

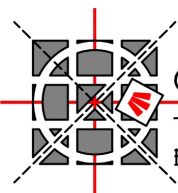
BID DOCUMENTS & SPECIFICATIONS

Issued for Permit, Pricing and Construction

Centennial SS Aesthetics Lab Belleville, ON

**for the
Hastings and Prince Edward
District School Board**

Date: 2025-11-12
Project N° 24045



COLBOURNE & KEMBEL , ARCHITECTS INC.

739D ARLINGTON PARK PLACE KINGSTON ONTARIO K7M 8M8
E-MAIL info@ckai.ca

TEL 613-384-2240

<u>Section</u>	<u>Title</u>
----------------	--------------

Division 00 – Procurement and Contracting Requirements

00 00 50	Project Team
00 01 07	Seals Page

Division 01 - General Requirements

01 11 00	Summary of Work
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 35 29.06	Health and Safety Requirements
01 35 35	Fire Safety Requirements
01 35 43	Environmental Procedures
01 45 00	Quality Control
01 51 00	Temporary Utilities
01 52 00	Construction Facilities
01 56 00	Temporary Barriers and Enclosures
01 61 00	Common Product Requirements
01 73 00	Execution
01 74 00	Cleaning
01 74 19	Waste Management And Disposal
01 77 00	Closeout Procedures
01 78 00	Closeout Submittals
01 91 13	General Commissioning Requirements

Division 02 - Existing Conditions

02 41 00.08	Demolition - Minor Works
-------------	--------------------------

Division 06 – Wood, Plastics, and Composites

06 40 00	Architectural Woodwork
06 61 16	Solid Surfacing Countertops

Division 07 – Thermal and Moisture Protection

07 84 00	Firestopping
07 92 00	Joint Sealants

Division 09 – Finishes

09 21 16	Gypsum Board Assemblies
09 51 13	Acoustical Panel Ceilings
09 65 19	Resilient Tile Flooring
09 91 23	Painting

Division 10 - Specialties

10 28 00	Toilet and Bath Accessories
----------	-----------------------------

END OF SECTION

PROJECT

CENTENNIAL SECONDARY SCHOOL AESTHETICS LAB
160 PALMER RD, BELLEVILLE

OWNER

HASTINGS & PRINCE EDWARD DISTRICT SCHOOL BOARD
156 ANN STREET,
BELLEVILLE, Ontario K8N 3L3

ARCHITECT

COLBOURNE & KEMBEL, ARCHITECTS INC.
739D Arlington Park Place
Kingston, Ontario K7M 8M8

MECHANICAL & ELECTRICAL ENGINEERING

GREER GALLOWAY, A DIVISION OF JP2G CONSULTANTS INC.
1620 Wallbridge Loyalist Road, RR5
Belleville, ON K8N 4Z5

Consultant Identification / Identification Expert-Conseil:

 Architect/Architecte	Engineer/Ingénieur	Engineer/Ingénieur
Engineer/Ingénieur	Engineer/Ingénieur	Engineer/Ingénieur
Engineer/Ingénieur	Engineer/Ingénieur	Engineer/Ingénieur

Part 1 General

1.1 SECTION INCLUDES

- .1 Title and description of Work.
- .2 Alterations to existing.
- .3 Existing services.
- .4 Contract method.
- .5 Work by others.
- .6 Work sequence.
- .7 Contractor use of premises.
- .8 Partial Owner occupancy.
- .9 Owner furnished items.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work under this Contract covers the furnishing of all labour, materials, and equipment required for the Work described in the drawings and specifications prepared by Colbourne & Kembel, Architects Inc.

1.3 CODES

- .1 Perform Work in accordance with the latest editions of the Ontario Building Code (OBC) and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents,
 - .2 Specified standards, codes and referenced documents.

1.4 SPECIFICATION GRAMMAR

- .1 Specifications are written in the imperative mood, in an abbreviated form.
- .2 The imperative language of all technical sections is directed to the Contractor:
 - .1 This form of statement requires the Contractor or one of their engaged Subcontractors to perform such action or work.
 - .2 Perform all requirements whether stated imperatively or otherwise.

1.5 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations occupants, and normal use of premises. Arrange with Owner to facilitate execution of work.
- .2 Use only entrances and corridor existing in building for moving workers and material.
 - .1 Protect walls and floors to approval of owner prior to use.
 - .2 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.6 SITE CONDITIONS

- .1 There are known designated substances in this building. Please refer to appendices in specifications for DSS report, lead guidelines and asbestos abatement procedures and comply to all requirements for working in the presence of, disturbing, handling, removal, and disposal of designated substances.
- .2 The GC must notify the Owner's DSS Consultant (and c.c. the Architect) prior to commencement of any work involving designated substances, and must provide regular updates of progress and of completion.

1.7 EXISTING SERVICES

- .1 Notify, Consultant, Owner and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, carry out work at times as directed by governing authorities with minimum disturbance to tenant operations.
- .3 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
- .4 Provide temporary services when directed by Consultant to maintain critical building and tenant services.
- .5 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .6 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.
- .9 Construct barriers, as required, in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.8 CONTRACT METHOD

- .1 Construct Work under single, stipulated price contract. The Canadian Standard Construction Document CCDC 2, 2020, and the supplementary conditions are part of the Contract Documents.
- .2 The specification of all trades shall be carefully read by the Contractor so that he may make himself acquainted with the extent and nature of the work of other trades.

1.9 WORK SEQUENCE

- .1 Construct Work to accommodate Owner's continued use of premises during construction.
 - .1 Work will be permitted to occur during school hours. Coordinate for use of school and isolation of areas of work ongoing during school year is required in the base bid.
- .2 Co-ordinate Progress Schedule including showing phasing of work and co-ordinate with Owner Occupancy during construction.
- .3 Maintain fire access/control.
- .4 Protect workers and public safety.

1.10 CONTRACTOR USE OF PREMISES

- .1 The Contractor will be provided with a key and alarm code to the building so that they may have access at any time.
- .2 Co-ordinate use of premises under direction of Owner.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.11 OWNER OCCUPANCY

- .1 Owner will occupy the school throughout construction.
 - .1 Area for construction laydown in parking area to be coordinated with Owner. Limited parking for Contractor during normal school year.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.
- .3 For work during normal school operations, coordinate with Owner and during which time limited areas to be available for construction.

1.12 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

1.13 PROJECT MEETINGS

- .1 Hold construction project meeting bi-weekly at site office.
- .2 Contractor will assume responsibility for recording and distributing minutes to all interested parties within 7 days of meeting.

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 SECTION INCLUDES

- .1 Schedule, form, content.
- .2 Critical path scheduling.

1.2 SCHEDULES REQUIRED

- .1 Contractor shall submit their Construction Schedule for review within seven days after award of contract utilizing the critical path method. This schedule shall be updated monthly with both hard copy and electronic copy forwarded to the Consultant. Monthly updates must include actual percentages complete. The Construction Schedule will be shown as a line item on the Contractor's Cost Breakdown. Failure to provide monthly updates may result in the contractor's request for payment being returned.
- .2 The CPM Schedule shall include complete sequence of construction activities.
- .3 Include dates for commencement and completion of each major element of construction.
- .4 Show projected percentage of completion of each item as of first day of month.
- .5 Indicate progress of each activity to date of submission schedule.
- .6 Show changes occurring since previous submission of schedule:
 - .1 Major changes in scope.
 - .2 Activities modified since previous submission.
 - .3 Revised project icons of progress and completion.
 - .4 Other identifiable changes.
- .7 Provide a narrative report to define:
 - .1 Problem areas, anticipated delays, and impact on schedule.
 - .2 Corrective action recommended and its effect.

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 SECTION INCLUDES

- .1 Shop drawings and product data.
- .2 Samples.
- .3 Certificates and transcripts.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Submit electronically, to Consultant within 14 days from award submittals listed for review. 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 Work affected by submittal shall not proceed until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals before submission to Consultant . This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with 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 Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify site measurements and affected adjacent Work are coordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to Contract drawings and specifications.
- .3 Allow 10 working days for Consultant's review of each submission.
- .4 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .5 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .6 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.

- .7 Submissions to include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of site measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified site dimensions and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .8 After Consultant's review, distribute copies.
- .9 Submit Electronic copies of shop drawings for each requirement requested in specification Sections.
- .10 Delete information not applicable to project.
- .11 Supplement standard information to provide details applicable to project.
- .12 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, Copies 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.

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 REFERENCES

- .1 Submit to Consultant and Owner copies of the following documents, including updates issued:
 - .1 Health and Safety Program submit, prior to commencement of work on the work site.
 - .2 Reports or directions issued by authorities having jurisdiction, immediately upon issuance from that authority.
 - .3 Accident or Incident Reports, within 24 hrs of occurrence.
- .2 Submit other data, information and documentation upon request by the Consultant as stipulated elsewhere in this section.

1.2 COMPLIANCE REQUIREMENTS

- .1 Comply with the latest edition of the Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act.
- .2 Observe and enforce construction safety measures required by:
 - .1 Ontario Building Code (latest edition).
 - .2 Provincial Worker's Compensation Board.
 - .3 Municipal statutes and ordinances.
- .3 In event of conflict between any provisions of above authorities the most stringent provision shall apply.
- .4 Provide and maintain Worker's Compensation Board coverage for all employees for the duration of the contract. Prior to commencement of the work, at each Interim Progress Claim, and prior to final payment, provide to the Consultant a letter of Clearance from the Worker's Compensation Board indicating that the Contractor's account is in good standing.
 - .1 Should the Contractor be a sole proprietor, provide documented proof in a form acceptable to the Consultant, of an alternative means of personal coverage that meets or exceeds the requirements set out above for Worker's Compensation Board coverage.

1.3 RESPONSIBILITY

- .1 The Contractor is responsible for safety of persons and property on the work site and the general public circulating adjacent to work site operations to extent that they may be affected by conduct of work.
- .2 The Contractor is to enforce compliance by workers and other persons granted access to work site with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with the Contractor's Health and Safety Program.
- .3 Should an unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise the Consultant verbally and in writing of the hazard or condition.

1.4 SITE CONTROL AND ACCESS

- .1 Control all work site access points and work site activities. Delineate and isolate the work site from adjacent and surrounding areas by use of appropriate means to maintain control of all work site access points.
- .2 Make provisions for granting permission to access onto work site to all persons who require access. Procedures for granting permission to access are to be in accordance

- with the Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act and the Contractor's Health and Safety Program.
- .3 Ensure persons granted access to the work site are in possession of and wear the minimum personal protective equipment (PPE) designated by the Contractor's Health and Safety Program. Ensure persons granted access to the work site are provided with, trained in the use of, and wear, appropriate PPE that are required above and beyond the designated minimums previously noted and as specifically related to the work site activity that they are involved in. Be responsible for the efficacy of the PPE that is provided above and beyond the designated minimums.
 - .4 Erect signage at access points and at other strategic locations around the work site clearly identifying the work site area(s) as being "off-limits" to non-authorized persons. Signage must be professionally made with well understood graphic symbols and is not to be used as advertising but for the specific use as related to site safety and key contact information.
 - .1 Information to be provided on the signage is as follows:
 - .1 Project Name/Description:
 - .2 Contractor Company Name:
 - .3 Project Superintendent's Name/Phone No.:
 - .5 Secure the work site at all times to protect against un-authorized access.

1.5 FILING OF NOTICE

- .1 File Notice of Project and any other required Notices with the Provincial/Territorial Authorities prior to commencement of the work. Provide the Owner with a copy of the filed Notice(s) prior to commencement of the work.

1.6 PERMITS

- .1 Obtain permits, licenses and compliance certificates, such as ESA, Plumbing permit etc., at appropriate times and frequencies as required by the authorities having jurisdiction.
- .2 Post all permits, licenses and compliance certificates on work site.
- .3 Owner to provide building permit.

1.7 ACCIDENT REPORTING

- .1 Investigate and report incidents and accidents as required Ontario Occupational Safety and Health Act, and the Regulations made pursuant to the Act.
- .2 For the purpose of this contract immediately investigate and provide a report on incidents and accidents that involve:
 - .1 A resulting injury that may or may not require medical aid but involves lost time at work by the injured person(s).
 - .2 Exposure to toxic chemicals or substances.
 - .3 Property damage.
 - .4 Interruption to adjacent and/or integral infrastructure operations with potential loss implications.
- .3 In the investigation and reporting of incidents and accidents, the Contractor is required to respond in a timely fashion to correct the action that was deemed to have caused the incident and/or accident and advise in writing on the action taken to prevent a re-occurrence of the incident and/or accident.

1.8 RECORDS ON SITE

- .1 Maintain on site a copy of the safety documentation as specified in this section and any other safety related reports and documents issued to or received from the authorities having jurisdiction.

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 REPORTING FIRES

- .1 Know location of nearest fire alarm box and telephone, including emergency phone number.
- .2 Report immediately all fire incidents to Fire Department as follows:
 - .1 activate nearest fire alarm box; or
 - .2 telephone 911 from local phone; or
 - .3 from cellular phone dial 911 and tell 911 operator the location of the fire
- .3 Person calling in alarm will remain on site to direct Fire Department to scene of fire.
- .4 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

1.2 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS

- .1 Fire protection and alarm system will not be:
 - .1 obstructed;
 - .2 shut off; and/or
 - .3 left inactive at end of working day without pre-arrangement with Owner.
- .2 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by Fire Chief.

1.3 FIRE EXTINGUISHERS

- .1 Supply fire extinguishers, as necessary, to protect work in progress and contractor's physical plant on site.

1.4 ACCESS FOR FIRE FIGHTING

- .1 Provide and maintain access for firefighting operations in accordance with NFC.
- .2 Submit written notification to Fire Chief a minimum of five Working Days before operation of activities that may cause problems that might impede fire department equipment access and personnel response including
 - .1 violation of minimum horizontal and overhead clearances
 - .2 other operations as directed by Fire Chief, or
 - .3 erecting of barricades and digging of trenches.
- .3 Maintain a minimum 6.0-m clear horizontal width for access routes, or as otherwise directed by Fire Chief.
- .4 Maintain a minimum 5.0-m vertical clearance for access routes, or as otherwise directed by Fire Chief.
- .5 Provide and maintain a safe exit path from all required building exits away from the building. Any exit paths within the designated area of work to be maintained by contractor.

1.5 SMOKING RESTRICTIONS

- .1 No smoking on school property at any time as per the Smoke Free Ontario Act.

1.6 QUESTIONS OR CLARIFICATION

- .1 Direct questions and requests for clarification on Fire Safety in addition to above requirements to Fire Chief.

1.7 FIRE INSPECTION

- .1 Coordinate site inspections by Fire Chief through Project Manager.
- .2 Allow Fire Chief unrestricted access to work site.
- .3 Cooperate with Fire Chief during routine fire safety inspection of Work site.
- .4 Immediately remedy unsafe fire situations observed by Fire Chief.

1.8 HOT WORK

- .1 A Hot Work Permit is required for any operations involving open flames or work and equipment producing heat or sparks. This work includes but is not necessarily limited brazing, cutting, grinding, soldering, torching and cadwelding.
- .2 Fire watches are required during all hot work. It is the Contractor's responsibility to provide all labour material and equipment to include personnel for the fire watch. Fire watch to continue for a minimum of 30 minutes after completion of work, including end of work day, coffee breaks and lunch breaks.
- .3 Fully comply with all required precautions indicated on the hot work permit checklist. Provide owner with an electronic copy of each permit for Hot Work. Leave Hard Copy of the Original on Site with the Custodian.

Part 2 Products

2.1 NOT USED

- .1 NOT USED

Part 3 Execution - Not Used

END OF SECTION

Part 1 General

1.1 FIRES

- .1 Fires and burning of rubbish on site is not permitted.

1.2 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution - Not Used

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Equipment and system adjust and balance.

1.2 INSPECTION

- .1 Allow Consultant 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 Consultant instructions, or law of Place of Work.
- .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 Consultant may order any 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, Owner shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies may be engaged by Owner for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Owner.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with 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 Consultant at no cost. Pay costs for retesting and re inspection.

1.4 ACCESS TO WORK

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

1.5 PROCEDURES

- .1 Notify appropriate agency and Consultant 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 an orderly sequence so as not to cause delay 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 incorporated in Work or not, which has been rejected by Consultant 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 Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Consultant.

1.7 REPORTS

- .1 Submit electronic copy of inspection and test reports.
- .2 Provide copies to Subcontractor of work being inspected or tested or manufacturer or fabricator of material being inspected or tested.

1.8 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
- .2 Refer to Section 01 78 00 - Closeout Submittals for definitive requirements.

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 SECTION INCLUDES

- .1 Temporary utilities.

1.2 INSTALLATION AND REMOVAL

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

1.3 WATER SUPPLY

- .1 Owner will provide continuous supply of potable water for construction use.

1.4 TEMPORARY HEATING AND VENTILATION

- .1 Contractor to provide temporary heat and electrical if required.
- .2 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.5 TEMPORARY POWER AND LIGHT

- .1 Owner will pay for temporary power during construction for temporary lighting and operating of power tools.
- .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

1.6 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, fax and data lines necessary for own use.

1.7 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on Site.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution - Not Used

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Construction aids.
- .2 Office and sheds.
- .3 Parking.
- .4 Project identification.

1.2 INSTALLATION AND REMOVAL

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.3 SCAFFOLDING

- .1 Provide and maintain scaffolding, ramps and ladders..

1.4 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists and cranes to be operated by qualified operator.

1.5 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.6 CONSTRUCTION PARKING

- .1 Parking will be permitted on site.
- .2 Provide and maintain adequate access to project site.
- .3 Use existing roads for access to project site. Make good damage resulting from Contractor's use of roads and site.

1.7 OFFICES

- .1 Provide Contractor's site office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.
- .4 Locate on site as directed by the Owner.
- .5 Install on site within two (2) weeks of contract award. Remove from site at completion of construction contract.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.9 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution - Not Used

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Barriers.
- .2 Environmental Controls.
- .3 Fire Routes.

1.2 INSTALLATION AND REMOVAL

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

1.3 HOARDING

- .1 Erect temporary site enclosures to contain designated construction areas using new 1.8 m high temporary portable fencing. Panels to have 42mm welded galvanized frames with non-climbable mesh.

1.4 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors.
- .2 Provide as required by governing authorities.

1.5 WEATHER ENCLOSURES

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3 Design enclosures to withstand wind pressure and snow loading.

1.6 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.

1.7 FIRE ROUTES

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

1.8 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.

1.9 PROTECTION OF BUILDING FINISHES

- .1 Provide necessary screens, covers, and hoardings.
- .2 Be responsible for damage incurred due to lack of or improper protection.

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 SECTION INCLUDES

- .1 Product quality, availability, storage, handling, protection, and transportation.
- .2 Manufacturer's instructions.
- .3 Quality of Work, coordination and fastenings.
- .4 Existing facilities.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality (as per specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 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.
- .3 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 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.
- .6 In specification sections where a specific manufacturer and/or product is specified as "an acceptable product is:" other manufacturers products meeting this standard ,as determined by the Consultant, will be accepted as an alternative unless specified otherwise.

1.3 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 Consultant of such, in order 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 Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and 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 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.6 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 manufacturers.
- .2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.8 CO-ORDINATION

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

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.10 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 neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

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

1.12 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise. All fasteners shall be compatible with materials being used (eg. pressure treated wood).
- .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 any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 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.

1.14 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

1.15 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 pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

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 SECTION INCLUDES

- .1 Requirements and limitations for cutting and patching the Work.

1.2 RELATED SECTIONS

- .1 Individual product Sections: cutting and patching incidental to work of section. Advance notification to other sections required.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit written request before cutting or altering to existing conditions which may affect the following:
 - .1 Structural integrity of any element of Project.
 - .2 integrity of weather-exposed and moisture-resistant elements
 - .3 efficiency, maintenance, safety, or accessibility of operational elements
 - .4 visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate Contractor
- .2 Include in request:
 - .1 identification of the 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 Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.4 MATERIALS

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

1.5 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 which may be exposed by uncovering work; maintain excavations free of water.

1.6 EXECUTION

- .1 All necessary cutting and patching of work for the Mechanical and Electrical or associated trades shall be done by the General Contractor. General Contractor is to coordinate and schedule related subtrades prior to pouring concrete, installing finishes to ensure that sub-trades routing, installation of services, finishes, etc. are in place prior to installing.
- .2 Execute cutting, fitting, and patching. required to make work fit properly together and as necessary for the installation of new and existing materials.

- .3 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
- .4 Make good any damage resulting from work of this contract.
- .5 Tradesmen qualified in the work being cut and patched shall be employed to ensure that works are correctly done.
- .6 Core drill holes in areas after being located by the Trade concerned.
- .7 Whenever it becomes necessary to cut or interfere in any manner with existing services or apparatus, do so at such times as approved by the Consultant.
- .8 Whenever existing items are designated for relocation or removal, relocate or remove these items unless specified to be done by other sections of the Specification. All waste and debris shall be disposed of by the General Contractor.
- .9 Coordinate work of all sections, taking into account existing installations to ensure best arrangement of components in available space. For critical locations, consult with Consultant prior to commencing work.
- .10 Make good all surfaces and finishes to match existing in areas from which items have been removed or in which items are relocated. Cap off all existing services required to be severed to affect the alterations and do all other work necessary to make good such areas the Consultant's satisfaction.
- .11 Core drill holes in concrete floors for piping where not previously sleeved, Do not use mechanical hammers or drills without prior approval in writing.
- .12 Any cutting/patching required after completion of new works shall be done by the General Contractor at the Sub-Trade concerned's expense.
- .13 Maintain all fire separations. Provide fire stopping at all penetrations in accordance with CAN4-5115.
- .14 Uncover Work to install ill-timed Work.
- .15 Remove and replace defective and non-conforming Work.
- .16 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .17 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .18 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .19 Restore work with new products in accordance with requirements of Contract Documents.
- .20 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .21 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
- .22 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.
- .23 Conceal pipes, ducts and wiring in wall and ceiling construction of finished areas except where indicated otherwise.
- .24 Reinstate sidewalks and lawns to pre-construction conditions
- .25 Refer to the Hazardous Building Materials Assessment and the general specification notes relating to asbestos and hazardous materials abatement.
- .26 Masonry shall be saw cut and patching shall be toothed in to match existing adjacent finish.

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Progressive cleaning.
- .2 Final cleaning.

1.2 PROJECT CLEANLINESS

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

1.3 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 materials from site at regularly scheduled times. Do not burn waste materials on site.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 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.
- .7 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors, and ceilings.
- .8 Clean lighting reflectors, lenses, and other lighting surfaces.
- .9 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .10 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .11 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

- .12 Clean roofs, downspouts, and drainage systems.

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 REGULATORY AGENCIES

- .1 The Ontario Ministry of Environment (OME) in accordance with Section 7 of Ontario Regulation 103/94 requires a source separation program for the waste that will be generated in the construction or demolition of a structure.
- .2 The source separation program required shall:
 - .1 Deal separately with each of the categories of waste set out in Part III of the Schedule that have been source separated from other kinds of waste and also from each other category of waste in Part III; or
 - .2 Provide for removal from the building site of any commingled categories of waste set out in Part III of the Schedule and for the immediate separation of such waste from all other kinds of waste and also from each category of waste in Part III, at
 - .1 permanent premises of the person undertaking the construction project
 - .2 permanent premises of the person on whose behalf the construction project is undertaken or
 - .3 a waste disposal site operating under the authority of a certificate of approval
- .3 The source separation program shall be implemented before construction work begins on site.

1.2 SUBMITTAL

- .1 Prepare and submit a waste reduction work plan. Describe management of construction wastes. Identify materials which can be recycled, reused and indicate methods proposed for reducing, reusing and recycling wastes.

1.3 WASTE COLLECTION AND DISPOSAL

- .1 Separate and salvage materials suitable for reuse and/or recycling from general waste stream.
- .2 Provide on site facilities for collection, handling and storage of anticipated quantities of reusable and/or recyclable materials.
- .3 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .4 Collect, handle, store on site and transport off site, salvaged materials, salvaged for reuse and/or recycling in separate condition. Transport to authorized reuse/recycling location.
- .5 Separate non salvageable materials from salvaged items. Transport and deliver non salvageable items to licensed disposal facility.
- .6 Burying, burning, selling waste materials on site is prohibited.
- .7 Disposals of liquid wastes into waterways, sewers is prohibited.
- .8 Unless specified otherwise, materials for removal become Contractor's property.
- .9 Clean up work, storage and waste collection areas as work progresses.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution - Not Used

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Consultant's Inspection.
- .2 Consultant's Inspection: Consultant and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Work is complete and ready for Final Inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Consultant. If Work is deemed incomplete by Consultant, complete outstanding items and request re inspection.

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 SECTION INCLUDES

- .1 As-built, samples, and specifications.
- .2 Equipment and systems.
- .3 Product data, materials and finishes, and related information.
- .4 Operation and maintenance data.
- .5 Spare parts, special tools and maintenance materials.
- .6 Warranties.

1.2 RELATED SECTIONS

- .1 Section 01 77 00 - Closeout Procedures.
- .2 Section 01 91 13 - General Commissioning Requirements.

1.3 SUBMISSION

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection, with Consultant's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Submit to the Consultant one (1) hard copy and one USB thumb drive, PDF format of operating and maintenance manuals in English within 14 days of substantial completion.

1.4 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: Vinyl, hard covered, 3 'D' ring, loose leaf 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, process flow under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf 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.

1.5 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 responsible parties.
 - .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.

1.6 AS-BUILT DOCUMENTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Consultant one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in site 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 Consultant.

1.7 RECORDING ACTUAL SITE CONDITIONS

- .1 Contractor shall maintain two sets of white prints for record drawing purposes. Record changes and at completion of project submit one marked to the Consultant.
- .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: legibly mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Site changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: legibly 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, field test records, required by individual specifications Sections.
- .7 Provide digital photos, if requested, for site records.

1.8 FINAL SURVEY

- .1 At completion of project, transfer recorded changes to Construction drawings and submit one set of as-built drawings to Consultant. As built drawing submission shall include one (1) marked copy of the construction drawings, one (1) hard copy of the As Built drawings and one (1) copy of As Built drawings in electronic .pdf format. All drawings shall be submitted and marked as built.

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 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified.
- .15 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.
- .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 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 to satisfaction of Consultant.

1.12 WARRANTIES AND BONDS

- .1 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 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
 - .5 Verify that documents are in proper form, contain full information, and are notarized.
 - .6 Co-execute submittals when required.
 - .7 Retain warranties and bonds until time specified for submittal.

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 SECTION INCLUDES

- .1 Includes general requirements for commissioning facilities and facility systems.

1.2 RELATED SECTIONS

- .1 Section 01 45 00 - Quality Control.

1.3 QUALITY ASSURANCE

- .1 Co-operate with testing organization services under provisions specified in Section 01 45 00 - Quality Control.
- .2 Testing organization: certified to perform specified services.
- .3 Comply with applicable procedures and standards of the certification sponsoring association.
- .4 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

1.4 SUBMITTALS

- .1 Prior to start of Work, submit name of organization proposed to perform services. Designate who has managerial responsibilities for coordination of entire testing, adjusting and balancing.
- .2 Submit documentation to confirm organization compliance with quality assurance provision.
- .3 Submit preliminary specimen copies of each of report forms proposed for use.
- .4 Fifteen days prior to Substantial Performance, submit 3 copies of final reports on applicable forms.
- .5 Submit reports of testing, adjusting, and balancing postponed due to seasonal, climatic, occupancy, or other reasons beyond Contractor's control, promptly after execution of those services.

1.5 PROCEDURES - GENERAL

- .1 Comply with procedural standards of certifying association under whose standard services will be performed.
- .2 Notify Engineer 3 days prior to beginning of operations.
- .3 Accurately record data for each step.
- .4 Report to Engineer any deficiencies or defects noted during performance of services.

1.6 FINAL REPORTS

- .1 Organization having managerial responsibility shall make reports.
- .2 Ensure each form bears signature of recorder, and that of supervisor of reporting organization.
- .3 Identify each instrument used, and latest date of calibration of each.

1.7 CONTRACTOR RESPONSIBILITIES

- .1 Prepare each system for testing and balancing.
- .2 Cooperate with testing organization and provide access to equipment and systems.
- .3 Provide personnel and operate systems at designated times, and under conditions required for proper testing, adjusting, and balancing.

- .4 Notify testing organization 7 days prior to time project will be ready for testing, adjusting, and balancing.

1.8 PREPARATION

- .1 Provide instruments required for testing, adjusting, and balancing operations.
- .2 Make instruments available to Engineer to facilitate spot checks during testing.
- .3 Retain possession of instruments and remove at completion of services.
- .4 Verify systems installation is complete and in continuous operation.
- .5 Verify lighting is turned on when lighting is included in cooling load.
- .6 Verify equipment such as computers, laboratory and electronic equipment are in full operation.

1.9 EXECUTION

- .1 Test equipment, balance distribution systems, and adjust devices for HVAC systems.

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 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

1.2 SUBMITTALS

- .1 Submit shop drawings in accordance with Sections 01 33 00 - Submittal Procedures.
- .2 Before proceeding with demolition of load bearing walls and where required by authority having jurisdiction submit for review by Consultant shoring drawings prepared by qualified professional engineer registered or licensed in the Province of Ontario, showing proposed method.
- .3 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Sections 01 74 19 - Waste Management and Disposal and indicate:
 - .1 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.
 - .2 Schedule of selective demolition.
 - .3 Number and location of dumpsters.
 - .4 Anticipated frequency of tippage.
 - .5 Name and address of haulers waste facilities waste receiving organizations.

1.3 WASTE MANAGEMENT AND DISPOSAL

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

1.4 SITE CONDITIONS

- .1 Review "Designated Substance Report" and take precautions to protect environment.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.
 - .1 Proceed only after receipt of written instructions have been received from Consultant.
- .3 Notify Consultant before disrupting building access or services.

Part 2 Products - Not Used

Part 3 Execution

3.1 PROTECTION

- .1 Prevent movement, settlement, or damage to parts of building to remain in place. Provide bracing and shoring required.
- .2 Keep noise, dust, and inconvenience to occupants to minimum.
- .3 Protect building systems, services and equipment.
- .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .5 Do Work in accordance with Section 01 35 29.06 - Health and Safety Requirements.

3.2 SALVAGE

- .1 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .2 Remove items to be reused, store as directed by owner, and re-install.

3.3 DEMOLITION

- .1 Remove parts of existing building to permit new construction. Sort materials into appropriate piles for reuse and recycling

3.4 DISPOSAL

- .1 Dispose of removed materials, to appropriate recycling facilities except where specified otherwise, in accordance with authority having jurisdiction.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 07 92 00 - Joint Sealants.
- .2 06 61 16 - Solid Surface Countertops.

1.2 REFERENCE STANDARDS

- .1 American National Standards Institute (ANSI)
 - .1 ANSI/BHMA A156.9-2010, Cabinet Hardware.
 - .2 ANSI/BHMA A156.11-2014, Cabinet Locks.
 - .3 ANSI A208.1-09, Particleboard.
 - .4 ANSI/HPVA HP-1-10, Standard for Hardwood and Decorative Plywood.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 Architectural Woodwork Standards (AWMAC AWS), 2014.
- .3 ASTM International (ASTM)
 - .1 ASTM F1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-11.3-M87, Hardboard.
 - .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
- .5 CSA Group (CSA)
 - .1 CSA O112-M Series 1977 (R2006) Standards for Wood Adhesives.
 - .2 CSA O151-14, Canadian Softwood Plywood.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.
 - .2 Submit electronic copy of shop drawings for review in accordance with requirements of Division 01.
 - .3 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .1 Scales: profiles full size, details half full size.
 - .4 Indicate materials, thicknesses, finishes and hardware.
 - .5 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
 - .6 Show location on casework elevations of backing required in supporting structure for attachment of casework.
 - .7 Indicate AWMAC AWS quality grade where different from predominant grade specified.
 - .8 Include colour schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.
 - .1 One colour to be selected for this project.
- .3 Samples:
 - .1 Prepare and submit samples in accordance with AWMAC AWS and as follows.
 - .2 Submit panel samples minimum 300 x 300 mm. for confirmation of colour selection.

1.4 QUALITY ASSURANCE

- .1 Perform Work of this Section by single architectural wood casework fabricator with minimum 5 years of current architectural casework production experience.

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 Deliver wood casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.
- .3 Protect millwork against dampness and damage during and after delivery.
- .4 Store millwork in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.
- .5 Store materials indoors in clean, dry, well-ventilated area.
- .6 Protect architectural woodwork and hardware from nicks, scratches, and blemishes.
- .7 Replace defective or damaged materials with new.
- .8 Waste Management: for packaging and materials, in accordance with 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 QUALITY GRADE

- .1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Premium Grade.
- .2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.2 LUMBER

- .1 Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWS quality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work
- .2 Machine stress-rated lumber is acceptable for all purposes.

2.3 PANEL MATERIALS

- .1 Structural Phenolic Laminate Panels with colour 2 sides, core black. Basis of design Formica Trespa Toplab structural panels, thickness 8mm and 19mm. Colour to be black (selected from quick ship colours). Standard grade. Texture Crystal Matte - TC.

2.4 CASEWORK FABRICATION - GENERAL

- .1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade and as detailed.
- .2 Set nails and countersink screws apply wood filler to indentations, sand smooth and leave ready to receive finish.
- .3 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .4 Shelving to cabinetwork to be adjustable unless otherwise noted.
- .5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .7 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

2.5 PHENOLIC CASEWORK FABRICATION

- .1 Fabricate casework bodies of structural panel as specified in accordance with AWMAC AWS requirements for grade specified and as follows
 - .1 Exposed interior surfaces: of structural panel as specified, colour both sides.
 - .2 Semi-exposed surfaces: same as exposed.
- .2 Fabricate door, drawer and panel surfaces of structural panel colour both sides as specified.
- .3 Drawer construction:
 - .1 Sides:
 - .1 AWMAC AWS Custom grade: structural panels as specified.
 - .2 Premium grade:.
 - .2 Bottoms: structural panels as specified, 8 mm thick.
 - .3 Joinery: Meeting requirements of AWMAC AWS for Grade specified.

2.6 CABINET HARDWARE

- .1 Cabinet hardware: to AWMAC AWS quality grade specified and to ANSI/BHMA A156.9, designated by letter B and numeral identifiers as listed below
- .2 Finish:
 - .1 Exposed hardware: brushed nickel.
 - .2 Semi-exposed hardware: Manufacturer's standard finish.
- .3 Shelf standards and supports: drilled to accept clips
 - .1 Clips: bright zinc plated, adjustable height shelf supports.
- .4 Casework door hinges: concealed adjustable hinges, soft close.
- .5 Pulls: D type, 100 mm.
- .6 Drawer slides:
 - .1 Extension and capacity: full extension and heavy duty meeting requirements of AWMAC AWS for type and size of drawer

2.7 CABINET LOCKS

- .1 Provide locks where indicated.
- .2 Cabinet locks: to ANSI/BHMA A156.11, designated by letter E and numeral identifiers as listed below
 - .1 Door or drawer locks: surface mounted.
- .3 Keying: to be coordinated with Owner.
 - .1 Provide 4 master keys.
 - .2 All cabinet locks in room to be keyed the same
 - .3 Stamp keying code numbers on keys and cylinders.

2.8 ACCESSORIES

- .1 Wood screws: type and size to suit application.
- .2 Nails and staples: to CSA B111 and ASTM F1667
- .3 Splines: plastic or metal.
- .4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.

- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Install architectural wood casework in accordance with AWMAC AWS grade for respective items
- .2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.
- .3 Install prefinished millwork at locations shown on drawings.
 - .1 Position accurately, level, plumb straight.
- .4 Fasten and anchor millwork securely.
 - .1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- .5 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation attachment screws and screws securing cabinets end to end.
- .6 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .7 Apply moisture barrier between wood framing members and masonry or cementitious construction.
- .8 Fit hardware accurately and securely in accordance with manufacturer's written instructions.
- .9 Make cutouts for inset equipment and fixtures using templates provided.

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 Clean millwork and cabinet work, inside cupboards and outside surfaces..
 - .2 Remove excess glue, pencil and ink marks from surfaces.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

3.4 PROTECTION

- .1 Protect millwork and cabinet work from damage until final inspection.
- .2 Protect installed products and components from damage during construction.
- .3 Repair damage to adjacent materials caused by architectural woodwork installation.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Related Sections
 - .1 Architectural Woodwork 06 40 00.
 - .2 Joint Sealants 07 92 00.

1.2 SUMMARY

- .1 Millwork Counter Tops.

1.3 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 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit duplicate samples of joints, edging and cutouts.
- .3 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .4 Closeout Submittals:
 - .1 Provide manufacturer's care and maintenance data, including repair and cleaning for solid surface work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
 - .1 A maintenance kit shall be submitted.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Storage and Protection:
 - .1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Maintain relative humidity between 25 and 60% at 22 degrees C during storage and installation.
 - .3 Handle materials to prevent damage to finished surfaces. Provide protective covering to prevent physical damage or staining following installation for duration of project.

1.5 WARRANTY

- .1 Provide manufacturer's warranty against defects in materials. Warranty shall provide material and labour to repair or replace defective materials.
- .2 Warranty period: Ten years from date of substantial completion.

Part 2 Products

2.1 MATERIALS

- .1 Acceptable Manufacturers:
 - .1 Corian by DuPont, Everform by Formica, Wilsonart Solid Surface or approved equal.
- .2 Solid Surface Material:

- .1 Non-porous, homogeneous material maintaining the same composition throughout with a composition of acrylic resin and natural materials; not coated, laminated or of composite construction; meeting following criteria:
 - .1 Flammability: meets requirements for Class 1 and Class A
- .3 Thickness: 19mm for counters.
- .4 Size: as indicated on drawings. All counters to be one continuous piece.
- .5 Colour: to be selected by Consultant from Manufacturer's full range of colours.
- .6 Edge treatment: square.
- .7 Sealant: section 07 92 00 Joint Sealants.
- .8 Adhesive for bonding to other products: One component silicone to ASTM C920.
- .9 Sealant: A standard mildew-resistant, FDA/UL recognized silicone colour coordinated sealant or clear silicone sealants.

2.2 FABRICATION

- .1 Fabricate components in shop for continuous one piece application, to sizes and shapes indicate, in accordance with approved shop drawings and solid surface manufacturer requirements. Provide factory cutouts for plumbing fittings and bath accessories as indicated on drawings.
- .2 Where indicated, thermoform corners and edges or other objects to shapes and sizes indicated on Drawings, prior to seaming and joining. Cut components larger than finished dimensions and sand edges to remove nicks and scratches. Heat entire component uniformly prior to forming.
- .3 Ensure no blistering, whitening and cracking of components during forming.
- .4 Provide holes and cutouts for plumbing accessories as indicated on Drawings.
- .5 Rout finish component edges to a smooth, uniform finish. Rout cutouts, then sand edges smooth. Repair or reject defective or inaccurate work.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions:
 - .1 Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.
 - .2 Verify actual site dimensions and location of adjacent materials prior to commencing work.
 - .3 Examine cabinets upon which counter tops are to be installed. Verify cabinets are level to within 3 mm in 3m.
 - .4 Notify Consultant in writing of any conditions which would be detrimental to installation.
- .2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

- .1 Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed Shop Drawings and Product installation details.
- .2 Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer's written recommendations using adhesive in colour to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.

- .3 Install countertops with no more than 3 mm sag, bow or other variation from a straight line.
- .4 Adhere topmount sinks/bowls to countertops using manufacturer recommended adhesives and colour-coordinated silicone sealant.
- .5 Seal between walls and components with joint sealant as specified herein and in Section 07 92 00, as applicable.
- .6 Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Performance of the Work.

3.3 REPAIR

- .1 Repair minor imperfections and cracked seams and replace areas of severely damaged surfaces in accordance with manufacturer's "Technical Bulletins".

3.4 SITE QUALITY CONTROL

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

3.5 CLEANING

- .1 Remove excess adhesive and sealant from visible surfaces.
- .2 Clean surfaces in accordance with manufacturer's " Care and Maintenance Instructions".

3.6 PROTECTION

- .1 Provide protective coverings to prevent physical damage or staining following installation for duration of Project.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 ASTM International (ASTM):
 - .1 ASTM A1008/A1008M- 13 Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable
 - .2 ASTM C719- 14, Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
 - .3 ASTM C920- 14, Standard Specification for Elastomeric Joint Sealants
 - .4 ASTM E84- 21, Standard Test Method for Surface Burning Characteristics of Building Materials
 - .5 ASTM E136- 19A, Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 degrees
 - .6 ASTM E814- 13a, Standard Test Method for Fire Tests of Penetration Firestop Systems
- .2 Firestop Contractors International Association (FCIA):
 - .1 FCIA Firestop Manual of Practice, 6th Edition 2015
- .3 Factory Mutual Approvals (FM):
 - .1 FM 4990- 2009, Approval Standard for Fire stopping
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).
- .5 National Research Council Canada (NRC):
 - .1 National Building Code of Canada (NBC) 2015
- .6 ULC Standards (ULC):
 - .1 CAN/ULC-S101- 14, Standard Method of Fire Endurance Tests of Building Construction and Materials
 - .2 CAN/ULC-S102- 10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
 - .3 CAN/ULC-S115- 11, Standard Method of Fire Tests of Firestop Systems

1.2 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 noncombustible 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.
- .5 Fire Blocking: materials, components or system installed in a concealed space in the building to restrict the spread of fire and smoke in that concealed space or from that concealed space to an adjacent space.

- .6 Fire Compartment: spaces within a building that are enclosed by exterior walls or separated from other parts of the building by enclosing Fire Separations having a Fire-Resistance Rating.
- .7 Fire-Resistance Rating: time in minutes or hours that a material or assembly of materials will withstand the passage of flame and transmission of heat when exposed to fire, meeting the requirements of CAN/ULC-S101 or as determined by formal testing of material or assembly of materials, meeting requirements of CAN/ULC-S115, or an interpretation of information derived from formal testing in accordance with requirements of the Building Code and acceptable to the Authority Having Jurisdiction (AHJ).
- .8 Fire Separation: assembly that acts as a barrier against the spread of fire, smoke and noxious gases resulting from combustion as defined by the Building Code and includes the following assemblies having a Fire-Resistance Rating requiring Fire Stopping as follows:
 - .1 Penetration-Type Fire Stop systems located within loadbearing walls and partitions.
 - .2 Penetration-Type Fire Stop systems located within non-loadbearing walls and partitions.
 - .3 Penetration-Type located within floor assemblies.
 - .4 Construction Joint-Type and other assemblies having a Fire-Resistance Rating indicated on Drawings or Schedules.
- .9 Fire Stop: material, component or system, and its means of support, used to protect gaps between fire separations, between fire separations and other construction assemblies, or used in openings where penetrating items wholly or partially penetrate fire separations, to restrict the spread of fire and smoke thus maintaining the fire-resistance continuity of a fire separation.
- .10 Fire Stop System: a specific site erected construction consisting of the assembly, fire stop materials, any penetrating items and their means of support which have met the requirements for an F, FT, FH, FTH and/or L rating when tested in a fire-resistance rated assembly in accordance with CAN/ULC-S115.
 - .1 F-Rating: the amount of time a fire stop system can remain in place without the passage of flame through the opening or the occurrence of flaming on the unexposed face of the fire stop.
 - .2 FT-Rating: a fire stop system with an F-Rating for the required time period which can also resist the transmission of heat through the fire stop during the same period and limit the rise in temperature on the unexposed face and/or penetrating item of the fire stop.
 - .3 FH-Rating: a fire stop system with an F-Rating for the required time period which can also resist the force of a hose stream without developing openings for a prescribed period.
 - .4 FTH-Rating: a fire stop system with an FT-Rating for the required time period which also passes the hose stream test for a prescribed period.
 - .5 L-Rating: largest test sample leakage rate, determined in accordance with the optional air leakage test in CAN/ULC-S115.
- .11 Multi-penetration: two or more service penetrations through an opening in the fire separation.
- .12 Non-rated Fire Separation: fire separation acting as a barrier to the spread of smoke until a response is initiated such as the activation of a fire suppression system.
- .13 Single-penetration: single service penetration through an opening in the fire separation.
- .14 System Design Listing: document providing proof of testing with technical details, specifications and requirements that leads to the application of a specific listed fire stop system.

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, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .1 Submit electronic copy of WHMIS SDS - Safety Data Sheets.
 - .2 Submit manufacturer's product data for each type of fire stopping and smoke seal. Submit complete product data for each individual component and include:
 - .1 Product name and product number
 - .2 Product characteristics and performance criteria
 - .3 Physical size, finish and limitations
 - .4 Technical data on out-gassing, off-gassing and age testing
 - .5 Curing time
 - .6 Chemical compatibility to other construction materials
 - .7 Shelf life
 - .8 Life expectancy
 - .9 Temperature range for installation
 - .10 Humidity range for installation
 - .11 Sound attenuation STC-Rating
 - .3 Manufacture Product Certification:
 - .1 Submit test reports showing compliance to ASTM E595.
 - .4 Submit a comprehensive list of all products and components included in submittal.
- .3 Shop Drawings:
 - .1 Submit shop drawings showing system design listings for Project including proposed materials, reinforcement, anchorage, fastenings and method of installation.
 - .2 Construction details to accurately reflect actual job conditions for each product and assembly.
 - .3 Submit details for materials and prefabricated devices.
 - .4 Submit electronic copy of shop drawings and include:
 - .1 Title page, labelled "Fire and Smoke Stop System Listings". Include project name, date and the names of the installation company and the manufacturer of proposed products. Electronic copy.
 - .2 Table of Contents in electronic copy.
 - .3 List of each proposed listed fire stop system and corresponding service penetration type or joint type in a matrix spreadsheet schedule, indicating floor and wall system, including rating for each.
 - .4 System Design Listings:
 - .1 Submit design listings for each listed fire stop system and each application identified in accordance with CAN/ULC-S115
 - .2 When more than one product is specified for the listed fire stop system or more than one packing/damming material is indicated, identify the item that will be used on this Project.
 - .5 Certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .4 Quality Assurance Submittals: Submit the following in accordance with Section 01 45 00 - Quality Control:
 - .1 Test reports in accordance with CAN/ULC-S101, CAN/ULC-S102, and CAN/ULC-S115.
 - .1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.
 - .2 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

- .3 Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.
- .4 Manufacturer's Site Reports: Submit manufacturer's reports within three days of review, verifying compliance of Work, as described in SITE QUALITY CONTROL in Part 3 of this Section.
- .5 Engineering Judgments(EJ):
 - .1 Where there is no specific tested listed fire stop system available from the manufacturer for a particular fire stop configuration, review systems from other manufacturers to obtain a listed fire stop system.
 - .2 Submit an EJ from the system manufacturer if there are no listed systems available from other manufacturers.
 - .3 Prepare and submit an EJ in accordance with best practices established in the following documents:
 - .1 IFC Guidelines for Evaluating Engineering Judgments.
 - .2 IFC Guidelines for Evaluating Engineering Judgments - Perimeter Fire Barrier Systems.
 - .4 For each EJ submitted, include:
 - .1 Project name, number and location.
 - .2 A description of the proposed system with detailed drawing.
 - .3 Installation instructions.
 - .4 Complete descriptions of critical elements for the fire stop configuration.
 - .5 Copies of all referenced system design listings which EJ is based on.
 - .6 EJ issuer name and contact information.
 - .7 Date of issue of EJ with authorization signature of issuer.
 - .5 EJ shall only be issued by fire stop manufacturer's qualified technical personnel or in collaboration with the manufacturer by a knowledgeable registered Professional Engineer, a Fire Protection Engineer or an independent testing agency that provides testing and listing services for fire stop systems similar to the EJ being contemplated.
 - .6 EJ shall be based upon interpolations of previously tested fire stop systems that are either sufficiently similar in nature or clearly bracket the conditions upon which the EJ is to be given. Additional knowledge and technical interpretations based upon accepted engineering principles, fire science and fire testing guidelines (e.g., ASTM E2032) may also be used as further support data.
 - .7 EJ shall be based upon knowledge of the elements of the construction to be protected and understanding of the probable behaviour of that construction and the recommended fire stop system protecting it were they to be subjected to the adequate standard fire test method for the required fire rating duration.
 - .8 EJ shall be limited to the specific conditions and configurations for which it was created and should be based upon reasonable performance expectations for the recommended fire stop system under those conditions.
 - .9 EJ shall be accepted only for a single specific job and location and should not be transferred to any other job or location without thorough and appropriate review of all aspects of the next job or location's circumstances.
 - .1 Manufacturer letter stating their opinion, with supporting justification, that the EJ will perform as a fire stop system when subjected to the appropriate standard fire test method for the required fire rating duration.
 - .10 Once the EJ has been reviewed, submit to the AHJ for final approval.
- .6 Closeout Submittals:
 - .1 Operation and Maintenance Data: Submit maintenance data for incorporation into manual, including:
 - .1 product data and manufacturer's installation and maintenance instructions for each product/system used on this project,
 - .2 Certifications:
 - .1 Accreditation of third-party inspection firm.

- .3 Warranty information on fire stop installations.
- .4 Life expectancy of each product installed as part of Project. For each system, list the installation date of products and the expected expiration date (month/year).

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: Use materials and methods of determining required thickness of application that have the full acceptance of AHJ and that are tested in accordance with CAN/ULC-S115, and form a part of a ULC or cUL listed system, Engineered Judgement or Equivalent Fire Resistance Rated Assembly.
- .2 Provide systems selection and analysis, installation and inspection of fire stop systems in accordance with the recommended practices detailed in the following guides:
 - .1 FCIA Firestop Manual of Practice (MOP).
- .3 Qualifications:
 - .1 Installer: company person specializing in selection and installation of fire stops with 5 years documented experience approved by manufacturer.
 - .2 Third-Party Inspection Firm: Accredited inspection agency with inspectors who have passed the ULC Firestop Exam or FM Firestop Exam.
- .4 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with contractor's representative.
 - .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.
- .5 Site Meetings: as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
 - .1 After delivery and storage of products, and when preparatory Work 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.
- .6 Code - required special inspection - Fire Stopping review and testing by 3rd party inspection agency in accordance with 01 45 00 Quality Control.
- .7 Mock-ups:
 - .1 Construct mock-up of fire stop systems in accordance with Section 01 45 00 - Quality Control
 - .2 Before beginning construction, provide mock-up of each proposed listed fire stop system for review by Consultant. Mock-up shall include work by other trades to demonstrate the required finish work, such as steel stud/gypsum board trade framing out multi-penetration openings.
 - .3 After mock-up completion and adequate curing time for materials, provide a minimum of 48 hours notification to Consultant to conduct review.
 - .4 Fire stopping installers and inspection firm shall be present during review of mock-ups.
 - .5 Correct mock-up deficiencies as directed by Consultant. Mock-up may remain as part of finished work.
 - .6 Inspection firm may perform destructive tests to each mock-up to ensure the system meets or exceeds the approved system design listing.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - .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 in a well-ventilated, dry indoor location and in accordance with manufacturer's instructions.
 - .2 Replace defective or damaged materials with new.

1.6 AMBIENT CONDITIONS

- .1 Ambient Conditions:
 - .1 Install fire stops and smoke seals when ambient and substrate temperatures are within the limits prescribed by the manufacturer and when the substrate is dry and without risk of condensation.
 - .2 Maintain manufacturer's recommended ambient and substrate temperatures for 48 hours before and 72 hours after installation.
- .2 Ventilate fire stops and smoke seals in accordance with manufacturers' instructions by natural means or, where this is inadequate or not available, use forced air circulation.

1.7 WARRANTY

- .1 Extend 12 month warranty period to 24 months for Work of this Section.
- .2 Manufacturers shall warrant work of this Section against defects and deficiencies in the product material for a period of 24 months. Promptly correct any defects or deficiencies which become apparent within warranty period at no expense.
- .3 Contractor warrants workmanship on materials and installation for a period of 24 months. Promptly correct any defects or deficiencies which become apparent within warranty period at no expense.

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 Use Fire Stop materials from a single manufacturer only for this project. Acceptable Manufacturers:
 - .1 STI Firestop (Specified Firestop Technologies Inc.)
 - .2 Hilti Canada Corporation.
 - .3 3M Canada Inc.
 - .4 Tremco Ltd.
- .3 Service penetration assemblies: systems tested to CAN-ULC-S115.
- .4 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.
- .5 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.
- .6 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
- .7 Pillow type fire stopping and smoke seals at openings intended for ease of re-entry such as cables and cable traps.
- .8 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
- .9 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .10 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .11 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

- .12 Sealants for vertical joints: non-sagging.
- .13 Fire caulking installed in areas with exposed or painted structure to be white paintable type.

2.2 PERFORMANCE/DESIGN CRITERIA

- .1 Fire stop and smoke seal systems consisting of a material or combination of materials installed to maintain the integrity of the fire-resistance rating of a fire separation in accordance with the requirements of the NBC.
- .2 Performance Requirements: Manufacturer shall design proprietary assemblies to withstand the listed ratings in accordance with the NBC, ULC Standards, and AHJ, and as follows:
 - .1 Non-rated fire separations: Provide L-Rated smoke protection fire stop system for application on both sides of separation.
 - .2 Provide through-penetration fire stop and joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of penetrated assembly, such as:
 - .1 Fire-resistance rated loadbearing walls, including partitions, with fire protection rated openings.
 - .2 Fire-resistance rated non-loadbearing walls, including partitions with fire protection rated openings.
 - .3 Fire-resistance rated floor assemblies.
 - .3 "F" Rated Systems: Provide through-penetration fire stop systems with F-ratings indicated, as determined by CAN/ULC-S115 or ASTM E814, and equal to or exceeding the fire-resistance rating of the penetrations created during construction.
 - .4 "T" Rated Systems: Where fire stop systems protect penetrating items from potential contact with adjacent materials, provide through-penetration fire stop systems with T-ratings and F-ratings indicated, as determined by CAN/ULC-S115 or ASTM E814, for the following conditions:
 - .1 Penetrations located outside wall cavities.
 - .2 Penetrations located outside fire resistive shaft enclosures.
 - .3 Penetrations located in a construction containing fire protection rated openings.
 - .4 Penetrating items larger than a 100-mm-diameter nominal pipe or 100 cm² in overall cross-sectional area.
 - .5 Fire stopping and Smoke Seal Systems Exposed to View: Provide products that after curing do not deteriorate when exposed to view, traffic, moisture, and physical damage both during and after construction, and as follows:
 - .1 Provide moisture resistant through-penetration fire stop systems for piping penetrations for plumbing and wet pipe sprinkler systems.
 - .2 Provide fire stopping and smoke seal systems capable of supporting anticipated floor loads either by installing floor plates or by other means for floor penetrations with annular spaces exceeding 100 mm in width and exposed to possible loading and traffic.
 - .3 Provide fire stopping and smoke seal systems not requiring removal of insulation for penetrations involving insulated piping.
 - .4 Provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 50 for fire stopping, smoke seal, and joint systems exposed to view.
 - .5 Architectural considerations: When fire stop system is exposed to view, consider architectural finish, potential traffic, and exposure to moisture and heat.

- .6 Fire Resistance of Joint Systems: Assembly ratings and movement capabilities shall be as indicated with assembly ratings equal to or exceeding the fire-resistance rating of constructions in which joints are located.
- .3 Acoustic insulation properties as indicated in wall schedule.
- .4 Dynamic Joints: Where required, design fire stop and smoke seal systems to accommodate a defined amount of movement in structural elements, construction joints and mechanical piping caused by expansion or contraction. Systems should also accommodate movement and sound and vibration control in mechanical installations.
- .5 Insulated Pipes and Ducts: Design and test listed fire stop system with the actual insulation materials penetrating the fire separation, as indicated on the system design listing.
- .6 Use in Wet Areas: water-based products are unacceptable in wet areas or areas that may be subject to occasional water exposure or flooding during and after construction.

2.3 MATERIALS

- .1 Compatibility: Under conditions of service and application, provide fire stopping and smoke seal systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating the systems, as demonstrated by fire stopping and smoke seal system manufacturer based on testing and site experience, and as follows:
 - .1 Asbestos-free materials and systems capable of maintaining an effective barrier against the passage of flame, smoke and water and the transmission of heat in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended, as indicated on System Design Listing.
 - .2 Fire Stop System Rating: To match fire-resistance rating of fire separation as indicated on Drawings.
 - .3 Service penetration assemblies and fire stop components: Certified by testing laboratory to CAN/ULC-S115.
 - .4 Provide elastomeric seal or non-shrink foam cement mortar for fire and smoke stop systems at openings intended for re-entry, such as cables. Do not use cementitious or rigid seal at such locations.
 - .5 Provide elastomeric protection for fire and smoke stop systems at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control. Do not use a cementitious or rigid seal at such locations. Exemption for fire dampers.
 - .6 Provide elastomeric seal for fire and smoke seals behind and around mechanical and electrical boxes within wall, floor, and ceiling assemblies.

2.4 FILL MATERIALS

- .1 General:
 - .1 Provide fire stopping and smoke seal systems containing the types of fill materials indicated in SCHEDULE in Part 3 of this Section by reference to the types of materials described in this Article. Fill materials are those referred to in directories of the referenced testing and inspecting agencies as fill, void, or cavity materials.
 - .2 Fire stopping and smoke seal systems shall be tested in accordance with CAN/ULC-S115 and be comprised of asbestos free materials and systems capable of maintaining an effective barrier against flame, smoke and gases. Fire stopping and smoke seal systems not to exceed opening sizes for which they are intended for the ratings as indicated on Drawings.
- .2 Latex Sealants: Single component latex formulations that after curing do not re-emulsify during exposure to moisture.

- .3 Fire Stopping and Smoke Seal Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrating item.
- .4 Cable Penetration Devices:
 - .1 Pre-manufactured intumescent blocks
 - .2 Pre-manufactured sleeves, consisting of an adjustable core
 - .3 Pre-manufactured cable management system, consisting of a system of intumescent inserts and adjustable cores
- .5 Intumescent Composite Sheets: Rigid panels consisting of aluminum foil faced elastomeric sheet bonded to galvanized steel sheet.
- .6 Intumescent Putties: Non-hardening dielectric, water resistant putties containing no solvents, inorganic fibres, or silicone compounds.
- .7 Intumescent Spray Foam: Expanding spray-in-place intumescent foam sealant.
- .8 Intumescent Wrap Strips: Single component intumescent elastomeric sheets with aluminum foil on one side.
- .9 Intumescent, Latex Sealant: Single-component, intumescent, latex formulation.
- .10 Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce a paintable compound, passing ASTM E136, with flame-spread and smoke-developed ratings of zero per ASTM E84.
- .11 Solvent-Release-Curing Intumescent Sealant: Solvent-release-curing, single-component, synthetic-polymer-based sealant of grade indicated below:
 - .1 Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces. Non-sag formulation for openings in vertical and other surfaces requiring a non-slumping/gunnable sealant, unless indicated fire stop system limits use non-sag grade.
- .12 Mortars: Pre-packaged, dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a non-shrinking, homogeneous mortar.
- .13 Pillows/Bags: Reusable, heat-expanding pillows/bags consisting of glass fibre cloth cases filled with a combination of mineral fibre, water insoluble expansion agents and fire-retardant additives.
- .14 Silicone Foams: Multi-component, silicone based liquid elastomers that, when mixed, expand and cure in-place to produce a flexible, non-shrinking foam.
- .15 Silicone Sealants: Moisture curing, single component, silicone based, neutral curing elastomeric sealants of grade indicated below:
 - .1 Grade for Horizontal Surfaces: Pourable (self-levelling) formulation for openings in floors and other horizontal surfaces.
 - .2 Grade for Vertical Surfaces: Non-sag formulation for openings in vertical and other surfaces.
- .16 Ceramic-Fibre and Mastic Coating: Ceramic fibres in bulk form formulated for use with mastic coating, and ceramic fibre manufacturer's mastic coating.
- .17 Ceramic-Fibre Sealant: Single-component formulation of ceramic fibres and inorganic binders.

2.5 MIXING

- .1 For those products requiring mixing before application, comply with fire stopping and smoke seal system manufacturer's instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

2.6 FIRE-RESISTIVE ELASTOMERIC JOINT SEALANTS

- .1 Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer that comply with ASTM C920 requirements,

- including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants.
- .2 Single-Component, Neutral-Curing Silicone Sealant: Type S; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, G, A, and (as applicable to joint substrates indicated) O.
 - .1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the changes in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.
 - .3 Multicomponent, Non-sag, Urethane Sealant: Type M; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, A, and (as applicable to joint substrates indicated) O.
 - .1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the change in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.
 - .4 Single-Component, Non-sag, Urethane Sealant: Type S; Grade NS; Class 25; and Uses NT, M, A, and (as applicable to joint substrates indicated) O.

2.7 ACCESSORIES

- .1 Provide components for each fire stopping and smoke seal system needed to install fill materials. Use only components specified by fire stopping and smoke seal system manufacturer and approved by the qualified testing and inspecting agency for fire stopping and smoke seal systems indicated on Drawings.
- .2 Primers: To manufacturer's recommendation for specific material, substrate, and end use.
- .3 Water (if applicable): Potable, clean and free from harmful amounts of deleterious substances.
- .4 Metal Fire Stop: Commercial galvanized steel, to ASTM A1008/A1008M, zinc coating 260 g/m², minimum metal core thickness 0.912 mm.
- .5 Steel Deck Moulded Flute Inserts: One-piece moulded mineral fibre flute inserts, sized for steel deck profiles, for placement at top of fire-rated wall assemblies
- .6 Packing/Damming Materials, Supports and Anchoring Devices: To manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to AHJ.
- .7 Fire Stop Insulation: Pre-formed, semi-rigid, non-combustible mineral wool, pre-cut in 1220-mm lengths to required depth and width.
- .8 Junction Box/Outlet Sealing Putty: Intumescent putty, pre-formed in pads.
- .9 Sealants: Good adhesion without use of primer, high visibility safety colours.
 - .1 Flame-spread rating: Maximum 25
 - .2 Smoke development classification: Maximum 50
 - .3 For vertical joints: Non-sagging
 - .4 For horizontal joints: Single component, self-levelling

Part 3 Execution

3.1 EXAMINATION

- .1 Verify that conditions of substrates previously installed are acceptable for product installation in accordance with manufacturer's instructions and approved system design listings for each condition.
- .2 Verify each opening/annular space to ensure it does not exceed the maximum and minimum dimensions indicated on the approved system design listing.

- .3 Verify that all joints, service penetrating elements and supporting devices/hangers have been properly installed as indicated on approved system design listings. Remove all temporary lines and markings to meet the approved system design listings.
- .4 Verify that proposed fire stop system consists of components that are compatible with each other, with substrates forming the openings, and with items, if any, penetrating the fire stop under conditions of application and service, as demonstrated by the fire stop manufacturer based on testing and site experience.
- .5 Pipe and Duct Insulation: Confirm that proposed fire stop system has been tested with the actual insulation penetrating the fire separation on site, as indicated in the approved system design listing. Maintain insulation around pipes and ducts penetrating the fire separation.
- .6 Ensure no additional items have been installed through opening that does not appear on the approved system design listing.
- .7 Ensure fire stopped areas are accessible for proper application and that conditions are suitable for installation of the fire stop system. Areas to remain accessible for inspection.
- .8 Report in writing to Consultant any defective surfaces or conditions affecting the fire stop system installation immediately and before commencing any installations.
- .9 Proceed only once defected surfaces or conditions have been corrected.
- .10 Proceed with installation only after unacceptable conditions have been remedied.

3.2 MANUFACTURER'S INSTRUCTIONS

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

3.3 PREPARATION

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.
 - .1 Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stop and smoke stop materials 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.
- .5 Prime surfaces as required.
- .6 Ensure multi-penetration openings have been framed and boarded out around annular openings, as indicated in the system design listing before prepping the opening.

3.4 INSTALLATION

- .1 Install fire stop and smoke seal materials and components in accordance with manufacturer's certified tested system listing and ULC certification.
- .2 Seal holes or voids made by through-penetrations, poke-through termination devices, and un-penetrated openings or joints to ensure that both 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 per manufacturer's instructions.
- .4 Tool or trowel exposed surfaces to neat finish.
- .5 Remove excess compound promptly as work progresses and upon completion.
- .6 Protect gaps around recessed components (e.g., panels, electrical boxes, outlets) with sealing putty in accordance with manufacturer's instructions.
- .7 Do not use damaged or expired material.

3.5 INSTALLATION - JOINT FIRE STOPS

- .1 For sealant applications, install joint fillers to support fire stop materials during application. Position joint fillers to ensure fire stop material cross-sectional shape and thickness relative to the joint width allows for optimum sealant movement, while developing the required fire-resistance rating.
- .2 Install fire stops using techniques recommended by the manufacturer:
 - .1 Fully wetting joint substrates to optimize adhesion.
 - .2 Completely filling recesses provided for each joint configuration.
 - .3 Tool non-sag fire stop materials immediately after their application and before the time skinning begins. Form smooth, uniform beads of configuration indicated or required to
 - .1 provide required fire-resistance rating,
 - .2 eliminate air pockets, and
 - .3 ensure contact and adhesion with sides of joint.
 - .4 Joint Systems and Perimeter Fire Containment Systems:
 - .1 For systems with dynamic joints, ensure movement capabilities of the installation meet or exceed the movement expectations of the system design listing and manufacturer's installation instructions.

3.6 INSTALLATION - THROUGH PENETRATION JOINT SEALANTS

- .1 Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position required to achieve fire ratings of designated through-penetration fire stop systems.
- .2 Install fill materials for through-penetration fire stop systems by techniques recommended by the manufacturer to produce the following results:
 - .1 Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
 - .2 Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - .3 For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
- .3 Remove combustible forming materials and other accessories not indicated as permanent components of fire stop systems.

3.7 REPAIRS AND MODIFICATIONS

- .1 Identify damaged or re-entered seals requiring repair or modification.
- .2 Remove loose or damaged materials. If adding penetrating items, remove sufficient material to insert new elements and to avoid damaging the balance of the seal.
- .3 Ensure sealed surfaces are clean and dry.
- .4 Use only materials that are suitable for repair of original seal, as approved by manufacturer. Do not mix products from different manufacturers.

3.8 SEQUENCES OF OPERATION

- .1 Proceed with installation only when submittals have been reviewed by Consultant.
- .2 Install floor fire stopping before interior partition erections.
- .3 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.
- .4 Mechanical pipe insulation: certified fire stop system component.
 - .1 Ensure pipe insulation installation precedes fire stopping.

3.9 SITE QUALITY CONTROL

- .1 Inspections: Notify Consultant when ready for inspection and before concealing or enclosing fire stop materials and service penetration assemblies.
- .2 Manufacturer's Field Services:
 - .1 Obtain report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Site Reports as described in SUBMITTALS in Part 1 of this Section.
 - .2 Provide manufacturer's site 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, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.10 CLEANING

- .1 Perform cleaning on a daily basis while work is ongoing.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Remove temporary dams after initial set of fire stop and smoke seal materials.

3.11 SCHEDULE

- .1 Fire stop and smoke seal at:
 - .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - .2 Edge of floor slabs at curtain wall and precast concrete panels.
 - .3 Top of fire-resistance rated masonry and gypsum board partitions.
 - .4 Intersection of fire-resistance rated masonry and gypsum board partitions.
 - .5 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
 - .6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
 - .7 Openings and sleeves installed for future use through fire separations.
 - .8 Around mechanical and electrical assemblies penetrating fire separations.
 - .9 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.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 ASTM International (ASTM):
 - .1 ASTM C920-18, Standard Specification for Elastomeric Joint Sealants
- .2 Canadian General Standards Board (CGSB) 1330:
 - .1 CGSB 19-GP-17M-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 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Manufacturer's product to describe:
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original factory packaging, with manufacturer's seals and labels intact. Protect from freezing, moisture, water and contact with ground or floor.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 Waste Management And Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

1.5 PROJECT 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 4.4 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: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.
- .4 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 Labour Canada.

Part 2 Products

2.1 SEALANT MATERIALS

- .1 Materials: Approved Manufacturers - Tremco, Sika, or Dow Corning.
- .2 In air handling units and supply air system, use sealants without strong odours, without toxic chemicals, and are mould-resistant.
- .3 When low toxicity sealants 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.
- .4 Provide primers in accordance with manufacturer recommendation.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Type 1: low modulus, one component, moisture curing, modified polyurethane joint sealer to: ULC CAN4 S115 CAN/CGSB-19.13-M87, ASTM C 920-02, Type S, Grade NS Class 25.
- .2 Type 2: One part, moisture cure, general purpose construction grade acetoxysilicone sealant to ASTM C920-02, Type S, Grade NS, CAN/CGSB-19.13-M87.
- .3 Type 3: Tremco, Trimsill one part, siliconized acrylic latex, fast setting, pliable seal with minimum shrinkage sealant to ASTM C.834, CAN/CGSB 19.GP-17M.
- .4 Type 4: Single component, non-skinning, non-hardening synthetic rubber acoustical sealant to CAN/CGSB 19.21.
- .5 Preformed Compressible and Non-Compressible back-up materials.
 - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
 - .1 Extruded closed cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .2 Bond breaker tape.
 - .1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

- .1 Perimeters of exterior opening where frames meet exterior facade of building (i.e. brick, block, precast masonry): Sealant Type: 1.
- .2 Control and expansion joints in exterior surfaces of unit masonry walls: Sealant type: 1.
- .3 Seal interior perimeters of windows: Sealant type: 2.
- .4 Perimeter of exterior side of windows where frames meet exterior masonry or metal siding type 1.
- .5 Interior control and expansion joints in floor surfaces: Sealant type: 3.
- .6 Perimeters of interior frames, as detailed and itemized: Sealant type: 3.
- .7 Joints at perimeter of non-load bearing Gypsum board Sealant type: 4.
- .8 Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, waterclosets, basins, vanities): Sealant type: 2.
- .9 Exposed interior control joints in drywall: Sealant type: 3.

2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

Part 3 Execution

3.1 PROTECTION

- .1 Protect installed Work of other trades from staining or 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 contaminants including dust, rust, oil grease, and other matter which may impair adhesion.
- .3 Do not apply sealants to joint substrates 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 Mask adjacent surfaces prior to priming and sealing where necessary to prevent staining.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to applying sealant.

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 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 Sealant Curing:
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until after curing has completed.

3.6 CLEANING

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C475-02(2015), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .2 ASTM C514-04(2014), Standard Specification for Nails for the Application of Gypsum Board.
 - .3 ASTM C840-16, Standard Specification for Application and Finishing of Gypsum Board.
 - .4 ASTM C1002-14, 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.
 - .5 ASTM C1047-14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .6 ASTM C1280-13a, Standard Specification for Application of Gypsum Sheathing.
 - .7 ASTM C1396/C1396M-14a, Standard Specification for Gypsum board.
- .2 Association of the Wall and Ceilings Industries International (AWCI)
 - .1 AWCI Levels of Gypsum Board Finish-GA-214-2015.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

1.2 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 and applicable standard designation.
- .3 Exercise care in unloading gypsum board materials shipment to prevent damage.
- .4 Storage and Handling Requirements in accordance with ASTM C 840-16:
 - .1 Store gypsum board assemblies materials level flat 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 gypsum board from direct exposure to rain, snow, sunlight, or other excessive weather conditions.
 - .4 Protect ready mix joint compounds from freezing, exposure to extreme heat and direct sunlight.
 - .5 Protect from weather, elements and damage from construction operations.
 - .6 Handle gypsum boards to prevent damage to edges, ends or surfaces.
 - .7 Replace defective or damaged materials with new.
- .5 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Section 01 74 19 - Waste Management and Disposal.

1.3 AMBIENT CONDITIONS

- .1 Maintain temperature 10 °C minimum, 21 °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, clean, 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 Water Resistant Abuse resistant board: to ASTM C1396/C1396M-14, Type X, 16 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges bevelled.
- .2 Metal furring runners, hangers, tie wires, inserts, and anchors.
- .3 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .4 Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
- .5 Nails: to ASTM C514-14
- .6 Steel drill screws: to ASTM C1002-14
- .7 Stud adhesive: to CAN/CGSB-71.25.
- .8 Laminating compound: as recommended by manufacturer, asbestos-free.
- .9 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, metal, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .10 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
- .11 Joint compound: to ASTM C475, asbestos-free

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 Proceed with installation only after unacceptable conditions have been remedied.

3.2 ERECTION

- .1 Do application and finishing of gypsum board to ASTM C840-16 except where specified otherwise
- .2 Do application of gypsum sheathing to ASTM C1280-13a
- .3 Install work level to tolerance of 1:1200.
- .4 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, and grilles.
- .5 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .6 Install wall furring for gypsum board wall finishes to ASTM C840-16, except where specified otherwise
- .7 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .8 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 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 C840-16
- .2 Apply gypsum board on walls vertically or horizontally, providing sheet lengths that will minimize number of board edges or end joints.
- .3 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, in partitions where perimeter sealed with acoustic sealant.
- .4 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.
- .5 Install gypsum board with face side out.
- .6 Do not install damaged or damp boards.
- .7 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 at 150 mm (6") 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 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.
- .6 Provide continuous polyethylene dust barrier behind and across control joints.
- .7 Locate control joints where indicated and at approximate 10 m spacing on long corridor runs, at approximate 15 m spacing on ceilings.
- .8 Install control joints straight and true.
- .9 Ensure that screws or nails are properly applied in process of attaching gypsum board to framing without damaging of gypsum board edges and ends.
- .10 Splice corners and intersections together and secure to each member with 3 screws.
- .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 to following levels in accordance with AWCI Levels of Gypsum Board Finish:
 - .1 Levels of finish:
 - .1 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.
- .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, 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 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.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

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.

3.7 SCHEDULES

- .1 Construct fire rated assemblies where indicated on drawings.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section includes:
 - .1 Materials and application of acoustical units for direct application or for application and installation within a suspended ceiling.
 - .2 Acoustical Suspension system.

1.2 REFERENCE STANDARDS

- .1 ASTM International (ASTM)
 - .1 ASTM C423-09, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - .2 ASTM C635/C635M-13a, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - .3 ASTM C636/C636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - .4 ASTM E1264-14, Standard Classification for Acoustical Ceiling Products.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-2003, Surface Burning Characteristics of Building Materials and Assemblies.

1.3 COORDINATION

- .1 Do not begin erection of ceiling suspension system until work above ceiling has been inspected by Consultant.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Samples:
 - .1 Submit duplicate 100 mm x 100 mm samples of each type of acoustical unit.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Storage and Handling Requirements:
 - .1 Protect on site stored or installed absorptive material from moisture damage.
- .3 Waste Management and Disposal:
 - .1 Separate waste materials for reuse, recycling or disposal in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .2 Divert unused metal materials from landfill to metal recycling facility.
 - .3 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .4 Fold up metal and plastic banding, flatten and place in designated area for recycling.

1.6 EXTRA MATERIALS

- .1 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type required for project.
- .2 Ensure extra materials are from same production run as installed materials.
- .3 Clearly identify each type of acoustic unit, including colour and texture.
- .4 Deliver to Owner, upon completion of the work of this section.

Part 2 Products

2.1 DESIGN CRITERIA

- .1 Design Requirements:
 - .1 Maximum deflection: 1/360th of span to ASTM C635/ASTM C635M deflection test.

2.2 ACOUSTICAL CEILING SUSPENSION

- .1 Suspension system to ASTM C 635.
- .2 Basic materials for suspension system: commercial quality cold rolled steel mill finished.
- .3 Suspension system: Heavy duty two directional exposed tee bar grid system:
 - .1 Two directional exposed tee bar 610 mm x 1220mm grid.
 - .2 Acceptable product: Donn DX/DXL by CGC or approved equal.
- .4 Exposed tee bar grid components: shop painted satin sheen white. Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
- .5 Hanger wire: galvanized soft annealed steel wire:
 - .1 3.6 mm diameter for access tile ceilings.
- .6 Accessories: splices, clips, wire ties, retainers and wall moulding flush and preformed corner cover, to complement suspension system components, as recommended by system manufacturer.

2.3 ACOUSTICAL CEILING PANELS

- .1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1-M89 ASTM E 1264-98.
 - .1 610mm x 1220mm x 16mm (24" x 48" x 5/8"), square edge, white.
 - .1 Acceptable product:
 - .1 Radar ClimaPlus by CGC or approved equal.

Part 3 Execution

3.1 SUSPENSION SYSTEM INSTALLATION

- .1 Comply with manufacturer's written installation instructions and recommendations, including product technical bulletins, product carton installation instructions, and data sheets.
- .2 Install suspension system in accordance with accepted shop drawings, Certification Organizations tested design requirements and ASTM C636/C636M except where specified otherwise.
- .3 Do not erect ceiling suspension system until work above ceiling has been inspected by Consultant.
- .4 Lay out centre line of ceiling both ways, to provide balanced borders at room perimeter with border units not less than 50% of standard unit width, also refer to reflected ceiling plan.
- .5 Finished ceiling system to be square with adjoining walls and level within 1:1000.

- .6 Secure hangers system to existing structural steel.
- .7 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
- .8 Ensure suspension system is coordinated 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 Interlock cross member to main runner to provide rigid assembly.
- .13 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- .14 Install perimeter trim.
- .15 Install preformed corner cover to all bullnosed block corners.

3.2 ACOUSTICAL CEILING PANEL INSTALLATION

- .1 Install acoustical panels and tiles in ceiling suspension system in accordance with manufacturer's instructions and as indicated.
- .2 Install acoustical units as indicated on reflected ceiling plan.
- .3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.
- .4 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.3 CLEANING

- .1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 ASTM International (ASTM):
 - .1 ASTM F1066- 04, Standard Specification for Vinyl Composition Floor Tile
- .2 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-25.20-95, Surface Sealer for Floors

1.2 SITE CONDITIONS

- .1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and for 48 hours after installation.

Part 2 Products

2.1 MATERIALS

- .1 Luxury Vinyl Tile (LVT):
 - .1 Acceptable product: Interface Studio Set LVT.
 - .2 Size: 0.25 m x 1.0 m.
 - .3 Colours: to be selected from standard colour range.
- .2 Luxury Vinyl Tile (LVT):
 - .1 Acceptable product: Polyflor Expona SimpLay PUR 19dB.
 - .2 Size: 178mm x 1220mm.
 - .3 Colour: as selected from manufacturer's standard colour range.
 - .4 Thickness: 5.0mm
- .3 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
- .4 Sub-floor filler and leveler: as recommended by flooring manufacturer for use with their product.
- .5 Metal edge strips: aluminum extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
- .6 Sealer: to CAN/CGSB-25.20-95, type recommended by flooring manufacturer.
- .7 Resilient Base:
 - .1 Rubber, coved, minimum 1200 mm length and 100 mm high, colour black.
 - .2 Preformed outside corner pieces to coordinate with coved rubber base, colour black.

Part 3 Execution

3.1 PREPARATION

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .2 Remove all existing floor paint by grinding and/or acid etch.
- .3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .4 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.

3.2 INSTALLATION - LVT RESILIENT TILE

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside.

- .2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
- .4 As installation progresses, and after installation, roll flooring in 2 directions with 45 kg minimum roller to ensure full adhesion.
- .5 Install flooring to pattern indicated.
- .6 Cut resilient tile and fit neatly around fixed objects.
- .7 Install feature strips and floor markings where indicated. Fit joints tightly.
- .8 Install flooring in pan type floor access covers. Maintain floor pattern.
- .9 Install resilient tile flooring through areas to receive movable type partitions without interrupting floor pattern.
- .10 Terminate flooring at centreline of door, in openings where adjacent floor finish material or colour are dissimilar.
- .11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.3 INSTALLATION - WALL BASE

- .1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or premoulded corners.
- .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, cut, and fit wall base to door frames and other obstructions. Install pre-moulded end pieces at flush door frames.

3.4 PROTECTION

- .1 Prohibit traffic on resilient tile flooring for a minimum 48 hours after installation.
- .2 Protect new floors until final inspection.

3.5 SCHEDULE

- .1 Refer to drawings for locations of vinyl composite tile.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCE STANDARDS

- .1 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.
 - .2 Maintenance Repainting Manual - current edition.

1.3 QUALITY ASSURANCE

- .1 Qualifications: Contractor: minimum of five years proven satisfactory experience. When requested, provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.
- .2 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .3 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.
- .4 Standard of Acceptance:
 - .1 Walls: No defects visible from a distance of 1000 mm at 90° to surface.
 - .2 Ceilings: No defects visible from floor at 45° to surface when viewed using final lighting source.
 - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit 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.

1.5 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 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 Store materials and supplies away from heat generating devices.
 - .2 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.

1.6 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
- .1 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.
 - .2 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
- .1 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 Surface and Environmental Conditions:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations.
 - .2 Apply paint when previous coat of paint is dry or adequately cured.

Part 2 Products

2.1 MATERIALS

- .1 Supply paint materials for paint systems from single manufacturer.
- .1 Only Sherwin Williams paint to be used on this project.
 - .1 Paint: Sherwin Williams Emerald Urethane.
 - .2 Primer: Sherwin Williams Extreme bond primer.
 - .2 Conform to latest MPI requirements for painting work including preparation and priming
 - .3 Provide paint products meeting MPI "Environmentally Friendly" E1, E2 E3 ratings based on VOC (EPA Method 24) content levels.
 - .4 Colours:
 - .1 Consultant will provide Colour Schedule after Contract award.
 - .2 Colour schedule will be based upon on selection of one new base colour and two new accent colours. All other painting and patch painting shall match existing.
 - .5 Mixing and tinting:
 - .1 Perform colour tinting operations prior to delivery of paint to site.
 - .2 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.
 - .6 Gloss/sheen ratings:
 - .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:
 - .1

Gloss Level-Category	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish	Max. 5	Max. 10
Gloss Level 2 - Velvet	Max.10	10 to 35
Gloss Level 3 - Eggshell	10 to 25	10 to 35
Gloss Level 4 - Satin	20 to 35	min. 35
Gloss Level 5 - Semi-Gloss	35 to 70	
Gloss Level 6 - Gloss	70 to 85	
Gloss Level 7 - High Gloss	More than 85	

- .2 Gloss level ratings of painted surfaces as specified herein.
 - .1 Walls: GL5

.2 Doors & Frames: GL5

Part 3 Execution

3.1 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.

3.2 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Inform Consultant if any oil based paint is encountered in any area to receive new paint before proceeding with work. Proceed only after written direction is received outlining preparation methods and paint materials to be used.

3.3 PREPARATION

- .1 Protection of in-place conditions:
 - .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 Consultant.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
- .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 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Consultant.
 - .3 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual specific requirements and coating manufacturer's recommendations. Refer to MPI Manual in regard to specific requirements and as follows:
 - .1 Sand existing painted surfaces, remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
 - .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.
 - .8 Fill all holes, and cracks as part of preparation work prior to painting followed by required painting systems.

- .4 Lightly sand all existing block and concrete surface prime and two coats or paint.
- .5 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.
- .6 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
- .7 Touch up of shop primers with primer as specified.

3.4 APPLICATION

- .1 Painting of rooms to include but not limited to walls, radiation covers, doors, frames, window and door trim, base boards, unfinished shelving and other materials which are secured to walls.
- .2 Use method of application approved by Consultant. Apply paint by brush or roller. Conform to manufacturer's application instructions unless specified otherwise..
- .3 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 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.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .4 Apply coats of paint in continuous film of uniform thickness.
 - .1 Repaint thin spots or bare areas before next coat of paint is applied.
- .5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .6 Sand and dust between coats to remove visible defects.
- .7 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.
- .8 Finish closets and alcoves as specified for adjoining rooms.
- .9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .10 Prime all surfaces and apply 2 finish coats.

3.5 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.

3.6 FIELD QUALITY CONTROL

- .1 Field inspection of painting operations to be carried out by independent inspection firm as designated by Consultant.
- .2 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Cooperate with inspection firm and provide access to areas of work.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 ASTM International (ASTM)
 - .1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM B456-03, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
 - .3 ASTM A653/A653M-09, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
- .3 CSA Group (CSA)
 - .1 CAN/CSA-B651-04, Accessible Design for the Built Environment.
 - .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CGSB 12.5-M86. Mirrors Silvered

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars.

1.3 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- .1 Tools:
 - .1 Provide special tools required for assembly, disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 78 00 - Closeout Submittals.
 - .2 Deliver special tools to Consultant.

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 toilet and bathroom accessories from nicks, scratches, and blemishes
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Sheet steel: to ASTM A653/A653M with ZF001 designation zinc coating.
- .2 Stainless steel sheet metal: to ASTM A167, Type 304.
- .3 Stainless steel tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.
- .4 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

2.2 COMPONENTS

- .1 Paper towel dispenser (PTD): Supplied by Owner, installed by this Contract.
- .2 Soap dispenser (SDP): Supplied by Owner, installed by this Contract.
- .3 Mirror (MR): wall mounted unit concealed hanger, fixed framed mirror 6 mm, stainless steel frame. Size: 1220 mm high and 600 mm wide. Mirror type 3B laminated CAN/CGSB 12.5-M86.

2.3 FABRICATION

- .1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.
- .2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.
- .3 Brake form sheet metal work with 1.5 mm radius bends.
- .4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- .5 Back paint components where contact is made with building finishes to prevent electrolysis.
- .6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CAN/CSA-G164
- .7 Shop assemble components and package complete with anchors and fittings.
- .8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .9 Provide steel anchor plates and components for installation on studding and building framing.

2.4 FINISHES

- .1 Chrome and nickel plating: to ASTM B456, satin finish.
- .2 Manufacturer's or brand names on face of units not acceptable.

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrates and surfaces to receive toilet and bathroom accessories previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to toilet and bathroom accessories installation.
- .2 Inform Consultant of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

- .1 Install and secure accessories rigidly in place as follows:

- .1 Stud walls: install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.
- .2 Hollow masonry units, existing plaster or drywall: use toggle bolts drilled into cell or wall cavity.
- .3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.
- .4 Toilet and shower compartments: use male to female through bolts.
- .2 Use tamper proof screws/bolts for fasteners.
- .3 Fill units with necessary supplies shortly before final acceptance of building.
- .4 Install mirrors in accordance with manufacturers instructions.

3.3 ADJUSTING

- .1 Adjust toilet and bathroom accessories components and systems for correct function and operation in accordance with manufacturer's written instructions.
- .2 Lubricate moving parts to operate smoothly and fit accurately.

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: separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

3.6 SCHEDULE

- .1 Locate accessories where indicated on drawings. Exact locations determined by Consultant.
- .2 Install Owner supplied components where indicated on drawings. Exact locations determined by Consultant.

END OF SECTION

