Division 01 - General Requirements **Pages**

Division 02 - Existing Conditions

Division 06 - Wood, Plastics, and Composites

Division 07 - Thermal and Moisture Protection

Division 08 - Openings

Division 09 - Finishes

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 74 00 – Cleaning and Waste Management.

.2 Section 01 77 00 – Closeout Procedures.

.3 Section 01 78 00 – Closeout Submittals.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 The project consists of architectural restoration of the north RBC Convention Centre Skywalk, 375 York Avenue.

.2 Major components of the Work include:

- .1 Structural repairs to the existing sidewalk outside the main floor vestibule.
- .2 Removal of the existing temporary wood hoarding/structure at the Level 01 vestibule and around the existing soffit.
- .3 Installation of new vapour barrier tie-ins and insulation behind soffit under skywalk connection at the Convention Centre.
- .4 Removal of portion of existing insulated soffit below skywalk.
- .5 Installation of new insulated soffit below portion of existing skywalk.
- .6 Installation of new linear metal ceiling, soffit and fascia at existing Level 01 vestibule.
- .7 Installation of new sprinkler heads and lighting at existing Level 01 vestibule.
- .8 Removal of existing doors and frames as well as partial removal of existing wall and floor construction at existing Level 02 link between the skywalk and the Convention Centre.
- .9 Saw-cutting portion of existing concrete floor slab and installation of firestopping at existing Level 02 link between the skywalk and the Convention Centre.
- .10 Installation of new expansion joint cover at existing Level 02 link between the skywalk and the Convention Centre.
- .11 Installation of new steel framing for new door systems at the East and West ends of the existing skywalk.
- .12 Installation of new fire rated wall and enclosures at existing Level 02 link between the skywalk and the Convention Centre.
- .13 Installation of new doors, frames and hardware (two sets) at the East and West ends of the existing skywalk.
- .14 Installation of additional door hardware to the existing doors to the North skywalk junction.
- .15 Installation of new electrical and fire alarm connections to accommodate the new door and hardware installations.

1.3 CODES AND STANDARDS

.1 Work to meet or exceed requirements of applicable standards, codes and referenced documents. In event of conflict between any provisions of authorities, most stringent provision applies.

.2 Safety of Work: perform work in accordance with 2010 National Building Code of Canada and other applicable regulations and requirements of other authorities having jurisdiction.

.3 Fire Safety: comply with Fire Commissioner of Canada Standards, FC 301 Standard for Construction Operations, issued by Human Resources and Skills Development Canada. This standard may be obtained from *www.hrsdc.gc.ca/eng/labour/fire_protection*.

1.4 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy 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.

1.5 PLANNING OF WORK

.1 Upon award of contract, immediately commence off-site work (preparation of shop drawings, ordering of materials, preparation of requested documents, etc.). On-site work is expected to commence on the date noted in D13 Commencement of the Bid Opportunity, and the Contractor must achieve Substantial Performance and Total Performance on the dates noted in D14 Substantial Performance and D15 Total Performance of the Bid Opportunity. Cooperate with The City in scheduling the work.

.2 Adjacent areas will be occupied during the term of this contract. Schedule work so normal functions within adjacent buildings are not unduly interrupted. In general, work to be performed during normal working hours (7:30 am to 4:30 pm), and can continue (including evenings and weekends) if coordinated with Contract Administrator. Also coordinate with Contract Administrator, dates which may require noise restrictions.

.3 Schedule work with utmost safety and minimal inconvenience, and allow adjacent buildings to operate without shutdown of any essential services. All shut-down requests must be submitted to The City a minimum of 24 hours prior to being required. Suitable periods for shutting off existing systems must be acceptable to The City.

.4 Where work (ie. delivery of construction materials and/or equipment, etc.) will impact or temporarily disrupt adjacent building's normal activities, co-ordinate with The City to minimize disruption and ensure staff and public safety.

.5 Plan work to ensure that emergency access and egress are maintained, and all life safety and applicable codes and regulations are in force for construction areas and adjacent occupied floor areas.

.6 Provide temporary dust tight barriers to localize dust/odor generating activities, and for the protection of existing finished areas of work. Contractor to be responsible for any and all construction contamination to adjacent occupied areas.

.7 Protect existing walls, ceilings and flooring in each area associated with the work, and in areas providing access to these areas of work from damage caused by construction activities. All bins/carts for conveying new and demolished materials in building to have non-marking inflated rubber-tired wheels.

.8 Vacuum clean dust and debris from existing floor, wall and ceiling surfaces in construction area when construction is complete.

1.6 ACCESS TO WORK

.1 Allow Contract Administrator and The City access to the Work, or other places where the work is being fabricated in connection with contract, at all times for purposes of inspection and examination of workmanship and materials.

.2 Maintain safety helmets on job site, ready for use, to be used in compliance with Workplace Safety and Health Regulations.

1.7 NO SMOKING POLICY

.1 Fully cooperate, respect and comply with Smoke-Free Workplace policy requirements established by The City throughout its facilities. Smoking is not permitted in workplace or on property.

.2 Smoke-free workplace policy applies to everyone who works or delivers materials to workplace, and to visitors.

Part 2 Products

N/A

Part 3 Execution

N/A

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 78 00 – Closeout Submittals.

1.2 ADMINISTRATIVE

.1 Submit to Contract Administrator, submittals listed for review. Submit promptly and in orderly sequence so as not to cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittals until review is complete.

.3 Review submittals prior to submission to Contract Administrator. 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.

.4 Notify Contract Administrator in writing at time of submission, deviations from requirements of Contract Documents stating reasons for deviations.

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

.6 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.

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

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 Term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data provided by Contractor to illustrate details of portion of Work.

.2 Submit 1 electronic copy (pdf) of all shop drawings and product data sheets or brochures for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.

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

.4 Allow 5 working days for Contract Administrator's review of each submission.

.5 Adjustments made on shop drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of work, state such in writing to Contract Administrator prior to proceeding with work.

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

.7 Accompany submissions with transmittal letter, containing:
- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions to include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of Subcontractor, Supplier, Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with contract documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances, relation to adjacent structure or materials.
  - .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.

.9 After Contract Administrator's review, distribute copies to Subcontractors as required.

.10 Supplement standard information to provide details applicable to project.

.11 If upon review by Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, copy will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.12 The review of shop drawings by Contract Administrator is for sole purpose of ascertaining conformance with general concept. This review shall not mean that Contract Administrator approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copy of digital photography in jpg format, monthly with progress statement and as directed by Contract Administrator.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Record of Existing Conditions.
- .1 Number of viewpoints: sufficient views and proximity to clearly indicate condition of existing building subject to damage from work under this Contract.
- .2 Frequency: before construction proceeds.

.4 Construction Progress Record.
- .1 Number of viewpoints: sufficient views and proximity to clearly indicate stages of completion of all work and services before concealment.
- .2 Frequency: monthly with progress statement.

.5 As-Built Record.
- .1 Number of viewpoints: all interior elevations.
- .2 Frequency: with final payment invoice.

Part 2 Products

N/A

Part 3 Execution

N/A

END OF SECTION

Part 1 General

1.1 POLLUTION CONTROL

.1 Prevent dust and noxious or hazardous gases from contaminating air beyond construction area, by providing temporary enclosures and/or other control methods. If necessary, arrange with The City for shutdown of air handling units which have air intakes in the vicinity of the work.

.2 Take precautions to prevent dust from triggering fire alarm smoke detectors and plugging ducts and filters. If necessary, arrange with The City for shutdown of these systems or equipment prior to construction. Contractor to be responsible for all damages.

.3 Prior to start of work, identify locations of air intakes and air-cooled mechanical and electrical equipment adjacent to the area of work and protect them from entry of dust and air borne particles from construction activity.

.4 Store flammable liquids in ULC approved containers. Remove flammable or combustible wastes from premises daily.

1.2 WASTE MANAGEMENT

.1 Provide on-site covered commercial waste containers for collection of non-hazardous waste materials and debris.

.2 Keep containers covered to minimize spread of dust or other contaminants. Deposit waste in containers as work progresses. Remove waste at regular intervals during construction and at the end of each working day. Do not allow waste to build up outside of approved waste containers at any time.

.3 Place materials defined as hazardous, volatile, or toxic waste in special metal containers designated for hazardous waste and dispose of at end of each working day.

.4 Waste Management and Disposal.

- .1 Separate and recycle packaging and waste materials to maximum extent economically possible.
- .2 Collect and separate plastic, paper packaging, and corrugated cardboard in designated areas for recycling as work proceeds and at completion of the Work.
- .3 Set aside damaged wood and dimensional lumber off-cuts for approved alternative uses (e.g. blocking).
- .4 Place materials defined as hazardous or toxic waste in designated containers.
- .5 Close and seal tightly, all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperature.
- .6 Place used sealant tubes and other containers in areas designated for hazardous materials.
- .7 Unused paint, caulking, and sealing compound materials must be disposed of at an official hazardous material collections site in accordance with legislation and authorities having jurisdiction. Do not dispose into sewer system, onto ground or in other location where it will pose health or environmental hazard.
- .8 Ensure all emptied containers are sealed and stored safely for disposal.
- .9 Fold up metal banding, flatten, and place in designated area for recycling.
- .10 Plan and coordinate insulation work to minimize generation of waste.
- .11 Designate on-site location for containers which facilitate recyclable materials without hindering daily operations.

1.3 DISPOSAL OF NON-HAZARDOUS WASTE

.1 Obtain approval and pay for use of off-site municipal collection or local dump or sanitary landfill sites, depending upon materials involved in accordance with authorities having jurisdiction.

.2 Where recycling is available, collect waste by type and coordinate pickup or delivery to recycling or collection facility.

1.4 DISPOSAL OF HAZARDOUS WASTE

.1 Obtain legislation governing disposal of hazardous and toxic materials, and pay for disposal of these materials in accordance with this legislation and authorities having jurisdiction and requirements of contract documents.

.2 Do not dispose of water or volatile materials such as: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.

1.5 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

.1 Comply with The City's WHIMIS regulations when handling controlled cleaning products on site. Maintain copies of the controlled cleaning product Materials Safety Data Sheets (MSDS) on site, and submit one copy to The City for record.

.2 Contractors are responsible for securing MSDS relating to specified products or other regulated products and materials that will be used on the work site, including those materials not specified herein. Maintain file of MSDS sheets at site office.

.3 Contractors to submit copies of all pertinent MSDS at award of the Contract and as work progresses.

.4 Contractors are responsible for making available all hazard information and warnings related to products specified as well as other products not specified but used.

.5 Storage of hazardous materials within or around the facility will not be allowed.

Part 2 Products

N/A

Part 3 Execution

3.1 PROJECT CLEANLINESS

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

.2 Provide on-site containers for collection of waste materials and debris.

.3 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Contract Administrator.

.4 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials that will create hazardous conditions.

.5 Vacuum clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations. Continue vacuum cleaning on an as-needed basis until building is ready for Substantial Performance.

.6 Schedule cleaning operations so that resulting dust and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

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

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

3.2 CLEANING OF STREETS

.1 Take precautions to prevent depositing of mud or debris on any roadways leading from site. Immediately clean up any mud or debris deposited. Neglect of this requirement will cause The City to have necessary clean-up work carried out and charge all costs to Contractor.

3.3 FINAL CLEANING

.1 When Substantial Performance is achieved, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris, vacuum clean and dust building interiors, and leave construction area clean.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from sight-exposed finished surfaces including glass and other polished surfaces.

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 78 00 – Closeout Submittals.

1.2 SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Contractor's Inspection: conduct review of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- .1 Notify Contract Administrator in writing of satisfactory completion of Contractor's review and submit verification that corrections have been made.
- .2 Request Contract Administrator review.

.2 Contract Administrator Inspection.
- .1 Contract Administrator and Contractor to review Work and identify defects and deficiencies.
- .2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificate that tasks have been performed as follows:
- .1 Work: completed and reviewed for compliance with Contract Documents.
- .2 Defects: corrected and deficiencies completed.
- .3 Equipment and systems: tested, adjusted and fully operational.
- .4 Operation of systems: demonstrated to The City's personnel.
- .5 Work: complete and ready for final review.

.4 Final Review.
- .1 When completion tasks are done, request final review of Work by Contract Administrator and Contractor.
- .2 If Work deemed incomplete according to Contract Administrator, complete outstanding items and request Contract Administrator review.

.5 Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of The City's acceptance of submitted declaration of Total Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment.
- .1 When Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
- .2 If Work deemed incomplete by Contract Administrator, complete outstanding items and request Contract Administrator review.

Part 2 Products

Part 3 Execution

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 77 00 – Closeout Procedures.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Two weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, four final copies of operating and maintenance manuals for each architectural, mechanical and electrical component of the Work in English.

.2 In addition, provide as-built documents, spare parts, maintenance materials, and special tools of same quality and manufacture as products provided in Work.

.3 Provide evidence, if requested, for type, source and quality of products supplied.

1.3 OPERATING AND MAINTENANCE MANUAL - FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf (8-1/2” x 11”) 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 'Operating and Maintenance Manual'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed 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.

.9 Provide 1:1 scaled CAD files in dwg format on CD.

1.4 OPERATING AND MAINTENANCE MANUAL - CONTENTS

.1 Table of Contents for Each Volume: provide title of project.
  .1 Date of submission; names.
  .2 Addresses, and telephone numbers of Contract Administrator and 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, and incorporating manufacturer's instructions.

1.5 PROJECT RECORD DOCUMENTS

.1 Maintain at construction site, one set of Contract Drawings and Specifications for record purposes. Mark set "PROJECT RECORD DOCUMENTS".

.2 Store Record Drawings and Specifications in field office apart from other documents used for construction. Maintain Record Drawings and Specifications in clean, dry and legible condition. Do not use Record Drawings and Specifications for construction purposes.

.3 Record "as-built" information in red ink, accurately and concurrently with construction progress. Do not conceal work until required information is recorded.

.4 Contract Drawings: legibly mark each item to record actual construction, including:
.1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
.2 Field changes of dimension and detail.
.3 Changes made by Addendum, Change Order or Field Instruction.
.4 Details not on original Contract Drawings.
.5 References 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, Change Order or Field Instruction.

.6 At completion of project and prior to Substantial Performance, submit Project Record Documents to Contract Administrator for review. In addition, submit AutoCAD disks with all changes redlined to reflect "as-built" conditions. Drawings must be generated in most current AutoCAD version, and consistent with Contract Documents prepared in AutoCAD 2013.

.7 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications Sections.

1.6 SPARE PARTS, MAINTENANCE, MATERIALS AND SPECIAL TOOLS

.1 Provide spare parts, maintenance and extra materials, in quantities specified in individual specification Sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Provide special tool items with tags identifying their associated function and equipment.

.4 Obtain receipt for delivered products and submit prior to final payment.

1.7 WARRANTIES

.1 Assemble warranty information in operating and maintenance manuals. Organize binder as follows:

- .1 Separate each warranty 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, executed in duplicate by Subcontractors, suppliers, and manufacturers, within ten calendar days after completion of applicable item of work.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.

Part 2 Products

N/A

Part 3 Execution

N/A

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 74 00 – Cleaning and Waste Management.

.2 Section 07 84 00 – Firestopping.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM E1971-05(2011), Standard Guide for Stewardship for the Cleaning of Commercial and Institutional Buildings.

.2 National Building Code of Canada, 2010 (NBCC).
- .1 NBCC Division B Part 8, Safety Measures at Construction and Demolition Sites.

1.3 QUALITY ASSURANCE

.1 Regulatory Requirements.
- .1 Comply with Workplace Safety and Health Act, Workplace Safety Regulation, Manitoba with regards to health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of work.

1.4 SITE CONDITIONS

.1 Existing Services.
- .1 Before commencing work, establish location and extent of service lines in area of work. Be absolutely certain of their origin and destination.
- .2 If existing active services encountered are not indicated on the drawings or interfere with the daily operations of the existing facilities, notify The City and Contract Administrator immediately requesting instructions on their disposition. Take immediate steps to ensure that the service provided is not interrupted, and do not proceed with the work until written instructions are received from The City and Contract Administrator.
- .3 Do not, under any circumstances drill, cut or chase openings of any description in any part of existing building structure, without written approval from Contract Administrator. Contract Administrator will supervise any work of this type and will require X-ray inspection of structure to be cut prior to drilling or cutting at Contractor's expense.
- .4 Record locations of maintained, rerouted and abandoned service lines on project record documents.

1.5 SCHEDULING

.1 Coordinate demolition and removal of debris to ensure minimal disruption to other construction activities.

.2 Execute work with least possible interference, inconvenience or disturbance to occupants, public, and normal use or premises. Keep noise and dust to minimum.

.3 Use only spark proof tools and equipment where explosive fumes may exist either from demolition work, renovation work, or existing operations.

Part 2 Products

N/A

Part 3 Execution

3.1 PREPARATION

.1 Prior to commencement of selective demolition work, inspect and photograph areas in which demolition work will be performed, including elements subject to damage or movement during demolition. In addition, conduct a condition survey of existing building structures and services to remain before commencing selective demolition activities.

.2 Erect and maintain rigid dustproof hording to fully isolate the demolition work from existing occupied areas. Maintain until such work is complete. Contractor will be responsible for any and all contamination to occupied areas outside of the demolition area.

.3 If unanticipated mechanical, electrical or structural elements that conflict with intended function or design are encountered, investigate and measure nature and extent of conflict.
- .1 Promptly submit written report to The City and Contract Administrator.
- .2 Pending receipt of directive from The City and Contract Administrator, rearrange selective demolition schedule, and notify The City and Contract Administrator as necessary to continue overall job progress without delay.

.4 Conduct demolition operations to prevent injury to people and damage to existing building.
- .1 Provide temporary barricades and other forms of protection as required for safety and security to protect The City personnel and the general public from injury due to selective demolition work.
- .2 Provide barriers and appropriate signs where necessary to restrict pedestrians from wandering into construction areas.
- .3 Erect temporary covered passageways as required by authorities having jurisdiction.
- .4 Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
- .5 Protect floors with suitable coverings when necessary. Use rubber-tired vehicles for conveying materials in building.
- .6 Utilize solid dustproof hording to fully isolate demolition work from existing building areas. Enclosures to restrict dust or dust migration, and separate areas from fumes and noise. Maintain until such work is complete. Contractor will be responsible for any and all contamination to areas outside of the demolition area.
- .7 Protect walls, ceilings, floors, and existing finish work that are to remain in place and are exposed during demolition operations.

.5 Provide and maintain temporary interior shoring, bracing, and/or structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
- .1 Cease operations and notify The City and Contract Administrator immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
- .2 Provide bypass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to The City if shutdown of service is necessary during changeover.

.6 Take precautions to prevent dust from triggering fire alarm smoke detectors and plugging ducts and filters. If necessary, arrange for temporary shutdown of this equipment with The City.

.7 Provide and maintain temporary fire protection equipment during performance of work required by and governing codes, regulations and bylaws.

.8 Disconnect electrical and data service lines entering areas to be demolished. Coordinate and schedule disconnects with The City and Contract Administrator. Post warning signs on electrical lines and equipment which must remain energized during period of demolition.

.9 Disconnect and cap all mechanical services in accordance with requirements of local authority having jurisdiction. Natural gas supply lines shall be removed by the gas company or by a qualified tradesman in accordance with gas company instructions.

3.2 DEMOLITION

.1 Comply with requirements of Sections 01 74 00.

.2 Conduct selective demolition operations as indicated and remove debris in a manor to ensure minimum interference with roads, streets, walks, and other adjacent occupied facilities.
- .1 Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction.
- .2 Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

.3 Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.
- .1 Do not interrupt utilities serving occupied facilities, except when authorized by The City in writing. Provide temporary services during interruptions to existing utilities, as acceptable to The City.

.4 Conduct demolition operations to prevent injury to occupants and damage to adjacent occupied areas. Ensure safe passage of people around demolition area.

.5 Clean adjacent areas and structures of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.3 CLEANING AND WASTE MANAGEMENT

.1 Comply with requirements of Section 01 74 00.

.2 Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain The City's property, obtain approval and pay for use of off-site municipal collection or local dump or sanitary landfill sites, depending upon materials involved in accordance with authorities having jurisdiction.

.3 Obtain legislation governing disposal of hazardous and toxic materials, and pay for disposal of these materials in accordance with this legislation and authorities having jurisdiction and requirements of contract documents.

.4 Maintain progressive cleaning of work and surrounding areas during demolition. Comply with Provincial and local fire and safety laws, ordinances, codes, and regulations.

.5 Vacuum clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations. Continue vacuum cleaning on an as-needed basis until renovations are ready for occupancy.

.6 When work is substantially performed, remove remaining waste materials, tools, equipment, machinery and surplus materials not required for performance of remaining work.

.7 Provide final cleaning in accordance with Section 01 74 00 and ASTM E1971 and leave work clean and suitable for occupancy.

3.4 REPAIR / RESTORATION

.1 Where penetrations through existing walls, floors, or roof result from removal or relocation of existing services or equipment, repair to standard of construction of surrounding material.

.2 Refinish wall, ceiling, roof, and floor surfaces to match adjacent finished unless otherwise indicated.

.3 Install new firestopping and restore integrity of existing fire separations in accordance with Section 07 84 00.

.4 Patch holes (abandoned and not required for future services) in existing walls, floors, and roof resulting from demolition and removal of mechanical pipes and or ducts and electrical services.

3.5 CLEANING OF STREETS

.1 Take precautions to prevent depositing of mud or debris on adjacent asphalt surfaces or any roadways leading from site. Immediately clean up any mud or debris deposited.

3.6 PROTECTION

.1 At end of each day's work, leave work in safe and stable condition so that no part is in danger of toppling or falling.

.2 Where security within existing building has been reduced by demolition work, provide temporary means to maintain security acceptable to The City and Contract Administrator.

.3 Protect interiors of parts not to be demolished at all times.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 00 – Metal Doors and Frames.

.2 Section 09 22 16 – Non-Structural Metal Framing.

.3 Section 09 29 00 – Gypsum Board.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM D5456-14b, Standard Specification for Evaluation of Structural Composite Lumber Products.

.2 Canadian Standards Association (CSA).
- .1 CSA O121-08 (R2013), Douglas Fir Plywood.
- .2 CSA O141-05 (R2014), Softwood Lumber.
- .3 CSA O151-09 (R2014), Canadian Softwood Plywood.
- .4 CSA O153-13, Poplar Plywood.
- .5 CSA O325-07 (R2012), Construction Sheathing.

.3 National Lumber Grades Authority (NLGA).
- .1 NLGA Standard Grading Rules for Canadian Lumber, 2014.

1.3 QUALITY ASSURANCE

.1 Lumber Identification: by grade stamp of agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood Identification: by grade mark in accordance with applicable CAN/ULC standards.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

Part 2 Products

2.1 LUMBER MATERIAL

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with CSA O141 and NLGA Standard Grading Rules for Canadian Lumber.

.2 Machine stress-rated lumber: acceptable for all purposes.

.3 Glued end-jointed (finger-jointed) lumber is not acceptable.

.4 Structural Composite Lumber (SCL) in accordance with ASTM D5456.

.5 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, panel and soffit backing:
- .1 Use S2S or S4S material.
- .2 Board sizes: “Standard” or better grade.
- .3 Dimension sizes: “Standard” light framing or better grade.
- .4 Post and timber sizes: “Standard” or better grade.

2.2 PANEL MATERIAL

.1 Construction Sheathing: to CSA O325.

.2 Plywood Standards: type, grade and thickness as indicated and in accordance with following standards:
- .1 Douglas Fir Plywood (DFP): to CSA O121, standard construction.
- .2 Canadian Softwood Plywood (CSP): to CSA O151, standard construction.
- .3 Poplar Plywood (PP): to CSA O153, standard construction.

Part 3 Execution

3.1 INSTALLATION

.1 Install lumber and plywood true to line, levels and elevations, square and plumb. Construct continuous members from pieces of longest practical length. Install spanning members with "crown-edge" up.

.2 Install furring and blocking as required to space-out and support door frames, casework, cabinets, wall and ceiling finishes, washroom accessories, and other work as required.

.3 Install rough bucks, curbs, nailers and linings to rough openings as required to provide backing for frames and other work.

.4 Provide wood blocking where required to provide support for wall or ceiling mounted items specified or detailed.

.5 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 26 00 – Air/Vapour Barrier Membrane – Self Adhesive.

.2 Section 09 29 00 – Gypsum Board.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM C518-10, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- .2 ASTM C578-15, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

.2 Underwriters Laboratories of Canada (ULC).
- .1 CAN/ULC-S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations. Remove only in quantities required for same day use.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Rigid Board Insulation (soffit) - Mechanically Attached.
  - .1 Rigid Cellular Extruded Polystyrene.
    - .1 Dow Styrofoam Cavitymate Wall Insulation.
    - .2 Owens Corning Canada Celfort 300 Wall Insulation.

.2 Fasteners for Rigid Board Insulation.
- .1 Dekfast fastening system, #12 Hex screws with recessed steel hexagonal Dekfast plate.
- .2 Duro-last fastening system, #12 Drill point screws with 75 mm square metal plate.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply similar products from a single manufacturer.

2.2 MATERIALS

.1 Rigid Board Insulation (soffit) - Mechanically Attached: rigid cellular extruded polystyrene to ASTM C518, ASTM C578 and CAN/ULC S701, Type 3, RSI (R) value of 0.87 (5) per 25 mm (1"), compressive strength 170 kPa (25 psi), 600 mm width x 2400 mm length board sizes for easy application in cavity walls, butt edge, CFC free and HCFC free, thickness/RSI value as indicated.

.2 Fasteners for Rigid Board Insulation (soffit): screw and plate fastening system consisting of 75 mm dia. galvanized steel plate with self-drilling, high corrosive-resistant screws.

Part 3 Execution

3.1 EXAMINATION

.1 Prior to commencement of work ensure substrates to receive insulation are firm, straight, smooth, dry, and clean of dust and debris or other material detrimental to uniform bedding of the insulation.

3.2 INSTALLATION

.1 Rigid Board Insulation (soffit) - Mechanically Attached.

- .1 Install rigid board insulation to maintain continuity of thermal protection to building elements and spaces.
- .2 Mechanically fasten insulation boards with screw and plate fastening system specified. Install screw and plate fasteners through insulation to substrate.
- .3 Fasteners to be spaced in accordance with manufacturer's written instructions. Ensure all insulation boards are securely fastened and bear tight against and flush with the surface of the substrate.
- .4 Cut and trim insulation boards neatly to fit spaces. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .5 Co-ordinate installation of insulation with work of other trades.
- .6 Do not cover insulation until it has been reviewed by Contract Administrator.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 09 29 00 – Gypsum Board.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM E96/E96M-15, Standard Test Methods for Water Vapor Transmission of Materials.
- .2 ASTM E2357-11, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver all materials to site in the manufacturer's original packaging and standard commercial containers. Packaging to contain manufacturer's name, product name and identification number and other related information.

.2 Provide and maintain dry, off-ground weatherproof storage. Store roll materials on end, and protect materials from direct sunlight, extreme temperatures, moisture conditions, chemicals, solvents, etc., as per manufacturer's recommendations. Remove only in quantities required for same day use.

1.4 SITE CONDITIONS

.1 Apply primer and air/vapour barrier membrane in dry weather conditions where ambient temperatures are in accordance with manufacturer's instructions. No installation work may be performed on surfaces exposed to inclement weather or when there is threat of precipitation.

1.5 WARRANTY

.1 Provide an extended warranty for Work of this Section for a period of 2 years from date of Total Performance of the Work. Contractor hereby warrants that membrane work will maintain air and water seal and will not lose adhesion or cohesion, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Self Adhesive Air/vapour Barrier Membrane, Primer, Sealer, Liquid Membrane, Flashing Membrane, Surface Conditioner.
  - .1 Bakor Blueskin SA.
  - .2 Carlisle CCW-705.
  - .3 IKO Aquabarrier AVB.
  - .4 Meadows Air-Shield.
  - .5 Soprema Sopraseal Stick 1100.
  - .6 W.R. Grace Perm-A-Barrier System 4000.

.2 Self Adhesive Air/vapour Barrier Membrane Primer (for use with exterior fibreglass-faced gypsum board sheathing).
- .1 Bakor Blueskin Primer (solvent based) or Aquatac Primer (water based).
- .2 IKO Aquabarrier Primer (solvent based) or Aquabarrier WB Primer (water based).
- .3 Meadows Mel-Prime (solvent & water based).
- .4 W.R. Grace Perm-A-Barrier System WB Primer.

.2 Substitutes not permitted.

.3 Supply all products from a single manufacturer.

2.2 MATERIALS

.1 Air/vapour Barrier Membrane and Membrane Flashing: 1 mm thick self-adhering membrane composed of bitumen modified with thermoplastic polymers and high density polyethylene film to ASTM E96/E96M and ASTM E2357, 914 mm width. The under face is self-adhesive covered by a silicone release paper. Primer as recommended by manufacturer.

2.3 ACCESSORIES

.1 Primer: blend of elastomeric bitumen (or synthetic rubber), volatile solvents, adhesive enhancing additives and resins used to prime substrate to enhance the adhesion of the self-adhesive membrane in varying outdoor temperatures as recommended by the membrane manufacturer.

.2 Sealer: jointing mastic compatible with bituminous materials.

.3 Liquid Membrane: two component high performance polyurethane sealant, 100% solids in content.

.4 Tapes: self-adhering type, maintaining a min. thickness of 0.8 mm (30 mil), provided in rolls of dimensions 100 mm and 150 mm.

Part 3 Execution

3.1 PREPARATION

.1 Refer to manufacturer’s printed literature for preparation requirements of substrates to receive air/vapour barrier membrane. Surfaces must be structurally sound and free of voids, loose aggregate, and sharp protrusions. Clean surfaces with a broom, vacuum, or compressed air to remove dust and debris.

.2 Apply primer over surfaces to receive air/vapour barrier membrane by means of roller or spray in accordance with manufacturer's printed instructions. Thoroughly dry primer before applying self-adhesive membrane.

3.2 INSTALLATION

.1 Apply primer and air/vapour barrier membrane in accordance with manufacturer's printed instructions.

.2 Detail work must be carefully carried out to ensure the air/vapour barrier membrane creates a continuous seal at all construction elements, and at junctures of different materials or construction types.

.3 Install the membrane onto the primed surface by peeling back the paper on the underside and adhering the membrane to the surface. Apply hand pressure over the surface of the membrane in order to remove any trapped air beneath the membrane followed by pressure with a hand roller over entire surface to ensure perfect adhesion of the membrane to the surface.

.4 Before covering the membrane with the rigid board insulation, inspect and repair as necessary any damaged areas. Rigid board insulation to follow as closely as possible to the installation of the membrane.

3.3 REPAIR

.1 Patch and repair misaligned or inadequately lapped seams, tears, punctures or fishmouths to the satisfaction of Contract Administrator.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 02 41 19 – Selective Demolition.

.2 Section 09 29 00 – Gypsum Board.

.3 Mechanical Specifications.

.4 Electrical Specifications.

1.2 REFERENCES

.1 International Firestop Council (IFC).
- .1 IFC 401 Inspection Manual for Firestopped Through Penetrations, Joints and Perimeter Fire Barrier Systems.

.2 National Fire Protection Association (NFPA).
- .1 NFPA 101: Life Safety Code, 2015 Edition.

.3 Underwriter's Laboratories (UL).
- .1 UL 1479-15, Fire Tests of Through-Penetration Firestops.

.4 Underwriter's Laboratories of Canada (ULC).
- .1 CAN/ULC S115-11, Standard Method of Fire Tests of Fire Stop Systems.

1.3 SYSTEM DESCRIPTION

.1 Provide firestopping in accordance with NFPA 101, consisting of a material or combination of materials that are compatible with each other, and installed to retain the integrity of a new or existing fire resistance rated construction by maintaining an effective barrier against the spread of flame, smoke and/or hot gases through penetrations, fire resistive joints, and perimeter openings in accordance with the requirements of applicable codes and tested by nationally accepted test agencies.

.2 Provide components for each firestopping system that are needed to install fill material. Use only components specified by firestopping manufacturer and approved by qualified testing agency for designated fire-resistance-rated systems.

.3 Use only firestop products that have been ULC or cUL tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance and as follows:
- .1 New and existing service penetrations for passage of duct, cable, cable tray, conduit, piping, electrical busways and raceways through new and existing fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
- .2 Openings between structurally separate sections of wall or floors.
- .3 New and existing wall-to-wall joints (gypsum board to concrete or concrete block walls or control/expansion joints for masonry, concrete or gypsum board).
- .4 New and existing joints between bottom of walls (gypsum board to floor system).

.5 Control or expansion joints in walls and floors.
.6 Openings and penetrations in fire-rated partitions or walls containing fire doors.
.7 Openings around structural members which penetrate floors or walls.
.8 Systems installed to allow and be designed to accommodate movement (expansion) in all joints as indicated on architectural / structural drawings/specifications and plumbing pipes and sprinkler pipes that require movement during the activation of these systems.
.9 Openings around structural members, which penetrate horizontal and vertical fire separations and their fire resistant membranes.

1.4 SUBMITTALS

.1 Shop Drawings.
.1 Submit shop drawings in accordance with Section 01 33 00.
.2 Provide manufacturer's specifications and technical data for each material including composition and limitations, documentation of ULC or cUL firestop systems to be used and manufacturer's installation instructions.
.3 Submit manufacturer's engineering judgment identification number and drawing details when no ULC or cUL system is available for application. Engineered judgment must include both project name and contractor’s name who will install firestop system as described in drawing.
.4 Submit material safety data sheets (MSDS) provided with product delivered to job-site. MSDS to include following:
.1 Technical data on out-gassing, off-gassing, and age testing.
.2 Curing time.
.3 Chemical compatibility to other construction materials.
.5 Provide certification by manufacturer that products supplied are protected against mould growth in both the wet and dry stage.
.6 Design system listings to show proposed material, including technical data, reinforcement, anchorage, fastenings and method of installation. Construction details to accurately reflect actual job conditions.

1.5 QUALITY ASSURANCE

.1 Regulatory Requirements.
.1 Firestop System installation must meet requirements of CAN/ULC S115 tested assemblies that provide fire rating as shown.
.2 Proposed firestop materials and methods to conform to applicable governing codes having local jurisdiction.
.3 For those firestop applications that exist for which no ULC or cUL tested system is available through manufacturer, manufacturer's engineering judgment derived from similar ULC or cUL system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation. Engineer judgment drawings must follow requirements set forth by IFC 401.

.2 Firestopping material to be free of asbestos, PCB, ethylene glycol, and lead, and cannot incorporate nor require the use of hazardous solvents.

.3 Firestopping material must have a minimum shelf life of 2 years from production and visible expiration or packaging date.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver materials undamaged in manufacturer's clearly labeled, unopened containers, identified with brand, type, and ULC or cUL label where applicable.

.2 Coordinate delivery of materials with scheduled installation date to allow minimum storage time at job-site.

.3 Store materials under cover and protect from weather and damage in compliance with manufacturer's requirements.

.4 Comply with recommended procedures, precautions or remedies described in material safety data sheets as applicable.

.5 Do not use damaged or expired materials.

1.7 WARRANTY

.1 Manufacturer’s Product Warranty: provide an extended warranty for Work of this Section for a period of 2 years from date of Total Performance of the Work. Manufacturer hereby warrants firestopping products to be free of manufacturing defects, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

.2 Installation Contractor’s Warranty: provide an extended warranty for Work of this Section for a period of 2 years from date of Total Performance of the Work. Contractor hereby warrants that firestopping will remain as installed, free from any defects and deficiencies, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Flexible Fire Stop Sealant (refer to Engineering Judgement Firestop Details following this spec Section).
  - .1 Hilti CP 606 Flexible Firestop Sealant.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all similar products from a single manufacturer.

2.2 MATERIALS

.1 Flexible Fire Stop Sealant: acrylic based firestop sealant to CAN/ULC S115 that provides movement capability in fire rated joints and seals through-penetration applications. Silicone free, halogen, asbestos and solvent free, paintable.

Part 3 Execution

3.1 PREPARATION

.1 Verification of Conditions: examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
- .1 Verify penetrations are properly sized and in suitable condition for application of materials.
- .2 Surfaces to which firestop materials will be applied to be free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.
- .3 Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
- .4 Comply with manufacturer's recommendations for temperature and humidity conditions before, during and after installation of firestopping.
- .5 Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

.1 Manufacturer's Instructions: comply with manufacturer's written installation instructions and published drawings for installation of through-penetration and construction joint materials.

.2 Firestopping of New Fire Separations.
- .1 Install firestopping to maintain the integrity of all new fire separations in new fire rated floors and walls whenever affected by new construction including:
  - .1 Penetrations through and top of fire-resistance rated masonry, gypsum board walls, and gypsum board shaft walls.
  - .2 Penetrations through fire-resistance rated floor assemblies.
  - .3 Intersections of fire-resistance rated masonry and gypsum board walls.
  - .4 Control joints in fire-resistance rated floor assemblies, and masonry and gypsum board walls.
  - .5 Openings and sleeves installed for future use through fire separations.
  - .6 Around mechanical and electrical assemblies penetrating fire separations.
  - .7 Rigid ducts greater than 129 cm^2 (20 in^2): firestopping to consist of bead of firestopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

.3 Firestopping of Existing Fire Separations.
- .1 Install firestopping at all new service penetrations and joints in existing fire separations.
- .2 Install new firestopping in existing fire rated wall and floor assemblies affected by removal of existing services or systems as part of work of this contract leaving unprotected openings.
- .3 Patch and restore integrity of existing fire separations at openings in existing fire rated walls resulting from the demolition of doors, windows, ceilings, abutting walls, etc.
- .4 Install firestopping and/or restore openings (i.e. not required for new services or systems, or openings replaced with services of a smaller size) in existing fire rated wall and floor assemblies remaining after the demolition and removal of mechanical pipes and or ducts and electrical services as part of work of this contract.
- .5 Where breeches are discovered in existing fire separations (from past projects), Contractor to advise Contract Administrator and The City.

3.3 FIELD QUALITY CONTROL

.1 Do not conceal firestopping installations until Contract Administrator has examined each installation.

.2 Identify firestopping with pressure sensitive, self-adhesive preprinted vinyl warning labels. Attach labels permanently to surfaces of penetrated construction on both sides of all firestopping installations where the labels will be visible to anyone seeking to add to or remove penetrating items or firestopping at a future date. Photograph all installations for record purposes. Include the following information on all warning labels:

- .1 The words: "WARNING FIRESTOPPING DO NOT DISTURB. NOTIFY CITY OF WINNIPEG OF ANY DAMAGE"
- .2 Contractor's name, address and phone number.
- .3 Firestopping system designation of applicable testing and inspecting agency (ULC or cUL).
- .4 Date of installation.
- .5 Firestopping product used and manufacturer's name.
- .6 Installer's name.

3.4 ADJUSTING AND CLEANING

.1 Clean off excess fill materials adjacent to openings as work progresses by methods and with cleaning materials recommended by firestopping manufacturer and that do not damage materials in which openings occur. Leave finished work in neat, clean condition with no evidence of spillovers or damage to adjacent surfaces.

.2 Provide final protection and maintain conditions during and after installation that ensure firestopping systems are without damage or deterioration at time of Substantial Performance of the Work. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping systems immediately and install new materials to produce firestopping systems complying with specified requirements.

END OF SECTION

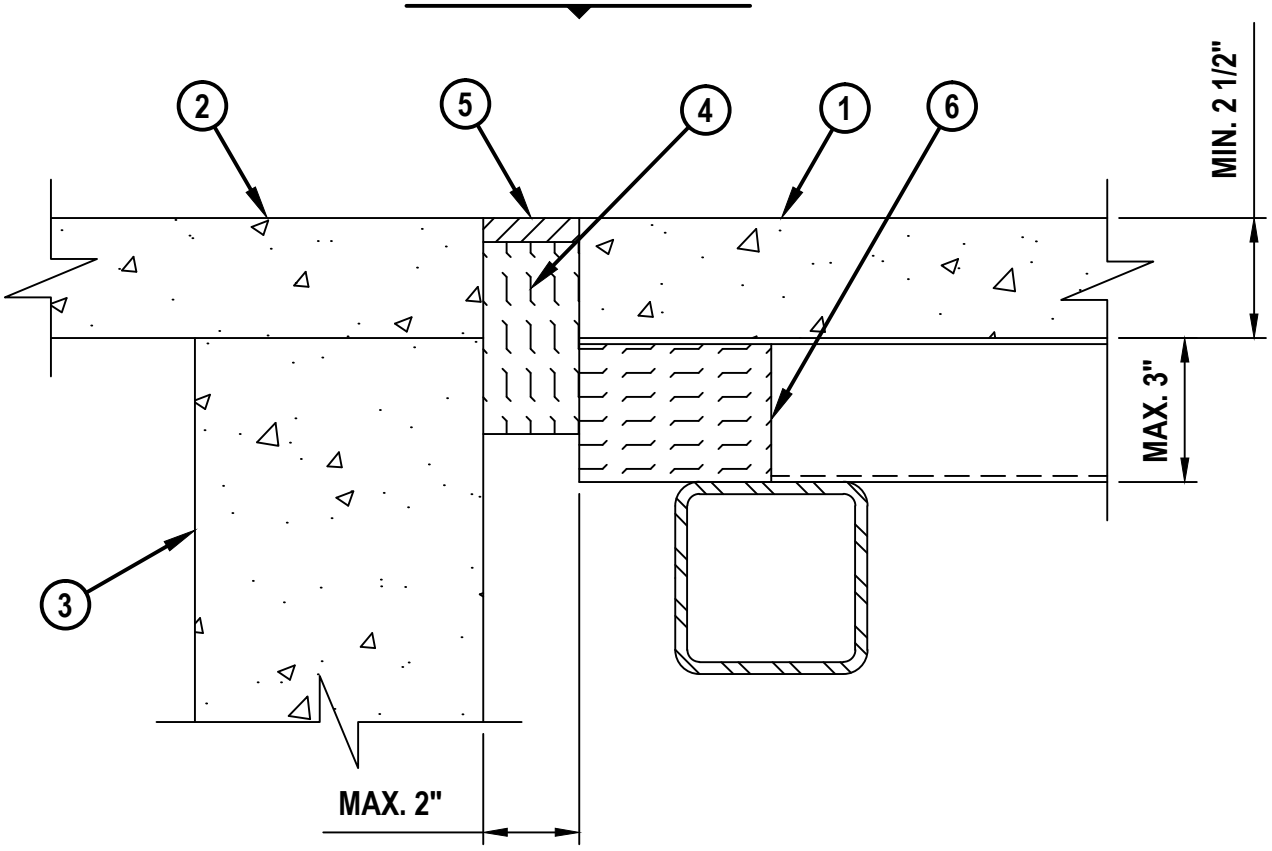
JH

ENGINEERING JUDGMENT FIRESTOP DETAIL

PROJECT : RBC CONVENTION CENTRE - NORTH SKYWALK - EXPANSION JOINT REPAIR
ARCHITECT : LM ARCHITECTURAL GROUP

F-RATING = 2-HR.

CROSS-SECTIONAL VIEW



1. CONCRETE FLOOR OVER METAL DECKING ASSEMBLY (MINIMUM 2-1/2" THICK) (2-HR. FIRE-RATING).
2. CONCRETE FLOOR ASSEMBLY (MINIMUM 7" THICK) (2-HR. FIRE-RATING).
3. CONCRETE BEAM (MINIMUM 6" THICK) (2-HR. FIRE-RATING).
4. MINIMUM 4" THICKNESS MINERAL WOOL SAFING (MIN. 4 PCF DENSITY) COMPRESSED 40% AND RECESSED TO ACCOMMODATE SEALANT.
5. MINIMUM 1/2" DEPTH HILTI CP 606 FLEXIBLE FIRESTOP SEALANT.
6. MINERAL WOOL SAFING (MIN. 4 PCF DENSITY) COMPRESSED 50% AND INSTALLED MINIMUM 4" DEEP TO COMPLETELY FILL FLUTE.

NOTES : 1. MAXIMUM WIDTH OF JOINT = 2".
2. THIS SYSTEM IS DESIGNED BASED UPON CANADIAN TEST STANDARD CAN/ULC-S115-11.

THIS ENGINEERING JUDGMENT REPRESENTS A FIRESTOP SYSTEM THAT WOULD BE EXPECTED TO PASS THE STATED RATINGS IF TESTED.
(REFERENCE : UL/cUL SYSTEM NO. FF-D-1087 & HW-D-0042)

Hilti Firestop Systems	HILTI, Inc. Plano, Texas USA (800) 879-8000 *Designed by* Chance Wickham	*Sheet* 1 of 1 *Scale* 1/4" = 1" *Date* Mar. 08, 2016	*Drawing No.* 227724c

Saving Lives through Innovation and Education

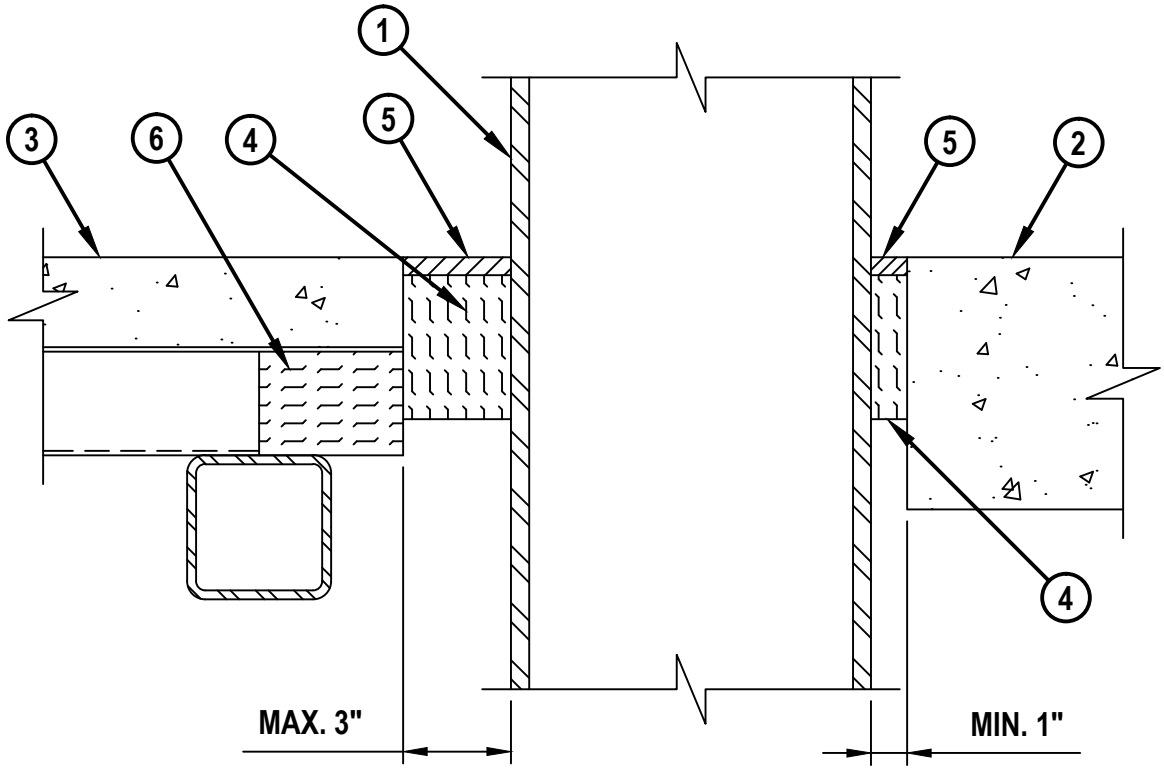
JH

ENGINEERING JUDGMENT FIRESTOP DETAIL

PROJECT : RBC CONVENTION CENTRE - NORTH SKYWALK - EXPANSION JOINT REPAIR
ARCHITECT : LM ARCHITECTURAL GROUP

F-RATING = 2-HR. (SEE NOTE NO. 3 BELOW)

CROSS-SECTIONAL VIEW



1. STEEL COLUMN (MAXIMUM 8" x 8") (NON FIRE-RATED).
2. CONCRETE FLOOR ASSEMBLY (MINIMUM 7" THICK) (2-HR. FIRE-RATING).
3. CONCRETE FLOOR OVER METAL DECKING ASSEMBLY (MINIMUM 2-1/2" THICK) (2-HR. FIRE-RATING).
4. MINIMUM 4" THICKNESS MINERAL WOOL SAFING (MIN. 4 PCF DENSITY) COMPRESSED 40% AND RECESSED TO ACCOMMODATE SEALANT.
5. MINIMUM 1/2" DEPTH HILTI CP 606 FLEXIBLE FIRESTOP SEALANT.
6. MINERAL WOOL SAFING (MIN. 4 PCF DENSITY) COMPRESSED 50% AND INSTALLED MINIMUM 4" DEEP TO COMPLETELY FILL FLUTE.

NOTES : 1. MAXIMUM WIDTH OF JOINT = 3".
2. THIS SYSTEM IS DESIGNED BASED UPON CANADIAN TEST STANDARD CAN/ULC-S115-11.
3. FIRE-RATING OF ASSEMBLY IS DEPENDENT UPON THE PERFORMANCE OF CURTAIN WALL ASSEMBLY UNDER FIRE CONDITIONS.

THIS ENGINEERING JUDGMENT REPRESENTS A FIRESTOP SYSTEM THAT WOULD BE EXPECTED TO PASS THE STATED RATINGS IF TESTED.
(REFERENCE : UL/cUL SYSTEM NO. FW-D-1071, FW-D-0042, FW-D-1012, HW-D-0042 & HW-D-0042)

Hilti Firestop Systems	HILTI, Inc. Plano, Texas USA (800) 879-8000 *Designed by* Chance Wickham	*Sheet* 1 of 1 *Scale* 3/16" = 1" *Date* Mar. 08, 2016	*Drawing No.* 227725c

Saving Lives through Innovation and Education

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 00 – Metal Doors and Frames.

.2 Section 08 41 13 – Aluminum-Framed Entrances and Storefronts.

.3 Section 09 29 00 – Gypsum Board.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM C1330-02(2013), Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- .2 ASTM C1518-04(2014), Standard Specification for Precured Elastomeric Silicone Joint Sealants.
- .3 ASTM C1520-02(2015)e1, Standard Guide for Paintability of Latex Sealants.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

1.4 SITE CONDITIONS

.1 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.5 WARRANTY

.1 Manufacturer’s Product Warranty: provide an extended warranty for Work of this Section for a period of 20 years from date of Total Performance of the Work. Manufacturer hereby warrants joint sealants to be free of manufacturing defects, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

.2 Installation Contractor’s Warranty: provide an extended warranty for Work of this Section for a period of 3 years from date of Total Performance of the Work. Contractor hereby warrants that installation of joint sealants will not crack, crumble, melt, shrink, run, lose adhesion, leak or stain adjacent surfaces, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Interior Silicone Sealant.
  - .1 Bostik Chem-Calk 600.
  - .2 Dow Corning 786 or CWS.
  - .3 GE 1700.
  - .4 Sonneborn Sonolastic Omniplus.
- .2 Interior Latex Acrylic Sealant.
  - .1 GE Acryseal.
  - .2 PRC 2000.
  - .3 Sternson Acry Flex.
  - .4 Sonneborn Sonolac.
  - .5 Tremco 834.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply similar products from single manufacturer.

2.2 MATERIALS

.1 Joint Sealants and Sealant Primers: as recommended by sealant manufacturer for use with their product on applicable substrates.
- .1 Interior Silicone Sealant: to ASTM C1518 at all locations unless otherwise indicated.
- .2 Interior Latex Acrylic Sealant: to ASTM C1520 for interior joints in surfaces to be painted.

.2 Preformed Compressible Joint Filler Material.
- .1 Closed-cell foam backing rod to ASTM C1330.
- .2 Polyethylene, Urethane, Neoprene or Vinyl Foam.
  - .1 Extruded open cell foam backer rod.
  - .2 Size: oversize 30% to 50%.
- .3 Neoprene or Butyl Rubber.
  - .1 Round solid rod, Shore A hardness 70.
- .4 High Density Foam.
  - .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.
- .5 Bond Breaker Tape.
  - .1 Self-adhesive, pressure sensitive tape mad from TFE-flourocarbon (Teflon) or polyethylene which sealant will not adhere to.

.3 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 PREPARATION OF JOINT SURFACES

.1 Prior to commencement of work, verify that site joints and surfaces have been provided as specified under work of other Sections, and that joint conditions will not adversely affect execution, performance or quality of completed work, and that they can be put into acceptable condition by means of preparation specified in this Section.

.2 Examine joint sizes and conditions to establish correct depth to width relationship for installation of joint filler materials and sealants.

.3 Ascertain that sealers and coatings applied to sealant substrates are compatible with sealant used and that full bond between sealant and substrate is attained.

.4 Clean bonding joint surfaces of harmful matter substances including dust, oil grease, and other matter which may impair work. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

.5 Defective work resulting from application to unsatisfactory joint conditions will be considered the responsibility of those performing the work of this Section.

3.2 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.3 JOINT FILLER MATERIAL

.1 Pack joints continuously with closed cell backer rod joint backing material allowing a recess to receive sealant. Installation of backer rod with a sharp tool such as putty knife is not permitted. Ensure surface skin of the backer rod is not punctured or cut during installation. A puncture in the backer rod may result in outgassing into the uncured sealant resulting in voids or other defects in the cured sealant.

.2 Backer rod to be installed under adequate compression to hold it in-place in the joint opening and to resist the pressure applied when tooling a non-sag sealant into place. Backer rod diameter to be 25% greater than the joint width. Install backer rod without stretching. Under no circumstances should backer rod that is too small for the joint be doubled up or braided together to fit the opening.

.3 Where joint configuration and/or size does not permit the use of a backer rod, install bond breaker tape. The tape shall be installed continuously with no skips or voids in the tape application.

.4 Install joint filler to achieve correct joint depth and shape (ratio 1:2) with approximately 30% compression.

3.4 INSTALLATION

.1 Joint Sealants.
- .1 Apply sealants to manufacturer's printed 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. Superficial pointing with skin bead is not acceptable.
- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.
- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.

3.5 CLEANING

.1 Clean adjacent surfaces immediately and leave work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM B209-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .2 ASTM B221M-13, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric].

1.2 SUBMITTALS

.1 Shop Drawings.
- .1 Submit shop drawings in accordance with Section 01 33 00.
- .2 Indicate lengths of joint cover assembly, fasteners, accessories, anchors, seals, butt joints and locations, finishes and profiles required for each condition.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, and construction activity in strict accordance with manufacturer's recommendations.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

1.4 WARRANTY

.1 Manufacturer’s Product Warranty: provide an extended warranty for Work of this Section for a period of 5 years from date of Total Performance of the Work. Manufacturer hereby warrants expansion joint covers to be free of manufacturing and material defects, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Floor to Floor Expansion Joint (50 mm joint width).
  - .1 Inpro JointMaster 802-A01-050/10 Expansion Joint System.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all similar products from a single manufacturer.

2.2 MATERIALS

.1 Aluminum: extruded aluminium cover plate to ASTM B209 and ASTM B221M with overlap design to minimize sightline, and accept various flooring thicknesses, 6063-T6 alloy and temper, mill finish.

.2 Fasteners, accessories and other materials required for complete installation in accordance with the manufacturer’s printed instructions.

Part 3 Execution

3.1 INSTALLATION

.1 Install expansion joint cover assemblies in accordance with reviewed shop drawings and manufacturer's printed instructions.

.2 Align work plumb, level and flush with adjacent surfaces. Rigidly anchor to substrate.

3.2 PROTECTION

.1 Prohibit traffic on floor for 48 hours after installation, or according to manufacturer's instructions. Thereafter, protect expansion joint cover assemblies from damage during final stages of construction until Substantial Performance of project.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 – Rough Carpentry.

.2 Section 07 92 00 – Joint Sealants.

.3 Section 08 80 00 – Glazing.

.4 Section 09 22 16 – Non-Structural Metal Framing.

.5 Section 09 29 00 – Gypsum Board.

.6 Section 09 90 00 – Painting and Coating.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
- .2 ASTM A780/A780M-09(2015), Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- .3 ASTM F1554-15, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

.2 Canadian Standards Association (CSA).
- .1 CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steel.
- .2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.3 Canadian Steel Door Manufacturers Association (CSDMA).
- .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frame Products, 2006.
- .2 CSDMA, Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.
- .3 CSDMA, Canadian Fire Labeling Guide for Commercial Steel Doors and Frame Products, 2009.
- .4 CSDMA, Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames, 2012.

.4 National Fire Protection Association (NFPA).
- .1 NFPA 80, Standard for Fire Doors and Other Opening Protectives, 2016 Edition.
- .2 NFPA 252, Standard Methods of Fire Tests of Door Assemblies, 2012 Edition.

.5 Underwriters' Laboratories of Canada (ULC).
- .1 CAN/ULC S104-15, Standard Method for Fire Tests of Door Assemblies.
- .2 CAN/ULC S105-09, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC S104.

1.3 SUBMITTALS

.1 Shop Drawings.
- .1 Submit shop drawings in accordance with Section 01 33 00.
- .2 Indicate each type of door, core material, steel thicknesses, mortises, reinforcements, arrangement of hardware, fire ratings, and finishes.
- .3 Indicate each type frame material, steel thickness, reinforcements, location of anchors, fire ratings, and exposed fastenings and finishes.
- .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements.
- .1 Steel fire rated doors and frames to be labeled and listed by organization accredited by Standards Council of Canada in conformance with CAN/ULC S104, CAN/ULC S105, NFPA 80 and NFPA 252 for ratings specified or indicated.
- .2 Provide fire labeled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN/ULC S104 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, well-ventilated area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Protect by suitable means until installation. Brace and stack to prevent racking, bending, twisting and other damage.

.4 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

Part 2 Products

2.1 MATERIALS

.1 Hot Dipped Galvanized Steel Sheet: to ASTM A653/A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Recommended Specifications for Commercial Steel Door and Frame Products.

.2 Reinforcement Channel: to CSA G40.20-04/G40.21, Type 44W, coating designation to ASTM A653/A653M, ZF75.

.3 Door Core Materials.

.1 Temperature Rise Rated (TRR) Core: mineral fibre core composition to limit temperature rise on unexposed side of door to 250 degrees F in 30 minutes. Core to be tested as part of complete door assembly, in accordance with CAN/ULC S104 or NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

.4 Glazing Stops: fabricate as formed channel, 0.9 mm (20 gauge) base steel thickness, minimum 16 mm height typical, accurately fitted, butted at corners and fastened with counter-sunk oval head sheet metal screws (secured from room side and not corridor or public side).

.5 Door Frame Adjustable Base Anchor: 1.6 mm (16 gauge) galvannealed steel to ASTM A653/A653M, two spot welds per end, WHI and ULC approved.

.6 Channel Spreaders: 1.6 mm (16 gauge) base steel thickness.

.7 Guard Boxes: 0.8 mm (22 gauge) base steel thickness.

.8 Hinge Reinforcing: 4.4 mm (7 ga.) base steel thickness.

.9 Lock Reinforcing: 1.6 mm (16 ga.) base steel thickness.

.10 Strike Reinforcing: 2.6 mm (12 ga.) base steel thickness.

.11 Surface Applied Hardware Reinforcing: 2.6 mm (12 ga.) base steel thickness.

.12 Fasteners: expansion bolts to ASTM F1554, galvanized.

.13 Metallic Paste Filler: to manufacturer's standard.

.14 Touch-up Primer: to ASTM A780/A780M.

.15 Door Bumpers: single stud black rubber/neoprene type.

.16 Joint Sealants: in accordance with Section 07 92 00.

.17 Glazing: in accordance with Section 08 80 00.

2.2 FABRICATION

.1 General.

.1 Fabricate steel doors and frames as detailed to Canadian Steel Door Manufacturers Association (CSDMA) specifications.

.2 Fabricate doors and frames to profiles and maximum face sizes as indicated, reviewed shop drawings and ULC or WHI requirements as applicable.

.3 Make provision for glazing on doors as indicated, and provide necessary glazing stops.

.4 Build-in required hardware reinforcing and guard boxes.

.5 Attach ULC or WHI labels to required fire rated doors and frames as indicated.

.6 Continuous Welded Seam (CWS) Edge: door seams continuously welded, ground, filled and finished smooth to provide a seamless edge

.2 Hollow Metal (HM) Welded Door Fabrication.

.1 Fabricate each face sheet from 1.6 mm (16 ga.) galvanized sheet steel with mineral fibre core laminated under pressure to face sheets, continuous welded seam edge.

.2 Bevel hinge and lock door edges 3 mm in 50 mm. Square edges on hinge and/or lock stiles are not acceptable.

.3 Close door top with flush surface, spot welded channel closure, door bottom with recessed, spot welded channel closure minimum 25 mm deep. Weld channels to both face sheets to stiffen door laterally.

.4 Continuously weld longitudinal edges. Grind and fill smooth to provide a seamless edge.

.5 Build in required hardware reinforcing, guard boxes. Provide closer reinforcement both sides all doors, including doors not scheduled to receive closers.

.6 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware as required.

.7 Reinforce perimeter of glazing openings exceeding 800 mm with minimum 0.8 mm (22 ga.) channels spot welded to door face skins all four sides.

.8 Factory prepare holes 12.7 mm diameter and larger except mounting and through bolt holes, on site, at time of hardware installation.

.9 Provide factory applied touch up primer at areas where zinc coating has been removed during fabrication.

.10 Fabricate doors requiring top and bottom concealed exit devices to hardware templates in relation to door bottom clearance.

.11 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN/ULC S104 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.12 Manufacturer's nameplates on doors are not permitted.

.3 Hollow Metal (HM) Welded Frame Fabrication.

.1 Fabricate frames from 2.1 mm (14 ga.) galvanized steel, fully welded combination type construction in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld mitres on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions. Grind welded joints and corners to flat plane, fill with metallic paste and sand to uniform smooth finish.

.4 Grind welded joints and corners to flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Reinforce frame heads with bent plate channels, minimum 9 ga. thick. Reinforce frame heads wider than 1220 mm.

.6 Reinforce frames for surface mounted hardware.

.7 Securely attach floor anchors to inside of each jamb profile.

.8 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

.9 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.10 Protect strike and hinge reinforcements using steel guard boxes welded to frames.

.11 Install three bumpers on strike jamb for single doors, two bumpers at head for double doors.

.12 Manufacturer's nameplates on frames are not permitted.

.13 Conceal fastenings except where exposed fastenings are indicated.

.14 Provide factory applied touch up primer at areas where zinc coating has been removed during fabrication.

.15 For power-assist door operators typically secured to door frame, provide additional reinforcing to support backside of mounting plate.

Part 3 Execution

3.1 INSTALLATION

.1 General.

.1 Install doors and frames in accordance with CSDMA Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames.

.2 Install labeled steel fire rated doors and frames to NFPA 80 and NFPA 252.

.2 Frame Installation.

.1 During the setting of frame product, check and correct as necessary for opening width, opening height, square, alignment, twist and plumb, in accordance with CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames.

.2 Frame Anchorage.

.1 Provide appropriate anchorages and connections to adjacent floor and wall construction.

.2 Install door frame adjustable base anchors as specified in accordance with manufacture's printed instructions.

.3 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.4 Provide 2 anchors for rebate opening heights up to 1525 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Continuously caulk perimeter of all frames (both sides between frame and surrounding construction) with acoustic sealant to form airtight seal.

.6 Install neoprene door bumpers in frames (following field painting of frames).

.3 Door Installation.

.1 Install doors and hardware in accordance with reviewed shop drawings, hardware templates, manufacturer's instructions, and Section 08 71 00.

.2 Provide even margins between doors and jambs and doors and finished floor (and thresholds) as follows:

.1 Hinge side: 1.0 mm.

.2 Latchside and head: 1.5 mm.

.3 Finished floor and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

.4 Field Repairs.

.1 Touch up finishes damaged during installation with touch-up primer in accordance with ASTM A780/A780M.

.2 Fill surfaces with imperfections with metallic paste filler and sand to uniform smooth finish.

.5 Glazing.

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

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealants.

.2 Section 08 71 00 – Door Hardware.

.3 Section 08 71 13 – Automatic Door Operators.

.4 Section 08 80 00 – Glazing.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM B221M-13, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric].

.2 Canadian Standards Association (CSA).
- .1 CAN/CSA S157-05/S157.1-05 (2010), Strength Design in Aluminum/Commentary on CSA S157-05, Strength Design in Aluminum.

.3 Aluminum Association (AA).
- .1 Designation System for Aluminum Finishes, 2003 (R2009).

.4 American Architectural Manufacturers Association (AAMA).
- .1 AAMA CW-10-12, Care and Handling of Architectural Aluminum from Shop to Site.

1.3 SUBMITTALS

.1 Shop Drawings.
- .1 Submit shop drawings in accordance with Section 01 33 00.
- .2 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, and anchorage details.
- .3 Indicate materials and large scale details for head, jamb and sills, profiles of components, elevations of unit, description of related components and exposed finishes, fasteners and caulking.

.2 Closeout Submittals.
- .1 Provide operation and maintenance data for incorporation into Operation and Maintenance Manual specified in Section 01 78 00.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Handle work of this Section in accordance with AAMA CW-10.

1.5 WARRANTY

.1 Manufacturer's Product Warranty: provide an extended warranty for Work of this Section for a period of 2 years from date of Total Performance of the Work. Manufacturer hereby warrants aluminum-framed entrances and storefronts to be free of manufacturing and material defects, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of The City and Contract Administrator, and at no expense to The City.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
  .1 Interior Aluminum Entrance Framing (single glazed).
    .1 Alumicor Flushglaze TL1800 Entrance Framing, 44 mm wide x 114 mm deep c/w Canadiana 500B Series (medium stile) Entrance Doors c/w 98 mm top rail, 101 mm stiles, 260 mm mid rail, and 304 mm bottom rail.

    .2 Kawneer TRIFAB VG 450 (centre plane) frame, 44 mm wide x 114 mm deep c/w 350 Series (medium stile) doors c/w 89 mm top rail and stiles, 254 mm mid rail, and 304 mm bottom rail.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all products from a single manufacturer.

2.2 MATERIALS

.1 Extruded Aluminum: Aluminum Association AA 6063-T6 alloy and temper in accordance with ASTM B221M and CAN/CSA S157/S157.1.

.2 Member Wall Thickness: wall thickness sufficient to meet the specified structural requirements.

.3 Tolerances: in accordance with Aluminum Association Aluminum Standards and Data.

.4 Exposed Formed Sheet Aluminum: extruded or break formed aluminum components 3 mm thick sheet of alloy and temper suitable for their purpose and finish to sizes and profiles indicated, finish to match entrance framing.

.5 Joint Sealants: in accordance with Section 07 92 00.

.6 Glazing: in accordance with Section 08 80 00.

2.3 COMPONENTS

.1 Glazing Gaskets: in accordance with ASTM C864 and be extruded of a silicone compatible EPDM rubber that provides for silicone adhesion.

.2 Isolation Coating: alkali resistant bituminous paint as recommended by manufacturer.

2.4 ACCESSORIES

.1 Exposed Formed Sheet Aluminum: extruded or break formed aluminum components to be 3 mm thick sheet of alloy and temper suitable for their purpose and finish to sizes and profiles indicated, finish to match entrance framing.

.2 Fasteners: 300 series stainless steel or 400 series stainless steel cadmium plated of size, type, quantity and length to meet load requirements of aluminum entrances and storefronts. Size and quantity to perform their intended function.

2.5 FABRICATION

.1 General.
- .1 Fabricate aluminum-framed entrances and storefronts from extrusions of size and shape shown on reviewed shop drawings. Member wall thickness sufficient to meet the specified structural requirements.
- .2 Fabricate units square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.
- .3 Accurately machine, assemble, and seal all joints to provide neat, flush, hairline, and weathertight joints.
- .4 Use only concealed tamperproof fasteners. Where fasteners cannot be concealed, countersunk screws finished to match adjacent material may be used upon receipt of written approval from Contract Administrator.
- .5 Brace frames to maintain squareness and rigidity during shipment and installation.
- .6 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .7 Make allowance for anticipated deflection of structure to ensure that structural loads are not transmitted to aluminum entrance framing.
- .8 Fabricate vertical and horizontal members from tubular extrusions designed for shear block corner construction.
- .9 Reinforce with aluminum or galvanized steel plates for finishing hardware to templates supplied.
- .10 Visible manufacturer's identification labels not permitted.

2.6 FINISHES

.1 Shop Finishing.
- .1 Exposed Aluminum Surfaces.
  - .1 AA-M10C22A31 (0.4 mils) Architectural Class II Clear Anodized Coating in accordance with Aluminum Association Designation System for Aluminum Finishes.

.2 Visible appearance of flowlines, streaks, sags, blisters and other surface imperfections is not acceptable.

Part 3 Execution

3.1 PREPARATION

.1 Verify substrate conditions which have been previously installed under other Sections, are acceptable for product installation in accordance with manufacturer's instructions.

.2 Coordinate work of this Section with Electrical Subcontractor (auto door operators).

3.2 INSTALLATION

.1 Aluminum Storefront and Entrance Framing.
- .1 Install aluminum-framed entrances and storefronts in accordance with reviewed shop drawings and manufacturer's printed instructions.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Make allowance for deflection of structure to ensure that structural loads are not transmitted to aluminum-framed entrances and storefronts.
- .4 Set all components level, square, plumb, at proper elevations and in alignment with other work.
- .5 Field apply isolation coating to aluminum in contact with dissimilar metals.
- .6 Seal joints between aluminum-framed entrances and storefront framing and other building components with caulking in accordance with Section 07 92 00.
- .7 Install door hardware in accordance with templates. Adjust door components to ensure smooth operation.
- .8 Site glaze aluminum-framed storefront framing and doors in accordance with Section 08 80 00.

3.3 CLEANING

.1 Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

3.4 PROTECTION

.1 Protect finished work from damage.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 00 – Metal Doors and Frames.

.2 Section 08 41 13 – Aluminum-Framed Entrances and Storefronts.

1.2 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
  .1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction) standard hardware location dimensions.

1.3 SUBMITTALS

.1 Shop Drawings.
  .1 Submit hardware schedule in accordance with Section 01 33 00.
  .2 Indicate hardware proposed, including make, model, material, function, finish, and all other pertinent information for each door or pair of doors.

.2 Closeout Submittals.
  .1 Provide operation and maintenance data for each type of door hardware for incorporation into Operation and Maintenance Manual specified in Section 01 78 00.
  .2 Supply 2 sets of wrenches for hardware adjustment.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Package each item separately or in like groups, label each item or package as to item identification and intended location.

.2 Deliver all hardware to site in the manufacturer’s original packaging. Packaging to contain manufacturer’s name, product name and identification number and other related information.

.3 Provide and maintain dry, off-ground weatherproof storage. Protect hardware as per manufacturer’s recommendations. Remove only in quantities required for same day use.

Part 2 Products

2.1 MANUFACTURERS

.1 Door Hardware.
  .1 Acceptable Products.
    .1 Refer to Hardware Groups following this Section.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all similar products from a single manufacturer.

2.2 FASTENINGS

.1 Supply and use only manufacturer's fastening devices required for satisfactory installation and operation of hardware.

.2 Use fasteners compatible with material through which they pass. Exposed fastening devices to match finish of hardware.

2.3 KEYING

.1 New door locks to be keyed to match existing master system. Prepare detailed keying schedule in conjunction with The City.

.2 Supply 3 keys per individual key group or lock. Supply 5 of each Master Key. Stamp keys "Do Not Duplicate".

.3 Supply construction cores with factory construction keying as required to secure the work during construction and prior to Substantial Performance. Provide 10 construction keys.

.4 Following Substantial Performance, provide all permanent cores and keys to The City.

Part 3 Execution

3.1 INSTALLATION

.1 Comply with manufacturer's written literature, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Supply door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).

.4 Hang doors on 3 hinges for doors up to 900 mm wide and 2200 mm high. For doors wider than 900 mm or higher than 2200 mm use 4 hinges.

.5 Install kickplates with oval head countersunk screws.

3.2 ADJUSTING

.1 Adjust door hardware for optimum and smooth operation. Lubricate hardware, operating equipment and other moving parts.

.2 Adjust door hardware to provide tight fit at contact points with frames.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 00 – Metal Doors and Frames.

.2 Section 08 41 13 – Aluminum-Framed Entrances and Storefronts.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM B221M-13, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric].

.2 Builders Hardware Manufacturers Association (BHMA).
- .1 ANSI/BHMA A156.19-2013, Power Assist and Low Energy Power Operated Doors.

.3 International Code Council (ICC).
- .1 ICC A117.1-2009, Accessible and Usable Buildings and Facilities.

1.3 SUBMITTALS

.1 Shop Drawings.
- .1 Submit in accordance with Section 01 33 00.
- .2 Show complete elevations, details and method of anchorage, installation of hardware; size, shape, joints and connections, and details of joining with other construction.
- .3 Provide manufacturer's catalogue data, detail sheets and specifications.
- .4 Templates, diagrams and shop drawings to be supplied to fabricators and installers of related work for coordination of operators with doors, frames, hardware and other work.

.2 Closeout Submittals.
- .1 Provide operating and maintenance instructions, parts lists and wiring diagrams for incorporation into Operations and Maintenance Manual specified in Section 01 78 00.

1.4 QUALITY ASSURANCE

.1 Manufacturer's Qualifications: factory-authorized and trained distributor having minimum of 5 year's experience specializing in work of this Section, and who maintains parts inventory and trained personnel capable of providing service.

.2 Requirements of Regulatory Agencies.
- .1 Meet requirements of disabled in accordance with ICC A117.1.

.3 All automatic equipment to comply with ANSI/BHMA A156.19.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer's original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Concealed Automatic Swing Door Operator System (aluminum doors).
  - .1 Horton HD-Swing Series 4800 Overhead Concealed Operator c/w Bottom Access Header.

- .2 Surface Mounted Automatic Swing Door Operator System (HM doors).
  - .1 Besam SW200i.
  - .2 Dor-O-Matic ADA Operator Senior-Swing.
  - .3 Gyro Tech GT System 500 HD.
  - .4 Horton 4100 LE.
  - .5 Hunter HA-8 HDS.
  - .6 LCN 4642 Auto Opener.
  - .7 Stanley Magic Swing Visible.

- .3 Column Type Door Actuators.
  - .1 Wikk Industries I36-3 Clear INGRESS'R.

- .4 Presence Detectors.
  - .1 BEA SuperScan I Presence Sensor with LE-21 relay.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all similar products from single manufacturer.

2.2 MATERIALS

.1 Extruded Aluminum: to ASTM B221M, 6063-T5 alloy and temper, anodized, header sections minimum 3 mm thick.

2.3 CONCEALED AUTOMATIC SWING DOOR OPERATOR SYSTEM

.1 Overhead Concealed Operator with Connecting Arm and Pivots: operator header is mounted directly over the door and serves as the door frame header.
- .1 Independent Pivot Connecting Arm: operator output shaft to connect to an arm that transmits power to the door via a slide block connected to the arm. The arm works in a track that is mounted in the top web of the door. The door pivot is independent of the operator allowing for the removal of the operator without removing the door.

.2 Bottom Access Header Case (across full with of double doors): extruded aluminum case 114 mm x 152 mm (4-1/2" x 6").

.3 Operator: isolation mounted and concealed in extruded aluminum case for smooth and quiet operation, maximum current draw not to exceed 3.15 amps.

.1 Opening Action: accomplished by a 1/8 HP D.C. permanent magnet motor working through reduction gears to the output shaft. Gear train bearings to be sealed ball bearing types.

.2 Field Adjustable Spring Closing Action: accomplished by a maximum-duty Quadracoil™ spring (four independent coil springs separated by teflon discs and enclosed in an external spring box) with a lifetime warranty. Spring to be adjustable, without removing the operator from the header, to accommodate a wide range of field conditions.

.3 Independent Adjustable Closing and Latching Speed Control: operator to employ a rheostat module to allow for independent field adjustment of closing and latching speeds using the motor as a dynamic brake.

.4 Field Adjustable Open Stop: operator to provide a field adjustable open stop to accommodate opening angles from 80 to 135 degrees without the need for additional components.

.5 Consistent Cycle: operator to deliver an even, consistent open force across the entire transition from door fully closed to door open check. Additionally, the range of the force to be field adjustable to accommodate a wide range of on-site conditions.

.6 Manual Use: operator to function as a manual door closer in the direction of swing with or without electrical power. Operator to deliver an even, consistent open force across the entire transition from door fully closed to door fully open.

.7 Controller Protection: controller to incorporate the following features to ensure trouble free operation:

.1 Automatic reset upon power up.

.2 Main fuse protection.

.3 Electronic surge protection.

.4 Internal power supply protection.

.5 Resettable sensor supply fuse protection.

.8 Push Button Interface: controller to have push button switches to allow for selection or change of the following parameters: carpet or timer logic, single or dual door, activation options, normal back check or large back check, push-to-open assist on/off.

.9 Soft Start/Stop: "soft-start"/ "soft-stop" motor driving circuit to be provided for smooth normal opening and recycling.

.10 Control Switch: automatic door operators to be equipped with a three position function switch to control the operation of the door. Control switch to provide three modes of operation - automatic, off, and hold-open.

.11 Master Control: incorporate the following features:

.1 Adjustable time delay of 1 to 28 seconds.

.2 Infinite adjustment to opening and open check speeds including adjusting the opening force without affecting the opening speed.

.3 Immediate reversal of door motion without undue strain on the drive train accomplished by supplying stepped voltage to the motor. The door to reverse when closing if an object stops the door.

.4 Motor Protection Circuit: locked door motor protection circuit to be supplied that will shut off current to the motor when the door is inadvertently locked or otherwise prevented from opening.

.4 On/Off Key Switch.

.1 Header Mounted Key Switch: 44 mm x 114 mm (1-3/4" x 4-1/2") satin stainless steel recessed key switch where indicated to turn on and off door operators.

2.4 SURFACE MOUNTED AUTOMATIC SWING DOOR OPERATOR SYSTEM

.1 Mode of Operation: spring close. Operator opens door by energizing motor and stops door by stalling motor against mechanical stop. Door closes slowly by means of spring energy with closing force of 26.6N (6 lb-force) minimum controlled by gear system and motor being used as dynamic brake without power. Complete automatic door cycle 18 to 20 seconds. Door operation not to require any fluids or gases under pressure to be used in opening and closing of door.

.2 Fail-Safe Operation: to operate as manual door in event of power failure with 62N maximum applied to door stile.

.3 Components.

.1 Operator Housing: nominal 140 mm wide x 127 mm high aluminum extrusion with finished end caps and prepared for surface mounting to new pressed steel door frames. Housing to extend full width of door header. All structural sections to have minimum thickness of 3.7 mm and be fabricated from 6063-T5 aluminum alloy.

.2 Power Operator: completely assembled and sealed unit including helical gear-driven transmission, overriding clutch (to provide easy manual operation, spring-close), mechanical spring and bearings all located in cast aluminum housing and filled with special lubricant for extreme temperature conditions. Attach DC shunt-wound permanent magnet motor with sealed ball bearings to transmission system. Operate motor from 115-volt supply requiring less than 5 amps at full power stall. Resilient mount complete unit with provisions for easy replacement, without removing door from pivots or frame. Include KEYED on/off switch (not toggle) mounted on header to turn power on or off, master keyed with mortise cylinder.

.3 Electronic Control: self-contained unit including necessary transformer, relays, rectifiers, and other electronic components for proper operation and switching of power operator. Plug-in type relays for individual replacement. All connecting harnesses to have interlocking plugs. Controls include time delay for normal cycle and adjustable hold-open (2 to 60 seconds) time delay module. Include "Time Out" feature which will turn off opening force when door is stopped for one second. If this occurs, door begins to close, and operator immediately resets and will accept another opening signal.

.4 Connecting Hardware.

.1 Pull-type operation: urethane covered roller riding in track fabricated of 6061-T6 aluminum alloy attached to top door rail.

.2 Push-type operation: two-piece drive arm with self-aligning rod ends and connecting door bracket.

.5 Presence Detector.

.1 Presence Detector: active infrared sensor, mounted to top rail of door on approach side, detects person in its path and sends signal to hold open or reactivate door until person has moved out of its pattern. Detection response time <50 ms; infinite presence detection time; detection range 685 mm to 2490 mm.

.2 Relay: prevents presence detector from activating door when door is manually operated permitting door to close without hold-open delay.

2.5 DOOR ACTUATORS

.1 Wall Plate Door Actuators (lower actuators only at existing Door 2:137B): 114 mm (4-1/2”) dia. satin stainless steel recessed push plate each side of opening as indicated on plan with handicap engraved emblem and "PUSH TO OPEN" wording.

.2 Column Type Door Actuators (at all other locations): 152 mm wide x 38 mm deep x 915 mm, surface mounted, tapered profile, hard wired, clear anodized aluminum with blue wheelchair logo and text "PUSH TO OPEN".

2.6 FINISHES

.1 Shop Finishing.

.1 AA-M12C22A31 (0.4 mils) Architectural Class II, Clear Anodic Coating in accordance with Aluminum Association Designation System for Aluminum Finishes.

2.7 MARKINGS

.1 Decals: provide decals visible from either side, instructing user as to operation and function of door.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that door openings and doors are properly installed and ready for installation of door operators.

.2 Verify that electrical service is available, properly located and of proper type.

3.2 INSTALLATION

.1 Install header case and concealed automatic door operator (aluminum doors) by factory-trained installers in accordance with reviewed shop drawings, manufacturer's printed instructions, and ANSI/BHMA A156.19.

.2 Install surface mounted automatic door operator (HM doors) by factory-trained installers in accordance with reviewed shop drawings, manufacturer's printed instructions, and ANSI/BHMA A156.19.

.3 Install wall mounted door actuators at location indicated.

.4 Install all work plumb, square, level and true to line.

.5 Field apply isolation coating to aluminum in contact with dissimilar metals.

3.3 ADJUSTING

.1 Adjust door operators for proper operation, without binding or scraping and without excessive noise.

3.4 CLEANING

.1 After installation, clean operator components as recommended by manufacturer.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 00 – Metal Doors and Frames.

.2 Section 08 41 13 – Aluminum-Framed Entrances and Storefronts.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM D2240-15, Standard Test Method for Rubber Property - Durometer Hardness.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.

.3 Underwriters' Laboratories of Canada (ULC).
- .1 CAN/ULC S104-10, Standard Method for Fire Tests of Door Assemblies.

.4 American National Standards Institute (ANSI).
- .1 ANSI Z97.1-2009, Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

1.3 SUBMITTALS

.1 Shop Drawings.
- .1 Submit shop drawings in accordance with Section 01 33 00.
- .2 Include manufacturer's printed product literature, specifications and data sheets.

.2 Test Reports.
- .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

1.5 WARRANTY

.1 Manufacturer's Product Warranty: provide an extended warranty for Work of this Section from date of Total Performance of the Work to term of warranty specified below, and these or other observed defects and deficiencies to be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

.1 Fire-Rated/Impact Safety-Rated Glass: 5 years against manufacturing defects resulting in material obstruction through the glass area and/or edge separation and changes in properties of the interlayer.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.

.1 Fire-Rated /Impact Safety-Rated Glass (FRG).

.1 TGP FireLite Plus Premium Grade.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all similar products from a single manufacturer.

2.2 MATERIALS

.1 Laminated Glass (LG), (aluminum doors): to CAN/CGSB-12.1, Type 1 (laminated), 6 mm overall thickness consisting of 3 mm clear float glass each side of 0.060" thick clear polyvinyl butyral (PVB) interlayer.

.2 Fire-Rated/Impact Safety-Rated Glass (FRG), (HM doors): to CAN/ULC S104 and ANSI Z97.1, 8 mm thick ceramic laminated clear and wireless glazing material for use in impact safety-rated locations such as doors, transoms and borrowed lites with fire rating requirements, both surfaces polished.

2.3 ACCESSORIES

.1 Setting Blocks: neoprene, 80 - 90 Shore "A" durometer hardness to ASTM D2240, minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height to suit glazing method, glass light weight and area.

.2 Spacer Shims: neoprene, 50 - 60 Shore "A" durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self-adhesive on one face.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.2 PREPARATION

.1 Remove protective coatings and clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION

.1 Interior Dry Method (tape and tape).
- .1 Cut glazing tape to length and set against permanent stop, projecting 1.6 mm above sight line.
- .2 Place setting blocks as per manufacturer's instructions.
- .3 Resting glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- .4 Place glazing tape on free perimeter of glazing in same manner as noted above.
- .5 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact. Knife trim protruding tape. Do not cut or abrade tempered glass.

3.4 CLEANING

.1 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 – Rough Carpentry.

.2 Section 08 11 00 – Metal Doors and Frames.

.3 Section 09 29 00 – Gypsum Board.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM C645-14e1, Standard Specification for Nonstructural Steel Framing Members.
- .2 ASTM C754-15, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 Canadian Sheet Steel Building Institute (CSSBI).
- .1 CSSBI S18-2007, Guide Specification for Non-loadbearing Steel Framing.
- .2 CSSBI Technical Bulletin Volume 7, No. 1 - 2007, Maximum Height Tables for Interior Non-Loadbearing Partitions.

1.3 QUALITY ASSURANCE

.1 Stud Height Limitations: to be in accordance with L/120, L/240, L/360 of ASTM C754 “Allowable Heights Table”, and CSSBI Technical Bulletin Volume 7, No. 1 “Maximum Height Tables for Interior Non-Loadbearing Partitions”, for stud width and spacing used.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, and in strict accordance with manufacturer's recommendations.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions.

Part 2 Products

2.1 MATERIALS.

.1 Steel Stud Framing for Screw Attachment of Gypsum Board: to ASTM C645, roll formed from 0.91 mm (standard duty 20 ga.) thick cold formed steel with hot dipped galvanized coating.

.2 Stud Widths: as indicated and to include factory pre-punched cutouts for services and channel bridging.

.3 Top and Bottom Track: to be of same material and gauge as studs and sized to suit stud. Leg length of top track to me 76 mm. Leg length of bottom track to be min. 30 mm.

.4 Stud Bridging Channels: to be provided on all steel stud framing consisting of 13 mm x 38 mm roll formed from 1.2 mm (18 ga.) thick cold formed steel with hot dipped galvanized coating.
.1 Up to 3050 mm high partition - 1 row mid height.
.2 Over 3050 mm high partition - maximum 1525 mm o.c.

.5 Fasteners: to secure metal framing together to be No. 8 x 16 mm Wafer Head Speed Tec Framing Screw.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections are acceptable for non-structural metal framing application in accordance with manufacturer's written instructions.

3.2 INSTALLATION

.1 Ensure height and spacing of steel studs and furring members meet the requirements of ASTM C754, CSSBI S18, and CSSBI Technical Bulletin Volume 7, No. 1 to provide proper support for gypsum board and any other wall mounted items.

.2 Provide cooperation to other trades to accommodate door frames, mechanical and electrical items and any other special supports or anchorage for work specified in other Sections required to be incorporated into or coordinated with framing system.

.3 Install partitions to underside of floor structure above unless otherwise indicated.

.4 Align tracks at top and bottom of partitions and secure 610 mm on centre maximum and maximum 50 mm from each end using shield screws, power driven fasteners, or other suitable fasteners.

.5 Place studs vertically as indicated, 406 mm on centre max., and 50 mm max. from abutting walls and openings.

.6 Install partitions to accommodate vertical deflection of structure to avoid transmission of structural loads onto framing by use of 63 mm leg top tracks.

.7 Attach studs to track using Speed Tec sheet metal framing screws.

.8 Install steel door frames (supplied by others) into steel stud partitions in accordance with requirements of section 08 11 00. Screw-fix frame anchor clips to jamb, header, and/or sill members. Fixing to be adequate to prevent movement of frame relative to steel stud framing.

.9 Install steel stud framing between studs for attachment of electrical receptacles and other mechanical and/or electrical systems.

.10 Finished work to be rigid, secure, square, level, plumb and erected to maintain dimensions and contours.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Section 09 29 00 – Gypsum Board.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM C144-11, Standard Specification for Aggregate for Masonry Mortar.
- .2 ASTM C150/C150M-15, Standard Specification for Portland Cement.
- .3 ASTM C206-14, Standard Specification for Finishing Hydrated Lime.
- .4 ASTM C847-14a, Standard Specification for Metal Lath.
- .5 ASTM C897-15, Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters.
- .6 ASTM C926-16, Standard Specification for Application of Portland Cement-Based Plaster.
- .7 ASTM C933-14, Standard Specification for Welded Wire Lath.
- .8 ASTM C1063-16, Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster.
- .9 ASTM E84-15b, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .10 ASTM E96/E96M-15, Standard Test Methods for Water Vapor Transmission of Materials.
- .11 ASTM E2357-11, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

.2 American Association of Textile Chemists and Colorists (AATCC).
- .1 AATCC 127-2014, Water Resistance: Hydrostatic Pressure Test.

1.3 SUBMITTALS

.1 Samples.
- .1 Submit samples in accordance with Section 01 33 00.
- .2 Submit 300 mm x 300 mm sample of cement stucco in colour and texture specified.

1.4 QUALITY ASSURANCE

.1 Qualifications.
- .1 Engage only applicators certified by cement stucco system manufacturer. Apprentices may be employed provided they work under direct supervision of certified journeyman applicators.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver all materials to site in the manufacturer's original packaging. Packaging to contain manufacturer's name, product name and identification number and other related information.

.2 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.

1.6 SITE CONDITIONS

.1 Do not apply cement stucco when substrate or ambient air temperature is less than 4° C or more than 30° C for 48 hours before, during, and after application.

.2 Apply cement stucco to clean, adequately prepared surfaces free from dust, dirt or other deleterious substances.

.3 Provide adequate protection from contaminates and the weather for substrates prior to and during cement stucco applications. Maintain in place until stucco is adequately cured.

.4 Protect cement stucco surfaces from uneven and excessive evaporation during hot, dry or windy weather.

.5 Take necessary care to identify and protect adjacent surfaces from damage from cement stucco application and promptly remove all droppings.

1.7 WARRANTY

.1 Manufacturer's Product Warranty: provide an extended warranty for Work of this Section for a period of 10 years from date of Total Performance of the Work. Manufacturer hereby warrants stucco system to be free from manufacturing defects, and maintain manufactured integrity with its physical characteristics, and these or other observed defects and deficiencies will be repaired to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Building Paper.
  - .1 DuPont™ Tyvek® CommercialWrap® D.
- .2 Building Paper Tape.
  - .1 DuPont™ Tyvek® Tape.
- .3 Exterior Cement Stucco.
  - .1 Imasco Traditional Stucco System consisting of Imasco Greatwall Basecoat Concentrate and Imasco Premix 1000 Finish Coat.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply similar products from single manufacturer.

2.2 MATERIALS

.1 Building Paper: spunbonded polyolefin, non-perforated, non-woven, non-absorbing, breathable membrane with ribbed surface texture, basis weight: 2.4 oz./yd², air penetration resistance in accordance with ASTM E2357, water vapour transmission in accordance with ASTM E96/E96M, water penetration resistance in accordance with AATCC 127, surface burning characteristics: Class A in accordance with ASTM E84.

.2 Building Paper Tape: manufacturer's purpose made tape constructed of an oriented polypropylene film coated with a specially formulated permanent acrylic adhesive.

.3 Exterior Cement Stucco.

.1 Greatwall Basecoat Concentrate: factory blend of Portland cement, fibers and proprietary ingredients. Improved workability, excellent coverage, compressive and flexural strength and resistance to shrinkage cracking. When mixed with sand and water it produces a fiber-reinforced stucco basecoat that provides a high quality substrate for a finish coat.

.2 Premix 1000 Finish Coat: mixture of Portland cement to ASTM C150/C150M, hydrated lime to ASTM C206, inert aggregates, and additives specially blended to provide improved workability, better coverage, colour consistency, and increased water resistance. Colour and texture to match existing building.

.4 Welded Wire Lath (stucco wire): standard type galvanized wire lath to ASTM C847 and ASTM C933 and of following types as required:

.1 20 gauge lath with openings not to exceed 25 mm.

.2 16 gauge lath with openings not to exceed 50 mm.

.5 Cornerite: standard manufacture, expanded 0.50 mm (minimum) galvanized sheet steel with 75 mm legs.

.6 Striplath: standard manufacture, expanded 0.50 mm (minimum) diamond mesh sheet steel, 100 mm wide galvanized.

.7 Water: potable, clean and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances.

.8 Sand: to ASTM C897, natural or manufactured, clean, sharp and free of loam, clay, silt, soluble salts and organic matter, freshwater washed. Sampling and testing to conform to ASTM C144.

2.3 ACCESSORIES

.1 Provide all stucco accessories and/or trim, such as expansion and control joints, stops (casing beads), internal corner reinforcement, etc. as detailed on drawings and/or as required to complete the work in accordance with best trade practices.

.2 Provide accessories fabricated from hot dipped galvanized steel, zinc alloy, or extruded exterior grade PVC of types and of materials pre-approved by the Contract Administrator, and to stucco manufacturer's requirements. Use prefinished materials where required or noted.

.3 Provide accessories with an embedment flange to key into stucco with depth (grounds) of accessories dependent on the required thickness of base coat, without the finish coat.

.4 Use welded wire external corner reinforcement for maximum embedment of base coat.

2.4 FASTENERS

.1 Fasteners: as recommended by manufacturer of suitable corrosion resistant material (electro and/or hot dipped galvanized steel, stainless steel) compatible with material, sheathing, framing or other substrate being fastened.

2.5 MIXES

.1 Mix products in strict accordance with manufacturer's printed instructions.

Part 3 Execution

3.1 EXAMINATION

.1 Prior to commencement of work of this Section, review all conditions and thoroughly inspect all substrates and surfaces scheduled to have cement stucco applied. Report in writing to Contractor and Contract Administrator any conditions or surfaces that will adversely affect proper installation of the cement stucco system.

.2 Verify that sheathing, building paper, and flashing assembly meets cement stucco manufacturer's installation requirements.

.3 Ensure wire lath, accessories and trim are tight and fastened securely in place and fixtures, conduits, pipes, cables and outlets are properly plugged, capped or covered before commencing cement stucco application.

.4 Do not commence with this work until work which is to receive it and site conditions are satisfactory.

.5 Protect all adjacent surfaces and areas from cement stucco application operations and make good any damage caused by failure to provide such protection.

3.2 INSTALLATION

.1 Building Paper.
- .1 Install building paper to all surfaces as indicated which are to be covered with cement stucco.
- .2 Install in accordance with building paper manufacturer's instruction.
- .3 Install in continuous horizontal strips, lapping upper strips over lower strips. Seal overlap using tape supplied by building paper manufacturer.
- .4 Seal laps, holes, tears, and punctures in building paper with building paper tape as specified prior to installation of wire lath and cement stucco base coat.

.2 Lath (stucco wire).
- .1 Install lath in accordance with ASTM C1063.
- .2 Install welded wire lath (stucco wire) with long dimension horizontal, lapping joints at least 1 mesh but not less than 25 mm, lapping upper courses over lower courses, and lapping ends.
- .3 At external corners, wrap wire lath around corner and reinforce with external corner reinforcement.

.4 At internal corners, fold wire through corner and reinforce with interior corner reinforcement.

.3 Accessories.

.1 Install accessories and trim straight, plumb, level, rigid and in the proper plane. Use full length pieces to minimize joints. Fit lengths together without gaps, accurately align and rigidly secure each side of joints. Mitre and fit corners accurately, without rough edges.

3.3 APPLICATION OF STUCCO BASE COAT (19 mm thick 2 coat application)

.1 General.

.1 Apply stucco base coats to entire surface in one continuous operation using trowel or machine to finish entire section of wall area at one time, interrupted only at natural breaks in construction such as changes of planes, openings, or at control joints.

.2 Minimum stucco application standards to ASTM C926 and stucco manufacturer's requirements with application methods in accordance with best trade practices for type and application of materials used.

.2 First (Scratch) Coat.

.1 Apply first (scratch) coat to completely embed lath to minimum thickness of 10 mm and thick enough to allow for uniform and shallow scoring (approx. 3 mm) of surface.

.2 Allow first (scratch) coat to stiffen before applying second (brown) coat.

.3 Second (Brown) Coat.

.1 Apply second (brown) coat to maximum thickness of 10 mm over damped first coat with sufficient material and pressure to ensure tight uniform bond to first coat but not to deform or crack first coat. If required, apply fine spray of clean water to first coat, so as to dampen it only. Do not saturate. Allow water sheen to disappear before applying second coat.

.2 Second (brown) coat application to bring total system thickness to 19 mm.

.3 Rod second (brown) coat to true, even plane, filling surface defects with cement plaster and trowel-float surface uniformly after it has set and when moisture is still present in it. (Float should not adhere to surface that is to be worked).

.4 Maximum deviation from true plane of base coat surfaces: 3 mm in 1525 mm as measured by straight edge placed at any location on surface.

3.4 CURING OF STUCCO BASE COAT

.1 Cure base coat materials in strict accordance with stucco manufacturer's system requirements.

3.5 APPLICATION STUCCO FINISH COAT

.1 Apply stucco finish coat to entire surface in one continuous operation using trowel finish entire section of wall areas at one time, interrupted only at natural breaks in construction such as changes of planes, openings, or at control joints.

.2 Minimum stucco application standards to ASTM C926 and stucco manufacturer's requirements with application methods in accordance with best trade practices for type and application of materials used.

.3 Ensure that surface temperature of substrate is above 5 degrees C for minimum of 24 hours during and after application of finish coat.

.4 Avoid application of separate batches of finish side-by-side, or application of finish coat materials in direct sunlight, or excessive wind.

.5 Spread on even coat of finish coat material using trowel then trowel to desired finish textured as indicated free of tool marks and other blemishes. Always work away from wet edge.

3.6 CURING OF STUCCO FINISH COATS\

.1 Cure stucco finish coat materials in strict accordance with stucco manufacturer's system requirements.

.2 Allow finish coat minimum of 24 hours to set with sufficient moisture retained or applied to permit proper hydration and to prevent shrinkage.

3.7 FIELD QUALITY CONTROL

.1 Cement stucco surfaces will be considered to lack uniformity and soundness if any of the following defects are apparent:
- .1 Cracks resulting from incorrect application methods.
- .2 Evidence of poor coverage (i.e., not applied to thickness specified), particularly at joints and corners.
- .3 Damage due to touching before stucco is sufficiently dry or any other contributory cause.
- .4 Damage due to application on moist surfaces or caused by inadequate protection from the weather.
- .5 Damage and/or contamination of cement stucco due to windblown contaminants (dust, salt spray, etc.).

.2 Cement stucco surfaces rejected by the Contract Administrator to be corrected as follows: Small affected areas may be touched up. Large affected areas or areas without adequate coverage or with cracking shall be removed and redone.

3.8 PROTECTION

.1 Ensure that all newly applied cement stucco surfaces are protected from rain and other contamination until stucco work is completely dry and cured. Curing periods shall exceed the manufacturer's recommended minimum time requirements.

.2 Ensure that barriers or screens and signs are provided by others to warn of or limit or direct traffic away or around work area and to protect newly applied cement stucco surfaces from hazardous contact.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 – Rough Carpentry.

.2 Section 07 92 00 – Joint Sealants.

.3 Section 08 11 00 – Metal Doors and Frames.

.4 Section 09 22 16 – Non-Structural Metal Framing.

.5 Section 09 90 00 – Painting and Coating.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM C475/C475M-15, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .2 ASTM C840-13, Standard Specification for Application and Finishing of Gypsum Board.
- .3 ASTM C954-15 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
- .4 ASTM C1177/C1177M-13, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- .5 ASTM C1280-13a, Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing.
- .6 ASTM C1396/C1396M-14a, Standard Specification for Gypsum Board.
- .7 ASTM C1629/C1629M-15, Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
- .8 ASTM D3273-12e1, Standard Test Method for Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
- .9 ASTM E136-16, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

.2 Gypsum Association (GA).
- .1 GA 214-15, Recommended Levels of Gypsum Board Finish.
- .2 GA 216-13, Application and Finishing of Gypsum Panel Products.
- .3 GA 253-12, Application of Gypsum Sheathing.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all materials to site in the manufacturer’s original packaging and standard commercial containers. Packaging to contain manufacturer’s name, product name and identification number and other related information.

.2 Provide and maintain dry, off-ground weatherproof storage protected from exposure to extreme temperatures, moisture conditions, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Abuse-Resistant Fire-Rated Gypsum Board.
  - .1 CertainTeed Abuse-Resistant (Type X) Gypsum Board.
  - .2 CGC Sheetrock Brand Mold Tough VHI Firecode Core Panels.
  - .3 Georgia-Pacific ToughRock Fireguard X Abuse-Resistant Gypsum Board.
- .2 Exterior Fibreglass-Faced Gypsum Board Sheathing (2/A3).
  - .1 CertainTeed GlasRoc High Performance Glass Fiber Reinforced Exterior Sheathing.
  - .2 CGC Securock™ Glass-Mat Sheathing.
  - .3 Georgia-Pacific DensGlass Gold Exterior Sheathing.
- .3 Stainless Steel Corner Guards.
  - .1 Specialloy SCGB-3 Panelled Wall Corner Guard #3 (full height).

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all similar products from single manufacturer.

2.2 MATERIALS

.1 Abuse-Resistant Fire Rated Gypsum Board: to ASTM C1396/C1396M, dense gypsum core reinforced by glass fibre, heavy-duty abuse resistant face paper to ASTM C1629/C1629M, 16 mm thick fire-rated to ASTM E136, 1220 mm wide x maximum practical length, ends square factory cut, edges tapered.

.2 Exterior Fibreglass-Faced Gypsum Board Sheathing: to ASTM C1177/C1177M and ASTM D3273, 16 mm thick with inorganic glass matt facing both sides and long edges of water-resistant, silicone-treated gypsum core and gold coloured alkali-resistant surface coating.

2.3 COMPONENTS

.1 Gypsum Board Shaft Enclosure Systems.
- .1 Gypsum Board: fire-rated gypsum board 15.9 mm and 19 mm thick x 1220 mm wide x longest practical length.
- .2 Shaft Liner Board: fire-rated mould-resistant gypsum liner board, 25 mm thick, height to suit installation conditions.
- .3 Framing System: studs and tracks; 64 mm deep, manufactured from galvanized steel, 20 gauge thick, as used in shaft enclosure wall fire tests by Warnock Hersey International.
- .4 Resilient Channel: drywall resilient channel manufactured from 0.530 mm galvanized steel.
- .5 Acoustical Insulation: friction fit glass or mineral fibre insulation.
- .6 Joint Treatment: mould resistant drywall compound and fiberglass mesh tape conforming to ASTM C475/C475M.
- .7 Corner Bead: 29 mm, 32 mm flanges.
- .8 Sheet Metal Screws: for attaching metal to metal; self-drilling, self-tapping, pan head sheet metal screws, 12.7 mm x No. 8 with rust resistant finish.

.9 Gypsum Board Screws: Type S-12 for 20 gauge framing, for attaching gypsum board to metal framing; lengths as specified.

2.4 ACCESSORIES

.1 Fasteners for Gypsum Board Sheathing: self-drilling screws to ASTM C954.

.2 Fasteners for Exterior Fibreglass-Faced Gypsum Board Sheathing: in accordance with ASTM C1280.

.3 Joint Tape: to ASTM C475/C475M, 51 mm wide, high strength, coated, alkali-resistant, glass fiber reinforcing tape.

.4 Joint Compound: to ASTM C475/C475M, asbestos-free, mould-resistant.

.5 Metal Corner Beads: roll formed from 0.40 mm (28 ga.) thick cold formed galvanized steel, beading angle, flange length as required.

.6 Metal Casing Beads: roll formed from 0.40 mm (28 ga.) thick cold formed galvanized steel, type "L", "J" or "Z" as required, beading angle or casing with one side knurled for joint filling.

.7 Paper Faced Metal Corner and Casing Beads: roll formed flanges from 0.40 mm (28 ga.) thick cold formed galvanized steel laminated to exposed paper tape.

.8 Stainless Steel Corner Guards: 16 ga. stainless steel, 1-3/16 x 1-3/16" box type corner guard, Type 304 stainless alloy with No. 4 satin finish.

.9 Joint Sealants: in accordance with Section 07 92 00.

Part 3 Execution

3.1 INSTALLATION

.1 Abuse-Resistant Fire Rated Gypsum Board.
- .1 Install gypsum board in accordance with ASTM C840, GA 216, and GA 253, and manufacture's printed instructions.
- .2 Do not apply gypsum board until blocking, electrical and mechanical work are complete and approved.
- .3 Apply fire rated gypsum board to metal furring or framing using screw fasteners. Spacing and length of fasteners in accordance with manufacturer's written instructions to obtain required fire rated assemblies.

.2 Exterior Fibreglass-Faced Gypsum Board Sheathing.
- .1 Install exterior fibreglass-faced gypsum board sheathing to metal furring in accordance with manufacturer's printed instructions.
- .2 Apply using screw fasteners in accordance with ASTM C1280.
- .3 Space fasteners 200 mm o.c. at perimeter and 200 mm o.c. along intermediate framing.
- .4 Locate fasteners not less than 10 mm from edges and ends of sheathing panels.
- .5 Length of fasteners in accordance with ASTM C1280.
- .6 Fasteners must be driven so as to bear tight against and flush with surface of sheathing. Fasteners must NOT be countersunk.

.3 Accessories.

.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 o.c.

.2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joint with sealant.

.3 Apply 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 and ducts in partitions where perimeter sealed with acoustic sealant.

.4 Install stainless steel corner guards as indicated.

3.2 CONSTRUCTION

.1 Gypsum Board Finish Levels: to GA 214 and GA 216 and as follows:

.1 Level 1: embed tape at joints in ceiling plenum areas, concealed areas and where indicated unless higher level of finish is required for fire resistance rated and sound rated assemblies.

.2 Level 2: embed tape and apply separate first coat of joint compound to tape, fasteners and trim flanges where indicated.

.3 Level 3: embed tape and apply separate first and fill coats of joint compound to tape, fasteners and trim flanges where indicated and for surfaces receiving medium or heavy-textured finishes before painting or heavy wallcoverings where lighting conditions are not critical.

.4 Level 4 (typical): embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners and trim flanges.

.2 Taping and Filling.

.1 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.

.2 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.3 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.4 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.3 Gypsum Board Shaft Enclosure Systems.

.1 Install gypsum board shaft enclosures in strict accordance with manufacturer's directions.

.2 Install track at top and bottom and sides of opening. Secure at 610 mm centres maximum with suitable power driven fasteners.

.3 As shaft enclosure walls are erected, apply acoustic caulking under tracks and edges of each layer of facing board around abutting perimeter, and where required for effective acoustic seal.

.4 Install acoustical insulation to fill cavity between studs and other voids, to form effective sound blanket.

.5 Apply corner beads to all external angles. Tape and fill flush, all joints and fastener heads in accordance with manufacturer's directions.

.6 Finished work smooth, seamless, plumb, true and flush with square, neat corners.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 American Society for Testing and Materials (ASTM).
- .1 ASTM A641/A641M-09a(2014), Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- .2 ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
- .3 ASTM B209-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

1.2 SUBMITTALS

.1 Shop Drawings.
- .1 Submit shop drawings in accordance with Section 01 33 00.
- .2 Indicate component profiles, materials, suspension system, perimeter and integral trim, and space closures.
- .3 Provide plans indicating layout arrangement of beams, dimensions, hanger locations, and location of related mechanical and electrical components.

.2 Closeout Submittals.
- .1 Provide maintenance data for incorporation into Operation and Maintenance Manual specified in Section 01 78 00.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all material to site in manufacturer’s original unopened packaging with labels clearly identifying product name and manufacturer.

.2 Store materials in a dry, enclosed area protected from exposure to moisture, construction activity, and direct sunlight in strict accordance with manufacturer's recommendations.

.3 Handle all products with appropriate precautions and care as stated manufacturer's instructions to avoid damage to surfaces and edges and prevent distortion or other physical damage.

1.4 WARRANTY

.1 Manufacturer’s Product Warranty: provide an extended warranty for Work of this Section for from date of Total Performance of the Work. Manufacturer hereby warrants linear metal ceilings to be free of manufacturing and material defects for 5 years including factory applied paint coating, and these or other observed defects and deficiencies will be repaired or replaced to the satisfaction of the Contract Administrator and The City, and at no expense to The City.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.
- .1 Linear Metal Ceilings.
  - .1 CGC Paraline Plus Linear Metal Ceiling System (to match existing).

2.2 COMPONENTS

.1 Linear Panels.
- .1 Linear Panels: 76 mm wide face x 25 mm deep channel shaped profile.
- .2 Aluminum: roll-formed aluminum sheet 0.6 mm (24 ga.) to ASTM B209, factory-finished in baked enamel paint finish, 2 colours to match existing linear panels.
- .3 Closure Flanges: integral flanges that overlap to form a reveal closure appropriate for soffit applications, factory finish to match panels.
- .4 Splice Plates: factory finish to match panels, formed for snap-fit in butt-cut panel ends.

.2 Suspension Members.
- .1 Paralock Carrier: G90 hot dipped galvanized steel to ASTM A653/A653M, painted in manufacturer's standard flat black with integral clips for locking main beams in place. Equip carrier with "plug-in" positive lock insertion for accurate, quick spacing and installation without tool.
- .2 Flexible Carrier: G90 hot dipped galvanized steel to ASTM A653/A653M, factor painted in manufacturer's standard flat black, integral clips for locking main beams in place.
- .3 Surface Mounting Clips: galvanized steel clips fabricated to hold carriers and provide means for attachment to wall or ceiling surface, finished in corrosion resistant coating over zinc phosphate substrate.
- .4 Paralock Spacers: 25 mm aluminum tee system with offset end which rests on carrier and inhibits twisting, complete with spring steel locking ends.

2.3 ACCESSORIES

.1 Retainer Clips, End Caps, Closures, Wall Trims: manufacturer's standard configuration to match existing, hardened and tempered aluminum, black finish, to accommodate 25 mm space between linear panels.

.2 Attachment Devices.
- .1 Hanger Wires: 2.5 mm dia. (10 ga.) galvanized commercial quality carbon steel, soft temper to ASTM A641/A641M.
- .2 Tie Wires: 1.6 mm diameter (14 ga.) galvanized, soft annealed wire.
- .3 Hanger Inserts: type and size for attachment to structure above.
- .4 Compression Posts (exterior installation): size as required to withstand wind load, integral levelling adjustment.

2.4 FABRICATION

.1 Linear Panels: edges formed to snap onto carrier members and provide positive locking mechanism with no additional fasteners, factory-finished to match existing.

.2 Paralock Carriers: zinc-coated and black finished steel formed to standard depth and width to accommodate width of main beam, integral cleats to receive main beams and required accessories, and with "plug-in" positive lock insertion.

Part 3 Execution

3.1 EXAMINATION

.1 Inspect area where linear metal ceiling system is to be installed for conditions that may affect the work and notify the Contract Administrator of any unsatisfactory conditions before proceeding.

.2 Confirm that layout of hangers will not interfere with other work. Ensure required utilities are available, in proper location, and ready for use. Coordinate location of hangers with other work.

3.2 INSTALLATION

.1 Install linear metal ceilings in accordance with and reviewed shop drawings and manufacturer's printed instructions. Locate system parallel to building lines according to reflected ceiling plan.

.2 Install hanger wires at maximum 1525 mm on centre, attaching directly to structure above. Do not support hanger wires from mechanical and/or electrical equipment, piping or other equipment occurring above ceiling.

.3 Provide additional hanger wires and reinforcing as required where lighting fixtures and/or air supply and return units occur in ceiling. Frame around fixtures and openings as required.

.4 Space carriers at 610 mm on centre and as required to support mechanical and/or electrical equipment. Align carriers straight and level in required position.

.5 Cut linear panels neatly and fit to exact dimensions and clearances at light fixture and around other items penetrating ceiling. Where required, use end cap to close off linear panels.

.6 Install closures, edge mouldings, end caps and trim using maximum lengths to complete linear metal ceiling assembly.

3.3 ADJUSTING

.1 Adjust ceiling components to provide a consistent finish and appearance in conformity with pre-established tolerances and requirements. All linear panels showing signs of damage, either in finish or in form are to be replaced.

3.4 CLEANING

.1 Clean all exposed surfaces of any dirt, grease, fingerprints and marks or other imperfections with cleaning materials recommended by the manufacturer.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes: all labor, materials, tools and other equipment, services and supervision required to complete all painting as indicated, and to full extent of drawings and specifications.

.2 Work under this contract includes, but is not necessarily limited to:
- .1 Minor surface preparation of substrates as required for acceptance of painting, including cleaning, small crack repair, and patching surfaces and areas to paint manufacturer's printed instructions and limits defined under Master Painters Institute (MPI) preparation requirements.
- .2 Priming and painting of all new exposed surfaces indicated.
- .3 Repainting of existing surfaces and finishes as required when adjacent to new painting work where applicable including surface preparation, prime and finish coats in accordance with MPI Repainting requirements.

.3 Cover or remove items such as grills, lights, smoke and heat detectors, fire pull stations, temperature sensors, etc, to ensure that no paint is applied to these items.

.4 Refer to drawings for location and extent of finishes required. Include all touch-ups and field painting necessary to complete work shown.

1.2 RELATED SECTIONS

.1 Section 08 11 00 – Metal Doors and Frames.

.2 Section 09 29 00 – Gypsum Board.

1.3 REFERENCES

.1 Master Painters Institute (MPI).
- .1 MPI Architectural Painting Specification Manual, including Identifiers, Evaluation, Systems, Preparation and Approved Product List (hereafter referred to as MPI Painting Manual).
- .2 MPI Maintenance Repainting Manual (hereafter referred to as MPI Repainting Manual).

1.4 SUBMITTALS

.1 Samples.
- .1 Submit samples in accordance with Section 01 33 00.
- .2 Provide 300 mm x 300 mm sample of each paint colour specified in gloss/sheen required to MPI Painting Manual standards for review and approval.
- .3 Once approved, samples become acceptable standard of finish quality and workmanship for on-site work.

.2 Quality Assurance/Control Submittals.
- .1 Submit list of all painting materials to Contract Administrator for review prior to ordering materials. If requested, provide invoice list of all paint materials ordered for project work indicating manufacturer, types and quantities for verification and compliance with specification and design requirements.

.2 Submit Material Safety Data Sheets (MSDS) prior to commencement of work for review and for posting at job site as required.

.3 Closeout Submittals.
.1 Provide maintenance data for incorporation into Operation and Maintenance Manual specified in Section 01 78 00.
.2 Provide itemized list complete with manufacturer, paint type and colour coding for all colours used for The City's later use in maintenance.

1.5 QUALITY ASSURANCE

.1 Qualifications.
.1 Engage only qualified journeypersons, as defined by local jurisdiction. Apprentices may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.

.2 Certifications.
.1 All materials, preparation and workmanship to conform to requirements of MPI Painting Manual unless otherwise indicated.
.2 Use only paint manufacturers and products as listed under Approved Product List section of MPI Painting Manual.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver all painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.

.2 Store all paint materials in original labeled containers in secure (lockable), dry, heated and well ventilated single designated area meeting minimum requirements of both paint manufacturer and authorities having jurisdiction.

.3 Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect environment from hazard spills. Store materials that constitute fire hazard (paints, solvents, drop clothes, etc.) in suitable closed and rated containers and removed from site on daily basis.

.4 Comply with requirements of authorities having jurisdiction, in regard to use, handling, storage and disposal of hazardous materials.

1.7 SITE CONDITIONS

.1 Apply paint only to dry, clean, properly cured and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect quality of finished surfaces.

1.8 MAINTENANCE MATERIALS

.1 At project completion provide 4 liters of each type and colour of paint from same production run (batch mix) used in unopened cans, properly labeled and identified for The City's later use in maintenance. Store where directed.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Products.

.1 New Gypsum Board (wall surfaces): INT 9.2M, Institutional Low Odor/ VOC (MPI Gloss Level G2).

.1 Primer Sealer, Interior, Institutional Low Odor/VOC – MPI #149.

.1 PPG Architectural Dulux Lifemaster Interior Acrylic Primer Sealer #59113.

.2 Latex, Interior, Institutional Low Odor/VOC (MPI Gloss Level G2) – MPI #144 (2 coats).

.1 PPG Architectural Dulux Lifemaster Interior Acrylic Eggshell #59311.

.2 New Galvanized Metal (HM doors and frames): INT 5.3N, Institutional Low Odor/VOC (over W.B. Primer) (MPI Gloss Level G5).

.1 Primer, Galvanized, Water Based – MPI #134.

.1 PPG Architectural Dulux Weatherguard Exterior Latex Primer #1535.

.2 Latex, Interior, Institutional Low Odor/VOC, Semi-Gloss (MPI Gloss Level G5) – MPI #147 (2 coats).

.1 PPG Architectural Dulux Lifemaster Interior 100% Acrylic Semi-Gloss #59211.

.3 New Structural Steel and Metal Fabrications: INT 5.1R, High Performance Architectural Latex (over QD alkyd primer), (MPI Gloss Level G5).

.1 Primer, Alkyd, Quick Dry, for Metal – MPI #76.

.1 Devo Coatings Devguard #4160.

.2 Latex, Interior, High Performance Architectural, Semi-Gloss, (MPI Gloss Level G5) – MPI #141 (2 coats).

.1 Dulux Diamond Interior 100% Acrylic Latex Semi-Gloss #13210.

.2 Request for substitutes will be considered in accordance with B7 Substitutes of the Bid Opportunity.

.3 Supply all products from single manufacturer.

2.2 MATERIALS

.1 Only materials (primers and paints) listed in latest edition of MPI Approved Product List (APL) are acceptable for use on this project. Supply all such material from single manufacturer for each system used.

.2 All paint materials to have good flowing and brushing properties and dry or cure free of blemishes, sags, air entrapment, etc. Refer to Field Quality Control/Standard of Acceptance requirements specified in this Section.

2.3 FINISHES AND COLOURS

.1 Unless otherwise specified herein, perform all painting work in accordance with MPI Premium Grade finish requirements.

.2 Colours as selected by Contract Administrator from manufacturer's full range of colours after award of Contract.

2.4 GLOSS / SHEEN RATINGS

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

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat finish	0 to 5	10 max.
G2	Velvet finish	0 to 10	10 to 35
G3	Eggshell finish	10 to 25	10 to 35
G4	Satin finish	20 to 35	35 min.
G5	Semi-Gloss finish	35 to 70	
G6	Gloss finish	70 to 85	
G7	High-Gloss finish	> 85	

Part 3 Execution

3.1 PREPARATION OF SURFACES

.1 Prepare all surfaces in accordance with MPI requirements. Refer to MPI Painting Manual/MPI Repainting Manual in regard to specific requirements for following:
- .1 Shop primed metal surfaces.
- .2 New galvanized and zinc coated metal.
- .3 New gypsum board surfaces.

.2 Remove all dust, dirt, and other surface debris by vacuuming or wiping with dry clean clothes.

.3 Protect all adjacent surfaces and areas from painting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and repair any damage caused by failure to provide such protection.

.4 Sand substrate defects ready for painting particularly after first coat of paint. Start of finish painting of defective surfaces (e.g. gypsum board) indicates acceptance of substrate after which Contractor to bear cost of making good defects including re-painting of entire defective surface (no touch-up painting).

3.2 APPLICATION

.1 Apply paint in workmanlike manner using skilled and trade qualified applicators as noted under Quality Assurance.

.2 Painting coats specified are intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.

.3 Apply minimum of 4 coats of paint where deep or bright colours are used to achieve satisfactory results.

.4 Sand and dust between each coat to provide anchor for next coat and to remove defects visible from distance up to 1000 mm.

.5 Do not apply finishes on surfaces that are not sufficiently dry. Unless manufacturer's directions state otherwise, ensure each coat is sufficiently dry and hard before following coat is applied.

3.3 FIELD QUALITY CONTROL/STANDARD OF ACCEPTANCE

.1 Painted surfaces will be considered to lack uniformity and soundness if any of the following defects are apparent:
- .1 Brush/roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
- .2 Damage due to touching before paint is sufficiently dry or other contributory cause.
- .3 Damage and/or contamination of paint due to blown contaminants (dust, etc.).

.2 Painted surfaces will be considered unacceptable if any of the following are evident under final lighting source (including daylight) for interior surfaces:
- .1 Visible defects are evident on vertical or horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm.
- .2 When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.

3.4 PROTECTION

.1 Protect all adjacent building surfaces (including flooring, glass, aluminum surfaces, etc.) and equipment and any labels and signage from painting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and repair any damage caused by failure to provide such protection.

.2 As painting operations progress, place "Wet Paint" warning signs in occupied areas.

3.5 CLEANING

.1 Remove all paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

.2 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same.

END OF SECTION