts, dampers, bus ducts, etc.).

1.2.3.3. seals to form draft tight barriers to retard passage of flame and smoke and where specifically designated, passage of liquids while passing hose stream test.

1.2.3.4. ensure seal provides and maintains a fire-resistance rating as determined by OBC for adjacent floor, wall or other fire separation assembly to requirements of and as acceptable to the Authorities Having Jurisdiction and to the Consultant.

1.2.3.5. firestopping and smoke seals in and around fire separations, including spaces around mechanical and electrical penetrations, at tops of fire walls, between slab edges and other gaps and penetrations at fire assemblies.

1.2.3.6. ensure mechanical and electrical respectively are responsible for firestopping and smoke seals within mechanical (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside electrical bus ducts). Ensure firestopping and smoke seals around outside of such mechanical and electrical assemblies where they penetrate fire-rated separations are part of work of this Section.

1.2.3.7. systems and specified Products are only a guide and may not address all firestopping conditions pertaining to situations which may be present in the Work. Provide firestopping and smoke seal required for the Work. These Products and systems are not presented to restrict other tested and approved listed assemblies of other manufacturers designing assemblies conforming to Ontario Building Code and resolving firestopping required for the Work.

1.2.4. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.4.1. Demolition: Section 02 41 00, Demolition and Salvage.

1.2.4.2. Sealants and caulking: Section 07 92 00, Joint Sealants.

1.2.4.3. Gypsum board partitions: Section 09 21 16, Gypsum Board.

1.2.4.4. Firestopping and smoke seals inside mechanical assemblies: Mechanical.

1.2.4.5. Firestopping and smoke seals inside electrical assemblies: Electrical.

1.2.4.6. Low Emitting Adhesives and Sealants:

1.2.4.6.1. All Adhesives and sealants used on the interior side of the building air barrier shall comply with the requirements of South Cast Air Quality Management District (SCAQMD) Rule #1168 Effective July 1, 2005,

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. OBC: Ontario Building Code.

1.3.1.2. UL: Underwriters Laboratories Inc.; www.ul.com.

1.3.1.3. ULC: Underwriters Laboratories of Canada; www.ulc.ca.

1.3.2. Definitions:

1.3.2.1. Firestop System Types:

1.3.2.1.1. Head of Wall Joint Firestop Systems (HW): Systems intended for installation in vertical separations between wall and floor or roof structures. Ensure these systems do not incorporate penetrating items such as pipes or cables.

1.3.2.1.2. Joint Firestop Systems (JF): Systems intended for installation in openings such as construction joints, gaps and spaces in floors or walls or at floor and wall intersections in accordance with approved systems. Ensure these systems do not incorporate penetrating items such as pipes or cables.

1.3.2.1.3. Perimeter Joint Firestop Systems (PJ): Perimeter joint firestop system rating are governed by lowest of fire resistance ratings of individual components (i.e. wall, floor or joint system). These systems consist of floor with fire endurance rating, exterior wall with or without fire endurance rating and perimeter joint system. Ensure these perimeter joint firestop systems do not incorporate penetrating items such as pipes or cables.

1.3.2.1.4. Service Penetration Firestop Systems (SP): Systems intended for installation in openings of limited dimensions and shape in floor or wall assemblies in accordance with approved systems. Ensure penetrating pipes, cable trays and similar items are in exact accordance with approved systems.

1.3.2.1.5. Service Penetration for Combustible Systems (SPC): Systems intended for installation in

openings of limited dimensions and shape in floor or wall assemblies in accordance with approved systems. Ensure penetrating pipes are in exact accordance with approved systems. These systems are tested with a minimum differential pressure of 50 Pa between exposed and unexposed surfaces of assembly to meet Code requirements for Combustible Pipes for Use in Drain, Waste and Vent Piping.

1.3.2.2. Ratings: Rating of firestop system applies to its use in specific assembly of materials, penetration and floor or walls in which it is tested as follows:

1.3.2.2.1. F Rating: When system remains in opening during fire test for rating period without permitting passage of flame through openings or occurrence of flaming on any element of unexposed side of assembly.

1.3.2.2.2. FT Rating: When system remains in opening during fire test in accordance with F Rating requirement and additionally, transmission of heat through firestop system during rating period shall not have been such as to raise temperature of any thermocouple on unexposed surface of system more than 163 deg C (325 deg F) above initial temperature.

1.3.2.2.3. FH Rating: When system remains in opening during fire and hose test in accordance with F Rating requirement and additionally, during hose stream test firestop system shall not develop any opening that would permit a projection of water from stream beyond unexposed side.

1.3.2.2.4. FTH Rating: When system remains in opening during fire test and hose stream test within limitations described for F, FT and FH ratings.

1.3.2.2.5. L Rating: Based on volume of air flowing, per unit of time through opening around test sample under specified pressure difference applied across surface of system. L Ratings are intended to determine acceptability of firestop systems with reference to control of air movement through assembly. Rating is expressed in litres per second (l/s) per linear metre of opening for joint systems.

1.3.3. Reference Standards:

1.3.3.1.	CAN/ULC-S101-07	Standard Methods of Fire Endurance Tests of Building Construction and Materials
1.3.3.2.	CAN/ULC-S102-07	Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
1.3.3.3.	ULC-S115-05	Standard Method of Fire Tests of Firestop Systems
1.3.3.4.	ULC Guide No. 40 U19	Firestop Systems
1.3.3.5.	ULC Guide No. 40 U19.13	Firestop Systems Components

1.4. ADMINISTRATIVEREQUIREMENTS

1.4.1. Preinstallation Meetings: Prior to commencement of sealing, arrange for Product manufacturer's knowledgeable representative to meet and discuss installation procedures and unique conditions at the Place of the Work, inspect substrate

surfaces and recommend solutions to accommodate adverse conditions, periodically visit and verify installations before being concealed and report unsatisfactory conditions to the Consultant, attend final inspection and to submit written certification that Products, systems and assemblies have been installed in accordance with manufacturer's requirements.

1.4.2. Scheduling: Coordinate with trades involved and advise dates where work will take place throughout various areas of work.

1.5. SUBMITTALS

1.5.1. Product Data: Submit manufacturers' specifications and technical data for each material including compositions, limitations, documentation conforming ULC and/or cUL firestop system proposed for this Project and manufacturers' installation instructions.

1.5.2. Product data for adhesives and sealants, including printed statement of VOC content showing compliance with SCAQMD rule #1168. Include a statement indicating the amount of materials used on Project. Ensure Contractor and/or Subcontractors provide completed forms in accordance with Section 01359.

1.5.3. Shop Drawings:

1.5.3.1. Submit Shop Drawings in accordance with Section 01 30 00. Submit complete and detailed Shop Drawings for each condition encountered on site. Indicate following:

1.5.3.1.1. ULC and/or cUL assembly number certification and material safety data sheets.

1.5.3.1.2. required temperature rise and flame rating.

1.5.3.1.3. hose stream rating (where applicable).

1.5.3.1.4. thickness.

1.5.3.1.5. proposed installation methods.

1.5.3.1.6. material of firestopping and smoke seals, primers, reinforcements, support and securement methods, damming materials, reinforcements and anchorages /fastenings.

1.5.3.1.7. size of opening.

1.5.3.1.8. adjacent materials.

1.5.3.1.9. number of penetrations.

1.5.3.2. Designate on Shop Drawings fixed penetrants, relative positions, number of penetrations, expansion and control joints in rated slabs and walls, firestopping details at receptacles and similar poke-through devices and surrounding permanent materials. Identify re-entry locations.

1.5.3.3. Submit fireproofing manufacturer's written verification that manufacturers have identified where firestopping is required, have selected correct firestop system and applicators have been trained by system manufacturers. Products, systems and assemblies have been installed in accordance with manufacturer's requirements.

1.5.4. Samples: Submit only as requested and in accordance with Section 01 30 00, various

types of firestopping and smoke seal material.

1.5.5. Certificates:

1.5.5.1. Submit manufacturer's verification that installed firestopping and smoke seal materials comply with specified requirements.

1.5.5.2. Submit copies of ULC, Warnock Hersey and/or cUL Listing cards for review.

1.6. CLOSEOUT SUBMITTALS

1.6.1. Operational and Maintenance Data: Provide maintenance data for materials and prefabricated devices, providing descriptions sufficient for identification on site in accordance with requirements of Section 01 70 00.

1.7. QUALITY ASSURANCE

1.7.1. Qualifications:

1.7.1.1. Installers: Provide work of this Section executed by competent installers experienced, trained, licensed and approved, by material or system manufacturer for application of materials and systems being used having a minimum 5 years' experience in application of Products, systems and assemblies specified. Ensure firestopping systems conform to requirements of ULC-S115 tested assemblies that provide fire rating as shown.

1.8. DELIVERY, STORAGE AND HANDLING

1.8.1. Delivery and Acceptance Requirements: Deliver materials to the Site in manufacturer's sealed and labelled containers. Materials are subject to the Consultant's inspection.

1.8.2. Storage and Handling Requirements:

1.8.2.1. Store materials inside building for 24 hours prior to use; store in area designated by the Consultant. Protect from damage and environmental conditions detrimental to material.

1.8.2.2. Comply with manufacturer's temperature, relative humidity and substrate moisture content for storage, mixing, application and curing of Products.

1.9. SITE CONDITIONS

1.9.1. Ambient Conditions:

1.9.1.1. Comply with manufacturer's recommended requirements for temperature, relative humidity, moisture content and presence of any sealer or release agents on substrate during application and curing of materials. Ensure surfaces are dry and frost free.

1.9.1.2. Maintain minimum temperature of 5 deg C (40 deg F) for minimum period of 1 week before application, during application and until application is fully cured.

1.9.1.3. Ventilate areas in which firestopping is being applied. Protect water-soluble material from wetting until fully cured.

1.10. WARRANTY

1.10.1. Manufacturer Warranty: Warrant work of this Section against defects and deficiencies for period of 5 years in accordance with the General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of the Consultant and at no additional expense to the Owner. Defects include but are not limited to cracking, breakdown of bond, failure to stay in place or bleeding.

PART2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer Lists: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. 3M Canada; www.3m.ca

2.1.1.2. A/D Fire Protection Systems Inc.; www.adfire.com

2.1.1.3. GE Canada, Inc.; www.gesilicones.com

2.1.1.4. Grace Construction Products; www.graceconstruction.com

2.1.1.5. Instant Firestop Inc.

2.1.1.6. Hilti (Canada) Corporation; www.ca.hilti.com

2.1.1.7. Johns Manville, Fire Protection Systems; www.jm.com

2.1.1.8. Tremco Canada; www.tremcosealants.com

2.1.2. Substitution Limitations: Comparable Products from manufacturers listed herein or equivalent will be accepted provided they meet requirements of this Specification.

2.2. MATERIALS

2.2.1. Performance/Design Criteria: Ensure firestop systems intended for installation in fire separations have assigned fire ratings as defined herein when tested in accordance with ULC- S115. Ensure firestop systems intended for use in fire resistive wall and/or floor assemblies are evaluated in accordance with CAN/ULC-S101 (Refer to ULC Guide No. 40 U19).

2.2.2. Supply materials and systems capable of effectively impeding passage of fire, smoke, gasses and where specifically indicated passage of liquids. Use only firestop systems that have been ULC and/or cUL tested for specific fire rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements and fire rating involved for each separate instance.

2.2.3. Ensure firestopping system provides fire-resistance rating, flame and temperature not less than fire resistance rating of surrounding floor, wall or assembly, in accordance with requirements of OBC.

2.2.4. Firestop System Rating: Where applicable, comply with F Rating based on number of hours system can resist flames and gases; T Rating based on maximum temperature

rise of 163 deg C (325 deg F) above ambient for any thermocouple in addition to flame, gas and stream performance and H Rating based on capacity to withstand hose stream after burn. Design combined and/or built-up site systems in accordance with approved restrictions and technical evaluations acceptable to the Consultant and the Authorities Having Jurisdiction.

2.2.5. Ensure systems provide fire and temperature rating in accordance with those outlined in OBC and effectively impeding passage of flame, smoke and gasses.

2.2.6. Firestopping seals except for wall joints in visible areas must be of easily identifiable colour, such as red or yellow to be clearly distinguished from other building materials.

2.2.7. Ensure service penetration components and assemblies, including back-up materials and supports are certified in accordance with ULC-S115 or CAN/ULC-S101 and be ULC listed by a certified authority recognized by building Code officials in locality in which Building is situated.

2.2.8. Ensure suitability of Products for application and compatibility of materials with surfaces to which it will be applied.

2.2.9. Ensure site system assembly is in accordance with ULC-S115 labeled and listed system design limitations, unless proposed assembly is approved by authorities having jurisdiction and meets Consultant's approval. Design combined and/or built-up site systems in accordance with approved restrictions and technical evaluations acceptable to Consultant and authorities having jurisdiction. Engineering judgements from firestopping manufacturers reviewed by Consultant and authorities having jurisdiction may be used for conditions where a ULC and/or cUL firestopping system is not available.

2.2.10. Ensure sealants and putty for overhead and vertical joints are non-sagging; seals for floors, self- levelling. Ensure flexible fire stop sealant provides movement capability in fire rated joint applications. Ensure sealants are compatible with base materials such as without limitations masonry, concrete, metal, gypsum board and other similar items.

2.2.11. Ensure Products have a compressive strength capable of providing self support at a penetrating item and shall maintain their integrity as tested in a ULC vertical application.

2.2.12. Ensure Products are compatible with abutting dissimilar architectural coatings and finishes at floors, walls, ceilings, waterproofing membranes and the like. Check with Room Finish Schedule and manufacturer of selected materials being installed.

2.2.13. Integral Pipe Sleeves/Firestopping Components: Mechanical may specify fire-rated pipe sleeves, cast-in pipe/sleeve assemblies and integral firestopped penetration devices and accessories listed by authorized testing and certification authorities. These systems may eliminate need for separate firestopping applications at certain designated locations and it is responsibility of this Section to determine any and all locations where such devices will be utilized on Project.

2.2.14. Do not provide Products containing asbestos.

PART3- EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

3.1.1.2. Verify openings, dimensions and surfaces conform to fire and smoke seal assembly.

3.1.1.3. Examine sizes of penetrating service, percentage fill and sleeve or opening sizes with exact annular space calculations, anticipated movement and conditions necessary to establish correct type, thickness and installation of back-up materials and seals.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Surface Preparation:

3.2.1.1. Provide primer or surface conditioner if required by Product manufacturer. Prime surfaces in accordance with manufacturer's directions.

3.2.1.2. Remove combustible material and loose material detrimental to bond from edges of penetration. Clean, prime or otherwise prepare substrate material to manufacturer's recommendation.

3.2.1.3. Remove insulation from insulated pipe and duct where such pipes or ducts penetrate a fire separation unless ULC certified assembly permits such insulation to remain within assembly, or where mechanical trades have installed special fire rated insulated sleeves. Ensure continuity of thermal and vapour barriers where such are removed, altered or replaced, to satisfaction of mechanical and the Consultant.

3.2.1.4. Alternatively, ensure pipe and duct insulation and wrappings occurring within openings to receive firestopping and smoke seals under this Section are installed prior to work of this Section and insulation and wrappings within fire seals are ULC listed components of system to be installed under this Section, unless ULC certified assembly permits such other insulation and wrappings to remain within assembly. Coordinate work of this Section with mechanical.

3.2.1.5. Clean bonding surfaces to remove deleterious substances including dust, paint, rust, oil, grease, moisture, frost and other foreign matter which may otherwise impair effective bonding.

3.3. INSTALLATION

3.3.1. Do not apply firestop material to surfaces previously painted or treated with sealer, curing compound, water repellent to other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

3.3.2. Provide temporary forming, packing and bracing materials necessary to contain firestopping. Upon completion, remove forming and damming materials not required to remain as part of system.

3.3.3. Install damming and firestopping materials as per manufacturer's instructions.

3.3.4. Mix and apply firestopping and smoke seals in accordance with manufacturer's instructions and tested designs to provide required fire (temperature and flame) rated seal, to prevent passage of smoke and where specifically designated, passage of fluids.

3.3.5. Provide temporary forming and packing as required. Apply materials with sufficient pressure to properly fill and consolidate mass to seal openings.

3.3.6. Tool or trowel exposed surfaces. Allow materials to cure by not covering up materials until full curing has taken place.

3.3.7. Where a designated system described hereinafter does not meet Code requirements for particular service condition, substitute with next higher system meeting required rating.

3.3.8. Notify Consultant when completed installations are ready for inspection and prior to concealing or enclosing firestopping and smoke seals.

3.3.9. System 1:

3.3.9.1. Install fire rated joint firestopping by compressing material minimum of 25% to ensure complete sealing and to follow irregularities of concrete slabs at perimeter of building where junction occurs with back of cladding system. Apply firestopping sealant of spray over compressed mineral wool.

3.3.9.2. Butt succeeding sections of firestopping material tightly up against preceding. Leave no voids.

3.3.9.3. Provide firestopping between exterior wall cladding and concrete floor slab. Secure and support to suit design requirements.

3.3.9.4. Use this System for joint seals through fire-resistance rated floor slabs, ceilings and roofs unless otherwise stipulated.

3.3.10. System 2:

3.3.10.1. At fire-rated masonry walls and gypsum board partitions which extend nominally to within 19 mm (3/4") of underside of deck above, insert fire rated joint assembly firestopping material in 25% compression in accordance with ULC test requirements and manufacturer's instructions. Provide adequate depth of material to fill gap flush with face of wall, except as otherwise specified. Apply firestopping sealant of spray over compressed mineral wool.

3.3.10.2. Insert at intersection of fire-resistance rated masonry and gypsum board partitions.

3.3.10.3. Insert at both sides of control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.

3.3.10.4. Where wall/slab junction is exposed in finished work, keep fibre back 9 mm (3/8") from face of block and apply fire-resistant sealant to gap, tooling to a concave joint.

3.3.10.5. At perimeter slab locations where this system would otherwise be exposed in finished work and where smoke seal is required, provide cover spray material of thickness as recommended by manufacturer of System 3 material set flush with top of slab and tooled smooth. Minimum cover spray thickness 3 mm (1/8"). Where anticipated movement in joint width is inevitable, select sealant with elastic capabilities.

3.3.11. System 3:

3.3.11.1. This System establishes fire rated firestopping for service penetrations throughout the Project. Seal gaps and holes in fire-rated walls and slabs and composite construction through which conduit, wire, cables, ductwork, piping and other protrusions pass as a result of work using fire- resistant penetration sealant. Include opening which have been formed, sleeved and cored.

3.3.11.2. Apply at unpenetrated openings and sleeves installed for future use through fire-resistance rated assemblies.

3.3.11.3. Apply this System between spaces having different air pressures. (See Mechanical Drawings for pressurized areas and locations of moving penetrants.)

3.3.11.4. Apply at "wet" rooms supported by suspended slabs at locations over Electrical and Equipment Rooms or similar areas containing power devices in which future re-entry is not required.

3.3.11.5.

3.3.11.6. Apply at Mechanical Rooms and similar rooms having systems containing liquids, including piping runs, unless such rooms are located over slab-on-grade.

3.3.11.7. Install System 3 materials at elevator shafts, duct shafts and other similar locations over occupied spaces.

3.3.11.8. Install 6 mm to 9 mm (1/4" to 3/8") bead of firestop caulking at interface of retaining angles around fire dampers, where angles meet fire-rated assembly and between retaining angles and fire damper, both sides of penetration. At floor locations, sealant bead at top of assembly is adequate.

3.3.11.9. Where necessary, remove insulation from insulated pipe and duct where such services penetrate a fire separation unless certified assembly permits such insulation to remain within assembly. Apply wrapping materials as listed herein.

3.3.11.10. Install System 3 materials at open wall joints, including expansion joints between fire rated enclosures and assemblies.

3.3.12. Systems 4 and 4A: Install at following locations:

3.3.12.1. At Electrical, Electrical Switchgear, Electrical Transformer Rooms and at Telephone Equipment Rooms requiring re-entry for additional services.

3.3.12.2. Install at communications and computer cable penetration points throughout.

3.3.13. Accessories: At hollow fire-rated walls, apply intumescent pads to back surfaces and cable entry points of electrical boxes, panels and other service penetration points, ensuring close coordination with electrical, mechanical and drywall trades. Where greater dimension of panel exceeds 500 mm (20"), gypsum board trades construct fire-rated enclosure around recessed panels.

3.3.14. System 5: Maintain maximum cavity wall compartments to lesser of following 2 criteria by bridging gap between cavity back-up material and back face of brick with full-depth strips of compartment closer and firestopping material, securing in position with mechanical fasteners and sealing against firm, primary cavity materials:

3.3.14.1. 10 m² (100 sq ft).

3.3.14.2. Division B, Part 3, Paragraph 3.1.11 of OBC.

3.3.15. Penetration Sizing: Ensure following regulates sizing of service penetrations to be firestopped, other than for fire dampered openings:

3.3.15.1. Ensure single, circular penetration is sleeved by work of mechanical and electrical.

3.3.15.2. Multiple penetrations of circular elements are defined as more than 1 circular penetration having a maximum space of 100 mm (4") between closest faces of such penetrating elements. Forming of such multiple penetrations is responsibility of respective trades whose service penetrates rated assembly and such formed opening shall be square or rectangular frame around group of penetrations in which maximum clearance between outer penetration element and face of opening shall be 25 mm (1").

3.3.15.3. Create single and multiple rectangular penetrations in same manner as specified above, but edge clearance may be increased to a maximum of 50 mm (2").

3.3.15.4. Exception; at fire dampers, clearances are governed by testing authorities' requirements.

3.3.15.5. For purposes of this Specification, a moving penetrant is defined as a penetrating device having an anticipated movement of greater than 9 mm (3/8") when measured at right angles to face of rated assembly.

3.3.16. Cable Tray Penetrations:

3.3.16.1. Seal (firestop) cable tray penetrations with re-enterable/re-penetrable matrices/devices with applicable ratings determined in accordance with ULC-S115 having a minimum L Rating not exceeding 5.0 cfm/sq ft of penetration opening at both ambient and elevated temperatures. For penetrations through a fire wall or horizontal fire separation provide a firestop system with a FT Rating as determined by ULC or cUL which is equal to fire resistance rating of construction being penetrated.

3.3.16.2. Ensure ULC or cUL tested listings for cable tray and cable penetrations conform to annular space requirements, (construction assembly type, penetrating item type and fire rating) for each separate instance per manufacturer's listings.

3.4. SITE QUALITY CONTROL

3.4.1. Site Tests and Inspections:

3.4.1.1. Perform a series of 5 fog tests to random locations as designated by Consultant. Should any penetration, joint or void, under jurisdiction of this Section, emit visible fog, make repairs and replace deficiencies and re-perform fog test at no additional cost to the Owner.

3.4.1.2. Ensure fog units (machines) have a formulation output range of (1.5 gal/hr). Formulation particle size 0.5 - 25 µm. Ensure fogging agent is non-toxic, non-staining and provides a heavy fog at 30 ppm with a permissible airborne level concentration of 50 ppm.

3.4.1.3. Fog at a rate of 4 s/100 cu ft. Maintain fog density until inspection is complete.

3.4.1.4. Independent inspection and testing company may be appointed by the Owner to carry

out additional inspection and testing as directed by the Consultant. Refer to Section 01 20 00 for payment requirements. Tests include 3 fog tests per floor at random locations.

3.4.1.5. Where work or materials fail to meet requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials.

3.4.2. Ensure firestopping systems do not affect structural integrity of load bearing walls and assemblies. Coordinate with the Consultant prior to penetrating any load bearing assembly. For unusual firestop application for which no tested system is available, ensure manufacturers submit their proposal to local authorities having jurisdiction for their review and approval prior to installation.

3.4.3. Ensure work of this Section is by 1 Subcontractor responsible for firestopping materials and systems for all work except as specified herein.

3.4.4. Conform to both temperature and flame ratings of standards listed hereinafter and other requirements of authorities having jurisdiction.

3.4.5. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.4.6. Manufacturer Services: Consult with Product manufacturer's technical representative about following items:

3.4.6.1. fire stopping system for fire separation required.

3.4.6.2. curing characteristics of materials specified.

3.4.6.3. joint characteristics as built.

3.5. CLEANING

3.5.1. Remove excess materials and debris and clean adjacent surfaces immediately after application to satisfaction of the Consultant. Remove and or correct staining and discolouring of adjacent surfaces as directed.

3.5.2. Remove temporary dams after initial set of firestopping and smoke seal materials where such materials are left exposed in finished areas and flame spread rating of such materials exceed a value of 25, in accordance with CAN/ULC-S102.

3.6. PROTECTION

3.6.1. Fully protect walls, windows, floors and other surfaces around areas to be firestopped from marring or damage. Mask where necessary to avoid spillage on to adjoining surfaces. Mask areas adjacent to openings, where necessary to prevent contamination or marring of adjacent surface materials. Remove masking after seal has been completed and an initial set has been achieved. Remove stains on adjacent surfaces as required.

END OF SECTION

PART1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide joints sealants including but not limited to following:

1.2.1.1. Interior:

1.2.1.1.1. control and expansion joints on exposed interior surfaces of exterior walls.

1.2.1.1.2. perimeter joints of exterior openings where indicated.

1.2.1.1.3. tile control joints.

1.2.1.1.4. perimeter joints between interior wall surfaces and frames for interior doors and windows and elevator entrances.

1.2.1.1.5. joints between plumbing fixtures and adjoining walls, floors and counters.

1.2.1.1.6. joints between different materials listed above.

1.2.1.1.7. other joints as indicated.

1.2.1.2. mildew resistant sealants.

1.2.1.3. self leveling sealants.

1.2.2. Low Emitting Adhesives and Sealants:

1.2.2.1. Provide adhesives and sealants with VOC content limits lower than stated in the state of California's South Coast Air Quality Management District (SCAQMD) rule #1168, current edition.

1.2.3. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.3.1. Firestopping and smoke seals: Section 07 84 00, Firestopping and Smoke Seals.

1.2.3.2. Sealing of joints around sound attenuating gypsum board partitions: Section 09 21 16, Gypsum Board.

1.2.3.3. Read other Sections of Specifications for extent of sealing specified in those Sections. Do other sealing indicated, specified or required.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. IPA: Isopropyl Alcohol (99.9% pure).

1.3.1.2. MEK: Methyl-ethyl-ketone.

1.3.1.3. SWRI: Sealant, Waterproofing, & Restoration Institute; www.swrionline.org.

1.3.2. Reference Standards:

1.3.2.1.	ASTM C661-15	Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
1.3.2.2.	ASTM C719-14	Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
1.3.2.3.	ASTM C834-14	Standard Specification for Latex Sealants
1.3.2.4.	ASTM C920-14a	Standard Specification for Elastomeric Joint Sealants
1.3.2.5.	ASTM C1021-08(14)	Standard Practice for Laboratories Engaged in Testing of Building Sealants
1.3.2.6.	ASTM C1248-08(12)	Standard Test Method for Staining of Porous Substrate by Joint Sealants

1.4. ADMINSTRATIVEREQUIREMENTS

1.4.1. Preinstallation Meeting:

1.4.1.1. Prior to start of work, arrange for Project site meeting of parties associated with work of this Section. Presided over by the Contractor, include the Consultant who may attend, Subcontractor performing work of this trade,, the Contractor's consultants of applicable discipline and manufacturer's representative.

1.4.1.2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Discuss also following items:

1.4.1.2.1. verify with sealant manufacturer that specified sealants are compatible with and will satisfactorily adhere to substrates.

1.4.1.2.2. weather conditions under which work will be done.

1.4.1.2.3. anticipated frequency and extent of joint movement.

1.4.1.2.4. joint design.

1.4.1.2.5. suitability of durometer hardness and other properties of material to be used.

1.4.1.2.6. recommendations of manufacturer for mixing of multi-component sealants.

1.4.1.2.7. number of beads to be used in sealing operation and priming operation if required.

1.5. SUBMITTALS

1.5.1. Product Data: Submit Product information from sealant manufacturer prior to commencement of work of this Section verifying:

1.5.1.1. selected sealant materials are from those specified.

1.5.1.2. composition and physical characteristics.

1.5.1.3. surface preparation requirements.

1.5.1.4. priming and application procedures.

1.5.1.5. suitability of sealants for purposes intended and joint design.

1.5.1.6. test report on adhesion, compatibility and staining effect on samples of adjacent materials used on Project.

1.5.1.7. sealants compatibility with other materials and Products with which they come in contact including but not limited to sealants provided under other Sections, insulation adhesives, bitumens, brick, stone, concrete, masonry, metals and metal finishes, ceramic tile, plastic laminates and paints.

1.5.1.8. suitability of sealants for temperature and humidity conditions at time of application.

1.5.1.9. Product data for adhesives and sealants, including printed statement of VOC content showing compliance with SCAQMD rule #1168. Include a statement indicating the amount of materials used on Project. Ensure Contractor and/or Subcontractors provide completed forms in accordance with Section 01359.

1.5.2. Test and Evaluation Reports:

1.5.2.1. Compatibility Testing Report: Submit in accordance with Section 01 30 00. Prior to supply or installation, test exterior sealant materials for compatibility with joint substrates. Test for staining and adhesion including substrates treated with sealers, curing compounds and water repellants, etc. Submit a written report of test results to the Consultant.

1.5.2.2. Colour: Submit colours for acceptance in accordance with following general colour hierarchy i.e. Between 2 dissimilar materials, colour the sealant to match the material with the higher relative position on the colour hierarchy scale (highest is at ".1"):

1.5.2.2.1. concrete.

1.5.2.2.2. masonry.

1.5.2.2.3. metal extrusions.

1.5.2.2.4. metal (formed).

1.5.3. Samples: Submit samples in accordance with Section 01 30 00. Provide cured, colour samples of manufacturer's standard range of colours in each type of sealant and caulking compound for colour selection by the Consultant. Submit samples of primer, bond breaker tape and joint backing material, if requested.

1.6. QUALITY ASSURANCE

1.6.1. Qualifications:

1.6.1.1. Installers: Provide work of this Section executed by competent installers who have a membership in good standing with SWRI and have a minimum of 5 years' experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

1.6.1.2. Testing Agencies: An independent testing agency qualified according to ASTM C1021 to conduct testing indicated. Ensure Products are verified by SWRI in accordance with ASTM C719 and ASTM C661.

1.6.2. Preconstruction Testing:

1.6.2.1. Test for compatibility of sealant and accessory Products with joint substrates. Provide test results and written recommendations for primers and substrate preparation required for proper adhesion. For materials failing tests, obtain joint sealant manufacturer's written instructions for corrective measures, including use of specialty formulated primers.

1.6.2.2. Test elastomeric joint sealants for compliance with requirements of ASTM C920 and where applicable, to other standard test methods.

1.6.2.3. Test elastomeric joint sealants for compliance with requirements of ASTM C719 for adhesion and cohesion under cyclic movement, adhesion-in peel and indentation hardness.

1.6.2.4. Test other joint sealants for compliance with requirements indicated by referencing standard Specifications and test methods.

1.6.3. Include lists of completed Projects with names of consultants and contact persons.

1.6.4. Mock-Ups: Conform to requirements of Section 01 30 00. At site, in area(s) designated by the Consultant, erect sample panels 1 m (39") long for each type of sealant joint design, showing location, size, shape and depth of joint complete with backup materials, primer, caulking and sealant, bond, colour and quality of installation work. If requested conduct field test for joints designated. Construct additional samples if required to obtain acceptance. Do no sealant work until samples have been accepted. Ensure accepted samples become standard of comparison for sealant and caulking work on site and become part of work.

1.7. DELIVERY, STORAGE AND HANDLING

1.7.1. Delivery and Acceptance Requirements: Deliver caulking and sealant materials to site in original, unopened containers with manufacturers' labels and seals intact. Labels to identify manufacturer's name, brand name of Product, grade and type, application directions and shelf life or expiry date of Product.

1.7.2. Storage and Handling Requirements:

1.7.2.1. Handle and store materials in accordance with manufacturer's printed directions. Store flammable materials in safe, approved containers to eliminate fire hazards.

1.7.2.2. Do not use caulking and sealant materials that have been stored for period of time exceeding maximum recommended shelf life of materials.

1.8. SITE CONDITIONS

1.8.1. Ambient Conditions:

1.8.1.1. Do not apply any sealant under adverse weather conditions, when joints to be sealed are damp, wet or frozen or when at ambient temperatures below 5 deg C (40 deg F). Maintain minimum temperature of application during application and for 8 hours after application. Consult manufacturer for specific instructions before proceeding and obtain the Consultant's approval.

1.8.1.2. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated and until contaminants capable of interfering with adhesion are removed from joint substrates.

1.9. WARRANTY

1.9.1. Manufacturer Warranty: Warrant work of this Section for period of 10 years for silicone type sealants and 5 years for other sealants against defects and/or deficiencies in accordance with the General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of the Consultant and at no expense to the Owner. Defects include but are not limited to; cracking, crumbling, melting, shrinkage, sag, failure of adhesion, cohesion or reversion, air and moisture leakage, marbling or streaking due to improper mixing, discolouration due to dirt pick-up during curing and staining of adjacent materials.

PART2- PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. BASF Construction Chemicals, LLC; www.buildingsystems.basf.com

2.1.1.2. CPD Construction Products; www.cpd.com

2.1.1.3. Dow https://consumer.dow.com/en-us/industry/ind-building-construction.html

2.1.1.4. Euclid Chemical Canada Ltd.; www.euclidchemical.com

2.1.1.5. Momentive Performance Materials; www.momentive.com

2.1.1.6. Pecora Corporation; www.pecora.com

2.1.1.7. Sika Canada Inc.; www.sika.ca

2.1.1.8. Tremco Canada; www.tremcosealants.com

2.1.1.9. W.R. Meadows of Canada; www.wrmeadows.com

2.1.1.10. Or equivalent.

2.2. MATERIALS

2.2.1. Performance/Design Criteria: Provide exterior and interior elastomeric joint sealants establishing and maintaining water tight, water resistant and air tight continuous joint seals without staining or deteriorating joint substrates.

2.2.2. General: Ensure elastomeric sealants comply with Standards specified herein for type, grade, class and uses.

2.2.3. Provide Products with capability, when tested for adhesion and cohesion under maximum cyclic movement in accordance with ASTM C719, to withstand required percentage change in joint width existing at time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated.

2.2.4. Where non-staining elastomeric sealants are applied to porous substrates, provide Products that have undergone testing according to ASTM C1248 and have not stained porous joint substrates indicated for Project.

2.2.5. Type A Sealant: Provide 1 of following:

2.2.5.1. Non-sag type, 1 component ultra low-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 100/50, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:

2.2.5.1.1. “Dow Corning 790 Silicone Building Sealant” by Dow Corning.

2.2.5.1.2. “GE SCS2700 SilPruf* LM” by Momentive Performance Materials.

2.2.5.1.3. “Pecora 890NST” by Pecora Corporation.

2.2.5.1.4. “Sikasil® WS-290” by Sika Canada Inc.

2.2.5.1.5. “Spectrem® 1" by Tremco Canada.

2.2.5.1.6. Or equivalent.

2.2.5.2. Non-sag type, 1 component medium-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 50, Use NT, G,

M, A and O. Supply in standard colours as selected. Supply 1 of following:

2.2.5.2.1. "Dow Corning 795 Silicone Building Sealant" by Dow Corning.

2.2.5.2.2. "GE SCS2000 SilPruf*" by Momentive Performance Materials.

2.2.5.2.3. "Pecora 864NST" by Pecora Corporation.

2.2.5.2.4. "Spectrem® 2" by Tremco Canada.

2.2.5.2.5. Or equivalent.

2.2.6. Type B Sealant: Non-sag type, 1 component, mildew resistant silicone containing non-toxic fungicidal agents sealant conforming to ASTM C920, Type S, Grade NS, Class 25, Use NT. Supply in standard colours as selected. Supply 1 of following:

2.2.6.1. "Dowsil 786" by Dow.

2.2.6.2. "Trade Mate Tub, Tile & Ceramic Silicone Sealant" by Dow.

2.2.6.3. "GE Sanitary SCS1700" by Momentive Performance Materials.

2.2.6.4. "Sikasil®-GP" by Sika Canada Inc.

2.2.6.5. "Tremsil® 200, white or clear" by Tremco Canada.

2.2.6.6. Or equivalent.

2.2.7. Type C Sealant: Provide 1 of following:

2.2.7.1. Non-sag type, 1 component, acrylic latex sealant conforming to ASTM C834, Type OP, Grade
-18°C. Supply in standard colours as selected. Supply 1 of following:

2.2.7.1.1. "Sonolac®" by BASF Construction Chemicals, LLC.

2.2.7.1.2. "GE RCS20" by Momentive Performance Materials.

2.2.7.1.3. "AC-20® +Silicone" by Pecora Corporation.

2.2.7.1.4. "Tremflex® 834" by Tremco Canada.

2.2.7.1.5. Or equivalent.

2.2.7.2. Non-sag type, multi-component polyurethane sealant conforming to ASTM C920, Type M, Grade NS, Class 50, Use T, I, M, A and O. Supply in standard colours as selected. Supply 1 of following:

2.2.7.2.1. "Sonolastic® NP 2™" by BASF Construction Chemicals, LLC.

2.2.7.2.2. "Sikaflex® 2c NS" by Sika Canada Inc.

2.2.7.2.3. "Dymeric® 240" by Tremco Canada.

2.2.7.3. Non-sag type, 1 component polyurethane sealant conforming to ASTM C920, Type S, Grade NS, Class 25, Use NT, M, A and O. Supply in standard colours as selected. Supply 1 of following:

2.2.7.3.1. "Sonolastic® NP 1™" by BASF Construction Chemicals, LLC.

2.2.7.3.2. "Eucolastic 1NS" by Euclid Chemical Canada Ltd.

2.2.7.3.3. "Sikaflex® 1a" by Sika Canada Inc.

2.2.7.3.4. "Dymonic® FC" or "Dymonic® 100" or "Vulkem 116" by Tremco Canada.

2.2.7.3.5. Or equivalent.

2.2.8. Type D Sealant: Provide 1 of following:

2.2.8.1. Pour grade, 1 component polyurethane sealant conforming to ASTM C920, Type S, Grade P, Class 25, Use T, M, A, I and O. Supply in standard colours as selected. Supply 1 of following:

2.2.8.1.1. "Sonolastic® SL 1™" by BASF Construction Chemicals, LLC.

2.2.8.1.2. "Eucolastic 1SL" by Euclid Chemical Canada Ltd.

2.2.8.1.3. "Sikaflex® Self-Leveling Sealant" by Sika Canada Inc.

2.2.8.1.4. "Vulkem® 45 SSL" by Tremco Canada.

2.2.8.1.5. Or equivalent.

2.2.8.2. Pour grade, multi-component, polyurethane sealant conforming to ASTM C920, Type M, Grade P, Class 25, Use T, M, A, I and O. Supply 1 of following:

2.2.8.2.1. "Sonolastic® NP 2™" by BASF Construction Chemicals, LLC.

2.2.8.2.2. "Sikaflex® 2c SL" by Sika Canada Inc.

2.2.8.2.3. "THC-900/901 or Vulkem® 245" by Tremco Canada.

2.2.8.2.4. Or equivalent.

2.2.9. Type E Sealant: Self-levelling type, epoxy modified joint sealant, cold-applied, 2 component, pour grade, grey colour filled full depth. Supply 1 of following:

2.2.9.1. "CPD Joint-Flex P.E." by CPD Construction Products.

2.2.9.1.1. "Eco 700" by Euclid Chemical Canada Ltd.

2.2.9.2. "Loadflex" by Sika Canada Inc.

2.2.9.3. "Rezi-Weld™ Flex" by W.R. Meadows of Canada.

2.2.9.4. Or equivalent.

2.2.10. Joint Primer: Non-staining, suitable for substrate surfaces, compatible with joint forming materials and as recommended by sealant manufacturer for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

2.2.11. Joint Backing: Preformed, compressible, resilient, non-waxing, non-extruding, non-staining strips of closed cell polyethylene or urethane foam, compatible with joint substrates and are approved by sealant manufacturer based on field experience and laboratory test. Sizes and shapes to suit various conditions, diameter 25% greater than joint width. Ensure backing is compatible with sealant, primer and substrate.

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

2.2.13. Masking Tape: Provide non-staining, non-absorbent tapes and sheets which effectively mask substrate without leaving an adhesive residue compatible with joint sealants and surfaces adjacent to joints.

2.2.14. Cleaning Material: Non-corrosive, non-staining, solvent type, xylol, MEK, toluol, IPA or as recommended by sealant manufacturer and acceptable to material or finish manufacturers for surfaces adjacent to sealed areas free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants with joint substrates.

PART3- EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Examine joints for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Ensure joints are suitable to accept and receive sealants.

3.1.1.2. Verify joint surfaces are clean, sound, free of defects and dimensions are within sealant manufacturer's size requirements.

3.1.1.3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.1.1.4. Do not apply sealant to masonry until mortar has cured.

3.1.2. Preinstallation Testing: Before any sealing work is commenced, test materials for indications of staining or poor adhesion.

3.1.3. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2.2. Surface Preparation:

3.2.2.1. Clean joints and spaces which are to be sealed and ensure they are dry and free of dust, loose mortar, oil, grease, oxidation, coatings, form release agents, sealers and other foreign material.

3.2.2.2. Clean porous surfaces such as concrete, masonry or stone by wire brushing, grinding or blast cleaning, mechanical abrading or combination of these methods as required to obtain clean and sound surfaces.

3.2.2.3. Remove laitance by grinding or mechanical abrading.

3.2.2.4. Remove oils by sandblast cleaning.

3.2.2.5. Remove loose particles present or resulting from grinding, abrading or sandblast cleaning by thorough brushing.

3.2.2.6. Clean ferrous metals of rust, mill scale and foreign materials by wire brushing, grinding or sanding.

3.2.2.7. Wipe non-porous surfaces such as metal and glass to be sealed, except pre-coated metals, with cellulose sponges or clean rags soaked with ethyl alcohol, ketone solvent, xylol or toluol and wipe dry with clean cloth. Where joints are to be sealed with silicone based sealants clean joint with MEK or xylol. Do not allow solvent to air-dry without wiping. Clean pre-coated metals with solutions or compounds which will not injure finish and which are compatible with joint primer and sealant. Check ferrous metal surfaces are painted before applying sealant.

3.2.2.8. Examine joint sizes and where depth of joint exceed required depth of sealant correct to achieve proper following width/depth ratio:

3.2.2.8.1. Maintain 2:1 Width/Depth Ratio: Ensure maximum sealant depth is 13 mm (1/2”) and minimum contact width with each substrate is 6 mm (1/4"). Confirm width/depth ratios with sealant manufacturers.

3.2.2.9. Install joint backing material to achieve correct, uniform joint profile and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

3.2.2.10. Do not leave gap between ends of sealant backing; do not stretch, twist, puncture, or tear sealant backings; remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

3.2.2.11. Confirm with sealant manufacturer selected bond breaker material works with chosen sealant.

3.2.2.12. Where joint design or depth of joint prevents use of joint backing material, apply bond breaker tape at back of joint to prevent 3-sided adhesion.

3.2.2.13. Do not stretch, twist, puncture or tear joint backing. Butt joint backing at intersections. Install bond breaker tape at back of joint where joint backing is not required or cannot be installed.

3.2.2.14. On horizontal traffic surfaces, support joint filler against vertical movement which might result from traffic loads, including foot traffic.

3.2.2.15. Where surfaces adjacent to joints are likely to become coated with sealant during application, mask them prior to priming and sealing.

3.2.2.16. Do not exceed shelf life and pot life of materials and installation times, as stated by manufacturer.

3.2.2.17. Be familiar with work life of sealant to be used. Do not mix multiple component materials until required for use.

3.2.2.18. Use materials as received from manufacturer, without additions, deletions and adulterations of materials.

3.2.2.19. Mix multiple component sealants and bulks sealants using mechanical mixer capable of mixing without mixing air into material, in accordance with manufacturer's directions and recommendations. Continue mixing until material is homogeneously blended, uniform in colour and free from streaks of unmixed material. Install compound prior to start of hardening or curing cycle.

3.2.2.20. Prior to painting, seal joints in surfaces to be painted. Where surfaces to be sealed are prime painted in shop before sealing ensure prime paint is compatible with primer and sealant. If they are incompatible, inform Consultant and change primer and sealant to compatible types approved by Consultant.

3.2.2.21. Where irregular surface or sensitive joint border exists, apply masking tape at edge of joint to ensure joint neatness and protection.

3.2.2.22. Prime exterior horizontal joints. Prime sides of joints for type of surface being sealed prior to application of joint backing, bond breaker or sealant as recommended by sealant manufacturer.

3.2.3. Removal:

3.2.3.1. Remove existing caulking and/or sealant from joints as required.

3.2.3.2. Remove existing caulking and/or sealants including any residual caulking/sealant material using suitable methods to prevent damage to adjacent surfaces. Take care to ensure no damage or visible changes take place to surface of substrate not covered by replacement sealant material.

3.2.3.3. Clean surfaces of joints and spaces in accordance with procedures specified herein

under "Surface Preparation".

3.2.3.4. Ensure materials in contact with sealant are compatible.

3.2.3.5. Where required, mask adjacent surfaces prior to priming and application of sealant to prevent staining.

3.2.3.6. Prime inner surfaces of joint, where required, immediately prior to caulking, in accordance with sealant manufacturer's recommendations, to provide full adhesion and to prevent staining of adjacent exposed surfaces.

3.3. APPLICATION

3.3.1. Apply in accordance with manufacturer's directions and recommendations unless more stringent requirements apply.

3.3.2. Apply sealant by proven techniques using hand operated guns or pressure equipment fitted with suitable nozzle size and equipment approved by sealant manufacturer.

3.3.3. Force sealant into joint and against sides of joints to obtain uniform adhesion. Use sufficient pressure to completely fill voids in joint regardless of variation in joint widths and to proper joint depth as prepared. Ensure full firm contact with interfaces of joint. Superficial pointing with skin bead is not acceptable.

3.3.4. Finish face of compound to form smooth, uniform beads. At recesses in angular surfaces, finish compound with flat face, flush with face of materials at each side. At recesses in flush surfaces, finish compound with concave face flush with face of materials at each side.

3.3.5. Compound may be tooled, provided such tooling does not damage seal or tear compound. Avoid pulling of sealant from sides.

3.3.6. Tool surfaces as soon as possible after sealant application or before any skin formation has occurred, particularly when using silicone sealants.

3.3.7. Ensure joint surfaces are straight, neatly finished, free from ridges, wrinkles, sags, dirt, stains, air pockets and embedded foreign matter or other defacement and be uniform in colour, free from marbling and/or colour streaking due to improper mixing or use of out of shelf life Products.

3.3.8. Do not use solvent curing sealants indoors.

3.3.9. Firestopping and Smoke Seal: Sealants part of firestopping systems and smoke seals provided within fire rated assemblies are part of work of Section 07 84 00 and carried out under supervision of this Section.

3.4. REPAIR

3.4.1. Repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.5. SITE QUALITY CONTROL

3.5.1. Site Tests and Inspections:

3.5.1.1. Independent inspection and testing company may be appointed and paid for by Owner to carry out inspection and testing as directed by Consultant. Refer to Section 01 30 00.

3.5.1.2. Inspect joints for complete fill, for absence of voids and for joint configuration complying with specified requirements. Record results in a manner acceptable to Consultant.

3.5.1.3. Tests may include sampling of installed Product where adhesion, cohesion or reversion failure is suspected.

3.5.1.4. Where work or materials fail to meet requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials.

3.5.2. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.5.3. Manufacturer Services: Prior to commencement of sealing, arrange for sealant manufacturer's technical representative to visit the Place of the Work and inspect surfaces and joints to be sealed.

3.6. CLEANING

3.6.1. Immediately clean adjacent surfaces which have been soiled and leave work in neat, clean condition. Remove excess materials, compounds smears or other soiling resulting from application of sealants. Use recommended cleaners and solvents. Leave finished work in neat, clean condition with no evidence of spillovers onto adjacent surfaces.

3.7. PROTECTION

3.7.1. Provide approved, non-staining means of protection for completed joint sealant installations where required to protect work from mechanical, thermal, chemical and other damage by construction operations and traffic.

3.7.2. Maintain protection securely in place until completion of Work. Remove protection when so directed by the Consultant.

3.8. ATTACHMENTS

3.8.1.1. Use 1 of sealants specified for each type in following locations. Ensure sealant chosen (from several specified under each type under "MATERIALS") for each location is recommended by manufacturer for use for conditions encountered:

3.8.1.1.1. Type A: Typically used in joints between metal frames and adjacent masonry and/or concrete construction in exterior walls, exterior and interior sides; control and expansion joints in exterior and interior surfaces of poured-in-place concrete walls, unit masonry walls; and other locations where sealant is required or noted on Drawings except in locations designated for Type B, C, D and E and except where sealant is specified in other Sections.

3.8.1.1.2. Type B: Typically used in joints between urinals and walls, around washrooms accessories, at corners of walls, between splash backs and walls, in shower, damp or wet areas, at ceramic tiles where mildew resistant sealant is required.

3.8.1.1.3. Type C: Typically used in joints between interior metal and/or wood frames and adjacent construction in interior partitions.

3.8.1.1.4. Type D (traffic bearing): Typically used in joints with movement in horizontal surfaces between concrete slabs, pavers and precast concrete panels.

3.8.1.1.5. Type E (load bearing): Typically used in static joints in horizontal surfaces where self-levelling sealants are required.

END OF SECTION

PART1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide hollow metal doors and frames including but not limited to following:

1.2.1.1. supply of interior hollow metal doors

1.2.1.2. supply of interior hollow metal door frames

1.2.1.3. supply of new interior hollow metal doors to be fit into existing frames

1.2.1.4. preparation of hollow metal doors and frames for door hardware.

1.2.1.5. preparation of hollow metal doors and frames for security system including CSA approved wiring, conduit and junction boxes for electronic hardware.

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Caulking and/or sealing door frames: Section 07 92 00, Joint Sealants.

1.2.2.2. Supply of door hardware: Section 08 71 00, Door Hardware.

1.2.2.3. Installation of snap-in clips and frames in gypsum board partitions: Section 09 21 16, Gypsum Board.

1.2.2.4. Finish painting: Section 09 91 00, Painting.

1.2.2.5. Wiring and conduit for electronic hardware in frame: Electrical.

1.2.2.6. Provision of security system: Electrical.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. CSDMA: Canadian Steel Door Manufacturers Association; www.csdma.org.

1.3.1.2. HMMA: Hollow Metal Manufacturers Association; www.naamm.org/hmma/.

1.3.1.3. NAAMM: National Association of Architectural Metal Manufacturers; www.naamm.org.

1.3.1.4. OBC: Ontario Building Code.

1.3.1.5. RRPC: Resin Reinforced Polychloroprene.

1.3.1.6. TRR: Temperature Rise Rated.

1.3.1.7. ULC: Underwriters Laboratories of Canada; www.ulc.ca.

1.3.2. Reference Standards:

1.3.2. Reference Standards:

1.3.2.1.	ANSI/SDI A250.4-11	- Test Procedure and Acceptance Criteria for - Physical Endurance for Steel Doors, Frames and Frame Anchors
1.3.2.2.	ANSI/SDI A250.10-11	- Test Procedure and Acceptance Criteria for - Prime Painted Steel Surfaces for Steel Doors and Frames
1.3.2.3.	ASTM A568/A568M-14	- Standard Specification for Steel, Sheet, Carbon, Structrural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for
1.3.2.4.	ASTM A653/A653M-15	- Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
1.3.2.5.	CSA W59-13	- Welded Steel Construction (Metal Arc Welding)
1.3.2.6.	NAAMM-HMMA 840-07	- Guide Specification for Installation and Storage of Hollow Metal Doors and Frames
1.3.2.7.	NAAMM-HMMA 860-13	- Guide Specifications for Hollow Metal Doors and Frames
1.3.2.8.	NFPA 80-13	- Standard for Fire Doors and Other Opening Protectives
1.3.2.9.	NFPA 252-12	- Standard for Fire Tests of Door Assemblies
1.3.2.10.	NFPA 257-12	- Standard for Fire Tests of Window Assemblies and Glass Block Assemblies
1.3.2.11.	CAN/ULC-S104-10	- Standard Method for Fire Tests of Door Assemblies
1.3.2.12.	CAN/ULC-S105-09	- Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104
1.3.2.13.	CAN4-S106-M80(85)	- Standard Method for Fire Test of Window and Glass Block Assemblies
1.3.2.14.	CAN/ULC-S702-09	- Standard for Mineral Fibre Thermal Insulation for Buildings

1.4. ADMINISTRATIVE REQUIEREMENTS

1.4.1. Scheduling: Submit a schedule indicating each door and frame related to the Door and Frame Schedule.

1.5. SUBMITTALS

1.5.1. Shop Drawings:

1.5.1.1. Submit Shop Drawings in accordance with Section 01 30 00. Show each type of frame, door, core, metal thicknesses and finishes, openings (glazed), fire ratings, location of exposed fasteners, cutouts, hardware blanking, reinforcing, tapping and drilling arrangements. Show large scale frame sections and anchoring details. Submit door and frame schedule identifying each unit. Ensure each unit bears legible identifying mark corresponding to that listed in Door and Frame Schedule.

1.5.1.2. For each door and frame scheduled for electrical hardware, show following items in addition to minimum requirements (coordinate with Electrical):

1.5.1.2.1. location and size of junction boxes and conduit for electrical hardware and wiring.

1.5.1.2.2. conduit cutouts.

1.5.1.2.3. other information related to electrical hardware or interrelated systems such as fire alarm and security systems/controls.

1.5.2. Samples: Submit samples in accordance with Section 01 30 00. Provide 1 cut-away corner sample minimum 300 mm (12") square for each type of door and frame to indicated following:

1.5.2.1. Doors:

1.5.2.1.1. core.

1.5.2.1.2. reinforcing.

1.5.2.1.3. facing.

1.5.2.1.4. frame.

1.5.2.1.5. insulation if applicable.

1.5.2.1.6. glazing if applicable.

1.5.2.1.7. factory applied finishes if applicable.

1.5.2.2. Frames:

1.5.2.2.1. frame profile.

1.5.2.2.2. corner joints.

1.5.2.2.3. floor and wall anchors.

1.5.2.2.4. silencers.

1.5.3. Test and Evaluation Reports: Submit following test and evaluation reports in accordance with NAAMM/HMMA 860:

1.5.3.1. Hollow metal door and frame assemblies supplied under this Section meet acceptance criteria of ANSI/SDI A250.4, Level A.

1.5.3.2. Primer applied on hollow metal door and frame assemblies meet acceptance

criteria of ANSI/SDI A250.10.

1.5.3.3. Ensure reports include name of testing authority, date of test, location of test facility, description of test specimen, procedures used in testing and indicate compliance with specified acceptance criteria.

1.5.3.4. Submit in addition to fire label, certificate to substantiate design and construction of fire-rated screen assemblies, if required by Consultant or authorities having jurisdiction.

1.6. QUALITY ASSURANCE

1.6.1. Qualifications:

1.6.1.1. Manufacturers: Execute work of this Section by a manufacturer who is a member of CSDMA and/or HMMA ensuring Product quality meets standards set by these associations.

1.7. DELIVERY STORAGE AND HANDLING

1.7.1. Delivery and Acceptance Requirements:

1.7.1.1. Identify Products with a label indicating: manufacturer's name, Consultant's opening number, Product description and dimensions.

1.7.1.2. Protect doors and frames during shipping.

1.7.1.3. Inspect materials thoroughly upon receipt and report discrepancies, deficiencies and damage immediately in writing to Consultant. Note damages on carrier's Bill of Landing.

1.7.2. Storage and Handling:

1.7.2.1. Store and protect doors and frames during storage in accordance with NAAMM-HMMA 840. Coordinate this requirement with Section 06 90 00 for installing doors.

1.7.2.2. Remove wrappings or coverings from doors upon delivery at site. Store doors in vertical position, spaced by blocking at least 100 mm (4") off ground to permit air circulation between them.

1.8. WARRANTY

1.8.1. Manufacturer Warranty: Warrant work manufactured from ASTM A653/A653M, A40 galvannealed steel, touched up only with zinc-rich rust inhibitive primer where coating was removed during its manufacture for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; rust perforation when stored, installed and finish painted in accordance with manufacturer's written instructions.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to

conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Baron Steel Doors & Frames; www.baronmetal.com

2.1.1.2. CECO Door (Assa Abloy Group) https://www.assaabloy.ca/

2.1.1.3. Daybar Industries Limited; www.daybar.com

2.1.1.4. Fleming Door Products Ltd.; www.flemingdoor.com

2.1.1.5. Gensteel Doors, Inc.; www.gensteeldoors.com

2.1.1.6. Shanahan's Limited Partnership; www.shanahans.com

2.1.2. Provide doors and frames for work of this Section by a single source manufacturer.

2.2. MATERIALS

2.2.1. Performance/Design Criteria:

2.2.1.1. Ensure Product is manufactured by a firm experienced in design and production of standard and custom commercial steel door and frame assemblies, integration of builders' or electronic hardware and glazing assemblies and other items affecting work.

2.2.1.2. Cycle Test Acceptance Criteria: Ensure door and frame assembly is testing in accordance with ANSI/SDI A250.4 for "High Usage" and is certified as Level "A" (1,000,000 cycles).

2.2.1.3. Twist Test Acceptance Criteria: Maximum permanent deflection not to exceed 3 mm (1/8") under a maximum 136 kg (300 lb) load, total deflection not to exceed 32 mm (1-1/4") when tested in accordance with ANSI/SDI A250.4. Ensure tests are conducted by an independent nationally recognized accredited laboratory.

2.2.1.4. Test fire rated doors, frames, transom frames and sidelight assemblies in accordance with requirements of CAN/ULC-S104 and NFPA 252. Test borrowed lights and screens in accordance with CAN4-S106-M and NFPA 257. Ensure Products are listed by a nationally recognized testing agency acceptable to authorities having jurisdiction and approved by Consultant having factory inspection services.

2.2.2. Sheet Steel:

2.2.2.1. Interior Doors and Frames: Commercial grade steel to ASTM A568/A568M, Class 1, hot-dip galvanized to ASTM A653/A653M, ZF120 (A40), known commercially as "Galvanneal". Steel sheet thicknesses specified are base metal thicknesses prior to galvanizing.

2.2.2.2. Exterior Frames: Commercial grade steel to ASTM A568/A568M, Class 1, hot-dip galvanized to ASTM A653/A653M, Z275 (G90). Steel sheet thicknesses specified are base metal thicknesses prior to galvanizing.

2.2.3. Door Cores:

2.2.3.1. Steel Stiffened: Continuous vertically formed steel sections, full thickness of interior space between door faces. Stiffeners 0.759 mm (22 ga) minimum thickness, spaced 150 mm (6") apart and securely fastened to both face sheets by industrial glue or laser welds spaced a maximum of 125 mm (5") oc vertically.

2.2.3.2. Insulation: PolyUrethane or Polystyrene Insulated core ASTM C1363 U-

Factor target value to be 0.36. Equal to 'Trio E' Energy efficient door as manufactured by Fleming Door products or approved equivalent of high thermal efficiency

2.2.3.3. TRR Core: Core composition to limit temperature rise on unexposed side of door to 250 deg C (450 deg F) at 30 or 60 minutes, as determined by OBC requirements. Test core as part of complete door assembly in accordance with CAN/ULC-S104 or NFPA 252 and listed by nationally recognized testing agency having factory inspection service.

2.2.4. Adhesives:

2.2.4.1. Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

2.2.4.2. Lock-Seam Doors: Fire resistant, RRPC, fire resistant, high viscosity sealant/adhesive.

2.2.5. Primer: Rust inhibitive touch-up only.

2.2.6. Door Silencers (Bumpers): Single stud rubber/neoprene type.

2.2.7. Fasteners for Stops: Cadmium plated steel, counter sunk flat or oval head sheet metal Phillips screws.

2.2.8. Mortar Guard Boxes: Minimum 0.8 mm thick (22 ga) steel.

2.2.9. Frame Anchors:

2.2.9.1. Floor Anchors: Minimum 3 mm (1/8") thick adjustable floor anchors with 2 holes for bolting to floor.

2.2.9.2. Wall Anchors:

2.2.9.2.1. Masonry T-strap Type Wall Anchors: Minimum 1.2 mm thick (18 ga) steel

2.2.9.2.2. Existing Masonry/Concrete Wall Type Anchors: Minimum 0.912 mm thick (20 ga) steel.

2.2.9.2.3. Masonry Stirrup-strap Type 50 mm x 250 mm (2" x 10"): Minimum 1.519 mm thick (16 ga) steel.

2.2.9.2.4. Steel/Wood Stud Type: Minimum 0.912 mm thick (20 ga) steel.

2.2.9.2.5. Steel/Wood Stud Tension and Associated Wall Type: Minimum 0.912 mm thick (20 ga) steel.

2.2.10. Fire Rated Door and Frame Assemblies: Conform to CAN/ULC-S104, CAN/ULC-S105, NFPA 80 and NFPA 252.

2.2.11. Fabrication:

2.2.11.1. Welding: Carry out welding in accordance with CSA W59.

2.2.11.2. Grind exposed welds smooth and flush. Fill open joints, seams and depressions with filler or by continuous brazing or welding. Grind smooth to true sharp arises and profiles and sand down to smooth, true, uniform finish.

2.2.11.3. Hardware Requirements: Blank, mortise, reinforce, drill and tap doors and frames to receive mortised templated hardware. Check hardware list for requirements.

2.2.11.4. Frames - General:

2.2.11.4.1. Fabricate frames for doors, screens and borrowed lights to profiles indicated.

2.2.11.4.2. Ensure exterior frames are welded type construction. Ensure interior frames are welded type construction.

2.2.11.4.3. Reinforce frame as required for surface mounted hardware. For door frames wider than 1500 mm (5'), reinforce door frame head and jamb and mullions at junction of head.

2.2.11.4.4. Protect mortise cut outs with mortar guard boxes. Omit for gypsum board applications.

2.2.11.4.5. Where frames occur in masonry provide strip strap, T-strap or wire type anchors. Where frames occur in gypsum board provide stud type anchors.

2.2.11.4.6. Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb. Provide 2 anchors for rebate opening heights up to and including 1500 mm (5') and 1 additional anchor for each additional 760 mm (30") of height or fraction thereof, except as indicated below. For frames in previously placed concrete, masonry or structural steel provide anchors located not more than 150 mm (6") from top and bottom of each jamb and intermediate anchors at 660 mm (26") on centre maximum.

2.2.11.4.7. Where floor finishes allow, fabricate frames to extend 38 mm (1-1/2") below finished floor level. Where frames are to terminate at finished floor level, provide plates for anchorage to slabs.

2.2.11.4.8. Prepare each door opening for single stud door silencers: 3 for single door openings placed opposite hinges: 2 for double door openings approximately 150 mm (6") each side of centreline of head stop.

2.2.11.4.9. Supply removable portion of stop and frame where required for overhead concealed door closers and properly connect to frame and prepare for attachment to closer prior to shipment.

2.2.11.4.10. Provide 0.912 mm thick (20 ga) steel snap-in or welded-in “Z” type stud anchors for door frames installed in steel stud gypsum board partitions. Ensure snap-in clips are supplied to Section 09 21 16.

2.2.11.4.11. Factory apply touch-up primer to areas where zinc coating has been removed during fabrication.

2.2.11.4.12. Construct door frames of labelled fire doors as detailed in Follow-up Service Procedures/ Factory Inspection Manuals issued by nationally recognized listing agency to individual manufacturers and tested in conformance with CAN/ULC-S104. Ensure ratings for frames match doors as minimum requirement. Locate label on frame jamb on hinge side, so it is concealed when door is closed.

2.2.11.5 Hollow Metal Door Frames

2.2.11.5.1. Interior: Minimum 1.519 mm thick (16 ga) steel.

2.2.11.5.2. Exterior: Minimum 1.9 mm thick (14 ga) steel.

2.2.11.6 Welded Type Frames:

2.2.11.6.1. Mitre corners of frames. Cut frame mitres accurately and weld continuously on returns

and inside of frame faces.

2.2.11.6.2. When required due to site access or due to shipping limitations, fabricate frame Product for large openings in sections, with splice joints for field assembly. Provide alignment plates or angles at each joint, fabricated of same metal thickness as frame. Indicate joints for field assembly on Shop Drawings.

2.2.11.6.3. Accurately cope and securely weld butt joints of mullions, transom bars, centre rails and sills.
Grind welded joints to a smooth, uniform finish.

2.2.11.6.4. Securely attach floor anchors to inside of each jamb profile.

2.2.11.6.5. Weld in 2 temporary jamb shipping bars at each frame to maintain alignment during shipment.

2.2.11.6.6. Use formed channel glazing stops, minimum 16 mm (5/8") in height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

2.2.11.7 Thermally Broken frames:

2.2.11.7.1. Equal to "Therma Frame" door frames as manufactured by S. W. Fleming Ltd. or approved equivalent at all exterior hollow metal door frame locations as indicated on drawings and in the door schedule.

2.2.11.7.2. Frames must meet or exceed CGSB 82 GP 5M.

2.2.11.7.3. Interior and exterior frame sections shall be separated by a Polyvinyl Chloride (PVC) thermal break and the sections must not be fixed by screws, grommets or other fastening devices.

2.2.11.7.4. Wall and floor anchors to be supplied to suit wall conditions and shall be designed so as not to permit thermal transfers from exterior to interior surfaces of the frames sections.

2.2.11.7.5. frames shall be mortised, reinforced, drilled and tapped to receive hardware as specified in the hardware list.

2.2.11.7.6. Prepare frame for hardware, electronic hardware and security systems. Drill, tap and reinforce frames where required.

2.2.11.7.7. All jambs, heads, sills, centre rails and mullions will be fabricated from 16 gauge (1.613 mm) wipe coated galvanized steel meeting the requirements of ASTM Designation A527, Coating Class A01.

2.2.11.8 Doors - General:

2.2.11.8.1. Fabricate doors to be swin g type flush with 1 continuous face free from joints, tool markings and abrasions and with provisions for glass and/or louvre openings as indicated on Door Schedule and Drawings

2.2.11.8.2. Fabricate interior doors using steel stiffened construction.

2.2.11.8.3. Fabricate doors with top and bottom inverted recessed spot welded channels.

2.2.11.8.4. Reinforce, blank, drill and tap doors for mortised, templated hardware

2.2.11.8.5. Reinforce doors for surface mounted hardware.

2.2.11.8.6. Undercut 19 mm (3/4") for air intake at washrooms and other doors indicated on Door Schedule.

2.2.11.8.7. Factory prepare holes 13 mm (1/2") diameter and larger. Factory prepare holes less than 13 mm (1/2") when required for function of device for knob, lever, cylinder, turn pieces or when these holes overlap function holes

2.2.11.8.8. Fabricate fire rated door assemblies as detailed in Follow-up Service Procedures/Factory Inspection Manuals issued by nationally recognized listing agency to individual manufacturer and tested in conformance with CAN4-S104-M. Provide labels for fire rated doors.

2.2.11.8.9. Fabricate fire rated doors where indicated in Door and Frame Schedule or Drawings, to meet required maximum temperature rise on unexposed side of door in accordance with OBC and ULC requirements.

2.2.11.9 Interior Moderate Duty Hollow Metal Doors:

2.2.11.9.1. Face Sheets: 1.2 mm thick (18 ga) minimum unprimed galvannealed steel sheet.

2.2.11.9.2. Vertical Stiffeners: 0.912 mm thick (20 ga) minimum unprimed steel sheet.

2.2.11.9.3. Glazing Stops: 0.912 mm thick (20 ga) minimum unprimed steel sheet, formed, drilled and countersunk for fastenings.

2.3 QUALITY CONTROL

2.3.1 Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3 PART3 – EXECUTION

3.1 Installation:

3.1.1 Frame Installation:

3.1.1.1 Allowable limit of distortion shall be 1/16" (1.5 mm) out of plumb each jamb, measured on face of frame, resulting in maximum twist of frame of 1/8" (3 mm) measured diagonally from upper to lower corner.

3.1.1.2 At masonry walls: install frames using the corrugated or wire masonry anchors. At preformed openings and exterior thermally broken doors use machine screws and expansion anchors as provided for this application. After installation, fill countersunk screw heads flush with frame and sand smooth ready for painting. Fill exterior frames with spray-on insulation by Section 07215. Co-operated with masonry trade who will fill interior frames with mortar.

3.1.1.3 Brace frames solidly in position while being built in. Install temporary spreader of wood at mid-height of frame until adjacent wall work is completed. Provide vertical support at centre of head for openings of 4'-0" (1200 mm) wide or wider.

3.1.1.4 Remove temporary jamb spreader bars and vertical supports only after frames are securely anchored in place.

3.1.2 Door Installation:

3.1.2.1 Install hollow metal doors plumb, true and level and at correct elevation.

3.1.2.2 Co-ordinate installation of hardware

3.1.2.3 Adjust operable parts to ensure proper operation.

3.1.2.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames

3.1.2.5 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08700 - Finish Hardware.

3.1.2.6 Install door grilles provided by Mechanical Contractor.

3.2 Touch Up

3.2.1 Remove rust, clean and touch-up any damaged galvanizing with "Zincrich" or "Galvicon" paint

3.2.2 Remove rust, clean and touch-up any damaged paint with approved primer.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. The Contract Documents, including all Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. The hardware schedule created by +VG Architects is for reference only and is intended for assistance in the costing of doors frames and installation.

1.2.2. Unless otherwise noted on the Contract Documents, including the Drawings, door hardware shall be of equal standard or to match existing hardware used nearby in the building.

1.2.3. Provide new doors as shown on the Drawings and described in Hardware Schedule 00 00 01.

1.2.4. Provide hardware as required for the Millwork installation, described on the Drawings and in Section 06 40 00.

1.2.5. Keying: Coordinate Keying requirements with the Region and provide keying schedule for all doors as required.

1.2.6. A cash allowance is provided for work of this section. Refer to Bid Form and Pricing information for amount.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.2. AHC - Architectural Hardware Consultant

1.3.3. Reference Standards:

1.3.3.1. ANSI/UL 10B-08 - Fire Tests of Door Assemblies

1.3.3.2. ANSI A156.10 - American National Standard for Power Operated Pedestrian Doors.

1.4. RELATED WORK SPECIFIED ELSEWHERE

1.4.1. Provision of Architectural Woodwork Section 06 40 00, Architectural Woodwork

1.5. INSPECTION

1.5.1. The Contractor shall ensure that the hardware suppliers' Architectural Hardware Consultant (AHC) checks all hardware when it has been installed and notifies the Consultant of any cases where it has not been properly installed, is defective, or is not as specified. Replace defective hardware. The Contractor shall ensure that the hardware supplier or closer manufacturer on its behalf checks all door closers after they have been installed to make sure that all adjustments

such as back checking degree have been properly made. Notify the Consultant of any closers that have not been properly adjusted.

1.6. SCHEDULING AND PACKAGING

1.6.1. Supply finishing hardware to those who are to install it complete with templates and other complete installation instructions, in sufficient time to avoid delaying the progress of the work.

1.6.2. Package hardware separately for each door or unit and state clearly on each package the number and description of the door or unit for which the hardware therein is intended.

1.6.3. Supply all required expansion shields, anchors, and other related accessories for satisfactory attaching or installing all finishing hardware.

1.7. HARDWARE LIST

1.7.1. Prepare and submit for approval, 6 copies of a hardware list indicating the type, manufacturer, number, location and finish of each item of finishing hardware supplied under this Section.

1.7.1.1. The hardware list must be prepared by an accredited Architectural Hardware Consultant (AHC), who is a staff member of the company providing the hardware

1.7.2. Hardware List - Finishing Hardware for all doors.

PART2 - PRODUCTS

2.1. FINISHING HARDWARE

2.1.1. Refer to Hardware indicated in section 00 00 01 and on drawings as prepared by +VG Architects.

2.2. MANUFACTURERS

2.2.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.2.2. Assa Abloy Canada Ltd. 160 Four Valley Dr, Concord, ON L4K 4T9

2.2.3. SARGENT® Manufacturing Company:

100 Sargent Drive New Haven, CT 06536-0915

2.2.4. Or Equivalent.

PART3 - EXECUTION

3.1. EXAMINATION

3.1.1. Prior to furnishing any hardware, carefully review the Drawings of Work requiring hardware, verify door swings, door and frame materials and operating conditions, and assure that hardware will fit Work to be attached.

3.1.2. Check shop drawings and frame and door lists affecting hardware type and installation, and verify to correctness thereof, or advise of required revisions. Confirm that doors, frames, and panels requiring additional support are reinforced.

3.1.3. Advise installer of any special requirements. Make final adjustments of hardware, in particular closer arms, valves and locksets; to work properly.

3.2. ATTACHMENTS

3.2.1. Schedule associated with this Section are part of Section 00 00 01.

END OF SECTION

PART 1- GENERAL

1.1. GENERALINSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide glass and glazing including but not limited to following:

1.2.1.1. glazing of new wood doors and windows.

1.2.1.2. New glazed screen

1.2.1.3. mirrors.

1.2.1.4. window film.

1.2.1.5. miscellaneous specialty glass, gaskets, tapes and glazing materials.

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Provision of architectural woodwork: Section 06 40 00, Architectural Woodwork.

1.2.2.2. Supply of wood doors: Section 08 14 00, Wood Doors.

1.2.2.3. Provision of unit mirrors: Section 10 28 00, Washroom Accessories.

1.2.2.4. Glazed hose cabinets and valve directory: Mechanical.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. EPDM: Ethylene Propylene Diene Monomer.

1.3.1.2. GANA: Glass Association of North America; www.glasswebsite.com.

1.3.1.3. OBC: Ontario Building Code.

1.3.1.4. PVB: Polyvinyl Butyral.

1.3.1.5. ULC: Underwriters Laboratories of Canada; www.ulc.ca.

1.3.2. Definitions:

1.3.2.1. Glass Terminology: Conform to ASTM C162 for glossary of terms and definitions of glazing terminology.

1.3.2.2. Pattern Glass: One type of rolled glass having a pattern impressed on 1 or both sides for light control, bath enclosures and decorative glazing. Sometimes called “rolled”, “figured”, or “obscure” glass.

1.3.2.3. Sandblasted Finish: Surface treatment for flat glass obtained by spraying glass with hard particles to roughen 1 or both surfaces of glass. Effect is to increase obscurity and diffusion.

1.3.2.4. United Inches: Total of 1 width and 1 height of a lite of glass in inches.

1.3.3. Reference Standards:

1.3.3.1.	ANSI Z97.1-09	- Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test
1.3.3.2.	ANSI/ASME B18.6.3-13	- Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series)
1.3.3.3.	ASTM C162-05(15)	- Standard Terminology of Glass and Glass Products
1.3.3.4.	ASTM C509-06(15)	- Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
1.3.3.5.	ASTM C864-05(15)	- Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
1.3.3.6.	ASTM C920-14a	- Standard Specification for Elastomeric Joint Sealants
1.3.3.7.	ASTM C1036-11e1	- Standard Specification for Flat Glass
1.3.3.8.	ASTM C1048-12e1	- Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
1.3.3.9.	ASTM C1115-06(11)	- Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories
1.3.3.10.	ASTM C1503-08(13)	- Standard Specification for Silvered Flat Glass Mirror
1.3.3.11.	CAN/CGSB-12.20-M89	- Structural Design of Glass for Buildings
1.3.3.12.	CAN/ULC-S104-10	- Standard Method for Fire Tests of Door Assemblies
1.3.3.13.	CAN4-S106-M80(85)	- Standard Method for Fire Tests of Window and Glass Block Assemblies
1.3.3.14.	GANA 01-0300	- Glass Information Bulletin – Proper Procedures for Cleaning Architectural Glass Products
1.3.3.15.	NFPA 80-13	- Standard for Fire Doors and Other Opening Protectives

1.4. ADMINSTRATIVEREQUIREMENTS

1.4.1. Preinstallation Meetings:

1.4.1.1. Arrange pre-installation meeting 1 week prior to commencing work with all parties

associated with trade as designated in the Contract Documents or as requested by the Consultant. Presided over by the Contractor, include the Consultant who may attend, Subcontractor performing work of this trade, testing company's representative and consultants of applicable discipline. Review the Contract Documents for work included under this trade and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of work of this Section.

1.4.1.2. Review installation methods, procedures, time schedule and conditions under which work shall proceed including manufacturer's written instructions and coordination required with related work.

1.4.1.3. Review and finalize construction schedule, verify availability of materials, experienced installer, equipment and facilities needed to make progress and avoid delays.

1.5. SUBMITTALS

1.5.1. Samples:

1.5.1.1. Submit samples of materials identifying quality and type of glass if required by Consultant before commencing work. Ensure samples are clearly labelled with manufacturer's name and type.

1.5.1.2. Submit following samples:

1.5.1.2.1. mirrors.

1.5.1.2.2. laminated glass for wood doors

1.5.1.2.3. Privacy window film.

1.6. CLOSEOUT SUBMITTALS

1.6.1. Operational and Maintenance Data: Provide maintenance data indicating cleaning instructions for inclusion into Maintenance Manual.

1.7. QUALITY ASSURANCE

1.7.1. Qualifications:

1.7.1.1. Installers: Provide experienced installer who is trained and experienced in glass and glazing requirements of this Section including familiarization with standards specified herein and capable to instruct installation requirements of this Section.

1.8. DELIVERY, STORAGE AND HANDLING

1.8.1. Delivery and Acceptance Requirements: Deliver glass and associated materials to site in original crates and containers with manufacturer's name and brand distinctly marked thereon and with glass labelled as to types. Do not remove labels on glass until after work is accepted by the Consultant.

1.8.2. Storage and Handling Requirements: Store materials within the building, in a clean, dry location, acceptable or as designated by the Consultant. Fully protect materials from damage of any kind until ready for use.

1.9. SITE CONDITIONS

1.9.1. Ambient Conditions: Do not perform glazing when temperature is less than 7 deg C (44 deg F) or sash or frames are wet, damp or frosted.

1.10. WARRANTY

1.10.1. Manufacturer Warranty: Warrant mirrors for period of 10 years against defects and/or deficiencies in accordance with the General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of the Consultant and at no expense to the Owner. Defects include but are not limited to; deterioration of silvering on mirrors.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. AGC Flat Glass North America Ltd.; www.na.agc-flatglass.com

2.1.1.2. Dow; https://consumer.dow.com

2.1.1.3. Guardian Industries Corp.; www.guardian.com

2.1.1.4. Momentive Performance Materials; www.momentive.com

2.1.1.5. PPG Canada Inc.; www.ppgglazing.com

2.1.1.6. Tremco Canada Inc; www.tremcosealants.com

2.1.1.7. Or equivalent.

2.1.2. Single Source Responsibility for Sealants, Gaskets and Other Glazing Accessories: Ensure consistent quality of performance by providing glazing sealant and seals from single manufacturer.

2.2. MATERIALS

2.2.1. Performance/Design Criteria:

2.2.1.1. Design glass and glazing to CAN/CGSB-12.20-M complying to OBC design and fire rating requirements and regulations of authorities having jurisdiction, being the minimum, except where more stringent requirements are specified herein. In case of conflict of requirements comply with most stringent requirements.

2.2.1.2. Provide accessories, closures and trims required and necessary to complete work.

2.2.1.3. Deflection: Limit glass deflection to flexural limit of glass with full recovery of glazing materials.

2.2.2. Glass: Free from bubbles, waves, discolouration and other defects and of following types for locations indicated on Drawings or noted on Door Schedule. Ensure glass (particularly heat- strengthened, tempered and laminated) bears manufacturer's labels on bottom inner right hand corner indicating quality.

2.2.3. Single Glazed Glass Types:

2.2.3.1. Float Glass (CGL): Clear transparent float glass, minimum 6 mm (1/4") thick conforming to ASTM C1036, Type I, Class 1.

2.2.3.2. Tempered Glass (TGL): Clear transparent tempered glass conforming to ASTM C1048, Kind FT and meeting requirements of ANSI Z97.1, minimum 6 mm (1/4") thick. Ensure surface compression is equal to or greater than 69 MPa (10 000 psi).

2.2.3.3. Heat-Strengthened Glass (HSGL): Clear transparent heat-strengthened glass conforming to ASTM C1048, Kind HS, minimum 6 mm (1/4") thick. Perform heat-strengthening using horizontal tong free method and ensure surface compression is between 27.6 MPa (4000 psi) and 48.3 MPa (7000 psi).

2.2.3.4. Wired Glass (GL4): Clear transparent wired glass conforming to ASTM C1036, Type II, Class 1, Quality Q5, Form 1, Mesh 2(M2), minimum 6 mm (1/4") thick.

2.2.3.5. Single Glass Unit (Type GL6): Glass assembly consisting of 13 mm (1/2") thick patterned (pattern shown on Drawings) tempered glass (TGL).

2.2.3.6. Mirrors: Size(s) as shown on Drawings, 6 mm (1/4") thick conforming to ASTM C1503 float glass with process deposit of 5 silver coats, 3 copper coats and final protective seal, warranted for 10 years against deterioration of silvering.

2.2.3.7. Mirror Adhesive: Compatible with silver coatings, copper coatings and protective seal applied to mirrors, recommended by manufacturer to hold mirrors permanently in position without visible signs of mirror deterioration thorough out warranty period. "Mirror-Mastic Bond" by Palmer Corporation or equivalent.

2.2.3.8. Security Screws: Complying with ANSI/ASME B18.6.3; provide only tamper-resistant Torx-Plus® or break off type screws as specified and noted on the Drawings. Provide flathead security screws where Torx-Plus® or breakoff is indicated to be counter sunk otherwise provide only trusshead or buttonhead for Torx-Plus® and only roundhead for breakoff type. Torx-Plus® Temper resistant screws with heads having a deep hex-lobular recess with a solid post formed in the centre requiring a special metal driver to install or remove screw. Ensure licensed manufacturer produces fasteners and tools. Break-Off head security screws with drive heads having an additional hexagonal shaped head designed to break off after installation at a predetermined torque level. Grind remaining portion of neck smooth after hex-head is broken off. Acceptable Manufacturers: Temper Proof Screws Inc., Folger Adam Security Inc., Sentry Security Fasteners, Inc. or Temper proof Screw Co. or equivalent.

2.2.4. Window Film: Provide "3M FASARA Glass finish Film" by 3M; www.3m.com (or similar

approved equivalent). Pattern and colour selected later by Consultant, Ensure film cutouts suit design and are located on washroom windows, glass doors and other areas as indicated on Drawings.

2.2.4.1. Base: 76 mm (3") x 73 mm (2-7/8") 2 piece extruded aluminum - for 12.7 mm (1/2") thick glass.

2.2.4.2. Glazing Material: Clear tempered glass (TGL) with polished bottom edge.

2.2.4.3. Finish: Clear anodized with mill finish.

2.2.5. Glazing, Sealing Compounds and Accessories:

2.2.5.1. Ensure glazing, sealing compounds and accessories are compatible with contact surfaces of frames, other accessories used in glazing system and contact surfaces of compounds used on insulated glass units. Wood or other organic materials are not acceptable for use in glazing systems including spacer blocks.

2.2.5.2. Glazing Compound: Non-hardening modified oil type. Colour to match adjacent surfaces unless indicated otherwise.

2.2.5.3. Sealant Compound: One component type, elastomeric chemical curing, ASTM C920, Type S, Grade NS. Colour to match adjacent surfaces unless indicated otherwise.

2.2.5.4. Sealant Compound: ASTM C920, multi-component chemical curing, Type M, Grade NS. Colour to match adjacent surfaces.

2.2.5.5. Sealant Compound: One component, silicone base chemical curing. Colour to match adjacent surfaces.

2.2.5.6. Sealant for Interior Glass-to-Glass Butt Glazing Installation: Translucent 1 part silicone sealant conforming to ASTM C920, Type S, Grade NS, "Tremsil® 200 General Construction Grade Silicone Sealant" by Tremco Canada or "Dow Corning 999-A Silicone Building & Glazing Sealant" by Dow Corning or "GE Contractors SCS1000 Silicone Sealant" by Momentive Performance Materials or equivalent.

2.2.5.7. Cellular Gaskets for Compression Glazing: ASTM C509 cellular, elastomeric, preformed, black. Closed cell neoprene or EPDM extrusions including molded corners where applicable by Cellular Rubber Extrusions, Tremco Canada or equivalent.

2.2.5.8. Dense Gaskets for Compression Glazing: ASTM C864, Option II or ASTM C1115, Type C, dense neoprene or EPDM extrusions, 60 and 70 Durometer density including molded corners where applicable by Poly-Wej Gaskets, Tremco Canada or equivalent.

2.2.5.9. Glazing Splines: Neoprene or EPDM manufacturer's standard dry glazing splines to suit aluminum extrusions. Colour to match adjacent surfaces unless indicated otherwise in the Contract Documents.

2.2.5.10. Glazing Points and Wire Spring Clips: Corrosion resistant, manufacturer's standards.

2.2.5.11. Edge Blocking, Setting Blocks, Lateral Shims, Gaskets and Tapes:

2.2.5.11.1. Edge Blocking for Glass: 60 - 70 Durometer neoprene, silicone or EPDM, channel shaped,

100 mm - 150 mm (4" - 6") long.

2.2.5.11.2. Setting Blocks: 7 mm x 100 mm (5/16 x 4") EPDM or extruded 80 - 90 Durometer neoprene; at insulating glass, use EPDM only. At fire-rated glazed doors and partitions, use similar sized fire- rated silicone GE "Gel 516" or asbestos cement blocks. Width; 1.6 mm to 3 mm (1/16" to 1/8") less than design glazing pocket width. For 4 sided structural glazing, use silicone compatible rubber or silicone.

2.2.5.11.3. Lateral Shims: Neoprene, silicone or EPDM, 40 - 60 Durometer, 100 mm (4") long or as required.

2.2.5.11.4. Non-Compression Glazing Tape for Interior Wood Screen Glazing: Preformed, 100% solids, cross linked butyl rubber, polyisobutylene, hardness 65 Durometer, unaffected by UV through glass. Acceptable Product: "Tremco 440 Tape" by Tremco Canada. Ensure tape is sufficiently wide and thick enough to completely cover bite area of glazing unit when unit is pushed into place

2.2.5.11.5. Compression Glazing Tape: Preformed, ribbon-shaped, non-skinning, 100% solids, non-oxidizing polyisobutylene: butyl, paper release, EPDM shim with continuous synthetic rubber spacer rod of 60 Durometer hardness. Acceptable Product: "Polyshim II Tape" by Tremco Canada or equivalent.. Ensure tape is sufficiently wide and thick to completely cover bite area of glazing unit when unit is pushed into place.

2.2.6. Primer Sealers and Cleaners: To glass and plastic glazing manufacturer's standards.

2.2.7. Fabrication:

2.2.7.1. Label each light of glass with registered name of Product and weight and quality of glass.

2.2.7.2. Check dimensions on job site before cutting materials.

2.2.7.3. Grind and chamfer edges of unframed glass and mirrors. Grind and chamfer edges of glass shelves and sliding doors.

2.2.7.4. Ensure minimum bite or lap of glass on stops and rabbets as recommended by glass manufacturer.

PART3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.1.1.2. Ensure glass is not more than 4 mm (3/16") less than the rebate size in either dimension, with allowance for edge spacers, shims and setting blocks as required.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Surface Preparation:

3.2.1.1. Thoroughly clean glass rebates and glass of dust, dirt, mortar and other foreign materials prior to glazing. Remove oils and grease with non-staining solvents such as Xycol or Methyl Ethyl Ketone solutions or equivalent..

3.2.1.2. Properly prime, before glazing, glazing rebates in wood doors.

3.3. INSTALLATION

3.3.1. Perform work of this Section in accordance with "GANA Glazing Manual, 2004" and "GANA Laminated Glazing Reference Manual, 2006" for laminated glazing installation methods.

3.3.2. If required, thoroughly mix glazing compound as recommended by manufacturer. Thinning of glazing compound will not be permitted.

3.3.3. Carefully remove glazing stops and replace after glazing. Take care to prevent damage to stops.

3.3.4. Doors, Screens, Sidelites and Interior Windows:

3.3.4.1. Place setting blocks on sill at 1/4 points from each corner unless otherwise directed by glazing manufacturer.

3.3.4.2. Place continuous glazing gaskets on edges of glass.

3.3.4.3. Centre and space each piece of glass with spacers located and installed according to manufacturer's directions.

3.3.4.4. Place glass so no voids occur between glass and glazing material and glazing stops.

3.3.4.5. Secure glass in place with stops, secured in place with screws.

3.3.5. Glazing Sealant:

3.3.5.1. Apply glazing sealant to clean, dry, grease and oil free surfaces. Provide exposed glazing sealant smooth, free from ridges, wrinkles, air pockets and embedded foreign materials.

3.3.5.2. Prime surfaces if required by glazing sealant manufacturer.

3.3.5.3. Trim glazing sealant flush with tops of stops and glazing channels.

3.3.5.4. Remove excess glazing sealant or droppings which would set up or become difficult to remove from finished surfaces. Do not use chemicals, scrapers, or other tools which would affect finished surfaces

3.3.5.5. Tape/Tape Method:

3.3.5.5.1. Cut glazing tape to proper length and install against permanent stop projecting 1.6 mm (1/16") above sightline.

3.3.5.5.2. Place glazing tape on free perimeter of glass projecting 1.6 mm (1/16") above sightline.

3.3.5.5.3. Trim off excess tape to sightline.

3.3.5.6. Combination Method-Tape/Sealant:

3.3.5.6.1. Cut glazing tape to proper length and install against permanent stop projecting 1.6 mm (1/16") above sightline.

3.3.5.6.2. Fill gap between glass and applied stop with sealant to depth equal to bite of frame on glass to uniform and level line.

3.3.5.6.3. Trim off excess tape to sightline.

3.3.5.7. Dry Method (Gaskets):

3.3.5.7.1. Place gasket against permanent stop and position glass sheet.

3.3.5.7.2. Apply removable stops. Install gaskets in frame channels.

3.3.5.8. Window Film:

3.3.5.8.1. Install window film in accordance with manufacturer’s printed instructions by experienced film applicators as recommended by glass film manufacturer.

3.3.5.8.2. Ensure glass surfaces are clean and ambient temperature is between 16 deg C and 38 deg C (61 deg F and 100 deg F).

3.3.5.8.3. Whenever 2 or more pieces of same colour translucent film are seamed together as a continuous band of colour, they must match to ensure uniform reflected daytime colour and transmitted night appearance.

3.3.6. Mirrors:

3.3.6.1. Install mirrors where indicated on Drawings.

3.3.6.2. Mount plumb and level and accurately in position and secure rigidly in position.

3.3.6.3. Ensure back-up wall surface is thoroughly dry, smooth and firm and is primed or painted.

3.3.6.4. Provide space for air circulation and elimination of condensation between back of mirror and wall.

3.3.6.5. Install tamper proof mirrors according to manufacturer's directions.

3.3.6.6. Install frameless mirrors with mirror edges ground and polished.

3.3.6.7. Locate joints in mirrors to the Consultant's direction. Generally joints are acceptable only for locations where mirrors are longer than 2440 mm (8' - 0"). Provide butt joints with ground and polished edges. Apply 6 mm (1/4") wide clear silicone bead at butt joints.

3.3.6.8. Secure wall and ceiling mirrors in place over special adhesive, temporarily fixing in place until adhesive sets.

3.3.6.9. Install mirrors with frames according to manufacturer's direction. Use concealed tamper proof fasteners in addition to adhesive where required.

3.4. SITE QUALITY CONTROL

3.4.1. Site Tests and Inspections: Ensure framing to be glazed is plumb, secure and permanently fixed in position.

3.4.2. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.5. CLEANING

3.5.1. Clean installed glass and metal frequently during construction. Avoid etching and staining glass and metal during construction.

3.5.2. Remove sealant and compound droppings from finished surface.

3.5.3. Clean and polish glass in accordance with GANA 01-0300 including removal of markings indicating presence of glass.

3.6. CLOSEOUT ACTIVITIES

3.6.1. Demonstration: Demonstrate operation and maintenance of switchable glass system to the Owner's representatives.

3.7. PROTECTION

3.7.1. Provide and maintain necessary protection of completed work against damage.

3.7.2. Do not mark or attach anything directly to exposed glass and framing surfaces.

3.7.3. If welding is to take place above or near completed glazing work, protect glass with plywood or other suitable means to reduce likelihood of weld spatter damaging glass surfaces.

3.7.4. Protect glass from other trades, workers, tools and other similar materials. Avoid storing materials adjacent to glass.

3.7.5. Replace cracked, broken, or defective glass at no additional cost to the Owner and to the Consultant's satisfaction.

3.7.6. Identification of Glazing: Mark glass lites with temporary, easily removable, large safety markings, immediately after glass installation. Maintain safety markings until final clean-up.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide gypsum board work including but not limited to following:

1.2.1.1. Temporary and permanent gypsum board partitions as shown on drawings

1.2.1.2. steel studs and furring channels.

1.2.1.3. ceiling, bulkhead and soffit suspension system.

1.2.1.4. gypsum board partitions, ceilings, bulkheads and soffits.

1.2.1.5. shaft wall.

1.2.1.6. corner beads, casing beads, trim, control joints and corner reinforcement.

1.2.1.7. taping and filling.

1.2.1.8. acoustically insulated gypsum board partitions.

1.2.1.9. acoustic caulking to acoustically insulated gypsum board partitions.

1.2.1.10. installation of access hatches, panels and doors supplied by other trades in gypsum board walls and ceilings as required.

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Firestopping, smoke seals and penetration firestopping: Section 07 92 00, Firestopping and Smoke Seals.

1.2.2.2. Finish painting of gypsum board: Section 09 91 00, Painting.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. CSA: Canadian Standards Association; www.csa.ca.

1.3.1.2. OBC: Ontario Building Code.

1.3.1.3. STC: Sound Transmission Class.

1.3.1.4. ULC: Underwriters Laboratories of Canada; www.ulc.ca.

1.3.2. Definitions:

1.3.2.1.	Drywall: Gypsum board.	
1.3.3.	Reference Standards:	
1.3.3.1.	ASTM A653/A653M-15	- Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
1.3.3.2.	ASTM A666-15	- Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
1.3.3.3.	ASTM C475/C475M-15	- Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
1.3.3.4.	ASTM C645-14e1	- Standard Specification for Nonstructural Steel Framing Members
1.3.3.5.	ASTM C754-15	- Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
1.3.3.6.	ASTM C840-13	- Standard Specification for Application and Finishing of Gypsum Board
1.3.3.7.	ASTM C954-15	- Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
1.3.3.8.	ASTM C1047-14a	- Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
1.3.3.9.	ASTM C1177/C1177M-13	- Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
1.3.3.10.	ASTM C1280-13a	- Standard Specification for Application of Exterior Gypsum Panel Products for use as Sheathing
1.3.3.11.	ASTM C1396/C1396M-14a	- Standard Specification for Gypsum Board
1.3.3.12.	ASTM C1629/C1629M-15	- Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels
1.3.3.13.	ASTM C1658/C1658M-13	- Standard Specification for Glass Mat Gypsum Panels
1.3.3.14.	ASTM D3273-12e1	- Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
1.3.3.15.	ASTM D4060-1	- Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

1.3.3.16.	ASTM D5420-10	- Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)
1.3.3.17.	ASTM E84-15b	- Standard Test Method for Surface Burning Characteristics of Building Materials
1.3.3.18.	ASTM E90-09	- Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
1.3.3.19.	ASTM E136-12	- Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
1.3.3.20.	ASTM E695-03(15)e1	- Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading
1.3.3.21.	CSA S136-12	- North American Specification for Design of Cold-Formed Steel Structural Members
1.3.3.22.	CAN/CGSB-51.33-M89	- Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction
1.3.3.23.	CAN/ULC-S101-07	- Method of Test for Standard Methods of Fire Endurance Tests of Building Construction and Materials
1.3.3.24.	CAN/ULC-S102-07	- Surface Burning Characteristics of Building Materials and Assemblies
1.3.3.25.	CAN/ULC-S114-05	- Standard Method of Test for Determination of Non- Combustibility in Building Materials
1.3.3.26.	CAN/ULC-S702-09	- Standard for Mineral Fibre Thermal Insulation for Buildings

1.4. ADMINSTRATIVEREQUIREMENTS

1.4.1. Sequencing:

1.4.1.1. Coordinate installation and cooperate with mechanical and electrical trades to accommodate mechanical electrical items and any other work required to be incorporated into or coordinated with ceiling systems.

1.4.1.2. Cooperate and coordinate with Sections applying wet trades and trades installing mechanical and electrical services. Coordinate stud layout at partitions accommodating wall mounted fixtures by other trades.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

1.5.1.1. Installers: Provide work of this Section executed by competent installers with a minimum of 5 years' experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements: Deliver materials to site with manufacturer's original labels intact. Do not remove wrappings until ready for use.

1.6.2. Storage and Handling Requirements:

1.6.2.1. No outside storage permitted. Store in clean, dry area, off ground. Provide adequate ventilation to avoid excess moisture, surface relative humidity and mould or fungal growth. Remove immediately any board showing signs of mould, mildew or fungal growth.

1.6.2.2. Stack gypsum board flat on level and dry surface without overhanging boards. Prevent sagging and damage to edges, ends and surfaces. Protect bagged Products from moisture or wetting.

1.7. SITE CONDITIONS

1.7.1. Ambient Conditions:

1.7.1.1. Do not install work of this Section in any area unless satisfied that work in place has dried out and that no further installation of materials requiring wetness, moisture or dampness is contemplated. Ensure relative humidity in area of work of this Section does not exceed 55% for duration of Project.

1.7.1.2. Ensure temperature of surrounding areas is min 13 deg C (55 deg F) and max 21 deg C (70 deg F) for 7 Days before and during application of gypsum board; maintain for 4 Days thereafter. Ensure heat is provided at appropriate time before work has started to bring surrounding and adjacent materials up to required temperature and maintained as specified. Avoid concentrated or irregular heating during drying by means of deflectors or protective screens.

1.7.1.3. Ensure ventilation is provided for proper drying of joint filler and adhesive and to prevent excessive humidity. Do not force dry adhesives and joint treatment.

PART 2 - PRODUCTS

2.1. **MANUFACTURERS**

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Bailey Metal Products Ltd.; www.bmp-group.com

2.1.1.2. Flex-Ability Concepts Ltd. 5500 West Reno Avenue, Suite 300, Oklahoma City, OK 73127; www.flexabilityconcepts.com

2.1.1.3. The Steel Network, Inc.; CircleTrak https://steelnetwork.com/

2.1.1.4. CertainTeed Corporation; www.certainteed.com

2.1.1.5. CGC Inc; www.cgcinc.com

2.1.1.6. Georgia-Pacific Canada, Inc.; www.gpgypsum.com

2.1.1.7. Or equivalent.

2.2. **MATERIALS**

2.2.1. Performance/Design Criteria:

2.2.1.1. Design ceiling suspension system in accordance with manufacturer's printed directions and conforming to ASTM C754 requirements. Do not suspend any items from structural steel deck. Do not support work of this Section from, nor make attachments to, ducts, pipes, conduits or support framing of other trades.

2.2.1.2. Design suspended ceiling system for adequate support of electrical fixtures as required by current bulletin of Electrical Inspection Department of Ontario Hydro.

2.2.1.3. Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.

2.2.1.4. Design suspension system to support weight of mechanical and electrical items such as air grilles, lighting fixtures, drapery track, drapes and with adequate support to allow rotation/ relocation of light fixtures.

2.2.1.5. Design interior partitions and ceilings using a maximum deflection criteria of L/240 unless otherwise specified herein.

2.2.1.6. Design sub-framing as necessary to accommodate and circumvent conflicts and interferences where ducts or other equipment prevent regular spacing of hangers.

2.2.1.7. Design metal stud reinforcements from hollow structural steel, stud, angle and steel plate sections, galvanized sheet steel minimum 1.214 mm (18 ga) where required to support of manufactured components without limitations items such as washroom accessories and similar items. Design weld connections ensuring rigid and secure installation capable of offering resistance to minimum 227 kg (500 lb) pull force. Consider galvanized items in moist areas. Do not design using wood blocking for this purpose.

2.2.2. Steel Studs: CSA S136 and ASTM C645, galvanized sheet steel, minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, screw able with crimped web and returned flange, of depth shown in maximum continuous lengths possible. Provide thicker steel where required due to height.

2.2.3. Heavy Duty Studs at Openings: CSA S136 and ASTM C645, galvanized sheet steel, minimum 54 mils designation thickness (1.367 mm (0.0538") minimum base steel thickness) (previously 16 ga), minimum Z120 (G40) zinc coating, screw able with crimped web and returned flange, of depth shown in maximum continuous lengths

possible. Provide thicker steel where required due to height.

2.2.4. Provide knockout openings in web at 460 mm (18") oc to accommodate (if required) horizontal mechanical and electrical service lines and bracing.

2.2.5. Floor and Ceiling Partition Track for Gypsum Board: CSA S136 and ASTM C645, galvanized sheet steel, minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, with minimum 30 mm (1-1/4") legs, top track having longer legs where required to compensate for deflection of structure above. Width to suit metal studs.

2.2.6. Furring Channels: CSA S136 and ASTM C645, galvanized sheet steel, minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, screw channels, 67 mm (2-5/8") wide x 22 mm (7/8") deep.

2.2.7. Carrying Channels for Gypsum Board: CSA S136 and ASTM C645, galvanized sheet steel, minimum 43 mils designation thickness (1.087 mm (0.0428") minimum base steel thickness) (previously 18 ga), minimum Z120 (G40) zinc coating, 38 mm (1-1/2") high with 19 mm (3/4") flanges, for primary carrying member in suspended ceilings and as horizontal stiffeners or bracing in metal stud systems.

2.2.8. Core Board Runner: CSA S136 and ASTM C645, 35 mm x 22 mm x 0.914 mm (1-3/8" x 7/8" x 20 ga) galvanized metal angle runner.

2.2.9. Hangers: 4.8 mm (3/16") nominal diameter mild steel rod coated with rust inhibitive paint for elsewhere.

2.2.10. Inserts for Concrete Slabs: Tie wire anchors, “Red Head TW-1614" by ITW Canada Inc., “Parabolt Wire Hanger” distributed by Acrow-Richmond Ltd., “T-14 Eyebolt” by Ramset Ltd. or “Tie Wire Drive TW-932" by Isometric Ltd. or equivalent.

2.2.11. Tie Wire: 1.519 mm (16 ga) nominal diameter galvanized, soft annealed steel.

2.2.11.1. For single layer application over metal framing; self-drilling, self-tapping, case hardened, No. 6 contoured Phillips head or Type S bugle head, sized for minimum 15.9 mm (5/8") penetration into steel framing. Ensure fasteners are corrosion resistant. Use drill point screws for abuse resistant gypsum fibre panels.

2.2.11.2. For double layer application over gypsum backing board and existing gypsum board; 38 mm (1- 1/2") Type G bugle head. For each additional layer of board, increase length of fasteners proportionally.

2.2.12. Gypsum Board (GB or GWB): Conforming to ASTM C1396/C1396M. Unless indicated otherwise use 1200 mm (4') wide standard facing board in maximum continuous lengths up to 3600 mm (12'), beveled and/or tapered edges to suit design requirements with butted square ends:

2.2.12.1. Recycled Content - Minimum Post Consumer Recycled Content: 5%; Minimum Total Recycled Content: 75%

2.2.12.2. Gypsum Board (Walls): Provide 15.9 mm (5/8") thick with tapered edges unless otherwise specified as follows:

2.2.12.2.1. Provide 9.5 mm (3/8") thick gypsum board on curved walls.

2.2.12.3. Gypsum Board (Ceiling): Provide 12.7 mm (1/2") thick with tapered edges unless otherwise specified as follows:

2.2.12.3.1. Use anti sag sheets.

2.2.13. Moisture Resistant Gypsum Board (MRGB): ASTM C1658/C1658M, glass mat reinforced, silicone treated core gypsum board, ASTM D3273 with a rating of 10, no mould growth after 4 weeks exposure, 12.7 mm (1/2") or Type X, 15.9 mm (5/8") "DensArmor Plus® High Performance Interior Panel" by Georgia-Pacific Canada, Inc. or "CGC Sheetrock® Brand Glass- Mat Panel Mold Tough®" by CGC Inc.or equivalent.

2.2.14. Fire Rated Gypsum Board having Testing Agency Fire Rating Identification Stamp on Each Sheet: ASTM C1396/C1396M, Type X, 12.7 mm (1/2") and/or 15.9 mm (5/8") thick gypsum board 1200 mm (4') wide, maximum practical length and tapered edge as required by each fire resistance assembly. "Gyproc Fireguard Type X or Type C" by Georgia-Pacific Canada, Inc., "CGC Sheetrock Firecode or Firecode C" by CGC Inc. or "ProRoc Type X or Type C" by CertainTeed Corporation or equivalent. .

2.2.15. Core Board: 25 mm (1") by 600 mm (24") sizes with tongue and grooved edges.

2.2.16. Dust Barrier: Minimum 0.152 mm (6 mil) polyethylene, CAN/CGSB-51.33-M, Type 2.

2.2.17. Resilient Sponge Tape: Self-sticking adhesive on 1 side, closed cell neoprene sponge tape, "Rubatex®" by Rubatex Corp., "Foamflex # 1220" by Jacobs & Thompson Inc.; www.foamparts.com or "Backerseal™ (Greyflex)™" by Emseal; www.emseal.com. or equivalent.

2.2.18. Joint Tape: Conforming to ASTM C475/C475M, provide following:

2.2.18.1. Regular Gypsum Board: Use either kraft paper joint tape with feathered edges and minute perforations 50 mm (2") wide.

2.2.18.2. MRGB: Use glass fibre tape only, open weave, with pressure sensitive adhesive 1 side, "Durock Cement Board Tape" by CGC Inc. or equivalent.

2.2.19. Joint Fillers and Topping Compound: Either slow or fast setting, low shrinkage type free of asbestos fillers and as recommended by manufacturer. Use "Gyproc 90" by Georgia-Pacific Canada, Inc. or "Durabond 90" by CGC Inc. or equivalent at exterior soffits.

2.2.20. Sealant for Moisture Resistant Gypsum Board Edges: "Sheetrock Brand W/R Sealant" by CGC Inc., or equivalent acceptable to the Consultant.

2.2.21. Corner Bead: ASTM C1047, "Dur-A-Bead™ No. 103 Corner Bead" by CGC Inc. at corners, reveals, or equivalent. Provide custom shapes of similar materials and design as noted.

2.2.22. Metal Trim: CGC No.200-A or BMP D-4411 in lieu of "J" Mould. Do not provide "J" Mould (CGC No. 400-A) unless specifically noted on Drawings as 'Exposed "J" Mould'.

2.2.23. Control Joints: Pre-fabricated control joints prepared to suit site conditions; "No. 093" by CGC Inc. zinc alloy control joint or equivalent. .

2.2.24. Sound Control Materials:

2.2.24.1. Sound Attenuation Batts at Telephone room: CAN/ULC-S702, mineral (glass and rock wool) fibre, flame spread and smoke developed in conformance with OBC requirements and other authorities having jurisdiction in accordance with CAN/ULC-S102. Non-combustible in accordance with requirements of CAN/ULC-S114. Acceptable Products: "EcoTouch™ QuietZone® PINK™ FIBERGLAS® Acoustical Insulation" by Owens Corning Canada LP; www.insulation- owenscorning.ca, "Roxul AFB - Acoustical Fire Batts" by Roxul Inc.; www.roxul.com or "Thermafibre Sound Attenuation Blankets" by CertainTeed Corporation; www.certainteed.com, or equivalent of sufficient thickness to meet required STC rating for sound-rated partitions and of width to suit metal framing spacing.

2.2.24.2. Strip Impalement Clips: 25 mm (1") wide strip of "Insul-Hold" by Insul-Hold Co., Inc.; www.insulhold.com, fabricated from 0.531 mm (25 ga) galvanized sheet metal in 30 m (100') rolls with punch-out insulation securement arrows. Alternatively, use special studs with punch- out impalement strips.

2.2.24.3. Acoustic Sealant: Single component, non-hardening, non-skinning synthetic rubber sealant; "Tremco Acoustical Sealant" by Tremco Canada or equivalent.

2.2.24.4. Elastomeric Sealant: As recommended by manufacturer of fibre-reinforced gypsum sheathing board.

2.2.24.5. Gaskets: Closed cell neoprene, 3 mm (1/8") thick x 64 mm (2-1/2")

2.3. EXAMINATION

2.3.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

2.3.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

2.4. INSTALLATION

2.4.1. Partition Types:

2.4.1.1. Refer to Drawings for partition types.

2.4.1.2. Provide partitions complete to underside of structure, unless otherwise indicated on Drawings.

2.4.2. Give a minimum of 48 hours' notice for the Consultant's inspection of internal wall insulation, vapour barriers and services prior to concealing with gypsum board.

2.4.3. Provide adequate ventilation to eliminate excessive moisture before commencing and during work to ensure proper drying of joint filler and adhesive. Do not force dry adhesive and joint treatment.

2.4.4. Examine substrate for compliance with applicable requirements, installation tolerances and other conditions affecting installation of fibre-reinforced gypsum board or sheathing. Do not proceed until unsatisfactory conditions have been corrected. Beginning of installation indicates acceptance of substrate conditions.

2.4.5. Carry out work using skilled tradesmen carefully supervised by competent

foremen. Take measurements accurately.

2.4.6. Install framing, blocking and furring in accordance with ASTM C645, ASTM C1280 and ASTM C840.

2.4.7. Maintain wallboard panels minimum 6 mm (1/4") and maximum 13 mm (1/2") above floor to prevent moisture transfer. Unless otherwise shown, extend panels to minimum 100 mm (4") above finished ceiling and to underside of deck or structure where exposed and at fire rated and sound control partitions. Omit taping and filling of concealed surfaces above ceiling line, except at fire rated and sound control partitions and walls.

2.4.8. Erect plain wallboard vertically or horizontally, whichever results in fewer end joints. Keep end joints away from prominent locations and central portions of ceilings. Locate vertical joints at least 300 mm (12") from jamb lines of openings.

2.4.9. Space screws for regular wallboard at 300 mm (12") oc along board edges and in board field on walls and ceilings; at fire-rated assemblies, reduce spacings to comply with labelling authorities assembly listings. For other specialty boards ensure screw spacing is in accordance with manufacturer's recommendations.

2.4.10. Do not secure gypsum board by installing screws into aluminum or steel window and door frames.

2.4.11. Install resilient sponge tape where gypsum board ceilings abut heads of door frames and where wallboard abuts heads or jambs of exterior door and window frames. Adhere tape to casing bead and compress during installation. Compressed thickness; 1.6 mm (1/16").

2.4.12. At partitions except shaft walls, apply 1 continuous 6 mm (1/4") bead of acoustical sealant to each side of partition where gypsum board meets dissimilar materials. Where 2 layers of gypsum board per face are required, apply bead of sealant at perimeter of base layer only.

2.4.13. Apply sealant beads at perimeter of other services and like objects which penetrate wallboard in accordance with manufacturer's directions.

2.4.14. Install access panels in locations to be determined by coordination with trades installing mechanical, electrical and other building services. The Consultant reserves right to relocate access panels up to 3600 mm (12') from locations shown on the Drawings due to site conditions, providing ample warning is given prior to installation.

2.4.15. Provide access panels in locations and sizes required by other Sections. Coordinate with other Sections for locations and sizes. Install in accordance with manufacturer's instructions.

2.4.16. Metal Framing for Partitions and Bulkheads:

2.4.16.1. Comply with recommendations of CGC Drywall Steel-Framed Systems Folder 09250-SA 923 for metal stud partition, ceiling, column fireproofing and bulkhead detailing.

2.4.16.2. Provide partition tracks at floor and underside of ceiling or structure above. Align accurately. Lay out to partition layout.

2.4.16.3. Erect partial height and curved partitions as indicated.

2.4.16.4. Place studs vertically at 400 mm (16") oc unless otherwise specified, not more than 50 mm (2") from abutting walls, and at each side of openings and corners. Position studs in tracks. Cross brace studs as required to provide rigid installation.

2.4.16.5. Provide heavy duty double boxed studs at each side of openings to extend in 1 piece from floor to underside of structure above.

2.4.16.6. Co-ordinate erection of studs and installation of service lines.

2.4.16.7. Provide continuous gasket to separate metal framing from masonry and concrete.

2.4.16.8. Do not secure studs to exterior window framing, or to ceiling grid members.

2.4.16.9. Provide continuous gasket between ceiling and floor tracks, and structure.

2.4.16.10. Metal Stud Reinforcements: Provide hollow structural steel, stud, angle and steel plate sections, galvanized sheet steel minimum 1.214 mm (18 ga) where required to support manufactured components. Weld connections. Ensure rigid and secure installation capable of offering resistance to minimum 227 kg (500 lbs) pull force. Galvanize stud reinforcements in moist areas. Do not use wood blocking for this purpose. Provide additional reinforcing framing studs or furring channels secured between studs for attachment and support without limitations including but not limited to the following:

- washroom accessories.
- fire hose cabinets.
- access panels.
- architectural woodwork.
- Miscellaneous specialties.
- fitments and fixtures.
- Provide continuous horizontal furring channels as backing to wall cabinets.

2.4.17. Access Doors and Panels: Install access doors and panels supplied as part of work of mechanical and electrical and where required as part of work of this Section in walls, bulkheads, ceilings and soffits.

2.4.18. Metal Furring:

2.4.18.1. Erect furring in accordance with manufacturer's directions and as specified herein.

2.4.18.2. Provide furring rigid, secure, square, level or plumb, framed and erected to maintain finish dimensions and contours indicated. Allow for thermal movement.

2.4.18.3. Furr around ducts, pipes and dropped beams occurring in finished areas and for vertical gypsum board breaks within or at termination of ceilings.

2.4.18.4. Provide metal furring channels fastened to masonry or concrete surfaces in parallel rows at 400 mm (16") oc unless gypsum board is indicated to be adhered directly to masonry or concrete surfaces. Shim metal furring channels to provide a level surface.

2.4.19. Gypsum Board Application:

2.4.19.1. Provide gypsum board in accordance with manufacturer's written installation instructions and finish to requirements of ASTM C840. Ensure moisture resistant gypsum board is installed on any wall/partition containing a plumbing fixture (i.e. water closets, sinks, tubs, etc.).

2.4.19.2. Provide metal trim casing bead at junctions with dissimilar materials. Provide reveals at junctions with dissimilar materials where indicated.

2.4.19.3. Provide curved uniform surfaces by wetting or dampening board or scoring back gypsum board and form to profiles indicated. Provide additional screws and framing members to maintain design curve. Apply joint compound and trowel smooth to provide continuous, smooth radius free from flat spots, facets and trowel marks. Allow gypsum boards to dry thoroughly before handling.

2.4.19.4. Provide finished work plumb, level and true, free from perceptible waves or ridges and square with adjoining work.

2.4.19.5. Cut and fit gypsum board to accommodate or fit around other parts of the Work. Provide work of this Section accurately and neatly.

2.4.19.6. Butt gypsum board sheets together in moderate contact. Do not force into place. Place tapered or wrapped edges next to 1 another.

2.4.19.7. Provide gypsum board perpendicular to framing and in lengths that will span ceilings and walls without creating end (butt) joints. If butt joints do occur stagger and locate them as far from centre of walls and ceilings as possible. Accurately fit exposed butt joints together and make edges smooth.

2.4.19.8. Support ends and edges on framing.

2.4.19.9. Fasten gypsum board to metal furring and metal studs with screws. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field. Ensure perimeter screws are not less than 9 mm (3/8") nor more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards.

2.4.19.10. Gypsum Board - Single Layer:

2.4.19.10.1. Ceilings: Apply gypsum board to metal furring with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Space screws at 200 mm (8") oc.

2.4.19.10.2. Partitions: Apply gypsum board to metal studs with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Locate vertical joints at least 300 mm (12") from jamb lines of openings. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field.

2.4.19.10.3. Ceiling and Partition Fasteners: Ensure perimeter screws are not less than 9 mm (3/8") nor more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards. Drive screws with power screw-gun and set with countersunk head slightly below surface of board.

2.4.19.10.4. Joints: Finish all joints unless specified otherwise.

2.4.19.11. Gypsum Board - Double Layer:

2.4.19.11.1. Lay out work to minimize end joints on face layer; to offset parallel joints between face and base layers by at least 250 mm (10") and to apply face layer at right angles to base layer.

2.4.19.11.2. Base Layer: Ensure base layer is same as face layer, or backing board, and applied at right angles to framing members. Secure base layer with screws spaced 300 mm (12") oc to each member. Ensure perimeter screws are not more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards. Ensure surface of erected base layer is straight, plumb or level and without protrusions before face layer is applied.

2.4.19.11.3. Face Layer: Apply face layer at right angles to base layer with screws.

2.4.19.11.4. Joints: Finish joints in face layers only, unless otherwise required to achieve fire resistant ratings indicated, as hereinafter specified. Ensure setting compound for fire rated construction conforms to requirements of authorities having jurisdiction to obtain fire rating shown on Drawings.

2.4.20. Interior Ceilings:

2.4.20.1. Comply with recommendations of CGC Drywall Steel-Framed Systems Folder 09250-SA 923.

2.4.20.2. Provide hanger wires spaced at maximum 1200 mm (4') oc along carrying channels and within 150 mm (6") of ends of carrying channel runs. Secure hanger wires to inserts in structure above.

2.4.20.3. Provide carrying channels maximum 1200 mm (4') oc and within 150 mm (6") of walls. Secure with hanger wire saddle-tied along channels. Provide 25 mm (1") clearance between runners and walls. Provide splicers behind joints. Level channels to a maximum tolerance of 3 mm (1/8") over 3600 mm (12').

2.4.20.4. Provide metal furring channels at right angles to carrying channels at maximum 600 mm (24") oc and within 150 mm (6") of walls. Provide 25 mm (1") clearance between furring ends and abutting walls. Attach furring channels to carrying channels with saddle-tie of double strand tie wire.

2.4.20.5. Provide additional cross-reinforcing at bulkheads and other openings.

2.4.20.6. Provide ceiling gypsum board, smooth and level.

2.4.21. Metal Trim and Accessories:

2.4.21.1. Provide metal trim casing beads at reveals; at ceiling-wall intersections and partition perimeters; and at intersection of dissimilar constructions such as gypsum board to concrete.

2.4.21.2. Provide metal trim casing beads where gypsum board abutts against a surface having no trim concealing junction.

2.4.21.3. Provide a 13 mm (1/2") separation gasket between metal trim casing beads and window frames or other cold surfaces or provide sponge tape between gypsum board partition or furring framing, where such framing abuts exterior door or window frame, sponge tape between floor and gypsum board partition track. Ensure tape is either full width or 1 strip 9 mm (3/8") wide on each side of framing member.

2.4.21.4. Provide casing bead and sponge tape where gypsum board abuts materials other than itself and acoustic tile ceilings including at exterior door and window frames, where juncture is not concealed with trim; or elsewhere where indicated on Drawings. Unless indicated otherwise, use tape 3 mm (1/8") narrower than casing bead to provide recess at exposed side. Compress tape by 25%.

2.4.21.5. Provide metal trim casing beads where indicated on the Drawings.

2.4.22. Control Joints:

2.4.22.1. Provide either manufactured control joint devices or field fabricated control joints from suitable materials to suit site conditions in accordance with manufacturer's instructions and/or ASTM C840.

2.4.22.2. Set in gypsum facing board, supporting control joints with studs or furring channels on both sides of joint. Ensure double studs with discontinuous tracks and double suspended ceiling furring channels have been installed prior to commencing board and bead application at control joints. Provide control joints as required to prevent cracks following locations:

2.4.22.2.1. where a partition, wall or ceiling traverses a construction joint (expansion, seismic or building control element) in base building structure.

2.4.22.2.2. where a wall or partition runs in an uninterrupted straight plane exceeding 9.1 m (30') (Note: A full height door frame may be considered a control joint).

2.4.22.2.3. interior ceiling with perimeter relief: installed so linear dimensions between control joints do not exceed 15 m (15') and total area between control joints does not exceed 230 m^2 (2,500 sq ft).

2.4.22.2.4. interior ceiling without perimeter relief: installed so linear dimensions between control joints do not exceed 9.1 m (30') and total area between control joints does not exceed 84 m^2 (900 sq ft).

2.4.22.2.5. exterior ceilings and soffits: installed so linear dimensions between control joints do not exceed 15 m (15') and total area between control joints does not exceed 230 m^2 (2,500 sq ft).

2.4.22.2.6. at stress points (ie corners of openings or changes in direction of surfaces).

2.4.22.3. Provide additional control joints at long and narrow surfaces.

2.4.22.4. Provide control joints full height floor to ceiling or door header to ceiling in partitions and furring runs.

2.4.22.5. Provide control joints from wall to wall in ceiling areas.

2.4.22.6. Provide continuous polyethylene dust barrier behind and across control joints.

2.4.22.7. Obtain Consultant's acceptance of exact locations of control joints.

2.4.23. Sound Control:

2.4.23.1. Where indicated on Drawings, provide sound rated partitions and ceiling in locations indicated to meet required minimum STC rating. Apply gypsum board on both sides of sound-proofed partitions. Follow manufacturer's details and recommendations.

2.4.23.2. Provide sound attenuation insulation to completely fill height of stud cavities. Tightly butt ends and sides of blankets within cavities. Cut blankets to fit small spaces. Carefully fit blankets behind electrical outlets, bracing, fixture attachments and mechanical and electrical services.

2.4.23.3. Mechanically fasten blankets to back of gypsum board as recommended by gypsum board manufacturer.

2.4.23.4. At sound attenuating suspended ceiling and enclosures having spring isolator hangers, terminate ceiling or enclosure at adjacent construction by providing continuous isolator strip and sealed joint.

2.4.24. Joint Treatment - Gypsum Board:

2.4.24.1. Verify board is firm against framing members and screw heads are properly depressed.

2.4.24.2. Mix joint compound or ready-to-use compounds according to manufacturer's directions. Use pure, unadulterated, clean water for mixing. Permit mixed material to stand 30 minutes before using. Do not mix more material than can be used within 1 hour. Do not use set or hardened compound. Clean tools and equipment after mixing each batch.

2.4.24.3. Tape and fill joints and corners in accordance with gypsum board manufacturer's printed instructions. Fill either manually, using hand tools of trade, or by a mechanical taping and filling machine of proven efficiency.

2.4.24.4. Remove plastic tape from control joints after finishing with joint compound.

2.4.24.5. After final coats of filler have dried at least 24 hours, sand surface lightly with No. 00 sandpaper to leave it smooth, ready for decoration.

2.4.24.6. Provide finished work smooth, seamless, plumb and true, flush and with square plumb neat corners.

2.4.24.7. Levels of Finish: Provide following levels of finish in accordance with ASTM C840:

Level 0: No taping, finishing or accessories required for temporary construction or areas where final decoration is not required.

Level 1: Use this level in plenum areas above ceilings, attics, areas where assembly would generally be concealed or in building service corridors and other areas.

Level 2: Use this level where water resistant gypsum backing board is used as substrate for tile; may be used in garages, warehouse storage, or other similar areas where surface appearance is not of primary concern.

Level 3: Use this level in appearance areas which are to receive heavy or medium texture spray or hand applied finishes before final painting or where heavy grade wall coverings are to be applied as final decoration.

Level 4: Use this level where flat paints, light textures or wall coverings are to be applied.

Level 5: Use this level to provide a uniform surface and minimize possibility of joint photographing and of fasteners showing through final decoration.

2.4.27.7.7. Exposed Moisture Resistant Gypsum Board Finish: Ensure joints and interior angles have

tape embedded in joint compound and 2 separate coats of joint compound applied over all flat joints and 1 separate coat of joint compound applied over interior angles. Cover fasteners heads and accessories with 3 separate coats of joint compound. Ensure surface is smooth and free of tool marks and ridges.

2.4.28.1. Where required, secure sound attenuation blanket insulation between studs as specified in Article on Sound Control Partitions.

2.5. SITE QUALITY CONTROL

2.5.1. Site Tests and Inspections:

2.5.1.1. Structural Inspection: Ensure a Professional Engineer specified herein inspects work of this Section during erection/installation and submits sealed and signed Field Review Report within 5 Days of site visit.

2.5.2. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

2.6. CLEANING

2.6.1. Clean off beads, casings, joint cement droppings and similar items and remove surplus materials and rubbish on completion and as directed.

2.7. PROTECTION

2.7.1. Provide protection of materials and work of this Section from damage by weather and other causes. Perform work in areas closed and protected from damage due to weather. Protect work of other trades from damage resulting from work of this Section. Make Good such damage immediately.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide tiling including but not limited to following:

1.2.1.1. grouting control joints in floor slab under tile.

1.2.1.2. levelling bed.

1.2.1.3. CIM for both floors and walls.

1.2.1.4. thin-set mortar bond coat.

1.2.1.5. floor tile, base and fittings.

1.2.1.6. wall tile.

1.2.1.7. grouting tile joints.

1.2.1.8. caulking tile control joints.

1.2.1.9. caulking penetrations through wall and floor tile.

1.2.2. Related Sections: Following description of work is included as reference only and shall not be presumed complete:

1.2.2.1. Provision of washroom accessories: Section 10 28 00, Washroom Accessories.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. CIM: Crack Isolation Membrane.

1.3.1.2. DCOF: Dynamic Coefficient of Friction.

1.3.1.3. EGP: Exterior Grade Plywood.

1.3.1.4. MSDS: Material Safety Data Sheets.

1.3.1.5. TTMAC: Terrazzo, Tile & Marble Association of Canada; www.ttmac.com.

1.3.1.6. VOC: Volatile Organic Compound.

1.3.2. Reference Standards:

1.3.2.1. ANSI A108.6-99(10) - Installation of Ceramic Tile with Chemical Resistant, Water

		Cleanable Tile-Setting and -Grouting Epoxy
1.3.2.2.	ANSI A118.3-13	- American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive
1.3.2.3.	ANSI A118.4-12	- American National Standard Specifications for Modified Dry- Set Cement Mortar
1.3.2.4.	ANSI A118.11-99(10)	- American National Standard Specifications for EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar
1.3.2.5.	ANSI A136.1-08(13)	- American National Standard Specifications for Organic Adhesives for Installation of Ceramic Tile
1.3.2.6.	ANSI A137.1-12	- Specification for Ceramic Tile
1.3.2.7.	ASTM C373-14a	- Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products, Ceramic Tiles, and Glass Tiles
1.3.2.8.	ASTM C627-10	- Standard Method of Evaluating Ceramic Floor Tile Systems using the Robinson-Type Floor Tester
1.3.2.9.	ASTM C648-04(14)	- Standard Specification for Standard Test Method for Breaking Strength of Ceramic Tile
1.3.2.10.	ASTM C650-04(14)	- Standard Test Method for Resistance of Ceramic Tile to Chemical Substances
1.3.2.11.	ASTM F1869-11	- Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
1.3.2.12.	ISO 10545-7:2010	- International Standard - Ceramic Tiles – Part 7: Determination of resistance to surface abrasion for glazed tiles
1.3.2.13.	ISO 13006:1998	- International Standard – Ceramic Tiles - Definitions, classification, characteristics and marking
1.3.2.14.	ISO 13007-1:2010	- International Standard - Ceramic tiles - Grouts and adhesives – Part 1: Terms, definitions and specifications for adhesives
1.3.2.15.	ISO 13007-3:2010	- International Standard - Ceramic tiles - Grouts and adhesives – Part 3: Terms, definitions and specifications for grouts

1.4. ADMINISTRATIVEREQUIREMENTS

1.4.1. Preinstallation Meetings: Arrange preinstallation meeting 1 week before commencing work with parties associated with trade as designated in the Contract Documents or

as requested by the Consultant. Presided over by the Contractor, include the Consultant who may attend, Subcontractor performing work of this trade, drywall trade, testing company's representative and consultants of applicable discipline. Review the Contract Documents for work included under this trade and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of work of this Section.

1.5. SUBMITTALS

1.5.1. Product Data:

1.5.1.1. Submit manufacturer's technical data sheets, MSDS and installation instructions for specified materials.

1.5.1.2. Where more than 1 manufacturer's Products are part of single tile assembly, arrange for each manufacturer to submit a written statement of compatibility with respect to other manufacturer's materials.

1.5.2. Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Section 01 30 00. In addition to minimum requirements indicate following:

1.5.2.1. details of construction.

1.5.2.2. movement joint layouts.

1.5.2.3. dimensions.

1.5.2.4. patterns.

1.5.3. Samples: Submit samples in accordance with Section 01 30 00. Submit individual sample panels of each colour of ceramic tile, set with adhesive, grouting and bonding method as specified, showing quality, colour and finish of material, grout and pattern of tiles. Ensure each panel is minimum 600 mm x 600 mm (24" x 24").

1.6. CLOSEOUT SUBMITTALS

1.6.1. Operational and Maintenance Data: Submit maintenance instructions in accordance with Section 01 70 00. Provide Owner with 3 copies of TTMAC's "2008 Hard Surface Maintenance Guide". Include specific warnings of any maintenance practice or materials which may damage or disfigure tile work.

1.7. MAINTENANCE MATERIAL SUBMITTALS

1.7.1. Extra Stock Materials:

1.7.1.1. Supply in addition to quantities required for work, extra materials and Products to be stored by Owner as follows:

1.7.1.1.1. Provide 5% extra stock of each type of tile and special units.

1.7.1.2. Deliver extra stock to the Owner as soon as permanent, locking storage facilities

are available. Place extra stock in designated storage area where directed.

1.8. QUALITY ASSURANCE

1.8.1. Qualifications:

1.8.1.1. Manufacturers: Provide Product of company specializing in manufacture of ceramic tile, porcelain tile, mosaics, pavers, trim units, thresholds, setting, grouting and installation Products with a minimum experience of 5 years. Provide test reports if requested to substantiate that Products supplied on this Project will be of consistent quality in appearance and physical properties.

1.8.1.2. Installers: Execute work of this Section using a company who is a member in good standing with TTMAC and has a minimum of 5 years' successful experience in application of Products, systems and assemblies specified. Perform tile work using skilled mechanics trained and experienced in work of this complexity. Install waterproofing system using an applicator approved by system manufacturer.

1.8.2. Mock-Ups:

1.8.2.1. Construct a minimum 10 m^2 (100 sq ft) mock-up complete with movement joint at Project location designated by the Consultant for acceptance. Ensure mock-up area is cleaned and properly prepared for tiling using specified setting and grouting materials in accordance with Specifications, Product instructions and discussions from preinstallation meeting. Ensure finish lighting scheme is replicated in area where mock-up is installed. During mock-up installation, ensure participants are present to observe substrate preparation, installation, grouting and cleaning procedures. Caution: When grouting with sanded grout, take special care and caution to prevent scratching, dulling or otherwise damaging tile natural surface appearance.

1.8.2.2. After mock-up has cured and been inspected, discuss pertinent remarks, observations and recommendations in the presence of participants.

1.8.2.3. Once accepted, mock-up including recorded remarks and recommendations remains part of finished work and used as a quality reference standard for balance of Project.

1.9. DELIVERY, STORAGE AND HANDLING

1.9.1. Delivery and Acceptance Requirements:

1.9.1.1. Coordinate deliveries to comply with construction progress schedule and arrange for above ground, under cover storage before materials are delivered to site.

1.9.1.2. Deliver tile in a manner to avoid chipping, breakage, staining and any other damage.

1.9.1.3. Deliver packaged materials in their original bags and containers clearly identified.

1.9.2. Storage and Handling Requirements:

1.9.2.1. Store and handle tile in a manner to avoid chipping, breakage, staining and any other damage.

1.9.2.2. Store packaged materials in their original bags and containers clearly identified. Keep containers sealed and labels intact unit time of use. Prevent damage or

contamination to materials by water, moisture, freezing, excessive heat, foreign matter or other causes. If materials have frozen, do not stir liquids or mix materials until they are completely thawed.

1.9.2.3. Provide secure heated and dry storage facilities on site. Maintain temperatures in storage area between 15 deg C (59 deg F) and 30 deg C (86 deg F).

1.10. SITE CONDITIONS

1.10.1. Ambient Conditions:

1.10.1.1. Do not perform work of this Section at temperature below 12 deg C (54 deg F) when using portland cement mortars or dry set mortars, latex portland mortars or bond coat. Maintain temperature between 12 deg C (54 deg F) and 32 deg C (90 deg F).

1.10.1.2. Observe manufacturer's recommended working temperatures for installation of adhesives and grouts.

1.10.1.3. Close doors and windows and turn off direct forced ventilation systems and apparatus. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion

1.10.1.4. Do not perform work of this Section when either substrate and/or ambient temperatures are below 10 deg C (50 deg F) or above 35 deg C (95 deg F). Maintain temperature in tiled areas within these temperature limits during installation and for 7 Days after completion of the Work unless otherwise indicated in the Product instructions and/or in ANSI A108 Installation Standard Procedure requirements.

1.11. WARRANTY

1.11.1. Manufacturer Warranty:

1.11.1.1. Warrant work of this Section for a period of 5 years against defects, excessive wear and loss of adhesion including replacement of defective tiling, materials, labour costs for demolition of defective work, accessories and installation systems at the Owner's convenience. Cracks arising from normal shrinkage and/or expansion of concrete are not considered as structural failure. Hairline cracks in grout joints which result from these causes are considered normal and warranty is not voided as a result of these minor defects.

1.11.1.2. Warrant waterproofing work of this Section against defects of workmanship and materials and against any actual leakage, for a period of 5 years. Leakage due to structural failure of concrete is excepted.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. Ardex Canada, Inc.; www.ardex.ca

2.1.1.2. Flextile Ltd.; www.flextile.net

2.1.1.3. Stonetile Ltd. http://www.stone-tile.com/

2.1.1.4. Laticrete International, Inc.; www.laticrete.com

2.1.1.5. Mapei Corporation; www.mapei.ca

2.1.1.6. Olympia Tile International Inc.; www.olympiatile.com

2.1.1.7. Schluter Systems (Canada) Inc.; www.schluter.com

2.1.1.8. Or equivalent.

2.1.2. Use proprietary Products in full compliance with manufacturer's recommendations. As far as possible obtain Product from single manufacturer ensuring compatibility with adjacent components while maintaining quality.

2.2. MATERIALS

2.2.1. Crack Isolation Membrane: Provide 1 of following:

2.2.1.1. Two part system made up of liquid rubber and reinforcing fabric to provide crack bridging capability over non-structural cracks, compatible with thin set mortar, supply "Ardex 8+9™ Rapid Waterproofing and Crack Isolation Compound" by Ardex Canada, Inc., "Laticrete Blue 92" by Laticrete International, Inc., "WP-980 Waterproof & Crack Isolation Membrane" by Flextile Ltd. or equivalent.

2.2.1.2. Single component highly flexible load bearing peal and stick sheet membrane and primer compatible with tile/stone setting mortars, supply "Mapeguard Primer and Mapeguard SM" by Mapei Corporation or "4000 Acrylic Latex Primer" and "1000 – Flexilastic Crack Isolation and Sound Reduction Membrane" by Flextile Ltd. or equivalent.

2.2.2. Setting Bed and Thin-Set Adhesive:

2.2.2.1. Latex Mortar Bond Coat: ISO 13007-1 performance level (C2ES2P2); ANSI A118.4; ANSI A118.11; for improved (C2) cement adhesive with (E) extended open time (S2) high- deformability (>5 mm) and improved (P2) for adherence to EGP characteristics, conforming to ANSI A118.4 and ANSI A118.11 requirements, supply "Ardex X 77™ Microtec® Premium Microfiber Reinforced Polymer Modified Thin Set Mortar" by Ardex Canada, Inc., "Laticrete 4237 with 211 Crete Filler Powder" by Laticrete International, Inc., "Kerabond/Keralastic" by Mapei Corporation or "#51 Floor and Wall Mix Thin-Set Mortar" and "#44 High Solids Latex Thin-Set Mortar Additive" by Flextile Ltd. or equivalent.

2.2.2.2. Latex Cement Mortars:

2.2.2.2.1. ISO 13007-1 (C2) performance level for improved cement adhesive with specific additional characteristics according to specified basis of design Project requirements; ANSI A118.4 and ANSI A118.11.

2.2.2.2.2. Full Contact Polymer-Modified Thin-Set Mortar Bond Coat for Horizontal

Applications: ISO 13007-1 (C2) performance level improved cement adhesive; ANSI A118.4 (and/or ANSI A118.11 for EGP mortar installation over Plywood), "Ardex FB 9 L Pourable ShearFlex® Mortar" by Ardex Canada, Inc. or "Ultracontact™ Ultra-Premium Normal Setting Polymer-Modified Mortar" by Mapei Corporation or equivalent..

2.2.2.2.3. Polymer-Modified Thin-Set Mortar Bond Coat: ISO 13007-1 performance level (C2ES1P1) for improved (C2) for cementitious adhesive with (E) extended open time, (S1) deformable (2.5 mm to 4.9 mm) and normal (P1) for adherence to EGP characteristics, conforming to ANSI A118.4 (and/or ANSI A118.11 for EGP mortar installation over Plywood); supply "Ardex X 5™ Thin Set Mortar" by Ardex Canada, Inc. or "Ultraflex™ LFT" by Mapei Corporation or equivalent..

2.2.3. Pre-Mixed Setting Bed and Dispersion Adhesive for Vertical Application of Tiles Less Than 300 mm x 300 mm (12" x 12"): Interior Use: ISO 13007-1 (D2T) performance level (D2) improved dispersion adhesive with (T) minimum slip characteristics (=0.5 mm) and ANSI A136.1 – Type 1 requirements. Supply Ardex D 14™ Type 1 Premixed Tile Adhesive" by Ardex Canada, Inc. or "Ultra/Mastic® ECO" by Mapei Corporation, Low VOC, solvent-free water-based (D2T) dispersion adhesive to ANSI A136.1- Type 1.

2.2.4. Tile:

2.2.4.1. Conforming to ANSI A137.1, ISO 13006. Provide bullnoses, copings, caps, cove base, nosings, corner pieces, and other special units as specified, indicated, and required. Colour as selected by the Consultant from manufacturer's full ranges. Provide tile with minimum following characteristics:

2.2.4.1.1. Water Absorption: ASTM C373 - < 3.0%.

2.2.4.1.2. Breaking Strength: ASTM C648 - > 250 lbs.

2.2.4.1.3. Abrasion Resistance: ISO 10545-7 - Class Four Heavy Traffic.

2.2.4.1.4. Scratch Hardness: MOH's - 7.

2.2.4.1.5. Chemical Resistance: ASTM C650 - Resistant.

2.2.4.1.6. DCOF: > 0.42.

2.2.4.2. Type CT-1: 100 mm x 400 mm (4" x 16") size glazed porcelain tiles "Gatineau Series" by Olympia Tile International Inc. in horizontal stack bond, colour "White Gloss".

2.2.4.3. Type CT-2: 50 mm x 300 mm (2" x 12") size glass tiles "Cristallo Series" by Olympia Tile International Inc. in vertical stack bond, colour "Super White Glossy".

2.2.5. Grout:

2.2.5.1. Epoxy Grout: Conforming to ANSI A118.3 and ISO 13007-3 (RG) performance level for reactive resin grouts; 100% solids, 2 component water washable epoxy grout, "Ardex WA Easy to Use Epoxy Grout and Adhesive" by Ardex Canada, Inc., "100 Flex-Epoxy 100% Solids Epoxy Grout" by Flextile Ltd., "SpectraLOCK® PRO Premium Grout" by Laticrete International, Inc. or "Kerapoxy" by Mapei Inc. or equivalent.

2.2.5.2. Do not add water or other materials to dilute mortar or grout additives unless recommended by admixture manufacturer.

2.2.6. Edge-Protection and Transition Profiles for Floors: Provide L-shaped profile with 3 mm (1/8") wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg and integrated grout joint spacer. Material and Finish: Selected later by Consultant. Height as required. Acceptable Product: "Schluter®-SCHIENE" by Schluter Systems (Canada) Inc. or equivalent.

2.2.7. Finishing and Edge-Protection Profiles for Walls and Countertops: Provide L-shaped profile with 3 mm (1/8") wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer. Material and Finish: Selected later by Consultant. Height as required. Acceptable Product: "Schluter®- JOLLY" by Schluter Systems (Canada) Inc. or equivalent.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Verify existing conditions and finishes are ready to receive specified tile work. Ensure backings are structurally sound, level, and plumb within required tolerances. Notify the Consultant in writing of unacceptable substrate conditions.

3.1.1.2. Ensure compatibility of adhesives, waterproofing, reinforcing and fillers with adjacent substrate and component coming in contact with these Products.

3.1.1.3. Ensure waterproofing and adhesive manufacturers; examine substrate conditions, verify conditions are suitable for installation prior to commencement and review application procedures. If requested submit written report.

3.1.2. Preinstallation Testing: Perform calcium chloride test in accordance with requirements of ASTM F1869 immediately prior to tiling for moisture on concrete floors around perimeter of areas, at columns and where moisture may be anticipated. Conduct 3 tests for first 93 m^2 (1000 sq ft) and 1 additional test for every 93 m^2 (1000 sq ft) of flooring. Ensure moisture emission from concrete floor does not exceed 1.36 kg/93 m^2 (3 lbs/1000 sq ft) in 24 hours unless otherwise stated in flooring Product instructions and limitations. Do not proceed with installation until moisture problem has been corrected. Provide results to Consultant prior to commencement of installation.

3.1.3. Evaluation and Assessment:

3.1.3.1. Prior to installation, set aside for further inspection and replacement on a tile for tile basis by tile or dimension stone Supplier, sub-standard tiles, fractured tiles or tiles with chipped corners, pinholes or voids that are unusable for cuts. Ensure this Subcontractor replaces at its own expense, sub-standard and/or pre-damaged tiles once installed.

3.1.3.2. Carefully select, set-aside and shade-mix tiles and/or dimension stones to a homogeneous blend throughout. During installation, provide supplementary lighting equipment if necessary to easily identify shade differences, which could normally be very slight and provide a standard even aesthetic blend effect. This is best achieved

by using a strong floodlight or spotlight fitted to a movable pole stand immediately over Work area.

3.1.3.3. Before setting, examine tile backs for possible dust or other contaminants. If necessary, use a slightly damp towel and wipe tile backs to remove any such dust or contaminant residue

3.1.3.4. Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Surface Preparation:

3.2.1.1. Ensure substrates are structurally sound, solid, stable, level, plumb and true to a tolerance in plane of 6 mm in 3 m (1/4" in 10' - 0") in accordance with ANSI A108 specification requirements. Ensure substrates are clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substance and debris which may prevent or reduce adhesion.

3.2.1.2. Mechanically sand, shot blast or scarify substrate as required to completely remove paint, loosely bonded topping, loose particles and contaminants. Surface etching or contaminant removal by chemical means is not permitted. When sanding or scarifying surfaces that may contain silica sand, wear an approved dust mask.

3.2.1.3. Apply latex cementitious leveling coat to correct substrate irregularity up to 8 mm (5/16") thickness. Above 8 mm (5/16") correct irregularity by mortar bed method or fast-setting mortar bed method.

3.2.1.4. Ensure substrates are dry.

3.2.1.5. In all cases, structural design of substrate shall not allow a deflection greater than L/360 when tested to 136 kg (300 lb) concentrated loads in accordance with ASTM C627 test method. Deflection and curvature should be uniform over length of the span.

3.2.1.6. Review setting out point with the Consultant for each location, verify patterns and edge condition.

3.2.1.7. Verify substrate expansion joints have been installed properly.

3.3. INSTALLATION

3.3.1. Provide tiling in accordance with TTMAC's "Specification Guide 09 30 00 Tile Installation Manual 2012-2014" unless specified otherwise in the Contract Documents.

3.3.2. Lay out tile so field or patterns are centered on wall and floor areas, or conform architectural details so no tile less than 1/2 size occurs. No cut tiles are allowed at finished ceiling level. Align joints in walls, bases and floors, where tile sizes accommodate. Provide uniform joint widths throughout.

3.3.3. Prior to installation ensure back of each tile is free of contaminants. Distribute production run variations evenly, maintaining continuity of appearance. When necessary, wipe the back face of stone or tile with a damp towel or cloth to remove dust and residual contaminants.

3.3.4. Arrange accessories in tile work so they are spaced evenly, centered with joints and set true with proper and adequate projection conforming to manufacturer's recommendations.

3.3.5. Make sure tile has adequate solid backing. Ensure corner and edges are fully supported by bonding material. Avoid slippage. Ensure tile installation has a minimum of 95% bond coverage by backbuttering or other accepted technique.

3.3.6. Fit tile units around corners, fitments, fixtures, drains and other built-in-objects to maintain uniform joint appearance. Cut, drill and set anchors, bolts for fastening fixtures and fittings in tile work. Make cut edges smooth, even and free from chipping. Do not split tile.

3.3.7. Grout to match colour of tile unless indicated otherwise. Fill joints.

3.3.8. Expansion and Control Joints:

3.3.8.1. Carry existing movement joints all the way through from substrate surface layer including tiling surface. Ensure control and expansion joints are kept free of setting materials.

3.3.8.2. Install control joints where tiling abuts restraining surfaces, around perimeter of work (and or panel) and at base of columns and curbs.

3.3.8.3. Install and space expansion and control joints in accordance with following:

3.3.8.3.1. interior: 4878 mm (16') to 6098 mm (20') in each direction with minimum joint width of 6 mm (1/4").

3.3.8.3.2. interior exposed to direct sunlight or moisture: 2439 mm (8') to 3659 mm (12') in each direction with minimum joint width of 6 mm (1/4").

3.3.8.3.3. exterior - normal: 2439 mm (8') to 3659 mm (12') in each direction with minimum joint width of 9 mm (3/8").

3.3.8.3.4. exterior - excessive: 2439 mm (8') to 3049 mm (10') in each direction with minimum joint width of 13 mm (1/2").

3.3.8.4. Caution: Under no circumstances cut in control joints after tiling has been installed. Install tiling up to movement joint and stop. If required, cut tiling and resume setting from opposite side of the joint. Before continuing, rake joint clean.

3.3.8.5. Install an accepted compressible bead and specified sealant to caulk expansion and control joints. Follow sealant manufacturer's installation instructions or install preformed proprietary brand control joint profiles as specified.

3.3.9. Ceramic Tile:

3.3.9.1. Provide setting bed in accordance with manufacturer's printed instructions and as specified herein.

3.3.9.2. Prepare gypsum board and cement board surfaces, by applying a scratch coat of setting bed material.

3.3.9.3. Provide setting compound in 1 layer with notched trowel to provide a continuous 3 mm

to 6 mm (1/8" to 1/4") bed, in accordance with tile manufacturer's written instructions.

3.3.9.4. Place tiles to achieve uniform:

3.3.9.4.1. shading.

3.3.9.4.2. colouring.

3.3.9.4.3. jointing.

3.3.9.5. Lay tiles in true lines, conforming to lines of building and arrange symmetrically in accordance with Drawing layouts. Review layout and slopes with the Consultant prior to setting of tiles.

3.3.9.6. When tiles are laid by thin-set method on exterior surfaces, in wet areas or laying large size tiles, achieve minimum of 95% coverage. Ensure bonding is notched in horizontal straight lines. Lay tile on freshly notched thin-set mortar, slide tile back and forth at 90 degree to notches. Ensure tiles are set while bond coat is wet and in tacky stage without skin. Provide back buttering by applying thin troweled coat to back side of tile using flat side of trowel immediately before laying to achieve minimum 95% adhesion for exterior work, or large tile area or wet areas.

3.3.9.7. Tile Joints: For commercial floors, pools, exterior cladding and decks, space tile with minimum 5 mm (3/16") width joints. For other interior floor and wall installations, space tile between 1.5 mm (1/16”) and 3 mm (1/8”) width joints when grouting with unsanded grout and minimum 3 mm (1/8”) width joints when grouting with sanded or epoxy grout. No butt joints are permitted.

3.3.9.8. Lay out work to produce a symmetrical pattern with minimum amount of cutting. Ensure cut tile at room perimeter is not less than 1/2 full size.

3.3.9.9. Provide slopes to floor drains using levelling bed material.

3.3.9.10. Set wall tile in a true vertical plane with edges of tiles flush with each other.

3.3.9.11. Set floor tile flat and level, with uniform joints throughout, properly aligned. Provide uniform slopes to floor drains.

3.3.9.12. Neatly and closely fit tiles around pipes, accessories and other items occurring in floor and walls. Provide necessary cutting without marring tile.

3.3.9.13. Provide ceramic tile bases to work of Architectural Woodwork and Modular Casework Sections as indicated.

3.3.9.14. Replace cracked, discoloured, chipped and damaged tile.

3.3.9.15. Align joints of floor, wall and base tiles.

3.3.10. Grouting:

3.3.10.1. Where tiling or stone tiling is installed with normal setting thin-set mortar, grout no sooner than 24 hours after installation.

3.3.10.2. Install epoxy grouts in accordance with Product instructions and ANSI A108.6.

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.4.2. Manufacturer Services: Have manufacturer's representative visit site at commencement of tile work to give proper direction and thereafter at regular interval to ensure proper workmanship.

3.5. CLEANING

3.5.1. Remove grout and mortar residue immediately while work progresses and before materials harden on tiling surface.

3.5.2. Clean tiling completely leaving no apparent cement laitance on the surface. Do not acid wash especially where pigmented grouts are specified.

3.5.3. Clean adjacent surfaces that have been soiled or otherwise marred, to completely remove evidence of materials causing same.

3.5.4. Upon completion, remove protective coverings and clean down finished work of this Section leaving it in a correct condition according to industry standards. Correct defective jointing and grouting and other non-conformities.

3.6. PROTECTION

3.6.1. Protect other parts of work from spatters, stains or damage.

3.6.2. Remove and replace with new materials, sections of work that have become stained, soiled, broken, chipped or otherwise damaged.

3.6.3. Protect finished work from weather, freezing and complete water immersion for periods of at least 72 hours to 14 Days after completion of the Work depending on setting and grouting materials used. Follow Product instructions for requirements.

3.6.4. Walls: Protect walls from impact, vibration and hammering on adjacent and opposite walls for periods of at least 24 hours to 7 Days after installation depending on setting and grouting materials used. Follow Product instructions for requirements.

3.6.5. Floors: Protect floors from foot traffic for at least 4 hours to 48 hours after installation depending on the setting and grouting materials used. In all cases prohibit heavy commercial and equipment traffic for at least 48 hours to 7 Days depending on setting and grouting materials used. Follow product instructions for requirements.

3.6.6. Since temperature and humidity conditions during and after installation affect final curing time of cement based and epoxy materials, allow for extended periods of cure and protection when ambient and/or substrate temperatures drop below 15 deg C (60 deg F) and/or when relative humidity is higher than 70%.

3.6.7. Protect finished work from damage by other trades and general abuse until Substantial Performance of the Work and acceptance.

3.7. ATTACHMENTS

3.7.1. ROOM FINISH SCHEDULE - See - Section 00 00 02:

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide :

1.2.1.1. Sheet Flooring to seminar room and storage areas

1.2.1.2. resilient accessories

1.2.1.3. reducing strips and thresholds at junction with adjacent architectural finishes

1.2.1.4. Sub Floor Filler

1.2.1.5. Resilient bases

1.2.1.6. metal edge strips.

1.2.1.7. Transitions strips

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Architectural Woodwork - 06 40 00

1.2.2.2. Joint Sealants - 07 92 00

1.2.2.3. Tiling - 09 03 00

1.2.2.4. Carpet - 09 68 16

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. MSDS: Material Safety Data Sheets.

1.3.1.2. PVC: Polyvinyl Chloride.

1.3.1.3. RH: Relative Humidity.

1.3.2. Reference Standards:

1.3.2.1. ASTM F710-11 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

1.3.2.2. ASTM F1861-08(12)e1 - Standard Specification for Resilient Wall Base

1.3.2.3. ASTM F1869-11 - Standard Test Method for Measuring

Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

1.3.2.4. ASTM F2170-11 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs in situ Probes

1.4. SUBMITTALS

1.4.1. Shop Drawings: Submit Shop Drawings in accordance with Section 01 30 00. If requested by the Consultant, submit Shop Drawings indicating layout of location of seams and the location and type of accessories and details affecting installation.

1.5. CLOSEOUT SUBMITTALS

1.5.1. Operational and Maintenance Data:

1.5.1.1. Submit maintenance instructions in accordance with Section 01 70 00.

1.5.1.2. Submit a Product data and maintenance schedule for use by the Owner for optimum retention of an acceptable level of appearance and wear throughout life of sheet flooring.

1.5.1.3. Arrange for maintenance training sessions for the Owner's staff.

1.5.1.4. Submit written recommendations for purchase of appropriate maintenance equipment with which to implement the maintenance program.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Deliver materials in original containers with manufacturer's seals and labels intact. Maintain temperature of storage area at 70 degrees F. (21 degrees C.) for 48 hours prior to installation.

1.7. MAINTENANCE MATERIAL SUBMITTALS

1.7.1. Extra Stock Materials: Supply following quantity of maintenance material in accordance with Section 01 70 00:

1.7.1.1. Quantity: 2% of colour, type and size of tile installed . Clearly mark containers.

1.7.1.2. Material shall be from same production run as the material installed.

1.7.1.3. Retain waste cuttings over 1 m^2 (10 sq ft) and hand over to the Owner. Package in suitable containers and label.

1.8. QUALITY ASSURANCE

1.8.1. Qualifications:

1.8.1.1. Installers: Provide work of this Section executed by competent installers with a minimum of 5 years' experience in application of Products, systems and assemblies specified and with approval and training of the Product manufacturer.

1.8.2. Mock-Ups:

1.8.2.1. In coordination with Consultant, Owner, Contractor, Subcontractor, flooring manufacturer and adhesive manufacturer, meet to select and block-off a floor area of approximately 9 m² (100 sq ft). Clean and properly prepare for building a mock-up of resilient sheet vinyl flooring using specified adhesive and floor finish materials in accordance with Specifications, Product instructions and discussions at the meeting. During mock-up area installation, ensure participants are present to observe substrate preparation, installation and cleaning procedures.

1.8.2.2. Ensure pertinent remarks, observations and recommendations are discussed in presence of participants and recorded in minutes of meeting. Contractor shall ensure adequate and complete distribution of minutes.

1.8.2.3. Mock-up floor area, once accepted, including recorded remarks and recommendations of meeting becomes a permanent part of Project and is the standard of workmanship against which balance of resilient sheet flooring work will be judged. Protect mock-up area from dirt, dust, damage and abuse until Substantial Performance of the Work.

1.9. SITE CONDITIONS

1.9.1. Ambient Conditions: Maintain minimum 70 degrees F. (21 degrees C.) air temperature at flooring installation area during installation and for 72 hours prior to and until floor area is occupied by Owner.

1.10. PROTECTION:

1.10.1. General Contractor's Responsibility: In each location immediately following installation, protect new floors, if work is to be done after flooring installed with heavy cotton or linen dust sheets or polyethylene and maintain in place until Architect gives instructions for the removal of temporary protection. Work shall be handed over to the Owner free of blemishes and in perfect condition.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Forbo inc. Forbo Flooring Canada 3983 Nashua Drive, Unit #1
Mississauga, Ontario L4V 1P3 www.forbo.com/flooring/en-ca/

2.1.1.2. Armstrong World Industries Canada Ltd.; www.armstrong.com

2.1.1.3. Flexco; www.flexcofloors.com

2.1.1.4. Flextile Ltd.; www.flextile.net

2.1.1.5. Johnsonite; www.johnsonite.com

2.1.1.6. Mannington Commercial; www.mannington.com

2.1.1.7. Mapei Canada Inc.; www.mapei.com

2.1.1.8. Roppe Corporation, USA; www.roppe.com

2.1.2. Substitution Limitations: Comparable Products from manufacturers listed herein will be accepted provided they meet requirements of this Specification.

2.2. MATERIALS

2.2.1. Provide Products free from blisters, cracks, chipped edges and corners, embedded foreign matter or other defects.

2.2.2. Recycled Content: Flooring material shall contain a minimum of 10% post-consumer content, or a minimum of 20% postindustrial content.

2.2.3. Flooring is to be FloorScore certified

2.2.4. Underlayment: Latex/cement/sand patching compound compatible with flooring and associated adhesives; “S-194 Patch & Underlayment" by Armstrong World Industries Canada Ltd., Ultra/Plan by Mapei Canada Inc., “Flextile Patch” by Flextile Ltd. or if acceptable to Product manufacturer Sureflo, hydraulic cement based self-levelling floor underlayment manufactured by Gemite Products Inc. or equivalent.

2.2.5. Homogeneous Sheet Flooring:

2.2.5.1. Sheet Vinyl flooring: Equal to 2.5 mm thick x 2000 mm width Polyflor Expona Flow PUR homogeneous floor covering. Wear layer to be 0.7mm. Flooring to be seamless with Integral cove base. Alternates must be equal and approved by architect prior to order and install. Colours to be:

9858 Light Grey Concrete (SHV1)
9855 Warm Concrete (SHV2)
9861 Copper Ornamental (SHV3)

2.2.5.2. Sheet Vinyl safety flooring: Equal to 2.5 mm thick x 2000 mm width Polyflor Polysafe Quattro safety floor covering. Flooring to be seamless with Integral cove base. Alternates must be equal and approved by architect prior to order and install. Colour to be Sea Spray 5763.

2.2.6. Integral Cove Base (ICB): Continuous, puncture resistant aluminum reinforcing bonded to back of base material prefabricated base 100mm high x 305mm heat welded to seamless resilient flooring; fabricated from same material and dye lots as resilient floor, as manufactured by Flash Cove Prefabricated Bases Inc. (FlashCove.com, 1-800-334-5147), complete with continuous stainless steel cap trim. Installed by qualified installers and as per manufacturer’s written installation instructions. Provide mock-up for approval by Architect.

2.2.7. Resilient Base (RB): 3 mm (1/8") thick x 100 mm (4") high in accordance with ASTM F1861, Type TS, Group 1, Style B, PVC-free vulcanized rubber, in coil lengths, colour selected from manufacturer's standard range. Provide Roppe – 193 Black Brown by Roppe Corporation, USA. or equivalent

2.2.8.

2.2.9. Reducing Strips (RS): Vinyl, thickness to suit adjacent flooring; Johnsonite, American Biltrite (Canada) Ltd., Flexco or Roppe Corporation, USA.; or equivalent

2.2.10. Primer and Adhesives: Environmentally friendly products as recommended by seamless floor manufacturer for specified material and which will produce good and

permanent waterproof bond between applicable substrate and flooring

2.2.11. High Moisture Tolerant Adhesive: “Flextech 720” by Flextile Ltd., “S-515 Floor Tile Adhesive” by Armstrong World Industries Canada Ltd. or “Paniseal™ VS” by Mapei Corporation. or equivalent

2.2.12. Colours: Selected by Consultant from manufacturer's standard colour selection.

2.2.13. Wax/Polish: As recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

3.1.1.1. Examine substrates for curing compounds, sealers, hardeners and other substances not compatible with adhesive.

3.1.1.2. Apply resilient flooring in respective areas during final stages of building completion when ceilings and permanent partitions are finished, paint prime coats are applied and substrate conditions are suitable

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Surface Preparation:

3.2.1.1. Prepare concrete floors to receive resilient sheet flooring in accordance with requirements of ASTM F710. Consult individual manufacturer for their specific recommendations and follow them as required.

3.2.1.2. Clean resilient flooring substrates free of loose and adhered material perfectly clean and in accordance with resilient flooring manufacturer's instructions.

3.2.2. Stripping:

3.2.2.1. Remove subfloor ridges and bumps to flush with adjacent subfloor.

3.2.2.2. Test existing substrate for soundness and remove unsound substrates.

3.2.3. Underlayment:

3.2.3.1. Fill depressions, dished areas, low spots, voids, gaps, cracks, joints, holes and other substrate defects with underlayment, flat, even and flush with adjacent substrate.

3.2.3.2. Floor fills, toppings and underlayment shall have minimum compressive strength of 24 MPa (3500 psi). Do not install underlayment, leveler, patching and skim coat over expansion joints

3.2.3.3. Provide underlayment to achieve a flat substrate to within the following tolerances:

- 3 mm (1/8") total maximum deviation +/- along a 3000 mm (10') straight edge

applied omni- directionally over entire floor area.

- Provide a flat, smooth 610 mm (24") wide underlayment strip at the junction of resilient flooring with other finish flooring materials for a flush transition at the meeting edge. Feather strip edges to conceal its perimeter

3.3. INSTALLATION

3.3.1. Install sheet flooring in accordance with manufacturer's written installation procedures and as specified herein. Mix and apply adhesives to manufacturer's written installation procedures.

3.3.2. Install flooring wall to wall before installation of floor set cabinets, casework, furniture, equipment and fixed partitions.

3.3.3. Apply adhesive uniformly using recommended trowel. Do no spread more adhesive than can be covered by flooring before initial set takes place.

3.3.4. Lay sheet flooring using heat seam and welding rod process. Prepare heat welded seams with special tool for this purpose and heat weld with vinyl welding rod in seams. Use method and sequence of work in conformance with approved Shop Drawings and in conformance with manufacturer's recommendations. Finish seams flush and free from voids, recesses and raised areas. Lay flooring (with seams parallel to building lines) to produce a minimum number of seams. Border widths minimum 1/3 width of full material. Lay resilient sheet vinyl flooring true, level and with even tight joints. Fit borders accurately as required.

3.3.5. Run sheets parallel to length or width of room as accepted. Double cut sheet joints and continuously seal.

3.3.6. As installation progresses, roll flooring with 45 kg (100 lb) roller or per flooring manufacturer's written recommendations to ensure full adhesion. Keep edges of sheet flooring at seams devoid of extra adhesive.

3.3.7. Where sheet flooring terminates at exterior doors with thresholds or transition trim, feather flooring as required to achieve maximum allowable distance of 13 mm (1/2") between flooring and top of threshold or transition trim. Extend sheet flooring a minimum of 13 mm (1/2") under threshold and apply sealant to perimeter of threshold.

3.3.8. Cut flooring neatly around fixed objects. Provide borders around permanent fixtures.

3.3.9. Install floor markings where indicated. Fit joints tightly.

3.3.10. Install flooring in pan type floor access covers with recommended adhesive suitable for this specific application. Maintain floor pattern.

3.3.11. Continue flooring over areas which will be under built-in furniture.

3.3.12. Continue flooring through areas to receive movable type partitions without interrupting floor pattern.

3.3.13. Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

3.3.14. Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.3.15. Resilient Base:

3.3.15.1. Provide resilient base to substrate surfaces in accordance with manufacturer's recommendations.

3.3.15.2. Apply adhesive evenly and continuously for full base adhesion and contact. Do not apply adhesive in a manner which promotes induced waviness in resilient base.

3.3.15.3. Provide base in longest lengths possible with top and bottom edges installed straight and true. Provide preformed inside and outside corners.

3.3.15.4. Provide resilient bases to walls, partitions, columns and items of Architectural Woodwork.

3.3.16. Resilient Base:

3.3.16.1. Provide resilient base to substrate surfaces in accordance with manufacturer's recommendations.

3.3.16.2. Apply adhesive evenly and continuously for full base adhesion and contact. Do not apply adhesive in a manner which promotes induced waviness in resilient base.

3.3.16.3. Provide base in longest lengths possible with top and bottom edges installed straight and true. Provide preformed inside and outside corners.

3.3.16.4. Provide resilient bases to walls, partitions, columns and items of Architectural Woodwork.

3.3.16.5. Scribe and fit to door frames and other obstructions.

3.3.16.6. Welding of Seams: welded to match flooring using products as recommended by sheet floor manufacturer for specified material.

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.5. CLEANING

3.5.1. Clean off excess adhesive as work progresses from floor, base and wall surfaces without damage. Upon completion, remove all markings and heel scuffs

3.5.2. Clean adjacent surfaces, which have been soiled or otherwise marred.

3.5.3. Protection of Finished Work

3.5.3.1. Prohibit traffic on floor for 48 hours after installation

3.5.3.2. Protect new floors from time of final set of adhesive, after initial sealing and waxing, until final waxing and final inspection.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Provide accessories as required for a complete installation including but not limited to-

1.2.1.1. carpet (roll form).

1.2.1.2. resilient accessories

1.2.1.3. metal edge strips.

1.2.1.4. Transitions strips

1.2.1.5. Resilient Base (RB): 3 mm (1/8") thick x 100 mm (4") high in accordance with ASTM F1861, Type TS, Group 1, Style B, PVC-free vulcanized rubber, in coil lengths, colour selected from manufacturer's standard range to match surrounding base. Provide Roppe – "618 Aubergine" by Roppe Corporation, USA. or equivalent

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. AATCC: American Association of Textile Chemists and Colorists; www.aatcc.org.

1.3.1.2. AFU: Accelerating Fading Units.

1.3.1.3. BCF: Bulk Continuous Filament.

1.3.1.4. MR: Modification Ratio.

1.3.1.5. ULC: Underwriters Laboratories of Canada; www.ulc.ca.

1.3.2. Reference Standards:

1.3.2.1. AATCC Test Method 16.3-2012 - Colorfastness to Light: Xenon-Arc

1.3.2.2. AATCC Test Method 134-2011 - Electrostatic Propensity of Carpets

1.3.2.3. ASTM D5848-10e1 - Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Coverings

1.3.2.4. ASTM F1861-08(12)e1 - Standard Specification for Resilient Wall Base

1.3.2.5. CAN/CGSB-4.129-93 - Carpet for Commercial Use

1.3.2.6. CAN/CGSB-4.162-M80 - Hospital Textiles – Flammability Performance

Requirements

1.3.2.7.	CAN/ULC-S101-07	-Standard Methods of Fire Endurance Tests of Building Construction and Materials
1.3.2.8.	CAN/ULC-S102.2-07	- Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies

1.4. SUBMITTALS

1.4.1. Shop Drawings: Submit Shop Drawings in accordance with Section 01 30 00. If requested by the Consultant, submit Shop Drawings indicating layout of carpet, location of seams and the location and type of accessories and details affecting carpet installation.

1.4.2. Samples: Submit samples in accordance with Section 01 30 00. Submit following samples in sizes indicated:

1.4.2.1. each carpet minimum 300 mm (12") square.

1.5. CLOSEOUT SUBMITTALS

1.5.1. Operational and Maintenance Data:

1.5.1.1. Submit maintenance instructions in accordance with Section 01 70 00.

1.5.1.2. Submit a Product data and maintenance schedule for use by the Owner for optimum retention of an acceptable level of appearance and wear throughout life of carpet.

1.5.1.3. Arrange for maintenance training sessions for the Owner's staff.

1.5.1.4. Submit written recommendations for purchase of appropriate maintenance equipment with which to implement the maintenance program.

1.6. MAINTENANCE MATERIAL SUBMITTALS

1.6.1. Extra Stock Materials: Supply following quantity of maintenance material in accordance with Section 01 70 00:

1.6.1.1. Quantity: 5% of the work.

1.6.1.2. Retain waste cuttings over 1 m^2 (10 sq ft) and hand over to the Owner. Package in suitable containers and label.

1.7. QUALITY ASSURANCE

1.7.1. Qualifications:

1.7.1.1. Installers: Provide work of this Section executed by competent installers with a minimum of 5 years' experience in application of Products, systems and assemblies specified and with approval and training of the Product manufacturer.

1.7.1.2. Pattern Match: Maximum amount of bowing and skewing of patterns in carpet is 38 mm (1-1/2") for 3.66 m (12') wide broadloom and 19 mm (3/4") for 1.83 m (6') wide carpet.

1.8. SITE CONDITIONS

1.8.1. Ambient Conditions: Do not install carpet until ambient room temperature is minimum 18 deg C (68 deg F) for at least 72 hours prior to commencing carpet installation and during carpet installation.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Conform to requirements of CAN/CGSB-4.162-M.

2.1.2. Carpet (CPT-1): Provide carpet uniform in colour and texture, supplied with an installation order for applicable dye baths, conforming to CAN/ULC-S101 and CAN/CGSB-4.129, having flame spread rating and smoke developed classification tested in accordance with CAN/ULC-S102.2 for floor surface covering and certified by ULC or WHI and having following minimum properties and characteristics:

2.1.2.1. Fibre: Colorstrand® SD Nylon

2.1.2.2. Permanent Static Control: Under 3.5 kilovolts in accordance with AATCC Test Method 134.

2.1.2.3. Carpet Construction: Woven.

2.1.2.4. Texture: patterned loop

2.1.2.5. Dye Method: solution dyed.

2.1.2.6. Face Weight: 949 g/m^2 (28 oz/sq yd) in accordance with ASTM D5848.

2.1.2.7. Carpet Width: 3.66m (12').

2.1.2.8. Carpet Backing: Non-woven synthetic fibre.

2.1.2.9. Colourfastness to Light: AATCC Test Method 16.3; minimum rating of 4 after 200 AFUs (AATCC Fading Units) using AATCC Gray Scale for colour change.

2.1.2.10. Acceptable Product: "Applied Science KC218" by Mohawk Group; https://www.mohawkgroup.com/duracolor Colour: "Industrial settings" #899". Or equivalent

2.1.3. Adhesive, Seam Sealer, Seam Tape: As recommended by each carpet manufacturer for their carpet.

2.1.4. Carpet Thresholds and Adapters: Provide minimum 38 mm (1-1/2") wide thresholds and adapters to suit carpet and adjacent flooring materials and thicknesses.

2.1.5. Carpet Edge Guards: Provide minimum 38 mm (1-1/2") wide edge guards to suit carpet and adjacent flooring materials and thicknesses.

2.1.6. Metal Edge Strips: Aluminum extruded, smooth, mill finish and polished with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Surface Preparation: Do not provide carpet until ceilings and gypsum board have been completed and painting and other finishing has been finished.

3.3. INSTALLATION

3.3.1. Provide carpet in accordance with respective manufacturer's printed installation instructions.

3.3.2. Provide carpet under furniture and fitments to perimeter of each room.

3.3.3. Lay carpet in any 1 area in 1 direction with no variation in running of the pile using minimum number of cross seams and maximum widths of carpet.

3.3.4. Provide carpet using glue down method of installation with seams welded or sealed in accordance with carpet manufacturer's directions. Provide carpet tight to walls and columns, flat to floor and base, and free from ripples and waves. Dress seams.

3.3.5. Provide a seam at the centre of door at doors and other openings where carpet is installed each side.

3.3.6. Locate carpet edge at centreline of door where carpet abutts dissimilar flooring at door openings.

3.3.7. Provide a continuous vinyl threshold along carpet edge where carpet abutts dissimilar flooring material and at other locations where carpet is exposed to traffic.

3.3.8. Do not use carpet roll ends at seams. Trim edges with cutting tool.

3.3.9. Power stretch and roll carpet to eliminate air pockets and provide positive continuous bond to substrate.

3.3.10. Trim carpet accurately to provide straight seams and a snug fit at perimeter, around columns and projections and at edges adjacent to dissimilar floor materials. Provide trimmed edge at juncture with resilient base.

3.3.11. Resilient Base:

3.3.11.1. Provide resilient base to substrate surfaces in accordance with manufacturer's recommendations.

3.3.11.2. Apply adhesive evenly and continuously for full base adhesion and contact. Do not apply adhesive in a manner which promotes induced waviness in resilient base.

3.3.11.3. Provide base in longest lengths possible with top and bottom edges installed straight and true. Provide preformed inside and outside corners.

3.3.11.4. Provide resilient bases to walls, partitions, columns and items of Architectural Woodwork.

3.3.12. Resilient Accessories:

3.3.12.1. Provide resilient accessories in accordance with manufacturer's instructions.

3.3.12.2. Provide carpet thresholds at door openings where carpet terminates and adjacent floorings begin. Locate thresholds directly beneath door (in a closed position).

3.3.12.3. Provide carpet adapters where carpet terminates at new resilient flooring [and edge guards where carpet terminates at existing flooring].

3.3.12.4. Provide carpet cove caps along top edge of carpet bases as indicated.

3.3.12.5. Provide carpet stair nosings at carpeted stairs.

3.3.13. Resilient Base:

3.3.13.1. Provide resilient base to substrate surfaces in accordance with manufacturer's recommendations.

3.3.13.2. Apply adhesive evenly and continuously for full base adhesion and contact. Do not apply adhesive in a manner which promotes induced waviness in resilient base.

3.3.13.3. Provide base in longest lengths possible with top and bottom edges installed straight and true. Provide preformed inside and outside corners.

3.3.13.4. Provide resilient bases to walls, partitions, columns and items of Architectural Woodwork.

3.3.13.5. Scribe and fit to door frames and other obstructions.

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.5. CLEANING

3.5.1. After installation is completed, remove any spots with suitable spot remover, remove cuttings, vacuum carpet thoroughly and leave clean tidy carpet installation.

3.5.2. Clean adjacent surfaces, which have been soiled or otherwise marred.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide painting including but not limited to following:

1.2.1.1. surface preparation of substrate: sanding, cleaning and preparation of surfaces for application of paint systems.

1.2.1.1.1. miscellaneous trims.

1.2.1.1.2. miscellaneous mechanical, electrical and plumbing penetrations to exterior.

1.2.1.1.3. shop primed materials of other Sections.

1.2.1.2. interior priming and painting of:

1.2.1.2.1. exposed building surfaces indicated on Room Finish Schedule.

1.2.1.2.2. metal handrails and brackets.

1.2.1.2.3. wood doors

1.2.1.2.4. exposed miscellaneous metal and steel items for work of other trades, including hangers, screws, etc., for mechanical and electrical works.

1.2.1.3.11. gypsum board walls, ceilings, bulkheads and other enclosures.

1.2.1.3.12. exposed vanity supports.

1.2.1.3.13. access panels and doors.

1.2.1.3.14. conduit, piping, ductwork, light panels, etc. exposed to view in areas listed in Room Finish Schedule.

1.2.1.3.16. finish painting of prime painted diffusers, registers and grilles in exposed locations

1.2.1.3.17. exposed surfaces of open ceilings including, structure, ducts, mechanical and electrical items, hangers, screws, miscellaneous metals, etc.

1.2.1.3.18. pipes, conduits, ducts and thermal insulation covers on ducts in rooms where walls and/or exposed ceilings are painted except mechanical/ electrical plant rooms.

1.2.1.4. exterior or interior sealing, staining and coating of exterior and/or interior exposed dressed lumber or other finish carpentry.

1.2.1.5. provision of materials, labour and equipment required to complete painting work and ancillary work described and implied herein to full intent of Drawings and Schedules.

1.2.1.6. waste management and disposal of paint, stain and wood preservatives and other related hazardous materials.

1.2.2. Section Excludes: Painting of:

1.2.2.1. chrome, stainless steel, vinyl, plastic laminate and aluminum surfaces throughout unless specified otherwise.

1.2.2.2. wallcoverings unless otherwise noted.

1.2.2.3. primed and finish painted equipment furnished by manufacturer unless required to be field painted in 1 common corporate colour as identified in Room Finish Schedule.

1.2.2.4. areas indicated as “unfinished” or “exposed” on Room Finish Schedule.

1.2.2.5. shop priming of metal fabrications and custom metal work.

1.2.2.6. shop priming and finishing of finish woodwork.

1.2.2.7. electrostatic painting (powder coating).

1.2.2.8. fluoropolymer thermal setting enamels or other organic coatings.

1.2.3. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.3.1. Surface preparation and shop priming of miscellaneous metal work: Section 05 50 00, Metal Fabrications.

1.2.3.2. Wood preservative or fire retardant treatment for rough carpentry: Section 06 10 00, Rough Carpentry.

1.2.3.3. Priming and/or back painting of wood: Section 06 10 00, Rough Carpentry.

1.2.3.4. Instructions on painting, stenciling and banding of mechanical and electrical work: Mechanical and Electrical.

1.2.3.5. Prime and finish coats applied by other Sections. Read carefully other Sections of Specifications to determine extent thereof.

1.3. REFERENCES

1.3.1. Abbreviations and Acronyms:

1.3.1.1. DFT: Dry Film Thickness.

1.3.1.2. MPI: The Master Painters Institute; www.mpi.net.

1.3.1.3. MSDS: Material Safety Data Sheets.

1.3.1.4. OPCA: Ontario Painting Contractors Association; www.ontpca.org.

1.3.1.5. PDCA: Painting and Decorating Contractors of America; www.pdca.org.

1.3.1.6. SSPC: The Society for Protective Coatings (formerly known as Steel Structures

Painting Council); www.sspc.org.

1.3.1.7. TSP: Tri-sodium Phosphate.

1.3.1.8. VOC: Volatile Organic Compound.

1.3.2. Definitions:

1.3.2.1. Exposed: Visible in completed work. In case of closets, cabinets and drawers, it includes their interiors. Exposed surfaces in underground parking areas are considered "Exterior" for purpose of this Specification. Exposed surfaces in aboveground parking areas are considered "Interior" for the purpose of this Specification.

1.3.2.2. Gloss or Sheen: Capacity of a finish on a surface to reflect light at specific angles as tested in accordance with ASTM D523.

1.3.2.3. Hazardous Waste: Construction and demolition materials that are regulated for disposal by local, city, county, province or federal authorities having jurisdiction.

1.3.2.4. Painting: In this Section refers to application of various types of paint, stain, varnishes and lacquers, etc

1.3.2.5. Surface Preparation: Cleaning or treating of surface to be painted to ensure best possible bond between surface and painting to be applied to surface; remove surface contaminants that will affect performance of painting, without limitations such as oil, grease, salts, dust, dirt, rust, rust scale, mill scale and old coatings where applicable; remove surface imperfections without limitation including but not limited to such as weld spatter, sharp edges, burrs, slivers, laminations, pits, porosities and crevices; prepare surfaces to provide anchor profile or surface profile which improve mechanical bonding of coating to prepared surface by increasing surface area.

1.3.3. Reference Standards:

1.3.3.1.	ASTM D523-14	- Standard Test Method for Specular Gloss
1.3.3.1.1.	CAN/CGSB-1.500-75	- Methods of Test of Toxic Trace Elements in Protective Coatings
1.3.3.2.	CAN/CGSB-85.100-93	- Painting
1.3.3.3.	MPI Painting Manual-07	- The Master Painters Institute – Architectural Painting Specification Manual by PDCA
1.3.3.4.	MPI Approved	– The Master Painters Institute – Approved Products List Products List (Includes United States, Canada and International Editions), January 2012
1.3.3.5.	SSPC-08	- Systems and Specifications - Steel Structures Painting Manual, Volume 1 & 2

1.4. ADMINISTRATIVEREQUIREMENTS

1.4.1. Preinstallation Meetings:

1.4.1.1. Review Drawings, details and Schedules, determine intent, extent, materials, types of surfaces, locations and be fully cognizant of intent of Work. Review Product literature, MSDS, related safety data, proper disposal requirements and inform those involved in work of this Section.

1.4.1.2. Review Specifications and Drawings for work of other Sections regarding provisions for prime and finish coats and ensure compatibility with each other and substrate prior to application.

1.4.1.3. Prior to start of work, arrange for Project site meeting of parties associated with Work of this Section. Presided over by the Contractor, include the Consultant, Subcontractor, manufacturer's representative, any sub-trades whose work will be painted (including mechanical and electrical trades) or whose work is adjacent to, or whose work or schedule may be affected by work of this Section.

1.4.1.4. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas requiring painting and other matters affecting construction, to permit compliance with intent of this Section.

1.4.2. Scheduling: Schedule painting operations to prevent disruption of and by other trades. Ensure painting is completed for locations requiring application of finishes by other trades in a timely fashion to prevent delays.

1.5. SUBMITTALS

1.5.1. Product Data:

1.5.1.1. Submit Product data conforming to Section 01 70 00 and submit a Schedule of Finishes listing manufacturer's Product name, colour, textures, MSDS and test reports requested for each paint system. Submit test reports for odourless, low or zero VOC Products when specified.

1.5.1.2. Painting Subcontractor to receive written Product data regarding chemical composition of coatings or treatments applied by others (pressure preservatives, admixtures and sealers, etc.) and their paintability.

1.5.1.3. Submit Product data for concrete and concrete block primers.

1.5.2. Samples: Submit samples 30 Days before materials are required in accordance with Section 01 30 00. Submit following samples in sizes indicated:

1.5.2.1. 3 copies of brushouts minimum 200 mm x 250 mm (8" x 10") of each finish including colour, sheen and texture required at least 30 Days prior to commencement of application. Identify each sample with job, finish, colour name, number, sheen and gloss values, substrate to be applied to, date and name of Subcontractor.

	Substrate	**Sample, Base Material**
1.5.2.1.1.	Gypsum Board	Face of typical unit
1.5.2.1.2.	Metal	Handrail

1.5.2.1.3. Woodwork Wood

1.5.2.2. sample panels of stain, varnish, lacquer or other wood finish on each species of wood specified, minimum 300 mm (12") square and of specified thickness.

1.5.3. Certificates:

1.5.3.1. Surface Preparation: Submit manufacturer's representative's written approval of surface preparation methods and any specific recommendations for alternative methods.

1.6. CLOSEOUT SUBMITTALS

1.6.1. Operation and Maintenance Data: Submit 3 copies of list of materials used, together with MSDS for each Product for incorporation into Maintenance Manuals. Include maintenance information such as cleaning and full pigment information for future touch up.

1.7. MAINTENANCE MATERIAL SUBMITTALS

1.7.1. Extra Stock Materials: Submit to the Owner 3% but not less than 1 - 4 l (1 gal) can of each different type and colour and degree of gloss of paint used (batch mix) on this Project for touch-ups. Ensure paint is boxed and in sealed, unopened cans in undamaged condition, with name of manufacturer, contents, type and colour clearly indicated on a label securely adhered to can. Give to the Consultant at time of final inspection.

1.8. QUALITY ASSURANCE

1.8.1. Qualifications:

1.8.1.1. Applicators:

1.8.1.1.1. Execute work of this Section by a firm which has adequate plant, equipment and skilled workers to perform work expeditiously and which is known to have been responsible, during immediate past 5 years, for installations similar to work contained herein. Ensure firm is fully conversant with applicable laws, bylaws, codes, fire, health and safety regulations and other regulations which govern.

1.8.1.1.2. Provide work of this Section executed by competent applicators with membership in good standing in OPCA and/or PDCA and have a minimum of 5 years' experience in application of Products, systems, coatings and assemblies specified and with approval and training of Product manufacturers.

1.8.1.1.3. Ensure materials, preparation and workmanship conforms to requirements of MPI Painting Manual.

1.8.2. Certifications: Ensure paint manufacturers and Products used are listed under Approved Product List section of MPI Painting Manual.

1.8.3. Mock-Ups:

1.8.3.1. Provide mock-up at location established by the Consultant, complete with required lighting. Mock- up to establish standard of workmanship, texture, gloss and coverage.

1.8.3.2. Apply minimum 300 mm x 300 mm (12" x 12"), or where required, full size mock-up

of each finish on each type of surface to be coated with correct material, number of coats, colour, texture and degree of gloss required.

1.8.3.3. Provide additional mock-ups of each finish in modified colour, texture or degree of gloss when required, to obtain approval.

1.8.3.4. Prepare surfaces and apply treatment to galvanized or other components as required for the Consultant's review. Do no painting until mock-ups have been accepted.

1.8.3.5. Approved mock-up to become standard of comparison for painting work on site. Correct and refinish work which does not compare with accepted finishes at no expense to the Owner.

1.8.3.6. Approved full size mock-up may become integral part of finished work if permitted by the Consultant.

1.9. DELIVERY, STORAGE AND HANDLING

1.9.1. Delivery and Acceptance Requirements:

1.9.1.1. Deliver to site, materials manufacturer's original, sealed and labeled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, degree of gloss, batch number, standard compliance, materials content as well as mixing, reducing and application requirements.

1.9.1.2. Manufacturer to certify, materials delivered to site conform to approved list and are of top quality Product range.

1.9.2. Storage and Handling Requirements:

1.9.2.1. Store on site, materials in manufacturer's sealed and labeled containers.

1.9.2.2. Comply with applicable local fire and building code requirements during storage and application.

1.9.2.3. Store containers of paint, thinner and other volatile materials in secure, well ventilated location, heated to minimum 10 deg C (50 deg F), where they will not be exposed to excessive heat or direct solar radiation. Keep tightly closed when not in actual use.

1.9.2.4. Presence of any unauthorized materials or containers on site is sufficient cause for rejection of paint materials on site at that time.

1.9.2.5. Protect floor and wall surfaces in storage areas from paint drips and splatters.

1.9.2.6. Be totally responsible for prevention of fire or explosion caused by improper storage of paints, solvents, rags and similar items. Store fire hazardous materials in location and in manner approved by local fire authority. Post "No Smoking" signs in areas of storage and mixing and strictly enforce this requirement. Provide and maintain CO_2 fire extinguishers of minimum 9 kg (20 lb) capacity. Repair damage to storage area or surrounding area at no cost to the Owner.

1.9.2.7. Where toxic, volatile, explosive, flammable materials are used, provide adequate fireproof storage lockers and take necessary precautions and post adequate warnings (eg "No Smoking" signs) as required.

1.10. SITE CONDITIONS

1.10.1. Ambient Conditions:

1.10.1.1. Paint and finish in clean, dust-free, properly ventilated and adequately lit areas minimum 323 Lx (30 ft candles) on surfaces to be painted or decorated.

1.10.1.2. Provide each paint materials in accordance with manufacturer's recommended

tolerances for:

1.10.1.3.1. Substrate Moisture Content: Perform tests with a properly calibrated electronic moisture meter to ensure compliance with manufacturer's recommendations. Without limitation, maximum moisture content as follows:

1.10.1.3.2. Gypsum Based Board and Plaster: Maximum 12 - 14%.

1.10.1.3.3. Wood: Maximum 15%.

1.10.1.4. Temperature and Ventilation:

1.10.1.4.1. Do not provide paint under ambient and surface temperatures less those required below in any instance for 24 hours before, during and 7 Days after installation.

1.10.1.4.2. Provide ventilation to remove odours, evaporating solvents and moisture. Maintain adequate ventilation at all times to control excessive humidity.

1.10.1.4.3. Ensure adequate temporary ventilation is provided under Section 01 50 00 for protection of workers from toxic fumes.

1.10.1.4.4. Interior Paint:

1.10.1.4.4.1. Water Based Paints: Maintain minimum interior surface and ambient air temperature of between 18 deg C (65 deg F) and 32 deg C (90 deg F) during application and drying of paint and maintain until building occupancy occurs.

1.10.1.4.4.2. Solvent Based Paints: Maintain minimum interior surface and ambient air temperature of between 7 deg C (45 deg F) and 35 deg C (95 deg F) during application and drying of paint and maintain until building occupancy occurs.

1.10.1.4.4.3. Do not undertake interior painting on surfaces where condensation has or will form due to presence of high humidity and lack of proper ventilation.

1.10.1.4.5. Exterior Paint:

1.10.1.4.5.1. Do not undertake exterior painting if air and surface temperature are expected to fall below 10 deg C (50 deg F) before coating has dried. Avoid painting during winds, weather conditions which may affect paint application or following rain. Wait until frost, dew or condensation has evaporated. Avoid painting surfaces exposed directly to hot summer sun.

1.10.1.4.5.2. Do not apply paint in snow, rain, fog or mist or when relative humidity exceeds 85% or dew point is less than 3 deg C (5 deg F) difference between air and surface temperature, or damp or wet surfaces unless surface to be painted is enclosed and conditioned to required temperatures and ambient conditions required for application.

1.10.1.4.5.3. Where required, suitable weatherproof covering and sufficient heating facilities are to be provided which will enable required ambient and surface temperatures.

1.11. WARRANTY

1.11.1. Manufacturer Warranty: Warrant work of this Section for a period of 2 years against defects and/or deficiencies in accordance with the General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of the Consultant and at no expense to the Owner. Defects include but are not limited to material and workmanship defects such as: improper cleaning and preparation of surfaces, entrapped dust and dirt, material shrinkage, cracking, splitting and defective workmanship including but are not limited to failure in bubbling, drips, runs, blistering, uneven coverage, misses, poor cutting in and delamination.

PART2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. Benjamin-Moore & Co., Limited; www.benjaminmoore.com

2.1.1.2. Dulux Paints by PPG Industries Inc.; www.dulux.ca

2.1.1.3. Para Paints; www.para.com

2.1.1.4. Pittsburgh Paints by PPG Architectural Finishes Inc. ; www.pittsburghpaints.com

2.1.1.5. The Sherwin-Williams Company; www.sherwin-williams.com

2.1.2. Substitution Limitations: Comparable Products from other manufacturers not listed herein will be accepted provided they meet requirements of MPI approved paints and this Specification after full review by Consultant.

2.1.3. Source Limitations: Provide primers for each coating system from same manufacturer as finish coats.

2.2. MATERIALS

2.2.1. Description:

2.2.1.1. Regulatory Requirements:

2.2.1.1.1. Conform to latest edition of Industrial Health and Safety Regulations issued by applicable authorities having jurisdiction in regard to site safety (ladders, scaffolding, ventilation, etc.).

2.2.1.1.2. Comply with more stringent of applicable laws, bylaws, codes, fire regulations, health and safety regulations of authorities having jurisdiction or requirements of this Specification. Ensure standards used for work of this Section are considered a minimum.

2.2.1.1.3. Where required, ensure paints and coatings meet flame spread and smoke developed ratings designated by local code requirements and/or authorities having jurisdiction.

2.2.1.1.4. Comply with toxic trace limitations stipulated by authorities having jurisdiction as tested in accordance with CAN/CGSB-1.500.

2.2.1.1.5. Conform to requirements of local authorities having jurisdiction in regard to storage, mixing, application and disposal of paint and related waste materials.

2.2.2. Performance/Design Criteria:

2.2.2.1. Provide best practices specified or recommended in CAN/CGSB-85.100 and MPI Painting Manual.

2.2.2.2. The Consultant reserves right to refuse any paint or finishing material if in its opinion it is not suitable or adequate for proposed use.

2.2.2.3. Provide paint and finishing materials of highest grade, top quality line of Products from manufacturer. Paint material containers not displaying manufacturer's Product identification will not be acceptable. Ensure paint is not diluted.

2.2.2.4. Use brand of paint chosen throughout work of this Section, except where specified otherwise. As far as practical, factory mix paint for immediate application without thinning or alteration at site.

2.2.2.5. Provide primers in recommended DFT/coat.

2.2.2.6. Only materials (primers, paints, coatings, varnishes, stains, lacquers, etc.) listed in MPI Approved Product List are acceptable for use on this Project.

2.2.2.7. Provide other materials such as linseed oil, shellac, thinners, solvents, etc. of highest quality Product of an MPI listed manufacturer and be compatible with paint materials being used as required.

2.2.2.8. Ensure materials used are lead and mercury free and have low VOC content where possible.

2.2.2.9. Provide paint materials with good flowing and brushing properties and dry or cure free of blemishes, sags, air entrapment, etc.

2.2.2.10. Paint materials which from time to time will become hot, such as convector covers and similar item, a paint type approved by paint manufacturer for particular condition.

2.2.3. Finishes:

2.2.3.1. Colours: Colours to be selected by the Consultant from manufacturer's full range of colours.

2.2.3.2. Gloss Values:

2.2.3.2.1.	Walls:	Satin (G4) or Semi-gloss (G5)
2.2.3.2.2.	Ceilings:	Flat or Matte (G1)
2.2.3.2.3.	Trim and Doors:	Semi-gloss (G5) or Gloss (G6)

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

3.1.1.1. Do work only when surfaces and conditions are satisfactory for production of quality work. Report to the Consultant in writing any surfaces which are found to be unsatisfactory.

3.1.1.2. Ensure temperature of surfaces to be finished are as required for application of finish. Refer to "Temperature and Ventilation" article specified herein. Ensure surfaces are dry and free of dirt, grease or other contaminants that may affect applied finish.

3.1.1.3. Verify moisture content of surfaces with electronic moisture meter. Do not proceed without written directions if moisture reading is higher than as required for application. Refer to "Ambient Conditions" article specified herein for substrate moisture content requirements.

3.1.1.4. If substrate is steel, do not apply coatings over moisture or when surface temperature is within 3 deg C (5 deg F) of dew point.

3.1.1.5. If substrate is wood, do not stain or paint if moisture reading is higher than 15%. Inspect work to assure surfaces are smooth, free from machine marks and nail heads have been countersunk.

3.1.1.6. If substrate is cast-in-place concrete, allow to cure for 60 to 90 Days before proceeding with priming.

3.1.1.7. If substrate is new plaster or masonry, allow to cure for 30 to 90 Days. Ensure moisture content is between 12% and 14% and test for alkalinity and neutralize (pH 6.5 - 7.5) before proceeding with priming.

3.1.1.8. If substrate is gypsum board, inspect to ensure joints are completely filled and sanded smooth. Inspect surfaces for "nail popping", screw heads not recessed and taped, breaks in surface or other imperfections and have repaired as required.

3.1.1.9. Verify each substrate is dry and not frozen and free from tool and sandpaper marks, dust, rust, insects, grease and other foreign matter liable to impair finished work.

3.1.2. Evaluation and Assessment:

3.1.2.1. Prior to commencement of work of this Section, thoroughly examine (and test as required) conditions and surfaces scheduled to be painted and report in writing to the Consultant any conditions or surfaces that will adversely affect work of this Section.

3.1.2.2. Do not commence painting work until adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the Consultant

3.1.2.3. Commencement of work does not imply acceptance of surfaces except as qualified herein. Surfaces such as concrete, masonry, structural steel and miscellaneous metal, wood, gypsum board and plaster, is not responsibility of this Subcontractor. Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

3.2.1.1. Provide scaffolding, staging, platforms and ladders, as required for execution of work. Erect scaffolding to avoid interference with work of other trades. Comply with Occupational Health and Safety Act.

3.2.1.2. During work of this Section, provide drop cloths, plastic, plywood or metal sheets to protect floors in areas assigned for storage and mixing of paints. Cover finished floors, walls, ceilings and other work in vicinity and protect from paint and damage.

3.2.1.3. Protect work of other trades against paint splattering and Make Good at own expense any such damage.

3.2.1.4. Protect exterior surfaces and areas, including landscaping, walks, drives, adjacent building surfaces (including glass, aluminum surfaces, etc.) and equipment and any door and frame labels and signage from painting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and Make Good any damage caused by failure to provide such protection.

3.2.1.5. Remove and securely store miscellaneous and finish hardware and surface fittings, electrical switch and outlet covers, receptacle plates, louvres, fittings and fastenings, to protect from paint splatter. Mask items not removable. Use sufficient drop cloths and protective coverings for full protection of floors, furnishings, mechanical, electrical and special equipment, other components of building which do not require painting or to be removed, from paint spotting and other soiling. Carefully clean and re-install items when paint is dry. Clean any components that are paint spotted or soiled. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes).

3.2.1.6. Prohibit traffic, where possible, from areas where painting is being carried out and until paint is cured. Post “wet paint” or other warning signage during and on completion of work. Provide also warning signs at points of entry to areas where painting is applied and drying.

3.2.2. Surface Preparation:

3.2.2.1. Prepare defective surfaces to obtain a satisfactory substrate and in accordance with paint manufacturer's instructions.

3.2.2.2. Ensure exterior work is not performed during or immediately following rain, frost or dew.

3.2.2.3. Prior to painting, sweep areas dust-free.

3.2.2.4. Clean soiled surfaces to be painted.

3.2.2.5. Remove efflorescence, chalk, dust, dirt, oil, grease, rust, form oil, release agents, loose mill scale and other extraneous matter from surfaces (except rust occurring on items specified to be primed under other Sections be removed and work re-primed under those Sections). Vacuum (fibre acoustic tile and) insulation covering surfaces. Vacuum clean floors before painting; wipe clean adjacent surfaces and surfaces to be painted before work is commenced to prevent dust and debris damage to wet paint.

3.2.2.6. Remove mildew by scrubbing affected area with solution of 150 g (5.3 oz) TSP and 125 g (4.4 oz) bleach in 3.5 l (0.92 gal) water. Rinse well with clean water and allow to dry. If condition is serious, source out finishes with extra mildew resistance.

3.2.2.7. Be responsible for surface preparation to suit surface condition and conform to level of cleaning based on SSPC, recommended metal cleaning procedures most commonly used to suit site conditions.

3.2.2.8. Metals:

3.2.2.8.1. Ensure application of paint and coatings occurs within appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications.

3.2.2.8.2. Ferrous Metal: Clean to SSPC-SP 1/2/3, to suit site conditions. Remove loose rust and prime bare metal with rust inhibitive steel primer. Touch-up damaged shop applied primer using compatible Product. Provide full coat primer only if damage is extensive. Treat weld areas with phosphoric acid (5% solution).

3.2.2.8.3. Structural Steel/Miscellaneous Steel (previously painted and exposed by alterations work): Remove oil, grease, dirt, rust scale, loose mill scale, loose paint or coating by brush-off blast cleaning to SSPC-SP 7.

3.2.2.9. Woodwork:

3.2.2.9.1. Verify and determine wood species, grain direction and structure, properties of finish, application method and exposure to elements. Check moisture content to avoid movement of wood caused by expansion and contraction due to changes in moisture content. Verify grain cut as it may interfere with adhesion of paint.

3.2.2.9.2. Apply wood finishing Product in following order and as needed for specific appearance and application specified herein. Sanding sealer to control penetration of subsequent coats to create more uniform finish. Stain to colour wood and highlight grain for final finish. Filler to fill pores of wood and control penetration of subsequent coats. Apply filler across grain forcing it into pores followed with rubbing and sanding when dried. For staining requirements mix stain with filler before applying for uniform finish. Finish coats to provide protection to wood.

3.2.2.9.3. Wood work for Opaque Coating: Seal knots and sapwood in surfaces to receive paint with alcohol-based primer-sealer. Seal door edges. Sand smooth rough surfaces of woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper. Sand in direction of grain. Clean surfaces free of dust before applying first coat using brush, compressed air or tack rags. Fill nail holes, splits and scratches with non-shrinking filler after first coat is dry.

3.2.2.9.4. Prepare plywood surface by removing dirt and debris. Fill screw and nail holes or minor imperfections with recommended filler and sand properly to receive finish coating. Ensure plywood requiring stained or painted finish is primed with top quality alkyd primer. Use only penetrating quality stain over plywood.

3.2.2.9.5. Woodwork for Clear Finish or Stain: Sand smooth woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper and clean surfaces free of dust using brush, compressed air or tack rags before applying first coat. Abrade surfaces with stiff brush to remove loose fibres and splinters. Fill nail holes, splits and scratches with non- shrinking filler tinted to match local grain condition after first coat is dry. Sand lightly between coats with No. 220 grit sandpaper and remove dust.

3.2.2.9.6. Remove salt deposits that may appear on wood surfaces treated with fire retarder.

3.2.2.9.7. Obtain inspection of glue laminated beams by assigned painting inspector to ensure shop sealer has been applied. Where non-specified shop sealer has been applied to beams or columns, remove and refinish in accordance with manufacturer's

written instructions.

3.2.2.9.8. Wood Doors: Remove doors before painting to paint bottom and top edges and re-hang once dry. Paint or finish top and bottom edges of doors to be painted or stained. Touch-up or refinish tops and edges after fitting.

3.2.2.10. Previously Finished Surfaces: Clean existing interior and exterior surfaces to be repainted or varnished to provide bond. Remove rust, scale, oil, grease, mildew, chemicals and other foreign matter. Remove loose paint and fill flush with suitable patching material. Clean off bubbled, cracked, peeling or otherwise defective paint by stripping with suitable environmental strippers or by burning. Do not burn off paints suspected of having lead content. Treat residue from stripping as Hazardous Waste. Flatten gloss paint and varnish with sandpaper and wipe off dust. If previous coatings have failed so as to affect proper performance or appearance of coatings to be applied, remove previous coatings completely and prepare substrates properly and refinish as specified for new work. Leave entire surface suitable to receive designated finishes and in accordance with finish manufacturer's instructions.

3.2.2.11. Gypsum Board:

3.2.2.11.1. Examine and ensure gypsum board surfaces are without defects or deficiencies and suit able to receive painting applications. Commencement implies acceptance of gypsum board work. Examine surfaces after for imperfections showing through and fill small nicks or holes with patching compound and sand smooth. Examine surfaces after priming for imperfections showing through.

3.2.2.11.2. Clean surfaces dry, free of dust, dirt, powdery residue, grease, oil, wax or any other contaminants. Sand and dust as necessary prior to painting and between coats to provide an anchor for next coat and to remove defects visible from a distance up to 1 m (39”).

3.3. APPLICATION

3.3.1. Safety Precautions: When handling solvent coating materials, wear approved vapour/particulate respirator as protection from vapours. Dust respirators do not provide protection from vapours.

3.3.2. Material Compatibility: Provide primers and finish coat materials compatible with each other and substrate including fillers.

3.3.3. Mixing and Tinting:

3.3.3.1. Unless otherwise specified herein or pre-approved, paint to be ready and factory tinted. Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment and colour and gloss uniformity.

3.3.3.2. Mix and prepare paint materials including paste, powder or catalyzed paint mixes in accordance with manufacturer’s directions for particular material and coat to be applied to produce a mixture of uniform density. If reducing is required, do so in accordance with recommendations of manufacturer for particular material and coat.

3.3.3.3. Where thinner is used, addition is not to exceed manufacturer’s recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

3.3.3.4. Mix primer-sealer with a certain amount of colour coat in proportions recommended

by manufacturer of material actually used. Tint undercoats and each finish coat with correct type colours, for identification of each succeeding coat.

3.3.3.5. Thoroughly mix materials before application. Apply materials evenly, under adequate illumination, free from sags, runs and other defects. Do cutting-in neatly.

3.3.4. Obtain colour chart giving colour schemes and gloss value for various areas from Consultant. Ensure colour chart gives final selection of colours and surface textures of finishes and whether finishes are transparent (natural) or opaque (paint).

3.3.5. Provide finish uniform in sheen, colour and texture, free from streaks, shiners and brush or roller marks or other defects.

3.3.6. Apply materials in accordance with manufacturer's directions and specifications paying particular attention to appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications. Do not use adulterants. Do any reduction of coating's viscosity in accordance with manufacturer's directions.

3.3.7. Use up paints within period of shelf life recommended by paint manufacturer.

3.3.8. Ensure successive coatings are harmonious chemical compositions and materials of same manufacturer.

3.3.9. Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1 m (39").

3.3.10. Ensure each coat is dry and hard before a following coat is applied.

3.3.11. Continue through paint finish behind wall-mounted items (e.g. chalk and tack boards).

3.3.12. Finish listed surfaces indicated on Room Finish Schedule(s) and/or noted on Drawing(s) and as specified. Refer to Room Finish Schedule for type, location and extent of finishes required and include touch-ups and field painting necessary to complete work shown, scheduled or specified.

3.3.13. Finishes and number of coats specified in Room Finish Schedule are intended as minimum requirements guide only. Refer to manufacturer's recommendations for exact instructions for thickness of coating to obtain optimum coverage and appearance. Some materials and colours may require additional coats and deeper colours may require use of manufacturers' special tinted primers. Unless otherwise specified, provide Premium Grade finish as defined by MPI as minimum finish.

3.3.14. Paint entire plane of areas exhibiting incomplete or unsatisfactory coverage and of areas which have been cut and patched. Patching is not acceptable. Vary each coat slightly in successively darker tones to permit supervision identity.

3.3.15. Do not paint baked paint surface, chrome plated, stainless steel, aluminum or other surfaces finished with final finish in factory. Finish paint primed surfaces.

3.3.16. Advise Consultant when each applied paint coat can be inspected. Do not recoat without inspection. Tint each coat slightly to differentiate between applied coats.

3.3.17. Apply additional paint coats, beyond number of coats specified for any surface, to completely cover and hide substrate and to produce a solid, uniform appearance.

3.3.18. Apply primer coat soon after surface preparation is completed to prevent contamination of substrate.

3.3.19. Primer/Sealers: Apply primer-sealer coats by brush or roller. Permit to dry in accordance with manufacturer's recommendations before applying succeeding coats. Touch up suction spots and sand between coats with No. 120 sandpaper.

3.3.20. Metals: Apply primer coat to unprimed ferrous metal surfaces. Where sandblast preparation is specified, apply specified primer immediately after blast cleaning.

3.3.21. Woodwork:

3.3.21.1. Fill open grain woods with filler tinted to match wood and work well into grain. Wipe excess from surface before filler sets.

3.3.21.2. Sand smooth paint and varnish undercoats prior to recoating.

3.3.21.3. Prime woodwork designated for painting as soon as possible after delivery to site and before installation. Prime cut surfaces, whether exposed or not, i.e. 6 edges of wood doors, before installation. Prime cut surfaces of woodwork to receive transparent finish with 1 coat of transparent finish reduced 25% or as directed by manufacturer.

3.3.21.4. Apply final coats on smooth surfaces by roller or brush. Hand brush wood trim surfaces.

3.3.22. Allow each coat of paint to cure and become dry and hard before application of succeeding coats (unless manufacturer's directions require otherwise).

3.3.23. Before finishing paint coats are applied, inspect and touch-up shop coats of primers previously applied by other trades or fabricators.

3.3.24. Provide paint coating thicknesses indicated, measured as minimum DFT.

3.3.25. Apply a minimum of 4 coats of paint where deep or bright colours are used to achieve satisfactory results.

3.3.26. Ledges: Finish projecting ledges, both above and below sight lines, as specified for adjacent surfaces.

3.3.27. Interior Columns: Finish interior columns same as walls of room unless otherwise indicated.

3.3.28. Existing Spaces:

3.3.28.1. Refinish existing surfaces of rooms or areas which have been damaged, altered or otherwise affected by work. Also finish "new" work occurring thereon unless otherwise specified. Use same procedure as for new work but primer (or filler, stain and sealer in case of varnish finish) may be omitted. Prepare existing surfaces as specified herein. Ensure finish matches previous finish.

3.3.28.2. Paint or repaint rooms or areas where noted on Room Finish Schedule and/or as indicated on Drawings.

3.3.28.3. Repaint surfaces entirely between changes of plane.

3.3.28.4. Use finish coat of respective new surface paint system for minor repair of existing finishes. Use system primer where existing finishes are damaged down to bare surface.

3.3.28.5. Extend painting to a suitable boundary to avoid a "patched" effect. Sand, wire-brush, or scrape such existing finished surfaces to remove loose paint and to reduce gloss. Also clean existing films of dirt, grease or wax. If metallic surfaces are rusted, remove loose scale to provide a firm surface. Patch and sand cracks and other imperfections.

3.3.28.6. Provide paint to interior existing spaces affected by alterations in accordance with following:

3.4.1.1. Paint walls to nearest inside and outside corners for full wall height.

3.4.1.2. Paint columns floor to ceiling.

3.4.1.3. Paint full ceilings to nearest wall or bulkhead.

3.4.1.4. Unless indicated otherwise match existing colour.

3.4.1.5. Where Room Finish Schedule indicates existing and/or new wall finishes to be painted, existing surfaces such as, existing door and frames, mechanical supply and return air grilles (both on walls and ceilings), access doors and electrical panels which have been previously painted to be painted for a complete finish room. If Room Finish Schedule indicates "-" it denotes entire room need not be painted, paint only patched area.

3.3.28.7. Example Locations:
3.3.28.7.1. pressed steel frames.
3.3.28.7.2. hollow metal doors.
3.3.28.7.3. access doors and frames.
3.3.28.7.4. hose cabinets.
3.3.28.7.5. miscellaneous exposed interior metal work.

3.5. SITE QUALITY CONTROL

3.5.1. Site Tests and Inspections:

3.5.1.1. Provide and coordinate site inspection service by manufacturer's representative in advance of work commencing and during progress of work to ensure correct use and application of each specified material. Manufacturer's representative to review and submit approval of surface preparation methods in Specifications or obtain specific recommendations for alternative methods. Report such conditions to the Consultant.

3.5.1.2. As work progresses and upon completion of work, submit written reports and manufacturers' confirmation that materials and application methods conform to manufacturers' requirements.

3.5.1.3. Inspect surfaces, preparation and paint applications.

3.5.2. Non-Conforming Work:

3.5.2.1. Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction to the Consultant at no cost to the Owner. Touch up small affected areas, repaint large affected areas or areas without sufficient DFT of paint. Remove runs, sags of damaged paint by scraper or by sanding prior to application of paint.

3.5.2.2. Following are considered non-conforming qualities:

3.5.2.2.1. Lack of Uniformity:

3.5.2.2.1.1. brush/roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas and foreign materials in paint coatings.

3.5.2.2.1.2. evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.

3.4.2.2.2. damage due to touching before paint is sufficiently dry or any other contributory cause.

3.4.2.2.3. damage due to application on moist surfaces or caused by inadequate protection from weather.

3.4.2.2.4. damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).

3.4.2.2.5. Aesthetic Problems: If following are evident under natural lighting source for exterior surfaces and final lighting source (including daylight) for interior surfaces:

3.4.2.2.5.1. visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).

3.4.2.2.5.2. visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).

3.4.2.2.5.3. visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.

3.4.2.2.5.4. when final coat on any surface exhibits a lack of uniformity of colour, sheen, texture and hiding across full surface area.

3.4.3. Manufacturer Services: Arrange for manufacturer’s representative to visit site at intervals during surface preparation and paint coating application to ensure proper specified surface preparation is being performed, specified Product are being used, appropriate number of coats are being applied and specified finishing procedures are being carried out.

3.5. CLEANING

3.5.1. Keep waste rags in covered metal drums containing water and remove from building at end of each Day. Remove other combustible rubbish materials and empty paint cans each Day from site and safely dispose of same in accordance with requirements of authorities having jurisdiction.

3.5.2. Clean equipment and dispose of wash water/solvents as well as other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction.

3.5.3. Clean containers used for storage, mixing and application of materials free of foreign materials and residue.

3.5.4. Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.

3.5.5. Clean adjacent surfaces which have been painted, soiled or otherwise marred. Remove

spilled, splashed, splattered or sprayed paint as work progresses using means and materials that are not detrimental to affected surfaces.

3.5.6. Remove masking and other protection provided under this Section.

3.5.7. Remove temporary protective wrappings provided by others for protection of work after completion of painting operations unless instructed otherwise.

3.5.8. Painting work will not be considered complete until spatters, drippings, smears and overspray have been cleaned and removed to satisfaction of the Consultant.

3.5.9. Make Good any damage to structure building surfaces or furnishings resulting from painting operations at no cost to the Owner.

3.5.10. Waste Management:

3.5.10.1. Disposal of Paint Waste:

3.5.10.2. Be responsible for removal and disposal of material and waste generated by this Section.

3.5.10.1.3. Paint, stain and wood preservative finishes and related materials (thinners solvents, etc.) are hazardous Products and are subject to regulations for disposal. Obtain information on these controls from applicable authorities having jurisdiction.

3.5.10.1.4. Separate and recycle waste materials. Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility. Treat materials that cannot be reused as hazardous waste and dispose of in an appropriate manner.

3.5.10.1.5. Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

3.5.10.1.6. To reduce amount of contaminants entering waterways, sanitary/storm drain systems or into ground adhere to following procedures:

3.5.10.1.6.1. Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case clean equipment using free draining water.

3.5.10.1.6.2. Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

3.5.10.1.6.3. Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

3.5.10.1.6.4. Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.

3.5.10.1.6.5. Dry empty paint cans prior to disposal or recycling (where available).

3.5.10.1.6.6. Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

3.5.10.2. Set aside and protect surplus and uncontaminated finish materials not required by the Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

3.6. ATTACHMENTS

3.6.1. ROOM FINISH SCHEDULE - See - Section 00 00 02:

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: Provide phenolic toilet partitions including but not limited to following:

1.2.1.1. phenolic toilet partitions and urinal screens.

1.2.1.2. barrier free type of hardware.

1.2.1.3. combined hook and bumper

1.2.1.4. anchors, brackets and fastenings.

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Provision of washroom accessories: Section 10 28 00, Washroom Accessories.

1.3. REFERENCES

1.3.1. Reference Standards:

1.3.1.1.	ASTM B221M-13	- Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
1.3.1.2.	ASTM D2197-13	- Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion
1.3.1.3.	ASTM D2794-93(10)	- Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
1.3.1.4.	ASTM D6578/D6578M-13	- Standard Practice for Determination of Graffiti Resistance
1.3.1.5.	ASTM E84-15	- Standard Test Method for Surface Burning Characteristics for Building Materials
1.3.1.6.	CSA B651-12	- Accessible Design for the Built Environment

1.4. SUBMITTALS

1.4.1. Product Data: Submit manufacturer's literature, data sheets for each type of material provided under this Section. Ensure data sheets provide required information. Submit 3 copies of detailed instructions for maintaining, preserving and keeping materials in clean and safe conditions and give adequate warning of maintenance practices or

materials detrimental to specified materials. Submit manufacturer's installation instructions.

1.4.2. Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Section 01 30 00.

1.4.3. Samples: Submit samples in accordance with Section 01 30 00. Submit following samples in sizes indicated:

1.4.3.1. one coat hook, top and bottom hinge, slide latch, stainless steel shoe, panel fitting, stirrup bracket and other hardware items and fasteners.

1.4.3.2. corner section, 200 mm x 200 mm (8" x 8") showing corner, edge and core construction.

1.5. CLOSEOUT SUBMITTALS

1.5.1. Operation and Maintenance Data: Submit maintenance instructions in accordance with Section 01 70 00.

1.6. QUALITY ASSURANCE

1.6.1. Qualifications:

1.6.1.1. Installers: Provide work of this Section executed by competent installers with a minimum 5 years' experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.6.2. Mock-Ups:

1.6.2.1. Provide a sample installation in a typical washroom where directed, for approval, before proceeding with remainder of installation.

1.6.2.2. Provide sections showing stile anchoring and leveling devices, concealed threaded inserts, panel and stile construction and edge construction.

1.7. DELIVERY, STORAGE AND HANDLING

1.7.1. Delivery and Acceptance Requirements: Deliver materials in sequence to meet installation schedule. Provide protection from marring or other damage.

1.7.2. Storage and Handling Requirements: Carefully unload materials; handle and store in a manner to prevent damage. Remove unsatisfactory materials and replace to the Consultant's satisfaction at no cost to the Owner.

1.8. WARRANTY

1.8.1. Manufacturer Warranty: Warrant work of this Section for period of 15 years against defects and/or deficiencies in accordance with the General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of the Consultant and at no expense to the Owner. Defects include but are not limited to; buckling, opening of seams, bond failure and extensive colour fading.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. ASI Group Canada - Global Partitions; www.asigroup-canada.com

2.1.1.2. Bobrick Washroom Equipment Company; www.bobrick.com

2.1.1.3. Bradley Corporation; www.bradleycorp.com

2.1.1.4. Hadrian Manufacturing Inc.; www.hadrian-inc.com

2.1.2. Substitution Limitations: This Specification is based on Bobrick's "1081/1181 DuraLineSeries". Comparable Products from other manufacturers not listed herein will be accepted in writing provided they meet requirements of this Specification after full review by the Consultant.

2.2. MATERIALS

2.2.1. Solid Phenolic: Constructed of solidly fused plastic laminate with matte-finish melamine surfaces, with integrally bonded coloured face sheets and black phenolic-resin core. Provide black edges. Brown edges are not acceptable. Colour and pattern as selected by the Consultant from manufacturer's standard colours. Ensure solid phenolic meets or exceeds following characteristics:

2.2.1.1. Impact Resistance: Maximum impact force of 48" in accordance with ASTM D2794.

2.2.1.2. Scratch Resistance: Maximum load of 10 kg in accordance with ASTM D2197.

2.2.1.3. Graffiti Resistance: 8 out of 9 applied marks cleaned in accordance with ASTM D6578/D6578M.

2.2.1.4. Surface Burning Characteristics:

2.2.1.4.1. Flame Spread: Maximum 30 in accordance with ASTM E84.

2.2.1.4.2. Smoke Developed Index: Maximum 55 in accordance with ASTM E84.

2.2.2. Aluminum Extrusions: ASTM B221M, minimum 3 mm (1/8") wall thickness, size accurately formed as shown on Drawings, extruded aluminum alloy AA-6063-T5 for aluminum. Ensure surfaces are free from defects impairing appearance, strength and durability.

2.2.3. Stainless Steel: Type 304 alloy with exposed surfaces having No. 4 polished finish.

2.2.4. Minimum Thicknesses:

	Member	**Thickness**
2.2.4.1.	Doors	19 mm (3/4").
2.2.4.2.	Pilasters/Headrail - Stainless Steel	1.01 mm (20 ga).
2.2.4.3.	Panels	13 mm (1/2").

2.2.4.4.	Headrail - Aluminum	1.5 mm (1/16”).
2.2.4.5.	Wall Channel – Aluminum	1.5 mm (1/16”).

2.2.5. Hardware and Fittings: Ensure panels, pilaster brackets and door hardware are stainless steel.

2.2.6. Bolts, Spacers, Bushings, Etc.: Manufacturer's standard of type to adequately secure pilasters to channels.

2.2.7. Wrap-Around Hinges: Adjustable, bottom hinge having cam units activated by gravity, with zytel or nylon bearings.

2.2.8. Colours: Selected by the Consultant from manufacturer's standard colour range.

2.3. MANUFACTURED UNITS

2.3.1. Floor Anchored Toilet Partitions: "1181 DuraLineSeries" by Bobrick. or equivalent.

2.3.2. Urinal Screens: 450 mm x 1067 mm (18" x 42"), same construction as partitions, but wall hung with a minimum of 3 wrap-around brackets. Acceptable Product: “1085 DuraLineSeries” by Bobrick or equivalent.

2.3.3. Fabrication:

2.3.3.1. Visit site and take necessary measurements required before fabrication.

2.3.3.2. Accurately follow methods of fabrication reinforcement and anchorage shown on reviewed Shop Drawings.

2.3.3.3. Cut, shear, straighten and work steel in a manner to prevent disfigurement of finished work.

2.3.3.4. Ensure finished work is free of warp, open seams, buckles and other surface defects detrimental to appearance.

2.3.3.5. Hardware and Fittings:

2.3.3.5.1. Provide barrier free type of hardware conforming to CSA B651 requirements.

2.3.3.5.2. Equip doors with gravity type hinge mounted on lower pilaster hinge bracket.

2.3.3.5.3. Provide wrap around type hinges. Ensure door top hinge pin is made from high strength, self- lubricating nylon with split tip design to prevent rising out of top door casting.

2.3.3.5.4. Provide each door with a combined coat hook and bumper and concealed latch with face mortised flush with edge strip of door. Ensure combined stop and keeper have 19 mm (3/4") diameter bumper locked in place.

2.3.3.5.5. Provide barrier free type of hardware for disabled stall unit without limitations as follows:

2.3.3.5.6. Provide door capable of being locked from inside with locking mechanism operated by 1 hand.

2.3.3.5.7. Include thumb turn lever to activate latch without fingertip grip application.

2.3.3.5.7.2. Provide door with door pull on outside, near latch side of door.

2.3.3.5.7.3. Equip stall with coat hook mounted not more than 1220 mm (48") above floor on side wall and projecting not more than 25 mm (1") from wall.

2.3.3.5.8. Provide wall channels, factory formed and punched prepainted sheet, 75 mm (3") deep, wide enough to fit pilasters and at least 1220 mm (48") long.

2.3.3.5.9. Provide both standard and barrier free latches with turn slot designed to allow emergency access from exterior.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Install partitions and screens plumb and square to building lines and according to manufacturer's printed directions. Ensure gap between panel to panel, panel to door and panel to adjacent construction is not greater than 9 mm (3/8”).

3.2.2. Perform drilling of steel, masonry or concrete necessary to install the work.

3.2.3. Install hardware and ensure it is visually aligned.

3.3. REPAIR

3.3.1. Touch up damaged Product.

3.4. SITE QUALITY CONTROL

3.4.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of the Consultant at no cost to the Owner.

3.5. ADJUSTING

3.5.1. Test and adjust hinges and latches for ease of operation. Set hinges so doors stay open 32 deg when compartment is not in use.

3.6. CLEANING

3.6.1. Clean and Make Good surfaces soiled or damaged.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.1.1.3. Accessories in this section are to be based on and coordinated with Town of Newmarket standards. Alternatives are to be only to the Prior approval of the Owner.

1.2. SUMMARY

1.2.1. Section Includes: Provide washroom and Locker Room accessories including but not limited to following:

1.2.1.1. CH - coat hook.

1.2.1.2. GB - grab bar.

1.2.1.3. ND - napkin and tampon disposal unit.

1.2.1.4. N - napkin and tampon vending unit.

1.2.1.5. SD - soap dispenser.

1.2.1.6. shelves for barrier-free washroom.

1.2.1.7. concealed sheet steel reinforcing.

1.2.1.8. Wall recessed Waste receptacle and paper towel dispenser unit.

1.2.1.9. TTD - toilet tissue dispensers

1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1.2.2.1. Provision of mirrors: Section 08 80 00, Glass and Glazing.

1.2.2.2. Rough-in for recessed or built-in fixtures in gypsum board: Section 09 21 13, Gypsum Board.

1.2.2.3. Provision of electrical service to washroom accessories requiring power: Electrical.

1.3. REFERENCES

1.3.1. Reference Standards:

1.3.1.1. ASTM A653/A653M-15 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

1.3.1.2. ASTM A666-15 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar

1.3.1.3. CSA W59-13 - Welded Steel Construction (Metal Arc Welding)

1.4. ADMINISTRATIVEREQUIREMENTS

1.4.1. Coordination: Coordinate location of washroom accessories with other work to prevent interference with clearances required for access, proper installation, adjustment, operation, cleaning and servicing of washroom accessories.

1.5. SUBMITTALS

1.5.1. Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Section 01 30 00. Ensure Shop Drawings are in the form of catalogue cuts and fully illustrate specified materials with description of components, surface finishes, hardware and securement devices.

1.5.2. Samples: Submit complete samples of each accessory and modular unit to the Consultant for review of construction quality, materials and finish prior to delivery of required quantities of items. Submit sample of each colour where applicable. Remove trademark and/or labels on exposed finishes prior to acceptance.

1.6. CLOSEOUTSUBMITTALS

1.6.1. Operational and Maintenance Data: Submit maintenance instructions in accordance with Section 01 70 00. Submit an accessories schedule, keys and parts manual as part of Project closeout documents. Submit 2 sets of following items of manufacturer's literature:

1.6.1.1. Technical Data Sheets of each item used for the Project.

1.6.1.2. Service and Parts Manuals.

1.6.1.3. Name of local representative to be contacted in the event of need of field service of consultation.

1.7. DELIVERY, STORAGE AND HANDLING

1.7.1. Delivery and Acceptance Requirements: Deliver materials in sealed cartons and containers with manufacturer’s name and Product description clearly marked thereon.

PART2- PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of the Drawings, schedules and Specifications:

2.1.1.1. Frost Products Ltd. http://www.frostproductsltd.com/

2.1.1.2. ASI Group Canada; www.asigroup-canada.com

2.1.1.3. Bobrick Washroom Equipment of Canada Ltd.; www.bobrick.com

2.1.1.4. Bradley Corporation; www.bradleycorp.com

2.1.2. Provide Products for work of this Section by 1 manufacturer and keyed alike to extent

possible.

2.1.3. Substitution Limitations: Equivalent Products will be accepted provided they meet requirements of this Specification.

2.2. MATERIALS

2.2.1. Ensure washroom accessories are stainless steel, Type 304 or Type 302, of 1 type throughout, ANSI No. 4 mechanical brushed finish, of contemporary design, with minimum material thicknesses of components as specified herein. Arrange stainless steel sheet so grain of brushed finish runs vertically in finished installation.

2.2.1.1. Minimum thickness, any location or component: 0.607 mm (24 ga)

2.2.1.2. Hygienic accessory - exposed double pan doors and panels: 0.607 mm (24 ga)

2.2.1.3. Hygienic accessory - exposed single pan doors: 1.214 mm (18 ga)

2.2.1.4. Reinforcement: 1.214 mm (18 ga)

2.2.2. Concealed Sheet Steel Reinforcing: Commercial quality cold rolled galvanized sheet steel to ASTM A653/A653M with zinc coating designation of Z275 (G90) in minimum thickness of 0.912 mm (20 ga); or ASTM A666, Type 304 sheet stainless steel.

2.2.3. Provide washroom accessories as specified with options indicated. Model numbers may not reflect all options required.

2.2.4. Provide stainless steel collars to accommodate semi-recessed mounting of units whose depth exceeds wall cavity depth.

2.3. MANUFACTURED UNITS

2.3.1. Coat Hook (CH): Satin finished stainless steel, double hook type supplied with backplates and screws:

2.3.1.1. ASI Group Canada, Model No. ASI-7345-S.

2.3.1.2. Bobrick, Model No. B-6727.

2.3.1.3. Bradley, Model No. 9124.

2.3.2. Grab Bar (GB): Stainless steel, 32 mm (1-1/4") od, 1.519 mm (16 ga) wall thickness with peened finish, positive gripping surface and complete with standard mounting plates, flanges and accessories, 38 mm (1-1/2") standoff from wall. Mount as shown on Drawings:

2.3.2.1. Frost Product Code 1001

2.3.2.2. ASI Group Canada, Model No. ASI-3700 Series.

2.3.2.3. Bobrick, Model No. B-5800 Series.

2.3.2.4. Bradley, Model No. 8322 Series.

2.3.3. Napkin and Tampon Vending Units (N): Recessed mounted, stainless steel. Unit to combine 2 dispensing mechanisms available with 25, 50 cents or “complementary”

operation in 1 cabinet to provide feminine napkins or tampons at Owner's option. Provide dispensing mechanisms convertible to allow the change or coin denomination.

2.3.3.1. Frost Product Code 615-5

2.3.3.2. ASI Group Canada, Model No. ASI-04684.

2.3.3.3. Bobrick, Model No. B-3500X2.

2.3.3.4. Bradley, Model No. 4017.

2.3.3.5. Or equivalents

2.3.4. Soap Dispensers Wall Mounted (SD): Vertically wall mounted, liquid type, minimum 1.2 l (40 oz) capacity container with soap level gauge and integral filler cap:

2.3.4.1. Swish 9330, 30 oz., wall mounted soap dispenser

2.3.4.2. ASI Group Canada, Model No. ASI-0347.

2.3.4.3. Bobrick, Model No. B-2111.

2.3.4.4. Bradley, Model No. 6562.

2.3.4.5. Or equivalents

2.3.5. Shelves for Barrier-Free Washrooms: Surface mounted 1.2 mm (18 ga) type 304 stainless steel construction, satin finish with 19 mm (3/4") return edge, 125 mm (5") deep complete with brackets:

2.3.5.1. ASI Group Canada, Model No. ASI-0692-516.

2.3.5.2. Bobrick, Model No. B-295-16.

2.3.5.3. Bradley, Model No. 755-16.

2.3.5.4. Or equivalents.

2.3.6. Wall Recessed Waste Recepacle and Paper Towel Dispenser:

2.3.6.1. Frost Product Code 427-60A: Stainless Steel, recessed 4" into wall, complete with 15 gallon (68 litre) waste receptacle

2.3.6.2. Or equivalent.

2.3.7. Toilet Tissue Dispenser TTD:

2.3.7.1. To AODA accessible Washroom Stalls: Frost #158S Double Roll Toilet Paper dispenser W/ Hood

2.3.7.2. To non-AODA compliant washroom stalls

2.3.7.3. Swish #884

2.3.7.4. Or equivalent.

2.3.8. Servery Paper Towel Dispenser

2.3.8.1. Swish Product Code 5050, wall mounted. (Approximate dimensions 10.5 (w) x 9.5 (h) x 7 (d)).

2.3.8.2. Or equivalent.

2.3.9. Fabrication:

2.3.9.1. Fabricate accessories true, square, rigid, free from distortion and from defects detrimental to appearance and performance. Assemble sheet metal accessories by welding in accordance with CSA W59. Conceal welds, or grind smooth such as to be undetectable in finished work. Unless approved by the Owner, ensure assembly fastenings, hardware fixings and mounting or installation devices are concealed in finished work.

2.3.9.2. Use non-corrosive metal fasteners of expansion type, toggle type or other approved type of positive, mechanical anchor as required to suit construction to which accessory is to be mounted. Ensure exposed fasteners, where permitted, are finished to match adjacent accessory surface and countersunk. Where accessories are mounted to sheet metal, provide a 3 mm (1/8") thick minimum full-size metal back-up plate drilled and tapped to receive machine screws and finished to match adjacent sheet metal surface.

2.3.9.3. Ensure frameless accessories have 1 piece fronts with 90 degree formed returns at their edges and openings. Ensure returns are continuously welded and ground smooth at corners. Where accessory fronts are framed, ensure frame edges, both inside and outside, have 90 degree formed returns continuously welded and ground smooth at corners. Ensure doors also have 90 degree formed returns.

2.3.9.4. Use concealed stainless steel piano hinges which extend full-length of hinged element. Ensure hinged elements have concealed, mechanically-retained, rubber bumpers for silent closing, and close flush with faces of fronts or frames. Locate hinges to afford easy and unobstructed access to interiors taking into consideration location of accessory relative to surrounding and adjacent items and finishes.

2.3.9.5. Ensure portions of sheet metal accessory interiors visible in completed work are stainless steel. Ensure changes in plane are formed or continuously welded and ground smooth. Ensure sheet metal accessory parts concealed in finished installation are galvanized or stainless sheet steel. Ensure edges of sheet metal accessible by users or maintenance personnel are hemmed for safety with no sharp edges.

2.3.9.6. Ensure lettering or pressure sensitive international symbols on accessories is silk screened with durable paint to withstand wear, or is engraved or embossed. Size, location and type face of lettering is subject to approval. Ensure edges of letters are straight and sharp.

PART3- EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify the Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

3.2.1. Provide necessary wall reinforcement for grab bars and towel bars as detailed for 227 kg (500 lbs) downward pull.

3.2.2. Install washroom accessories in accordance with manufacturer's printed installation instructions.

3.2.3. Provide fastenings and mounting kits for washroom accessories.

3.2.4. Verify wall opening for correct dimensions, plumbness of blocking or frames and other preparation that would affect installation of washroom accessories.

3.2.5. Verify spacing of plumbing fixtures and toilet partitions that affect installation of washroom accessories.

3.2.6. Securely fasten accessories, level and plumb using appropriate fastenings as recommended by manufacturer.

3.2.7. Provide corrosion resistant fastenings. Where fasteners are exposed, use tamper-proof fasteners finished to match items secured.

3.2.8. Locate washroom accessories where indicated on the Drawings and where directed by the Consultant. Obtain the Consultant's acceptance of exact locations.

3.2.9. Provide manufacturer's recommended anchoring systems.

3.2.10. Fit flanges of accessories snug to wall surfaces.

3.3. SITE QUALITY CONTROL

3.3.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4. ADJUSTING

3.4.1. Test mechanisms, hinges, locks and latches.

3.4.2. Adjust and lubricate to ensure washroom accessories are in perfect working order.

3.5. CLEANING

3.5.1. Clean and polish mirrors, aluminum and stainless steel surfaces.

3.5.2. Remove protective coatings and paper including adhesives.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.

1.1.1.2. Division 1 requirements and documents referred to therein.

1.1.1.3. Accessories in this section are to be based on and coordinated with Town of Newmarket standards. Alternatives are to be only to the Prior approval of the Owner.

1.2. SUMMARY

1.2.1. Section Includes: Provide Metal Lockers as shown on drawings.

1.3. REFERENCES

1.3.1. Reference Standards:

1.3.1.1. ASTM A653/A653M-15 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

1.3.1.2. ASTM A666-15 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar

1.3.1.3. CSA W59-13 - Welded Steel Construction (Metal Arc Welding)

1.4. ADMINISTRATIVE REQUIREMENTS

1.4.1. Coordination: Coordinate location of lockers with other work to prevent interference with clearances required for access, proper installation, adjustment, operation, cleaning and servicing of products.

1.5. SUBMITTALS

1.5.1. Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Section 01 30 00. Ensure Shop Drawings are in the form of catalogue cuts and fully illustrate specified materials with description of components, surface finishes, hardware and securement devices.

1.5.2. Samples: Submit:

1.5.2.1. materials list of items proposed to be provided under this section;

1.5.2.2. manufacturer's specifications and other data needed to prove compliance with the specified requirements;

1.5.2.3. colour chips showing the standard and option colours available in the proposed products, to allow Architect to select colours from full line of manufacturer's colour range;

1.5.2.4. manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

1.6. CLOSEOUTSUBMITTALS

1.6.1. Operational and Maintenance Data: Submit maintenance instructions in accordance with Section 01 70 00. Submit an accessories schedule, keys and parts manual as part of Project closeout documents. Submit 2 sets of following items of manufacturer's literature:

1.6.1.1. Technical Data Sheets of each item used for the Project.

1.6.1.2. Service and Parts Manuals.

1.6.1.3. Name of local representative to be contacted in the event of need of field service of consultation.

1.7. DELIVERY, STORAGE AND HANDLING

1.7.1. Delivery and Acceptance Requirements: Deliver materials in sealed cartons and containers with manufacturer's name and Product description clearly marked thereon.

PART2- PRODUCTS

2.1. GENERAL REQUIREMENTS

2.1.1. Unless noted otherwise, provide NH Series 1-Tier Premium Steel Locker with Front Vents, Heavy Duty, from Ceha Canada Inc; or acceptable alternatives from Spacesaver Corporation, Hadrian, Shanahan or General Storage Systems to meet minimum general requirements.

2.2. BASE BID REQUIREMENTS

2.2.1. Use all metal construction, and finish in colours selected by the Architect from complete colour range of the approved manufacturer. Finish with electrostatically applied polymer coating, baked.

2.2.2. Bodies shall be fabricated from minimum 18 gauge prepainted steel. Sides to have stiffening ribs and backs flanged, formed and factory punched to provide necessary assembly holes. Tops, bottoms and shelves shall be flanged on all four sides with a channel formation at the front of the shelves. The locker bottom shall have a 16 gauge support bracket installed across the centre of the locker bottom

2.2.3. Frames shall be welded together from specially formed minimum 16 gauge channel sections of prime cold rolled steel. Provide two rubber door grommets on the lock side of the frame. Incorporate ventilation slots at top and bottom of frames. A hidden nylon friction door stop shall ensure proper door closure and quiet operation.

2.2.4. Doors shall be all welded construction consisting of a 16 gauge outer panel and a 24 gauge full door size inner panel welded together to form a rigid box construction. The door shall close on a 16 gauge frame member with a 16mm (5/8") wide closure strike the full height of the door and shall fit flush with the outside of the frame. No parts shall be proud of frame. The door shall be hung on a 16 gauge continuous one piece integral right hand hinge and

frame.

2.2.5. Provide flow through ventilation louvres in the top and bottom frame members along with slots in the top and bottom and back of doors.

2.2.6. Provide flat top, end flushing panels, anchor angles and other anchoring devices as needed.

2.2.7. For all free-standing floor-mount lockers provided Manufacturer's raised recessed metal base.

2.2.8. Provide stainless steel recessed pocket for standard combination or padlocks.

2.2.9. Provide coat rod under top shelf (no hooks)

2.2.10. Numbers: to be embossed black painted on stainless steel plates consecutively numbered. All lockers to have 4 digit numbers as selected by Owner.

2.2.11. Metal Edges: roll all exposed edges of shelves, etc. or fabricate with a return to protect users from cutting or snagging.

2.2.12. Shelf: double reinforce, to avoid denting when stepped upon.

2.2.13. NH Series 1-Tier Premium Steel Locker with Front Vents, Heavy Duty, from Ceha Canada Inc; or acceptable alternative

2.2.14. Free-standing floor-mount single tier single door lockers, 450mm wide x 610mm deep x 1830mm high (18" wide x 24" deep x 72" high) in configuration / quantity and arrangement as indicated on the Drawings

2.2.15. Locker body and locking drawer constructed of fully welded, 22 gauge metal frame, 20 gauge commercial grade doors

2.2.16. Single door fabricated of 8 gauge double-wall steel with welded box construction and configured with hasp for padlock.

2.2.17. Interior components of locker to consist of lockable box kit, upper shelf, integral garment hanger and hooks, integrated pegboard on interior door panel, and coat rod.

2.2.18. Finishes for metals to be selected by Architect from Manufacturer's complete finish options of electrostatic power-coat paint finishes

2.3. OTHER MATERIALS

2.3.1. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

2.4. BENCHES

2.4.1. For Base Bid configuration provide benches as part of manufactured locker package

2.4.2. Benches to be CB-CH Multipurpose Bench with Shoe Rack and varnished hornbeam slats from Ceha Canada Inc; or acceptable alternatives from Spacesaver Corporation, Hadrian, Shanahan or General Storage Systems or approved equivalent in configurations as shown on drawings .

3 PART 3 – EXECUTION

3.1. SURFACE CONDITIONS

3.1.1. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected

3.2. FIELD MEASUREMENTS

3.2.1. Verify all measurements and dimensions affecting this Section of the Work.

3.3. INSTALLATION

3.3.1. Supply and install all lockers, indicated on drawings, including clothes rod and door hardware (padlock not included). For locker locations see Architectural 9 series drawings.

3.3.2. Supply and install all fastenings, anchors, end panels, filler panels, clips, and accessories required for the erection and completion of the work. Top and bottom details to be as shown.

3.3.3. Accurately position lockers as detailed on Drawings. Erect in strict accordance with the manufacturer's instructions.

3.3.4. Fasten lockers to base as required to provide rigidity.

3.3.5. Be responsible for strength of construction methods and adequacy of anchoring.

3.3.6. Dissimilar metals in contact or metals and masonry or concrete in contact, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Architect.

3.3.7. Upon completion, examine all installation, make all necessary adjustments and leave in perfect operating condition, to the approval of the Architect.

END OF SECTION