

**International Civil Aviation Organization
New showcase layout on the 4th floor**

PWSGC file: R.097036
RRA file: 1843

Volume 1:

General requirements and architectural technical specifications

ISSUED FOR TENDER
January 2019

RUBIN & ROTMAN ARCHITECTS

3550 Saint-Antoine St. W.,
Montreal, Quebec
H4C 1A9
Tel.: (514) 861-5122
Fax: (514) 861-5383



1 SEALS AND SIGNATURES – VOLUME 1

1.1 - ARCHITECTURE

Rubin et Rotman associés
Stephen Rotman, architecte
N° OAQ : 90-10-3169



N° de section	Description	Nombre de pages
00 01 07	Page of seals and signatures	1
00 01 10	List of sections	4
00 01 15	List of drawings	2
VOLUME 1		
Division 01	General Requirements	
01 11 01	Work related general information	3
01 14 00	Work restrictions	3
01 14 01	Health and safety requirements	10
01 31 19	Project Meetings	2
01 32 16.19	Construction progress schedule – bar (ganttt) Chart	3
01 33 00	Submittal procedures	4
01 35 21	LEED requirements	15
01 35 29.06	Health and Safety requirements	21
01 45 00	Quality control	3
01 52 00	Construction facilities	5
01 56 00	Temporary barriers and enclosures	2
01 61 00	Common products requirements	4
01 71 00	Examination and preparation	1
01 73 00	Execution requirements	2
01 74 00	Cleaning	3
01 74 19	Construction/Demolition Waste Management And Disposal	8
01 77 00	Closeout Procedures	2
01 78 00	Closeout Submittals	8
01 91 13	Commissioning – Mechanical and Electrical Installation	18
01 91 13.16	Commissioning - Forms	3
	Annexe 2 – Commissioning Form – Sprinkler system	1
	Annexe 2 – Commissioning Form – Sequence of operations	1
	Annexe 2 – Commissioning Form – Fire alarm system	1
	Guide de remplissage du formulaire de collecte de données (will be provided after contract is awarded)	--

N° de section	Description	Nombre de pages
	Data Collection Form SIGE (Excel format)	
Division 02	Existing Conditions	
02 41 99	Demolition for Minor Works	3
Division 05	Metals	
05 50 00	Metal Fabrications	5
Division 06	Wood, plastics and composites	
06 10 53	Miscellaneous Carpentry	2
06 20 00	Finish Carpentry	5
06 47 00	Plastic Laminate Finishing	5
Division 07	Thermal insulation and waterproofing	
07 21 16	Blanket Insulation	3
07 84 00	Firestopping	4
07 92 00	Joint Sealing	6
Division 08	Openings and closures	
08 11 00	Metal Doors and Frames	7
08 14 16	Flush Wood Doors	4
08 71 00	Door Hardware	9
08 71 01	Door Hardware - Groups	9
08 80 00	Glazing	6
Division 09	Finishes	
09 21 16	Gypsum Board Assemblies	7
09 22 16	Non-structural Metal Framing	4
09 51 13	Acoustical Panel Ceilings	3
09 53 00	Acoustical Suspension	4
09 65 16	Resilient Sheet Flooring	6
09 68 13	Tile Carpeting	11

N° de section	Description	Nombre de pages
09 91 23	Interior Painting	13
Division 10	Special works	
10 14 00	Building Panel Signage	5
10 22 19	Stud type demountable partition	10
10 44 00	Fire Extinguishers and Safety	3

VOLUME 2

Division 21	Fire Suppression	
21 05 00	Common Work Results for Fire Suppression	2
21 13 13	Wet Pipe Sprinkler Systems	7
Division 23	Heating, Ventilation and Air Conditioning (HVAC)	
23 05 00	Common Work Results for HVAC	5
23 05 05	Selective Demolition for Heating, Ventilating, and Air Conditioning (HVAC)	4
23 05 48.16	Seismic Restraint Systems (SRS) – Type P2 Buildings	5
23 05 53	Identification for HVAC Piping and Equipment	4
23 05 93	Testing, Adjusting and Balancing for HVAC	5
23 05 94	Pressure Testing of Ducted Air Systems	4
23 07 13	Duct Insulation	4
23 31 13.01	Metal Ducts - Low Pressure to 500 Pa	6
23 31 13.02	Metal Ducts – High Pressure to 2 500 Pa	5
23 33 00	Air Duct Accessories	4
23 33 14	Dampers - Balancing	3
23 33 46	Flexible Ducts	3
23 33 53	Ducts Liners	5
23 36 00	Air Terminal Units	6
23 37 13	Diffusers, Registers and Grilles	3
Division 25	Integrated Automation	
25 05 01	EMCS: General Requirements	7
25 05 60	EMCS: Field Installation	8

Section N°	Description	Number of pages
25 30 02	EMCS: Field Control Devices	6
25 90 01	EMCS: Site Requirements Applications and Systems Sequences of Operation	2
25 99 05	EMCS: Requirements Relative to Programming and Dynamic Screens	5
Division 26	Electrical	
26 05 00	Common Work Results for Electrical	8
26 05 05	Selective Demolition for Electrical	3
26 05 21	Wires and Cables (0-1000 V)	2
26 05 28	Grounding - Secondary	1
26 05 29	Hangers and Supports for Electrical Systems	2
26 05 31	Splitters, Junction, Pull Boxes and Cabinets	1
26 05 32	Outlet Boxes, Conduit Boxes and Fittings	2
26 05 34	Conduits, Conduit Fastenings and Conduit Fittings	3
26 05 36	Cable Trays for Electrical Systems	2
26 05 43.01	Installation of Cables in Trenches and in Ducts	2
26 09 24	Lighting Control Devices – Low Voltage	3
26 27 26	Wiring Devices	2
26 50 00	Lighting	2
Division 27	Communications	
27 05 26	Grounding and Bonding for Communications Systems	3
27 05 28	Pathways for Communications Systems	4
Division 28	Electronic Safety and Security	
28 31 00.02	Multiplex Fire Alarm and Voice Communication Systems	3

ARCHITECTURE

N° plan	Titre	Rév.
A000	Title page	00
A101	Site plan	00
A110	Demolition plan	00
A115	Ceiling demolition plan	00
A120	Construction plan	00
A121	Enlarged plans	00
A150	Reflected ceiling plan	00
A160	Equipment and accessory plan	00
A170	Finishes plan	00
A190	Signage plan	00
A211	Interior elevations	00
A212	Interior elevations	00
A401	Plan and section typical details – Movable partitions	00
A402	Plan and section details	00
A801	Door and frame schedule, typical partitions	00
A802	Signage	00

ARCHITECTURE – COMPLEMENTARY DRAWINGS ISSUED FOR REFERENCE

N° plan	Titre	Rév.
F160	Furniture plan	00
F161	Furniture details	00
F162	Furniture details	00

MECHANICAL

Plan No	Title	Rev.
M01	Legend and Drawing List	00
M02	Mechanical - Fire Protection - 4 th Floor - Demolition	00
M03	Mechanical - Fire Protection - 4 th Floor - New Layout	00
M04	Mechanical - Ventilation and Integrated Automation - 4 th Floor - Demolition	00
M05	Mechanical - Ventilation and Integrated Automation - 4 th Floor - New Layout	00
M06	Mechanical - Ventilation and Integrated Automation - Schematics, Tables and Details	00

ELECTRICAL

Plan No	Title	Rev.
E01	Legend and Drawing List	00
E02	Lighting - 4 th Floor - Demolition	00
E03	Services - 4 th Floor - Demolition	00
E04	Auxiliary Services - 4 th Floor - Demolition	00
E05	Lighting - 4 th Floor - New Layout	00
E06	Services - 4 th Floor - New Layout	00
E07	Auxiliary Services - 4 th Floor - New Layout	00
E08	Details	00

END OF SECTION

Partie 1 General**1.1 WORK BY THIRD PARTIES**

- .1 Work in collaboration with other contractors and carry out instructions from Departmental Representative.
- .2 Coordinate work with work performed by other contractors. If the performance or outcome of any part of the work under this contract depends on work by another contractor, indicate immediately, in writing to the Departmental Representative, any anomaly or deficiency that may interfere with proper performance of work.

1.2 FUTURE WORK

- .1 Ensure that structures do not encroach on areas of future work.

1.3 SUBCONTRACTORS

- .1 Retain the services of subcontractors designated by the Departmental Representative for the following work:
 - Controlled access system
Company : Technilogic
579A Notre-Dame street, suite 303, Repentigny
Contact : Jean Rho
Cell : 514-497-6678
Office : 450-582-7611 extension 400
 - Keying work
Company : Serrurier Excel Inc
97 Industrielle street, Delson
Contact : Yves Patenaude
 - Fire Alarm System
Company : TROY
9125 Pascal Gagnon, Suite 101, Montreal
Contact : Martin Gadoury
 - Controls Systems
Company : Regulvar
3985, boulevard Industriel, Laval
Contact : Eric Viau
 - Camera Systems
Company : Technilogic
Contact : : Jean Rho
Cell : 514-497-6678
Office: 450-582-7611 extension 400
- .2 Relations and responsibilities between the Contractor, subcontractors and suppliers designated by the Departmental Representative must comply with contract conditions.

1.4 ORDER OF WORK PERFORMANCE

- .1 Perform work in stages so that the Departmental Representative can use the premises continuously during work.
- .2 Coordinate the work progress schedule based on occupancy of the premises.
- .3 Perform work in stages to allow continuous public use of the premises. Maintain public access of the premises as long as the progress of work precludes offering an alternative.
- .4 Maintain access for firefighting. Also provide means of firefighting.

1.5 CONTRACTOR'S USE OF PREMISES

- .1 Use of the premises is restricted to areas necessary for performance of work and for access to provide for:
 - .1 Occupancy of the premises by the Departmental Representative.
 - .2 Partial occupancy of the premises by the Departmental Representative.
 - .3 Performance of work by other contractors.
 - .4 Public use of the premises.
- .2 Coordinate use of premises as directed by the Departmental Representative.
- .3 Find work areas or additional storage space necessary for performance of work under this contract, and pay for it.
- .4 Remove or alter the existing structure to avoid damaging the portions to remain in place.
- .5 Repair or replace portions of the existing structure altered during construction, as directed by the Departmental Representative, for connection to the existing structure or an adjacent structure or for harmonization with them.
- .6 Once work is completed, the existing structure shall be in a condition equal to or better than it was before the start of work.

1.6 OCCUPANCY OF PREMISES BY THE DEPARTMENTAL REPRESENTATIVE

- .1 The Departmental Representative will occupy the premises throughout the duration of construction and will continue its normal activities during this period.
- .2 Collaborate with the Departmental Representative in establishing the work schedule so as to reduce conflicts and facilitate use of the premises by the latter.

1.7 MATERIALS PURCHASED IN ADVANCE _ not applicable**1.8 ITEMS PROVIDED BY THE DEPARTMENTAL REPRESENTATIVE _ not applicable****1.9 CHANGES, ADDITIONS OR REPAIRS TO THE EXISTING BUILDING**

- .1 Perform work with the least possible interference with the occupants, the public and normal use of the premises. Make the necessary arrangements with the Departmental Representative to facilitate performance of work.
- .2 For the transportation of workers, materials and equipment, use only the building's existing elevators.
 - .1 Protect elevator walls to the Departmental Representative's satisfaction before using elevators.
 - .2 Assume the security of equipment and take responsibility for damage caused by the work and overloads imposed on existing equipment.

1.10 DOCUMENTS REQUIRED

- .1 Maintain on the job site a copy of each of the following documents.
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed shop drawings.
 - .5 List of unreviewed shop drawings.
 - .6 Change orders.
 - .7 Other changes to the contract.
 - .8 Field test reports.
 - .9 Copy of the approved schedule.
 - .10 Health and safety plan and other safety-related documents.
 - .11 Other documents indicated.

Partie 2 Products**2.1 NOT USED**

- .1 Not used.

Partie 3 Execution**3.1 NOT USED**

- .1 Not used.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 14 01 – Health, Safety and Environment Plan Specific to the Building.
- .2 Section 01 11 01 – General Work Information.
- .3 Section 01 56 00 – Temporary Barriers and Enclosures.

1.2 USE OF PREMISES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Closures: protect work temporarily until permanent enclosures are completed.

1.3 SPECIAL REQUIREMENTS

- .1 Refer to Section 01 14 01 – Health and Safety Environment Plan Specific to the Building.
- .2 Ensure that Contractor's staff working on the site are aware of and comply with the regulations, including fire, traffic and occupational safety regulations.
- .3 Plan and schedule work so that final completion takes place **before July 4th, 2019**.
- .4 Remain within the limits of the work and the access roads.
- .5 No parking will be available for the contractor or its subcontractors.

1.4 WORK SCHEDULE

- .1 Submit the work schedule in accordance with Section 01 32 16.19 – Construction Progress Schedule – Bar (Gantt) Chart.
- .2 To avoid disturbing occupants of the floors, the contractor must conduct certain work outside the business hours of the building.
 - 1. Work to be conducted day or night: work on the fourth floor, non-noisy only:
 - .1 Wiring work;
 - .2 Electrical finishing (installation of lighting fixtures, wiring, etc.)
 - .3 Plastering and sanding of gypsum on walls;
 - .4 Finishing of floors (carpets, baseboards, marmoleum, tile, etc.);
 - .5 Painting;
 - .6 Installation of suspended ceilings (tiles);
 - .7 Installation of door hardware;
 - .8 Installation of the security and access system;
 - .9 Installation of blinds;
 - .10 Installation of signage;
 - 2. Work to be conducted evening or night only:
 - .1 Mechanical finishing (plumbing and ventilation);

- .2 Laying of gypsum;
 - .3 Installation of doors, frames and glazing;
 - .4 Assembly and installation of office furniture;
 - .5 Installation of suspended ceilings (frames);
 - .6 Assembly and installation of cabinetwork;
 - .7 All work on other floors (if required).
- 3. All evening and night work shall be done between 6 p.m. and 7 a.m., Monday to Thursday night.
 - 4. All weekend work shall be done between 6 p.m. Friday and 7 a.m. Monday.
 - 5. Noisy work shall be done between 6 p.m. and 7 a.m. Noisy work including drilling, use of percussion tool, hammering, any work causing concrete slabs to vibrate, pumping of oil from cylinders, any work emitting noise or vibrations that may be perceived in areas occupied by offices or meeting rooms, etc.
 - 6. Material and equipment must be delivered outside peak hours, between 5 p.m. and 8 a.m. and between 1 p.m. and 3 p.m., unless indicated otherwise by the Departmental Representative.

1.5 SEPARATE MANDATE FOR FURNITURE

- .1 The provision and installation of office furniture is excluded from the present mandate and will be part of a separate mandate. However the contractor of the furniture mandate will have to install the office furniture during the present mandate. He will have to sign the Subordination Agreement found at article 1.44 of section 01 35 29.06 – Health and Safety Requirements.

1.6 SECURITY

- .1 Provide temporary means to maintain security if it has been reduced due to work under this contract.
- .2 Security escort
 - .1 Staff members assigned to this work must be accompanied by a security officer when performing duties in operating areas.
 - .2 Submit any request for an escort to the Departmental Representative at least three days in advance following the prescribed procedures. For requests submitted within the prescribed time, the cost of the escort will be paid by the Departmental Representative. For late requests, the cost will be charged to the Contractor.
 - .3 Any request for an escort may be cancelled without charge if notice is given at least twenty-four (24) hours before the scheduled time. If notice of cancellation is received later than this, the cost of the escort will be charged to the Contractor.
 - .4 The cost will be calculated on the basis of the hourly rate for a security officer, for a period of four (4) hours if notice of cancellation is given too late.

1.7 SMOKE-FREE ENVIRONMENT

- .1 Observe the no-smoking instructions. Smoking is prohibited.

Partie 2 Products**2.1 NOT USED**

.1 Not used.

Partie 3 Execution**3.1 NOT USED**

.1 Not used.

END OF SECTION

(Revised: May 2018)

BGIS

La Maison de l'OACI (ICAO headquarters)
999 Robert-Bourassa Boulevard
Montreal, QC H3C 5J9

Health, safety and environment plan specific to the building
Headquarters of the International Civil Aviation Organization (La Maison de l'OACI)
999 Robert-Bourassa Boulevard, Montreal

General Information

Public Services and Procurement Canada (PSPC) has mandated BGIS to provide various real estate services on behalf of the Government of Canada to the Maison de l'OACI, located at 999 Robert-Bourassa Boulevard in Montreal, since December 2016. BGIS has been designated as the supervising authority for occupational health and safety (OHS) and environment at the Maison de l'OACI and, accordingly, must ensure the health and safety of all occupants, visitors, service and maintenance contractors and construction contractors.

No work activity (construction or maintenance) will take place at the Maison de l'OACI without the prior authorization of BGIS.

BGIS is authorized to exercise its right to:

- review all work plans before work begins;
- reject any work plan that is likely to disturb the activity of tenants, that does not take adequate account of risk to property or does not meet health and safety risks acceptably;
- demand to see with its own eyes the permits, certifications and other titles of workers to validate their qualifications;
- inspect any work under way to ensure that it complies with the plan and with safety regulations and that it in no way compromises the Maison de l'OACI or its occupants, onsite service or maintenance contractors, construction contractors, visitors or the public;
- halt work at any time if it deviates from the approved work plan, if a hazardous situation arises or if any equipment, device or system used by a worker is unsafe for any reason.

The content of this document is discussed with the contractor at the project start-up meeting.

Protocol and instructions for access to the Maison de l'OACI

All workers requiring unescorted access to the Maison de l'OACI for professional purposes must have a minimum security rating of "reliability status" from the Government of Canada.

Some areas in the Maison de l'OACI may require a higher security rating. Based on government security policy, such areas are assigned a SECRET or TOP SECRET rating.

Workers who lack "reliability status" from the Government of Canada will not have access without an authorized escort (meaning a security officer or BGIS team member).

Contractor's responsibilities

Include but are not limited to:

- Preventing damage to the client's property or equipment, or to the environment;
- Working safely to avoid creating danger for the contractor or for others;
- To the greatest possible extent, and upon request, taking part in accident investigations and cooperating with BGIS personnel on any request related to health, safety or the environment (HSE);
- Applying the compulsory use of personal protective equipment (PPE) at all times (safety boots, safety helmet);
- Posting conspicuous bilingual signs indicating worksite risks and hazards.

Operating procedures at the Maison de l'OACIHours of operation

Normal operating hours at the Maison de l'OACI are Monday to Friday, 6 a.m. to 6 p.m.

Access to the building outside normal operating hours

The general contractor must send a request to the BGIS representative at least 48 hours prior to the start of work.

Security / Identification

Due to the nature of the building, a security check is conducted upon arrival at the security office. A "Contractor" security card is issued, with workers' names, dates and places clearly identified on the work permit. These identity cards must be visible on the workers at all times.

The contractor and its workers must, without exception, comply with the access requests made previously. Under no circumstance may they request access to a space not set out in the initial request to the Commissionnaire accompanying them. Access will be firmly denied.

The contractor, its workers and the equipment and tools they carry with them must be submitted to an extensive security check (metal detector, X-ray) each time they enter the building. If a spot in the work area has been outlined and approved by a BGIS representative, the contractor may leave its tools there during working time, but BGIS will in no instance be responsible in the event of loss, breakage or theft.

Vertical transportation

Contractors are entitled to use the freight elevator. In case of overlap during the presence of several construction sites in the building, schedules will be established to separate them in space and time.

Use of the freight elevator is subject to conditions and to the approval of the BGIS team leader. Any operation or handling of the mechanisms of this equipment causing a displacement of the maintenance company will be invoiced to the contractor responsible for this.

It is strictly PROHIBITED to use the passenger elevators to transport work-related tools or

materials unless an exception has been pre-approved by BGIS.

Parking

There is no parking for contractors.

Noisy work

Permitted work hours must be planned between 6 p.m. and 6 a.m. Schedules must be approved by the BGIS team.

Deliveries

All deliveries must be made in the shipping and receiving area. The entrance is on Viger Street.

Shipping and receiving area (including elevators, entry and exit doors and emergency exits)

The shipping and receiving area is solely for delivering or loading of equipment. No parking is allowed. No storage of materials is tolerated. Normal hours of operation are from 8:30 a.m. to 4:30 p.m.

- Receiving dock

Vertical clearance 3.8 metres; length 7.9 metres.

For any use of the shipping and receiving area, an arrangement must be discussed with a BGIS representative 48 hours in advance for access and for coverage by a security officer.

- All construction materials are brought in through the loading dock at all times; use of the other entrances to the Maison de l'OACI is prohibited.
- Security must be present at all times for the opening of the garage and loading dock doors and for the entire time the doors are open.
- All materials unloaded at the dock are immediately removed and stored in an approved location.

Storage of materials

Storage of materials is generally impossible apart from exceptions that must be approved by the BGIS team leader, based on availability in the building. No storage of materials is tolerated in the corridors, even temporarily.

Loans of tools or equipment

The contractor must provide its own tools, equipment and vehicles and must perform all work safely, in accordance with regulatory requirements. The contractor may use tools and equipment belonging to BGIS or loaned by it only through written authorization by signing the "Waiver and release of loan of BGIS equipment" form.

Roof access

Roof access is prohibited without the approval of the BGIS team leader.

Interruptions

Any interruption of service (water, electricity or other) must be planned at least one week in

advance.

Electrical panels

Any employee capable of performing electrical work must first obtain authorization from the BGIS team leader and apply the BGIS lockout procedure.

The contractor must notify the team leader or his/her representative of any change made to an electrical panel.

Warning

The contractor must make sure not to trigger accidentally an alarm of one of the building's security systems (fire, intrusion, mechanical, etc.) while performing work.

If an alarm is triggered, the contractor is responsible for the costs related to interruptions of building clients' operations and for the costs charged to BGIS by various suppliers or organizations following a false alarm.

At least 48 hours' prior authorization is required for any work affecting clients' operations.

Garbage

This is no container available (with some exceptions). The contractor must remove its garbage at the end of each work shift.

Washrooms

Workers must use the washrooms identified by the BGIS representatives. They are not permitted to use the building's other washrooms.

Breaks, meals and smoking room

It is prohibited for contractors to use the cafeteria or ICAO's smoking room (fifth floor) at any time. Meals and breaks must be taken in a place designated by BGIS.

Electrical rooms

Electrical rooms must remain accessible and clean at all times.

Any storage of materials in electrical rooms is prohibited.

Canvassing / solicitation

To ensure the peace and quiet of occupants, no canvassing or solicitation will be allowed in the Maison de l'OACI.

Work permits

A work permit must be filled out and submitted to BGIS for approval at least 48 hours ahead of time at QC□RP1workpermit@bgis.com.

This work permit enables BGIS to examine all work plans before the start of work.

If certain high-risk work is indicated in the work permit, such as work in enclosed spaces, hot work or lockouts, additional permits or documents must be filled out by the contractor to be able to conduct work. If this type of high-risk work is added in the course of work, the BGIS team leader must be notified immediately and must provide his/her authorization for the work to be

performed.

A contractor using hazardous materials or chemicals must have a copy of the safety data sheet of each product used, and this must be readily accessible to employees.

BGIS may demand to see with its own eyes workers' permits, certifications and other titles to validate their qualifications.

BGIS may inspect any work under way to ensure that it complies with the plan and with safety regulations and that it in no way compromises the facility or its occupants nor the onsite service and maintenance contractors, construction contractors, visitors to the facility or the public.

BGIS may halt work at any time if it deviates from the approved work plan, if a hazardous situation arises or if any equipment, device or system used by a worker is unsafe for any reason.

BGIS contractors' safety manual

Contractors must use their own HSE policies, procedures and programs jointly with the BGIS contractors' guide to health, safety and environment policies, which presents a general overview of BGIS's HSE protocols and minimum requirements during the performance of work by contractors at the Maison de l'OACI.

A contractor that is unable to meet the guide's conditions must notify BGIS immediately in writing. BGIS reserves the right to subject the contractor to a compliance audit of its work (workplace inspections, visual observations, interviews and examinations of documents, training registers, certifications and HSE statistics).

First aid kit and incident reporting

The contractor must make sure to provide its employees with an adequate number of first aid kits based on the number of employees on the worksites.

If one of the contractor's employees is hurt, or if there is an incident involving minor and/or serious injuries or illnesses (lost time and/or medical care), damage to property or equipment (unplanned and uncontrolled fire, explosion or flooding, collapse or malfunction of a building or structure) or environmental contamination (with a response by a regulatory body such as the ministry of the environment or the ministry of labour), the contractor must report the incident immediately to the project manager or to the BGIS representative on the site.

Emergency measures plan – Fire Safety

Heat and smoke detectors

This building is protected by heat and smoke detectors connected to the security post.

All work conducted in areas where there is a smoke detector, including housekeeping work, must be authorized by the BGIS representative since smoke detectors also detect dust, moisture, etc.

More specifically, when work may affect the fire safety system, a fire bypass must be requested from the BGIS team leader.

Contractors will be held responsible for service interruptions that disrupt the client's operations if they neglect to have the detectors deactivated prior to work.

Sprinkler system

This building is protected by a sprinkler system connected to the building's fire alarm panel. Any work near the sprinklers must be conducted with the greatest care.

Emergency exits

Emergency exits must remain accessible and clean at all times.

Location of emergency stairways: two emergency stairways per floor in the office tower, a third exit starting at the fifth floor, then four more in the conference centre. The emergency stairways lead directly outside the building and are identified by “Sortie-Exit” luminous panels.

Fire alarm – evacuation

In case of a fire alarm, the contractor and its team must evacuate just like all occupants, with no exceptions.

A supervisor on the contractor’s team must notify the emergency commander on duty at the building exit that all of his/her team has evacuated and must go to the meeting point based on the place where he/she works in the building.

The contractor is responsible for training his/her team on the building’s emergency procedures at the start of the mandate and at each work shift, as required.

Meeting point

For occupants and for contractors or workers: Victoria Square park.

Oil product storage systems

One or more systems on site are subject to federal regulations on the storage of oil products and allied products (SOR/2008□184). They are located in the basement and on the 16th floor.

For more information, contact the BGIS team leader or the BGIS HSE coordinator.

Project-specific OHS plan

All projects and activities are coordinated and separated based on the Maison de l’OACI “space and time” calendar.

When several activities or projects are occurring simultaneously at the Maison de l’OACI, project coordinating meetings are held by the OHS coordinator on a weekly basis. Participation at these meetings (in person or by phone) is compulsory for all contractors or their representatives with work under way at the Maison de l’OACI as well as for all members of the BGIS team concerned. Minutes of the meeting are then produced and sent to all meeting members as well as to the representative of the occupant of the Maison de l’OACI.

Before any activity is started, a project initiation and checklist are completed by BGIS.

BGIS reserves the right to subject the contractor to continuous inspections of activities and work under way to ensure compliance with the requirements mentioned in the work permit and the project documentation.

BGIS reserves the right to halt work that is disrupting the occupants’ activities, that do not adequately address risks to the building or health and safety exposure, that are not in compliance with the work plan or that create hazardous situations or dangerous behaviour.

All meetings involving project planning are led by the BGIS project management department and include the BGIS real estate manager and the BGIS HSE coordinator at the Maison de l’OACI.

Register of HSE hazards at the Maison de l'OACI

	Type of danger	Present danger	Explanation of danger (if necessary)	Measures currently taken
1	Asbestos	<input type="checkbox"/>	Presence of non-friable asbestos, roof drain in good condition over its full length	Annual inspection Updated inventory of asbestos zones Compliance with asbestos work procedures
2	Access to facilities	<input type="checkbox"/>	Presence of water at entrances following storms	Signage: wet floor, restricted access
3	Loading dock area	<input type="checkbox"/>	Limited space at 3.8-metre clearance, vehicle flow, carbon monoxide	Designated lanes Engines turned off during vehicle loading / unloading
4	Corridors	<input type="checkbox"/>	Danger of sliding	Signage: wet floor
5	Vehicle flow in underground parking lot	<input type="checkbox"/>	Hazards for employees at work and pedestrians	Wearing reflective vests during work or inspections Cone security perimeter Carbon monoxide detector
6	Clear, unobstructed emergency exits	<input type="checkbox"/>		Keeping minimum clearance in corridors Exit signage
7	Lighting	<input type="checkbox"/>		Generator-powered emergency lighting
8	Heating	<input type="checkbox"/>	Hot surfaces in mechanical rooms, steam heating ducts in the building	Restricted access Emergency exits indicated Wearing of personal protective equipment
9	Fire alarm system	<input type="checkbox"/>		Remain in contact with surveillance personnel inside the building Registration of contractors at the security office
10	Fire alarm panel monitored	<input type="checkbox"/>		Onsite monitoring: if work requires system stoppage, this work must be done after normal work hours, in the presence of surveillance personnel
11	Smoke detectors	<input type="checkbox"/>	Prohibition of work generating flames, sparks or vapours	Turn on the bypass system Obtain a high-temperature work permit
12	Heat detectors	<input type="checkbox"/>	Activities creating heat and equipment defects	Turn on the bypass system Inspection of equipment Obtain a high-temperature work permit

HEALTH, SAFETY AND ENVIRONMENT PLAN SPECIFIC TO THE BUILDING

13	Storage areas	☐	Danger that stacked equipment could fall	Appropriate shelving for stacked equipment Preventive maintenance Ladders, stools
14	Certified roof anchors Roof		No guardrails, but anchors are present Risk of falling	Wearing of harnesses for work less than three metres from the edge Anchors are inspected and certified annually The inspection certificate is posted at each roof entrance Device to prevent falls necessary if work conducted less than three metres from the edge of the roof
15	Access ladders	☐	Present	Inspection
16	Controlled products	☐	Various	Data sheets updated on site Training Personal protective equipment
17	Mould	☐		If observed, warn real estate manager
18	Buried installations Require detection	☐	Steam, water and sewer ducts, electrical conduits buried or in the indoor or outdoor cement structure	Zones to be marked by the contractor during excavation work or drilling of concrete slabs Identification Signalling See plans and shop drawings
19	Uneven surfaces	☐	Possible presence outside the building	Vigilance
20	Slippery surfaces	☐	Roof in the winter Building entrances and accesses	Warning signs Cord (hands-free type) Maintenance of surfaces
21	Noise	☐	Some work may create exposure to high noise levels Deafness, ringing of the ears	Noise-generating work must be done after normal hours Personal protective equipment Earplugs are available in the mechanical rooms
22	Enclosed spaces	☐	Inlet sumps, pits, boilers, tanks, heating system	Rescue plan Enclosed spaces identified Lockout and labelling procedure BGIS policy on enclosed spaces Skilled persons Personal protective equipment
23	Oxygen deficiency or enrichment	☐	Possibility in a sump or elevator pit	Air quality surveillance necessary

HEALTH, SAFETY AND ENVIRONMENT PLAN SPECIFIC TO THE BUILDING

24	HVAC	□	Dust, smoke in case of displacement Risk of falling in units Burns	Stoppage of the CVAC unit during work inside or nearby or when there is a dust, smoke or asbestos risk It may be necessary to plan protective measures against falls in HVAC units Lockout and labelling procedures Follow the BGIS policy
25	High-temperature work in the building	□	Risk of fire or burns Warm sector Loss of consciousness Injuries	Personal protective equipment Surveillance Stoppage of machines Obtain a high-temperature work permit
26	Mechanical	□	Mechanical parts, automatic start-up of machine	Protectors in place Lockout and labelling procedures Restricted area Skilled persons Personal protective equipment
27	Electrical vault	□	Electrical arc	Lockout and labelling procedures Restricted area Qualified staff only
28	Elevator machinery space	□	Moving parts, rotation	Controlled access Personal protective equipment Machine and equipment guards
29	Glycol system	□	Environment	Data sheet Response lot (spill kit)
30	Work done by a single person during normal hours	□	Discomfort, injury	Always notify the supervisor before entering a system Follow BGIS guidelines Have a means of communication
31	Electrical room	□	Exposure to 25,000 volts	Limited access Locked space Lockout and labelling procedures

Important telephone numbers

Position	Name	Cell phone
Real estate manager	Nathalie Duchesne	438.822.4457
Occupant services coordinator	Benoit Tremblay	438.886.9821
Building coordinator and service	Adriana Grasso	438.870.4431
Maintenance supervisor	Jonathan Duval	438.870.6985
Health, safety and environment coordinator	Laëtitia André	514.268.6020
ICAO building security	-	514.283.1673
Emergency	Police – Ambulance – Fire	911

Outside emergency numbers

Fire, Police, Ambulance	911
Poison Control Centre	1 800 463 5060
Environmental Emergency (Quebec)	1 866 694 5454
Environmental Emergency (Canada)	1 866 283 2333
Hydro Québec	1 800 790 2424

I HAVE READ CAREFULLY AND UNDERSTAND CLEARLY THIS HEALTH, SAFETY AND ENVIRONMENT ORIENTATION SPECIFIC TO THE MAISON DE L'OACI. I AM SIGNING FREELY AND VOLUNTARILY, AND I UNDERSTAND WHEN SIGNING THAT I MUST COMPLY WITH ALL THE INSTRUCTIONS MENTIONED AND THAT, IN CASE OF NON-COMPLIANCE, WORK WILL BE HALTED IMMEDIATELY. THIS DOES NOT RELEASE THE CONTRACTOR FROM TAKING ALL MEASURES NECESSARY TO ENSURE THE SAFETY OF EMPLOYEES IN THE FACE OF RISKS AND HAZARDS NOT LISTED IN THIS DOCUMENT.

CONTRACTOR	NAME	TELEPHONE	E-MAIL
SIGNATURE			DATE

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 ADMINISTRATIVE

- .1 Plan project meetings throughout the course of work.
- .2 Except for the first meeting, notify the Departmental Representative in writing of a meeting five days prior to the scheduled date.
- .3 Minutes will be written and distributed by the Departmental Representative.
- .4 Representatives of the Contractor, subcontractors and contractors who attend the project meetings will be qualified and authorized to act on behalf of the parties they represent.
- .5 Meetings will be held at the site, at the Contractor's facilities.

1.3 PRE-CONSTRUCTION MEETING

- .1 In the days after awarding of the contract, the Departmental Representative will hold a meeting of the parties in contract to discuss and resolve administrative procedures and each party's responsibilities.
- .2 The Departmental Representative or senior representatives, the Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
- .3 The Departmental Representative will prepare the agenda.

1.4 PROGRESS MEETINGS

- .1 Set a schedule of meetings to be held every two weeks at a fixed day and time during the course of Work and two weeks prior to completion of work.
- .2 The Departmental Representative or senior representatives, the Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
- .3 Notify parties at least five days prior to the first meeting.
- .4 Agenda to include the following:
 - .1 Reading and approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Upholding of quality standards.

- .11 Review proposed changes and possible effects on construction schedule and on completion date.
- .12 Health and safety on site.
- .13 Other business.

Partie 2 Products**2.1 NOT USED**

- .1 Not used.

Partie 3 Execution**3.1 NOT USED**

- Not used.

END OF SECTION

CONSTRUCTION PROGRESS SCHEDULE - BAR (GANTT) CHART

Part 1**1.1 RELATED REQUIREMENTS**

- .1 Section 01 14 01 – Health, safety and environment plan specific to the building.

1.2 DEFINITIONS

1. Activity: element of Work performed during course of Project. Activity normally has an expected duration and expected cost and expected resource requirements. Activities can be subdivided into tasks.
2. Bar Chart (GANTT Chart): graphic display of schedule-related information. In a typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally, the Bar Chart should be derived from commercially available computerized project management system.
3. Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
4. Construction Work Week: Monday to Friday, inclusive, will provide a five-day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
5. Duration: number of work periods (not including holidays or other nonworking periods) required to complete the activity or other project element. Usually expressed as workdays or workweeks.
6. Master Plan: summary-level schedule that identifies major activities and key milestones.
7. Milestone: significant event in project, usually completion of major deliverable.
8. Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involve using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
9. Project Planning, Monitoring and Control System: overall system operated by Consultant to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

1. Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
2. Plan to complete Work in accordance with prescribed milestones and time frame.
3. Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
4. Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

CONSTRUCTION PROGRESS SCHEDULE - BAR (GANTT) CHART

Page 2

1.4 ACTION AND INFORMATIONAL SUBMITTALS

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit to the Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
3. Submit Project Schedule to the Departmental Representative within five working days of receipt of acceptance of Master Plan.

1.5 PROJECT MILESTONES

- .1 Project milestones form interim targets for the project schedule.
- .2 The Contractor's project schedule must identify the dates for the following milestones:
 - .1 Date of substantial completion of work: June 20, 2019, including office furniture provided and installed by another contractor.
 - .2 Date of final completion of work: July 4, 2019, including office furniture provided and installed by another contractor.

1.6 MASTER PLAN

1. Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
2. The Departmental Representative will review and return revised schedules to the Contractor within five working days.
3. Revise impractical schedule and resubmit within five working days.
4. Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

- .1 Develop detailed project schedule from master plan.
- .2 Ensure that the detailed project schedule includes as a minimum the steps corresponding to the activities below.
 - .1 Awarding of contract.
 - .2 Shop drawings, samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Excavation.
 - .6 Backfill.
 - .7 Footing.
 - .8 Slab on ground.
 - .9 Structural steel.
 - .10 Wall finish and covering.
 - .11 Interior architectural elements (walls, floors, ceilings).
 - .12 Plumbing.
 - .13 Lighting.

CONSTRUCTION PROGRESS SCHEDULE - BAR (GANTT) CHART

- .14 Electricity.
- .15 Piping.
- .16 Control / regulation.
- .17 Heating, ventilation and air conditioning.
- .18 Carpentry.
- .19 Fire protection.
- .20 Testing and commissioning.
- .21 Materials supplied with a long delivery time.
- .22 Requested delivery dates for equipment provided by the Departmental Representative

1.8 PROJECT SCHEDULE REPORTING

1. Update project schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress. The schedule must also be submitted with each monthly progress payment request.
2. Include as part of the project schedule a narrative report identifying work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS

1. Discuss project schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

Part 2 Products**2.1 NOT USED**

- .1 Not used.

Part 3 Execution**3.1 NOT USED**

- .1 Not used.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information are not produced in SI Metric units, converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Check that field measurements are accurate with respect to adjacent facilities.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Keep one reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided by the Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by a professional engineer registered or licensed in Canada, in the Province of Quebec.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of the Section under which adjacent items will be supplied and installed. Indicate cross-references to design drawings and specifications.

-
- .4 Allow ten working days for Departmental Representative's review of each submission.
 - .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
 - .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
 - .7 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Contractor.
 - .2 Subcontractor.
 - .3 Supplier.
 - .4 Manufacturer.
 - .4 Title of each drawing, data sheet and test report.
 - .5 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .6 Details of appropriate portions of Work as applicable:
 - .1 Materials and details of fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Characteristics such as power, flow or capacity.
 - .5 Performance characteristics.
 - .6 Benchmark standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .9 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request. If no shop drawing is required due to use of a standardized manufactured product, submit one

-
- electronic copy of product data sheets or manufacturer's brochures for requirements requested in specification Sections and as required by Departmental Representative.
- .10 Submit one electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within three years of date of contract award for project.
- .11 Submit one electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Documents printed on manufacturer's letterhead and signed by a representative of the manufacturer must attest that the product, system or material meets specification requirements.
- .2 Certificates must be dated after award of project contract, complete with project name.
- .12 Submit one electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
- .1 Pre-printed documents describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .13 Submit one electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.one
- .14 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .15 Submit one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Delete information not applicable to project.
- .17 Supplement standard information to provide details applicable to project.
- .18 If upon review by Departmental Representative no errors or omissions are discovered or if only minor corrections are made, one electronic copy will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .19 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
- .1 This review shall not mean that the Departmental Representative approves detailed design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that

pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

- .20 Copy of certification of professional accreditation and of environmental awareness accreditation (HRAI card) of all refrigeration specialists and technicians involved.

1.5 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's office.
- .3 Notify Departmental Representative in writing, at time of submission, of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples that Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 MOCK-UPS

- .1 Erect mock-ups in accordance with Section 01 45 00 - Quality Control.

1.7 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit documents required by the Occupational Health and Safety Commission (CSST).

Partie 2 Products

2.1 NOT USED

- .1 Not Used.

Partie 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY OF THE LEED CERTIFICATION SYSTEM

- 1.1.1 The building owner wishes to follow the process for a LEED v4 Interior Design and Construction certification to eventually apply, following future renovations, for certification from the Canada Green Building Council (CaGBC). The contractor and the subcontractors, suppliers and manufacturers must take part in the LEED certification process.
- 1.1.2 The LEED checklist showing the selected elements appears in **Schedule A** of this document.
- 1.1.3 LEED building evaluation systems consists of a list of credits grouped by category. Each credit represents sustainable design and construction strategies which may provide points when implemented. Based on total points accumulated, four certification levels are possible. There are also prerequisites, which are compulsory conditions for certification. The certification file, consisting of many documents such as signed letters, plans, shop drawings, approved data sheets, etc., are prepared by the person to whom the credit has been assigned. Once this file is complete, it is submitted to the CaGBC for analysis, review and issuances of a certificate.
- 1.1.4 These specifications are based on the requirements of the LEED v4 Interior Design and Construction - Commercial Interiors evaluation system.
- 1.1.5 Some LEED prerequisites and credits required to obtain certification depend on product selection. Thus, one of the criteria in the analysis of the data sheets submitted by the contractor will be compliance with LEED requirements.
- 1.1.6 The contractor must comply with the procedures specific to the LEED certification system outlined in this section. Required procedures include meetings devoted specifically to LEED certification. These meetings will be conducted with the contractor's LEED Coordinator.
- 1.1.7 Following the contract award, the contractor must identify its own LEED coordinator. This coordinator will be in charge of managing and coordinating the LEED elements related to the contractor's tasks.
- 1.1.8 A commissioning process will be applied to the project. The contractor and its subcontractors will be subject to this process and must play an active role in LEED commissioning. The commissioning plan inserted in Section 01 91 13.16 identifies the steps to be followed in this process.
- 1.1.9 The Designated Representative will hold one (1) information meeting intended for the successful bidder and the subcontractors to outline LEED requirements and the project's environmental goals.

1.2 RELATED REQUIREMENTS

- 1.2.1 All sections in the specifications.
- 1.2.2 All schedules.

1.3 DEFINITIONS

- 1.3.1 **LEED** – Acronym for Leadership in Energy and Environmental Design, a sustainable building evaluation system regulated by the U.S. Green Building Council (USGBC).

- 1.3.2 **LEED Coordinator** – Representative of the firm hired by the owner to assist the team and coordinate LEED certification of the building.
- 1.3.3 **LEED Online** – Web platform on which all supporting documents for certification must be filed. The LEED Coordinator provides access to this platform, where the professionals and the contractor can directly access the credits for which they are responsible and upload the documentation.
- 1.3.4 **FSC** – Forest Stewardship Council.
- 1.3.5 **SAS** – Sustainable Agricultural Standard.
- 1.3.6 **VOC** – Volatile organic compounds: substances which, at room temperature, turn into breathable gases that accumulate in the atmosphere. These substances, some of which are toxic to humans, participate in the formation of ground-level ozone and smog.
- 1.3.7 **CFC** – Chlorofluorocarbons.
- 1.3.8 **HCFC** – Hydrochlorofluorocarbons: temporary CFC replacement gases, with lower potential for ozone layer depletion but still contributing to climate change.
- 1.3.9 **HFC** – Hydrofluorocarbons: CFC replacement gases that do not contribute to depletion of the ozone layer but that contribute to climate change.
- 1.3.10 **LEED** – Leadership in Energy and Environmental Design.
- 1.3.11 **IAQ** – Indoor Air Quality.
- 1.3.12 **Chain-of-Custody Certificate** – A set of documents signed by manufacturers certifying that the wood used to make products was obtained from FSC certified forests.
- 1.3.13 **Rapidly Renewable Materials** - Bio-based materials other than food or feed that are composed in whole, or in significant part, of biological products, renewable agricultural materials (including plant, animal, and marine materials), or forestry materials.
- 1.3.14 **Regionally Manufactured Materials** – Materials whose purchase, final manufacturing and extraction sites are located within a radius of 160 km from the project. By extraction is meant the place of extraction of the raw material. Various metals and plastic-based materials generally do not count for regional materials.
- 1.3.15 **Recycled content** - Defined in accordance with International Organization of Standardization document “ISO 14021 – Environmental labels and declarations – Self-declared (Type II environmental labelling).”
 - .1 Wastes and scraps from the manufacturing process, that are combined with other materials after a minimal amount of reprocessing for use in further production of the same product, are not recycled materials.
 - 2. Discarded materials from one manufacturing process that are used as materials in another manufacturing process are pre-consumer (post-industrial) recycled materials.

1.4 REFERENCES

- 1.4.1 Canada Green Building Council (CaGBC).
 - .1 LEED v4 for Interior Design and Construction Reference Guide.
 - .2 CaGBC Credit Interpretation Ruling (CIR) database.
 - .3 LEED Online access: <http://www.usgbc.org/leedonline.new>
 - .4 Access to credit interpretations, credit requirements and the reference guide Addenda and Errata : <http://www.usgbc.org/credits>
- 1.4.2 American Society of Heating Refrigeration and Air-Conditioning (ASHRAE)
 - .1 ANSI/ASHRAE 52.2-1999, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size (ANSI approved).
 - .2 ASHRAE 55-2004, Thermal Environmental Conditions for Human Occupancy (avec errata, mais sans addenda).
 - .3 ASHRAE 62.1-2007, Ventilation for Acceptable Indoor Air Quality (avec errata, mais sans addenda).
 - .4 ASHRAE/IESNA 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential Buildings (avec errata, mais sans addenda).
- 1.4.3 American Society for Testing and Materials (ASTM)
 - .1 ASTM E408e1, Standard Test Method for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
 - .2 ASTM E903, Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
 - .3 ASTM E1980, Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
 - .4 ASTM E1918, Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
 - .5 ASTM C1371, Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissiometers.
 - .6 ASTM C1549, Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using Portable Solar Reflectometer.
 - .7 ASTM E779, Standard Test Method for Air Leakage Rate by Fan Pressurization.
- 1.4.4 California Department of Public Health (CDPH)
 - .1 State of California Standard 1350, Section 9, Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small Scale Environmental Chambers (including 2004 addenda).
- 1.4.5 Carpet and Rug Institute (CRI)
 - .1 CRI Green Label Indoor Air Quality Test Program – Green Label Testing Program.
- 1.4.6 CSA International
 - .1 CAN/CSA-ISO 14021-00 (C2009), Environmental labels and declarations – Self-declared environmental claims (Type II environmental labelling).
 - .2 CAN/CSA Z769-00, Phase II – Environmental Site Assessment.
 - .3 CAN CSA S478-07, Guidelines on Durability in Buildings.
- 1.4.7 Forest Stewardship Council (FSC)
 - .1 FSC Principles and Criteria for International Guidelines to forest management.
- 1.4.8 GreenGuard

- .1 GREENGUARD Certification Standards for Low-Emitting Products.
- 1.4.9 Scientific Certification Systems (SCS) Global Services
 - .1 FloorScore indoor air quality certification for hard surface flooring.
- 1.4.10 Green Seal Environmental Standards
 - .1 Standard GS-11 (1993), Paints.
 - .2 Standard GC-03 (1997), Anti-Corrosive Paints.
 - .3 Standard GS-36 (2000), Adhesives for Commercial Use.
- 1.4.11 International Performance Measurement & Verification Protocol (IPMVP)
 - .1 Concepts and options for determining energy savings in new construction, Vol. III (2003).
- 1.4.12 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113 (2004), Architectural Coatings.
 - .2 SCAQMD Rule 1168 (2005), Adhesives and Sealants Applications.
- 1.4.13 Sheet Metal and Air Conditioning Contractors National Association (SMACNA) (2007).
 - .1 Indoor Air Quality (IAQ) Guidelines for Occupied Buildings Under Construction, 2nd edition, 2007, ANSI/SMACNA008-2008, Chapter 3.
- 1.4.14 United States Environmental Protection Agency
 - .1 Construction General Permit (2003).
 - .2 Clean Air Act Title VI, Complying with The Section 608 Refrigerant Recycling Rule.
- 1.4.15 Washington State Department of Ecology
 - .1 Stormwater Management Manual for Western Washington, Volume II, Construction Stormwater Pollution Prevention (2005)
- 1.4.16 USGBC Building Product Disclosure and Optimization Calculator
<http://www.usgbc.org/resources/bpdo-calculator>
- 1.4.17 GreenWizard – searchable database of building products with various types of documentation that may be suitable for LEED v4. <https://www.greenwizard.com/>
- 1.4.18 GreenSpec – searchable database of building products with various types of documentation that may be suitable for LEED v4. <http://greenspec.buildinggreen.com/>
- 1.4.19 UL Sustainable Product Database – searchable database of building products with various types of documentation that may be suitable for LEED v4.
<http://www.ul.com/global/eng/pages/offerings/businesses/environment/databasesearch>
- 1.4.20 Global Reporting Initiative Sustainability Disclosure Database – searchable database of Corporate Sustainability Reports which may be compliant with LEED v4.
<http://database.globalreporting.org/search>

- 1.4.21 Pharos Project – searchable database of Manufacturer Inventories which may be compliant with LEED v4. <https://www.pharosproject.net/>
- 1.4.22 Cradle to Cradle Certified Products Registry – searchable database of C2C Certified products. <http://www.c2ccertified.org/products/registry>
- 1.4.23 HPD Collaborative – manufacturer resource for the creation of Health Product Declarations. <http://hpdcollaborative.org/>

1.5 PREPARATORY MEETING

- 1.5.1 Plan a preparatory meeting prior to site mobilization. This meeting will bring together the general contractor, the contractor's LEED Coordinator and the construction professionals to discuss the following points:
 - .1 LEED certification and requirements.
 - .2 Documents required to obtain LEED certification.
 - .3 Procedures and plans to be instituted for LEED certification.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- 1.6.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- 1.6.2 Product Data:
 - .1 Submit required data sheets as well as the manufacturer's instructions and documentation. Data sheets must include product characteristics, performance criteria, physical size, finish and limitations.

1.7 SUSTAINABLE DESIGN SUBMITTALS

- 1.7.1 Submit to the LEED Coordinator the completed letters, calculations, and electronic templates.
- 1.7.2 Submit all documentation for LEED prerequisites and credits mentioned in other sections.
 - .1 When a project consists of separate submittals, LEED prerequisite and credit documentation must be submitted as distinctly separate files.
- 1.7.3 Submit Project Cost Data: provide statement for total cost for building materials used for project. Include cost breakdown indicating total cost of mechanical and electrical components.
- 1.7.4 Documents to submit for LEED certification:
 - .1 Reduction of indoor water consumption (GEEpr1 and cr1)
 - .1 Data sheet of plumbing fixtures showing they meet WaterSense certification
 - .2 Flow of plumbing fixtures must be identified on the plumbing fixture data sheets.
 - .2 Construction and demolition waste management (MRpr2 and cr6)
 - .1 The contractor shall produce and implement a construction waste management plan as outlined in Section 01 74 19 – Construction Waste Management
 - .3 Environmental Product Declaration (MR cr3)
 - .1 The contractor shall identify on Material Information Sheet in **Schedule D** if the product has an Environmental Product Declaration and, if so, provide this declaration:

- .1 Product for which there is a specific Environmental Product Declaration: product with lifecycle critical analysis, meeting ISO 14044.
- .2 Product for which there is a specific Environmental Product Declaration: product with lifecycle critical analysis, meeting ISO 14025, 14040 and 14044 and EN15804 or ISO 21930.
- .3 Third-party-certified products providing a reduction in impact exceeding the industry average in at least three of the following areas, are evaluated at 100% of their cost in calculations for obtaining credit:
 - .1 ozonosphere reduction, in kg of CFC-11;
 - .2 acidification of land and water sources, in H⁺ ion molar concentration or kg of SO₂;
 - .3 global warming potential (greenhouse gases), in CO equivalent;
 - .4 eutrophication, in kg of nitrogen or kg of phosphate;
 - .5 ground-level ozone formation, in kg of NO_x, kg of O₃ equivalent or kg of ethane;
 - .6 decrease in non-renewable energy resources, in MJ.
- .2 Products extracted, manufactured and purchased within a radius of 160 km from the project will double the product's contribution value based on cost.
- .4 Supply of raw material (MR cr4)
 - .1 The contractor shall identify, on the Material Information Sheet in **Schedule D**, the raw material supply.
 - .2 Products and materials that have made public a report from their suppliers of raw materials indicating the source of the raw materials and confirming their commitment to use land with long-term respect for the environment, to reduce environmental damage caused by extraction or manufacturing processes, and complying voluntarily with relevant standards or programs that set criteria for responsible sourcing.
 - .3 The following reference frameworks can be used for reporting corporate sustainability:
 - .1 Global Reporting Initiative (GRI) Sustainability Report
 - .2 Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises
 - .3 U.N. Global Compact: Communication of Progress
 - .4 ISO 26000: 2010 Guidance on Social Responsibility
 - .4 Use products and materials that meet the following requirements for at least 25% of the total value of products installed permanently in the project.
 - .1 Extended producer responsibility;
 - .2 Bio-sourced materials;
 - .3 Wood products;
 - .4 Reuse of materials;
 - .5 Recycled content;
 - .6 U.N. Global Compact: Communication of Progress
 - .7 ISO 26000: 2010 Guidance on Social Responsibility

- .5 Products extracted, manufactured and purchased within a radius of 160 km from the project will double the product's contribution value based on cost.
- .5 Ingredients of materials (MR cr5)
 - .1 The contractor shall indicate in the Product Information Sheet in **Schedule D** if the product has a chemical indicator and, if so, shall provide this inventory.
 - .2 Use products (including furniture) from various manufacturers that use one of the following programs to demonstrate that the product's inventoried chemical ingredients have a content of at least 0.1% (1,000 ppm):
 - .1 Manufacturer's inventory;
 - .2 Declaration of the product's undesirable effects on health;
 - .3 Cradle to Cradle certification, v2 Basic or v3 Bronze.
 - .3 Use products and materials that meet the following requirements for 25% of the total value of the products installed permanently in the products:
 - .1 Green Screen v1.2 Benchmark
 - .2 Certification Cradle to Cradle
 - .3 Optimisation REACH
 - .4 Use products and materials that meet the following requirements for at least 25% of the total value of the products installed permanently in the project:
 - .1 Come from manufacturers taking part in validated and structured health, safety, hazard and risk programs that document at least 99% (by weight) of the ingredients making up the construction products or materials.
 - .2 Come from manufacturers whose supply chain is verified by an independent third party.
 - .5 Products extracted, manufactured and purchased within a radius of 160 km from the project will double the product's contribution value based on cost.
- .6 Low-emission materials (QEI cr2)
 - .1 The contractor shall provide the data sheets for paints, adhesives, floor finishes, ceilings, walls, sound insulation and thermal insulation. Each data sheet must indicate the COV concentration. The products selected must have a concentration lower than that shown in the table in **Schedule B** of this section.
- .7 IAQ management plan during construction (QEIcr3)
 - .1 The contractor shall produce and implement a plan for management of Indoor Air Quality during construction.
- .8 Design innovation – low-mercury lighting fixtures (ID cr1)
 - .1 The contractor shall provide the data sheet for lighting fixtures. This sheet shall indicate whether the device contains mercury and, if so, the mercury concentration.

PART 2 – PRODUCTS

2.1 NOT USED

PART 3 – EXECUTION

3.1 CONTRACTOR'S RESPONSIBILITIES

- 3.1.1 Designate a LEED Coordinator in charge of LEED coordination on the job site. The LEED Coordinator must be present on the job site on a regular basis. This person may also be the waste management coordinator.
- 3.1.2 Understand the LEED certification system.
- 3.1.3 Make all procedures, programs and plans instituted for LEED certification available to visitors and workers for consultation. Keep these documents up to date.
- 3.1.4 Comply with the goals, requirements and documents to be submitted for each credit.
- 3.1.5 Coordinate with all subcontractors compliance with all procedures, programs and plans instituted for the desired LEED certification
- 3.1.6 Select materials and systems to obtain the desired credits.
- 3.1.7 Track the information contained in the material information sheets to be knowledgeable when signing the LEED letters for your assigned credits at the end of the project.
- 3.1.8 Provide all required documentation (documents submittals) for LEED certification.
- 3.1.9 Keep work areas clean and ensure daily cleaning of debris, scape and dust generated by the work.
- 3.1.10 The contractor's LEED Coordinator must be able to compile documentation so as to attend a monthly review with the project's LEED Consultant.
- 3.1.11 **Schedule C** provides the list of the contractor's deliverables.

3.2 AIR QUALITY CONTROL

- 3.2.1 Institute an air quality plan that meets the requirements in Chapter 3 of the 2nd edition of the Indoor Air Quality (IAQ) Guidelines for Occupied Buildings under Construction (2007) from the Sheet Metal and Air Conditioning National Contractors Association (SMACNA). Conduct work in accordance with the plan's requirements even if the building is unoccupied.
- 3.2.2 The plan must be updated based on changes in site conditions and must include, but without being limited to, the following items:
 - .1 Identification of the worksite.
 - .2 Responsibilities.
 - .3 Evaluation of potential sources of air quality problems.
 - .4 Description of implementation measures and date.
 - .1 Protection of the HVAC system.
 - .2 Control of pollutants at source.
 - .3 Interruption of the flow of pollutants.
 - .4 Cleaning.
 - .5 Construction schedule.
 - .5 Daily inspections and corrective measures.
 - .6 Site maintenance methods.
 - .7 Air cleaning timeline at the end of construction (purge).
 - .8 Weekly verification sheet.
 - .9 Letter of commitment from subcontractors.

- 3.2.3 Clean and monitor the building's air. Issue to the Departmental Representative the starting and finishing dates, air flows, volumes and durations of outside air intake and total volume of new air brought into the building. Use 100% new air and MERV 8 filters for air cleaning. Clean after the installation of all finishes and after all corrections of deficiencies. Indoor temperature must be at least 16°C with relative humidity of no more than 60%. Install new minimum-efficiency MERV 13 filters at the end of air cleaning and provide evidence of replacement of the filters.

SCHEDULE A – Preliminary LEED point grid

LEED v4 for ID+C: Commercial Interiors
Project ChecklistProject Name: 1843 OACI Showcase
Date: 13-nov-2018

Y ? N



cr1 Integrative Process

2

15	2	1	Location and Transportation	Notes	18
			cr1 LEED for Neighborhood Development Location		18
8			cr2 Surrounding Density and Diverse Uses	8035m2/hectare	8
7			cr3 Access to Quality Transit	360W/216WE	7
		1	cr4 Bicycle Facilities	180m ->290m	1
2			cr5 Reduced Parking Footprint	3.0630376344 /100m2 = 1318 79 spaces now	2

6	2	4	Water Efficiency	Notes	12
Y			pr1 Indoor Water Use Reduction	20%	Requis
6	2	4	cr1 Indoor Water Use Reduction	25%-50%	12

2	17	19	Energy and Atmosphere	Notes	38
Y			pr1 Fundamental Commissioning and Verification		Requis
Y			pr2 Minimum Energy Performance	3%, opt2-prescriptive	Requis
Y			pr3 Fundamental Refrigerant Management	no CFC, BIGIS will validate	Requis
		5	cr1 Enhanced Commissioning		5
16	9		cr2 Optimize Energy Performance	ASHRAE 90.1-2010	25
2			cr3 Advanced Energy Metering	send info to Anna & Eliza	2
		3	cr4 Renewable Energy Production		3
1			cr5 Enhanced Refrigerant Management		1
		2	cr6 Green Power and Carbon Offsets		2

2	5	6	Materials and Resources	Notes	13
Y			pr1 Storage and Collection of Recyclables	5 base + batteries/mercury/electronic	Requis
Y			pr2 Construction & Demolition Waste Management Planning	diversion goals	Requis
1			cr1 Long-Term Commitment	10 year lease	1
		3	cr2 Interiors Life-Cycle Impact Reduction		4
1	1		cr3 BPDO – Environmental Product Declaration		2
1	1		cr4 BPDO – Sourcing of Raw Materials		2
1	1		cr5 BPDO – Material Ingredients		2
1	1		cr6 Construction and Demolition Waste Management	On-site separation	2

4	11	2	Indoor Environmental Quality	Notes	17
Y			pr1 Minimum Indoor Air Quality Performance	ASHRAE 62.1 2010	Requis
Y			pr2 Environmental Tobacco Smoke Control		Requis
		2	cr1 Enhanced Indoor Air Quality Strategies		2
1	2		cr2 Low-Emitting Materials		3
1			cr3 Construction Indoor Air Qly Management Plan	SMACNA	1
		2	cr4 Indoor Air Quality Assessment	purge ou test	2
		1	cr5 Thermal Comfort	ASHRAE 55-2010	1
1	1		cr6 Interior Lighting		2
		3	cr7 Daylight		3
1			cr8 Quality Views		1
		2	cr9 Acoustic Performance		2

1	5	0	Innovation	Notes	6
		5	cr1 Innovation		5
1			cr2 LEED Accredited Professional		1

1	3	0	Regional Priority	Notes	4
1			cr1 Regional Priority: Specific Credit	Surrounding density & diverse uses	1
		1	cr2 Regional Priority: Specific Credit	Indoor water use reduction 6pts	1
		1	cr3 Regional Priority: Specific Credit	Thermal confort	1
		1	cr4 Regional Priority: Specific Credit	Optimize E perf 10pts	1
				Enhanced Cx 4pts, LCA 3pts	

31	45	33	TOTALS	Possible Points:	110
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80+					

SCHEDULE B – Low-emission building products and systems

TABLE 1. Thresholds of compliance with emissions and content standards for 6 categories of materials

Category	Threshold	Emissions and content requirements
Interior paints and coatings applied on site	At least 90%, by volume, for emissions; 100% for VOC content	<ul style="list-style-type: none"> General Emissions Evaluation for paints and coatings applied to walls, floors, and ceilings VOC content requirements for wet applied products
Interior adhesives and sealants applied on site (including flooring adhesive)	At least 90%, by volume, for emissions; 100% for VOC content	<ul style="list-style-type: none"> General Emissions Evaluation VOC content requirements for wet applied products
Flooring	100%	<ul style="list-style-type: none"> General Emissions Evaluation
Composite wood	100% not covered by other categories	<ul style="list-style-type: none"> Composite Wood Evaluation
Ceilings, walls, thermal, and acoustic insulation	100%	<ul style="list-style-type: none"> General Emissions Evaluation
Furniture	At least 90%, by cost	<ul style="list-style-type: none"> Furniture Evaluation

TABLE 5. Building products and systems

Building system	Includes	Exceptions	Calculations
Insulation (thermal and acoustic)	Includes the following, if inside the building waterproofing membrane: <ul style="list-style-type: none"> Thermal and acoustical boards, batts, rolls, blankets Sound attenuation fire blankets Loose fill insulation Spray foam insulation (open and closed cell) 	Insulation on interior or exterior of HVAC ductwork may be excluded (because of lack of modeling scenarios)	<p>Total area of insulation is based on installed planar areas of each insulation type. Total area of insulation for project is sum of planar areas of all types of insulation in defined scope. Percentage of compliant insulation is calculated based on percentage of compliant insulation surface area.</p> <p>If insulation system comprises more than one component, all components identified in spreadsheet matrix must be compliant for system to qualify for full credit. Otherwise, use Equation 2 to determine credit percentage.</p> <p>Example of multicomponent insulation system is insulation board bonded to structural components with adhesive.</p>
Flooring	Includes all finished flooring: <ul style="list-style-type: none"> Subflooring Fluid and trowel-applied adhesives and grout (full spread only) Engineered wood Resilient flooring Carpeting Mineral-based tile 	<p>Testing not required:</p> <ul style="list-style-type: none"> Mineral-based finished flooring without integral organic-based modifiers, or topically applied film-forming or penetrating coatings such as tile, terrazzo, and masonry Associated site-applied adhesives, grouts, and sealers must be meet requirements for adhesives and sealants. Untreated and unfinished solid wood flooring 	<p>Total finished floor area for project is sum of areas of all flooring.</p> <p>Percentage of compliant flooring is calculated based on percentage of compliant floor area.</p> <p>If flooring system comprises more than one component, all components identified in spreadsheet matrix must be compliant for system to qualify for full credit.</p> <p>Flooring systems generally comprise multiple components; identify all components in spreadsheet matrix. This includes all site-applied products and materials such as adhesives, underlays, grouting, stains, and sealers.</p> <p>Examples of multicomponent flooring systems are carpet with cushion, resilient flooring with flooring adhesive, wood flooring with site-applied finish, cut stone flooring with site-applied sealer, tile with adhesive and grout, and concrete finish consisting of stain, sealer and top coat.</p>

TABLE 5. (CONTINUED) Building products and systems

Building system	Includes	Exceptions	Calculations
Ceilings	<ul style="list-style-type: none"> Overhead structural elements (exposed, finished, unfinished) Direct-applied ceiling systems Suspended systems (including canopies and clouds) Glazed skylights Examples include painted drywall and plaster, acoustical suspension systems, specialty systems (plastic, metal, wood), and painted or otherwise finished structural elements When it is unclear what is wall versus ceiling, project teams may classify elements either way, as they deem appropriate 	<p>Testing not required:</p> <ul style="list-style-type: none"> Exposed concrete Exposed metal structural elements Factory-finished metal ceiling products Glazing Ceiling systems considered architectural woodwork must comply with prescriptive material requirements specified for built-in cabinetry Bare concrete or metal structural elements; tile, masonry and cut stone without integral organic-based coatings and sealants; transition strips 	<p>Total ceiling area for project is ceiling plan area for project plus areas of additional finished ceiling planes.</p> <p>Percentage of compliant ceiling is calculated based on percentage of compliant ceiling area.</p> <p>If ceiling system comprises more than one component, all components identified in USGBC's low-emitting materials calculator must be compliant for system to qualify for full credit. Examples of multicomponent ceiling systems are drywall panel with skim coat, primer and finish paint; manufactured wood coffer applied with adhesive; and any ceiling surface with site-applied paint or coating.</p>
Walls	<ul style="list-style-type: none"> Generally vertical structural elements (exposed, finished, unfinished) All finish wall treatments Interior columns Exterior and interior wall glazing Doors Partial-height vertical surfaces (e.g., transoms, bulkheads, pony walls, knee walls, and similar structures normally constructed and finished on-site) Architectural woodwork applied to walls Built-in cabinetry Floor-to-ceiling, moveable, demountable wall systems and partitions When it is unclear what is wall versus ceiling, project teams may classify elements either way, as they deem appropriate. 	<ul style="list-style-type: none"> Office furniture system partitions (e.g., partial-height or floor-to-ceiling cubicle panels that are manufactured off-site) are addressed under Furniture and furnishings <p>Testing not required:</p> <ul style="list-style-type: none"> Bare concrete or metal structural elements; tile, masonry and cut stone without integral organic-based coatings and sealants; factory-finished metal wall products; and glazing. Plaster and stucco without >1% organic additives Wall systems considered to be architectural woodwork must comply with prescriptive material requirements specified for built-in cabinetry (see below) Salvaged and reused architectural woodwork is available for credit without any requirements other than those associated with site-applied paints, coatings, adhesives, sealants 	<p>Total wall area for project is total interior surface area of all elements within scope of wall systems category.</p> <p>Because of potential complexity of area calculations for large projects, wall surface areas may be estimated as for painting.</p> <p>Percentage of compliant wall systems is calculated based on percentage of compliant wall area.</p> <p>If wall system is comprises more than one component, all components identified in spreadsheet matrix must be compliant for system to qualify for full credit. Examples of multicomponent wall systems are drywall panel and acoustic panel applied with adhesive, drywall panel with primer and finish paint coats, and movable wall system with wood frame, wood door, and fabric-covered acoustic panels.</p>
Built-in cabinetry (subcategory of wall systems in Option 2)	<p>Includes all furniture-like items built on site that are typically procured by general contractor at earlier stage than furniture and furnishings</p> <ul style="list-style-type: none"> Examples: cabinets, other storage units, shelving, product-display units, integrated or built-in reception desks and seating 		<p>Total emitting surface area of built-in cabinetry is the area exposed to interior</p> <p>For built-in cabinetry, compliance is determined based on following prescriptive construction criteria intended to limit sources of indoor VOC contaminants:</p> <ul style="list-style-type: none"> Products with composite woods constituting all or portion of product (e.g., countertops, cabinetry with composite wood cores and internal components) must be constructed with composite wood documented to have low formaldehyde emissions (compliant to CARB ATCM limits for no added formaldehyde or ultra-low formaldehyde emitting or its equivalent). Materials with no defined category under ATCM must follow requirements for particleboard. Built-in cabinetry constructed of inherently nonemitting materials (e.g., metal with factory-applied powder coating or plating) are eligible for credit without testing. Site-applied finishes must comply with VOC content limits and VOC emissions limits for paints and coatings. Site-applied adhesives must comply with VOC content limits for adhesives and sealants.

TABLE 5. (CONTINUED) Building products and systems

Building system	Includes	Exceptions	Calculations
Furniture and Furnishings	<p>All stand-alone furniture items purchased for project</p> <ul style="list-style-type: none"> Examples: individual and group seating; open-plan and private office workstations; desks and tables of all types; storage units, credenzas, bookshelves, filing cabinets, and other case goods; wall-mounted, visual display products (e.g., markerboards and tackboards, excluding electronic display products); and miscellaneous items (e.g., easels, mobile carts, freestanding screens, and movable partitions) Movable partitions include office furniture system cubicle panels that are typically integrated with work surfaces, desks, and storage furniture. 	<ul style="list-style-type: none"> Salvaged and reused furniture more than one year old at time of occupancy is available for credit without any IAQ testing Office accessories (e.g., desk-top blotters, trays, tape dispensers, waste baskets, work tools normally hung on office cubicle panels, monitor arms, and all electrical items such as desk lamps and small appliances) are excluded 	<p>Total amount of stand-alone furniture for project and the relative contributions of these products is based on purchase costs (i.e., excluding labor for installation).</p> <p>To achieve full credit, 50% or more of total stand-alone furniture costs must be compliant for project to earn credit for this category. Product compliance of 90% or more is treated as 100%.</p> <p>Furniture and furnishing items must be tested following ANSI/BIFMA Standard Method M7.1–2011. Use either a concentration modeling approach or emission factor approach. Model test results using open plan, private office, or seating scenario in ANSI/BIFMA M7.1 as appropriate. USGBC-approved equivalent testing methodologies and contaminant thresholds are also acceptable. For classroom furniture, use standard school classroom model in CDPH Standard Method v1.1. Documentation submitted for furniture must indicate modeling scenario used to determine compliance.</p> <p>Furniture compliant with Section 7.6.1 of BIFMA e3-2011 counts for half credit, by cost and furniture compliant with Section 7.6.2 of BIFMA e3-2011 counts for full credit, by cost. Furniture compliant with both sections is eligible for full credit, by cost, not to exceed 100% of the furniture cost.</p>

SCHEDULE C – List of contractor's deliverables

	10 days prior to start-up	Upon start-up	Weekly	During construction	At construction completion	If necessary
Construction waste management						
Waste reduction workplan	x					
Reliable method for tracking and recording waste					x	
Scale tickets				x		
List of approved and/or authorized recycling facilities	x					
Letters from recycling facilities, indicating end product(s) from recycling	x					
Minimum of 2 pictures of waste storage/container, taken once a month during work				x		
Interior air quality management						
Interior air quality workplan	x					
A minimum of 6 pictures per week, date stamped and with description of illustrated measure			x			
If the ventilation units are used during construction, supply a list of filters and dates at which they were changed					x	
Technical documentation						
Material Information Sheet for all materials used on project		x				
Technical documentation and approved certificates for low emission materials used, indicating the quantity of VOC.				x		
Invoices showing the FSC or SFI numbers of the last supplier, and FSC or SFI certificates for all wood products or wood based products				x		
Technical data sheet for the permanent control systems				x		
Budget						
Total project cost for materials						
Total project cost for wood based products					x	
Schedule						
Include the commissioning activities in the schedule		x				
Include the purge procedure or air quality tests (when applicable) in the schedule		x				

SCHEDULE D – Material Information Sheet

Complete this sheet for all construction materials and products on the project, and submit technical data sheet, MSDS and all other documents validating the information filled out in this sheet.

Project			
Contractor			Tel
Responsible			Email

Information on the Material	
Spec section	
Material name	
Description/Use of the material	
Cost of material (excluding labour and administration)	
Subcontractor /Supplier	Manufacturer
Address	Address
Responsible	Responsible
Tel	Tel
Email	Email

Complete all required information and write N/A when non applicable.

CREDIT	DESCRIPTION	INFORMATION	JUSTIFICATION of MANUFACTURER
MR	Material ingredients		
	Pre and post-consumption recycled content	% / %	EPD
	health Product Declaration available	Yes / No	HPD
	Cradle to Cradle Certification	Yes / No	Certificat
	GreenScreen v1.2 Benchmark	Yes / No	Certificat
	REACH Certification	Yes / No	Certificat
	Other equivalent certification:		Certificat
	Regional material (160 km radius)		
	Distance manufacturer and job site	km	CSR/ map
	Distance extraction and manufacturer	km	CSR/ map
	Means of transportation (Road, Rail, Sea)	Road / Rail / Sea	Manufacturer Info
	% of product manufactured and extracted locally	%	Manufacturer Info
	Certified wood (softwood lumber and composite wood)		
	Indicate n° of certificat (FSC / SFI / other)		Certificat / invoice
IEQ	Low emission products		
	Product tested by third party	Yes / No	Certificat
	Added methylene chloride and perchloroethylene	Yes / No	Data sheet / MSDS
	Adhesives and sealant : VOC content	g/l	MSDS
	Paints and coatings : VOC content	g/l	Data sheet / MSDS
	Tested flooring system	Yes / No	Certificat
	Tested composite wood and agrifiber products	Yes / No	Certificat / manufacturer letter
	Tested ceiling, wall and insulation	Yes / No	Data sheet / Certificat
	Tested furniture	Yes / No	Certificat

I _____ (subcontractor or supplier), declare that the information presented is compliant with the supplied products for the project indicated above, and that the supporting evidence is attached to this document.

Signature _____ Date _____

Table of contents

*ATTENTION : THIS DOCUMENT IS ALSO AVAILAIBLE AT R/RPS/AES/NMS/Québec/Août
2016/Français/Division 1 Exigences générales*

- 1.1 à 1.18 General Clause*
- 1.19 Blasting*
- 1.20 Powder Actuated Device*
- 1.21 Use of Public Roads*
- 1.22 Lockout-Tagout*
- 1.23 Electrical Work*
- 1.24 Asbestos Exposure*
- 1.25 Fungal Contamination*
- 1.26 Exposure to Silica*
- 1.27 Sandblasting*
- 1.28 Lead-Base Paint Removal*
- 1.29 Exposure to animal's Fecal Droppings*
- 1.30 Respiratory protection*
- 1.31 Fall Protection*
- 1.32 Scaffolding*
- 1.33 Confined Spaces*
- 1.34 Excavation Work*
- 1.35 Lifting Loads with Crane or Boom Truck*
- 1.36 Hot Work*
- 1.37 Roofing Work*
- 1.38 Steel structure erection or dismantling work*
- 1.39 Work Near Bodies of water*
- 1.40 Interior Use of Internal Combustion Engines*
- 1.41 Temporary Heating*
- 1.42 Work Near Overhead Power Lines*
- 1.43 Diving Operations*
- 1.44 Health and safety subordination agreement*

Partie 1 General

GENERAL NOTE: in this section the term “site” includes all the facilities located at the site where the work is taking place (construction site, buildings, access, infrastructure, parkings, bays, etc.).

1.1 RELATED REQUIREMENTS

- .1 Section 01 52 00 - Construction facilities.
- .2 Section 01 14 01 - Health and safety requirements.

1.2 REFERENCES

- .1 Province of Quebec
 - .1 Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting occupational health and safety).
 - .2 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental representative, and the CNESST the site-specific prevention program, as outlined in the article “GENERAL REQUIREMENTS”, at least 10 days prior to the start of work.
- .3 Departmental representative will review Contractor’s site-specific prevention program and provide comments to Contractor within 10 days after receipt of the document. Revise plan as appropriate and resubmit to Departmental representative within 5 days after receipt of comments from Departmental representative. Departmental representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4 Departmental representative’s review of Contractor’s site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor’s overall responsibility for construction Health and Safety during the work.
- .5 Submit copies of Contractor’s authorized representative’s construction site health and safety inspection reports to Departmental representative.
- .6 Submit to Departmental representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.

-
- .7 Submit to Departmental representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.
- The investigation report shall contain at least the following:
1. date, time and place of accident;
 2. name of sub-contractor involved in the accident;
 3. number of persons involved and condition of wounded;
 4. witness identification;
 5. detailed description of tasks performed at the time of the accident;
 6. equipment being used to accomplish the tasks performed at the time of the accident;
 7. corrective measures taken immediately after the accident;
 8. causes of the accident;
 9. preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals. Contractor must also keep one copy of these documents on the construction site.
- .9 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental representative.
- .10 Submit to Departmental representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article "GENERAL REQUIREMENTS" of this section.
- .11 Submit to Departmental representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
- .1 first aid in the workplace and cardiopulmonary resuscitation;
 - .2 work likely to release asbestos dust (mandatory for all work where asbestos is present);
 - .3 work in confined spaces (mandatory for all work in confined spaces);
 - .4 lockout-tagout procedures (mandatory for all work requiring lockout);
 - .5 safely operating forklift trucks (mandatory for all forklift usage);
 - .6 safely operating elevating work platforms (mandatory for the use of all elevating platforms);
 - .7 any other requirement of Regulations or the safety program.
- In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
- .12 Engineer's plans and certificates of compliance: Contractor must submit to the Departmental representative and to the *Commission des normes, de l'équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by engineer of all plans

and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

1.4 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNESST before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental representative.

At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental representative.
- .2 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
- .3 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

1.5 HAZARD ASSESSMENT

- .1 The contractor must perform construction site specific safety hazard assessment related to project.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental representative prior to commencement of Work.
- .2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental representative no later than 5 days after the committee meeting.

1.7 REGULATORY REQUIREMENTS

- .1 Do the Work in accordance with Regulatory Requirements.

- .2 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.
- .3 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .4 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that *Code*.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.9 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).
- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.10 WORK PERFORMED BY EXTERNAL CONTRACTORS

- .1 On this construction site, it is anticipated that work will be performed by an external contractor that has not been hired by the Contractor:
- .2 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental representative to perform certain work. In return, these external

contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental representative prior to the start of the work of each contractor (see the wording in the article HEALTH AND SAFETY SUBORDINATION AGREEMENT)

1.11 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article “HAZARD ASSESSMENT” and the article “RISKS INHERENT TO THE WORKSITE” in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific characteristics of the project and cover all the work to be executed on the construction site.

The safety program must include at least the following:

- .1 company safety and health policy;
- .2 description of the stages of the work;
- .3 total costs, schedule and projected workforce curves;
- .4 flow chart of safety and health responsibilities;
- .5 physical and material layout of the construction site;
- .6 risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
- .7 identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article “RISKS INHERENT TO THE WORKSITE”;
- .8 identification of preventive measures for health and safety of employees and / or public works site as indicated in the article “SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC”;
- .9 training requirements;
- .10 procedures in case of accident/injury;
- .11 written commitment from all parties to comply with the safety program;
- .12 construction site inspection checklist based on the preventive measures;
- .13 emergency response plan which shall contain at least the following:
 - .1 construction site evacuation procedures;
 - .2 identification of resources (police, firefighters, ambulance services, etc.);
 - .3 identification of persons in charge of the construction site;
 - .4 identification of the first-aid attendants;
 - .5 communication organizational chart (including the person responsible for the site and the Departmental representative);
 - .6 training required for those responsible for applying the plan;
 - .7 any other information needed, in the light of the construction site’s characteristics.

If available the Departmental representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental representative.

- .2 Departmental representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space, procedures for interrupting electric power, etc.) or at the request of the Departmental representative.
- .4 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
- .5 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
- .6 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental representative on demand.
- .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental representative on demand.
- .8 The Departmental representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
- .9 The Departmental representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.12 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed.
 - .1 refer to *Health, safety and environment plan specific to the building*;The Contractor shall process to a risk assessment of the site to validate this information and see if other risks are present on the site. He must include in its prevention program all risks that have been identified.

1.13 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC

- .1 The worksite is occupied by employees and/or the public during the following times: from Monday to Friday from 6 am to 6 pm even if employees and / or the public will not have access to the construction site.

These requirements must be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and / or the public on the site.

1.14 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.15 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 If the construction site meets the requirements of article 2.5.3 of the *Code de la sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), the Contractor needs to hire a competent person authorized as a safety officer and appoint this person full time from the beginning of the work. This person's tasks shall solely be dedicated to the management of health and safety on the construction site. This safety officer must have the following qualifications:
 - .1 have a safety officer certificate issued by the CNESST;
 - .2 have site-related working experience specific to the activities associated with the present project;
 - .3 have working knowledge of occupational health and safety regulations in the workplace;
 - .4 be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter the construction site to perform work;
 - .5 be responsible for implementing, enforcing in detail and monitoring site-specific Contractor's Health and prevention program;
 - .6 be on construction site at all times during execution of work;
 - .7 inspect the work and ensure compliance with all regulatory requirements and those indicated in the contract documents or the site-specific prevention program.
 - .8 Keep a daily log of actions taken and submitting a copy to Departmental representative each week.

The safety officer's certificate shall be submitted to the Departmental representative before the start of the work.

- .2 When the hiring of a safety officer is not required or if this person is hired by the Departmental representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental representative before the start of work.

1.16 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
 - .1 notice of construction site opening;
 - .2 identification of principal Contractor;
 - .3 company OSH policy;
 - .4 site-specific prevention program;
 - .5 emergency plan;
 - .6 minutes of worksite committee meetings;
 - .7 names of worksite committee representatives;
 - .8 names of the first-aid attendants;
 - .9 action reports and correction notices issued by the CNESST.

1.17 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental representative in accordance with the article "ACTION AND INFORMATIONAL SUBMITTALS" in this section.
- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental representative or his agent.
- .3 Submit to Departmental representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and

construction site workers and environmental protection take precedence over cost and scheduling considerations.

- .5 The Departmental representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.18 PREVENTION OF VIOLENCE

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental representative.

1.19 BLASTING _not applicable

1.20 POWDER ACTUATED DEVICE

- .1 Use powder actuated devices only after receipt of written permission from Departmental representative.
- .2 Any person using an explosive actuated tool shall hold a training certificate and meet all requirements of Section 7 of the *Code de sécurité pour les travaux de construction* (S- 2.1, r. 4). (Safety code for the construction industry)
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

1.21 USE OF PUBLIC ROADS

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.22 LOCKOUT-TAGOUT

- .1 For all work on electrically or otherwise energized equipment, the Contractor shall draw up and implement a general lockout-tagout procedure and submit it to the Departmental representative.

- .2 Supervisors and all workers concerned by work requiring lockout-tagout must have received training on lockout-tagout procedures by a recognized organization; Contractor shall submit training certificates to the Departmental representative.
- .3 Before starting the lockout-tagout procedure of a piece of equipment on an occupied site, Contractor must coordinate his work with the representative of the site if the interruption of the power sources can have an impact on the operations of the site or on its occupants.
- .4 Contractor must designate a qualified person as responsible for the lockout-tagout and must make sure that that person prepares a lockout-tagout data sheet for each piece of equipment involved. The lockout-tagout data sheet must be submitted to the Departmental representative at least 48 hours before the beginning of the work. The Departmental representative will review the data sheet with the representative of the site if the work takes place in an existing building. The data sheets for lockout-tagout must contain at least the following information:
 - .1 description of work to carry out;
 - .2 identification, description and location of the circuit and/or ~~piece of~~ equipment to lockout-tagout;
 - .3 identification of energy sources that feeds the ~~piece of~~ equipment;
 - .4 identification of each cutout point;
 - .5 sequence of lockout-tagout and the release of residual energy as well as the sequence of unlocking;
 - .6 list of material needed for the lockout-tagout;
 - .7 method of verification of zero energy implementation;
 - .8 name and signature of the person who prepared the data sheet.

When required by the Departmental representative, Contractor must record all this information on the site's representative form.
- .5 At the time of lockout-tagout, the person responsible must date the data sheet and ensure that each worker involved in the work on the circuit/~~piece of~~ equipment to lockout-tagout puts his name on the data sheet and signs it.

1.23 ELECTRICAL WORK

- .1 Contractor shall ensure that all electrical work is executed by qualified employees in accordance with the provincial regulation respecting vocational training and qualification.
- .2 Contractor shall respect all requirements of standard CSA Z462 *Workplace Electrical Safety Standard*.
- .3 No repairs or alterations shall be carried out on any live equipment except where complete disconnection of the equipment is not feasible.
- .4 Contractor shall respect all requirements prescribed in paragraph "LOCKOUT-TAGOUT" in this section.

- .5 Contractor shall advise in writing the Departmental representative of all the work that cannot be done with de-energized equipment and obtain his authorization. Contractor shall demonstrate to the Departmental representative that it is impossible to do the work with de-energized equipment and provide all the information necessary to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) before the beginning of the work, excluding for the exceptions indicated in standard CSA Z462 Workplace electrical safety.
- .6 The energized electrical work permit on must contain at least the following elements:
- description of the circuit and equipment and its location;
 - justification for having to do the work in an energized condition;
 - description of safe work practices to apply;
 - results of the shock hazard analysis;
 - limit of the protective perimeter against electric shocks;
 - results of the arc flash hazard analysis;
 - description of the arc flash protection boundary;
 - description of the personal protective equipment required;
 - description of the means to limit access to unqualified persons;
 - proof that an information session has been carried out;
 - approval signature of the energized electrical work (by a person in authority or by the owner).
- .7 If for the operational requirements of the occupants of the site the representative of the site requires that the Contractor performs work in an energized condition, the Contractor shall obtain all the information required to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) and have it signed by the representative of the site assigned by the Departmental representative before the beginning of the work.

1.24 ASBESTOS EXPOSURE

It is not anticipated that the work covered by the present specifications involves the manipulation of materials containing asbestos; however, if the Contractor or the Departmental representative or his agent discover materials which are susceptible of containing asbestos, the Contractor must immediately stop the work and advise the Departmental representative. If more investigation demonstrates that the materials do contain asbestos, the Contractor shall comply with the following requirements.

Prior to starting any work likely to emit asbestos dust, the Contractor must:

1. Provide a written procedure for the work, identifying the risk level of the work (low, moderate, high), as defined in section 3.23 of the *Code de sécurité pour les travaux de*

construction S-2.1, r- 4, (Safety code for the construction industry). This procedure must take into account all the requirements of that section 3.23.

2. Submit certificates that demonstrate that all workers involved in the work have received training on asbestos hazards and on the procedure required in the preceding paragraph.
3. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.25 FUNGAL CONTAMINATION

It is not anticipated that the work covered by the present specifications involves the manipulation of materials contaminated by mould; however, if the Contractor or the Departmental representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor must immediately stop the work and advise the Departmental representative. If more investigation demonstrates that the materials do contain mould, the Contractor shall comply with the following requirements.

Prior to starting any work where workers are likely to be in contact with materials contaminated by mould, the Contractor must:

1. Provide a written procedure for the work which respects all the requirements of the *Code de la sécurité pour les travaux de construction* S-2.1, r- 4, (Safety code for the construction industry), as well as the requirements indicated in the document “*Mould Guidelines for the Canadian Construction Industry*” published by the Canadian Construction Association (<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>).
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.26 EXPOSURE TO SILICA

For any interior or exterior work generating silica, the Contractor must respect the following requirements, in addition to those in the *Code de sécurité pour les travaux de construction* S-2.1, r.4 (Safety code for the construction industry).

1. Work in wet environment or use tools with the inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high-efficiency filters not to propagate dust in the environment.
2. Clean surfaces and tools with water, never with compressed air.
3. Sand and pickle surfaces by using an abrasive containing less than 1% of silica (also called amorphous silica).

4. Install shields or other containment device to prevent silica dust from migrating toward other workers or the public.
5. Wear individual respiratory and ocular protection equipment during all the operations that could generate silica dust in accordance with the requirements of the *Code de sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry).
6. Wear coveralls to prevent contamination outside the construction site.
7. Do not eat, drink, or smoke in a dusty environment.
8. Wash the hands and the face before drinking, eating or smoking.

1.27 SANDBLASTING

Prior to starting any sandblasting work, the Contractor must:

1. Provide a written procedure of the work that meets the requirements of section 3.20. of the *Code de sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the Construction Industry).
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.
3. All sanding and sandblasting work shall be done by using an abrasive containing less than 1% of silica.

1.28 LEAD-BASE PAINT REMOVAL

Prior to all work where workers are likely to handle materials containing lead-base paint or other substances containing lead, the Contractor must:

1. Provide a written procedure for the work which respects all the requirements of the *Code de sécurité pour les travaux de construction S-2.1, r- 4*, (Safety code for the construction industry), as well as the requirements indicated in the document “*Guideline for Lead on Construction Projects*” published by the Ontario Ministry of Labour (http://www.labour.gov.on.ca/english/hs/pdf/gl_lead.pdf). If there is a discrepancy between the Québec regulation and the Ontario document, the most stringent requirement shall apply.
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.29 EXPOSURE TO ANIMAL'S FECAL DROPPINGS

Prior to all work where workers are likely to come in contact with materials contaminated by animal's fecal droppings, the Contractor must:

1. Provide a written procedure for the work which respects all the requirements of the *Code de la sécurité pour les travaux de construction* S-2.1, r- 4, (Safety code for the construction industry), as well as the requirements indicated in the document "*Des fientes de pigeons dans votre lieu de travail: méfiez-vous*" (Pigeon droppings in your workplace: Beware" published by the CNESST (http://www.csst.qc.ca/publications/100/Documents/DC100_1331_1web2.pdf)
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.30 RESPIRATORY PROTECTION

1. Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 *Selection, use and care of respirators*. Submit the certificates of the fit testingS to the Departmental representative on demand.

1.31 FALL PROTECTION

1. Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
2. Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
3. The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
4. Define the limits of the danger zone around each elevating platform.
5. All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
6. Everyone who works within two metres from a fall hazard of three metres or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.

7. Despite the requirements of the regulation, the Departmental representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than three metres.

1.32 SCAFFOLDINGS

In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who uses scaffolding^S must respect the following requirements:

Foundation

1. Scaffolding^S shall be installed on a solid foundation so that it does not slip or rock.
2. Contractors wishing to install scaffolding^S on a roof, overhang, canopy or awning shall submit their calculations and loads, as well as plans signed and sealed by an engineer to the Departmental representative and obtain his authorization before beginning installation.

Assembly, bracing and mooring

1. All scaffolding^S shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
2. Where a situation requires the removal of part of the scaffolding^S (e.g., crosspieces), the Contractor shall submit to the Departmental representative an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
3. For scaffolding^S where the span between two supports is greater than three metres, the Contractor shall provide the Departmental representative an assembly plan signed and sealed by an engineer.

Protection against falls during assembly

1. Workers exposed to the risk of falling more than three metres shall be protected against falls at all times during assembly.

Platforms

1. Scaffolding platforms shall be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
2. If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry)
3. Scaffolding^S of four sections (or six metres) high or more shall have a full platform covering the entire surface between the putlogs every three metres high or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.

Guardrails

1. A guardrail shall be installed on every landing.
2. Cross braces shall not be considered as guardrails.
3. If the platforms are not covering the entire surface between the putlogs, the guardrail must be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
4. Where scaffoldingS has four sections (or six metres) high or more and full platforms are required, the guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.

Access

1. The Contractor shall ensure that access to the scaffoldingS does not compromise worker safety.
2. Where the platforms of the scaffoldingS are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.
3. Notwithstanding the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), stairs shall be installed on all scaffoldingS that have six or more rows of uprights or is six sections (or nine metres) high or higher.

Protection of the public and occupants

1. When scaffoldingS are installed in a zone accessible to the public, the Contractor shall take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffolding.
2. Contractor must install covered walkways, nets or other similar devices to protect workers, the public and the occupants against falling objects. The means of protection must be approved by the Departmental representative.

Engineering plans

1. In addition to those required by the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Departmental representative reserves the right to require engineering plans for other types or configurations of scaffoldingS.
2. A plan signed and sealed by an engineer is required for all scaffoldingS that will be covered with a canvas, a tarpaulin or any other material that has wind resistance.
3. A certificate of conformity signed by an engineer is required in all cases where an engineering plan is required ~~for the installation~~ and this, before anybody uses the facility. A copy of these documents must be available on the construction site at all times.

1.33 CONFINED SPACES _not applicable

1.34 EXCAVATION WORK_not applicable**1.35 LIFTING LOADS WITH CRANE OR BOOM TRUCK_not applicable****1.36 HOT WORK**

Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.

1. Before the beginning of each shift of work and for each sector, the Contractor must obtain a "Hot Work Permit" emitted by the person responsible for the site.
2. A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
3. The Contractor must appoint an individual to do continuous monitoring of the fire risks for a period of one (1) hour after the end of the shift of hot work. This individual shall sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
4. When the hot work is done in areas where there is combustible materials or where the walls, ceilings or floors are made of or covered with combustible materials, a final inspection of the work area must be scheduled four (4) hours after the work has finished. Unless specified otherwise by the Departmental representative, the Contractor must assign a person to carry out this monitoring.

Welding and cutting

In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:

1. Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
2. Air extraction system with filters must be used for all welding and cutting work performed inside.
3. Stop all activities producing flammable or combustible gas, vapours or dust in the vicinity of the welding or cutting work.
4. Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
5. Store all oxygen cylinders more than 6 metres from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made of non-combustible material as mentioned in the article 3.13.4 of the *Code de sécurité pour les travaux de construction, S-2, r. 6* (Safety code for the construction industry)
6. Store the cylinders far from all heat sources.
7. Not to store the cylinders close to the staircases, exits, corridors and elevators.

8. Do not put acetylene in contact with metals such as silver, mercury, copper and alloys of brass having more than 65% copper, to avoid the risk of an explosive reaction.
9. Check that welding equipment with electric arc has the necessary tension and are grounded.
10. Ensure that the conducting wires of the electric welding equipment are not damaged.
11. Place the welding equipment on a flat ground away from the bad weather.
12. Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
13. Move away or protect the combustible materials which are closer than 15 metres from the welding work.
14. Prohibition to weld or cut any closed container.
15. Do not perform any cutting, welding or work with a naked flame on a container, a tank, a pipe or other container containing a flammable or explosive substance unless:
 - a. they have been cleaned and air samples indicating that work can be done without danger has been taken; and
 - b. provisions to ensure the safety of the workers have been made.

1.37 ROOFING WORK_not applicable

1.38 STEEL STRUCTURE ERECTION OR DISMANTLING WORK_not applicable

1.39 WORK NEAR BODIES OF WATER _not applicable

1.40 INTERIOR USE OF INTERNAL COMBUSTION ENGINES

1. In addition to respecting article 3.10.17 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
2. The use of a gas-powered equipment inside a building is prohibited even if the building is provided with openings.
3. The use of other equipment powered by an internal combustion engine inside a building must be submitted to the approval of the Departmental representative.
4. For the use of any piece of equipment powered by an internal combustion engine inside a building, even if the building is provided with openings, the Contractor must install a ventilation system able to maintain the concentrations of toxic gases below the regulatory values. The stale air shall be exhausted outside the building.
 - a. Before using equipment powered by an internal combustion engine, the Contractor must plan and write the following:
 - b. number of fans to install;
 - c. power of the fans;
 - d. location of the fans;
 - e. dimensions of the openings that will be open during the work.
5. During the operation of equipment with internal combustion engine, the Contractor must measure the concentrations of carbon monoxide and nitrogen oxides in the work area and at the breathing

area of the workers; the concentration levels measured must be recorded in a register every 30 minutes that must be available for consultation.

6. If work is in an occupied building, the Contractor must also measure the concentrations of carbon monoxide and nitrogen oxides in the rooms next to the work area and the concentration levels measured must be recorded in a register every 30 minutes.
7. If the carbon monoxide or nitrogen oxides detector alarm goes off during the work, the Contractor must stop the work and take the corrective measures required before resuming the work.
8. A portable fire extinguisher must be available at all times in the work area during the use of equipment with internal combustion engines.
9. The equipment must be maintained at a safe distance from all combustible material.
10. The storage of fuel for any equipment with internal combustion engine is prohibited inside a building.

1.41 TEMPORARY HEATING

1. In addition to respecting section 3.11 of the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
2. A portable fire extinguisher must be available at all times near the heating units, no matter what type of heating is used.
3. The heating units must always be used in accordance with the manufacturer's specifications.
4. If applicable, the canvas or tarpaulins used next to the heating units must be solidly fixed so as not to be projected on the heaters, on the pipes connected to the heaters or on any other heat source.
5. The gas cylinders must be installed in a way that they are protected from vehicle and other equipment traffic.
6. For the use of heating units other than electric, the Contractor must install a carbon monoxide detector in the work area, next to the heating units and/or the workers, throughout the course of the heating period. The Contractor must immediately apply the corrective measures required to the heating units if the detector's alarm goes off.
7. The Contractor must ensure a minimum surveillance of the heating units outside the hours of work (nights and weekends). He must submit a surveillance plan to the Departmental representative before the use of the heating units.

1.42 WORK NEAR OVERHEAD POWER LINES_not applicable

1.43 DIVING OPERATIONS_not applicable

1.44 HEALTH AND SAFETY SUBORDINATION AGREEMENT**Project:** _____ **Address:** _____**EXTERNAL CONTRACTOR**

I hereby agree to submit to the authority of (name of the Principal Contractor's business) _____, which is the Principal Contractor for the project indicated above during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to:

- inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times;
- apply the prevention program that is specific to the activities that we carry out under this project;
- inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and
- follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.

Name of representative: _____

Name of business: _____

Description of work to be done on the construction site: _____

Approximate dates of work (start-end): _____

Signature: _____ Date: _____

PRINCIPAL CONTRACTOR

I hereby agree to allow the business (name of external contractor) _____ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PWGSC's Departmental representative of this and to provide documentary evidence of my actions or dealings with the Contractor.

Name of representative: _____

Name of the Principal Contractor's business: _____

Signature: _____ Date: _____

Submit a completed and signed copy to PWGSC's Departmental representative

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative or if this is required by local regulations.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination, such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Departmental Representative will engage independent inspection or testing agencies and will cover the costs, except in the following cases.
 - .1 Inspections and tests required by laws, orders, rules, regulations or public ordinances.
 - .2 Inspections and tests conducted exclusively to suit the Contractor.
 - .3 Testing, fine-tuning and balance of handling systems or of electrical or mechanical networks and facilities.
 - .4 Factory tests and certificates of compliance.
 - .5 Tests to be conducted by the Contractor under the Departmental Representative's supervision.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Use of testing and inspection agencies in no way absolves the Contractor of responsibility for execution of work in accordance with requirements in contract documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.4 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work and to off-site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to avoid delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether or not incorporated in Work, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 REPORTS

- .1 Submit one copy of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested or to manufacturer or fabricator of material being inspected or tested.

1.8 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by local regulations will be appraised by Departmental Representative and may be authorized as recoverable.

1.9 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations designated in specific Section approved by Departmental Representative.

- .3 Prepare mock-ups for Consultant's review within a reasonable time and in orderly sequence to avoid delays in Work.
- .4 Delay in preparing mock-ups is not considered sufficient reason for extension of Contract Time, and no claim for extension by reason of such default will be allowed.
- .1 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.10 MILL TESTS

- .1 Submit mill test certificates as [requested] [required of specification Sections].

1.11 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and other building systems specified in various sections of the specifications.

Partie 2 Products**2.1 NOT USED**

- .1 Not used.

Partie 3 Execution**3.1 NOT USED**

- .1 Not used.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 14 01 – Health, Safety and Environment Plan Specific to the Building
- .2 Section 01 35 29.06 – Health and Safety Requirements

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
 - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.3 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location for site office, storage, and routes for movements of workers and equipment
- .2 Indicate any additional area or transit zone.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from site all such work after use.

1.4 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide scaffolding, ramps, ladders, flying scaffolding, platform, temporary stairs for execution of work, and ensure maintenance.

1.5 SCAFFOLDING – SPECIAL REQUIREMENTS

- .1 Foundations:
 - .1 Scaffolding must be installed on solid foundations to avoid sliding or tilting.
 - .2 Contractor wishing to install scaffolding on a roof, roof projection, canopy or attic must submit calculations and load to the Departmental Representative for authorization before starting installation.
- .2 Assembly, bracing and mooring:

-
- .1 All scaffolding must be assembled, braced and moored in accordance with manufacturer's instructions and the provisions of the Safety Code for the Construction Industry.
 - .2 For any situation requiring removal of some scaffolding elements (e.g., braces), the Contractor must submit an assembly procedure signed and sealed by an engineer attesting that the assembled scaffolding will provide for work to be conducted safely, taking account of the loads to be applied.
 - .3 For any scaffolding structure with a span of more than 3 metres between supports, the Contractor must provide an assembly plan signed and sealed by an engineer.
- .3 Fall protection during assembly:
- .1 At all times during assembly, all workers must be protected against falls.
 - .2 Prior to the start of work, the Contractor must submit to the Departmental Representative a procedure specifying the means of protection used and, where applicable, the anchorage points for emergency cables or retaining links. This procedure must comply with the provisions of sections 3.9.4.5, 2.9.1 and 2.10.12 of the Safety Code for the Construction Industry.
- .4 Floors:
- .1 Scaffolding floors must be designed and installed in accordance with the provisions of the Safety Code for the Construction Industry.
 - .2 If planks are used, they must be approved and stamped in accordance with the provisions of section 3.9.8 of the Safety Code for the Construction Industry.
 - .3 Floors must cover the entire surface protected by the railings.
 - .4 Notwithstanding the foregoing, scaffolding with four or more sections (or greater than 6 metres) in height must have a solid floor covering the entire putlog surface every 3 metres or fraction thereof, and the elements of these floors must at no time be moved to create intermediate levels.
- .5 Railings:
- .1 A railing must be installed at all work stages.
 - .2 Cross braces must not be considered as railings.
 - .3 For scaffolding of four or more sections (or 6 metres) in height, where solid floors are required, railings must be installed at each of these levels at the start of work and remain in place until work is completed.
- .6 Access:
- .1 Contractor must ensure that means of access to scaffolding do not compromise workers' safety.
 - .2 When scaffolding floors are made of planks, ladders must be installed so that protruding planks do not hinder workers going up or down.
 - .3 Notwithstanding the provisions of the Safety Code for the Construction Industry, stairs must be installed on all scaffolding of six or more rows and six or more sections (or 9 metres) in height.
- .7 Protection of the public and of occupants:

- .1 The Contractor must delineate and barricade the work area to limit access to authorized workers only.
- .2 The Contractor must install covered passageways, nets or similar arrangements to protect the public or occupants from falling objects.
- .8 Use of public roads:
 - .1 When it is necessary to encroach on public roads, the Contractor must obtain, at its expense, all authorizations and permits required by the competent authority.
 - .2 The Contractor must install, at its expense, all signage, barricades and other devices required to ensure the safety of the public and of its own facilities.

1.6 LIFTING EQUIPMENT

- .1 Provide and install hoists and cranes for moving workers, materials and equipment, and ensure maintenance and operation. Make the necessary financial arrangements with subcontractors for use of lifting equipment.
- .2 Operation of hoists and cranes must be entrusted to qualified workers.

1.7 ELEVATORS AND HOISTS

- .1 Elevator no. 1 (freight elevator) may be used for moving workers and materials or equipment.

1.8 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not overload or permit overloading any part of Work to avoid strain on integrity.

1.9 ONSITE PARKING

- .1 No parking is provided for the Contractor or its subcontractors.

1.10 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.11 OFFICES

- .1 Set up a ventilated office in the worksite area, heated to 22 degrees Celsius, equipped with lighting providing 750 lux of illumination, large enough for site meetings to be held, and provide a table to spread out drawings.
- .2 Provide a marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors must set up their own office, as required.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Store materials and equipment on the site, ensuring that they interfere as little as possible with work.

1.13 SANITARY FACILITIES

- .1 Refer to section 01 14 01 - Health, Safety and Environment Plan Specific to the Building.

1.14 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access routes and temporary detours as required.
- .2 Maintain and protect traffic on the routes concerned during construction work, unless specifically indicated otherwise by the Departmental Representative.
- .3 Provide measures for protection and rerouting of traffic, including services of supervisors and signallers, installation of barricades, installation of lighting devices around and in front of equipment and the work area, and the installation and maintenance of appropriate warning signs, danger signs and directional signs.
- .4 Protect the travelling public from damage to persons and property.
- .5 The Contractor's rolling stock used for transportation of materials or equipment entering or leaving the site must cause the least possible interference with road traffic.
- .6 Ensure that existing roads and authorized load limits are adequate. The Contractor is responsible for repairing roads damaged in the course of construction work.
- .7 Build necessary access roads and site roads.
- .8 Set up site tracks of adequate incline and width. Avoid sharp curves, blind corners and dangerous intersections.
- .9 Provide lighting fixtures, traffic signs, barricades and clear markings for safe traffic flow.
- .10 Take the steps needed to reduce dust to ensure that activities proceed safely at all times.
- .11 The location, incline, width and path of access roads and site roads are subject to approval from the Departmental Representative.
- .12 Lighting fixtures must ensure full visibility over the entire width of site roads and work areas during the evening and night shifts.
- .13 Provide for snow removal during the work period.
- .14 Once work is completed, dismantle the site roads designated by the Departmental Representative.

1.15 CLEAN-UP

- .1 Remove construction debris, waste and, packaging material from work site each day.
- .2 Remove dust and mud from paved roads.
- .3 Store salvageable materials resulting from demolition.
- .4 Do not store new or salvaged material in construction facilities.

Partie 2 Products**2.1 NOT USED**

- .1 Not Used.

Partie 3	Execution
3.1	NOT USED
.1	Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 14 00 - Work restrictions.

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
 - .2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-O121-M1978(R2003), Douglas Fir Plywood.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.4 HOARDING_ not applicable**1.5 GUARD RAILS AND BARRICADES_ not applicable****1.6 WEATHER ENCLOSURES_ not applicable****1.7 DUST TIGHT SCREENS**

- .1 Provide dust tight screens or [insulated] partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.8 ACCESS TO SITE_ not applicable

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.9 PUBLIC TRAFFIC FLOW_ not applicable

- .1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.10 FIRE ROUTES

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.12 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative 3 locations and installation schedule days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.13 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 References to relevant standards may be made in each part of specifications.
- .2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to check through testing.
- .3 Cost for testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.3 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and otherwise use recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative so that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Departmental Representative at start of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration or soiling, in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Avoid storing cement products directly on ground or on concrete floors or against walls.
- .5 Keep sand used for grout or mortar materials clean and dry. Store on wooden platforms.
- .6 Store lumber and wooden sheets or panels on flat, solid supports, and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated, well ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense to satisfaction of Departmental Representative.
- .9 Touch up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over nameplates.

1.6 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Departmental Representative will be paid by the latter. Unload, handle and store these products.

1.7 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturer.
- .2 Notify Departmental Representative in writing of discrepancy between specifications and manufacturer's instructions so that Departmental Representative can take suitable action.
- .3 Improper installation or erection of products, due to failure to comply these requirements, entitles Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.8 QUALITY OF WORK

- .1 Ensure that Quality of Work is of highest standard, executed by workers experienced and skilled in their respective trades. Immediately notify Departmental Representative if required Work is unlikely to produce expected results.
- .2 Do not employ persons unskilled in their required duties. Departmental Representative reserves right to require dismissal from site of workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in any dispute rest solely with Departmental Representative, whose decision is final.

1.9 CO-ORDINATION

- .1 Ensure co-operation of workers in conducting Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform Departmental Representative of any abnormal situation. Install as directed by Departmental Representative.

1.11 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to avoid damage or risk of damage to any portion of Work.

1.12 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of any conflicting installation. Install as directed.

1.13 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood or other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings that cause spalling or cracking of material to which items are anchored are not acceptable.

1.14 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.

-
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.15 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless indicated otherwise in writing by Departmental Representative.

1.16 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work and/or to building occupants.
- .2 Protect, relocate or maintain existing active utilities. When utilities are encountered, cap off in manner approved by appropriate authority. Stake and record location of capped utility.

Partie 2 Products

2.1 NOT USED

- .1 Not Used.

Partie 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 EXISTING SERVICES

- .1 Not used.

1.4 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain approval for actual locations.

Partie 2 Products**2.1 NOT USED**

- .1 Not Used.

Partie 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 01 14 00 – Work Restrictions.
- .2 01 14 01 – Health, Safety and Environment Plan Specific to the Building.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Departmental Representative or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Departmental Representative or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.3 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.4 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas that are to be exposed by uncovering work.

1.5 EXECUTION

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Retain the services of the original installer for the cutting and patching of water-repellent items, items exposed to the weather, and exposed surfaces.
- .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .10 Restore work with new products in accordance with requirements of Contract Documents.
- .11 Fit Work airtight to pipes, sleeves, ducts, air and electrical conduits and other penetrations through surfaces.
- .12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 078400 Firestopping.
- .13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with 01 74 19 - Construction Waste Management.

Partie 2 Products**2.1 NOT USED**

- .1 Not Used.

Partie 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 14 01 Health and safety requirements.
- .2 Section 01 35 29.06 Health and Safety requirements
- .3 Section 01 74 19 Construction/Demolition Waste Management And Disposal

1.2 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-94, Stipulated Price Contract.
- .2 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions "C", In Effect as Of: May 14, 2004.

1.3 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 For recycling, Refer to Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.4 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

-
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
 - .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
 - .4 Remove waste products and debris other than that caused by Owner or other Contractors.
 - .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
 - .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
 - .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors.
 - .9 Clean lighting reflectors, lenses, and other lighting surfaces.
 - .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
 - .11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
 - .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
 - .13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
 - .14 Remove dirt and other disfiguration from exterior surfaces.
 - .15 Clean and sweep roofs, gutters, areaways, and sunken wells.
 - .16 Sweep and wash clean paved areas.
 - .17 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
 - .18 Clean roofs, downspouts, and drainage systems.
 - .19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
 - .20 Remove snow and ice from access to building.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

.1 Not Used.

END OF SECTION

Part 1 General**1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of work, meet the LEED Consultant to review PSPC's waste management goals and the waste reduction plan proposed by the Contractor with respect to construction, renovation and demolition (CRD) waste generated by the project.
- .2 PSPC's waste management goal: reduce the total flow of construction/demolition waste to landfills. Prior to end of work, give the LEED Consultant the documents certifying that procedures for waste management and for recycling and reuse of recyclable and reusable products have been applied.
- .3 Minimize the quantity of non-hazardous solid waste generated by the work. Maximize reduction at source, reuse and recycling of solid waste produced by CRD activities.
- .4 Preserve the environment and prevent damages caused by environment pollution.

1.2 RELATED REQUIREMENTS

- .1 Section 01 35 21 – LEED Requirements

1.3 REFERENCES

- .1 Canada Green Building Council
 - .1 LEED v4 for Interior Design and Construction

1.4 DEFINITIONS

- .1 Approved/authorized recycling facility: Recycler approved by an appropriate provincial authority.
- .2 Class III non-hazardous waste : construction, renovation and demolition waste.
- .3 Construction, renovation and/or demolition (CRD) waste: solid Class III non-hazardous waste generated by construction, renovation and/or demolition activities.
- .4 Cost/Revenue Analysis Workplan (CRAW): workplan based on data from the waste reduction plan and used for financial tracking of the waste management methods used (Schedule B).
- .5 Inert waste: exclusively asphalt and concrete materials.
- .6 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into predefined categories and sent for recycling and reuse, maximizing value and potential for reducing disposal costs.
- .7 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new products for reuse.
- .8 Recycle: process of collecting or transforming waste and discarded materials for reintroduction in a consumption cycle as new products.

- .9 Recycling: operations combining sorting, cleaning, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating or thermally destroying waste.
- .10 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .11 Salvage: removal of structural and non-structural materials from industrial, commercial or institutional deconstruction/disassembly projects for purpose of reuse or recycling.
- .12 Separated waste: refers to waste sorted into individual types.
- .13 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .14 Waste Audit (WA): detailed inventory of final results. Involves quantifying by weight and percentage amounts of materials and waste reused, recycled or sent to landfill during work. Measures fulfilment of waste reduction plan goals and notes lessons learned.
- .15 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, submittal and reporting requirements that are required.
- .16 Waste Reduction Workplan (WRW): written report that addresses opportunities for reduction, reuse, or recycling of materials. Prescribes recovery goals, implementation and reporting procedures, expected results and responsibilities. Waste reduction plan information (Schedule A) from the waste audit.

1.5 DOCUMENTS

- .1 Maintain and post, in a visible and accessible place on the job site, a copy of each of the following documents.
 - .1 Waste Reduction Workplan (Schedule A).
 - .2 Material Waste Separation Plan.
 - .3 Schedules A and B established for the project.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Waste Reduction Workplan (WRW, Schedule A).
 - .2 One copy of Cost/Revenue Analysis Workplan (CRAW: Schedule C).
- .3 Prepare and submit, once a month throughout the project, the following.
 - .1 Receipts, scale tickets, waybills and/or waste disposal receipts showing quantities and types of materials reused, recycled or disposed of.
 - .2 Updated waste tracking form.

- .3 Summary monthly written report indicating in detail the cumulative amounts of waste reused, recycled or sent to landfill as well as a summary of ongoing waste management activities.
- .4 Prior to final payment, submit the following.
 - .1 A waste valuation report indicating the final quantities (in tonnes) by type of material recovered for reuse, recycling or disposal in landfills, recycling centres, reuse depots and other waste processing facilities.
 - .2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled or disposed of as well as their destination.

1.7 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare and submit WRW (Schedule A) prior to project start-up.
- .2 The WRW determines strategies to optimize valuation through reduction, reuse and recycling of materials and to comply with applicable regulations.
- .3 WRW should include but not be limited to:
 - .1 The specific waste reduction goals, existing obstacles and strategies for overcoming them.
 - .2 Destination of materials listed.
 - .3 Means of collecting, sorting and reducing the waste produced.
 - .4 Location of onsite waste bins.
 - .5 Clear labelling of storage areas.
 - .6 Reliable methods for tracking and recording results in reports.
 - .7 Details on materials handling and removal procedures.
 - .8 Recycler's requirements.
 - .9 Quantities of materials to be salvaged for reuse or recycled and materials sent to landfill.
 - .10 Requirements for monitoring of activities related to waste management on the job site.
- .4 Post WRW or summary on the job site in a place where workers at site are able to review the contents.
- .5 Monitor and report on waste reduction by documenting total volume (in tonnes) and cost of actual waste removed from project.

1.8 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

- .1 Prepare a CRAW (Schedule B) that includes the following.
 - .1 Cost of applicable waste management practices.
 - .2 Cost of implementing the waste recovery program.
 - .3 Savings and benefits from the waste recovery program.

1.9 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 Prepare MSSP and have ready for use prior to project start-up.

- .2 The MSSP will present in detail the methodology and planned activities on site for sorting reusable and recyclable materials and wastes to be put in landfill.
- .3 Provide on-site facilities and containers for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Locate containers so as to facilitate deposit of materials without hindering operations.
- .5 Train workers in handling and separation of materials for reuse and/or recycling.
- .6 Label containers clearly and securely to indicate the type and condition of materials accepted. Help workers sort materials adequately.
- .7 Monitor onsite waste management through periodic inspections to check on signage, contamination levels, location and condition of bins, staff participation, use of waste tracking forms and collection of consignment notes, receipts and invoices.

1.10 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established for the facility. Apply approved temporary security measures.

1.11 WASTE PROCESSING SITE

- .1 Contractor is responsible for finding waste recovery resources and service providers. Recovered waste materials shall be transported to approved and/or authorized recycling facilities or to equipment recyclers.

1.12 QUALITY ASSURANCE

- .1 Waste management meeting: The waste management Coordinator must provide an update on the waste recovery and management situation at each meeting. He/she shall provide a summary of the monthly waste recovery report in writing.

1.13 STORAGE, HANDLING AND PROTECTION

- .1 Store materials salvaged for reuse or recycling in the places indicated.
- .2 Protect, stockpile, store and catalogue salvaged items.
- .3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .4 Protect structural components not removed for demolition from movement or damage.
- .5 Protect electrical and mechanical facilities.
- .6 Provide facilities and containers on the job site to collect and store reusable or recyclable materials.
- .7 Separate and store waste materials generated by the project in designated areas.
- .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
- .1 On-site source separation is recommended.

- .2 Remove co-mingled materials to off-site processing facility for separation.
- .3 Obtain waybills, receipts and/or scale tickets for waste materials separated and removed from the site.
- .4 Materials reused on site are regarded as recovered and are to be included in any report.

1.14 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage generated.
 - .4 Tonnage reused or recycled.
 - .5 Reused or recycled waste destination.
- .3 Remove materials from the site as work progresses.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.15 SCHEDULING

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 GENERAL

- .1 Conduct work in accordance with the WRW and the MSSP.
- .2 Handle wastes that are not reused, recycled or recovered in accordance with codes and regulations.

3.2 CLEANING

- .1 Cleaning during work: conduct cleaning in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave the premises clean at the end of each workday.
- .2 Final cleaning: remove surplus materials, waste, tools and equipment from the job sites in accordance with Section 01 74 00 - Cleaning.

- .3 Waste management: separate waste for reuse and recycling.
 - .1 Remove recycling bins and holders from the job site and remove materials to appropriate facilities.
 - .2 Separate at source waste materials that are to be reused or recycled and place them in the appropriate location.

3.3 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers in accordance with relevant fire safety regulations.
 - .1 Mark containers or stockpile areas.
 - .2 Provide instruction on disposal practices.
- .2 Onsite sale of waste materials is not permitted.

3.4 REPORT ON DIVERSION OF MATERIALS

- .1 At the end of the project, prepare a written report on diversion of waste materials indicating the quantities of materials reuses, recycles or disposed of, as well as the following.
 - .1 Indicate the final diversion results and measure fulfilment of goals in the Waste Reduction Workplan.
 - .2 Compare the final quantities / percentages of diverted materials with the initial projections in the Waste Audit and the Waste Reduction Workplan. Explain the variations.
 - .1 Supporting documents.
 - .2 Waybills and tracking forms.
 - .3 Description of problems, solutions and lessons learned.

3.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule A

1) Material category	2) Persons in charge	3) Total quantity of waste (units)	4) Expected quantity of reused waste (units)	Actual quantity	5) Expected quantity of recycled waste (units)	Actual quantity	6) Destination of materials
Wood and plastic - Description							
Off-cuts							
Warped pallet forms							
Plastic packaging							
Cardboard packaging							
Other							
Door and window material - Description							
Painted frames							
Glass							
Wood							
Metal							
Other							

3.6 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Schedule B – Cost/Revenue Analysis Workplan (CRAW)

(1) Material description	(2) Total quantity (units)	(3) Volume (cumul.)	(4) Weight (cumul.)	(5) Disposal cost/credit \$(+/-)	(6) Category subtotal \$(+/-)	(7) Cost (-) /Credit (+)
Wood						
Wood stud						
Plywood						
Baseboard - wood						
Door trim - wood						
Cabinet					\$	
Doors and windows						
Panel regular						
Slab regular						
Wood laminate						
Byfold - closet						
Glazing					\$	

3.7 MAIN ENVIRONMENTAL AUTHORITIES IN THE FEDERAL AND PROVINCIAL GOVERNMENT

.1 Schedule C – Main government environmental authorities

Province	Address	General information	Fax
Quebec	Ministère de l'Environnement et Lutte contre les changements climatiques, headquarters 150 René-Lévesque Blvd. East, Quebec City, QC G1R 4Y1	418-643-3127 800-561-1616	418-646-5974
	Conseil de la conservation et de l'environnement, 800 Place d'Youville, 19 th floor Quebec City, QC G1R 3P4	418-643-3818	

3.8 SCHEDULES

.1 The following schedules are attached to these specifications.

- .1 Waste Reduction Workplan Form – Schedule A.
- .2 Cost/Revenue Analysis Workplan – Schedule B.
- .3 Government environmental authorities – Schedule C.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor to conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative's inspection.
 - .2 Departmental Representative's inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion tasks: submit written certificates in English and French that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and fully operational.
 - .4 Training needed for operations of devices, equipment and systems has been provided to staff of Departmental Representative.
 - .5 Commissioning of devices, equipment and mechanical systems: completed in accordance with Sections 01 91 13 - Commissioning – Mechanical and Electrical Installation and a copy of the final commissioning report submitted to Departmental Representative.
 - .1 Work: complete and ready for final inspection.
- .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative and Contractor.
 - .2 When Work is incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
 - .3 Any additional final inspection will be at Contractor's expense.
- .1 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

- .2 Commencement of Lien and Warranty Periods: date of Departmental Representative's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
- .3 Final Payment:
 - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 When Work deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
- .4 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

Partie 2 Products

2.1 NOT USED

- .1 Not Used.

Partie 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Partie 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 Not used.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty meeting:
 - .1 Convene meeting one week prior to contract completion with the contractor's representative and the Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify project requirements.
 - .2 Review the terms of the contractor's warranty and the manufacturer's installation instructions.
 - .2 Departmental Representative to establish communications procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determining priorities for type of defects.
 - .3 Determining reasonable response time.
 - .3 Provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative four final copies of operating and maintenance manuals in English and French.
- .3 Submit the "Final Waste Diversion Report" for duly completed construction, renovation or demolition projects.
- .4 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .5 Provide evidence, if requested, for type, source and quality of products supplied.

1.5 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, looseleaf 219 x 279 mm with spine and face pockets.

- .3 When multiple binders are used, correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title "Project Record Documents." List title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed flyleaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in .dwg format on CD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for each volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Contractor with name of its representatives.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: refer to Section 01 91 13 – Commissioning – Mechanical and Electrical Installation.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Site instructions.
 - .6 Minutes of site meetings.

- .7 Revised shop drawings, data sheets and samples.
- .8 Field test records.
- .9 Inspection certificates.
- .10 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders.
 - .3 Details not on original Contract Drawings.
 - .4 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications and field test records required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.9 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.

- .1 Give function, normal operation characteristics and limiting conditions.
- .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
 - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
 - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Provide descriptions of the sequence of operations prepared by the various manufacturers of command and regulation devices.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 91 13 – Commissioning – Mechanical and Electrical Installation.
- .15 Documents supporting inspection results, forms and procedures for registration, deactivation / decommissioning and removal of storage tanks must comply with SOR/2008-197, regulations under the Canadian Environmental Protection Act.
- .16 Additional requirements: as specified in individual specification sections.

1.10 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
 - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.11 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

1.12 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.13 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan thirty days before planned pre-warranty conference, to Departmental Representative's approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties set out in the contract.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint four-month and nine-month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, commissioned systems, fire protection, alarm systems, sprinkler systems and lightning protection systems.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.

- .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
- .7 Cross-reference to warranty certificates as applicable.
- .8 Starting point and duration of warranty period.
- .9 Summary of maintenance procedures required to keep warranty in force.
- .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
- .11 Organization, names and phone numbers of persons to call for warranty service.
- .12 Typical response time and repair time expected for various warranted equipment.
- .4 Contractor's plans for attendance at four-month and nine-month post-construction warranty inspections.
- .5 Procedure and status of tagging of equipment covered by extended warranties.
- .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.
- .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.14 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

Partie 2 Products

2.1 NOT USED

- .1 Not Used.

Partie 3 Execution**3.1 NOT USED**

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 21 13 13 - Common Work Results for Fire Suppression.
- .2 Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
- .3 Section 23 05 94 - Pressure Testing of Ducted Air Systems.
- .4 Section 25 90 01 - EMCS: Site Requirements Applications and Systems Sequences of Operation.
- .5 Section 26 09 24 - Lighting control devices: Low voltage.
- .6 Section 26 50 00 - Lighting.
- .7 Section 28 31 00.02 - Multiplex Fire Alarm and Voice Communication Systems.

1.2 REFERENCE STANDARDS

- .1 ASHRAE Guideline 0-2005.
- .2 ASHRAE Guideline 1.1-2007.
- .3 Building Commissioning Association Standard (BCA).
- .4 ACG Commissioning Guideline.
- .5 Commissioning Guide for the New Construction ("CanmetÉnergie/Ressources naturelles Canada").
- .6 CSA-Z320-11 - Building Commissioning.

1.3 OBJECTIVES

- .1 The commissioning is a quality process that aims to ensure that all building systems reach the planned objectives. This methodology begins with the design phase and continues to project construction and acceptance with the verification of system performance, and validation, optimization of operating sequence. The main goals of the commissioning are:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents, design criteria, and Departmental Representative requirements;
 - .2 Complete project on schedule;

- .3 Verify and document performance of all systems and equipment;
- .4 Ensure appropriate documentation is compiled into the Building Management Manual;
- .5 Effectively train O&M staff;
- .6 Optimize life cycle costs of equipment and improve the energy performance of systems;
- .7 Reduce operating costs and maintenance.

1.4 ACRONYMS

- .1 CxA : Commissioning Agent.
- .2 Cx: Commissioning.
- .3 OPR: Departmental Representative's Project Requirements.
- .4 BOD: Basis of design.
- .5 TAB: Testing, Adjusting and Balancing.
- .6 CxRO: Commissioning Representative for the Departmental Representative.
- .7 CxRC: Commissioning Representative for the Contractor.
- .8 BAS: Building Automation System.
- .9 GS : General and sub-contractors.

1.5 DEFINITION

- .1 The Cx Authority: Person appointed by the Departmental Representative to lead the process of CX and submit a final report to the Departmental Representative on performance of the systems and the whole process.
- .2 Cx Team: The team members are Cx Authority, the project manager, Departmental Representative, the Architect, the design Engineer, the General Contractor, the equipment suppliers and the Subcontractors.
- .3 Commissioning Plan: An evolutive document that defines the activities of the Cx project, the schedule, the documentation requirements, and the roles and responsibilities of team members.
- .4 Cx Calendar: General Contractor shall coordinate with the Cx Authority to establish a protocol and a timetable for Cx systems and equipment, which will be updated with progress.

- .5 Deficiencies and Noncompliances Register: It is an official and evolutive directory of the deficiencies and anomalies (with solution when required) that the Cx Authority or other member of the Cx team will have observed during the process.
- .6 PERFORMANCE VERIFICATION (PV) FORMS : PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
- .7 PRODUCT INFORMATION (PI) REPORT FORMS: Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
- .8 Installation Control Form/and start-up: Forms provided by the manufacturer or the Departmental Representative, which include checklist for proper installation of equipment.
- .9 Cx Coordinator of the Contractor: Person at the service of the Contractor, responsible for coordinating the activities of the commissioning.
- .10 Cx Coordinator of the Departmental Representative: Person at the service of the Departmental Representative, responsible for coordinating the activities and for supporting the commissioning activities.

Part 2 CX steps

2.1 CX PROCESS

- .1 Use this Cx Plan as master planning document for Cx:
 - .1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx;
 - .2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures;
 - .3 Sets out deliverables relating to O&M, process and administration of Cx;
 - .4 Describes process of verification of how works meet design requirements to ensure that the design requirements are met;
 - .5 Produces a complete functional system prior to issuance of the certificate of occupancy;

- .6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:
 - .1 Overview of Cx;
 - .2 Commissioned systems;
 - .3 Construction checklists;
 - .4 The overview of the Cx activities during the pre-design, design, construction, occupation, and operation phases;
 - .5 Cx schedule;
 - .6 Process and methodology for successful Cx;
 - .7 The expected objectives and results of the Cx;
 - .8 The list of team members, their responsibilities and expected deliverables;
 - .9 The training documents;
 - .10 O&M manual requirements.
- .2 Refinement of Cx Plan: During construction phase, revise, refine and update Cx Plan to include:
 - .1 Changes resulting from Client program modifications;
 - .2 Approved design and construction changes;
 - .3 Results of previous steps.
- .3 Overview of the process:
 - .1 Develop the Departmental Representative's Project Requirements (OPR), and ensure they are included in the basis of design (BOD).
 - .2 Develop a Cx plan and presenting it to the Cx team at the starting meeting.
 - .3 Coordinate with Contractors to establish a methodology for functional tests of equipment.
 - .4 Develop a record of anomalies and deficiencies.
 - .5 Oversee staff training.
 - .6 Reviewing operation and maintenance manuals.
 - .7 Optimize and validate the sequences of operation and solve the identified problems.

2.2 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

2.3 COMPOSITION AND RESPONSIBILITIES OF CX TEAM

- .1 Cx Authority (Stantec):
 - .1 Organize and lead the Cx team.
 - .2 Develop a Cx plan and include it in the construction document as well as updating it regularly.
 - .3 Organize and conduct Cx meetings, and draw up the minutes.
 - .4 Provide the Construction Checklists.
 - .5 Perform site inspections, check functional performance and attend tests.
 - .6 Oversee the process of training staff.
 - .7 Review operation and maintenance manuals.
 - .8 Maintain up to date the list of the validity dates of the guarantees.
 - .9 Approve or oversee the Commissioning process, balancing reports and sequences of operation in collaboration with the Cx Coordinator of the Departmental Representative.
 - .10 Prepare a final Cx report summarizing undertaken works and the results of all tests.
 - .11 Issuing a Cx acceptance report to validate the certificate of provisional acceptance.
- .2 Departmental Representative:
 - .1 Assist to Cx meetings.
 - .2 Verify installations.
 - .3 Attend selectively to installation Cx.
 - .4 Make lists of deficiencies relating to the installation and testing.
 - .5 Provide appropriate training sessions on the concept and the objectives of different systems.
 - .6 Verify Cx reports.
 - .7 Help resolve any problem related to the design, equipment, installation or operation.
- .3 Contractors, Contractor's representative and Sub-contractors:
 - .1 Assist to Cx meetings.
 - .2 Consolidate Cx steps in the construction schedule.
 - .3 Perform tests and functional tests on equipment and systems.
 - .4 Fill the Performance Verification (PV) Forms and Product Information (PI) Report Forms.
 - .5 Complete and provide to the Cx Authority the Cx schedule.
 - .6 Submit the different required reports.

- .7 Coordinate and convene manufacturer representatives at the different steps of the Cx and to the meetings when requested.
- .8 Produce operation and maintenance manuals.
- .9 Provide training sessions required for installed equipment as recommended by the Cx Authority.
- .10 Correct deficiencies.
- .11 Issue the appropriate warranties
- .12 Perform seasonal testings.
- .4 Departmental Representative, Users, Cx coordinator for Departmental Representative, and Operation and Maintenance Members:
 - .1 Attend Cx meetings.
 - .2 Participate to training sessions.
 - .3 Facilitate the coordination work between the Cx Authority and the General Contractor.
 - .4 Raise any issues found during the Cx.
 - .5 Follow the process and work with the Cx Authority.

2.4 MANUFACTURER'S INVOLVEMENT

- .1 Employ the following Cx participants to verify performance of equipment and systems:
 - .1 Installation contractor/subcontractor.
 - .1 Equipment and systems except as noted.
- .2 Equipment manufacturer: equipment specified to be installed and started by manufacturer:
 - .1 To include performance verification.
- .3 Factory testing: manufacturer to:
 - .1 Coordinate time and location of testing;
 - .2 Provide testing documentation for approval by Cx Authority;
 - .3 Arrange for Cx Authority to witness tests;
 - .4 Obtain written approval of test results and documentation from Cx Authority before delivery to site.
- .4 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Cx Authority:
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.

- .5 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
 - .2 Verify with manufacturer that testing as specified will not void warranties.
 - .3 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems;
 - .2 Ability to interpret test results accurately;
- .6 Specialized companies: required participation in the case of equipment and systems supplied and installed by a specialist company.

2.5 COMMISSIONED SYSTEMS

- .1 Commission mechanical systems and associated equipment:
 - .1 HVAC and exhaust systems.
 - .1 HVAC ducts and systems.
 - .2 Cooling and heating systems.
 - .2 Fire and life safety systems.
 - .1 Wet pipe sprinkler systems.
 - .2 Standpipe and hose systems.
 - .3 Fire extinguishers.
 - .3 Noise and vibration control systems for mechanical systems.
 - .4 Seismic restraint and control measures.
 - .5 Building management system (BMS).
- .2 Commissioning of electrical systems and equipment:
 - .1 Low voltage below 750 V.
 - .1 Low voltage equipment.
 - .2 Low voltage distribution systems.
 - .2 Lighting systems.
 - .1 Lighting equipment.
 - .2 Distribution systems.
 - .3 Emergency lighting systems, including battery packs.
 - .4 Fire exit emergency signage.
 - .3 Fire alarm systems, equipment.
 - .1 Detection system.
 - .2 Signalling system.

2.6 INSTRUMENTS

- .1 Each report must indicate what tools were used for measures in the report.
 - .1 Balancing devices.
 - .2 Thermometers and manometers.
 - .3 Air quality devices.
 - .4 Multimeters.
 - .5 Luxmeter.
- .2 The operation and maintenance manual must include the list of instruments used, including: serial number, the current certificate of calibration, calibration date, date of expiration of the calibration and the accuracy of the calibration.
- .3 Upon request, submit the instruments and equipment for the examination and approval by the Cx Authority.

2.7 DELIVERABLES RELATING TO THE CX PROCESS

- .1 Audit of the principles of basis of design, ensure that they meet the requirements of the Departmental Representative.
- .2 Cx Plan.
- .3 Static verification of installation and components.
- .4 Quality and performance control by using functional tests on systems and equipment.
- .5 Training Plans.
- .6 Operation and maintenance manual.
- .7 Final Cx Reports.

2.8 COMMISSIONING MEETINGS

- .1 Convene Cx meetings.
- .2 Purpose: to explain process, resolve issues, monitor progress, identify deficiencies, relating to Cx.
- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.

- .4 At 60% construction completion stage, Departmental Representative must call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter, Contractor must call CX meetings with Sub-Contractor, to be held until project completion and as required during equipment start-up and functional testing period.
- .6 Meeting will be chaired by Cx Agent, who will record and distribute minutes.
- .7 Ensure subcontractors and relevant manufacturer representatives are present at Cx meetings when there as required.

2.9 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.
- .3 Include certificates of approval, acceptance and compliance with the operation and maintenance manual, and provide copies upon request Departmental Representative.

2.10 AERAULIC AND HYDROLIC BALANCING

- .1 Perform aeraulic and hydrolic balancing, as specified in the relevant sections. Validate the balancing method with the Cx Authority or the Departmental Representative. Produce reports within 10 days after a series of interventions. Reports must indicate the observed anomalies.

2.11 CONTROL CX

- .1 Perform Cx control, as required in the relevant sections.
- .2 Submit graphic trends (30 days) for the main control loop.
- .3 Produce reports and verifications as Cx forms.

2.12 STARTUP OF INTEGRATED EQUIPMENT

- .1 Make the startup of equipment that require prior completion of the various disciplines. These devices can be started when:
 - .1 The installation is complete.
 - .2 The power supply is checked.
 - .3 Water network balancing is completed.
 - .4 Auxiliary services are completed.
- .2 Obtain the list of manufacturers to confirm compliance of the installation before the Cx equipment.
- .3 Fill in the Cx forms of equipment, submitted by the Cx Authority or manufacturers, if they include all required information.
- .4 Cx reports shall specify the conditions under which the startup was made. These conditions include:
 - .1 External ambient conditions.
 - .2 The supply voltage.
 - .3 The pressure and supply temperature of auxiliary services.
 - .4 Any special condition that may influences the performance.
- .5 Integrated systems include the following:
 - .1 Systems related to indoor air quality.
 - .2 Automatic regulation systems for rooms.
 - .3 Fire alarm systems.
 - .4 Fire pumps and controllers.
 - .5 Emergency lighting systems.

2.13 CONSTRUCTION CHECKLISTS (STATIC VERIFICATION FORMS)

- .1 These control forms of the installation must include the following:
 - .1 Installation instructions provided by the manufacturer and controls recommended by the manufacturer;
 - .2 Specific procedures established in technical relevant section;
 - .3 Procedures considered as good practice in installation and construction of mechanical/electrical, and deemed necessary to a proper and effective operation of the equipment and systems.
- .2 The control forms for the installation, provided by the manufacturer, are also acceptable. If the Cx Authority deems them necessary, lists of additional data will be required in case of projects with special conditions.

- .3 Use control forms to verify the installation of equipment and systems involved. Confirm on the document the verifications carried out, indicate anomalies and deficiencies identified and corrective measures implemented.
- .4 Provide to the Cx Authority the control forms which have been duly signed by the subcontractor concerned or the representative of the manufacturer, once the process is completed, to confirm that the audits and inspections were actually performed. These forms will be required at the time of Cx and will be joined in the operation and maintenance manual at the project completion.
- .5 The control forms that are used in the Cx must be strictly complied with at the time of equipment and systems Cx.

2.14 FUNCTIONAL TESTINGS (DYNAMICS)

- .1 Before testing begins, check:
 - .1 That the Construction Checklist forms are available and filled.
 - .2 That the installation of components, equipment, systems and related subsystems is completed.
 - .3 That the requirements and test procedures are well understood by all interveners.
 - .4 That the design criteria, the design intention and characteristics are well understood.
 - .5 That complete Cx documentation is up to date and available.
 - .6 That the Cx calendar is up to date.
 - .7 That all systems are completely cleaned.
 - .8 That the required tests in the different sections were made and reports were submitted.
 - .9 That the TAB operations of equipment and systems are completed and that relevant reports have been submitted to Departmental Representative, for consideration and approval.
 - .10 That the provisions related to records are taken.
- .2 Duration of Testing:
 - .1 All equipment and systems specified in Cx plan must be subjected to functional tests for a continuous period of 30 days. During this period, the Contractor shall correct the deficiencies and make necessary adjustments to optimize the systems and obtain the specified performance. The changes must be recorded and documented.
 - .2 During the testing period, conduct periodic audits and produce reports every three days to confirm the sequence of tests.
- .3 The Cx forms are documents on which are recorded the results of audits, functional tests (dynamic) and adjustments that have been carried out on equipment and systems

concerned in order to ensure they work efficiently and effectively, alone or in interaction with others, as required by work.

- .4 The Cx forms also include documents on which the Contractor has recorded the readings and the data measured during functional testing and in the control process of the performance of equipment and systems concerned.

2.15 TESTS RECORDING

- .1 Before testing starts, the Contractor shall take required dispositions and set up recording equipment required to produce reports that assess test compliance.
- .2 When possible, the permanent monitoring equipment can be used if the equipment were calibrated following the procedures and using instruments with calibration certificates that have been submitted.
- .3 Equipment must be able to record the required measures every 15 or 30 minutes throughout the duration of the tests, or more frequently if required for the test validation, when requested by Departmental Representative or Cx Authority.
- .4 The required measures must allow to certify:
 - .1 The stability of the equipment and measured values.
 - .2 The proper functioning of equipment with required efficiencies under different loads, including operation at full load and at minimum conditions.
 - .3 The startup sequence of equipment.
- .5 If testing and measurement does not confirm the operation under conditions considered representative, the Cx Authority may require additional specific tests. At least one additional test will be asked for verification of networks in heating or cooling mode, depending on whether the official 30-day trials have been carried out in summer or winter.
- .6 The General Contractor shall assume the responsibilities and inspection costs, including disassembly and reassembly after approval, testing and adjustment of equipment and systems, as well as the provision of test equipment.

2.16 PERFORMANCE VERIFICATION TOLERANCES

- .1 Application tolerances:
 - .1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within $\pm 10\%$ of specified values.
- .2 Instrument accuracy tolerances:
 - .1 To be of higher order of magnitude than equipment or system being tested.

- .3 Measurement tolerances during verification:
 - .1 Unless otherwise specified actual values to be within $\pm 2\%$ of recorded values.

2.17 COMMISSIONING SCHEDULE

- .1 The General Contractor, in collaboration with the Cx Authority, prepare a detailed Cx schedule, which must include the following:
 - .1 Cx meeting program.
 - .2 Sequence of testing of equipment and systems, interrelation between the various tests, test duration and periods of training.
 - .3 Expected date of installation control of each equipment and system.
 - .4 Expected date for the Cx of each equipment and system.
 - .5 Expected date for the transmission of operation and maintenance manuals.
 - .6 Expected date for training.
 - .7 Expected date for the delivery of Cx final report.
 - .8 Expected date of seasonal tests if applicable.
- .2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over.
- .3 After approval, incorporate Cx Schedule into Construction Schedule.
- .4 The Cx team must monitor the progress of the Cx with respect to schedule and update as needed.

2.18 STANDARDS AND PROCEDURES FOR CX OF MECHANICAL INSTALLATIONS

- .1 Building Automation System.
 - .1 The system test performance and point to point must be performed by the Contractor under the supervision of the Departmental Representative or Cx Authority, and then checked through the control system.
 - .2 Demonstrate the operation of all systems in all operating conditions, before the trial period of 30 days, in the presence of the Departmental Representative and Cx Authority. This demonstration must include simulated trials in opposite seasons. Conduct an audit of programming and operating sequences of ECMS after TAB operations completed during the probationary period prescribed for 30 days. Data gathered during these tests must be registered to control panels or ECMS.

2.19 STANDARDS AND PROCEDURES FOR THE CX OF THE ELECTRICAL INSTALLATIONS

- .1 Low Voltage Systems.
 - .1 These systems include low voltage lighting systems.
- .2 Lighting Security Systems.
 - .1 Verify the operation of these systems by cutting the normal supply.
 - .2 Then verify if the area illuminated by the devices is appropriate.
- .3 Fire Alarm Systems.
 - .1 Make functional tests after considering all other aspects of the safety of persons and property.
 - .2 Testing shall be reviewed fully in accordance with the requirements of ULC.

2.20 CORRECTION OF DEFICIENCIES

- .1 The Cx Authority must give Cx lists of deficiencies in accordance with specific conditions.
- .2 If equipment, systems, components and control/regulation devices have been incorrectly installed or have anomalies during the Cx, correct anomalies, repeat equipment and components verification of the non-operating system, including related systems therefore, if the Departmental Representative and the Cx Authority ask for them to ensure that the system works as it should.
- .3 The Contractor shall assume all costs associated with corrections, inspections and additional tests to determine the acceptability and performance of these elements. These costs will be deducted from payments or will be retain.

2.21 VERIFICATION OF THE RESULTS

- .1 labor:
 - .1 Provide manpower and instrumentation to verify up to 30% of reported results, unless specified otherwise in other sections. Number and location to be at discretion of Cx Authority.
- .2 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
- .3 Review and repeat commissioning of systems if inconsistencies found in more than 20% of reported results.
- .4 Perform additional commissioning until results are acceptable to Departmental Representative and Cx Authority.

2.22 REPEAT VERIFICATIONS

- .1 Assume costs incurred by Departmental Representative and Cx Authority for third and subsequent verifications where:
 - .1 Verification of reported results fails to receive Departmental Representative's approval.
 - .2 Repetition of second verification again fails to receive approval.
 - .3 Departmental Representative and Cx Authority deems Contractor's request for second verification was premature.

2.23 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results according to Departmental Representative or Cx Authority, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide labor and materials, assume costs for re-commissioning.

2.24 SEASONAL TESTING:

- .1 If requested by the Cx Authority, additional testing during the opposite season may be performed.

2.25 EXTRAPOLATION OF RESULTS

If the Commissioning is sensitive to occupancy, weather, or seasonal variations and it can not be performed with design parameters, the results may be extrapolated for partial loads, however it must be approved by the Departmental Representative and the Cx Agent. The extrapolation shall be carried out in accordance with the instructions of the equipment and systems manufacturer, using the data from the manufacturer and with his assistance, using an approved form.

2.26 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

2.27 Departmental Representative's PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

2.28 ACTIVITIES DURING WARRANTY PERIOD

- .1 Cx activities must be completed before issuance of Interim Certificate, it is anticipated that certain Cx activities may be necessary during Warranty Period, including:
 - .1 Fine tuning of HVAC systems.
 - .2 Adjustment of ventilation rates to promote good indoor air quality and reduce deleterious effects of VOCs generated by off-gassing from construction materials and furnishings.
 - .3 Seasonal adjustments: Control Contractor have to provider 10 hours for multiples site visits for fine tuning or complains.

2.29 TRAINING SCHEDULE

- .1 Following training sessions are required:
 - .1 Section 21 13 13 - Common Work Results for Fire Suppression (2 hr).
 - .2 Section 25 90 01 - EMCS: Site Requirements Applications and Systems Sequences of Operation (8 hr).
 - .3 Section 26 09 24 - Lighting control devices: Low voltage (2 hr).
 - .4 Section 28 31 00.02 - Multiplex Fire Alarm and Voice Communication Systems (2 hr).
- .2 Each training responsible must provide:
 - .1 Training plan.
 - .2 List of persons that must attend training.
 - .3 Training location.
 - .4 Objectives.
 - .5 Subjects (description, time, techniques, etc.).
 - .6 Training duration for each subject.
 - .7 Training methods.
- .3 Coordinate trainings to be given according to the requirements of the different sections, with the initial training will be given by the Departmental Representative.
- .4 The training by the Departmental Representative must include the following:
 - .1 Review of facility and occupancy profile.
 - .2 Functional requirements.
 - .3 System philosophy, limitations of systems and emergency procedures.
 - .4 Verification of operation and maintenance documents.
 - .5 Review of all systems using simplified diagrams for the cooling water systems, water condensers or heat exhausts, heating systems, gas supply, fuel, air and exhaust system.

- .5 The training by the Contractor must include the following:
 - .1 Review of system layout, equipment, components and controls.
 - .2 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
 - .3 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
 - .4 Maintenance and servicing.
 - .5 Trouble-shooting diagnosis.
 - .6 Inter-Action among systems during integrated operation.
- .6 Deliver training during regular working hours, training sessions to be 3 hours in length.
- .7 Training to be completed prior to acceptance of facility.
- .8 Visual recordings of trainings can be requested by the Departmental Representative.

2.30 OPERATION AND MAINTENANCE MANUAL

- .1 Operating and maintenance manuals must be checked by the Cx Authority before final inspection by the Departmental Representative who retains the final copies.
- .2 Operation and maintenance manuals must include the following:
 - .1 A summary;
 - .2 The list of the Contractors and emergency information;
 - .3 Command and regulation network diagrams of each network, including ambient circuit;
 - .4 A description of each system or each installation and its control device;
 - .5 A description of the operation of each system or each installation, under various loads, with program of setpoint and indication of seasonal variations modifications;
 - .6 Instructions on the operation of each system or each facility and each component;
 - .7 A description of measures to be taken in case of equipment failure;
 - .8 A color code;
 - .9 Instructions for maintenance, repair, operation and how to identify defects in each piece of equipment;
 - .10 The information on the periodicity of tasks to be done, as well as tools, parts and time needed for all these tasks;
 - .11 The performance data provided by the equipment manufacturer stating the points of use of equipment, once the Cx is completed;
 - .12 The Cx forms for all equipment and systems;

- .13 Any other specific performance data specified elsewhere in the contract documents;
 - .14 TAB reports for each system;
 - .15 The name, address and phone number of the manufacturer or supplier and the Contractor who performed the installation;
 - .16 The shop drawings approved;
 - .17 The « As-built » drawings;
 - .18 The description of the exact operation, step by step, of each system installed;
 - .19 The description of the procedure, step-by-step, for the start up and stopping, in order to have a safe and reliable operation;
 - .20 A list of the different parts of the equipment that could be replaced on a regular basis, giving the replacement interval;
 - .21 The list of spare parts and the names, address and telephone numbers of suppliers of all equipment, engines and accessories supplied and installed, with reference to the appropriate section.
 - .22 The final Cx report.
- .3 Approval:
- .1 For approval, submit to the Cx Authority and to the Departmental Representative, the copy of the operation and maintenance manual draft. Unless otherwise directed by the Cx Authority and the Departmental Representative, the forms must not be submitted individually.
 - .2 Make the necessary changes in the operation and maintenance manual and resubmit as directed by the Cx Authority and the Departmental Representative.
 - .3 Provide a final copy of the operation and maintenance manual to the Cx Authority and 3 final copies to the Departmental Representative.
- .4 Additional information:
- .1 Prepare additional information forms and attach them to the operation and maintenance manual when the demonstrations or the instruction execution described above demonstrate that such records are necessary.
- .5 The operation and maintenance manual must be presented in a ring binder and must respect the order of the sections in the specifications.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 91 13 - Commissioning - Mechanical and Electrical Installation.

1.2 INSTALLATION/START-UP CHECK LISTS

- .1 Include the following data:
 - .1 Product manufacturer s installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
- .2 Equipment manufacturer’s installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists will be required for specific project conditions.
- .3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.
- .4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.
- .5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
- .2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative’s approval.

1.4 PERFORMANCE VERIFICATION (PV) FORMS

- .1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
- .2 PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.

- .3 Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.

1.5 SAMPLES OF COMMISSIONING FORMS

- .1 Departmental Representative will develop and provide to Contractor required project-specific Commissioning forms in electronic format complete with specification data.
- .2 Revise items on Commissioning forms to suit project requirements.
- .3 Samples of Commissioning forms and a complete index of produced to date will be attached to this section.

1.6 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS

- .1 When additional forms are required, but are not available from Departmental Representative develop appropriate verification forms and submit to Departmental Representative for approval prior to use.
 - .1 Additional commissioning forms to be in same format as provided by Departmental Representative.

1.7 COMMISSIONING FORMS

- .1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.
- .2 Strategy for Use:
 - .1 Departmental Representative provides Contractor project-specific Commissioning forms with Specification data included.
 - .2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
 - .3 Confirm operation as per design criteria and intent.
 - .4 Identify variances between design and operation and reasons for variances.
 - .5 Verify operation in specified normal and emergency modes and under specified load conditions.
 - .6 Record analytical and substantiating data.
 - .7 Verify reported results.
 - .8 Form to bear signatures of recording technician and reviewed and signed off by Departmental Representative.
 - .9 Submit immediately after tests are performed.
 - .10 Reported results in true measured SI unit values.
 - .11 Provide Departmental Representative with originals of completed forms.
 - .12 Maintain copy on site during start-up, testing and commissioning period.
 - .13 Forms to be both hard copy and electronic format with typed written results in Building Management Manual.

1.8 LANGUAGE

- .1 To suit the language profile of the awarded contract.

Part 2 Products**2.1 NOT USED**

- .1 Not Used.

Part 3 Execution**3.1 NOT USED**

- .1 Not Used.

END OF SECTION

PROJECT: R.097036 (157102433)	ICAO – New showcase layout on the 4th floor	Form : 1	No.:
		1 of 1	
APPENDIX 2 - COMMISSIONING FORM			

SPRINKLER SYSTEM

IDENTIFICATION	Equipment Tag:	Serial Number:
	Location:	
	Model Number:	Contractor:
	Type:	Manufacturer:
	Description of System:	

REPORTS	INCLUDED	N/A	COMMENTS
Cleaning	<input type="checkbox"/>	<input type="checkbox"/>	
Commissioning Control Check	<input type="checkbox"/>	<input type="checkbox"/>	
Pressure Test	<input type="checkbox"/>	<input type="checkbox"/>	
Glycol and Ethanol Concentration	<input type="checkbox"/>	<input type="checkbox"/>	
Sound Level	<input type="checkbox"/>	<input type="checkbox"/>	
Compliance with Standards/Codes	<input type="checkbox"/>	<input type="checkbox"/>	

MAINTENANCE REQUEST

MEMORANDUM (Deficiencies, repair work, sound, maintenance)	STATUS
	<input type="checkbox"/> Compliance
	<input type="checkbox"/> Requires Additional Checking
	<input type="checkbox"/> To be Completed
	<input type="checkbox"/> Out of Service
	<input type="checkbox"/> Non Compliance

Name of Technician:	Date:
Approved by: (Commissioning Authority)	Date:

PROJECT: R.097036 (157102433)	ICAO – New showcase layout on the 4th floor	Form : 2	No.:
		1 of 1	
APPENDIX 2 - COMMISSIONING FORM			

SEQUENCE OF OPERATIONS

IDENTIFICATION	Name of System:
	Description of System:
	<div> <div>Controls:</div> <div> <input type="checkbox"/> N/A <input type="checkbox"/> Internal <input type="checkbox"/> External </div> </div> <div> <div>Communication/Integration:</div> <div> <input type="checkbox"/> Pneumatic <input type="checkbox"/> Electric <input type="checkbox"/> Digital </div> </div> <div> <input type="checkbox"/> Coordination with BAS <input type="checkbox"/> N/A </div>

SEQUENCE OF OPERATION	VERIFIED	COMMENTS
All sensors and actuators are calibrated, correctly positioned and working properly.		
Configuration of occupation schedule and pre-startup mode or night set back temperature.		
Minimum position for fresh air damper.		
Modulation of valves and dampers		
Pressure, temperature and humidity control loops		
Supply and mixed air control loops		
Hardware protections (freeze, high pressure, proof of flow, high temperature, high humidity)		
Static pressure set point (also see bypass and variable frequency drives)		
Positioning of systems when stopped		
Variable frequency drives (minimum speed, acceleration ramps, deceleration) and bypass circuit		
Pressure, temperature, and CO ₂ alarms		
Functionality of terminal boxes		
Heating and cooling loops		
Special systems (recovery, energy measurement, gas detection)		

Name of Technician:	Date:
Approved by: (Commissioning Authority)	Date:

PROJECT: R.097036 (157102433)	ICAO – New showcase layout on the 4th floor	Form : 3	No.:
		1 of 1	
COMMISSIONING FORM			

APPENDIX 2 - FIRE ALARM SYSTEM

IDENTIFICATION	Panel:		Drawing Number:	
	Connected to:		Location:	
	Manufacturer:		Manufacturer Phone #:	
	Contractor:		Contractor phone #:	
	Model/Serial:		Compliance:	<input type="checkbox"/> Y <input type="checkbox"/> N
	System:	<input type="checkbox"/> Conventional <input type="checkbox"/> Addressable	Connection with Fire Network:	<input type="checkbox"/> Y <input type="checkbox"/> N
	Number of Zones:		Number of Loops:	
	Batteries:		Reserve:	

INSPECTION AND TRIAL	Description	Y	N	N/A	Comments
	Standards and codes applied				
	Correct installation				
	All electric connections tight				
	Verify electrolyte level is correct (where applicable)				
	Specified sequences of operation and operating schedules have been provided with all variations documented				
	Measures and sensibility				
	Specified point-to-point checks have been completed and documentation record submitted for this system				

MEMORANDUM (Deficiencies, repair work, sound, maintenance)	STATUS
	<input type="checkbox"/> Compliance
	<input type="checkbox"/> Requires Additional Checking
	<input type="checkbox"/> To be Completed
	<input type="checkbox"/> Out of Service
	<input type="checkbox"/> Non Compliance

Name of technician:	Date:
Approved by: (Commissioning Authority)	Date:

**Data Collection Form SIGE (Excel format)
will be Provided at a Later Date**

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 01 14 01 General information about the job

1.2 REFERENCES

- .1 Canadian Standard Association
 - .1 CSA S350-FM1980(R1998), Code of Practice for Safety in Demolition of Structures.

1.3 ACTION AND INFORMATIONAL SUBMISSIONS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit for review and approval by Departmental Representative shoring and underpinning drawings stamped and signed by professional engineer registered or licensed in the Province of Quebec in Canada, showing proposed method.
- .3 Before starting work on the site, submit a detailed waste reduction plan in accordance with Section 01 74 19 – Waste Management and Disposal.

1.4 WASTE MANAGEMENT AND REMOVAL

- .1 Sort waste for reuse in accordance with Section 01 74 19 – Waste Management and Disposal.

1.5 EXISTING CONDITIONS

- .1 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.
 - .1 Proceed only after receipt of written instructions have been received from Departmental Representative.
 - .2 Notify Departmental Representative before disrupting access or services.

1.6 GENERAL INDICATIONS - DEMOLITION

- .2 Scope of demolition work described on plans is for information only and should not be considered restrictive or limiting.
- .3 Examine carefully the drawings of all specialties involved in order to measure the exact scope of work.

Part 2 Products**2.1 NOT USED**

- .1 Not used.

Part 3 Execution**3.1 PREPARATION**

- .1 Inspect building site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

3.2 PROTECTION

- .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.
- .2 Keep noise, dust, and inconvenience to occupants to minimum.
- .3 Loud / noisy work can not be done during ICAO's operating hours.
- .4 Protect building systems, services and equipment.
- .5 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .6 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.

3.3 RECOVERY

- .1 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .2 Remove items to be reused and store them as directed by the Departmental Representative.

3.4 REMOVAL

- .1 Remove items as indicated.
- .2 Removal of Pavements, Curbs and Gutters:
- .3 Square up adjacent surfaces to remain in place by saw cutting or other method approved by the Departmental Representative.
- .4 Protect adjacent joints and load transfer devices.
- .5 Protect underlying and adjacent granular materials.

3.5 DEMOLITION WORK

- .1 Dismantle parts of the existing building where removal is necessary for new construction. Sort materials for reuse.
- .2 Remove and store materials to be salvaged, in manner to prevent damage and Trim edges of partially demolished building elements to tolerances.

3.6 DISPOSAL

- .1 Unless directed otherwise, ship removed material and equipment to appropriate recycling facilities, in accordance with the requirements of the appropriate authorities.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Not used.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269/A269M-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-14, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 CSA International
 - .1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA S16-14, Design of Steel Structures.
 - .4 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .5 CSA W59-13, Welded Steel Construction (Metal Arc Welding)(Metric).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - 2018.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Data sheet
 - .1 Submit required data sheets and manufacturer's specifications and documentation for products in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Shop drawings
 - .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Shop drawings shall illustrate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
 - .3 Submit drawings stamped and signed by professional engineer registered or licensed in Province Territory of Quebec, Canada.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and uploading
 - .1 Materials must be transported, stored, handled and protected in accordance with general and special conditions.
 - .2 Storage and Handling Requirements:
 - .1 Exposed surfaces of stainless steel items to be covered with thick self-adhesive paper or peelable plastic film before shipment of these items to site.
 - .2 Surfaces must not be cleared of protecting coating until final cleaning of building. Provide necessary instructions for removal of these protections.

Part 2 Products**2.1 MATERIALS**

- .1 Steel sections and plates: Grade 300W, to CSA G40.20/G40.21, thickness as indicated in drawings.
- .2 Steel pipes: to ASTM A53/A53M, standard series, galvanized finish.
- .3 Welding materials: to CSA W59.
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A325, Type 1 medium carbon steel bolts, galvanized finish; ASTM A194/194M, Grade 2H nuts, galvanized finish; ASTM F436M, Type 1 washers; ASTM A307, prison-made.
- .6 Aluminum sheets: brand-name general-use sheets, 3 mm minimum thickness, clear anodized finish.
- .7 Stainless steel tubes and plates: to ASTM A269, Grade 302, commercial grad.
- .8 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof flat round oval headed screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.

- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- .5 Avoid electrolytic between metal of different types.

2.3 FINISHES

- .1 Galvanization: hot dip with zinc coating, 600 g/m², ASTM A123/A123M. Typical for all exterior assemblies.
- .2 Chrome plating: chrome plating on steel with successive layers of copper 0.009 mm thick, nickel 0.010 mm thick and chrome 0.0025 mm thick.
- .3 Primer applied in shop: in accordance with product MPI-INT 5.1A.
- .4 Zinc-rich primer: ready for use, in accordance with product MPI-INT 5.2C, according to directive DCC-047a for chemical composition and VOC level.
- .5 Bituminous paint: conform to CAN/CGSB-1.108.

2.4 ISOLATION COATING

- .1 Isolate aluminum from following components, by means of bituminous paint:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.
 - .3 Wood.

2.5 SHOP PAINTING

- .1 Surfaces must be cleaned according to instructions in Volume 2 of Steel Structures Painting Council manual.
- .2 All surfaces must be covered with one (1) coat of primer applied in shop, except interior surfaces of crib steps.
- .3 Surfaces inaccessible after assembly must be covered with two (2) coats of primer of a different colour.
- .4 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
- .5 Surfaces to be welded on site must be cleaned and must not be coated with paint.

2.6 CHANNEL FRAMES

- .1 Fabricate frames from steel, sizes of channel and opening as indicated.
- .2 Sections welded to form a single-piece mullion transom, dimensions as indicated.
- .3 Flat steel anchors, dimensions as indicated in the plans, welded to the jambs of the assembled frame with sections no more than 450 mm apart.
- .4 Finish: galvanised for exterior components, prime coat painted for interior components.

2.7 MISCELLANEOUS METAL STRUCTURES

- .1 Supports for countertops, vanities and metal components in built-in furniture:

- .1 Steel sections with anchor plates or end supports.
- .2 Miscellaneous lintels: steel, dimensions as indicated.
- .3 Steel structural supports for decorative elements.

Part 3 Execution

3.1 EXAMINATION

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

3.2 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Ministerial Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CSA S16.1 Weld field connection.
- .7 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
- .8 Once assembly is completed, use primer to touch up rivets, welds done on site, bolts and burned or scratched surfaces.
- .9 Using zinc-rich primer, touch up galvanized surfaces in places burned during on-site welding.

3.3 CHANNEL FRAMES

- .1 Install channel frames in locations as indicated.

3.4 CLEANING

- .1 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

- .1 Leave Work area clean at end of each day.
- .2 Final cleaning: remove surplus materials, waste, tools and equipment in accordance with Section 01 74 00 – Cleaning.
- .3 Clean metalwork as soon as possible after installation to rid it of dust generated by construction work or by surroundings.
- .4 Waste management: Sort and recycle waste in accordance with Section 01 74 19 – Waste Management and Disposal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 08 11 00 - Metal Doors and Frames.
- .2 Section 08 14 16– Flush Wood doors
- .3 Section 09 22 16 - Non-structural Metal Framing.

1.2 REFERENCES

- .1 Wood from Quebec or Ontario meeting regional materials credit (MRc5) requirements.
- .2 Certified wood meeting certified materials credit (MRc7) requirements.
- .3 Products certified by the Forest Stewardship Council (FSC). Provide traceability chain and proof of purchase for each product.
- .4 Plywood boards shall meet standardized requirements as well as following requirements:
- .5 Wood meeting certified materials credit (MRc7) requirements.
- .6 Products certified by the Forest Stewardship Council (FSC). Provide traceability chain and proof of purchase for each product.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Wood Certification: submit vendor's manufacturer's Chain-of-Custody Certificate number for CAN/CSA-Z809 or FSC or SFI certified wood.
- .3 Low-emission materials: in accordance with Section 01 35 21 – LEED Requirements.

1.4 QUALITY ASSURANCE

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.
- .3 Sustainable development certification: in accordance with Section 01 35 21 – LEED Requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.

Part 2 Products**2.1 LUMBER**

- .1 Sawed lumber: softwood with S4S finish (bleached on all 4 sides).
 - .1 Eastern spruce, Grade no. 1, no more than 19% moisture.
 - .2 Complies to CSA O141.
 - .3 Complies with NLGA Standard Grading Rules for Canadian Lumber.
- .2 Anti-rot treatment, coloured pentachlorophenol base.
- .3 Hardware: nails, bolts, screws, nuts, screws, washers, lag screws and any other required item, to CSA B111 and ASTM D1761.
- .4 Lumber in accordance with ASTM D5456.
- .5 Furring, wedges, nailing strips, rough frames, battens and grounds, and sleepers:
 - .1 S4S finish.
 - .2 Boards of Standard or higher category.
 - .3 Dimensioned wood: light frame classification of Standard or higher category.
 - .4 Columns and square wood pieces: Standard or higher category.
- .6 Panels: conform to CSA O325
 - .1 Plywood : Douglas fir, to standards CSA-O121, standard construction classification.
 - .2 Pressed particleboard for interior finishing: in accordance with ANSI/NPA 208.1.

Part 3 Execution**3.1 LAYING**

- .1 Supply and install wood blockings, furring and nailing bases necessary for other trades, including mechanical and electrical.
- .2 Pieces of wood to be as long as possible, with joints closed and adjacent pieces well aligned with one another.
- .3 Exterior wood and wood in contact with masonry or concrete to be pressure-treated against rot.
- .4 All wood cuts to be provided with anti-rot preservative applied by brush and compatible with the original pressure treatment.

3.2 PROTECTION

- .1 Provide and install temporary covers and panels to protect the building from the elements. If necessary, double with asphalt felt to ensure a good seal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 06 10 53 – Miscellaneous Carpentry.
- .2 08 14 16 – Flush Wood Doors.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI A208.1-09, Particleboard.
 - .2 ANSI A208.2-09, Medium Density Fibreboard (MDF) for Interior Applications.
 - .3 ANSI/HPVA HP-1-10, American National Standard for Hardwood and Decorative Plywood.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
 - .1 Architectural Woodwork Quality Standards, 1st edition, 2009.
- .3 ASTM International
 - .1 ASTM A123/A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .4 Canada Green Building Council (CaGBC)
 - .1 LEED v4 for Interior Design and Construction Reference Guide, 2017.
- .5 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-11.3-M87, Hardboard.
- .6 CSA International
 - .1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
 - .2 CSA O121-08, Douglas Fir Plywood.
 - .3 CSA O141-05(R2009), Softwood Lumber.
 - .4 CSA O151-09, Canadian Softwood Plywood.
 - .5 CSA O153-M1980(R2008), Poplar Plywood.
 - .6 CAN/CSA-Z809-08, Sustainable Forest Management.
- .7 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .8 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2010.
- .9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

- .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .10 Sustainable Forestry Initiative (SFI)
 - .1 SFI-2010-2014 Standard.
- .11 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S104-10, Standard Method for Fire Tests of Door Assemblies.
 - .2 CAN/ULC-S105-09, Standard Specification for Fire Door Frames.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for plywood, particleboard, OSB, MDF and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.
 - .2 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .3 Indicate materials, thicknesses, finishes and hardware.
- .4 Sustainable Design Submittals:
 - .1 LEED Canada submittals: in compliance with Section 01 35 21 - LEED Requirements.
 - .2 Construction Waste Management:
 - .1 Submit project Waste Management Plan in compliance to section 01 74 19 - Construction/Demolition Waste Management And Disposal.
 - .2 Submit calculations on end-of-project recycling rates in compliance with section 01 35 21 – LEED requirements.
 - .3 Recycled Content: in compliance with Section 01 35 21 - LEED Requirements
 - .4 Regional Materials: in compliance with Section 01 35 21 - LEED Requirements.
 - .5 Wood Certification: in compliance with Section 01 35 21 - LEED Requirements.
 - .6 Low-Emitting Materials: in compliance with Section 01 35 21 - LEED Requirements.

1.4 QUALITY ASSURANCE

- .1 Lumber by grade stamp of agency certified by Canadian Lumber Standards Accreditation Board (CLSAB).
- .2 Sustainable Standards Certification:

- .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.
- .3 Plywood, particleboard, OSB and wood based composite panels to CSA and ANSI standards.
- .4 Wood fire rated frames and panels: listed and labelled by an organization accredited by Standards Council of Canada to CAN/ULC-S104 and CAN/ULC-S105.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect wood products from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .5 Packaging Waste Management: remove for reuse in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Softwood lumber: S4S, moisture content 19% or less in accordance with following standards:
 - .1 CSA O141.
 - .2 CAN/CSA-Z809 or FSC or SFI certified.
 - .3 NLGA Standard Grading Rules for Canadian Lumber.
 - .4 AWMAC premium grade, moisture content as specified.
 - .5 Machine stress-rated lumber is acceptable.
 - .6 Hardwood lumber: in accordance with the following standards:
 - .1 National Hardwood Lumber Association (NHLA).
 - .2 AWMAC premium grade, moisture content as specified.
 - .3 CAN/CSA-Z809 or FSC or SFI certified.
- .2 Panel Material: urea-formaldehyde free

- .1 Recycled content: in accordance with Section 01 35 21 - LEED Requirements.
- .2 CAN/CSA-Z809 or FSC or SFI certified.
- .3 Douglas fir plywood (DFP): to CSA O121, standard construction.
- .4 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .5 Hardwood plywood: to ANSI/HPVA HP-1.
- .6 Poplar plywood (PP): to CSA O153, standard construction.
- .7 Particleboard: to ANSI A208.1.
- .8 Hardboard: to CAN/CGSB-11.3.
- .9 Medium density fibreboard (MDF): to ANSI A208.2, density 640-800 kg/m³.
- .10 Low density fibreboard: to CSA-A247M.

2.2 ACCESSORIES

- .1 Nails and staples: to CSA B111; galvanized to ASTM A123/A123M for exterior work, interior humid areas and for treated lumber; stainless steel finish elsewhere.
- .2 Wood screws: stainless steel, type and size to suit application.
- .3 Splines: metal.
- .4 Adhesive and Sealants: in accordance with Section 07 92 00 - Joint Sealants.
 - .1 VOC limit : in accordance with Section 01 35 21 - LEED Requirements.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for wood products installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Do finish carpentry to Quality Standards of (AWMAC).
- .2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
- .3 Form joints to conceal shrinkage.

3.3 CONSTRUCTION

- .1 Fastening:

- .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
 - .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
 - .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.
 - .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.
- .2 Interior frames:
- .1 Set frames with plumb sides and level heads and sills and secure.

3.4 INSTALLATION OF FRAMES

- .1 Interior frames:
- .1 Frames to be solid wood maple species, to match existing adjacent wooden frames.
 - .2 Construction:
 - .1 Profile: as detailed on plans and to match existing adjacent wooden frames.
 - .2 Corner: as detailed on plans and to match existing adjacent wooden frames.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: sort materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

3.6 PROTECTION

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

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 10 22 19 – Stud Type Demountable Partitions

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI 208.1-09, Particleboard.
- .2 ASTM International
 - .1 ASTM D2832-92(R2011), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
 - .2 ASTM D2369-10e1, Standard Test Method for Volatile Content of Coatings.
- .3 Canada Green Building Council (CaGBC)
 - .1 LEED v4 for Interior Design and Construction Reference Guide, 2017.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
- .5 CSA International
 - .1 CSA O112.10-08, Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure).
 - .2 CSA O121-08, Douglas Fir Plywood.
 - .3 CSA O151-09, Canadian Softwood Plywood.
 - .4 CSA O153-M1980(R2008), Poplar Plywood.
 - .5 CAN/CSA-Z809-08, Sustainable Forest Management.
- .6 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .7 Green Seal Environmental Standards (GS)
 - .1 GS-36-11, Commercial Adhesives.
- .8 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .9 National Electrical Manufacturers Association (NEMA)
 - .1 ANSI/NEMA LD-3-05, High Pressure Decorative Laminates (HPDL).
- .10 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2011, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .11 Sustainable Forestry Initiative (SFI)

-
- .1 SFI-2014 Standard.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for laminate, adhesive, and core materials and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements. Indicate VOC's for adhesives in g/L.
- .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit duplicate samples of joints, edging, cutouts and postformed profiles.
- .4 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Sustainable Design Submittals:
 - .1 LEED Canada submittals:
 - .1 In accordance with Section 01 35 21 - LEED Requirements.
 - .2 Construction Waste Management: in accordance with section 01 74 19 -
 - .3 Regional Materials: in accordance with Section 01 35 21 - LEED Requirements.
 - .4 Wood Certification: in accordance with Section 01 35 21 - LEED Requirements
 - .5 Low-Emitting Materials: in accordance with Section 01 35 21 - LEED Requirements

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

-
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect laminate, adhesive, and core materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
 - .4 Packaging Waste Management: remove for reuse as specified in Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Laminated plastic for flatwork: to NEMA LD3 (for movable partitions).
 - .1 Type: general purpose.
 - .2 Grade: VGL.
 - .3 Size: 1.27 mm thick.
 - .4 Colour: layers of uniform colour: white / very pale warm grey.
 - .5 Pattern: solid.
 - .6 Finish: satin.
- .2 Particleboard core: to ANSI 208.1, high density, sanded faces, of thickness indicated.
 - .1 CAN/CSA-Z809 or FSC or SFI certified.
 - .2 Ensure particleboard core is urea-formaldehyde free.
- .3 Laminated plastic adhesive: recognized brands, suitable for intended use, water-repellent and in accordance with ASTM-D5116, D2832 and the following low emission levels:
 - .1 Total VOC content: less than 0.5mg/m³/hour.
 - .2 Formaldehyde: less than one (1) part per billion (1 PPB).
4 Phenylcyclohexane (4-PCH): less than one part per billion (1 PPB).
- .4 Impregnation coatings: water-repellent adhesives or coatings approved by the laminate manufacturer.
 - .1 VOC emission tests to be conducted in accordance with ASTM D2369 and ASTM D2832.
 - .2 VOC content: no more than 200g/L as in SCAQMD Rule 1113.
 - .3 Limits and restrictions on chemical composition: as in SCAQMD Rule 1113.
- .5 Sealants:
 - .1 VOC emission tests to be conducted in accordance with ASTM D2369 and ASTM D2832.
 - .2 VOC content: no more than 5% by weight.
 - .1 Limits and restrictions on chemical composition: as in SCAQMD Rule 1113.

-
- .3 Lag bolts and splines: of the type recommended by the fabricant.
-

2.2 FABRICATION

- .1 Laminate to be fabricated in shop as per NEMA LD3, Annex A.
- .2 Structures in which appliances, equipment or other items are to be built-in or contiguous to these items must be built to appropriate dimensions, obtained beforehand.
- .3 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .4 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cutouts.
- .5 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.
- .6 Apply laminate backing sheet to reverse side of core of plastic laminate work.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for laminate, adhesive, and core materials installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins concerning the handling, storage, installation, adjustment, protection and cleaning of the products supplied and the work performed.

3.3 INSTALLATION

- .1 Install work plumb, true and square, neatly scribed to adjoining surfaces.
- .2 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.
- .3 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm on centre, 75 mm from edge. Make flush hairline joints.
- .4 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

-
- .5 Site apply laminated plastic to units as indicated. Adhere laminated plastic over entire surface. Make corners with hairline joints. Use full sized laminate sheets. Make joints only where approved. Slightly bevel arises.
 - .6 For site application, offset joints in plastic laminate facing from joints in core.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
 - .1 Clean to NEMA LD3, Annex B.
 - .2 Remove traces of primer, caulking, epoxy and filler materials and clean doors and frames.
- .3 Waste Management: in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

3.5 PROTECTION

- .1 Cover finished laminated plastic veneered surfaces with heavy kraft paper or put in cartons during shipment.
- .2 Protect installed laminated surfaces in accordance with manufacturer's written recommendations.
 - .1 Remove protection only immediately before final inspection.
- .3 Protect installed products and components from damage during construction.
- .4 Repair damage to adjacent materials caused by laminate, adhesive, and core materials installation.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 09 22 16 - Non-structural Metal Framing
- .2 Section 10 22 19 - Stud type demountable partition

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C553-13, Standard Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
 - .2 ASTM C665-12, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - .3 ASTM C1320-10, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
- .2 Canada Green Building Council (CaGBC)
 - .1 LEED v4 for Interior Design and Construction Reference Guide, 2017.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CSA B149 PACKAGE-10, Consists of B149.1, Natural Gas and Propane Installation Code and B149.2, Propane Storage and Handling Code.
- .4 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S604-2012, Standard for Factory-Built Type A Chimneys.
 - .2 CAN/ULC-S702-2012, Standard for Mineral Fibre Insulation for Buildings.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for blanket insulation and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Certificates:
 - .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Test Reports:
 - .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.

- .5 Sustainable Design Submittals:
 - .1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.
 - .2 Construction waste management: refer to Section 01 74 19 – Waste Management and Disposal.
 - .3 Recycled content: refer to Section 01 35 21 – LEED Requirements.
 - .4 Regional materials and equipment: refer to Section 01 35 21 – LEED Requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors, off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
- .4 Develop a Construction Waste Management Plan based on the recommendations in Section 01 74 19 – Waste Management and Disposal.
- .5 Packaging Waste Management: refer to section 01 74 19 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 INSULATION

Acoustical insulation: fire-rated, mineral fibre from volcanic rock and slag.

- .1 To CAN/ULC-S702, type 1.
- .2 Density: 45 kg/m³.
- .3 RSI: 0.76 m² °C/W / 25 mm.
- .4 Flame propagation: 0
- .5 Smoke developed: 0
- .6 Recycled content: 40% minimum
- .7 Thickness: as indicated.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for blanket insulation application in accordance with manufacturer's written instructions.
 - .1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .2 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSULATION INSTALLATION

- .1 Install insulation to maintain continuity of thermal protection to building elements and spaces and to ASTM C1320.
- .2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- .3 Do not compress insulation to fit into spaces.
- .4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures.
- .5 Do not enclose insulation until it has been inspected and approved by Departmental Representative.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste Management: in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 09 21 16 - Gypsum Board Assemblies.
- .2 Section 09 22 16 - Non-structural Metal Framing.
- .3 Division 23 - Heating, Ventilating and Air Conditioning
- .4 Division 26 - Electrical

1.2 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S115-11, Fire Tests of Fire stop Systems.
 - .2 CAN/ULC-S101-14, Standard Methods of Fire Endurance Tests of Building Construction and Materials Fifth Edition.

1.3 DEFINITIONS

- .1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- .2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- .3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- .4 Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of non-combustible construction or have "0" annular space in buildings of combustible construction.
 - .1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

- .3 Test reports: in accordance with ULC-S115.

1.5 QUALITY CONTROL

- .1 Installer: company specializing in fire stopping installations and approved by manufacturer.
- .2 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with Departmental Representative to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

1.6 TRANSPORT, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings.
- .2 Storage and Protection:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
 - .1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended and conforming to specified special requirements described in PART 3.
- .2 Service penetration assemblies: systems tested to CAN-ULC-S115.
- .3 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.
- .4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.
- .5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

- .6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
- .7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .9 Restraining, support, backing and anchoring devices: based on manufacturer's recommendations and compatible with established entities, proven and deemed acceptable by competent authorities.
- .10 Sealants for vertical joints: non-sagging.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 PREPARATION

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

- .1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
- .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .4 Tool or trowel exposed surfaces to neat finish.
- .5 Remove excess compound promptly as work progresses and upon completion.

3.4 INSPECTION

- .1 Inspections: before concealing or covering materials or fire-resistant entities, inform Departmental Representative that work is ready for inspection.

3.5 SCHEDULE

- .1 Fire stop and smoke seal at:
 - .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - .2 Top of fire-resistance rated masonry and gypsum board partitions.
 - .3 Intersection of fire-resistance rated masonry and gypsum board partitions.
 - .4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
 - .5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs
 - .6 Access points and shafts set aside or placed in fire-resistant partitions for later use.
 - .7 Around mechanical and electrical assemblies penetrating fire separ.
 - .8 Rigid ducts: greater than 129 cm² : fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

3.6 CLEANING

- .1 Effectuer les travaux de nettoyage conformément à la section 01 74 00 – Nettoyage.
- .2 Remove debris and surplus material, and clean contiguous surfaces immediately after installation.
- .3 Remove temporary dams after initial set of fire stopping and smoke seal materials.
- .4 Waste management: Sort and recycle waste in accordance with Section 01 74 19 – Waste Management and Disposal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 09 21 16 - Non-structural Metal Framing

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C919-12, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
 - .2 CAN/CGSB-19.13-M87 Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .3 CGSB19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
 - .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999.
- .4 General Services Administration (GSA) - Federal Specifications (FS)
 - .1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .6 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992.
- .7 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-04, Architectural Coatings.
 - .2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations. Manufacturer's product to describe:

- .1 Caulking compound.
- .2 Primers.
- .3 Sealing compound, including compatibility when different sealants are in contact with each other.
- .3 Submit 2 samples of each type of material and colour.
 - .1 As required, for purposes of harmonization with adjacent materials, submit dried samples of sealants to be left visible, for each proposed colour.
- .4 Manufacturer's Instructions:
 - .1 Submit instructions to include installation instructions for each product used.

1.4 QUALITY CONTROL

- .1 Installer: company specializing in work covered by this section and approved by manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect joint sealants from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort and recycle waste in accordance with Section 01 74 19 – Waste Management and Disposal.

1.7 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Proceed with installation of joint sealants only when:
 - .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4 degrees C.
 - .2 Joint substrates are dry.
 - .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .2 Joint-Width Conditions:
 - .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

- .3 Joint-Substrate Conditions:
 - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.

1.9 EXTENDED WARRANTY

- .1 For work in this section, that is to say section 07 92 00 – Joint sealing, the warranty period of 12 months prescribed in the general conditions, is extended to 60 months.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.

Part 2 Products

2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.
- .3 Sealants for each location must be of a single type and from the same manufacturer.
- .4 Where sealants are qualified with primers use only these primers.
- .5 Unless indicated otherwise, the colour of each sealant for each location shall be at the discretion of the Departmental Representative from the manufacturer's standard colours.

2.2 SEALANTS – DESCRIPTION

- .1 Type 1: two- or three-component polyurethane sealant, to CAN/CGSB-19.24P.
- .2 Types 2 and 2A: single-component polyurethane sealant, to CAN/CGSB-19.13.
- .3 Type 3: single- or two-component non-sag polyurethane sealant, to ASTM C920 or CAN/CGSB-19.13.
- .4 Type 4: single-component acrylic sealant, to CAN/CGSB-19-GP-5M.
- .5 Type 5: mould-resistant sealant.
- .6 Type 6: sealant for acoustic insulation.
- .7 Type 7: single-component silicon sealant, to CAN/CGSB-19.13.

- .8 Type 8: sealant to seal the vapour barrier, EcoLogo certified, asbestos-free, compatible with the vapour barrier and recommended by the vapour barrier manufacturer.

2.3 SEALANTS – LOCATIONS

- .1 Expansion and dividing joints formed in outer side of prefabricated decorative panel walls: Type 1 or 2A product.
- .2 Exterior joints in wearing surfaces (as itemized): type 3 product.
- .3 Inner perimeter of apertures formed in outside walls, based on details in drawings: Type 2 product.
- .4 Expansion and dividing joints formed in inner side of cast concrete outside walls: Type 2 product.
- .5 Expansion and dividing joints formed in inner side of prefabricated decorative panel walls: Type 2 product.
- .6 Expansion and dividing joints formed in inner side of outside masonry block walls: Type 2 product.
- .7 Interior control and expansion joints in floor surfaces: Type 1 or 2A product for non-circulable joints, Type 3 product for circulable joints.
- .8 Perimeters of interior frames, as detailed and itemized: Type 4 product.
- .9 Joints formed atop non-bearing masonry walls on underside of concrete units cast on site: Type 2 product.
- .10 Perimeter of bathroom fixtures (sinks, bathtubs, urinals, seats, toilets, washbasins, vanities): Type 5 product.
- .11 Visible dividing joints formed in drywall partition structures: Type 4 product.
- .12 Expansion and control joints for indoor ceramic tiles: Type 5 product.
- .13 Interior acoustical joint: Type 6 product.
- .14 Glazing seals: Type 7 product.
- .15 To seal vapour barrier sheets: Type 8 product.

2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
- .2 Primer: in accordance with sealant manufacturer's written recommendations.

2.5 PREFORMED, COMPRESSIBLE AND NON-COMPRESSIBLE BACKING

- .1 Backing rods must suit the appropriate sealants and must be of the type recommended by the manufacturer.
- .2 Elements of polyurethane, urethane, neoprene or vinyl foam.
 - .1 Extruded cellular foam filling rods.
 - .2 Elements oversized by 30% to 50%.

- .3 Neoprene or butyl rubber elements.
 - .1 Round, solid rods, 70 Shore A hardness.
- .4 High-density foam elements.
 - .1 Extruded cellular PVC foam or extruded cellular polyethylene foam, 20 Shore A hardness, tensile strength of 140 kPa to 200 kPa, extruded polyolefin foam 32 kg/m³ in density, or neoprene, of dimensions recommended by the manufacturer.
- .5 Non-sticking tape.
 - .1 Polyethylene tape not sticking to the sealant.

Part 3 Execution

3.1 PROTECTION

- .1 Protect structures installed by third parties against dirt or any other form of contamination.

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

- .1 Sealant:
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.

3.7 CLEANING

- .1 Clean adjacent surfaces immediately and leave works clean and in perfect condition.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealants.
- .4 Ensure that installed sealants are free of skin formation or poor adhesion and do not contain defects that may affect the quality of the work.
- .5 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 07 92 00 - Joint Sealing.
- .2 Section 08 71 00 - Door Hardware.
- .3 Section 08 71 01 – Hardware Groups.
- .4 Section 09 21 16 - Gypsum Board Assemblies.
- .5 Section 09 22 16 - Non-structural Metal Framing.
- .6 Section 09 91 23 – Painting.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A653/A653M-15, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating
 - .2 CGSB 41-GP- 19Ma-84, Rigid Vinyl Extrusions for Windows and Doors
- .3 Canadian Standards Association (CSA)/CSA International
 - .1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
 - .2 CSA W59-13, Welded steel construction (metal arc welding)
- .4 Canadian Steel Door Manufacturers Association (CSDMA)
 - .1 CSDMA, Specifications for Commercial Steel Doors and Frames, 2006.
 - .2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 2009.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-16, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-12, Standard Methods of Fire Tests of Door Assemblies.
- .6 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113, Architectural Coatings.
 - .2 SCAQMD Rule 1168, Adhesives and Sealants Applications.
- .7 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC S104-15, Standard Method for Fire Tests of Door Assemblies

- .2 CAN/ULC-S702-14, Standard for mineral fibre thermal insulation for buildings
- .3 CAN/ULC-S704-11, Standard for thermal insulation, polyurethane and polyisocyanurate, boards, faced
- .4 CAN/ULC-S105-09, Standard specification for fire door frames meeting the performance required by CAN/ULC-S104-15.

1.3 SYSTEM DESCRIPTION

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
- .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.
- .3 The doors and ironwork and hardware system must be designed to meet or exceed industry standards in terms of resistance to wind loads (Door & Access Systems Manufacturer Association).
- .4 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104-15 and NFPA 252 for ratings specified or indicated, and bearing the label of the body in question.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals, product data, shop drawings and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submittals, product data and certificates
 - .1 Submit test and engineering data, and installation instructions.
- .3 Shop drawings
 - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed or louvred, arrangement of hardware fire rating and finishes.
 - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing, fire rating and finishes.
 - .3 Include schedule as per drawings identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .4 Sample :
 - .1 Submit one 300 x 300 mm corner sample of each type of frame.
 - .2 Show butt cutout, glazing stops, snap-on trim with clips.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort waste for reuse, recycling and recovery in accordance with Section 01 74 19 – Construction/Demolition Waste Management and Disposal.

1.7 EXTENDED WARRANTY

- .1 For work in this section, that is to say section 08 11 00 – Metal doors and frames, the warranty period of 12 months prescribed in the general conditions, is extended to 24 months.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.

Part 2 Products**2.1 GENERAL**

- .1 The doors and frames should be made in accordance with NAAMM / 863 HMMA

2.2 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653M, and galvanization ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcements and channels: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M galvanization ZF75.

2.3 DOOR CORE MATERIALS

- .1 Honeycomb construction:
 - .1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m³ minimum sanded to required thickness.
- .2 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at prescribed time duration. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.4 ADHESIVES

- .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
 - .1 Adhesive: maximum VOC content 50 g/L to SCAQMD Rule 1168.
- .2 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.5 PAINT

- .1 Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.
- .2 Rust Touch up paint complies with CAN/CGSB-1.181.
 - .1 Maximum VOC emission level 50 g/L to GC-03

2.6 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior interior top bottom steel caps.
- .3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- .4 Door bottom seal: see section 08 71 10 – Door Hardware.
- .5 Metallic paste filler: to manufacturer's standard.
- .6 Fire labels: metal riveted.
- .7 Sealant:: See section 07 92 00 – Joint Sealing.
- .8 Glazing and glazing bead: See section 08 80 00 - Glazing.
 - .1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws and dry glazing of snap-on type.
 - .2 Design exterior glazing stops to be tamperproof.

2.7 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDMA specifications, with the maximum frontal dimensions and profiles indicated.
- .2 Interior frames: 1.6 mm (16 ga) for frames of 915 mm or less and 1.9 mm (14 ga) for frames over 915mm, welded (continuous weld).
- .3 Blank, reinforce, drill and tap frames for mortised, templated hardware and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .4 Protect mortised cutouts with steel guard boxes.
- .5 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .6 Manufacturer's nameplates on frames and screens are not permitted
- .7 Unless otherwise noted, conceal fastenings except where exposed fastenings are indicated
- .8 Insulate exterior frame components with low pressure application polyurethane insulation and with batt insulation in fire-rated frames.

2.8 ANCHORING OF FRAMES

- .1 Supply and install devices to anchor frames to walls and floors.

- .2 Install wall anchor immediately above or below each hinge reinforcement on the hinge side of the post and directly opposite the striking stile.
- .3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.9 FRAMES: WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld (continuous weld) on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment
- .7 Based on the dimensions set for the frames, produce them in several parts to facilitate shipping and handling. Parts must be assembled and welded on site so as not to leave any visible joint or trace of assembly.

2.10 DOOR FABRICATION GENERAL

- .1 Doors: swing type, flush, as indicated.
- .2 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E330.
- .3 Fabricate doors with longitudinal weld. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
- .4 Blank, reinforce, drill doors and tap for mortised, templated hardware electronic hardware.
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .6 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Grind until a flat, metallic top with filler putty, then sand until smooth and uniform finish.
- .7 Interior door shall be provided, at the upper part and the lower part, an inverted recessed section, welded longitudinally. Grind until a flat, metallic top with filler putty, then sand until smooth and uniform finish.
- .8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

- .9 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 and NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.
- .10 Manufacturer's nameplates on doors are not permitted.

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

- .1 Form face sheets for exterior doors from 1.6 mm (16 ga) sheet steel with fiber glasscore laminated under pressure to face sheets
- .2 Form face sheets for interior doors from 1.6 mm (16 ga) sheet steel with honeycomb core laminated under pressure to face sheets
 - .1 Finish : Paint, flat.

2.12 FIRE RESISTANT DOORS

- .1 Swinging doors
 - .1 Door panel thickness: 51 mm
 - .2 Resistance : 45 minutes

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.

3.3 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation. The alignment and verticality of cadres should be checked prior to installation of doors and hardware components to ensure that the installation of the frames don't affect the proper functioning of the hardware
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of frames between frame and adjacent material.
- .6 Maintain continuity of air barrier vapour retarder.

3.4 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
 - .1 Hinge side: 1.0 mm.
 - .2 Latchside and head: 1.5 mm.
 - .3 Finished floor: 13 mm
 - .4 Ensure door swing does not conflict with flooring.
- .3 Adjust operable parts for correct function.
- .4 Install louvres.

3.5 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.6 GLAZING

- .1 Install glazing for doors frames in accordance with Section 08 80 00 - Glazing.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 08 71 00 - Door Hardware.
- .2 Section 08 71 01 - Hardware Groups.
- .3 Section 08 80 00 – Glazing.
- .4 Section 10 22 19 – Stud type demountable partition.

1.2 REFERENCES

- .1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
 - .1 Quality Standards for Architectural Woodwork 2014.
- .2 Standards Council of Canada (SCC).
 - .1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
 - .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
- .3 Canadian Standards Association (CSA International).
 - .1 CSA A440.2-CSA A440.2-98(R2003), Energy Performance of Windows and Other Fenestration Systems.
 - .2 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
 - .3 CAN/CSA O132.2- Series-90(R2003), Wood Flush Door.
 - .4 CAN/CSA-O132.5-M1992(R1998), Stile and Rail Wood Doors.
 - .5 CAN/CSA-Z808-F96, A Sustainable Forest Management System : Guidance Document.
 - .6 CSA, 2000 Windows and doors certification program.
- .4 Environmental Choice Program (ECP).
 - .1 DCC-045-92, Sealants and Caulking.
 - .2 DCC-046-92, Adhesives.
- .5 National Fire Protection Association (NFPA).
 - .1 NFPA 80-2016, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-2012, Standard Method of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC).
 - .1 CAN/ULC-S104-15, Fire Tests of Door Assemblies.
 - .2 CAN/ULC-S105-09, Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:

- .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit 1 copy of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
 - .1 For caulking materials during application and curing.
 - .2 For door materials and adhesives.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate door types and cutouts for lights louvres, sizes, core construction, transom panel construction and cutouts.

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one 300 x 300 mm corner sample of each type wood door.
- .3 Show door construction, core, glazing detail and faces.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.
- .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Storage and Protection:
 - .1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
 - .2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
 - .3 Protect doors from scratches, handling marks and other damage. Wrap Crate doors.
 - .4 Store doors away from direct sunlight.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort and recycle waste in accordance with Section 01 74 19 – Waste Management and Disposal.

- .2 Do not pour unused paint products into sewers, waterways or lakes or onto the ground or in any place where they may pose a health or environmental risk.

1.8 EXTENDED WARRANTY

- .1 For work in this section, that is to say section 08 14 16 - Flush wood doors, the warranty period of 12 months prescribed in the general conditions, is extended to 36 months.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.

Part 2 Products

2.1 DOORS WITH A DEGREE OF FIRE RESISTANCE

- .1 Wood doors: with the rating prescribed in tests conducted in accordance with CAN4-S104.

2.2 FLUSH DOORS

- .1 Solid core door: to CAN/CSA-O132.1
 - .1 Construction
 - .1 Solid-core particleboard: connected to mullion and transom frame with wooden lock reinforcements and special wood reinforcing blocks, covered with siding panels on both sides, seven-ply construction:
 - .1 Solid pressed wood core, density of 449 kg/m³, to ANSI A208.1.
 - .2 Upper and lower veneer cross beams, unwound, 3 mm thick, laminated lengthwise by hot pressing using Type 1 structural adhesive, with a total width of 57 mm, including a slice of softwood 16 mm thick.
 - .3 Veneer wings, 3 mm thick, laminated lengthwise by hot pressing using Type 1 adhesive, total length 108 mm, including 16 mm piece of hardwood of same species as face of door.
 - .2 Face Panels: hardwood veneer, Grade I (Premium), maple species
 - .1 Finish: Factory-varnished.
 - .2 Adhesive: type I (water resistant) for interior doors.

2.3 ACCESSORIES

- .1 Glass: Refer to Section 08 80 00 – Glazing.
- .2 Accessories: Refer to Section 08 71 00 – Door Hardware.

2.4 FABRICATION

- .1 Vertical door edges covered with a piece of hardwood with blind joints, to be varnished when doors are of varnished wood and to be painted when doors are of painted wood.
- .2 Doors prepared to receive hardware.

- .3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

2.5 FINISH

- .1 Equivalent or superior to AW1 TR-6 and OP-6 finishing processes.
- .2 Satin varnish finish, 30 to 35 degrees. 100% solid ultraviolet polyurethane, non-yellowing.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.
- .2 Install labelled fire rated doors to NFPA 80, bearing the certification label of the competent body.
- .3 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.
- .4 Adjust hardware for correct function.

3.3 ADJUSTMENT

- .1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer, caulking; clean doors and frames.
- .3 Clean glass and glazing materials with approved non-abrasive cleaner.
- .4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 99 – Demolition for Minor Works.
- .2 Section 08 11 10 - Metal doors and frames.
- .3 Section 08 14 16 - Flush Wood Doors.
- .4 Division 26 - Electrical.

1.2 REFERENCES

- .1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
 - .1 CSDFMA/ACFPA, Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.
- .2 Standards Council of Canada (SCC).
 - .1 CAN/CSA B-651-12, Accessible design for the built environment.
- .3 American National Standards Institute (ANSI).
 - .1 ANSI/BHMA A156.1-2000, Butts and Hinges.
 - .2 ANSI/BHMA A156.3-2001, Exit Devices.
 - .3 ANSI/BHMA A156.4-2000, Door Controls - Closers.
 - .4 ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
 - .5 ANSI/BHMA A156.6-2001, Architectural Door Trim.
 - .6 ANSI/BHMA A156.8-2000, Door Controls - Overhead Stops and Holders.
 - .7 ANSI/BHMA A156.10-2017, Power Operated Pedestrian Doors.
 - .8 ANSI/BHMA A156.12-2018, Interconnected Locks.
 - .9 ANSI/BHMA A156.13-2005, Mortise Locks and Latches.
 - .10 ANSI/BHMA A156.14-2013, Sliding and Folding Door Hardware.
 - .11 ANSI/BHMA A156.15-2015, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
 - .12 ANSI/BHMA A156.16-2002, Auxiliary Hardware.
 - .13 ANSI/BHMA A156.17-2004(R2010), Self Closing Hinges Pivots.
 - .14 ANSI/BHMA A156.18-2000, Materials and Finishes.
 - .15 ANSI/BHMA A156.19-2002, Power Assist and Low Energy Power Operated Doors.
 - .16 ANSI/BHMA A156.20-2017, Strap and Tee Hinges, and Hasps.

1.3 DOCUMENTS/SAMPLES SUBMITTALS

- .1 Product Data:
 - .1 Submit required product data sheets and manufacturer's specifications and documentation concerning the products in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Samples:

- .1 Submit required samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
- .3 After approval samples will be returned for incorporation in Work.
- .3 Hardware List:
 - .1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate specified hardware, including make, model, material, function, finish and other pertinent information.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .5 Closeout submittals
 - .1 Provide operation and maintenance data sheets on door closers, locks, door retainers and accessories for emergency exit doors, and incorporate them in manual in accordance with Section 01 78 00 – Closeout Submittals.
 - .2 Inform maintenance staff of correct way to maintain and clean hardware items.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
- .2 Tests reports: submit tests reports certifying that products and materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Certificates: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Meeting prior to installation: hold a meeting in which will be examined the works requirements, manufacturer's installation instructions and his warranty of products.
- .5 Inspection of work: by supplier of hardware parts during performance of work. Errors, omissions and corrective measures to be taken must be recorded in writing following each visit and send to Departmental Representative.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect door hardware from nicks, scratches, and blemishes.
 - .3 Protect prefinished surfaces with wrapping strippable coating.
 - .4 Replace defective or damaged materials with new.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste in conformity with section 01 74 21 – Construction/Demolition Waste management and Disposal.

1.7 DEPARTMENTAL REPRESENTATIVE'S SUPPLIER

- .1 Cylinders and keys shown in hardware groups are provided and installed by Departmental Representative's sole supplier.
- .2 Contractor's bid must include costs for supply and installation of these components and preparation of shop drawings.
- .3 This supplier is under contractor's full responsibility. Coordinate supplier's activities so that hardware and keying items are integrated into project at appropriate times in accordance with project timeline.
- .4 Supplier's contact information:

Serrurier Excel Inc.
97 rue Industrielle
Delson, Québec
J5B 1V9

Contact: Yves Patenaude

1.8 ACCEPTABLE MATERIALS OR PRODUCTS

- .1 When materials or products are prescribed by brand name, consult Bidder Instructions to learn procedure for requesting approval of substitute materials or products.

1.9 EXTENDED WARRANTY

- .1 For work in this section, section 08 71 00 – Door hardware, the warranty period of 12 months prescribed in the general conditions, is extended to 10 years for door closers and to 24 months for all other hardware items.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.

Part 2 Products**2.1 GENERAL**

- .1 Only door hardware items certified according to standards ANSI/BHMA are acceptable for the present project.
- .2 All items of the same type must come from the same manufacturer.

2.2 DOOR HARDWARE

- .1 Edge hinges: conforming to ANSI/BHMA A156.1
 - .1 Heavy duty 3 knuckle hinges with concealed anti-friction bearings, in steel with satin chrome finish, ANSI A8111.

- .2 For doors 45 mm thick, having to 914 mm width, provide 114 mm high hinges; for doors of more than 914 mm up to 1220 mm, provide hinges 127 mm high.
- .3 Authorized products:
 - .1 Mckinney TA786 x finish 652
 - .2 Stanley CB1901R x finish 652
 - .3 Hager AB750 x finish 652
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
- .2 Edge hinges: conforming to ANSI/BHMA A156.1
 - .1 3 knuckle hinges with concealed anti-friction bearings, in steel with satin chrome finish, ANSI A8112.
 - .2 For doors 45 mm thick, having to 914 mm width, provide 114 mm high hinges; for doors of more than 914 mm up to 1220 mm, provide hinges 127 mm high.
 - .3 Authorized products:
 - .1 Mckinney TA714 x finish 652
 - .2 Stanley CB1900R x finish 652
 - .3 Hager AB700 x finish 652
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
- .3 Mortise Lock: conforming to ANSI/BHMA A 156.13
 - .1 Mortise lock with lever. Die Cast zinc lever with forged rose. The lever must be designed with a flat face (116mm length) returning 13 mm from face of door.
 - .2 Functions as prescribed.
 - .3 Authorized products:
 - .1 Corbin Russwin série ML2000 x LWA x finish 626
 - .2 Sargent série 8200 x LNJ x finish 626
 - .3 Yale série CRR 8800FL x finish 626
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
- .4 Key cylinder: conforming to ANSI/BHMA A156.5
 - .1 High security key cylinder.
 - .2 Models as prescribed.
 - .3 Authorized products :
 - .1 Abloy CY415N x finish 626
 - .2 No equivalent.
- .5 Electrical strike : conforming to ANSI/BHMA A156.31
 - .1 Electrical strike with bolt surveillance and quick connectors.
 - .2 Authorized products:
 - .1 HES 4500C x LBSM x 2004M x finish 630
 - .2 Adams Rite 7170 x Monitored x ELX x finish 630
 - .3 Folger Adam 712-75 x LBMLCM x 2004M x finish 630

-
- .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
 - .6 Electrical strike : conforming to ANSI/BHMA A156.31.
 - .1 Electrical strike with bolt surveillance and quick connectors.
 - .2 Authorized products:
 - .1 HES 8500 x LBSM x 2004M x finish 630
 - .2 Securitron MUNL x FSUNL x finish 630
 - .3 Or a substitute product approved by addenda in accordance with Bidder Instructions.
 - .7 Wire harness :
 - .1 Wire harness with quick connectors.
 - .2 Authorized products:
 - .1 McKinney QC-C1500P (Or required length)
 - .2 Corbin 711F839 (Or required length)
 - .3 Sargent 52-2990 (Or required length)
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
 - .8 Magnetic Contact :
 - .1 Recessed Magnetic Contact for wooden door.
 - .2 Authorized products :
 - .1 Securitron DPS-W-BK
 - .2 Sentrol 1076C
 - .3 SDC MC-4
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
 - .9 Secondary hardware accessories : conforming to ANSI/BHMA A156.6.
 - .1 Kick plate with countersunk stainless steel screws with conical heads
 - .2 Authorized products:
 - .1 Rockwood K1050 x CSK x finish 630
 - .2 Trimco BBW K0050 x CSUNK x finish 630
 - .3 Ives 8400 x B-CS x finish 630
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
 - .10 Door closers: door closer conforming to ANSI/BHMA A156.4
 - .1 Surface door closer with rail, cam action and integrated stops.
 - .2 Authorized products :
 - .1 Corbin Russwin, DC5230 x finish 689.
 - .2 Sargent 422 series x finish 689
 - .3 Norton 2800ST series x finish 689
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.

- .11 Door closers: door closer conforming to ANSI/BHMA A156.4
 - .1 Surface door closer with rail, cam action and integrated holder and stops.
 - .2 Authorized products :
 - .1 Corbin Russwin, DC5230 x A1, finish 689
 - .2 Sargent 422 series x H x finish 689
 - .3 Norton 2800ST series x H x finish 689
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
- .12 Secondary hardware accessories : wall mounted doorstops conforming to ANSI/BHMA A156.16.
 - .1 Wall-mounted convex doorstop. Wall-mounted doorstops shall be equipped with a metal back plate fastened to the wall with two (2) screws and. The case and rubber insert must be adjusted to back plate and attached with a concealed screw. No screws or holes must be visible on the face of the doorstop.
 - .2 Authorized products:
 - .1 Rockwood 406, finish 630
 - .2 Trimco BBW 1270WX x finish 630
 - .3 Ives WS406CVX x finish 630
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
- .13 Door perimeter sealant system : door bottom conforming to ANSI/BHMA A156.16.
 - .1 Automatic recessed door bottom for wooden door.
 - .2 Authorized products:
 - .1 KN Crowder CT-53, finish 719
 - .2 Legacy 7063CA x finish 628
 - .3 Pemko 434ARL x finish 719
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.
- .14 Door perimeter sealant system : Soundproofing conforming to ANSI/BHMA A156.22.
 - .1 Soundproofing gasket in self-adhesive silicone.
 - .2 Authorized products:
 - .1 Pemko S44C, colour : clear or transparent
 - .2 Legacy 5881S-CL x colour : clear or transparent
 - .3 KN Crowder W-22 x colour : clear or transparent
 - .4 Or a substitute product approved by addenda in accordance with Bidder Instructions.

2.3 MISCELLANEOUS HARDWARE

- .1 Furnish one (1) lockable key cabinet with hooks, labels and indexed cards. The cabinet must have sufficient capacity for the total number of locks plus 10 %.

2.4 FASTENINGS

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels. Self-tapping
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.
- .5 Protection plates for door bottoms must be furnished with countersunk screws, flush mounted, appropriate to the material of the door.

2.5 KEYING

- .1 The supplier of hardware items must prepare detailed keying schedule in conjunction with the Departmental Representative and with his approval.
- .2 All locks must be integrated in a new keying system as follows:
 - .1 Construction master keys
 - .2 Master keys
 - .3 Keys similar or different as needed.
- .3 Number of keys
 - .1 Provide six (6) construction master keys.
 - .2 Provide two (2) extraction keys
 - .3 Provide three (3) master keys by group
 - .4 Provide four (4) spare keys per cylinder
- .4 Except for construction keys who must be delivered to the Contractor, all permanent keys must be delivered directly to the engineer.
- .5 All cores must be furnished with appropriate cams/bolts for the prescribed locking functions. Furnish appropriate compression washers, collars and blocking rings.
- .6 Contractor must submit to Departmental Representative a two-level keying chart (one level per floor) including diagrams of key paths and codification of cylinders as well as twenty-five (25) additional codes.

2.6 FINISHES

- .1 General recommendations for materials and finishes:

Hinges	652	satin chrome on steel
Locksets	626	satin chrome
Door-closers	689	aluminum finished with paint applied by pulverization
Butt / protection plates	630	satin finish stainless steel
Floor/wall butts	626	satin chrome

Part 3 Execution**3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Supply manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

- .1 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction), elaborated by the Canadian Steel Door and Frame Manufacturers' Association (CSDFMA) or as indicated for special conditions
- .2 Only competent workers must be employed for the installation of door hardware. The installer must adjust, clean and bring to new all installed hardware items to the satisfaction of the Departmental Representative.
- .3 Electrical connection: refer to division 26 Electricity for supply and installation embedded boxes, conduits with lead cords and electrical power (115V at lintels) for the two door operators.
- .4 The manufacturer, with the cooperation of hardware supplier, must prepare wiring diagrams with all the details of electrical components for each opening. Diagrams must indicate all components of systems listed in the present section.
- .5 Protection plate:
 - .1 Except for doors equipped with lip sills, protection plates must be installed at 6, 35 mm from bottom edge of door, on the push side.
 - .2 For simple doors, install a plate at the center of the door, at equal distance between butts on the frame jamb and /or weather stripping.
 - .3 For double doors install plates at 6, 35 mm at the most, of the center junction of doors and at appropriate distance of the hinge side of doors to clear butts on frame jambs and/or weather stripping.
- .6 The contractor must ensure that walls have the required blocking reinforcements so that they will not be eventually damaged by the wall door stops.
- .7 Install a key control cabinet

3.3 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.
- .3 Adjust door hardware to ensure tight fit at contact points with frames.
- .4 Adjust door closers of doors with manual operation so that they open with a force inferior to 22 Newton.

3.4 CLEANING

- .1 Cleaning during work: conduct cleaning in accordance with Section 01 74 00 – Cleaning.
 - .1 Leave the premises clean at the end of each workday.
 - .2 Clean hardware items with a humid cloth and a non-abrasive cleaner and polish them in conformity to manufacturer's instructions
 - .3 Remove protective material from hardware items where present.
- .2 Upon completion of works remove from site surplus materials, rubbish, tools, equipment in accordance with section 01 74 00 - Cleaning.

3.5 DEMONSTRATION

- .1 Keying System Setup and Cabinet:
 - .1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.
 - .2 Place file keys and duplicate keys in key cabinet on their respective hooks.
 - .3 Lock key cabinet and turn over key to Departmental Representative.
- .2 Maintenance Staff Briefing:
 - .1 Brief maintenance staff regarding:
 - .1 Proper care, cleaning, and general maintenance of projects complete hardware.
 - .2 Description, use, handling, and storage of keys.
 - .3 Use, application and storage of wrenches for door closers, locksets, and fire exit hardware.
- .3 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.1 PROTECTION

- .1 Protect installed equipment and components from damage during construction.
- .2 Repair damage caused to adjacent materials and equipment by installation of door hardware.

3.2 LIST OF HARDWARE ITEMS

- .1 Refer to section 08 71 01 – Hardware groups.

END OF SECTION

PARTIE 1- GENERAL**1.1 List of manufacturers :**

PRODUCT	MANUFACTURER	EQUIVALENT MANUFACTURERS
Hinges, wire harnesses	<i>Mckinney</i>	Stanley, Hager
Locksets, door closers	<i>Corbin Russwin</i>	Sargent, Yale
Electric strikes	<i>HES</i>	Adams Rite, Folger Adam
Kick plates, doorstops	<i>Rockwood</i>	Trimco BBW, Ives
Soundproofing gasket	<i>Pemko</i>	Legacy, KN Crowder
Automatic door bottom	<i>KN Crowder</i>	Legacy, Mckinney
High security key cylinder	<i>Abloy</i>	Aucun équivalent

Keying: New master key system is to be coordinated with the contractor and the Departmental Representative.

1.2 ANSI / BHMA Standards for Materials and Finishes :

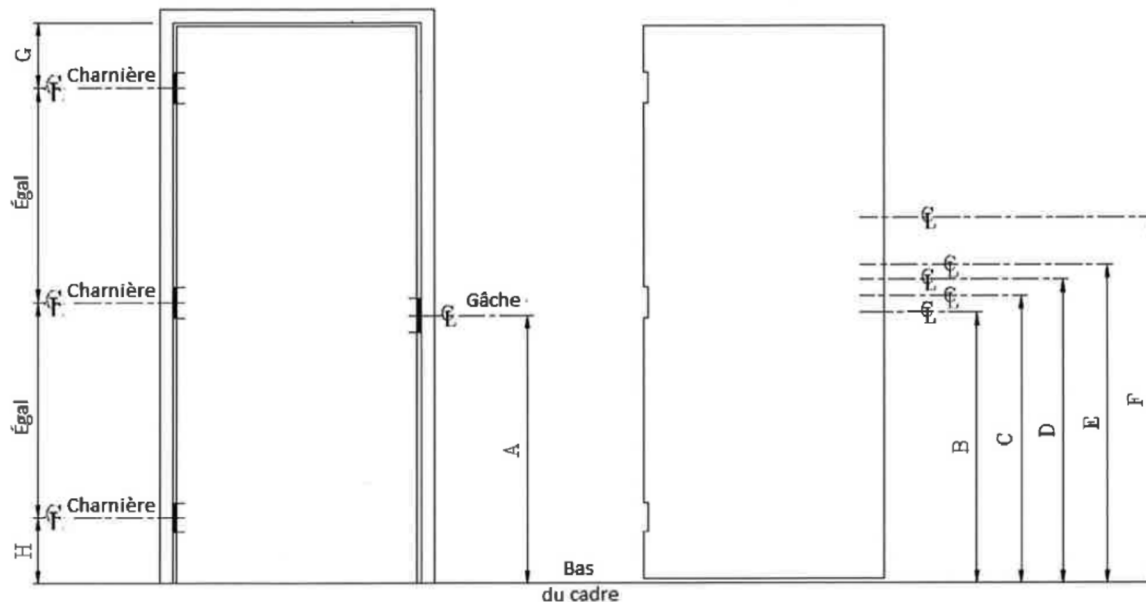
Finish Description	Base Material	Canadian Equivalents
626 Satin Chrome plated	Brass, Bronze	C26D
630 Satin Stainless Steel	Stainless Steel 300 Serie	C32D
652 Satin Chrome plated	Steel	C26D
689 Aluminum Painted	Any	C28
719 Natural Aluminium	Aluminum	C27

1.3 Notes and abbreviations:

CMK	Construction Master Key
EMK	Existing Master Key
NRP	Non Removable Pin

Note : Dimensions shown in hardware groups are for information purposes. Coordination is required before they are produced to ensure correct dimensions.

Emplacement standard pour la quincaillerie architecturale



Item de quincaillerie		Impériale (jusqu'à)	Métrique (jusqu'à)
A	Ligne du centre pour serrures rondes et à levier, dispositifs de sortie de secours & pènes à rouleau	40 5/16"	1035
B	Ligne de centre d'une poignée à tirer et ensemble de barres à tirer & pousser	42"	1065
C	Ligne du centre d'un pêne de bras à tirer d'hôpital	45"	1145
D	Ligne du centre d'un bras à tirer d'hôpital (type vertical)	47"	1195
E	Ligne du centre d'une plaque à pousser d'hôpital	48"	1220
F	Ligne du centre de la serrure auxiliaire	48"	1220
G	Ligne du centre de la charnière du haut (max)	9 3/4"	250
H	Ligne du centre de la charnière du bas (max)	13"	330

Note : Les dimensions peuvent être sujettes à des variations mineures selon les manufacturiers.

PARTIE 2– PRODUCTS**2.1 Hardware Groups****Group 01**

QTY	DESCRIPTION	FINISH	MANUFAC.
4	Hinges (by movable partition system manufacturer)		
1	Mortice Lockset with lever, office use with construction key cylinder (temporary)_ ML2053 x LWA x SA118 x M17 x CMK	626	Corbin Russwin
1	Mortice Lockset with high security key (permanent) CY415N x Length x Cam required x Rim x Existing key path x EMK <i>(Number of cylinder per required key path. To ccordinate with manufacturer)</i>	626	Abloy
1	Convex wall stop	630	Rockwood
1	Automatic recessed door bottom for wooden door CT-53 x width of door x end plates	719	KN Crowder
1	Length of soundproofing gasket (by movable partition system manufacturer)		

Note : *Ensure the compatibility between the hardware, the wooden door and the aluminum frame with manufacturers before fabricating products.*

Group 02

QTY	DESCRIPTION	FINISH	MANUFAC.
4	Heavy duty 3 knuckle hinges with concealed anti-friction bearings TA786, 114mm x 101mm x NRP	652	Mckinney
1	Mortice Lockset with lever, storage use with construction key cylinder (temporary) ML2057 x LWA x SA118 x M17 x CMK	626	Corbin Russwin
1	Mortice Lockset with high security key (permanent) CY415N x Length x required Cam x Rim x Existing key path x EMK <i>(Number of cylinder per required key path. To coordinate with manufacturer)</i>	626	Abloy
1	Electrical strike with bolt surveillance and quick connectors 4500C x Fail Secure x LBSM x 2004M x 4500-105 x required Voltage (Power supply via access control system)	630	HES
1	Wire harness with quick connectors QC-C1500P x 4623mm <i>(or per required length)</i>		Mckinney
1	Surface door closer with rail, cam action and integrated stops DC5230 <i>(To install on pull side of door)</i>	689	Corbin Russwin
1	Kick plate with countersunk stainless steel screws with conical heads K1050, 205mm x Length of door less 38mm x CSK	630	Rockwood
3	Length of soundproofing gasket in self-adhesive silicone S44C x 1/Head & 2/Jamb <i>(Each length to install in one piece)</i>	clair	Pemko
1	Recessed Magnetic Contact for wooden door DPS-W-BK	noir	Securitron
1	Complete card reader with exit request, controler and accessories <i>(See Division 26 Electricity and/or Division 28, access control)</i>		

Note : All electrical components specified in the present hardware groups are provided, installed and connected by the present section including wiring between components. All wires will be identified and lead to the dedicated junction box. From this point, electrical connections will be the responsibility of Division 26 (Electricity) and/or Division 28 (Access Control).

Group 03

QTY	DESCRIPTION	FINISH	MANUFAC.
4	Hinges (Pour les portes N-410A et N-410B) (by movable partition system manufacturer)		
4	3 knuckle hinges with concealed anti-friction bearings TA714, 114mm x 101mm x NRP (For door N-415)	652	Mckinney
1	Mortice Lockset with lever for storage use with construction key cylinder (temporary) ML2057 x LWA x SA118 x M17 x CMK	626	Corbin Russwin
1	Mortice Lockset with high security key (permanent) CY415N x Length x required Cam x Rim x Existing key path x EMK <i>(Number of cylinder per required key path. To coordinate with manufacturer)</i>	626	Abloy
1	Convex wall stop 406	630	Rockwood

Group 04

QTY	DESCRIPTION	FINISH	MANUFAC.
4	3 knuckle hinges with concealed anti-friction bearings TA714, 114mm x 101mm x NRP	652	Mckinney
1	Mortice Lockset with lever for office use with construction key cylinder (temporary)_ ML2053 x LWA x SA118 x M17 x CMK	626	Corbin Russwin
1	Mortice Lockset with high security key (permanent) CY415N x Length x required Cam x Rim x Existing key path x EMK <i>(Number of cylinder per required key path. To coordinate with manufacturer)</i>	626	Abloy
1	Surface door closer with rail, cam action and integrated holder and stops DC5230 x A1 (To install on pull side of door)	689	Corbin Russwin
1	Kick plate with countersunk stainless steel screws with conical heads K1050, 205mm x Width of door less 38mm x CSK	630	Rockwood
1	Automatic recessed door bottom for wooden door CT-53 x Width of door x End plates	719	KN Crowder
3	Length of soundproofing gasket in self-adhesive silicone S44C x 1/Head & 2/Jambs (Each length to install in one piece)	clair	Pemko

Group 05

QTY	DESCRIPTION	FINISH	MANUFAC.
4	3 knuckle hinges with concealed anti-friction bearings TA714, 114mm x 101mm x NRP	652	Mckinney
1	Mortice Lockset with lever for office use with construction key cylinder (temporary) ML2053 x LWA x SA118 x M17 x CMK	626	Corbin Russwin
1	Mortice Lockset with high security key (permanent) CY415N x Length x required Cam x Rim x Existing key path x EMK <i>(Number of cylinder per required key path. To coordinate with manufacturer)</i>	626	Abloy
1	Surface door closer with rail, cam action and integrated holder and stops DC5230 x A1 <i>(To install on pull side of door)</i>	689	Corbin Russwin
1	Kick plate with countersunk stainless steel screws with conical heads K1050, 205mm x Largeur de la porte moins 38mm x CSK	630	Rockwood
3	Length of soundproofing gasket in self-adhesive silicone S44C x 1/Head & 2/Jambs <i>(Each length to install in one piece)</i>	clair	Pemko

Group 06

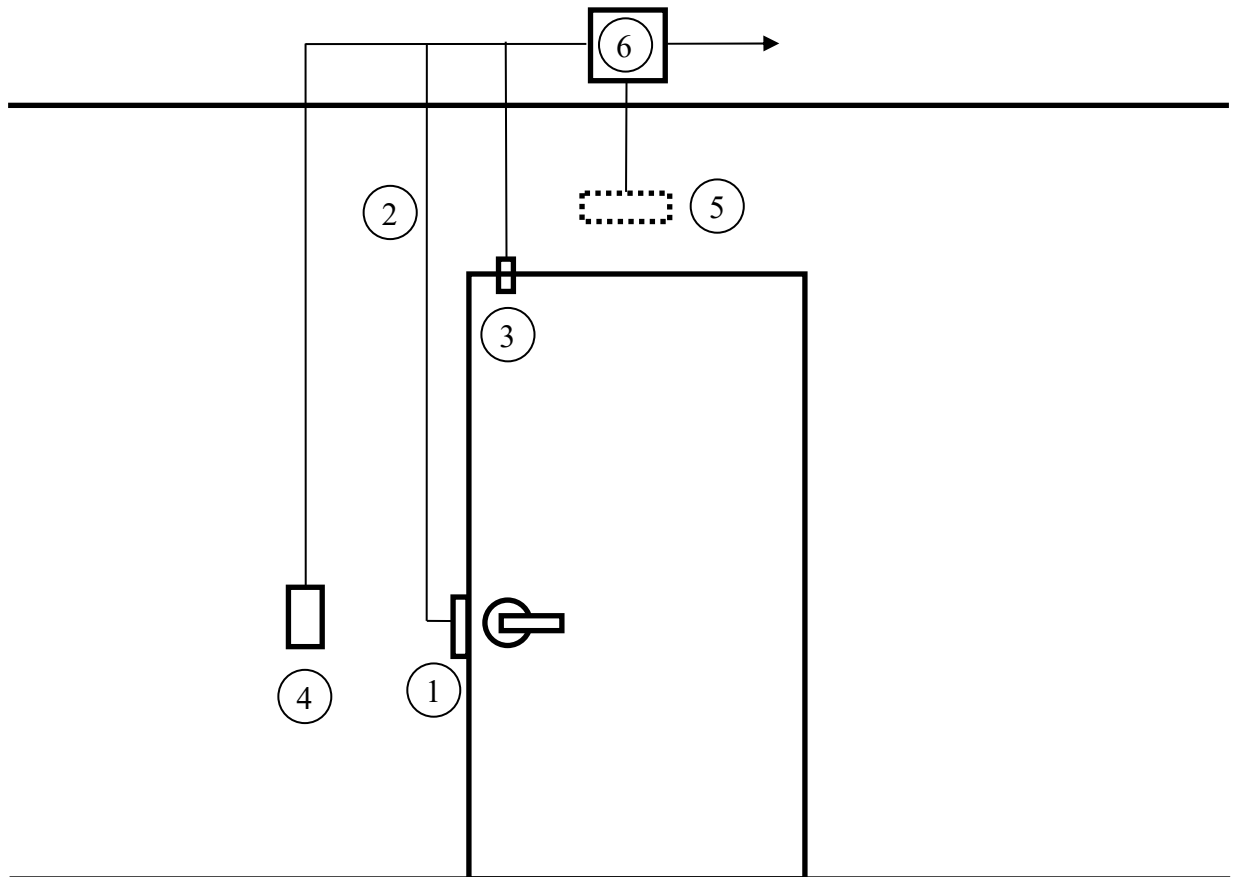
QTY	DESCRIPTION	FINISH	MANUFAC.
4	Hinges (by movable partition system manufacturer)	652	Mckinney
1	Mortice Lockset with lever for storage use with construction key cylinder (temporary) ML2057 x LWA x SA118 x M17 x CMK	626	Corbin Russwin
1	Mortice Lockset with high security key (permanent) CY415N x Length x required Cam x Rim x Existing key path x EMK <i>(Number of cylinder per required key path. To coordinate with manufacturer)</i>	626	Abloy
1	Electrical strike with bolt surveillance and quick connectors 8500 x 852K x Fail Secure x LBSM x 2004M x required Voltage (Power supply via access control system)	630	HES
1	Wire harness with quick connectors QC-C1500P x 4623mm <i>(or per required length)</i>		Mckinney
1	Surface door closer with rail, cam action and integrated stops DC5230 <i>(To install on pull side of door)</i>	689	Corbin Russwin
1	Recessed Magnetic Contact for wooden door DPS-W-BK	Noir	Securitron
1	Complete card reader with exit request, controler and accessories <i>(See Division 26 Electricity and/or Division 28, access control)</i>		

Note : All electrical components specified in the present hardware groups are provided, installed and connected by the present section including wiring between components. All wires will be identified and lead to the dedicated junction box. From this point, electrical connections will be the responsibility of Division 26 (Electricity) and/or Division 28 (Access Control).

Group 07

QTY	DESCRIPTION	FINISH	MANUFAC.
4	Heavy duty 3 knuckle hinges with concealed anti-friction bearings TA786, 114mm x 101mm x NRP	652	Mckinney
1	Mortice Lockset with lever for storage use with construction key cylinder (temporary) ML2057 x LWA x SA118 x M17 x CMK	626	Corbin Russwin
1	Mortice Lockset with high security key (permanent) CY415N x Length x required Cam x Rim x Existing key path x EMK <i>(Number of cylinder per required key path. To coordinate with manufacturer)</i>	626	Abloy
1	Electrical strike with bolt surveillance and quick connectors 8500 x 852K x Fail Secure x LBSM x 2004M x required Voltage <i>(Power supply via access control system)</i>	630	HES
1	Wire harness with quick connectors QC-C1500P x 4623mm <i>(or per required length)</i>		Mckinney
1	Surface door closer with rail, cam action and integrated stops DC5230 <i>(To install on pull side of door)</i>	689	Corbin Russwin
1	Recessed Magnetic Contact for wooden door DPS-W-BK	Noir	Securitron
1	Complete card reader with exit request, controler and accessories <i>(See Division 26 Electricity and/or Division 28, access control)</i>		

Note : All electrical components specified in the present hardware groups are provided, installed and connected by the present section including wiring between components. All wires will be identified and lead to the dedicated junction box. From this point, electrical connections will be the responsibility of Division 26 (Electricity) and/or Division 28 (Access Control).

Single door with card readerDoors # N-404.1, N414.1A, N-417.1, N417.2, N-417.3

- 1) Electrical strike 4500C x Fail Secure x LBSM x 2004M x 4500-105 x required voltage
- Or** Electrical strike 8500 x 852K x Fail Secure x LBSM x 2004M x required voltage
- 2) Wire harness QC1500P x 4623mm (or per required length)
- 3) Magnetic Contact DPS-W-BK
- 4) Card reader (See Division 26 Electricity and/or Division 28, Access Control)
- 5) Exit request (See Division 26 Electricity and/or Division 28, Access Control)
- 6) Controller o junction box See Division 26 Electricity and/or Division 28, Access Control)

*Junction box, electrical conduits, pull ropes, power supply,
connections to 120VAC and to fire alarm system panel by division 26.*

Operation: From outside, the door is locked at all times. An authorized person can present a valid card in front of the card reader to activate the electrical strike. The access is then allowed for a predetermined time. From inside, it is always possible to exit by pressing the lockset lever

Note: This drawing is provided for information related to electrical hardware and must not be used as a wiring diagram. Final positions for each item will be determined by site conditions and professionals..

IMPORTANT : THIS DIAGRAM MUST NOT BE USED FOR CONSTRUCTION OR INSTALLATION.

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 07 92 00 - Joint Sealing.
- .2 Section 08 14 16 – Flush wood doors
- .3 Section 10 22 19 - Stud type demountable partition.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C542-05(2011), Standard Specification for Lock-Strip Gaskets.
 - .2 ASTM D2240-15, Standard Test Method for Rubber Property - Durometer Hardness.
 - .3 ASTM E84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .4 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - .5 ASTM F1233-08(2013), Standard Test Method for Security Glazing Materials and Systems.
- .2 Canada Green Building Council (CaGBC)
 - .1 LEED v4 for Interior Design and Construction Reference Guide, 2017.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.1-90, Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.2-91, Flat, Clear Sheet Glass.
 - .3 CAN/CGSB-12.3-91, Flat, Clear Float Glass.
 - .4 CAN/CGSB-12.8-97, Insulating Glass Units.
 - .5 CAN/CGSB-12.13-M91, Patterned Glass.
- .4 Environmental Choice Program (ECP)
 - .1 DCC-045-95 (R2005), Sealants and Caulking Compounds.
- .5 Glass Association of North American (GANA)
 - .1 GANA Glazing Manual - 2008.
 - .2 GANA Laminated Glazing Reference Manual - 2009.
- .6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province Territory of QUEBEC, Canada.
- .4 Samples:
 - .1 Submit for review and acceptance of each unit.
- .5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .6 Sustainable Design Submittals:
 - .1 Submittals for LEED Canada-CI version 4 certification: in accordance with section 01 35 21 – LEED Requirements.
 - .2 Construction waste management: refer to section 01 74 19 - Construction/Demolition Waste Management And Disposal.
 - .3 Recycled content: refer to section 01 35 21 – LEED Requirements.
 - .4 Regional materials: refer to section 01 35 21 – LEED Requirements.
 - .5 Low emitting materials: refer to section 01 35 21 – LEED Requirements.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect glazing and frames from nicks, scratches, and blemishes.

- .3 Protect prefinished aluminum surfaces with wrapping strippable coating.
- .4 Replace defective or damaged materials with new.
- .4 Produce a waste management plan in accordance with Section 01 74 19 – Waste Management and Removal.
- .5 Management of packaging waste: in accordance with Section 01 74 19 – Waste Management and Removal.

1.7 AMBIENT CONDITIONS

- .1 Ambient Requirements:
 - .1 Install glazing putty when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
 - .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

Part 2 Products

2.1 MATERIALS

- .1 Design Criteria:
 - .1 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.
- .2 Single laminated glass, identified as V-2 in the plans (typical office front and base building sidelights), consisting of:
 - .1 Clear tempered glass, 6 mm
 - .2 PVB interlayer
 - .3 Clear tempered glass, 6 mm
- .3 Double laminated glass, identified as V-3 in the plans (typical acoustic office front), consisting of:
 - .1 Laminated glass, type V-2
 - .2 Spacer
 - .3 Laminated glass, type V-2
- .4 Inner glass polyester film, surface bonded – type 1 (homogeneous):
 - .1 Colour: white
 - .2 Opacity: translucent
 - .3 Finish: matte
 - .4 Type: sandblasted matte
 - .5 Thickness: 2.76 mils
 - .6 Pattern: homogeneous sandblasting with no separate dots or pattern
 - .7 Reflection of visible light: 43%

- .8 Transmission of visible light: 21%
- .9 Shading coefficient: 0.44
- .10 Width: 1,270 mm
- .11 Adhesive: pressure-sensitive
- .5 Sealant: in accordance with Section 07 92 00 – Joint Sealants.
 - .1 Maximal VOC content: 250 g/L, in accordance with SCAQMD Rule 1168-A2005.
 - .1 Maximum VOC level: 5% in weight, according to guideline DCC-045.
 - .2 Ensure that sealants comply with limitations and restrictions in guideline DCC-045 regarding chemical composition.
 - .3 Refer to section 01 35 21 –LEED Requirements.

2.2 ACCESSORIES

- .1 Setting blocks: neoprene, 80-90 Shore A durometer hardness to ASTM D2240, adapted to the method of mounting the glazing and to the weight and size of the windows.
- .2 Spacer shims: neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
- .3 Glazing tape:
 - .1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper, black colour.
 - .2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2 %, designed for compression of 25 %, to effect an air and vapour seal.
- .4 Extruding joints with locking tabs: to ASTM C542.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
 - .1 Verify that openings for glazing are correctly sized and within tolerance.
 - .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
 - .3 Visually inspect substrate in presence of Departmental Representative.
 - .4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .5 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

3.3 INTERIOR GLAZING - DRY METHOD (TAPE AND TAPE)

- .1 Perform work in accordance with GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- .3 Place setting blocks at 1/4 or 1/3 points, with edge block maximum 150 mm from corners.
- .4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- .5 Place glazing tape on free perimeter of glazing in same manner described.
- .6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .7 Knife trim protruding tape.

3.4 PLASTIC FILMS

- .1 Fasten the plastic film using an adhesive applied in accordance with instructions from the manufacturer of the product used.
- .2 Ensure that the film being applied is free of air bubbles, wrinkles or visible distortions.
- .3 Adjust the film on the perimeter of the glazing and trim the edges.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .1 Remove traces of primer, caulking.
 - .2 Remove glazing materials from finish surfaces.
 - .3 Remove labels.
 - .4 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .2 Waste management: in accordance with section 01 74 19 - Construction/Demolition Waste Management And Disposal.

3.6 PROTECTION

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

- .2 After installation, mark each light with an "X" by using removable plastic tape or paste.
- .3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 07 84 00 - Applied fireproofing.
- .2 Section 07 92 00 – Joint Sealing.
- .3 Section 09 22 16 – Non-structural Metal Framing.
- .4 Section 10 22 19 - Stud type demountable partition.

1.2 REFERENCES

- .1 Aluminum Association (AA)
 - .1 AA DAF 45, Designation System for Aluminum Finishes.
- .2 ASTM International
 - .1 ASTM C475, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .2 ASTM C514, Standard Specification for Nails for the Application of Gypsum Board.
 - .3 ASTM C557, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - .4 ASTM C840, Standard Specification for Application and Finishing of Gypsum Board.
 - .5 ASTM C954, 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.
 - .6 ASTM C1002, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .7 ASTM C1047, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .8 ASTM C1280, Standard Specification for Application of Gypsum Sheathing.
 - .9 ASTM C1177/C1177M, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
 - .10 ASTM C1178/C1178M, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
 - .11 ASTM C1396/C1396M, Standard Specification for Gypsum Wallboard.
- .3 Association of the Wall and Ceilings Industries International (AWCI)
 - .1 AWCI Levels of Gypsum Board Finish.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

- .2 CAN/CGSB-71.25, Adhesive for bonding prefabricated panels to wood framing and metal studs.
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-10, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit one (1) 300 mm x 300 mm size sample of gypsum board, and 300 m long sample of corner and casing beads.
- .4 Sample of gypsum ceiling with relief, identified as "REL" in the plans.
 - .1 Submit a sample of this gypsum ceiling work including at least one module with four ridges, a peak and perimeter valleys, for approval by the Departmental Representative. The work sample will then be used as a reference for the quality of finishing of these ceiling modules. It may later be incorporated in the work.
- .5 Sustainable design submittals:
 - .1 Refer to Section 01 35 21 – LEED Requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store gypsum board assemblies materials level off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.

- .3 Protect from weather, elements and damage from construction operations.
- .4 Handle gypsum boards to prevent damage to edges, ends or surfaces.
- .5 Protect prefinished aluminum surfaces with wrapping strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
- .6 Replace defective or damaged materials with new.

1.5 AMBIENT CONDITIONS

- .1 Maintain temperature 10 degrees C minimum, 21 degrees C maximum for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimum after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

Part 2 Products

2.1 MATERIALS

- .1 Standard gypsum board: to ASTM C1396/C1396M, standard, 13mm ou 16 mm thick as indicated on plans, and type X of 16mm, 1200 mm wide x maximum practical length, ends square cut, edges bevelled.
- .2 Ultra-resistant gypsum board: to ASTM C1396/C1396M, consisting of a high-density gypsum core, reinforced by ordinary or "X" type fibreglass, 16 mm thick unless indicated otherwise, with squared ends and edges.
- .3 Metal furring runners, hangers, tie wires, inserts, anchors: to CSA A82.30.
- .4 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .5 Resilient clips: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
- .6 Nails: to ASTM C514.
- .7 Steel drill screws: to ASTM C1002.
- .8 Stud adhesive: to CAN/CGSB-71.25.
- .9 Laminating compound: as recommended by manufacturer, asbestos-free.
- .10 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, galvanized, 0.5 mm base thickness, perforated flanges one-piece length per location.
- .11 Finishing moulding: on ceiling, near openings or a junction of partitions (inner corners), continuous, clear anodized aluminum with PVC pressure mouldings, 29 mm wide, color to be selected by Departmental Representative.

- .12 Finishing moulding on outer corners: clear anodized aluminum, 45 mm x 45 mm with two PVC pressure mouldings, continuous, color to be selected by Departmental Representative.
- .13 Edge mouldings: at abutment of window mullions, continuous, clear U-shaped anodized aluminum covering partition edges and fitting with finishing mouldings on either side of partition, with PVC pressure mouldings, 29 mm wide, color to be selected by Departmental Representative.
- .14 Concealed staples to fasten gypsum board panels (dry-mounted type). Sealants: in accordance with Section 07 92 00 - Joint Sealants.
- .15 Polyethylene: to CAN/CGSB-51.34, type 2.
- .16 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.
- .17 Joint filler: to ASTM C475, asbestos-free.
- .18 Joint tape.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies' installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 ERECTION

- .1 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise.
- .2 Do application of gypsum sheathing to ASTM C1280.
- .3 Place gypsum board on metal frame, as indicated, above suspended ceilings and up to real ceilings.
- .4 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840 except where specified otherwise.
- .5 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .6 Install work level to tolerance of 1:1200.
- .7 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.

- .8 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .9 Install wall furring for gypsum board wall finishes to ASTM C840, except where specified otherwise.
- .10 Furr openings and around built-in equipment, cabinets, access panels. Extend furring into reveals. Check clearances with equipment suppliers
- .11 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.3 APPLICATION

- .1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
- .2 Apply single double layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls to ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - .2 Double-Layer Application:
 - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
 - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
 - .3 Apply base layers at right angles to supports unless otherwise indicated.
 - .4 Apply base layer on walls with joints over supports and face layer joints offset at least 250 mm with base layer joints.
- .3 Where indicated, place one (1) or two (2) thicknesses of gypsum board on concrete block surfaces and secure them with laminating adhesive.
 - .1 Shore up or secure gypsum board until adhesive is fully set.
 - .2 Support or secure plasterboard until the adhesive has taken fully.
 - .3 Secure top and bottom of each gypsum board mechanically.
- .4 Apply a continuous bead of an acoustic sealant, 12 mm in diameter, on the perimeter of each partition wall where the plasterboards and framing intersect and where the partitions abut on the fixed elements of the building. Perfectly seal all cuts made around the electrical boxes and ducts and in the partitions with acoustic sealant on the perimeter.
- .5 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .6 Install gypsum board with face side out.
- .7 Do not install damaged or damp boards.

- .8 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.4 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure using contact adhesive for full length at 150 mm on centre.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- .5 Contraction joints: prepare joints with two outcrop moulds placed back to back, inserted into coating formed by gypsum board and attached independently on each side of joint.
- .6 Provide continuous polyethylene dust barrier behind and across control joints.
- .7 Locate control joints at changes in substrate construction or at approximate 10m spacing on long corridor runs and at approximate 15m spacing on ceilings.
- .8 Install control joints straight and true.
- .9 Construct expansion joints, at building expansion and construction joints. Provide continuous dust barrier.
- .10 Install expansion joint straight and true.
- .11 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - .1 Rigidly secure frames to furring or framing systems.
- .12 Finish face panel joints and internal angles with joint system consisting of: joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .13 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWC Levels of Gypsum Board Finish.
 - .1 Levels of finish:
 - .1 Level 0: no tapping, finishing or accessories required.
 - .2 Level 1: embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.
 - .3 Level 2: embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.
 - .4 Level 3: embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

- .5 Level 4: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
- .6 Level 5: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.
- .14 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .15 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .16 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .17 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.6 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 05 50 00 - Metal Fabrications.
- .2 Section 06 10 53 – Miscellaneous Carpentry.
- .3 Section 07 21 16 - Blanket Insulation.
- .4 Section 07 84 00 - Firestopping.
- .5 Section 07 92 00 - Joint Sealing.
- .6 Section 08 11 00 - Metal doors and frames
- .7 Section 08 14 16 - Flush Wood Doors
- .8 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C645-14 e1, Standard Specification for Nonstructural Steel Framing Members.
 - .2 ASTM C754-15, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - .3 ASTM D1056-14, Standard Specification for Flexible Cellular Materials—Sponge or Expanded Rubber.
- .2 Environmental Choice Program (ECP)
 - .1 CCD-047, Architectural Surface Coatings.
 - .2 CCD-048, Surface Coatings - Recycled Water-Borne.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual – Current edition.
 - .1 MPI #26, Primer, Galvanized Metal, Cementitious.
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- .1 Submit manufacturer's instructions, printed product literature and data sheets for metal framing and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit duplicate 300 mm long samples of non-structural metal framing.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect metal framing from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: stud size as indicated on plans, to ASTM C 645, roll formed from hot dipped galvanized steel sheet, to resist structural loads, for screw attachment of gypsum, designed for knock-out service holes at 460 mm centres.
 - .1 Standard partition: 20 gauge minimum, unless otherwise indicated.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, of 32mm high.
 - .1 Floor tracks: steel sheet, 0.5 mm thickness, dimensions to fit those of columns, pressure-type, shaped to hold columns securely in place at 50 mm intervals.
 - .2 Ceiling tracks: in sections of dimensions to fit those of columns, for assembly with saddles and doubled binding wires, 1.2 mm in diameter.
- .3 Metal channel stiffener: 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .4 Acoustical sealant: to Section 07 92 10 – Joint Sealant.
- .5 Sealing complex: to CAN/CGSB-51.34, type 2.

- .6 Insulating strip: rubberized, moisture resistant 3 mm thick, 12 mm wide, one face self-adhering, length as required.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for non-structural metal framing application in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 ERECTION OF STANDARD PARTITIONS

- .1 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.
- .2 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .3 Place studs vertically at 400 mm on centre and not more than 50 mm from abutting walls, and at each side of openings and corners.
 - .1 Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .4 Erect metal studding to tolerance of 1:1000.
- .5 Attach studs to bottom track.
- .6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .7 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .8 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified.
 - .1 Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- .9 Install heavy gauge single jamb studs at openings.
- .10 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs.
 - .1 Secure track to studs at each end, in accordance with manufacturer's instructions.
 - .2 Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .11 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.

- .12 Provide 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.
- .13 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .14 Extend partitions to ceiling height except where noted otherwise on drawings.
- .15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
 - .1 Use 50 mm leg ceiling tracks. Use double track slip joint to form control joint.
- .16 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .17 Install two continuous beads of acoustical sealant insulating strip under studs and tracks around perimeter of sound control partitions.

3.3 INSTALLING INSULATION

- .1 Install insulation so as to ensure continuous acoustic protection at places indicated.
- .2 Carefully adjust insulation on units to be covered as well as around electrical boxes, pipes, air ducts and frames that pass through it.
- .3 Do not compress insulation to fit spaces to be insulated.
- .4 Do not cover insulation before installation work has been inspected and approved by Departmental Representative.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 Waste management: in accordance with section 01 74 19 - Construction/Demolition Waste Management And Disposal.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by non-structural metal framing application.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 09 53 00 - Acoustical suspension.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C423-02a, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - .2 ASTM E1264-98, Standard Classification for Acoustical Ceiling Products.
 - .3 ASTM E1477-98a(2003), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .2 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-2003, Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Data sheets: submit Material Safety Data Sheets (MSDS) required under Workplace Hazardous Materials Information System (WHMIS).
- .3 Submit two samples, 300 mm x 300 mm, of each type of acoustic element.

1.4 QUALITY ASSURANCE

- .1 Mock-up:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .2 Construct mock-up 10 m² minimum of acoustical tile ceiling including one inside corner and one outside corner.
 - .3 Construct mock-up where directed.
 - .4 Allow 24 hours for inspection of mock-up by Ministerial Representative before proceeding with ceiling work.

- .5 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Protect on site stored or installed absorptive material from moisture damage.
- .2 Store extra materials required for maintenance, where directed by Ministerial Representative.

1.6 WASTE MANAGEMENT AND REMOVAL

- .1 Separate and recycle waste in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

1.7 ENVIRONMENTAL REQUIREMENTS

- .1 Permit wet work to dry before beginning to install.
- .2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20% to 40% before and during installation.
- .3 Store materials in work area 48 hours prior to installation.

1.8 EXTRA MATERIALS

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide acoustical units amounting to 5% of gross ceiling area for each pattern and type required for project.
- .3 Ensure extra materials are from same production run as installed materials.
- .4 Clearly identify each type of acoustic unit, including colour and texture.
- .5 Deliver to Ministerial Representative, upon completion of the work of this section.
- .6 Store extra materials in place indicated by Ministerial Representative.

Part 2 Products

2.1 MATERIALS

- .1 Acoustic units for suspended ceiling system TA1 (typical unit):
 - .1 Material: thermoformed mineral fibre.
 - .2 Dimension: metric, 500 mm x 1500 mm x 19 mm thickness, straight edge.
 - .3 Classification: to ASTM E1264 Type IV, form 2, motif E, class A fire resistance.
 - .4 Color : white.
 - .5 Finish: factory-applied latex paint coated with a transparent acoustic membrane.
 - .6 Texture: non-directional surface with fine perforations providing a smooth surface appearance.
 - .7 Acoustical performance: NRC :0,75 and CAC :35

- .8 Light Reflectance: 0,90
- .9 Durability: resistant to staining, impact and scratching; may be washed or scrubbed.
- .2 Acoustic units for suspended ceiling system TA2 (identical to base building corridor unit); provided by PWSGC.
- .3 Adhesive: low VOC type recommended by acoustic unit manufacturer.

Part 3 Execution**3.1 EXAMINATION**

- .1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Ministerial Representative.

3.2 INSTALLATION OF SUSPENSION FRAME ELEMENTS

- .1 Install acoustical panels and tiles in ceiling suspension system.
- .2 Arrange acoustic elements parallel to building site lines so that elements at the edge retain at least 50% of their original width and so that the pattern is oriented in the same direction. Refer to reflected ceiling plan.

3.3 INTERFACE WITH OTHER WORK

- .1 Co-ordinate with Section 09 53 00 - Acoustical Suspension.
- .2 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 09 21 16 - Gypsum Board Assemblies.
- .2 Section 09 51 13 - Acoustical Panel Ceilings.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C635-04, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - .2 ASTM C636/C636M-06, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - .3 ASTM E580-06 e1, Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 DESIGN REQUIREMENTS

- .1 Maximum bending: arrow 1/360 of span, determined by bending tests specified in ASTM C635.
- .2 Installation to comply with seismic requirements for reference region and building use.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit required shop drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.
 - .2 For special arrangements of frame components, submit plane views of reflected ceiling, as specified.
 - .3 Shop drawings shall clearly indicate arrangement and method of suspending acoustic items near ceilings.
- .3 Submit required samples:
 - .1 Submit representative model of each type of ceiling suspension frame.
 - .2 Each sample to show details of mounting and assembly, connection to walls, built-in appliances, splints, method of fitting, finish and method installing acoustic items.

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.7 WASTE MANAGEMENT AND REMOVAL

- .1 Separate and recycle waste in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Removal.

1.8 RECOVERED MATERIALS

- .1 Components of the existing Type TA2 ceiling framework must be dismantled and kept for reinstallation.

1.9 PRODUCTS SUPPLIED BY PWGSC

- .1 Type TA2 suspension framing to be supplied by Ministerial Representative.
- .2 Contractor to supply and install all other products or materials outlined in this section and required for installing suspended ceiling.
- .3 Contractor to take cognizance of product or material characteristics and ensure they are installed in accordance with Part 3 of this section.

1.10 EXTENDED WARRANTY

- .1 For work in this section, that is to say section 09 53 00 – Acoustical suspension, the warranty period of 12 months prescribed in the general conditions, is extended to 60 months.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.

Part 2 Products**2.1 MATERIALS**

- .1 Intermediate duty system to ASTM C635.
- .2 Basic materials for fabricating frame components: commercial quality cold rolled steel.
- .3 Type 1 suspension framework: typical
 - .1 Material: hot-dipped galvanized steel with aluminum end caps.
 - .2 Profile type: exposed tee.
 - .3 Dimension: 22 mm.

- .4 Colour: matte white.
- .5 Fire resistance rating : none.
- .4 Type 2 suspension framework: for suspended ceilings in the base building
 - .1 Material: hot-dipped galvanized steel with aluminum end caps.
 - .2 Profile type: exposed tee.
 - .3 Dimension: 22 mm.
 - .4 Colour: same as existing adjacent colour.
 - .5 Fire resistance rating: none.
- .5 Hangers: soft annealed steel wire, galvanized.
 - .1 Visiting tile ceilings, 3.6 mm diameter.
 - .2 Other ceilings, 2.6 mm diameter.
- .6 Hangar anchors: special manufacturing according to requirements.
- .7 U-shaped load-bearing frames: 38 mm, galvanized steel, required thickness.
- .8 Accessories: straps, fasteners, metal wire clips, staples and wall-ceiling joint mouldings, recessed, necessary to achieve a full suspension frame in accordance with manufacturer's recommendations.
- .9 Wall-ceiling joint mouldings: L-shaped, 22 mm x 22 mm, same finish as T suspension.
- .10 Gypsum frieze joint mouldings: aluminum, L-shaped ceiling molding, 22 mm x 22 mm, same finish as T suspension.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Comply with manufacturer's written requirements, recommendations and specifications, including product technical bulletins, instructions on product handling, storage and installation, and data sheets.

3.2 INSTALLATION

- .1 Installation: to ASTM C636 except where specified otherwise.
- .2 Install suspension system to manufacturer's instructions and tested design requirements of certification bodies.
- .3 Install new frame suspension by making the necessary connections with existing ceilings as indicated on drawings.
- .4 Do not erect ceiling suspension system until work above ceiling has been inspected and approved by Departmental Representative.
- .5 Secure hangers to overhead structure using attachment methods acceptable to Ministerial Representative.

- .6 Install hangers spaced at maximum 1000 mm centres and within 150 mm from ends of main tees.
- .7 Lay out two perpendicular medians on ceiling to provide balanced borders at room perimeter. Arrange frame with border units not less than 50% of standard unit width.
- .8 Ensure suspension system is co-ordinated with location of related components.
- .9 Install wall moulding to provide correct ceiling height.
- .10 Completed suspension system to support super-imposed loads, such as lighting fixtures, diffusers, grilles and speakers.
- .11 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .12 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- .13 Install concealed splines for removable components in sufficient quantity for access to ceiling void over a surface equal to 10% of suspended ceiling surface.
- .14 Finished ceiling system to be square with adjoining walls and level within 1:1000.

3.3 CLEANING

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
- .2 Touch up scratches, abrasions, voids and other defects in painted surfaces.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 09 21 16 – Gypsum Board Assemblies.
- .2 Section 09 91 23 – Painting.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM F1303-04(2014), Standard Specification for Sheet Vinyl Floor Covering with Backing.
- .2 Canada Green Building Council (CaGBC)
 - .1 LEED v4 for Interior Design and Construction Reference Guide, 2017.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-13, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2011, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals, product data and samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for resilient sheet flooring and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit duplicate 300 x 300 mm sample pieces of sheet material, and duplicate 300 mm long baseboard.
- .4 Sustainable Design Submittals:
 - .1 Submittals for LEED Canada-CI version 4 certification: in accordance with section 01 35 21 – LEED Requirements.
 - .2 Construction waste management: refer to section 01 74 19 - Construction/Demolition Waste Management And Disposal.
 - .3 Recycled content: refer to section 01 35 21 – LEED Requirements.
 - .4 Regional materials: refer to section 01 35 21 – LEED Requirements.
 - .5 Low emitting materials: refer to section 01 35 21 – LEED Requirements.

1.4 MAINTENANCE

- .1 Extra Materials:
 - .1 Provide extra materials of resilient sheet flooring, baseboard and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Provide 3% of total surfaces of each colour, pattern and type flooring material required for project for maintenance use.
 - .3 Provide at least three linear metres of additional materials for each 150 linear metres or fraction of this length of soft-throat vinyl baseboard for each type, colour, pattern and size of installed soft products.
 - .4 Extra materials in one piece and from same production run as installed materials
 - .5 Identify each roll of resilient flooring and each container of adhesive.
 - .6 Deliver to Departmental Representative, upon completion of the work of this section.
 - .7 Store where directed by Departmental Representative.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect specified materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop a Construction Waste Management Plan in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .5 Packaging Waste Management: refer to Section 01 74 19 - Construction/Demolition Waste Management And Disposal.

1.6 INSTALLATION CONDITIONS

- .1 Ambient conditions:
 - .1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees for 48 hours before, during and 48 hours after installation.

Part 2 Products**2.1 MATERIALS**

- .1 Linoleum sheet flooring: composed of natural ingredients which are mixed and calendered onto a jute backing:

-
- .1 Pattern: marbled.
 - .2 Thickness: 2.5mm
 - .3 Colour: warm medium grey, with streaks of dark grey and cream.
 - .2 Resilient baseboard for tile carpeting:
 - .1 Type: vinyl.
 - .2 Profile: bevelled profile broadening toward the bottom with a 6x6 mm recess at the base. This profile provides for the carpet to be changed without dismantling the baseboards.
 - .3 Thickness: 6 mm in its broad part at the base.
 - .4 Height: 101.6 mm.
 - .5 Length of at least 2,400 mm.
 - .6 Colour: medium warm grey
 - .3 Resilient baseboard for resilient sheet flooring:
 - .1 Type: vinyl.
 - .2 Profile: bevelled profile broadening toward the bottom with toe at the base.
 - .3 Thickness: 12 mm in its broad part at the base, including the toe.
 - .4 Height: 101.6 mm.
 - .5 Length: at least 2,400 mm.
 - .6 Color : medium warm grey
 - .4 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
 - .1 Cove base adhesives:
 - .1 Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
 - .5 Sub-floor filler and leveller: as recommended by flooring manufacturer for use with their product.
 - .6 Metal edge strips:
 - .1 Aluminum extruded, smooth, polished, stainless steel with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
 - .2 The visible portion of the trim must be less than 10mm wide.
 - .3 The trim must comply with universal accessibility regulations.
 - .7 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.
 - .1 Sealer: maximum VOC limit 100 g/L to SCAQMD Rule 1113.

Part 3 Execution**3.1 INSPECTION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for resilient floor installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 SITE VERIFICATION OF CONDITIONS

- .1 Using methods recommended by floor covering manufacturer, ensure that concrete slab is clean and dry.

3.3 PREPARATION

- .1 Remove existing resilient flooring.
- .2 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.
- .3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .4 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .5 Prime concrete slab to resilient flooring manufacturer's printed instructions.

3.4 APPLICATION: FLOORING

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system.
- .2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.
- .4 Run sheets in direction of traffic. Double cut sheet joints and continuously seal according to manufacturer's printed instructions.
- .5 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's printed instructions.
- .6 As installation progresses, and immediately after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .7 Cut flooring around fixed objects.

- .8 Install feature strips and floor markings where indicated. Fit joints tightly.
- .9 Install flooring in pan type floor access covers. Maintain floor pattern.
- .10 Continue flooring over areas which will be under built-in furniture.
- .11 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .12 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- .13 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 APPLICATION: BASE

- .1 Lay out base to keep number of joints at minimum.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions. Use pre-moulded end pieces at flush door frames.
- .7 Cope internal corners. Use pre-moulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.
- .8 Install bevelled carpet baseboards before laying carpeting on a floor.
- .9 Weld heat baseboards according to the manufacturer's written instructions.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
 - .1 Clean flooring surfaces to flooring manufacturer's printed instructions.
- .3 Waste management: in accordance with section 01 74 19 - Construction/Demolition Waste Management And Disposal.

3.7 PROTECTION OF FINISHED SURFACES

- .1 Protect newly installed floor covering from time adhesive holds until final waxing.
- .2 Prohibit all traffic on covered floors for 48 hours after floor covering is laid.
- .3 Prohibit all heavy wheeled traffic on covered floors for 72 hours after floor covering is laid.
- .4 For linoleum coverings, use only water-based coatings. Do not clean in first 72 hours.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 07 92 00 – Joint Sealing.
- .2 Section 09 65 16 – Resilient Sheet Flooring.

1.2 REFERENCES

- .1 American Association of Textile Chemists and Colorists (AATCC)
 - .1 AATCC Test Method 16-2004, Colourfastness to Light.
 - .2 AATCC Test Method 23-2005, Colourfastness to Burn Gas Fumes.
 - .3 AATCC Test Method 129-2005, Colourfastness to Ozone in the Atmosphere Under High Humidities.
 - .4 AATCC Test Method 134-2006, Electrostatic Propensity of Carpets.
 - .5 AATCC Test Method 171-2005, Carpets: Cleaning of; Hot Water Extraction Method.
 - .6 AATCC Test Method 175-2008, Stain Resistance: Pile Floor Coverings.
 - .7 AATCC Test Method 189-2007, Fluorine Content of Carpet Fibers.
- .2 ASTM International
 - .1 ASTM D297-93(2006), Standard Test Methods for Rubber Products-Chemical Analysis.
 - .2 ASTM D1335-05, Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
 - .3 ASTM D2661-08, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
 - .4 ASTM D1667-05, Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
 - .5 ASTM D3574-08, Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Moulded Urethane Foams.
 - .6 ASTM D3936-05, Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
- .3 Canada Green Building Council (CaGBC)
 - .1 LEED v4 for Interior Design and Construction Reference Guide, 2017.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No. 22-2004, Textile Test Methods - Colourfastness to Rubbing (Crocking).
 - .2 CAN/CGSB-4.2 No.27.6M-2004, Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.

- .3 CAN/CGSB-4.2 No. 76-94/ISO 2551: 1981, Textile Test Methods - Machine-Made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions.
- .4 CAN/CGSB-4.2 No.77.1-94/ISO 4919:2000, Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
- .5 CAN/CGSB-4.129-93(R1997), Carpets for Commercial Use.
- .5 Carpet and Rug Institute (CRI)
 - .1 CRI Carpet Installation Standard 2009.
 - .2 CRI Green Label Indoor Air Quality Testing Program.
 - .3 CRI Green Label Plus Indoor Air Quality Testing Program.
- .6 Environmental Choice Program (ECP)
 - .1 CCD-152-2009, Flooring Products, Commercial Non-modular Textile Flooring.
- .7 Health Canada
 - .1 C.R.C., c.923-10, Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.
- .8 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .9 National Floor Covering Association (NFCA)
 - .1 National Floor Covering Specification Manual 2007.
- .10 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- .11 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-07, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC-S102.2-07, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting one week prior to start of installation work with Contractor's Representative and Ministerial Representative, in accordance with Section 01 31 19 - Project Meetings, to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other construction subtrades.

- .4 Review manufacturer's written installation instructions and warranty requirements.
- .2 Sequencing: sequence in accordance with manufacturer's recommendation.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for each protective covering, carpet tile, adhesive, subfloor patching compound and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Quebec, Canada.
 - .2 Information on shop drawings to indicate:
 - .1 Nap: direction, open edges, special patterns.
 - .2 Cutouts: show locations where cutouts are required.
 - .3 Edgings: show location of edge mouldings and edge bindings.
- .4 Samples:
 - .1 Submit samples of each type of tile carpeting for examination and acceptance.
 - .2 Give the samples to the Contractor, who is to incorporate them in the work.
 - .3 Submit two (2) samples of each prescribed type of tile carpeting and two (2) slabs of each colour chosen.
 - .4 Submit duplicate 150 mm long of each baseboard type.
- .5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .6 Test and Evaluation Reports:
 - .1 Certified test reports showing compliance with specified performance characteristics and physical properties.
- .7 Manufacturer's Instructions: submit manufacturer's installation instructions.
- .8 Manufacturers Reports:
 - .1 Manufacturer's Field Reports: submit manufacturer's written reports within three days of review, confirming compliance with specifications.
- .9 Sustainable Design Submittals:
 - .1 Submittals for LEED Canada-CI version 4 certification: in accordance with section 01 35 21 – LEED Requirements.

- .2 Construction waste management: refer to section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .3 Recycled content: refer to section 01 35 21 – LEED Requirements.
- .4 Regional materials: refer to section 01 35 21 – LEED Requirements.
- .5 Low emitting materials: refer to section 01 35 21 – LEED Requirements.
- .10 Qualification Statements:
 - .1 Compliance: to CAN/ULC-S102 and CAN/ULC-S102.2.
 - .2 Testing: passes testing requirements of:
 - .1 Green Label Indoor Air Quality Testing Program.
 - .3 Tuft bind: meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.

1.5 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.
- .3 Warranty Documentation: submit warranty documents specified.
- .4 Recovery of carpeting: in accordance with Section 01 35 21 – LEED Requirements.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra stock materials: Comply with Section 01 78 00 - Closeout Submittals.
 - .1 Quantity: provide minimum 5% of:
 - .1 Carpet tile: T1 and T2 types
 - .2 Adhesives.
 - .2 Transportation, storage and protection: comply with Owner's requirements for transportation and storage of materials and replacement products.

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements.
 - .1 Prequalification: compliance with Health Canada regulations under Hazardous Products Act, Part II of Schedule 1, and conform to CAN/CGSB-4.2 #27.6.
- .2 Qualifications:
 - .1 Manufacturer:
 - .1 Capable of providing field service representation during construction and approving application method.
 - .2 Flooring Installer:
 - .1 Experience and specializing in work similar to that required for this project.
 - .2 Certification by carpeting manufacturer prior to submission.

- .3 Work may not be subcontracted without written approval from the Departmental Representative.
- .4 Person responsible for installing carpet tiles must conduct work according to state of the art, including verification and preparation of substrate, in accordance with written instructions from carpet tile manufacturer.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - .3 Store and protect carpet tile and adhesive in original containers or wrapping with manufacturer's seals and labels intact.
 - .4 Store and protect carpet tile and accessories in location as directed by Ministerial Representative.
 - .5 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
 - .6 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
 - .7 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
 - .8 Replace defective or damaged materials with new.
- .4 Develop a Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .5 Packaging Waste Management: refer to Section 01 74 19 - Construction/Demolition Waste Management And Disposal.

1.9 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Moisture: ensure substrate is within moisture limits and alkalinity limits recommended by manufacturer.
 - .2 Temperature: maintain ambient temperature of not less than 18 degrees C from 48 hours before installation to at least 48 hours after completion of work.

- .3 Relative humidity: maintain between 10% and 65% for 48 hours before, during and 48 hours after installation.
- .4 Ventilation:
 - .1 Building manager will co-ordinate operation of ventilation system during installation of carpet. Ventilate area of work as directed by building management by use of approved portable supply and exhaust fans.
 - .2 Provide continuous ventilation 24 hours per day throughout installation and for seven days after completion of carpet installation.
- .5 Install carpet only after space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

1.10 WARRANTY

- .1 Manufacturer's warranty: submit, for Ministerial Representative's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and does not limit other rights Ministerial Representative may have under contract documents.
- .2 Warranty period: 15 years, commencing on date of substantial performance of work. Warranty covers labour repair or replacement of defective components defined as follow:
 - .1 Excessive Surface Wear: More than 15% loss of pile fibre weight.
 - .2 Excessive Static Electricity: More than 3.0 kV per AATCC 134.
 - .3 Resiliency Loss of the Backing: More than 10% loss of backing resiliency.
 - .4 Delamination.
 - .5 Edge Ravel.

Part 2 Products

2.1 MATERIALS

- .1 Sustainable Design characteristics:
 - .1 Materials and products: conform to section 01 35 21 – LEED requirements.
- .2 Adhesive: 50 g/L maximum VOC level to SCAQMD Rule 1168 and GS-36.
- .3 Sealant and primers: as recommended by manufacturer, based on surface condition.
 - .1 Maximum VOC level: 100g/L to SCAQMD Rule 1168.
- .4 Carpet tile and accessories:
 - .1 Certification: Green Label Plus.
 - .2 Recycled content: in accordance with section 01 35 21- LEED Requirements.

2.2 PERFORMANCE

- .1 Flammability: certified for flammability to Health Canada regulations under "Hazardous Products - Carpet Regulations", Part II of Schedule 1.

- .2 Flame Spread: maximum flame spread rating 300, maximum smoke developed classification 500, when tested to CAN/ULC-S102.2.
- .3 Smoke Development: 450 or less per ASTM E662.
- .4 Dry Breaking Strength: to ASTM D2661, minimum acceptable tear strength in both length and width:
 - .1 11.3 kg for carpets installed by glue down installation.
- .5 Wear: maximum 10% of pile face fibre by weight for 10 years.
- .6 Edge Ravel: none for 10 years.
- .7 Static Resistance: permanent static control to AATCC 134, allowing to limit development and accumulation of electrostatic charge to 3000 V maximum at 20% RH and 22 degrees C.
- .8 Static Generation: less than 3.0 kV per AATCC 134 for 10 years.
- .9 Tuft Bind: Tuft Lock: to CAN/CGSB-4.129/ ASTM D1335, minimum acceptable 1.6 kilograms for cut pile product and 3.6 for loop pile product.
- .10 De-lamination of Secondary Backing: to ASTM D3936, minimum acceptable peel strength of 1.6 kg/25 mm.
- .11 Stain resistance: to AATCC 175, 8.
- .12 Soil Resistance: Fluorine Durability Level to AATCC 189, 350 ppm fluorine minimum.
- .13 Colourfastness to light: to AATCC 16/CAN/CGSB-4.2 No.18.3.
- .14 Colourfastness to atmosphere: to AATCC 129/ AATCC 23.
- .15 Colourfastness to crocking: to CAN/CGSB-4.2 No. 22.
- .16 Indoor Air Quality Certification: certified to CRI Green Label Plus IAQ requirements.

2.3 FABRICATION

- .1 Carpeting types T1 and T2
 - .1 Dimensions: 25cm x 1m
 - .2 Face construction: Tufted
 - .3 Pile Surface Appearance : Level loop
 - .4 Pile fibre : Type 6 nylon de type 6, 100% recycled
 - .5 Tufted fibre weight: 26 oz./sq. yd. / 882 g/m²
 - .6 Gauge: 5/64 in. 50.4 edges/10 cm
 - .7 Pile height: 0.13 in. 3.3 mm
 - .8 Pile thickness: 0.08 in. 2 mm
 - .9 Dyeing Method: Dyed in the mass at 100%.
 - .10 Mesh count: 11.5 per inch 45.3 edges/10 cm
 - .11 Density of pile: 11,700 oz./cu. yd. / 433,833.4 g/m³

- .12 Pile pattern: on each carpet tile, four strips of oblique lines creating a herringbone pattern.
- .13 Installation pattern: Herringbone
- .14 Colour:
 - T1: medium grey and cream
 - T2: dark grey and cream
- .2 Type T3 carpeting (as existing in the base building)
 - .1 Company: Shaw
 - .2 Collection: Clearveiw
 - .3 Style: Glaze Tile #59 562
 - .3 Colour: Oxide #62 505
 - .4 Dimensions: 610 x 610mm
 - .5 Installation: monolithic

2.4 ACCESSORIES

- .1 Wiremold for electrical/telecom ducting:
 - .1 Wiremold consisting of an aluminum extrusion laid on the slab surface and two low-slope MDF ramps on each side of the wiremold. The carpet is installed on the slopes, but the wiremold cover remains visible and accessible.
 - .2 Total width: 450mm
 - .3 Total thickness: 16mm
 - .4 Materials: aluminum extrusion
 - .5 Finish: extruded aluminum
 - .6 Conform to ADA
- .2 Adhesive
 - .1 Pressure Sensitive Type, recommended by carpet tile manufacturer for direct glue down installation, for removal and gluing of slabs without losing adhesive properties.
 - .2 On site application VOC limit: 50 g/L maximum to SCAQMD Rule 1168.
- .3 Threshold strips:
 - .1 Hammered surface aluminum, designed for carpet being installed.
 - .2 Floor flange minimum 38 mm wide, face minimum 16 mm wide.
- .4 Carpet protection: non-staining heavy duty kraft paper.
- .5 Levelling compound for substrates: Portland cement product with water and/or latex added to produce a bonding paste.

Part 3 Execution**3.1 INSTALLERS**

- .1 Use experienced and qualified technicians to carry out assembly and installation of tile carpet.

3.2 EXAMINATION

- .1 Examine conditions, substrates and work to receive work of this Section, co-ordinate with Section 01 71 00 - Examination and Preparation.
- .2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for carpet tile installation in accordance with manufacturer's written instructions.
 - .1 Proceed with installation only after unacceptable conditions have been remedied.

3.3 PREPARATION

- .1 Subfloor Preparation:
 - .1 Inspect concrete and determine special care required to make it suitable for carpet.
 - .2 Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible latex patching compound.
 - .3 Comply with manufacturer's written recommendations for maximum patch thickness.
 - .4 Prime large patch areas with compatible primer.
 - .5 Ensure concrete substrates are cured, clean and dry.
 - .6 Ensure concrete substrates are free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that interfere with the bonding of adhesive.
 - .7 Where powdery or porous concrete surface is encountered, apply primer compatible with adhesive to provide a suitable surface for glue-down installation.
- .2 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations and co-ordinate with Section 01 71 00 - Examination and Preparation.
 - .1 Prepare floor surfaces in accordance with CRI Carpet Installation Standard.
- .3 Tile Carpeting Preparation:
 - .1 Pre-condition carpeting: following manufacturer's written instructions.

3.4 INSTALLATION

- .1 Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard. Co-ordinate with Section 01 73 00 - Execution requirements.
- .2 Coordinate carpet-laying work with the work of the other trades to meet a schedule and sequence so as to avoid construction delays.

- .3 Install carpet tile after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.
- .4 Install carpet tile as per manufacturer's recommendation. This can include quarter-turn 90 degree format, monolithic, random, quarter turn ashlar, horizontal, herringbone or vertical ashlar.
- .5 Snugly join carpet tiles in completed installation.
 - .1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is in compliance with manufacturer specifications.
 - .2 Do not trap yarn between carpet tiles.
- .6 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- .7 Ensure finished installation presents smooth wearing surface free from conspicuous seams, burring and other faults.
- .8 For each zone, use material from same dye lot.
 - .1 Ensure colour, pattern and texture match within visual areas.
 - .2 Maintain constant pile direction.
- .9 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .10 Install carpet tiles to underfloor duct system and to access covers.
- .11 Install carpeting in pan type floor access covers.
- .12 Extend carpet tiles under baseboards, door reveals, fixed and removable flanges, suspended projecting elements, alcoves, and similar openings.
- .13 Install carpet tiles smooth and free from bubbles, puckers, and other defects.
- .14 Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.

3.5 SITE QUALITY CONTROL

- .1 Site Tests and Inspections:
 - .1 Co-ordinate site test with Section 01 45 00 - Quality Control.
- .2 Manufacturer's Field Services:
 - .1 Co-ordinate manufacturer's services with Section 01 45 00 - Quality Control. Have manufacturer review work involved in handling, installation / application, protection and cleaning of its products, and submit written reports, in acceptable format, to verify compliance of work with Contract.
 - .2 Provide manufacturer's field services, consisting of product use recommendations and periodic site visits for inspection of product installation, in accordance with manufacturer's instructions.
 - .3 Schedule site visits:

- .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
- .2 Twice during progress of Work at 25% and 60% complete.
- .3 Upon completion of Work, after cleaning is carried out.
- .4 Obtain reports within three days of review and submit immediately to Ministerial Representative.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
 - .1 Vacuum carpets clean immediately after completion of installation.
- .2 Waste management: in accordance with section 01 74 19 - Construction/Demolition Waste Management And Disposal.

3.7 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Prohibit traffic on carpet for period of 24 hours minimum after installation and until adhesive is cured.
- .3 Install carpet protection to satisfaction of Ministerial Representative.
- .4 Repair damage to adjacent materials caused by tile carpeting installation.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 07 92 00 – Joint Sealing.
- .2 Section 08 11 00 – Metal doors and frames.
- .3 Section 08 14 16 – Flush wood doors.
- .4 Section 09 21 16 - Gypsum Board Assemblies.
- .5 Section 09 65 16 – Resilient sheet flooring.

1.2 REFERENCES

- .1 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33
- .2 Environmental Protection Agency (EPA)
 - .1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 - 1995, (for Surface Coatings).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual, 2004.
- .5 National Fire Code of Canada - 2015
- .6 Society for Protective Coatings (SSPC)
 - .1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.
- .7 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.3 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
 - .2 Apprentices: working under direct supervision of qualified trades person in accordance with trade regulations.
- .2 Mock-Ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .1 Provide 1000 mm x 1000 mm mock-up. Prepare and paint designated surface, area, room or item (in each colour scheme) to specified

- requirements, with specified paint or coating showing selected colours, gloss/sheen, textures.
- .2 Mock-up will be used:
 - .1 To judge workmanship, substrate preparation, operation of equipment and material application and workmanship to MPI Architectural Painting Specification Manual standards.
 - .3 Locate where directed where indicated
 - .4 Allow 24 hours for inspection of mock-up before proceeding with work.
 - .5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.
- .3 Pre-Installation Meeting:
 - .1 Convene a pre-installation meeting one week prior to beginning work of this Section, in accordance with Section 01 32 16.19 - Construction Progress Schedule – bar (GANTT) chart, to review the following :
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Coordination with other building sub trades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
- .4 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Submit product data for the use and application of paint thinner.
 - .3 Submit Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS). Indicate VOCs during application and curing.
- .3 Samples:
 - .1 Submit full range colour sample chips to indicate where colour availability is restricted.
 - .2 Submit duplicate 200 x 300 mm sample panels of each paint stain clear coating special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:
 - .1 Use sample of each different base material (take minimum thickness prescribed for sample) receiving paint to apply to respective products.

- .3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
- .4 Test reports: submit certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
 - .1 Lead, cadmium and chromium: presence of and amounts.
 - .2 Mercury: presence of and amounts.
 - .3 Organochlorines and PCBs: presence of and amounts.
- .5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .6 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation application instructions.
- .7 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers.
 - .4 MPI Environmentally Friendly classification system rating.

1.5 MAINTENANCE

- .1 Extra Materials:
 - .1 Deliver to extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
 - .2 Quantity: provide one - one four litre can of each type and colour of primer stain finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
 - .3 Delivery, storage and protection: comply with Departmental Representative requirements for delivery and storage of extra materials.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Pack, ship, handle and unload materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.
- .2 Acceptance at Site:
 - .1 Identify products and materials with labels indicating:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.

-
- .4 Storage and Protection:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
 - .5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
 - .6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.
 - .7 Remove paint materials from storage only in quantities required for same day use.
 - .8 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .9 Waste Management and Disposal:
 - .1 Separate waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal
 - .2 Place materials defined as hazardous or toxic in designated containers.
 - .3 Handle and dispose of hazardous materials in accordance with CEPA.
 - .4 Ensure emptied containers are sealed and stored safely until they are removed from site.
 - .5 Unused paint materials must be disposed of at official hazardous material collections site as approved by Departmental Representative.
 - .6 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
 - .7 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
 - .8 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
 - .9 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

- .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
- .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .10 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .11 Set aside and protect surplus and uncontaminated finish materials. Entrust collection of these products to responsible organizations that can reuse or reprocess them and report the recycled quantities. Provide suitable transportation conditions as required.

1.7 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Coordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.
 - .2 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
 - .3 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless pre-approved written approval by Specifying body Paint Inspection Agency Authority and product manufacturer, perform no painting when:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
 - .3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
 - .4 The relative humidity is under 85% or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.
 - .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
 - .6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
 - .2 Perform painting work when maximum moisture content of the substrate is below:
 - .1 Allow new concrete and masonry to cure minimum of 28 days.
 - .2 15% for wood.
 - .3 12% for plaster and gypsum board.

- .3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
 - .3 Apply paint when previous coat of paint is dry or adequately cured.
- .4 Additional interior application requirements:
 - .1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
 - .2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

Part 2 Products

2.1 MATERIALS

- .1 Materials and resources in accordance with Section 01 35 21 – LEED Requirements.
- .2 Paint and coating materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .3 Provide paint materials for paint systems from single manufacturer.
- .4 Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.
- .5 Conform to latest MPI requirements for interior painting work including preparation and priming or print paint.
- .6 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, and others) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .7 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.
- .8 Prescribe products appearing on the MPI Approved Products List to meet indoor air quality requirements, especially regarding odours.
- .9 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:
 - .1 Water-based.
 - .2 Non-flammable biodegradable.

- .3 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
- .4 Manufactured without compounds which contribute to smog in the lower atmosphere.
- .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

2.2 COLOURS

- .1 Departmental Representative will submit the color selection at contract award.
- .2 Refer to finish plans for number and location of different colours.
- .3 Selection of colours from manufacturers full range of colours.
- .4 Where specific products are available in restricted range of colours, selection based on limited range.
- .5 Second coat in three coat systems to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Departmental Representative for tinting of painting materials.
- .2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- .3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .4 Thin paint for spraying in accordance with paint manufacturer's instructions.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

Level	Gloss @ 60 degrees	Sheen @ 85 degrees
1 - Matte Finish	Max. 5	Max. 10
2 - Velvet-Like Finish	Max. 10	10 to 35
3 - Eggshell Finish	10 to 25	10 to 35
4 - Satin-Like Finish	20 to 35	min.35
5 - Traditional Semi-Gloss Finish	35 to 70	
6- Traditional Gloss	70 to 85	
8 – High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces as indicated, refer to plan A170.

2.5 INTERIOR PAINTING SYSTEMS

- .1 Clay masonry units: pressed and extruded brick:

- .1 INT 4.1H - Multicolour finish.
- .2 INT 4.1J - Clear water repellent paintable finish.
- .3 INT 4.1K - Clear (2 component) polyurethane finish.
- .2 Concrete masonry units: smooth and split face block and brick:
 - .1 INT 4.2A – Latex, satin-like finish.
- .3 Structural steel and metal fabrications: columns, beams, joists:
 - .1 INT 5.1S - Institutional low odour/low VOC, platinum-like finish.
- .4 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
 - .1 INT 5.3N - Institutional low odour/low VOC, platinum-like or transparent finish as indicated on plans.
- .5 Stainless steel: unpolished:
 - .1 INT 5.6H – Latex, platinum finish.
- .6 Wood paneling and casework: partitions, panels, shelving, millwork.
 - .1 INT 6.4P - Pigmented fire retardant transparent finish coating (ULC rated).
 - .2 INT 6.4R - Latex velvet-like finish (over latex primer).
- .7 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material:
 - .1 INT 9.2M - Institutional low odour/low VOC, matte finish for ceilings and velvet-like finish for walls.
- .8 Varnish for wooden doors and frames :
 - .1 Clear varnish of 100% ultraviolet solid polyurethane, for heavy duty use, non yellowing, low odour/low VOC. Satin-like finish ranging from 30 to 35 degrees.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 GENERAL

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .3 Maximum moisture content as follows:
 - .1 Stucco, plaster and gypsum board: 12%.
 - .2 Concrete: 12%.
 - .3 Clay and Concrete Block/Brick: 12%.
 - .4 Wood: 15%.

3.4 PREPARATION

- .1 Protection:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
 - .4 Protect passing pedestrians, building occupants and general public in and about the building.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Remove dust, dirt, and other surface debris by wiping with dry, clean cloths.
 - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

- .4 Allow surfaces to drain completely and allow to dry thoroughly.
- .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
 - .3 Tint filler to match stains for stained woodwork.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes.
- .8 Touch up of shop primers with primer as specified in relevant section.

3.5 APPLICATION

- .1 Conform to manufacturer's application instructions.
- .2 Brush and Roller Application:
 - .1 Work paint into cracks, crevices and corners.
 - .2 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .3 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
 - .4 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

- .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
- .4 Brush out immediately all runs and sags.
- .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .9 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .10 Finish closets and alcoves as specified for adjoining rooms.
- .11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
- .2 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .3 Do not paint over nameplates.
- .4 Keep sprinkler heads free of paint.
- .5 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .6 Paint fire protection piping, color as indicated by Departmental Representative.
- .7 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .8 Paint natural gas piping, color as indicated by Departmental Representative.
- .9 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .10 Do not paint interior transformers and substation equipment.

3.7 SITE TOLERANCES

- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

- .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.8 FIELD QUALITY CONTROL

- .1 Interior painting and decorating work shall be inspected by a Paint Inspection Agency (inspector) acceptable to the specifying authority and local Painting Contractor's Association. Painting contractor shall notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.
- .2 Interior surfaces requiring painting shall be inspected by Paint Inspection Agency who shall notify Departmental Representative and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.
- .3 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer shall provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Departmental Representative.
- .4 Standard of Acceptance:
 - .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
 - .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
 - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
- .5 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .6 Cooperate with inspection firm and provide access to areas of work.
- .7 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

3.9 RESTORATION

- .1 Clean and re-install hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.

- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 05 50 00 – Metal Fabrications.
- .2 Section 06 10 53 – Miscellaneous Carpentry.
- .3 Section 09 21 16 – Gypsum Board Assemblies.
- .4 Section 09 91 23 - Interior Painting.

1.2 REFERENCES

- .1 Aluminum Association, Inc. (AAI)
 - .1 AAI DAF45-03(R2009), Designation System for Aluminum Finishes.
- .2 ASTM International Inc.
 - .1 ASTM A123/A123M-13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .2 ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .3 ASTM B32-08, Standard Specification for Solder Metal.
 - .4 ASTM B456-11e1, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
- .3 Canada Green Building Council (CaGBC)
 - .1 LEED v4 for Interior Design and Construction Reference Guide, 2017.
- .4 Canadian General Standards Board (CGSB)
 - .1 CGSB 31-GP-107Ma-90, Non-Inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.
- .5 Canadian Standards Association (CSA International)
 - .1 CSA W47.2-F11, Certification of Companies for Fusion Welding of Aluminum.
 - .2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
 - .3 CSA W59.2-M1991(R2013), Welded Aluminum Construction.
- .6 Canadian Sheet Steel Building Institute (CSSBI)
 - .1 CSSBI SSF 6-2012 Sheet Steel Facts #6, Metallic Coated Sheet Steel for Structural Building Products.
- .7 Green Seal Environmental Standards
 - .1 Standard GS-11-2013, Paints and Coatings.
 - .2 Standard GS-36-2013, Commercial Adhesives.
- .8 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

- .9 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule #1113- A2016, Architectural Coatings.
 - .2 SCAQMD Rule #1168- A2011, Adhesive and Sealant Applications.
- .10 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual – September 2012.
 - .1 MPI #76, Quick Dry Alkyd Metal Primer.
 - .2 MPI #96, Quick Dry Enamel Gloss.

1.3 ACTION SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .1 Product Data
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for signage and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Shop Drawings:
 - .1 Indicate materials, thicknesses, sizes, finishes, colours, construction details, removable and interchangeable components, mounting methods and schedule of signs.
 - .2 Submit relevant documentation from catalogs and full size templates.
- .3 Samples:
 - .1 Submit duplicate representative sample of sign image and mounting method including, but not limited to: graphics, and wall plates fixed mounting installation method.
- .4 Sustainable Design Submittals:
 - .1 Submittals for LEED Canada-CI version 4 certification: in accordance with section 01 35 21 – LEED Requirements.
 - .2 Construction waste management: refer to section 01 74 19 - Construction/Demolition Waste Management And Disposal.
 - .3 Recycled content: refer to section 01 35 21 – LEED Requirements.
 - .4 Regional materials: refer to section 01 35 21 – LEED Requirements.
 - .5 Low emitting materials: refer to section 01 35 21 – LEED Requirements.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Welding company Certification in accordance with CSA W47.2.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect specified materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Develop a Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .5 Packaging Waste Management: refer to Section 01 74 19 - Construction/Demolition Waste Management And Disposal.

Part 2 Products**2.1 MATERIALS**

- .1 Sheet aluminum: anodizing quality.
 - .1 Recycled content: in accordance with Section 01 35 21 – LEED Requirements.
- .2 Prefinished sheet steel with laser-cut letters : conforming to CSSBI SSF 6, for normal use selected from manufacturer's standard range, color to be chosen by Departmental Representative.
 - .1 Recycled content: in accordance with Section 01 35 21 - LEED Requirements.
- .3 Welding materials: to CSA W59.
- .4 Solder: to ASTM B32, Type Sn50.

2.2 SIGN GRAPHICS

- .1 Sign graphics: well defined, arranged for balanced appearance, and properly word and letter spaced in accordance with specifications on plans.
- .2 Cut and spray process: mask surfaces, accurately cut-out image, spray apply uniform coating to obtain opaque to match Departmental Representative's sample finish .
- .3 Self-stick vinyl film: individual letters, numerals and symbols die cut from 0.1 mm thick integral colour, matte finish, interior grade PVC film, with self-stick adhesive backing. Color to be chosen by Departmental Representative.

2.3 WALL OR DOOR PLATES

- .1 Metal plates:

- .1 Fabricate from extruded sheet, minimum 6.4 mm clear anodized finish.
 - .1 Sizes as indicated.
- .2 Sign graphics: apply by self-stick vinyl letters.
- .2 Interchangeable mounting:
 - .1 Supply plates with approved type, semi-concealed, retaining holders that permit quick but vandal-resistant interchange of sign face.
 - .2 Exposed fasteners not permitted.
 - .3 Exposed portions to match sign face.
- .3 Fixed mounting:
 - .1 Prepare plates for fixing by Departmental Representative's approval.
 - .2 Include back-up plates for fixing to uneven surfaces where required.

2.4 FABRICATION

- .1 Fabricate signs in accordance with details, specifications and shop drawings.
- .2 Build units square, true, accurate to size, free from visual or performance defects.
- .3 Fit and securely join sections to obtain tight, closed joints.
- .4 Allow for thermal movement without distortion of components.
- .5 Exposed fasteners of same finish and colour as base material permitted and where approved by Departmental Representative.
- .6 Polish exposed metal edges to smooth, slightly convex profile.
- .7 Do aluminum welding to CSA W59.2.
 - .1 Finish exposed welds flush and smooth.
- .8 Apply bituminous paint to aluminum in contact with dissimilar metals, concrete or masonry.
- .9 Manufacturer's nameplates on sign surface permitted in non-visible locations in completed work.

2.5 FINISHES

- .1 Anodized aluminum:
 - .1 Clear finish: to designation AA - DAF 45
 - .1 Maximum VOC limit: in accordance with Section 01 35 21 - LEED Requirements.
- .2 Baked enamel:
 - .1 One coat of conditioner to CGSB 31-GP-107M one coat of MPI #76 primer.
 - .2 At least two coats of MPI # 96.
 - .3 One coat on interior surfaces.
 - .4 Individually bake each coat.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for signage installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Manufacturer's Instructions: compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
- .2 Erect and secure signs plumb and level, at specified height.
- .3 Comply with sign manufacturer's installation instructions and verified shop drawings.
- .4 Mechanical attachment:
 - .1 To wood: use screws.
 - .2 Secure into framing members behind stud walls or above ceilings.
 - .3 Mechanical fasteners and methods of attachment subject to Departmental Representative's approval.
- .5 Adhesive attachment:
 - .1 Use self-stick adhesive foam tape to manufacturer's instructions to fix sign and prevent "rocking".
 - .2 Keep tape maximum 1.6 mm from edges.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave signs clean.
 - .2 Remove debris from interior of sign boxes.
 - .3 Touch up damaged finishes.
- .3 Waste Management: 01 74 19 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 06 10 53 – Rough Carpentry.
- .2 Section 06 47 00 – Plastic laminate finishing.
- .3 Section 07 21 16 – Blanket insulation
- .4 Section 07 92 00 – Joint sealants
- .5 Section 08 14 16 – Flush wood doors.
- .6 Section 08 71 00 – Door hardware.
- .7 Section 08 71 01 – Hardware groups.
- .8 Section 08 80 00 – Glazing.
- .9 Division 26 – Electrical

1.2 REFERENCE STANDARDS

- .1 National Research Council of Canada (NRC)
 - .1 National Building Code of Canada, 2015 Edition
- .2 Code of Federal Regulations (annual edition)
 - .1 16 CFR 1201 – Safety standard for Architectural Glazing Materials.
- .3 Aluminum Association (AA)
 - .1 AA DAF45-2003 (R2009), Designation System for Aluminum Finishes, 9th Edition.
- .4 American Society of Civil Engineers (ASCE)
 - .1 ASCE 7- 16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-16)
- .5 ASTM International
 - .1 ASTM A653/A653M-17, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM C645-18, Standard Specification for Nonstructural Steel Framing Members.
 - .3 ASTM E72-15 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
 - .4 ASTM E413-16 Classification for Rating Sound Insulation
 - .5 ASTM E84-18b Standard Test Method for Surface Burning Characteristics of Building Materials
 - .6 ASTM E90-09 (2016), Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

- .7 ASTM E1300-16 Standard Practice for Determining Load Resistance of Glass in Buildings
- .6 National Fire Protection Association (NFPA)
 - .1 NFPA 70 – 2017, National Electrical Code.
- .7 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-ID+C v4, LEED (Leadership in Energy and Environmental Design): Green Building Rating System for Commercial Interiors.
- .8 CSA International
 - .1 CSA C22.1 24th Edition, 2018, Canadian Electrical Code, Part 1
- .9 ANSI Standards
 - .1 ANSI/BIFMA X5.6 - 2016 Panel Systems – Tests, American National Standard for Office furnishing
 - .2 ANSI/BIFMA M7.1 - 2011(R2016), Standard Test Method for Determining VOC Emissions from Office Furniture Systems, Components, and Seating.
 - .3 ANSI Z97.1-2015, For Safety Glazing Materials Used In Buildings - Safety Performance Specifications And Methods Of Test.
 - .4 BIFMA Level Certification
- .10 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature and data sheets for demountable partitions and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop drawings:
 - .1 The submitted shop drawings must be sealed and signed by an engineer having right of practice in the province of Quebec.
 - .2 Shop drawings shall indicate, show or include overall plan and elevation views, panel and door sizes, permissible requirements and tolerances, adjacent structures, anchor details and related work.
- .4 Samples:
 - .1 Submit one representative model of each partition type.
 - .1 Indicate basic construction, glazed sections, door frames, trim, and finishes.

- .2 Submit duplicate 200 x 300 mm samples of panel colours, textures and finishes and 300 mm long samples of trim options for colour selection by Departmental Representative.
- .3 Submit sample of floor and ceiling fixing devices.
- .5 Test Reports:
 - .1 Submit test reports in accordance with Section 01 45 00 - Quality Control, from approved independent testing laboratory, certifying partition system complies with sound transmission rating as specified.
- .6 Sustainable Design Submittals:
 - .1 LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements.
 - .2 Construction Waste Management: in accordance with Section 01 74 19 – Construction/Demolition Waste Management and Disposal.
 - .3 Recycled Content: in accordance with Section 01 35 21 - LEED Requirements.

1.4 QUALITY ASSURANCE

- .1 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .2 Erect assembly of one modules of each partition type, on site where directed by Departmental Representative.
 - .3 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with Work.
 - .4 When accepted, mock-up will demonstrate minimum standard for this Work. Mock-up may remain as part of finished Work.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect stud type demountable partitions from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: 01 74 19 —Construction/Demolition Waste Management and Disposal.

1.6 EXTENDED WARRANTY

- .1 For work in this section, that is to say section 10 22 19 – Stud type demountable partitions, the warranty period of 12 months prescribed in the general conditions, is extended to 120 months.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.
- .3 The warranty shall cover all defects in design, materials and installation for the following components as a minimum:
 - .1 Glass panels.
 - .2 Doors and doorframes.
 - .3 Door hardware.
 - .4 Details of joints between glass panels.
 - .5 Horizontal and vertical framing.
- .4 Warranty requirements apply fully, whether the system's components come from one or several suppliers.

1.7 ACCEPTABLE MATERIALS OR PRODUCTS

- .1 When materials or products are prescribed by brand name, consult « Tender documents » for approval of substitute materials or products procedures.

Part 2 Products**2.1 SYSTEM DESCRIPTION**

- .1 Basic system to be ceiling height partitions, from single manufacturer, of metal framing faced with removable unitized glass panels or faced solid panels both sides, including doors, door hardware and non-marring connectors.
- .2 Acceptable manufacturers:
 - .1 Haworth, Enclose system
 - .2 Artopex, Sky 700 system
 - .3 Teknion, Optos system for glazing and Altos system for solid partitions
 - .4 Or a replacement product approved by addenda in accordance with Tender Document.

2.2 PERFORMANCE

- .1 System to withstand lateral loads and seismic loads requirement of National Building Code of Canada, 2015 Edition.
- .2 Structural Performance
 - .1 Product's load bearing capacity: to ANSI/BIFMA X5.6.
 - .2 Glass partition's transverse load capacity: to ASTM E72.

- .3 Glass thickness: to ASTM E1300.
- .4 Glazing materials: complying with 16 CFR Part 1201 and/or ANSI Z97.1.
- .3 Seismic Performance: to ASCE 7.
- .4 Sound Transmission: to ASTM E 90 and STC rating of 45 classified according to ASTM E 413.
- .5 Surface Burning Classification: to ASTM E 84.
 - .1 Flame-spread: 25 or less
 - .2 Smoke-developed criteria: 450 or less.
 - .3 For installation in non-combustible, Type I or Type II, buildings.
- .6 Electrical and Communications Performance:
 - .1 Prewired, fully assembled components within wall panels: to NFPA 70 National Electric Code and the CSA C22.1 Canadian Electrical Code.
 - .2 System-attached electrical components: to NFPA 70, National Electric Code and the CSA C22.1 Canadian Electrical Code, Part 1.

2.3 SUSTAINABLE DEVELOPMENT REQUIREMENTS

- .1 Indoor Air Quality Performance: GREENGUARD certified to be low-emitting and complies with ANSI/BIFMA Standard Method M7.1-2011.
- .2 Sustainability Performance: solid panels to meet the Business and Institutional Furniture Manufacturers Association (BIFMA) level 1 sustainability third-party certified standard.

2.4 DESIGN REQUIREMENTS

- .1 Partition assembly: 101.6mm thick wall system, fully demountable and relocatable, non-progressive, extend in four directions without disturbing other panels, accommodates pre-finished unitized panels, quick-connect electrical, and wall-hung furniture and accessories. Reconfigurable power and data systems. Seamless integration of solid panel wall system with frameless glass wall or with conventional construction.
- .2 Components: distortion free, uniform in dimension, construction and appearance, made to suit specific function and have been proven in use.
- .3 Partition heights: as indicated on plans.
- .4 Minimum sound transmission rating of installed panel partition: tested to ASTM E90
 - .1 Solid panel system: STC 42
 - .2 Single pane glazing: STC 40
 - .3 Double pane fronts: STC 45

2.5 MATERIALS

- .1 Wall framing: extruded aluminum components, designed and prepared for removable attachment of facing sheets.

- .2 Solid tiles: high pressure plastic laminate on high density wood particle board for interior finishing: refer to sections 06 10 53 – Rough Carpentry and section 06 47 00 – Plastic laminate finishing.
- .3 Acoustical insulation: type recommended by partition manufacturer to achieve STC rating specified. Refer to section 07 21 16 – Blanket insulation.
- .4 Sound/light seal: self-adhesive closed cell, inorganic, permanently elastic, sponge type stripping, black.
- .5 Glass and glazing materials: 12mm thick laminated glass in accordance with Section 08 80 00 - Glazing.
- .6 Accessories: miscellaneous trim, bracing, fasteners, clips, and other accessories for installation as recommended by partition manufacturer.
- .7 Aluminum extrusions: Aluminum Association alloy AA6063-T5.

2.6 COMPONENTS

- .1 Solid wall panels (partition type 66 on plans): factory assembled, accommodating multi-configuration design options, removable tiles on each side of the partition, attached to the metal framing with continuous ABS retention strips.
 - .1 Height: up to 3657.6mm maximum, available in 3.2mm increments
 - .2 Width: 203.2mm à 1524mm depending on finish selection
 - .3 Thickness: 101.6mm
 - .4 Vertical adjustment: up 44.5mm, down 19mm
 - .5 Horizontal alignment: 2mm increments in width
 - .6 Finish: high pressure plastic laminate
 - .7 Acoustic seals on all sides, acoustical insulated core with urea-formaldehyde free batt insulation
 - .8 Non-marring floor connector and removable grid clips at the ceiling.
 - .9 Integrated slotted vertical frame members to accommodate mounting of furniture, accessories, and audio/visual equipment in 25.4mm increments, end-user adjustable.
 - .10 Bottom raceway from panel to panel, allowing vertical and horizontal electrical and data routing.
- .2 Glass wall panel, single pane (partition type 64) or double pane (partition type 65): factory-assembled, unitized glass wall panels, frameless type.
 - .1 Height: up to 3657.6mm, available in 3mm increments
 - .2 Width: 203.2mm to 1524mm maximum
 - .3 Thickness: 101.6mm
 - .4 Aluminum powder coated finished framing:
 - .1 Bottom one or two channels rail: 88.9mm high
 - .2 Top rail: 63.5mm high
 - .3 Side rails: 22mm wide

- .5 Vertical adjustment: up 44.5mm, down 19mm
- .6 Horizontal alignment: 2mm increments in width.
- .7 Monolithic glass panels.
- .8 Reveals in Black.
- .9 Acoustic seals on all sides.
- .10 Non-marring floor connector and removable grid clips at the ceiling.
- .11 Butt joint panels: auto adhesive tape.
- .12 Glass corner wall panel: configuration in 2-way and 3-way 90 °, as well as 2-way 135°
 - .1 Height: up to 3200.4mm maximum, available in 3mm increments.
 - .2 Width: 1219.2mm maximum per leg on 2-Way and return leg on 3-Way, 1524mm maximum for front on 3-Way.
 - .3 Thickness: 101.6mm
 - .4 12mm thick laminated glass; glass panes are joined on site.
- .3 Doors: butt-hinge, 44.5mm thick solid wood doors.
 - .1 Finish, color, texture and pattern: maple veneer with clear varnish, satin finish.
 - .2 Prepare for hardware specified in Section 08 71 00 - Door Hardware, with cut-outs and reinforcing as required.
- .4 Door frames: ceiling height, aluminum with powder coat finish, hinge/strike preparation and acoustical brushes, continuous and seamless with solid or glass panel system.
- .5 Door hardware: refer to section 08 71 00 – Door hardware.
- .6 Panel connectors: allow for intersection between two or more wall panels.
 - .1 8mm wide ABS extruded reveal connectors, used for:
 - .1 In line panel to panel connections.
 - .2 In line panel to door connections.
 - .3 In panel to post connections in 2-way, 3-way and 4-way conditions.
 - .2 Post connector (two and three ways, in line, 90°, 135° and variable angle post):
 - .1 Extruded powder coated aluminum, 101.6mm x 101.6mm dimension.
 - .2 Height: 1219.2mm to 3657.6mm
 - .3 31.8mm recessed base aligning with wall panel types.
 - .3 Starters trim providing an interface between demountable wall panel partition and base building fixed component.
 - .1 Compressible Starter
 - .1 Minimally visible, used in 90° degrees junction condition
 - .2 Used in conjunction with compressible bracket when mechanical fastening is required
 - .3 Compression capacity: 8 mm
 - .4 Expansion capacity: 28.6 mm
 - .2 Low profile starter:

- .1 22mm wide aligning dimensionally with glazing verticals.
 - .2 Used for aesthetic continuity, in 90° degrees junction condition.
 - .3 4.8mm adjustment range through compression of foam tape.
 - .4 May be mechanically fastened to base building if required.
 - .3 Adjustable Starter
 - .1 36.5mm wide, used in 90° degrees junction condition.
 - .2 Nominal reveal of 12.7mm, allows adjustment of +/- 12.7mm.
 - .3 Starter available in painted metal, wall covering and wood finishes.
 - .4 Low profile end-of-runs: to finish the end of a wall panel run not intersecting with a base building component.
 - .1 22mm wide aligning dimensionally with glazing verticals.
 - .2 Used for aesthetic continuity.
- .7 Building interface connectors:
 - .1 Ceiling connectors: standard for all wall panels, door assemblies, and panel connectors.
 - .1 Ceiling track: aluminum extrusion, 3048mm in lengths and fitted as required to suit site conditions. Anchored to finished ceiling with ceiling suspension grid clip or screw.
 - .2 Ceiling track splice plates: ceiling track extrusions connector.
 - .3 Ceiling track wall mount bracket: anchor the end of the ceiling track to a base building wall.
 - .4 Ceiling track hardware anchoring kit (grid clips/screws): to fit ceiling system.
 - .5 Ceiling track flap: 50.8mm high horizontal trim pieces that snap to each side of the ceiling track to create a reveal and light seal at the top of the wall panels, door, and panel connectors. 2743.2mm in lengths fitted to suit site conditions.
 - .6 Ceiling track flap tape: 16.5 meter rolls used at the junction of two ceiling track flaps.
 - .7 Lateral bracing y-bolts: provide lateral bracing as required by building code. Bolt and bracket kit; bolt screwed through bracket/ceiling track and top of wall panel, bracket anchored to base building structural component.
 - .2 Floor connectors: wall panel provided with independent base track and levelers.
 - .1 Carpet floor type shoe: factory installed carpet gripper; lateral bracing shoe as required by building code.
- .8 Accessories:
 - .1 Art hook, identified “CR” on plans : Metal J-shaped hook, to be inserted into reveals between wall panels. See plan A160 for locations.

2.7 ELECTRICAL AND VOICE/DATA

- .1 All electrical infrastructure to be prewired into the partitions. For the wiring of movable partitions, refer to circuitry described in Electrical plans.
- .2 For data infrastructure, provide empty conduits with pull ropes in movable partitions.
- .3 Conventional power supply for stud type demountable partitions: components prepped for or factory installed according to the following requirements:
 - .1 Power Receptacle:
 - .1 Factory installed 100mm x 100mm conventional box with 120 VAC, 15 AMP or 20 AMP circuits.
 - .2 12/2 AC cable, cable runs from box to 3050mm whip from top of the wall panel.
 - .2 Switches:
 - .1 Factory installed 100mm x 100mm conventional box with single reducer plate.
 - .2 Empty 19mm E.M.T. conduit for wiring, conduit runs from box to 150mm stub from top of panel.
 - .3 Dimmer – 120 volts
 - .4 Motion Sensor – 120 volts
 - .3 Data/Communication:
 - .1 Factory installed 100mm x 100mm conventional box with single reducer plate.
 - .2 Empty 19mm E.M.T. conduit for wiring, conduit runs from box to 150mm stub from top of panel.
 - .4 Receptacle finishing plate: type coordinated with division 26 – Electrical
 - .5 Devices location and installation height: as indicated on electrical plans.

Part 3 Execution**3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrates and surfaces to receive stud type demountable partitions previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Check dimensions, tolerances and form of fastening of items to other structures.
 - .3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval from Departmental Representative.

3.2 ERECTION

- .1 Install partition after floor finishes, in accordance with manufacturer's instructions.

- .2 Fasten tracks or trims to floors, ceiling and abutting vertical surfaces at 600 mm on centre maximum.
 - .1 At ceilings use fasteners that rigidly support partition without damaging or defacing ceiling panels or grid system members.
- .3 Erect partitions, plumb, square and level.
 - .1 Accurately fit and fasten to abutting surfaces.
 - .2 Adjust leveler under partitions at uneven floors to ensure level installation.
- .4 Install continuous light/sound seal at junction of ceiling height partitions with floors, ceilings and vertical surfaces.
- .5 Install panels in accordance with manufacturer's printed instructions.
 - .1 Apply panels full height floor to ceiling.
 - .2 Butt panels together to moderate contact.
 - .3 Install glass in accordance with section 08 80 00 - Glazing.
 - .4 Install sealant in accordance with section 07 92 00 - Joint Sealants.

3.3 ADJUSTING

- .1 Adjust posts, panels and doors of demountable partitions to fit and accurately and operate smoothly in accordance with manufacturer's written recommendations.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
- .3 After completion of work, wall panels and other signage devices must be left in good condition.
- .4 Repair all damaged finishes.

END OF SECTION

Part 1 General**1.1 REFERENCE STANDARDS**

- .1 Canada Green Building Council (CaGBC).
 - .1 LEED v4 for Interior Design and Construction Reference Guide 2017.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (SDS).
- .3 National Fire Protection Association (NFPA).
 - .1 NFPA 10-2006, Standard for Portable Fire Extinguishers.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature and datasheet and include product characteristics, performance criteria, physical size, finish, and limitations.
 - .2 Submit two copies WHMIS SDS - Material Safety Data Sheets.
- .3 Provide shop drawings.
- .4 Sustainable Design Submittals:
 - .1 LEED Canada Submittals: In accordance with Section 01 35 21- LEED Requirements.
- .5 Quality Control Submittals: Submit following:
 - .1 Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning and maintenance procedures.
 - .2 Manufacturer's Field Reports: Submit manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART 3, FIELD QUALITY CONTROL.
- .6 Closeout Submittals:
 - .1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, shipping, handling, and unloading:
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

- .2 Waste Management and Disposal:
 - .1 Separate waste materials for recycling reuse in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MULTI-PURPOSE DRY CHEMICAL EXTINGUISHERS

- .1 Stored pressure rechargeable type with hose and shut-off nozzle, ULC labelled for Class A, B, and C protection.
 - .1 Size 4.5 kg or as indicated.

2.2 EXTINGUISHER BRACKETS

- .1 Type recommended by extinguisher manufacturer.

2.3 CABINETS

- .1 Semi-recessed type as indicated, constructed of 1.6 mm thick steel, 180° opening door of 2.5 mm thick steel with latching device.
- .2 Cabinet to Maintain fire resistive rating of construction in which they occur.
- .3 Cabinet door: with 5 mm full glass panel.
- .4 Finish:
 - .1 Tub: Prime coated.
 - .2 Door and frame: No.4 satin finish stainless steel.

2.4 IDENTIFICATION

- .1 Identify extinguishers in accordance with recommendations of CAN/ULC-S508, ANSI/NFPA 10 and UL 711.
- .2 Attach tag or label to extinguishers, indicating month and year of installation. Provide space for service dates.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 Install or mount extinguishers in cabinets or on brackets in accordance with NFPA 10.

3.3 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:

- .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

END OF SECTION