21-029

DTAH

City of Toronto Parks, Forestry and Recreation

Bluffers Park East Pavilion

Bluffers Park Architectural Specification

Issued for Tender

April 11, 2025

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Section 00 31 00
Available Project Information

Part 1 General

1.1 USE AND RELIANCE UPON AVAILABLE PROJECT INFORMATION

.1 Available Project Information is made available to Bidders for the purpose of disclosing information that is available to the Consultant and Owner.

.2 Bidders are responsible for interpreting and forming their own conclusions about the Available Project Information, including consideration of the time the document was created. Bidders are encouraged to obtain specialist advice if necessary. Consultant and Owner assume no responsibility for interpretations or conclusions made.

.3 In the event there is a conflict between the Contract Documents and the recommendations contained in the Available Project Information, the Contract Documents shall govern.

1.2 AVAILABLE PROJECT INFORMATION

.1 The following Available Project Information is not incorporated into the Contract Documents, but is made available to Bidders:

.1 Site Survey: Bluffer's Park Beach House on part of Water Lot Location DT137, Lake Ontario. In front of Lot 24, Concession B, City of Toronto. Survey by J.H. Gelbloom Surveying Limited, 2022.

.2 Geotechnical Report: Geotechnical Investigation, Proposed Bluffer's Park Pavilion by Davroc Testing Laboratories Inc., dated April 13, 2023.

.3 Designated Substances Survey: Designated Substance Survey at Bluffer's Park East Washroom by CCI Group, dated November 22, 2016.

.4 Existing Site and Building Drawings: 12 sheets, scanned architectural, structural, mechanical and electrical blueprints from 1988/1989 construction of existing Bluffer's Beach House.

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Section 01 25 00
Product Substitution Procedures

Part 1 General

1.1 APPROVED ALTERNATIVES AND APPROVED EQUALS

.1 Named Products alternates or equals, indicated by the phrases "or approved alternate by XYZ Manufacturing" or "or approved equal by XYZ Manufacturing", shall be interpreted to mean that named Product alternate or equal, if selected for use in lieu of indicated or specified Product, meets or exceeds performance, appearance, general arrangement, dimensions, availability, code and standards compliance, and colour of specified Product. Be responsible for costs and modifications associated with the inclusion of named Product alternate or equal at no additional cost to the Owner.

.2 The process for proposing and approving alternates or equals shall be the same process as for proposing and approving substitutions (refer to paragraph 1.2 below).

.3 Confirm delivery of specified items prior to proposing alternates or equals.

1.2 SUBSTITUTIONS

.1 Submission of substitutions:

.1 Proposals for substitutions of Products and materials must be submitted in accordance with Schedule D - 3.9.4 Substitutions, as supplemented by this section.

.2 Contract Administrator may review submissions, if directed by Owner, but in any case with the understanding that the Contract Time will not be altered due to the time required by the Contract Administrator to review the submission and by the Contractor to implement the substitution in the Work.

.2 Submission requirements:

.1 Description of proposed substitution, including detailed comparative specification of proposed substitution with the specified Product.

.2 Manufacturer’s Product data sheets for proposed Products.

.3 Respective costs of items originally specified and the proposed substitution.

.4 Confirmation of proposed substitution delivery, in writing by Product manufacturer.

.5 Compliance with the building codes and requirements of authorities having jurisdiction.

.6 Affect concerning compatibility and interface with adjacent building materials and components.

.7 Compliance with the intent of the Agreement, Drawings, Schedules, and Specifications.

.8 Effect on Contract Time.

.9 Reasons for the request.

.10 Detailed availability of maintenance services and sources of replacement materials and parts, including associate costs and time frames.

.3 Substitutions submitted on shop drawings without following requirements of this section prior to submission of the affected shop drawings will cause the shop drawings to be rejected.

.4 Proposed substitutions shall include costs associated with modifications necessary to other adjacent and connecting portions of the Work.

.5 Contract Administrator's decision concerning acceptance or rejection of proposed substitutions is final.

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Section 01 33 00
Submittal Procedures

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

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

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

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals before submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify site measurements and affected adjacent Work are coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.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 Contract drawings and specifications.

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

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

.6 Accompany submissions with transmittal letter,in duplicate, containing:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing, product data, and sample.

.5 Other pertinent data.

.7 Submissions to include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of site measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified site dimensions and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.8 After Consultant's review, distribute copies.

.9 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

.10 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.

.11 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of Contract award for project.

.12 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of Contract complete with project name.

.13 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.

.1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.

.14 Submit electronic copies of Manufacturer's Site Reports for requirements requested in specification Sections and as requested by Consultant.

.15 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.

.17 Delete information not applicable to project.

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

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

.20 The review of shop drawings by the Consultant is for the sole purpose of ascertaining general conformance with design concept.

.21 This review shall not mean that the Consultant approves detailed design inherent in shop drawings, responsibility for which shall remain with the Contractor submitting the same, and such review shall not relieve the Contractor of responsibility for errors or omissions in shop drawings, or of the responsibility for meeting requirements of construction and Contract Documents.

.22 Without restricting generality of the foregoing, the Contractor is responsibility for dimensions to be confirmed and correlated at the project site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of Subcontractors.

1.3 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Consultant's business address.

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

.4 Where colour, pattern or texture is criterion, submit full range of samples.

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

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

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Section 01 56 00
Temporary Barriers and Enclosures

Part 1 General

1.1 HOARDING

.1 Erect temporary site enclosures using 38 x 89 mm construction grade lumber framing at 600 mm centres and 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121.

.2 Apply plywood panels vertically flush and butt jointed.

.3 Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

.4 Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189 and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.

.5 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.2 ACCESS TO SITE

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

1.3 PUBLIC TRAFFIC FLOW

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

1.4 FIRE ROUTES

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

1.5 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.6 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Be responsible for damage incurred due to lack of or improper protection.

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Section 01 61 00
Common Product Requirements

Part 1 General

1.1 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

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

.3 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

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

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

1.2 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

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

1.3 STORAGE, HANDLING AND PROTECTION

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

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

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

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

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

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

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

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

.9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

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

.2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle and store such products.

1.5 MANUFACTURER'S INSTRUCTIONS

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

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

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

1.6 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.7 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.8 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.9 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.11 FASTENINGS

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

.2 Prevent electrolytic action between dissimilar metals and materials.

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

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

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

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

1.12 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

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

1.13 PROTECTION OF WORK IN PROGRESS

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

1.14 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and pedestrian and vehicular traffic.

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

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Section 01 74 13
Progress Cleaning

Part 1 General

1.1 ENVIRONMENTAL CONTROLS

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

.2 Store volatile wastes in covered metal containers, and remove from Place of Work daily.

.3 Prevent accumulation of wastes which create hazardous conditions.

.4 Provide adequate ventilation during use of volatile or noxious substances.

1.2 MATERIALS

.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned. Use as recommended by cleaning material manufacturer.

1.3 CLEANING DURING CONSTRUCTION

.1 Clean the Place of Work daily. Maintain clean and clear egress routes.

.2 Maintain Place of Work, grounds and public properties free from accumulations of waste materials and rubbish.

.3 Provide containers at the Place of Work for collection of waste materials and rubbish. Remove waste materials and rubbish from the Place of Work when containers become full.

.4 Sort materials and rubbish in order to divert waste from landfill whenever possible. Adhere to local material recycling requirements.

.5 Debris and waste are not permitted within cavities of Work.

END OF SECTION

Section 01 74 19
Waste Management and Disposal

Part 1 General

1.1 SUMMARY

.1 This Section includes requirements for management of construction waste and disposal, which forms the Contractor 's commitment to reduce and divert waste materials from landfill and includes the following:

.1 Preparation of a Draft Construction Waste Management Plan that will be used to track the success of the Construction Waste Management Plan against actual waste diversion from landfill.

.2 Preparation of monthly progress reports indicating cumulative totals representing progress towards achieving diversion and reduction goals of waste materials away from landfill and identifying any special programs, landfill options or alternatives to landfill used during construction.

.2 Owner has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors be employed by the Contractor.

1.2 DEFINITIONS

.1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.

.2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, re-modeling, repair and demolition operations.

.3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity, or reactivity.

.4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.

.5 Non-toxic: Not poisonous to humans either immediately or after a long period of exposure.

.6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

.7 Recycle: To remove a waste material from the Project site to another site for remanufacture into a new product for reuse by others.

.8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.

.9 Return: To give back reusable items or unused products to vendors for credit.

.10 Reuse: To reuse a construction waste material in some manner on the Project site.

.11 Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.

.12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.

.13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

.14 Toxic: Poisonous to humans either immediately or after a long period of exposure.

.15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

.16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:

.1 Solvents in paints and other coatings;

.2 Wood preservatives; strippers and household cleaners;

.3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

.4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

.18 Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the Project, and ensure that requirements of the Construction Waste Management Plan are followed.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit required information in accordance with Section 01 33 00 - Submittal Procedures.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Construction Waste Management Plan (CWM Plan): Submit a CWM Plan for this Project before any waste removal from site and that includes the following information:

.1 Material Streams: Analysis of the proposed jobsite waste being generated, including material types and quantities forming a part of identified material streams in the Draft CWM Plan; materials removed from site destined for alternative daily cover at landfill sites and land clearing debris cannot be considered as contributing to waste diversion and will be included as a component of the total waste generated for the site.

.2 Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the course of the Project, and the proposed local market for each material.

.3 Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the Project.

.4 Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

.5 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the Project waste and the available recycling and reuse programs in the Project area.

.2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:

.1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.

.2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.

.3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

Part 2 Products - Not Used

Part 3 Execution

3.1 CONSTRUCTION WASTE MANAGEMENT PLAN IMPLEMENTATION

.1 Manager: Contractor is responsible for designating an on site party or parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the Project.

.2 Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor, the Owner, the Consultant and other site personnel as required to maintain CWM Plan.

.3 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the Project to Subcontractor 's at appropriate stages of the Project.

.4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:

.1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

.2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.

.5 Progressive Documentation: Submit a monthly summary of waste generated by the Project to ensure that waste diversion goals are on track with Project requirements:

.1 Submittal of waste summary can coincide with application for progress payment, or similar milestone event as agreed upon between the Owner, Contractor and Consultant.

.2 Monthly waste summary shall contain the following information:

.1 The amount in tonnes or m^3 and location of material landfilled,

.2 The amount in tonnes or m^3 and location of materials diverted from landfill, and

.3 Indication of progress based on total waste generated by the Project with materials diverted from landfill as a percentage.

3.2 SUBCONTRACTOR'S RESPONSIBILITY

.1 Subcontractor 's shall cooperate fully with the Contractor to implement the CWM Plan.

.2 Failure to cooperate may result in the Owner not achieving their environmental goals, and may result in penalties being assessed by the Contractor to the responsible Subcontractor 's.

END OF SECTION

Section 01 74 23
Final Cleaning

Part 1 General

1.1 FINAL CLEANING

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

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

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

.4 Remove waste products and debris including that caused by Owner or other Contractors.

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

.6 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.7 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors and all other surfaces.

.8 Clean lighting reflectors, lenses, and other lighting surfaces.

.9 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.10 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.11 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.12 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.13 Remove dirt and other disfiguration from exterior surfaces.

.14 Sweep and wash clean paved areas.

.15 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.16 Clean roofs, downspouts, and drainage systems.

.17 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.18 Remove snow and ice from access to building.

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Section 01 78 00
Closeout Submittals

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Two weeks before Substantial Performance of the Work, submit to the Consultant, two hard and one digital final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

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

1.2 FORMAT

.1 Organize data as instructional manual.

.2 Binders: Vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 Identify contents of each binder on spine.

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, 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.

1.3 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant 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.

1.4 AS-BUILT DOCUMENTS AND SAMPLES

.1 Maintain, at site for [Owner] one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Site test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in site office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Consultant.

1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Contractor from digital files provided by Consultant.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Site changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 Referenced Standards to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Provide digital photos, if requested, for site records.

1.6 EQUIPMENT AND SYSTEMS

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

.1 Give function, normal operation characteristics and limiting conditions.

.2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.12 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.13 Additional requirements: As specified in individual specification Sections.

1.7 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: Include product data, with catalogue number, size, composition, and colour and texture designations.

.1 Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: As specified in individual specifications Sections.

1.8 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification Sections.

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

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Consultant.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit before final payment.

.2 Extra Stock Materials:

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

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

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Consultant.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit before to final payment.

1.9 DELIVERY, STORAGE, AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

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

.4 Store paints and freezable materials in a heated and ventilated room.

1.10 WARRANTIES AND BONDS

.1 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Verify that documents are in proper form, contain full information, and are notarized.

.4 Co-execute submittals when required.

.5 Retain warranties and bonds until time specified for submittal.

.2 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.3 Conduct joint 12 month and 24 month warranty inspection, measured from time of acceptance, by Contractor and Consultant.

.4 Respond in timely manner to oral or written notification of required construction warranty repair work.

.5 Written verification to follow oral instructions.

Part 2 Products - Not Used

Part 3 Execution - Not Used

END OF SECTION

Section 02 41 16
Structure Demolition

Part 1 General

1.1 SUMMARY

.1 This Section includes requirements for the following:

.1 Demolition and removal of buildings and structures.

.2 Demolition and removal of site improvements adjacent to a building or structure being demolished.

.3 Demolition and removal of concrete foundations and piles.

.4 Removing below grade construction.

.5 Disconnecting, capping or sealing, and removing site utilities.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Demolition Meetings:

.1 Convene pre-installation meeting 1 week before beginning work of this Section, with Consultant in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify project requirements.

.2 Verify existing site conditions adjacent to demolition work.

.3 Coordination with other construction subtrades.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Shop Drawings: Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario as follows:

.1 Submit for review and approval demolition drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.

.2 Schedule of Demolition Activities: Coordinate with Section 01 32 16.16 - Construction Progress Schedule - Critical Path Method (CPM), and indicate the following:

.1 Detailed sequence of demolition and removal work, with starting and ending dates for each activity

.2 Interruption of utility services

.3 Coordination for shutoff, capping, and continuation of utility services

.3 Demolition Plan: Submit a plan of demolition area indicating extent of temporary facilities and supports, methods of removal and demolition prepared by a

professional engineer in accordance with requirements of Authority Having Jurisdiction.

.4 Proposed Dust Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation.

.2 Informational Submittals: Provide the following submittals when requested by the Consultant:

1.4 SITE CONDITIONS

.1 Environmental protection:

.1 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

.2 Fires and burning of waste or materials is not permitted on site.

.3 Do not bury rubbish waste materials.

.4 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.

.5 Ensure proper disposal procedures are maintained throughout project.

.2 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.

.3 Protect trees, plants and foliage on site and adjacent properties where indicated.

.4 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.

.5 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

1.5 EXISTING CONDITIONS

.1 Existing Hazardous Substances: Owner has performed a hazardous substances assessment and identified materials requiring abatement as follows:

.1 Hazardous substances are as defined in the Hazardous Products Act.

.2 Hazardous substances will be removed by the Contractor as a part of the Contract before starting Work in accordance with work results described in Related Requirements listed above.

.2 Discovery of Hazardous Substances: Immediately notify Consultant if materials suspected of containing hazardous substances are encountered and perform the following activities:

.1 Hazardous substances will be as defined in the Hazardous Products Act.

.2 Stop work in the area of the suspected hazardous substances.

.3 Take preventative measures to limit users' and workers' exposure, provide barriers and other safety devices and do not disturb.

Part 2 Products - Not Used

Part 3 Execution

3.1 EXAMINATION

.1 Survey existing conditions and correlate with requirements indicated to determine extent of structure demolition required.

.2 Review Project Record Documents of existing construction provided by Owner.

.3 Owner does not guaranty that existing conditions are the same as those indicated in Project Record Documents.

.4 Inventory and record the condition of items being removed and salvaged.

.5 When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element.

.6 Promptly submit a written report to Consultant.

.7 Verify that Hazardous Substances have been remediated before proceeding with structure demolition operations.

3.2 PREPARATION

.1 Protection of in-place conditions:

.1 Support affected structures and, if safety of structure being demolished or services appears to be endangered, take preventative measures, stop Work and immediately notify Consultant and Owner.

.2 Surface Preparation:

.1 Disconnect and re-route electrical and telephone service lines entering buildings to be demolished.

.1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.

.2 Disconnect and cap designated mechanical services.

.1 Sewer and water lines: remove as directed by Consultant.

.3 Septic Tanks:

.1 Remove tanks within area of new construction or under paved areas and slabs.

.2 Removal in accordance with CCME, Code of Practice PN 1326

.4 Underground storage tanks and piping: Remove and dispose in accordance with Section as directed.

.5 Do not disrupt active or energized utilities designated to remain undisturbed.

3.3 DEMOLITION

.1 Protect demolition work in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.2 Blasting operations not permitted during demolition.

.3 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

.4 Before start of Work remove contaminated or hazardous materials as defined by authorities having jurisdiction from site and dispose of at designated disposal facilities in safe manner and in accordance with TDGA and other applicable requirements. Refer Existing Conditions in PART 1.

.5 Demolish structure.

.6 To permit construction of new structures and landscapes.

.7 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.

.8 At end of each day's work, leave Work in safe and stable condition.

.9 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

.10 Use natural lighting to do Work where possible.

3.4 SITE RESTORATION

.1 Below Grade Areas: Rough grade below grade areas ready for further excavation or new construction.

.2 Provide a smooth transition between adjacent existing grades and new grades.

END OF SECTION

Section 03 35 00
Concrete Floor Finishing

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's product literature and data sheets for concrete finishing products. Include product characteristics, performance criteria, and resulting finishes, and limitations.

.2 Manufacturers' Instructions: Submit application instructions for each concrete floor treatment.

1.2 QUALITY ASSURANCE

.1 Mock-Ups: Provide site mock-up for each concrete finish in accordance with Section 01 43 00 - Quality Assurance.

.1 Build mock-up approximately 1000 m by 1000 m at the Project site.

.2 Mock-up may form part of permanent structure when accepted by Consultant.

1.3 SITE CONDITIONS

.1 Temporary lighting: Minimum 1200 W light source, placed 2.5 m above floor surface for each 40 m^2 of floor being treated.

.2 Make work area watertight and protected against rain and detrimental weather conditions.

.3 Temperature: Maintain a minimum 10°C ambient temperature for seven days before installation and a minimum 48 hours after completion of work. Maintain relative humidity at a maximum 40% during both periods.

.4 Moisture: Ensure concrete substrate is within moisture limits prescribed by installer or floor treatment material manufacturer.

Part 2 Products

2.1 POLISHED CONCRETE

.1 Polished Concrete refers to an exposed concrete surface finish obtained through intensive diamond grinding incorporating a densifying liquid hardener.

.2 Polished Concrete finish is intended for interior areas as scheduled in Contract Documents. The characteristics being sought include:

.1 Aggregate Exposure Classifications: “A”: No intentional effort to produce any aggregate exposure other than what may become naturally exposed while producing the specified gloss level (concrete fine and coarse aggregates may become exposed depending upon surface flatness and other factors).

.2 Level 1: “Flat” low-gloss finish

.3 Concrete Densifier and Chemical Hardener Compound shall be LIQUI-HARD as manufactured by W.R. MEADOWS.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that concrete slabs are ready to receive work and elevations as indicated on Drawings and as recommended by manufacturer's written instructions.

.2 Examine surfaces to receive concrete densifier and chemical hardener. Notify architect if surfaces are not acceptable. Do not begin application until unacceptable conditions have been corrected.

3.2 SURFACE PREPARATION

.1 Protect adjacent surfaces not designated to receive treatment.

.2 Clean and prepare surfaces to receive treatment in accordance with manufacturer's instructions ensuring that all stains, oil, grease, form release agents, dust and dirt removed prior to application.

3.3 POLISHED CONCRETE FINISHING

.1 Install polished concrete floor system in accordance with installer’s instructions at locations
indicated on the Drawings.

.2 Preparation Steps:
a. Remove existing floor coatings if present.
b. Start the grinding phase a diamond grit and hardness based on the floor conditions.
c. Wet polish to a hone.
d. Apply concrete densifier to total saturation.
e. Remove residue of concrete densifier dried on floor surface.

.3 Final Polish: Wet polish until desired surface sheen meets the requirements listed above.

3.4 PROTECTION

.1 Protect finished surfaces in accordance with manufacturer's recommendations.

END OF SECTION

Section 03 48 00
Precast Concrete Specialties

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for precast elements and include product characteristics, performance criteria, physical size, mix design, finish and limitations.

.2 Shop Drawings: Submit engineered shop drawings.

.3 Samples: Submit precast concrete samples, in sizes as directed by the Consultant of the specified finish for review.

Part 2 Products

2.1 MANUFACTURED PRODUCTS

.1 Precast concrete units:

.1 Provide precast concrete fabrications indicated on the architectural drawings, complete
with drips, to profiles as indicated.

.2 Provide steel inserts and anchors necessary for precast installation.

.3 Slope top surfaces of exterior precast minimum 2%.

.4 Provide drip section to bottom edge of exterior precast to break drainage water flow.

.5 Finish on exposed surfaces of precast concrete shall be grey or white, to Consultant's selection, with smooth finish and as follows:

.1 Colour and texture: CPCI colour to Consultant selection, intended to match Linear Brick Masonry, light sandblast finish.

Part 3 Execution

3.1 INSTALLATION

.1 Install precast concrete units in accordance with CSA A23.4-16/CAN/CSA A23.3-04 and.

.2 Set work plumb, true and square with joints parallel and uniform. Vertical and horizontal joints 12.7 mm (1/2") wide maximum as detailed.

.3 Set dowels into full contact with non-shrink grout in accordance with engineered shop drawings.

.4 Set precast into full contact with non-shrink mortar in accordance with engineered shop drawings.

.5 Joints between precast and between precast and adjacent materials: Apply sealant in accordance with Section 07 92 00.

END OF SECTION

Section 04 05 13
Masonry Mortaring and Grouting

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for masonry mortar and grout and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Manufacturers' Instructions: submit manufacturer's installation instructions.

Part 2 Products

2.1 MATERIALS

.1 Use same brands of materials and source of aggregate for entire project.

.2 Cement:

.1 Portland Cement: to CAN/CSA-A3000, Type GU - General use hydraulic cement (Type 10) colour.

.1 Colour to suit colour additives noted below.

.3 Aggregate: supplied by one supplier.

.1 Fine Aggregate: to CAN/CSA-A179, 04.

.4 Water: clean and potable.

.5 Lime:

.1 Hydrated Lime: to CAN/CSA-A179, Type S.

2.2 COLOUR ADDITIVES

.1 Use colouring admixture not exceeding 10% of cement content by mass, or integrally coloured masonry cement, to produce coloured mortar to match approved sample. Admixtures approved prior to use. Use in accordance with specific manufacturer's recommendations.

.2 White mortar: use white Portland cement, and lime to produce mortar type specified.

.3 Powder: inorganic mineral oxide pigment; 2 colour as selected by Consultant from manufacturer's standard colour range..

2.3 MORTAR MIXES

.1 Mortar for exterior masonry above grade:

.1 Load Bearing: type S based on Structural specifications.

.2 Non-Load Bearing: N based on Structural specifications.

.3 Mortar for exterior exposed masonry veneer: Type N, Portland Cement/Lime/Sand mix.

.2 Mortar for interior masonry:

.1 Load Bearing: type S based on Structural specifications.

.2 Non-Load Bearing: N based on Structural specifications.

2.4 MORTAR MIXING

.1 Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to within 1% accuracy.

.2 Mix mortar ingredients in accordance with CAN/CSA-A179 in quantities needed for immediate use

.3 Maintain sand uniformly damp immediately before mixing process.

.4 Add mortar colour and admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.

.5 Using anti-freeze compounds including calcium chloride or chloride based compounds is prohibited.

.6 Adding air entraining admixture to mortar mix is prohibited.

.7 Use a batch type mixer in accordance with CAN/CSA-A179

.8 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for masonry installation in accordance with manufacturer's written instructions.

3.2 PREPARATION

.1 Apply bonding agent to existing concrete surfaces.

3.3 CONSTRUCTION

.1 Do masonry mortar and grout work in accordance with CAN/CSA-A179 except where specified otherwise

3.4 MIXING

.1 Clean mixing boards and mechanical mixing machine between batches.

.2 Mortar: weaker than units it is binding.

.3 Contractor to appoint one individual to mix mortar, for duration of project. In event that this individual is changed, mortar mixing must cease until new individual is trained, and mortar mix is tested.

3.5 MORTAR PLACEMENT

.1 Install mortar to manufacturer's instructions.

.2 Install mortar to requirements of CAN/CSA-A179

.3 Remove excess mortar from grout spaces.

3.6 GROUT PLACEMENT

.1 Install grout in accordance with manufacturer's instructions.

.2 Install grout in accordance with CAN/CSA-A179

.3 Work grout into masonry cores and cavities to eliminate voids.

.4 Installing grout in lifts greater than 400 mm, without consolidating grout by rodding is prohibited.

.5 Displacing reinforcement while placing grout is prohibited.

3.7 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Remove droppings and splashings using clean sponge and water.

.3 Clean masonry with low pressure clean water and soft natural bristle brush.

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

3.8 PROTECTION

.1 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.

END OF SECTION

Section 04 05 19
Masonry Anchorage and Reinforcing

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for anchorage and reinforcing materials and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.

.4 Samples:

.1 Submit 1 samples of: anchorage and reinforcement materials.

.5 Manufacturers' Instructions: submit manufacturer's installation instructions.

1.2 SITE MEASUREMENTS

.1 Make site measurements necessary for proper fit of members.

Part 2 Products

2.1 MATERIALS

.1 Bar reinforcement: Steel to CAN/CSA-A371 and CSA G30.18, Grade .

.2 Connectors: to CAN/CSA-A370 and CSA S304.1.

.3 Corrosion protection: to CAN/CSA-A370.

.4 Ties: stainless steel finish.

.1 Joint Reinforcement Ties: CSA A371 with corrosion protection to CSA S304 and CSA A370:

.5 Anchors: to CAN/CSA-A370:

.1 Dovetail Anchors: bent steel strap, 4.75 mm size x 12 ga. mm thick, galvanized to CAN/CSA-A370 Table 5.2 coated finish.

.6 Shelf Angle Support Systems:

.1 Hot dipped galvanized to ASTM A153/A153M-09 and CAN/CSA A370.

.2 Product: Fero ‘FAST Thermal Bracket Offset Shelf Angle – Lintel and Extended Lintel’, consisting of FAST brackets, washers, fasteners and required accessories, type to suit application.

2.2 FABRICATION

.1 Fabricate reinforcing in accordance with CSA A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by Reinforcing Steel Institute of Canada.

.2 Fabricate connectors in accordance with CAN/CSA-A370.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for anchorage and reinforcing materials installation in accordance with manufacturer's written instructions.

3.2 PREPARATION

.1 Direct and coordinate placement of metal anchors for masonry supplied to other Sections.

3.3 INSTALLATION

.1 Supply and install masonry connectors and reinforcement in accordance with CAN/CSA-A370, CAN/CSA-A371, CSA A23.1/A23.2 and CSA S304.1 unless indicated otherwise.

3.4 REINFORCED LINTELS AND BOND BEAMS

.1 Reinforce masonry beams, masonry lintels and bond beams as indicated.

.2 Place and grout reinforcement in accordance with CSA S304.1, CAN/CSA-A371, and CAN/CSA-A179.

.3 Support and position reinforcing bars in accordance with CAN/CSA-A371.

3.5 GROUTING

.1 Grout masonry in accordance with CSA S304.1, CAN/CSA-A371 and CAN/CSA-A179 and as indicated.

3.6 LATERAL SUPPORT AND ANCHORAGE

.1 Supply and install lateral support and anchorage in accordance with CSA S304.1 and as indicated.

3.7 MOVEMENT JOINTS

.1 Reinforcement not continuous across movement joints unless otherwise indicated.

3.8 FIELD BENDING

.1 Do not field bend reinforcement and connectors except where indicated or authorized by Consultant.

.2 When field bending authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars and connectors with cracks or splits.

3.9 FIELD TOUCH-UP

.1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

3.10 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

END OF SECTION

Section 04 05 23
Masonry Accessories

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for masonry accessories and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:

.1 Submit 1 samples of masonry accessories as follows:

.1 Materials: cured, and coloured samples, illustrating colour and colour range. Include:

.1 Movement joint filler.

.2 Moisture control material samples, illustrating colour and colour range, size, and shape. Include:

.1 Weep hole vents.

.2 Grout screens.

.3 Flashing material samples, illustrating colour and colour range, size, shape, and profile. Include as specified:

.1 Sheet metal flashings.

.2 Composite flashings.

1.2 SITE MEASUREMENTS

.1 Make site measurements necessary to ensure proper fit of members.

Part 2 Products

2.1 MATERIALS

.1 Movement joint filler: purpose-made elastomer ……durometer hardness to ASTM D2240 of size and shape indicated

.2 Weep hole vents: purpose-made full height of masonry unit, designed to keep weep hole open for passage of air and water, UV stabilized polypropylene.

2.2 MOISTURE CONTROL

.1 Weep Hole Vents: polypropylene fibre filter, colour [to match mortar colour].

.2 Mortar diverters: shaped and sized to suit cavity spaces.

.1 Cavity space size: 25 mm.

.3 Grout Screens: 6 mm square monofilament screen fabricated form high-strength, non-corrosive polypropylene polymers to isolate flow of grout in designated areas.

2.3 FLASHINGS

.1 Sheet metal: galvanized steel.

.1 Thickness: 0.457 mm.

.2 Finish: prefinished to Consultant selection from standard colour range.

.3 Lap sealant: Henry Company 'Air-Bloc 21'

.2 Composite Flashings:

.1 Slip-sheet flashing membrane (for lintel bearing locations):

.1 Minimum 0.5mm thick, PVC membrane, low temperature flexible to 40-degree Celcius below zero.

.3 Masonry through wall flashings:

.1 Sheet membrane: acceptable products include:
Henry Company ‘Bakor Blueskin TWF'
Soprema ‘Sopraseal Stick 130-S’
W.R. Meadows ‘Air-Shield Thru-Wall Flashing’

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for masonry accessories installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION: MATERIALS

.1 Install continuous movement joint fillers in movement joints at locations indicated on drawings.

.2 Lap adhesive: apply adhesive to flashing lap joints.

.3 Brick vents: install brick vents at locations indicated on drawings.

3.3 INSTALLATION: MOISTURE CONTROL

.1 Install weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 600 mm on centre.

.2 Mortar diverters: install purpose made diverters in cavities where indicated and as directed, size and shape to suit purpose and function.

.3 Grout screens: install purpose made screens in cavities where indicated and as directed, size and shape to suit purpose and function.

3.4 INSTALLATION: FLASHINGS

.1 Build in flashings in masonry in accordance with CAN/CSA-A371

.1 Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, and steel angles over openings, and at base of cavity wall and where cavity interrupted by horizontal members or supports and as shown on drawings. Install flashings under weep hole courses and as indicated.

.2 In cavity walls and veneered walls, carry flashings from front edge of exterior masonry, under outer wythe, then up backing minimum 150 mm, and as follows:

.1 For masonry backing embed or bond flashing 25 mm in joint.

.3 Lap joints 150 mm and seal with adhesive.

.2 Form flashing (end dams) at lintels, sills and wall ends to prevent water from travelling horizontally past flashing ends.

.3 Install vertical flashing where outer veneer returns at window or door jambs, to prevent contact of veneer with inner wall.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

END OF SECTION

Section 04 21 13
Brick Masonry

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data: Submit manufacturer's instructions, printed product literature and data sheets for brick masonry and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Shop Drawings: Submit engineered shop drawings for masonry unit wall assemblies indicating:

.1 Proposed locations of movement (control) joints.

.2 Types of masonry units, typical dimensions, colours, special shapes and shape dimensions.

.3 Layout/coursing of each type of masonry unit. Units are not to be cut without approval of Consultant. Layout using full brick masonry units.

.4 Show masonry tie and connectors typical detail, spacing and load capacity.

.3 Samples:

.1 Submit two full-size samples of each type of masonry unit specified.

.2 Submit one sample of each masonry accessory specified.

1.2 QUALITY ASSURANCE

.1 Mock-ups:

.1 Construct sample panels of approximately 900mm x 900mm of area of masonry, including sill shapes where applicable, for Consultant review.

1.3 SITE CONDITIONS

.1 Ambient Conditions: assemble and erect components only when temperature is above 4 degrees C.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Face brick:

.1 Glazed Brick:

.1 Product: Elgin Butler Ceramic Glazed Brick
(https://elginbutler.com/product-lines/glazed-brick/)
Size: 4S Modular: 2-1/4 x 7-5/8, including sill units w/ rounded edge
Colour: Rustic Orange 4546

.2 Linear Brick:

.1 Product: Arriscraft Architectural Linear Series Brick
(https://arriscraft.com/products/opal-architectural-linear-series-brick/)

Size: 2-1/4″ x random lengths
Colour: 2 colours, random mixed - Mahogany & Walnut
Finish: Split texture

.2 Reinforcement:

.1 Reinforcement in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

.3 Connectors:

.1 Connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

.4 Flashings:

.1 Flashing: in accordance with Section 04 05 23 - Masonry Accessories.

.5 Mortar Mixes:

.1 Mortar and mortar mixes in accordance with Section 04 05 13 - Masonry Mortar and Grouting.

Part 3 Execution

3.1 PREPARATION

.1 Protect adjacent finished materials from damage due to masonry work.

3.2 INSTALLATION

.1 Construction to conform to CAN/CSA-A371.

.2 Bond: running bond, or as indicated in Architectural Drawings.

.3 Coursing height: as indicated.

.4 Jointing: concave where exposed or where paint or similar thin finish coating is specified.

.1 Mixing and blending: mix units within each pallet and with other pallets to ensure uniform blend of colour and texture.

.2 Clean unglazed clay masonry as work progresses.

.3 Reinforcement:

.1 Install reinforcing in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

.4 Connectors:

.1 Install connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

.5 Flashings:

.1 Install flashings in accordance with Section 04 05 23 - Masonry Accessories.

.6 Mortar Placement:

.1 Place mortar in accordance with Section 04 05 13 - Masonry Mortar and Grouting.

.7 Grout Placement:

.1 Place grout in accordance with Section 04 05 13 - Masonry Mortar and Grouting.

.8 Tolerances:

.1 To CAN/CSA-A371unless noted below.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.2 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

END OF SECTION

Section 04 22 00
Concrete Unit Masonry

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for concrete masonry units and include product characteristics, performance criteria, physical size, finish and limitations.

Part 2 Products

2.1 MATERIALS

.1 Standard concrete block units see Structural Specifications: to CAN/CSA-A165 Series (CAN/CSA-A165.1).

.1 Special shapes: provide bull-nosed units for exposed corners. Provide purpose-made shapes for lintels, beams and bond beams. Provide additional special shapes as indicated.

.2 In-Situ Carbon Dioxide Mineralization:

.1 In-situ carbon dioxide mineralization in concrete masonry units: Supply concrete masonry units that have undergone in-situ carbon dioxide mineralization, such that post-industrial carbon dioxide (CO2) is injected into the concrete during mixing and chemically converted into a mineral.

.2 Acceptable technologies:
.1 CarbonCure Technologies Inc. ‘CarbonCure’.
.2 Carboclave.

2.2 REINFORCEMENT

.1 Reinforcement in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

2.3 CONNECTORS

.1 Connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

2.4 FLASHING

.1 Flashing: in accordance with Section 04 05 23 - Masonry Accessories.

2.5 MORTAR MIXES

.1 Mortar and mortar mixes in accordance with Section 04 05 13 - Masonry Mortar and Grouting.

2.6 CLEANING COMPOUNDS

.1 Use low VOC products in compliance with applicable regulations and guidelines..

.2 Compatible with substrate and acceptable to masonry manufacturer for use on products.

.3 Cleaning compounds compatible with concrete unit masonry and in accordance with manufacturer's written recommendations and instructions.

2.7 TOLERANCES

.1 Tolerances for standard concrete unit masonry tolerances in accordance with CAN/CSA-A165.1, supplemented as follows:

.1 Maximum variation between units within specific job lot not to exceed 2 mm.

.2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.

.3 Out of square tolerance not to exceed 2 mm.

.2 Tolerances for architectural concrete masonry units in accordance with CAN/CSA-A165.1, supplemented as follows:

.1 Maximum variation in length or height between units within specific job lot for specified dimension not to exceed 2 mm.

.2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.

.3 Out of square tolerance not to exceed 2 mm.

.4 Maximum variation in width between units within specific job lot for specified dimension not to exceed 2 mm.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for concrete unit masonry installation in accordance with manufacturer's written instructions.

3.2 PREPARATION

.1 Protect adjacent finished materials from damage due to masonry work.

3.3 INSTALLATION

.1 Concrete block units:

.1 Bond: running.

.2 Coursing height: 200 mm for one block and one joint.

.3 Jointing: concave where exposed or where paint or other finish coating is specified.

.2 Special Shapes:

.1 Install special units to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond or module.

.2 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.

3.4 REINFORCEMENT

.1 Install reinforcing in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

3.5 CONNECTORS

.1 Install connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

3.6 FLASHING

.1 Install flashings: in accordance with Section 04 05 23 - Masonry Accessories.

3.7 MORTAR PLACEMENT

.1 Place mortar in accordance with Section 04 05 13 - Masonry Mortar and Grouting.

3.8 CONSTRUCTION

.1 Cull out masonry units, in accordance with CAN/CSA-A165 and approved range of colour samples, with chips, cracks, broken corners, excessive colour and texture variation.

.2 Build in miscellaneous items such as bearing plates, steel angles, bolts, anchors, inserts, sleeves and conduits.

.3 Construct masonry walls using running bond unless otherwise noted.

.4 Build around frames previously set and braced. Fill behind hollow frames within masonry walls with mortar or grout and embed anchors.

.5 Fit masonry closely against electrical and plumbing outlets so collars, plates and covers overlap and conceal cuts.

.6 Install movement joints and keep free of mortar where indicated.

.7 Hollow Units: spread mortar setting bed from outside edge of face shells. Gauge amount of mortar on top and end of unit to create full joints, equivalent to shell thickness. Avoid excess mortar.

.8 Solid Units: apply mortar over entire vertical and horizontal surfaces. Avoid bridging of airspace between brick veneer and backup wall with mortar.

.9 Ensure compacted head joints. Use full or face-shell joint as indicated.

.10 Tamp units firmly into place.

.11 Do not adjust masonry units after mortar has set. Where resetting of masonry is required, remove, clean and reset units in new mortar.

.12 Tool exposed joints concave weathered/raked for interior work; strike concealed joints flush.

.13 After mortar has achieved initial set up, tool joints.

.14 Do not interrupt bond below or above openings.

3.9 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Standard Concrete Unit Masonry:

.1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block. Clean wall surface with suitable brush or burlap.

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

END OF SECTION

Section 05 41 00
Structural Metal Stud Framing

Part 1 General - Not Used

Part 2 Products

2.1 DESIGN CRITERIA

.1 Retain a professional engineer to design the wind bearing steel stud wall systems.

.2 Design systems based on Limit States Design principles using factored loads and resistances.

.3 Loads and load factors in accordance with the NBC. For wind load calculations, base the reference velocity pressure (q) on a 1 in 50 probability of being exceeded in any one year.

.4 Design in accordance with CSSBI 51and errata as modified by requirements of this Section including using editions of Reference Standards indicated in Part 1 of this Section.

.5 Determine resistances and resistance factors in accordance with the NBC and CSA S136.

.6 Conform to the requirements of fire rated assemblies indicated on Drawings.

.7 Indicate dimensions of wall stud depth on Drawings. Design wall stud steel thicknesses as required by the Design Criteria. Use greater or lesser stud depths if approved by the Consultant.

.8 Space wall studs at a maximum of 406 mm on centre (o.c.), unless a smaller spacing distance on centre is required by the Design Criteria.

.9 Conform to the design thicknesses in the following table for wall studs, unless a thicker dimension is required by the Design Criteria.

.1

Wall Stud Depth	Minimum Base Steel Thickness Exclusive of Coating	Design Thickness Exclusive of Coating
92 mm	0.836 mm	0.879 mm
102 mm	0.836 mm	0.879 mm
152 mm	0.836 mm	0.879 mm
203 mm	1.087 mm	1.146 mm

.10 The minimum thickness for the bridging channel shall be 1.087 mm, unless a thicker bridging channel design thickness is required by the Design Criteria.

.11 The minimum thickness for clip angles shall be 1.367 mm, unless a thicker clip angle thickness is required by the Design Criteria.

.12 Maximum flexural deflections under specified wind loads shall conform to the following:

.1 Wall studs supporting other finishes with stud deflections limited to L/360.

.13 Design components and assemblies to accommodate specified erection tolerances of the building structure.

.14 Design bridging to prevent member rotation and member translation perpendicular to the minor axis. Allow for secondary stress effects due to torsion between lines of bridging. Collateral sheathing may be used to help restrain member rotation and translation perpendicular to the minor axis. Design bridging at a maximum of 1524 mm o.c. Design spacing of bridging at equal intervals over the span length of the member. Closer spacings may be required to satisfy structural requirements.

.15 Design anchorage and splice details for bridging.

.16 Design for local loading due to anchorage of cladding and interior wall mounted fixtures where indicated on Drawings.

.17 Design connections between wind bearing steel stud members with bolts, welding, or sheet metal screws.

.18 Design head, sill, and jamb members and connections to frame openings larger than 100 mm in any dimension.

.19 Design anchor top and bottom track to the building structure at a maximum spacing of 813 mm o.c. Closer spacings may be required to satisfy structural requirements.

2.2 METAL FRAMING

.1 Steel studs: To CSA S136, fabricated from metallic coated steel, depth as indicated.

.1 Minimum steel thickness: Meeting Design Criteria.

.2 Steel Stud Designations: Colour code to CSSBI Technical Bulletin Vol.7, No. 2.

.3 Stud tracks: Fabricated from same material and finish as steel studs, depth to suit.

.1 Bottom track: Single piece

.2 Top track: single piece

.4 Bridging: Meeting Design Criteria

.5 Angle clips: Meeting Design Criteria

.6 Tension straps and accessories: As indicated in shop drawings

2.3 SOURCE QUALITY CONTROL

.1 When requested, submit mill reports describing material properties.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for structural metal stud framing.

.1 Inspect substrates and building structure floor flatness, and levelness. Inspect vertical structural members to ensure they are true and plumb.

.2 Proceed with installation only after unacceptable conditions are remedied.

3.2 ERECTION

.1 Erect structural metal stud framing to reviewed shop drawings and CSA S136.

.2 Anchor tracks securely to structure at a maximum of 800 mm o.c., unless lesser spacing is indicated on shop drawings.

.3 Erect studs plumb, aligned, and securely attached with a minimum of screws. Penetration of sheet metal screws beyond joined materials shall be not less than three exposed threads.

.4 Seat studs into bottom tracks and single piece top track.

.5 Install studs at a maximum of 50 mm from abutting walls, openings, and each side of corners and terminations with dissimilar materials.

.6 Brace steel studs with horizontal internal bridging at a maximum 500 mm.

.1 Fasten bridging to steel clips fastened to steel studs with screws or by welding.

.7 Frame openings in stud walls to adequately carry loads by using additional framing members and bracing as detailed on shop drawings.

.8 Cutouts: Maximum size of cutouts for services as follows:

.1

Member Depth	Across Member Depth	Along Member Length	On Centre Spacing
92 mm	Max. 40 mm	Max. 105 mm	Min. 600 mm
102 mm	Max. 40 mm	Max. 105 mm	Min. 600 mm
152 mm	Max. 65 mm	max. 115 mm	Min. 600 mm

.2 Limit distance from centre line of last unreinforced cutout to end of member to a maximum of 300 mm.

.9 Tolerances:

.1 Plumb: Maximum 1/500th of member length

.2 Camber: Maximum 1/1000th of member length

.3 Spacing: Maximum +/- 3 mm from design spacing

.4 Gap between end of stud and track web: Maximum 4 mm

3.3 SITE QUALITY CONTROL

.1 Site Tests and Inspections: Structural metal stud framing delegated design engineer responsible for shop drawings to perform the following:

.1 Periodically inspect structural metal stud framing work at Project site, including inspection of welded and screwed system connections; connections to primary building structural elements; review member sizes, locations, steel thicknesses, coating thicknesses; erection tolerances; and framing members cut or altered at the Project site.

.2 Review mill test reports.

.3 Submit report(s) and a confirmation letter signed and sealed, as described in QUALITY ASSURANCE in Part 1 of this Section.

.2 Non-Conforming Work: Replace members with localized damage.

3.4 ADJUSTING

.1 Touch-up welds with one coat of zinc-rich primer. Before applying paint, prepare surface in accordance with paint manufacturer's recommendations.

3.5 CLEANING

.1 Leave Work area clean at end of each day.

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

.3 Waste Management: Perform in accordance with Section 01 74 19 - Waste Management and Disposal, and as follows:

.1 Protect steel waste from moisture and excessive corrosion.

.2 Separate stud framing waste from other construction waste for potential re-use in the Project or recycling.

.4 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Section 05 50 00
Metal Fabrications

Part 1 General

1.1 SUMMARY

.1 Section Includes:

- .1 Access ladder and cage.
- .2 Rooftop ladder enclosure.
- .3 Metal counter supports.
- .4 Bench supports.
- .5 Loose steel lintels.
- .6 Supports and framing for overhead door.
- .7 Exterior scupper and downspouts.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit the following action submittals before starting work of this Section:

- .1 Product Data: Product literature and data sheets for installed products, including product characteristics, performance criteria, physical sizes, finishes, and limitations.
  - .1 WHMIS SDS for site-applied primers, coatings, paints, and other finishes.
- .2 Shop Drawings:
  - .1 Submit engineered stamped shop drawings for all metal fabrications including plan, sections and large scale details as well as exposed-to-view edge conditions.
  - .2 Indicate materials, base metal thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.3 Submit the following informational submittals as work progresses:

Part 2 Products

2.1 MATERIALS

.1 Steel Sections and Plates: To CSA G40.20/G40.21, Grade 300W.

.2 Steel Shapes: To CSA G40.20/G40.21, Grade 350W.

.3 Welding Materials: To [CSA W59].

2.2 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping, shake-proof flat-headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop-assemble work, ready for erection.

.4 Make exposed welds continuous for length of each joint. File or grind exposed welds smooth and flush.

Part 3 Execution

3.1 PREPARATION

.1 Thoroughly clean and suitably pre-treat steel prior to finishing.

.2 Remove loose mill scale, rust, oil, grease, dirt, and other foreign matter using one or more of the following methods:

.1 solvent cleaning

.2 wire brushing

.3 power wire brushing

.4 abrasive blasting

.3 Grind sharp projections until smooth.

.4 Prepare metal surfaces to receive paint finishes in accordance with MPI ASM.

3.2 INSTALLATION - GENERAL

.1 Install metal fabrications as indicated on Drawings.

.2 Install in accordance with reviewed shop drawings, square, plumb, straight, true, accurately fitted, and with tight joints and intersections.

.3 Perform welding in accordance with CSA W59unless specified otherwise.

.4 Provide suitable anchorage such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles as indicated on reviewed shop drawings.

.5 Provide exposed fastening devices to match finish and be compatible with material through which they pass.

.6 Make site connections with fasteners to CSA S16.

.7 Touch up rivets, site welds, bolts, and burnt or scratched surfaces with primer after installation.

.1 Primer: In accordance with FINISHES in this Section.

.8 Touch up galvanized surfaces burned by site welding with zinc-rich primer after installation.

.1 Zinc-rich primer: In accordance with FINISHES in this Section.

END OF SECTION

Section 06 10 53
Miscellaneous Rough Carpentry

Part 1 General - Not Used

Part 2 Products

2.1 DESCRIPTION

.1 Regulatory Requirements:

.1 Lumber Grades: Provide lumber products that are all sides finished (S4S) in nominal dimensions required for the project; grade-marked by accredited agencies of the Canadian Lumber Standards Accreditation Board and that conform to National Grading Rules published by the NLGA.

.1 Grading: Machine Grading, Visual Grading, or Both

.2 Moisture Content: Kiln Dry, 19% or less

.3 Structural Design Properties: Strength and related properties in accordance with CSA O86

.4 Sizes: Nominal dressed dimensions described in CSA O141 for surfaced dry conditions and wood species.

.2 Panel Grades: Provide panel products that are grade-marked by agencies recognized by CSA O325 and National Institute of Standards and Technology, Voluntary Product Standard PS 2 04 Performance Standard for Wood-Based Structural-Use Panels as modified by other listed CSA panel standards.

2.2 PERFORMANCE CRITERIA

.1 Plywood Grades: Provide plywood products in nominal dimensions required for the project; grade-marked by accredited agencies of the APA and that conform to the Canadian Plywood Grading Guide, and tolerances described for specific plywood Products below, and identified as follows:

.1 Name of Standard CSA O151;

.2 Manufacturer's Mill Identification;

.3 Bond Quality (Exterior or Interior);

.4 Commercial Species Grouping (DFP, CSP, ASP or HEM-FIR);

.5 Product Grade (SHG, SEL, SEL TF, G1S or G2S);

.6 Nominal Thickness; and

.7 Additional Grade or Product Designations (if applicable).

.2 Lumber Grades: Provide lumber products that are all sides finished (S4S) in nominal dimensions required for the project; grade marked by accredited agencies of the Canadian Lumber Standards Accreditation Board and conform to National Grading Rules published by the National Lumber Grades Authority, and as follows:

.1 Grading: Machine Grading, Visual Grading, or Both.

.2 Moisture Content: Kiln Dry, 19% or less.

.3 Structural Design Properties: Strength and related properties in accordance with CSA O86 and NLGA SPS 2.

.4 Sizes: Nominal dressed dimensions described in CSA O141 for surfaced dry conditions and wood species.

.5 Acceptable Alternative Products: Lumber products meeting requirements of the American Lumber Standards Committee designated ALS Program Lumber and that are accepted by the Canadian Lumber Standards Accreditation Board, may be acceptable for the Project when proof of compliance with strength and related properties meeting CSA O86 are submitted before purchasing any lumber products.

2.3 ACCESSORIES

.1 Driven Fasteners: Steel nails, spikes, brads and staples meeting requirements of ASTM F1667. Ensure length is sufficient to penetrate connecting solid wood materials.

.1 Exterior Work: Hot-dipped galvanized.

.2 Interior High Humidity Work: Hot-dipped galvanized.

.3 Interior Work: Electroplated zinc plated, or cadmium plated.

.2 Rough Hardware (Bolts, Nuts and Washers): Provide manufacturer recommended fastening devices and anchors meeting requirements of ASTM A307 and as follows:

.1 Ground Contact Materials: Stainless steel.

.2 Exterior Work: Hot-dipped galvanized.

.3 Interior High Humidity Work: Hot-dipped galvanized.

.4 Interior Work: Electroplated zinc plated, or cadmium plated.

.5 Pressure Treated Materials: Refer to Section 06 05 73 - Wood Treatment.

.3 Wood Screws: Steel screws meeting requirements of ASME B18.6.1 and as follows:

.1 Exterior Work: Galvanized, ceramic coated or stainless steel.

.2 Interior Work: Galvanized.

.4 Screws for Fastening to Cold-Formed Metal Framing: Steel screws meeting requirements of ASTM C954, except for wafer heads and reamer wings whose length should be as recommended by screw manufacturer for material being fastened.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for product installation in accordance with manufacturer's instructions.

3.2 INSTALLATION

.1 Requirements:

.1 Accurately frame and properly assemble rough carpentry work

.2 Securely attach rough carpentry work to substrate by anchoring and fastening

.3 Include required nails, fastenings and other connectors

.4 Set rough carpentry to required levels and lines with members plumb, true to line, cut, and fitted

.5 Fit rough carpentry to other construction

.6 Scribe and cope as needed for accurate fit

.7 Locate furring, nailers, blocking, grounds, and similar supports as required when attaching to other construction.

.8 Do not use materials with defects that impair the quality of the rough carpentry or use pieces that are too small to use with a minimum number of joints or optimum joint arrangement.

.2 Provide electrical equipment backboards for mounting electrical equipment as indicated. Use 19 -mm thick plywood on 19 x 38 mm furring around spacing, perimeter and at maximum 305 mm intermediate.

3.3 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

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

3.4 PROTECTION

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

.2 Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

Section 06 40 00
Architectural Woodwork

Part 1 General

1.1 PREINSTALLATION MEETING

.1 Before enclosing framing, convene a meeting of contractor, casework fabricator, casework installer, framing subcontractor and Consultant.

.1 Review locations of backing required for casework installation as shown on shop drawings and as necessary for installation.

.2 Review method of attachment for backing to wall system.

.3 Review coordination with other affected sections.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.

.2 Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into architectural wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.

.3 Hardware List:

.1 Submit hardware list cross-referenced to specifications.

.2 Include manufacturer's specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.

.4 Shop Drawings:

.1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.

.2 Submit one sets of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed, submit one copies for final acceptance and distribution.

.3 Indicate details of construction, profiles, jointing, fastening and other related details.

.1 Scales: profiles full size, details half full size.

.4 Indicate materials, thicknesses, finishes and hardware.

.5 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.

.6 Show location on casework elevations of backing required in supporting structure for attachment of casework.

.7 Include color schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.

.8 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada, for the following items.

.1 Millwork, including kitchen cabinets, washroom sink cabinets, lockers, benches and wood wall cladding, phenolic panels for washroom partitions.

.5 Samples:

.1 Prepare and submit samples in accordance with AWMAC AWS and as follows.

.2 Apply sample finishes to specified substrate or core material minimum 300 x 300 mm to match designer sample. For veneers with transparent finish submit three samples to illustrate range and colour of grain expected.

.3 Shop applied coatings:

.1 For transparent finish, submit triplicate samples of each species and cut of wood to be used, finished as specified.

.4 Furnish four samples of each lumber and composite panel material to Contractor for preparation of site applied finish samples in accordance with Section 09 91 23 Interior Painting.

.5 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.6 Submit statement of experience and qualifications of architectural wood casework fabricator.

Part 2 Products

2.1 QUALITY GRADE

.1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Custom Grade and as follows, except where specified otherwise:

.1 Economy Grade: mechanical rooms and utility areas.

.2 Premium Grade: all other areas.

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.2 LUMBER

.1 Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWSquality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work

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

.3 Face framing, pulls, trims, molding, edge-banding, stiles and rails: matching species, in profiles indicated.

2.3 DECORATIVE VENEER FACED PLYWOOD

.1 Decorative hardwood plywood: to specified AWMAC AWSrequirements for grade specified for exposed and semi-exposed surfaces:

.1 Veneer species: Natural Birch.

.2 Matching: Book veneer leaf matching, Running veneer assembly matching.

.3 Core: Veneer core plywood non-telegraphing grain.

.4 Thickness: 19 mm.

.5 Bond: Type II.

.6 Sanding: touch sanding.

.7 Grain direction: vertical.

2.4 PHENOLIC ARCHITECTURAL PANEL

.1 Solid phenolic wall panels (Max HPL): manufactured by FunderMax GmBH / FunderMax North America, 9401-P Southern Pine Blvd, Charlotte NC 28273 (https://fundermax.us/product/interior-architectural-panels/)

.1 Core: Black

.2 Thickness: 20mm

.3 Colour: 0667 FH Passion

2.5 SOLID SURFACE COUNTERS AND SILLS

.1 Engineered stone; quartz-based fabricated stone surfacing:

.1 Composition: natural quartz aggregate combined with resins and pigments and fabricated into slabs, and as follows:

.1 Thickness: as indicated.

.2 Edge Profile: as indicated.

.3 Colour: As selected by Consultant from manufacturer's standard range.

.4 Finish: Manufacturer's standard finish.

.5 Acceptable Product: Corian Quartz by DuPont.

2.6 COMPOSITE WOOD BENCH / WALL SLATS

.1 TREX Transcend Lineage in Jasper - grooved - 20' by Trex Company Inc. (https://www.trex.com/products/decking/lineage/jasper/)

.1 Dimension: 0.94"x 5.5"x 20'. Clips & Pro Plug required.

.2 Configuration of boards as indicated in Architectural Drawings.

2.7 CASEWORK FABRICATION - GENERAL

.1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade

.2 Set nails and countersink screws apply stained wood filler to indentations, sand smooth and leave ready to receive finish.

.3 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.4 Shelving to cabinetwork to be adjustable unless otherwise noted.

.5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

.7 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

2.8 WOOD CASEWORK FABRICATION

.1 Fabricate casework bodies of specified veneered plywood panel materials in accordance with AWMAC AWSrequirements for grade specified and as follows

.1 Exposed interior surfaces: Veneer of same species and cut and grade as exposed exterior surfaces.

.2 Semi-exposed surfaces: low pressure melamine overlay in solid colour by Consultant selection from manufacturer's standard range..

.2 Fabricate door, drawer and panel surfaces of specified veneered plywood panel materials.

.3 Drawer construction:

.1 Sides:

.1 AWMAC AWS Premium grade: prefinished seven or nine ply hardwood veneer core with no internal voids, 19 thickness.

.2 Bottoms: Hardwood plywood of same species as drawer sides, 19 mm thick.

.3 Joinery: Meeting requirements of AWMAC AWS for Grade specified.

.1 Sides, front and back: Dowel screwed

.2 Drawer bottoms fully housed into sides and sub front and mechanically fastened to back or plowed into back.

2.9 SHOP APPLIED FINISH COATINGS

.1 Factory finish with transparent, Post Catalysed Lacquer in accordance with the North American Architectural Woodwork Standards 3.1, Section

1. Transparent finish: Clear (natural)
2. Sheen: Semi-gloss. Sheen range measurements in accordance with North American Architectural Woodwork Standards 3.1.

.2 Apply finish system component materials in accordance with manufacturer's instructions.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.

3.2 INSTALLATION

.1 Install architectural wood casework in accordance with AWMAC AWSgrade for respective items

.2 In case of conflict between Contract Documents and AWMAC AWSgrade requirements, Contract Documents govern.

.3 Install prefinished millwork at locations shown on drawings.

.1 Position accurately, level, plumb straight.

.4 Fasten and anchor millwork securely.

.1 Supply and install heavy duty fixture attachments for wall mounted cabinets.

.5 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation attachment screws and screws securing cabinets end to end.

.6 Use draw bolts in countertop joints.

.7 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.8 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 07 92 00 - Joint Sealants.

.9 Apply moisture barrier between wood framing members and masonry or cementitious construction.

.10 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

.11 Make cutouts for inset equipment and fixtures using templates provided.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

3.4 PROTECTION

.1 Protect millwork from damage until final inspection.

.2 Protect installed products and components from damage during construction.

.3 Repair damage to adjacent materials caused by architectural woodwork installation.

END OF SECTION

Section 06 41 93
Cabinet and Washroom Partition Hardware

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for cabinet hardware and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:

.1 Provide one sample of each type of hardware for Consultant review.

.4 Hardware List:

.1 Submit contract hardware list.

.2 Indicate specified hardware, including make, model, material, function, finish and other pertinent information.

.5 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for cabinet hardware for incorporation into manual.

Part 2 Products

2.1 HARDWARE ITEMS

.1 Use one manufacturer's product for all similar items.

2.2 CABINET HARDWARE

.1 Cabinet hardware: to ANSI/BHMA A156.9, designated by letter B and numeral identifiers listed below.

.1 Hinges: concealed, soft close hinge, type commercial, finish to match cabinet pulls.

.2 Pulls: back mounted pull, type commercial, Richelieu 'Contemporary Steel Edge pull - 576', with back plate, type B02191, finished to chrome finish.

.3 Shelf brackets and standards: commercial type to suit application as indicated, type commercial, for various mm wide shelves, finished to chrome finish.

.4 Pilaster strips: commercial type to match Richelieu '5/8 Steel Pilaster'.

.5 Drawer slides: side mounted drawer slides, type commercial, soft close.

.2 Cabinet locks: to ANSI/BHMA A156.11, designated by letter E and numeral identifiers listed below.

.1 Door or drawer locks: half mortised into back of door or drawer, type commercial, grade commercial grade to match Richelieu 'Cam Lock C8060 and 8073', zinc finish.

.2 Cylinders: key into keying system as directed.

2.3 WASHROOM PARTITION HARDWARE

.1 Washroom partition hardware to match Bobrick Dura Line Series CGL - extended privacy overhead-braced hardware system (https://www.bobrick.com/products/toilet-partitions-cubicle-systems/traditional-partitions/duralineseries-cgl/)

.1 Standard concealed stainless steel hardware package includes barrel hinges, latch and keeper, bracket, coat hook, inswing door hardware and/or outswing door pull.

.2 Occupancy Indicator Latch. Part number 1002612 by Bobrick.

.3 Additional Occupancy Indicator - banner style: Peep No More™ automatic indicator sign, stainless steel finish.

2.4 FASTENINGS

.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.2 Exposed fastening devices to match finish of hardware.

.3 Use fasteners compatible with material through which they pass.

2.5 KEYING

.1 Padlocks and cabinet locks to be master keyed. Submit keying schedule for approval.

.2 Supply keys in duplicate for every lock in this Contract.

.3 Supply 3 master keys for each master key or grand master key group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Install key cabinet where indicated.

Part 3 Execution

3.1 INSTALLATION

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

.2 Install hardware to standard hardware location dimensions in accordance with manufacturer's recommendations and to project design requirements.

.3 Install key control cabinet and establish key control set-up.

3.2 ADJUSTING

.1 Adjust cabinet hardware for optimum, smooth operating condition.

.2 Lubricate hardware and other moving parts.

.3 Adjust cabinet door hardware to ensure tight fit at contact points with frames.

3.3 CLEANING

.1 Clean in accordance with Section 01 74 00 - Cleaning.

.1 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

.2 Remove protective material from hardware items where present.

3.4 PROTECTION

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

.2 Repair damage to adjacent materials caused by cabinet and miscellaneous hardware installation.

END OF SECTION

Section 07 11 13
Bituminous Dampproofing

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, product literature and data sheets for bituminous dampproofing and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Manufacturer's Instructions: provide to indicate special handling criteria, installation sequence, cleaning procedures.

1.2 SITE CONDITIONS

.1 Ambient Conditions: temperature, relative humidity, moisture content.

.1 Apply dampproofing materials only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.2 Do not proceed with Work when wind chill effect would tend to set bitumen before proper curing takes place.

.3 Maintain air temperature and substrate temperature at dampproofing installation area above 5 degrees C for 24 hours before, during and 24 hours after installation.

.4 Do not apply dampproofing in wet weather.

.2 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.

Part 2 Products

2.1 MATERIALS

.1 Asphalt:

.1 For application and curing at temperatures above 5 degrees C: to CAN/CGSB-37.2.

.1 Package label or bill of lading for bulk hot liquid asphalt must indicate type, flash point, equiviscous temperature range and final blowing temperature.

.2 Sealing compound: plastic cutback asphalt cement to CAN/CGSB-37.5.

.3 Protection board: as recommended by manufacturer.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed are acceptable for bituminous dampproofing application installation in accordance with manufacturer's written instructions.

3.2 WORKMANSHIP

.1 Keep hot asphalt:

.1 Below its flash point.

.2 At or below its final blowing temperature.

.3 Within its equiviscous temperature range at place of application.

3.3 PREPARATION

.1 Before applying dampproofing:

.1 Seal exterior joints between foundation walls and footings, joints between concrete floor slab and foundation and around penetrations through dampproofing with sealing compound.

3.4 APPLICATION

.1 Dampproofing in accordance with CAN/CGSB-37.3.

.2 Seal work in accordance with CGSB 37-GP-11M.

.3 Prime surface in accordance with CGSB 37-GP-15M.

.4 Apply dampproofing in accordance with applicable CGSB application standard.

.1

Material		Application
CAN/CGSB-37.2	use	CAN/CGSB-37.3
CGSB 37-GP-6Ma	use	CGSB 37-GP-12M
CAN/CGSB-37.1	use	CGSB 6 37-GP-36M
CAN/CGSB-37.2	use	CAN/CGSB-37.3 8
CSA A123.4	use	CGSB 37-GP-37M

3.5 SCHEDULE

.1 Apply continuous, uniform coating to entire exterior faces of foundation walls from 50 mm below finished grade level to and including tops of foundation wall footings.

.2 Apply continuous, uniform coating to exterior side of foundation walls enclosing rooms below finished grade. Include exterior portion of interior walls where floors in adjacent rooms are at different elevations.

.3 Apply two additional coats of dampproofing to vertical corners and construction joints for a minimum width of 230 mm on each side, and all around and for 230 mm along pipes passing through walls.

3.6 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.3 Clean adjacent materials of spills, splatter, and accidentally applied dampproofing.

.4 Waste Management: in accordance with Section 01 74 19 - Waste Management and Disposal.

3.7 PROTECTION

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

END OF SECTION

Section 07 18 00
Service Room and Traffic Coatings

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for traffic coatings and include product characteristics, performance criteria, physical size, finish and limitations.

1.2 AMBIENT CONDITIONS

.1 Do not install traffic topping when ambient air temperature or substrate temperature is less than 5 degrees C.

.2 Maintain air temperatures and structural base temperature of traffic topping installation area above 5 degrees C for 12 hours before, during and 72 hours after installation.

.3 Provide forced air circulation during curing period for enclosed applications to control dangerous vapour buildup, odours and fumes.

Part 2 Products

2.1 DESIGN REQUIREMENTS

.1 Design topping to allow for structural movement or deflection of building, and span cracks in substrate surfaces to maximum 1.5 mm wide which may occur after installation of topping.

.2 Design topping for pedestrian and vehicular traffic.

2.2 MATERIALS

.1 Service Room Coating: In accordance with ASTM C957-17.

.1 High-solids, fluid-applied, polyurethane, waterproofing, traffic-bearing, membrane deck coating system. Suitable for pedestrian traffic, skid resistant aggregate loaded top surface, and
waterproof. Thickness: 40 mil minimum.

.1 Primer: 2-component, polyurethane-based adhesive primer.

.2 Base coat: 2-component, fast-curing, polyurethane base coat.

.3 Top Coat: 2-component, fast-curing, aromatic polyurethane or epoxy top coat.

.2 Traffic Coating: Traffic coating membrane shall meet or exceed the requirements of CSA S41314
and ASTM C957-17ASTM D4060, CS-17 Wheel, 1,000 g load, 1,000 cycles.

.1 Acceptable traffic coating systems; 99% solids systems:

.1 Master Builders Solutions Canada ‘MasterSeal Traffic 2500’.

.2 Neogard 'Auto-Gard FC'.

.3 Tremco Incorporated 'Vulkem 360NF/950NF/951NF'.

.4 Sikalastic ‘Sikalastic 3900 Series’.

.3 Joint and crack sealant: to manufacturer's standard.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for traffic coatings installation in accordance with manufacturer's written instructions.

3.2 PREPARATION

.1 Prepare surfaces to receive traffic topping in accordance with manufacturer's instructions.

.2 Install traffic topping after other work which penetrates membrane has been completed.

3.3 INSTALLATION

.1 Reinforce joints and cracks greater than 1 mm and less than 3 mm in accordance with manufacturer's written recommendations.

.2 Apply coating in accordance with manufacturer's written requirements.

.3 Provide 200mm high base to columns, walls, and against vertical surfaces, unless otherwise indicated.

.4 Flash pipes, conduits and other penetrations to manufacturer's standards.

3.4 TEMPORARY PROTECTION

.1 Provide temporary barriers to protect topping membrane during curing period.

.2 Apply temporary protection board to protect topping membrane from construction activity.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

3.6 PROTECTION

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

.2 Repair damage to adjacent materials caused by traffic coatings installation.

END OF SECTION

Section 07 21 13
Board Insulation

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's product literature, and data sheets for each type of board insulation. Include product characteristics, performance criteria, physical sizes, and limitations.

.3 Shop Drawings: Submit shop drawings for sloped insulation at roof level.

Part 2 Products

2.1 INSULATION

.1 Extruded polystyrene (XPS): ToCAN/ULC-701, for applications below grade, vertically.

.1 Type: 4.

.2 Compressive strength: Minimum 30 kPa.

.3 Board thickness: As indicated on Drawings mm …….

.4 Size: To manufacturer's standard.

.5 Edges: square.

.2 Expanded polystyrene (EPS): ToCAN/ULC-701, forapplications below grade, horizontally.

.1 Type: 4.

.2 Compressive strength: Minimum 275 kPa.

.3 Board Thickness:As indicated on Drawings mm …….

.4 Size:To manufacturer's standard.

.5 Edges: square.

2.2 ADHESIVE

.1 Adhesive for rigid insulation boards: Polymer modified liquid applied membrane, compatible with insulation to be applied, type as manufactured for the attachment of insulation.

.2 Joint tape: as recommended by insulation manufacturer.

2.3 ACCESSORIES

.1 Insulation fasteners: HDPE washer, zinc plated pin finish, pins purpose made to suit substrate material, 50 mm (2”) minimum insulation holding diameter; direct fasten type, pin depth length to suit insulation thickness.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: Verify that conditions of substrate previously installed are clean, dry, smooth, and acceptable for application of board insulation in accordance with manufacturer's instructions.

3.2 INSTALLATION - GENERAL

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.2 Fit insulation tight around penetrating electrical boxes, plumbing piping heating pipes, and ducts, around exterior doors and windows and other protrusions.

.3 Cut and trim insulation neatly to fit spaces. Butt joints tightly.

.4 In multi-layered applications, offset vertical and horizontal joints.

.5 Use only insulation boards free from chipped or broken edges.

.6 Use largest possible boards to reduce number of joints.

.7 In multiple layer applications oOffset both vertical and horizontal joints

.8 Do not enclose, cover, or perform backfilling of insulation until it has been reviewed and accepted by Consultant.

3.3 INSTALLATION - PERIMETER FOUNDATION INSULATION

.1 Interior application: Extend boards as indicated on Drawings, install on inside face of perimeter foundation walls.

.2 Exterior application: extend boards as indicated on Drawings. Install on exterior face of perimeter foundation wall with adhesive.

.3 Under slab application: Extend boards as indicated on Drawings. Lay boards on level compacted fill.

.4 Drape the drainage board/panel and secure without fastening through the waterproofing membrane or tape to the waterproofing membrane.

.1 Unroll drainage board with flat core side against the wall or waterproofing membrane.

.2 Adhere drainage board/panel with mastic without fastening through the waterproofing membrane.

.3 Overlap flat side core lip with second sheet of the drainage board to provide a continuous drainage layer. Ensure excess filter fabric is overlapped with the adjacent sheets.

3.4 INSTALLATION - UNDERSLAB INSULATION

.1 Extend boards as indicated on Drawings, and as follows:

.1 Lay boards on level compacted fill.

.2 Protect top surface of horizontal insulation from damage during concrete work by installing protection board.

3.5 CLEANING

.1 Progress Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaningupon completion.

.3 Waste Management: Perform in accordance with Section 01 74 19 - Waste Management and Disposal

END OF SECTION

Section 07 21 29
Sprayed Insulation

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit manufacturer's product literature, specifications and data sheets. Include product characteristics, performance criteria, and limitations.

.3 Submit manufacturer's installation instructions. Include preparation instructions, recommendations for special storage and handling. Include installation sequence and cleaning procedures.

.4 Submit Manufacturer's Site Reports as described in PART 3 - SITE QUALITY CONTROL. Submit manufacturer's written reports within 3 days of inspection. Submit Manufacturer's Site Reports as described in PART 3 - SITE QUALITY CONTROL. Submit manufacturer's written reports within 3 days of inspection.

1.2 QUALITY ASSURANCE

.1 Manufacturer: company with experience in producing material required for this project, with sufficient production capacity to produce and deliver required units without causing delay in work.

.2 Installer: Person specializing in sprayed insulation installations with documented experience. Approved by manufacturer. Installer to becertified by an ISO 17024 accredited certification organization in accordance with the requirements in ULC 705.2. Submit copies of licenses to Consultant for each installer.

.3 Mock-Ups: Construct mock-up in accordance with Section 01 43 00 - Quality Assurance.

.1 Construct a mock-up minimum 10 m^2. Mock-up to include one inside corner and one outside corner and termination details at openings including doors and windows.

.2 Consultant will require minimum 24 hours to review the mock-up.

.3 Approved Mock-up may be part of finished work.

1.3 HEALTH AND SAFETY

.1 Comply with requirements of Workplace Hazardous Materials Information System regarding use, handling, storage and disposal of insulation materials.

.2 Protect workers in accordance with ULC-705 and manufacturer's recommendations.

.3 Ensure that workers wear gloves, supplied fresh air system, dust masks, long sleeved clothing, eye protection and protective clothing when applying foam insulation.

.4 Ensure that workers do not eat, drink or smoke while applying foam insulation.

1.4 WASTE MANAGEMENT

.1 Separate and recycle waste packaging materials in accordance with Waste Management Plan and Waste Reduction Plan.

.2 Dispose of waste products at appropriate recycling facilities. Collect and separate paper and plastic material in appropriate on-site storage containers.

.3 Dispose of waste foam daily and decontaminate empty drums in accordance with foam manufacturer's instructions. Divert metal drums to metal recycling facility.

1.5 SITE CONDITIONS

.1 Ventilate area in accordance with Section 01 51 00 - Temporary Utilities.

.2 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and 24 hour after application to maintain non-toxic, unpolluted, safe working conditions.

.3 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.

.4 Protect adjacent surfaces and equipment from damage by overspray and fall-out.

.5 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

Part 2 Products

2.1 MATERIALS

.1 Insulation: Spray applied closed cell, rigid polyurethane foam to ULC-705.1 and ASTM C1029. Type 2, two-component, Medium density. Zero ozone depletion blowing agent. Properties as follows:

.1 To CAN/ULC S705.1-15, HFO-based closed cell, spray-applied rigid cellular polyurethane foam, medium density.

.2 Sustainable Requirements:
Low GWP (Global Warming Potential): Utilizing HFO blowing agent, GWP <1.
Eco-efficiency analysis, life cycle assessment approved by an independent third party.

.3 Modify spray foam to suit temperature application in accordance with insulation manufacturer's recommendations.

.4 Burning characteristics; maximum values in accordance with CAN/ULC-S102-10:
Flame spread: 500.
Smoke developed: 500.

.5 Water vapour permeance; with outer skins to simulate actual in-situ conditions:
Maximum 60 ng/Pa.m2 .s. (1 perm) when tested to ASTM E96/E96M-13.

.6 Acceptable Products:
BASF Building Systems ‘Walltite – CM01’.
Carlisle Spray Foam Insulation ‘SealTite One’.
Demilec Inc. ‘Heatlok Soya HFO/Polarfoam SOYA HFO’.
Elastochem Specialty Chemicals Inc. ‘Insulthane Extreme’.
Soprema ‘Sopra SPF 202’.

.2 Transition air barrier membrane at substrate transitions and as indicated, at control joints, over parapet wall at roof air barrier locations down onto roof air barrier; and between junctions of dissimilar material prior to the application of the insulation. Install in widths of min. 300 mm (12") with 150 mm (6") cover to each side of joints or onto dissimilar products.

.1 Primers: As required by CAN/ULC S705.2-05, Annex A and to suit environmental conditions at time of application.

.2 Self-adhesive membrane: Composite preformed modified membrane system consisting of SBS modified asphalt for low temperature flexibility and polyethylene scrim reinforcing.

.3 Acceptable Products: As approved in writing by sprayed foam insulation manufacturer.

2.2 EQUIPMENT

.1 Spray equipment: In accordance with ULC-705.2 and the equipment manufacturer's recommendations for specific type of application

.2 Provide a separate proportioner unit for each spray gun.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that conditions of existing substrate are acceptable for sprayed insulation application in accordance with manufacturer's instructions.

.1 Ensure surfaces are free of snow, ice, frost, grease and other deleterious materials.

.2 Measure moisture content and temperature of substrate and surface suitability in accordance with ULC-705.2. Measurements below ULC-705.2 requirements are not acceptable

3.2 PREPARATION

.1 Protection of In-Place Conditions:

.1 Mask and cover adjacent areas to protect from over spray.

.2 Ensure any required foam stop or back up material are in place to prevent over spray and achieve complete seal.

.3 Seal off existing ventilation equipment. Install temporary ducting and fans to ensure exhaust fumes. Provide for make-up air.

.4 Erect barriers, isolate area and post warning signs to advise non-protected personnel to avoid the spay area.

.2 Surface Preparation:

.1 Clean all surfaces free of oil, grease, dust and debris. Ensure surfaces are clean, dry and properly fastened to ensure adhesion of the foam to the substrate.

.2 Ensure that all work by other Subcontractors that may penetrates through the insulation is in place and complete.

3.3 APPLICATION

.1 Apply primer to surfaces where recommended by manufacturer. Apply primer in accordance with manufacturer's instructions.

.2 Spray apply insulation to maintain continuity of thermal protection to building elements and spaces.

.3 Spray apply insulation to primed surfaces in accordance with ULC-705.2

.4 Record equipment settings on the Daily Work Record as required by ULC-705.2

.5 Spray apply insulation to final thickness as indicated on Drawings. Apply in consecutive passes to thicknesses as recommended by manufacturer. Minimum thickness: 15 mm. Maximum thickness: 50 mm.

.6 Spray insulation to seal perimeter of electrical boxes, pipes, ducts, frames and other objects into or passing through insulation.

.7 Keep insulation away from heat emitting devices such as recessed light fixtures, chimneys and furnace vents. Maintain minimum distances as recommended by manufacturer's instructions.

.8 Finished surface of foam insulation to be free of voids and imbedded foreign objects.

.9 Remove masking materials and over spray from adjacent areas immediately after foam surface has hardened. Ensure cleaning methods do not damage work performed under other sections.

.10 Trim, as required, any excess thickness that would interfere with the application of cladding system by other Subcontractors.

.11 Do not enclose insulation until it has been reviewed and is acceptable to Consultant.

.12 Tolerances: Maximum variation from indicated thickness: minus 6 mm, plus 10 mm but not universally high or low.

3.4 SITE QUALITY CONTROL

.1 Provide Manufacturer's Site Services consisting of product use recommendations and regular site visits to inspect product installation to ensure compliance with manufacturer's instructions.

3.5 CLEANING

.1 Perform cleaning in accordance with Section 01 74 00 - Cleaning.

.2 Upon completion of insulation work, remove surplus materials, rubbish, tools and equipment.

.1 Remove insulation material spilled and oversprayed during installation and leave work area clean.

3.6 PROTECTION

.1 Protect installed products and accessories from damage during construction.

.1 Protect the spray foam from ultraviolet light in accordance with manufacturer's requirements.

END OF SECTION

Section 07 26 00
Below-Grade Vapour Barrier

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for vapour retarders and include product characteristics, performance criteria, physical size, finish and limitations.

Part 2 Products

2.1 SHEET VAPOUR BARRIER

.1 Underslab Plastic Sheet Vapour Retarder: High density, puncture resistant polyolefin resin sheet in accordance with ASTM E1745 and CAN/CGSB-51.34, and as follows:

.1 Thickness: 0.38 mm

.2 Vapour Permeance: Nominal = 0.57 Perms maximum

2.2 ACCESSORIES

.1 Joint sealing tape: High density, air resistant pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 100 mm wide for lap joints and perimeter seals, 100 mm wide elsewhere.

.2 Through Wall Membranes: Manufacturer's recommended reinforced self adhesive, compatible with vapour membrane and that will not become plastic and extrude onto finished surfaces when exposed to high wall temperatures.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for vapour retarder installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION

.1 Ensure services are installed and inspected before installation of retarder.

.2 Use sheets of largest practical size to minimize joints.

.3 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

3.3 INSTALLATION: UNDERSLAB SHEET VAPOUR BARRIER

.1 Install vapour barrier in accordance with manufacturer's written instructions and ASTM E1643, and generally as follows:

.1 Unroll vapour barrier with the longest dimension parallel to direction of concrete placement.

.2 Lap vapour barrier onto face of grade beams.

.3 Overlap joints in accordance with manufacturer's requirements.

.4 Seal penetrations including pipe and conduit risers in accordance with manufacturer's written instructions.

.5 Make no additional penetrations except as required for placing of reinforcing steel and permanent utilities.

.2 Repair damaged areas by cutting patches of vapour barrier membrane; sized to overlap damaged area, and tape all sides using manufacturer's required tape.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.1 Remove insulation material spilled during installation and leave work area ready for application of wall board.

.3 Waste Management: perform in accordance with Section 01 74 19 - Waste Management and Disposal.

END OF SECTION

Section 07 27 00.01
Air Barriers Systems

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit the following action submittals before starting work of this Section:

.1 Product Data: Product literature and data sheets for installed products; include product characteristics, performance criteria, physical sizes, finishes, and limitations.

.2 Shop Drawings:

.1 Show location of each component, dimensioned plans and elevations, large-scale details, and attachment details.

.2 Show intersections with other envelope assemblies and materials, membrane counter-flashings, details showing bridging of construction gaps, inside and outside corners, and special joint conditions.

.3 Show miscellaneous penetrations, including conduits, pipes, electric boxes, and similar items.

1.2 QUALITY ASSURANCE

.1 Qualifications:

.1 Applicator: Company specializing in performing work of this Section with minimum 5 years of documented experience .

.2 Mock-Ups: Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.1 Construct mock-up of air barrier installation, including a typical exterior wall panel, with minimum one window frame and sill, insulation, building corner condition,; illustrating materials interface and seals.

.2 Minimum size: 10 m2.

.3 Location: Acceptable to the Consultant.

.4 Acceptable mock-ups may …… remain as part of the Work.

1.3 PROJECT CONDITIONS

.1 Install air barrier at ambient and substrate temperatures within manufacturer's acceptable range.

.2 Install solvent curing sealants and vapour release adhesive materials in open spaces with ventilation.

.3 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.4 Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

1.4 WARRANTY

.1 Submit warranty information in accordance with Section 01 78 00 - Closeout Submittals.

Part 2 Products

2.1 AIR BARRIER SYSTEMS

.1 Provide air barrier systems, to provide a continuous barrier to the movement of air, in accordance with CAN/ULC-S742.

.2 Provide complete air barrier systems composed of components compatible within each assembly and with substrate and other adjacent materials.

.3 Single source responsibility: Materials shall be sourced from one manufacturer including sheet membranes, air barrier sealants, primers, mastics and adhesives.

.4 Provide products suitable for installation and use within temperature ranges specified by manufacturer for the Place of the Work.

2.2 AIR BARRIERS

.1 Sheet-Applied, Vapour Impermeable Self-Adhesive Air/Vapour Barrier Membrane System

.1 Description: Composite preformed modified bituminous membrane system consisting of SBS modified asphalt for low temperature flexibility and polyethylene scrim reinforcing, with physical properties as follows:

.1 Thickness: 1.0 mm (40 mils).

.2 Application temperature: in accordance with manufacturers written requirements.

.3 Primer: in accordance with manufacturers written requirements.

.4 Termination and penetration sealing mastic: in accordance with manufacturers
written requirements.

.5 Acceptable product systems:
Carlisle Coatings & Waterproofing ‘CCW 705’.
GCP Applied Technologies ‘Perm-A-Barrier Wall Membrane’.
Henry Company ‘Blueskin SA' and ‘Blueskin SA LT’.
IKO ‘AquaBarrier AVB’ and AquaBarrier AVB Low Temp’.
Soprema 'Sopraseal Stick 1100 T’.
W.R. Meadows 'Air Shield' and ‘Low Temperature Air Shield’.

.2 Preformed sheet membrane systems; non-bituminous:

.1 Description: elastomeric proprietary film with high-tack acrylic pressure sensitive adhesive, with physical properties as follows:

.1 Thickness: 0.25 mm (10 mils).

.2 Application temperature: in accordance with manufacturers written requirements.

.3 Acceptable Products:
3M ‘Self-Adhered Air and Vapour Barrier Membrane 3015’, complete with ‘All-Weather Flashing Tape 8067’ and

'Polyurethane Sealant 540'.
IKO 'AcrylicStick SA'.

.2 Liquid-Applied, Air/ Vapour Barrier Membrane System (Elastomeric)

.1 One component elastomeric, fluid-applied membrane. VOC Content: 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

.2 Provide joint reinforcement mesh to substrate panel substrates and joints/gaps in substrate materials.

.3 Concrete and concrete masonry patching materials; for crack, protrusions, voids, offsets, and irregularities: as per manufacturer's written requirements.

.4 Transition air barrier membrane; details, protrusions, transitions between dissimilar substrate materials, and gaps 6 mm (1/4") and greater: Preformed membrane in accordance with manufacturer's written requirements.

.5 Acceptable Product systems:
Carlisle Coatings & Waterproofing 'Barriseal'.
Henry 'Air-Bloc 16MR.
Henry 'Air-Bloc 32MR'.
Master Builders Solutions Canada 'MasterSeal AWB 660 I'.
Soprema 'Sopraseal LM 200 S'.
Soprema 'Sopraseal LM 200 T'.
Soprema 'Sopraseal LM 203'.
Tremco 'ExoAir 120'.
Tremco 'ExoAir 130'.
W.R. Meadows 'Air-Shield LM'.

.3 Sheet Metal, Air/ Vapour Barrier

.1 Sheet metal for metal/air vapour barriers and air seals: Minimum 0.91 mm (20 gauge) thick, sheet steel galvanized to ASTM A653/A653M-13, Designation G90/Z275.

.2 Sealant for sealing of metal air/vapour barrier: Single component silicone, to ASTM C92014, Type M or S, Grade NS, Class 25.

.3 Dielectric Separator: Best grade, quick drying non-staining alkali resistant bituminous paint to CAN/CGSB 1.108-M89.

.4 Fasteners: Self-drilling, galvanized steel fasteners with neoprene washers.

2.3 THROUGH-WALL FLASHING MEMBRANE

.1 Provide self-adhering, vapour-impermeable flashing membranes cut to widths suitable for installation openings and other through-wall penetrations.

.1 Modified bituminous sheet membrane: SBS modified bitumen laminated to woven polyethylene facer, with the underface covered with release paper or film; 1.0 mm nominal thickness.

.2 Sheet metal membrane: Rubberized asphalt adhesive factory-applied to a composite facer of cross-laminated HDPE and aluminum foil; 1.0 mm nominal thickness.

.3 Match air barrier.

2.4 SEALANTS

.1 Provide non-hardening sealants in accordance with air barrier manufacturer's instructions and Section 07 92 00 - Joint Sealants.

.1 VOC and other chemical content restrictions: To SCAQMD Rule 1168.

.2 Colours for exposed sealants: To be selected by the Consultant from the manufacturer's standard range.

2.5 ADHESIVES

.1 Provide permanently non-curing adhesives in accordance with air barrier manufacturer's instructions.

.1 VOC and other chemical content restrictions: To SCAQMD Rule 1168.

2.6 ACCESSORIES

.1 Provide accessories, as required for a complete system, in accordance with the air barrier assembly manufacturer's instructions.

Part 3 Execution

3.1 EXAMINATION

.1 Verify installation and substrate conditions in accordance with Section 01 71 00 - Examination and Preparation, and:

.1 Verify concrete surfaces are free of large voids, spalled areas, or sharp protrusions.

.2 Verify masonry joints are struck flush.

.3 Verify metal components are free of sharp edges and burrs.

.4 Verify that electrical, mechanical, and telecommunications work within demising walls to receive air barrier is complete.

3.2 PREPARATION

.1 Prepare substrates in accordance with manufacturer's instructions.

.2 Clean substrates of oil, dust, and other foreign matter that may impair application.

.3 Remove surface moisture prior to installation.

3.3 INSTALLATION

.1 Install materials in accordance with manufacturer's instructions and reviewed Shop Drawings.

.2 Apply primers as recommended by the manufacturer to suit project conditions.

.3 Install continuous air barrier assemblies without gaps.

.4 Lap and seal joints over firm bearing.

.5 Apply sealant within recommended application temperature range.

.1 Consult with sealant manufacturer's technical representative when sealant cannot be applied within recommended temperature range.

.6 Substrate Gaps Greater than 13 mm: Cover with minimum 0.79 mm thick galvanized sheet metal or purpose-made reinforced backing sheet as recommended by air barrier manufacturer.

.7 Provide additional sheet air barrier layer at inside and outside corners; extend at least 200 mm each side of corner.

.8 Maintain continuous seal at transition between wall and roof air barriers.

.9 Accommodate deflection of structure below roof beam locations. Provide looped butyl membrane, mechanically fastened and sealed to membrane-type air barriers and substrate.

.10 Maintain continuity of air barrier systems at openings and other penetrations.

.1 Seal penetrations through air barrier membrane at structural members, ductwork, piping, conduits, and similar penetrations without suitable flanges with backer rod, reinforcement, and elastomeric liquid air barrier coating compatible with air barrier.

.2 Pressed steel door openings: Return air barrier membrane into rough openings, fill void space between rough opening and frame with bead-applied polyurethane foam sealant, and caulk to air barrier return.

.3 Window frames:

.1 Wrap rough opening heads, jambs, and sills with flashing membrane; shingle-lap to prevent water ingress.

.2 Seal air barrier to flange of window frame flanges.

.3 Fill void space between rough opening and window frame with bead-applied polyurethane foam sealant and caulk to air barrier return.

.4 Curtain wall framing: Mechanically fasten air barrier membrane to curtain wall framing in accordance with curtain wall manufacturer's instructions.

.5 Mechanical penetrations: Return air barrier membrane into rough openings, fill void space with bead-applied polyurethane foam sealant, and seal to air membrane with backer rod and caulking.

.1 Galvanized ductwork and louvres: Provide compatible, corrosion-resistant metal flange around perimeter of duct or louvre for mechanical fastening and sealing of air barrier membrane.

.11 Apply insulation as soon as possible after air barrier is installed. Do not leave installed air barrier exposed longer than recommended by manufacturer.

3.4 THROUGH-WALL FLASHING MEMBRANE INSTALLATION

.1 Prime substrate in accordance with manufacturer's instructions.

.2 Measure and cut through-wall flashing to required length, apply to rough openings, and integrate into wall air barrier system in accordance with manufacturer's instructions.

.3 Roll membrane into place with hand roller to smooth out wrinkles, air bubbles, and creases.

.4 Form laps to shed water. Make laps in widths recommended by manufacturer.

.5 Apply continuous bead of mastic sealant at laps, seams, and penetrations, and along top edges of flashing membrane.

.6 Keep edge of membrane flashing and mastic at least 13 mm away from exterior finish.

3.5 SELF-ADHERING SHEET AIR BARRIER INSTALLATION

.1 Install self-adhering sheet air barrier over exterior face of exterior wall substrate in accordance with manufacturer recommendations.

.2 Remove release paper as membrane is applied.

.3 Apply pressure with roller over surface of membrane while installing.

.4 Ensure installed self-adhered membrane is free of wrinkles, fish mouths, and bubbles.

3.6 SITE QUALITY CONTROL

.1 Manufacturer Services: Provide manufacturer's site services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions and warranty requirements.

.1 Schedule site visits to review work of this Section:

.1 after delivery and storage of products, and when preparatory Work is complete, but before installation begins;

.2 During mock-up construction;

.3 during progress of Work at approximately 30 % and 60 % complete; and

.4 upon completion of the work of this Section.

END OF SECTION

Section 07 46 16
Aluminum Composite Panel Cladding System

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's product literature for cladding system materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Shop drawings: Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.2 Indicate dimensions and thickness of panels, fastening and anchoring methods, detail and location of joints and gaskets, thermal movement provision, wall openings, head, jamb and sill details, materials and finish, compliance with design criteria and requirements of related work.

.4 Samples:

.1 Submit duplicate 100 x 100 mm samples of wall system, representative of materials, finishes and colours.

1.2 QUALITY ASSURANCE

.1 Qualifications:

.1 Manufacturer: company specializing in producing composite wall panels with 5 years documented experience with sufficient capacity to produce and deliver required units without causing delay in Work.

.2 Installer: person specializing in composite wall panel installations approved by manufacturer.

.2 Mock-ups: construct mock-ups in accordance with Section 01 43 00 - Quality Assurance and to requirements supplemented as follows:

.1 Provide mock-up for evaluation of surface finishes and workmanship.

.2 Provide initial production units for job-site assembly with other materials for review.

.3 Coordinate type and location of mock-ups with project requirements.

.4 Do not proceed with remaining work until workmanship, colour, and finish are accepted by Consultant.

.5 Refinish mock-up area as required to produce acceptable work.

.6 Approved mock-up may …… remain as part of finished work.

Part 2 Products

2.1 PERFORMANCE/DESIGN CRITERIA

.1 Maximum deflection not to exceed L/180 under system's own weight plus wind load (positive and negative) loads acting normal to the plane in accordance with the Building Code Climatic Data, wind load 1:30 years.

.2 Calculate live load deflections in accordance with CSSBI 20M, as modified by the requirements of this Section.

.3 Design metal cladding to allow for thermal movement of component materials caused by variation in ambient temperature range of 80°C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.4 Maximum deviation from vertical and horizontal alignment of erected panels: 1 to 1000.

.5 Include expansion joints to accommodate movement in wall system and between wall system and building structure, where these movements are caused by deflection of building structure, and accommodate these movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.

.6 Provide for positive drainage to the exterior of all water entering or condensation occurring within the system.

.7 Final review and acceptance of work completed by this Section shall be carried out by the manufacturer's representative, the Consultant, Contractor and the Subcontractor.

2.2 MATERIALS

.1 Composite panels:

.1 Two sheets of aluminum sandwiching a solid core of extruded thermoplastic material formed in a continuous process with no glues or adhesives between dissimilar materials. The core material shall be free of voids and/or air spaces and not contain foamed insulation material. Panel system shall be listed for fire resistance rating.

.2 Acceptable Products:

.1 3A Composites USA ‘Alucobond Plus'.

.3 Thickness: 4 mm.

.4 Core: fire resistant thermoplastic resin core.

.5 Bond Integrity: tested for resistance to delamination as follows:

.1 Bond Strength: 10.3 MPa minimum to ASTM C297.

.2 Peel Strength: 100 N mm/mm minimum to ASTM D1781.

.3 No degradation in bond performance after 8 hours of submersion in boiling water and after 21 days of immersion in water at 21°C.

.4 Fire Performance: to ASTM E84 Flame Spread 0, Smoke Developed 0.

.2 Aluminum face sheets:

.1 Thickness: 0.51 mm.

2.3 ACCESSORIES

.1 Fasteners: aluminum extrusion, type self-tapping, concealed in accordance with manufacturer's recommendations.

.2 Concealed sealants: one-component, butyl-polyisobutylene polymer base, solvent curing to CGSB 19-GP-14M.

.3 Thermally Broken Clip System: Low-conductivity thermal spacers. Confirm all clips with structural engineer and loads in accordance with Section 01 35 73 - Delegated Design.

.4 Girts: Fabricated from minimum 1.27 mm thickness galvanized steel to ASTM A653, Grade 230 with Z275 coating. Material visible after assembly of wall panel shall be finished to match aluminum panels.

.5 Sub-girts: of 1.22 mm minimum base metal thickness, structural quality steel to ASTM A 653, with Z275 zinc coating, …… profile as indicated to accept exterior sheet with structural attachment to building frame.

.6 Isolation Tape: Manufacturers standard material for separating dissimilar metals from direct contact.

.7 Stiffeners, as required: Minimum 25 mm x 25 mm aluminum, bonded to the full length of face sheet using double sided high bond isolating tape to prevent weather staining and frost lines to the face of the panel. Bonding tape to be protected with continuous bead of caulking on both sides of stiffeners, type as recommended by manufacturer.

.8 Flashings: Fabricate flashing from 1.57 mm minimum thickness aluminum sheet IN ACCORDANCE WITH Section 07 62 00 - Sheet Metal Flashing and Trim. Where exposed to view, finish to match adjacent panels. Provide lap strip under flashing at abutted conditions; with lapped surfaces sealed with a full bed of non- hardening sealant.

2.4 FINISHES

.1 Exposed aluminum surfaces: 70% Kynar 500 or Hylar 5000 fluoropolymer resin systems, ceramic pigments and other select inorganic pigments to AAMA 2605-17a.

.1 Acceptable Products (must be compatible with Alucobond):
PPG 'Duranar' Mica colour range.
Valspar ‘Fluropon Classic’.

.2 Colour: Native Copper Mica, as provided by Alucobond in their Natural Collection.

2.5 FABRICATION

.1 All components shall be factory fabricated ready for site installation. All components shall match quality and installation of accepted mock up specified above.

.2 Fabrication Tolerances:

.1 Panel bow: maximum 0.8% of panel dimension in width and length.

.2 Panel dimensions: where final dimensions cannot be established by site measurement before completion of panel manufacturing, make allowance for site adjustments as recommended by manufacturer.

.3 Panel lines, breaks and angles: sharp, true and surfaces free from warp or buckle.

.4 Panel shall be visually flat.

.5 Panel surfaces shall be free of scratches or marks caused during fabrication.

Part 3 Execution

3.1 EXAMINATION

.1 Before installation examine alignment of substrate and notify Consultant in writing if substrate does not comply with requirements of panel manufacturer.

3.2 INSTALLATION

.1 Install composite panels in accordance with manufacturer's written instructions and shop drawings.

.1 Allow for thermal movement.

.2 Erect panels plumb, level, and true.

.3 Do not install component parts that are observed to be defective, including warped, bowed, dented, scraped and broken members.

.4 Separate dissimilar metals; use appropriate gasket and fasteners to prevent corrosive or electrolytic action between metals.

.5 Install flashings to divert all moisture and condensation to exterior. Trim and flash around doors, louvers, and windows. Use only membrane flashing supported by insulation per architectural details.

.6 Remove strippable coating from panels as they are installed.

.7 Tolerances:

.1 Maximum variation from plane or location shown on shop drawings: 10 mm/10 m of length and up to 20 mm/100 m.

.2 Maximum deviation for vertical member: 3 mm in an 8.5 m run.

.3 Maximum deviation for a horizontal member: 3 mm in an 8.5 m run.

.4 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm.

3.3 SITE QUALITY CONTROL

.1 Manufacturer's Site Services: Provide manufacturer's site services consisting of periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.4 CLEANING

.1 Proceed in accordance with Section 01 74 00 - Cleaning.

.1 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

Section 07 46 24
Prefinished Wood Siding

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for wood siding and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.2 Indicate dimensions, siding and soffit profiles, attachment methods, schedule of wall elevations, trim and closure pieces, ……, ……, furring, and related work.

.4 Samples:

.1 Submit duplicate 305mm length x specified width mm size profile specified, in a dry condition.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.

.3 Warranty Documentation: submit warranty documents specified.

1.3 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

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

.3 Installer Qualifications: minimum three years documented experience with products specified.

.4 Mock-Up:

.1 Provide site mock-up for work of this Section indicating methods and materials, and procedures proposed to achieve final results in accordance with Section 01 43 00 - Quality Assurance, and to comply with following requirements, using materials indicated for completed work:

.2 Build mock-ups in location and of size as directed by Consultant.

.3 Obtain Consultant's acceptance of mock-ups before starting construction; mock-up used throughout construction period as standard of acceptance for subsequent work.

.4 Mock-up may form part of permanent structure when accepted by Consultant; repair or replace unacceptable mock-ups at no additional cost to Owner.

1.4 SITE CONDITIONS

.1 Execute work of this Section within environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

1.5 WARRANTY

.1 Manufacturer's warranty: Submit, for Consultant acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

Part 2 Products

2.1 MATERIALS

.1 Acceptable Product:

.1 Prefinished wood siding 'Maibec em+ Series'

.2 Profile: Contemporary

.3 Factory finished on all surfaces.

.1 Finish: Brushed face finish

.2 Colour: Natural Tones Series, 053-Muskoka Brown

.4 Trim accessories and mouldings as indicated.

.2 Fasteners:

.1 Blind nailed; general: 50mm, 11mm crown, 16 gauge, resin-coated stainless steel type 304 staples.

.2 First and last course: Use Maibec twice hot-dipped zinc galvanized or stainless steel 300 series flat textured head ring shank nails that are corrosion resistant and colour matched to the siding.

.1 Lengths: 50mm for siding, 75mm for all other standard mouldings.

2.2 ACCESSORIES

.1 Manufacturers standard exposed trim, closures, cap pieces and other accessories required for complete installation.

.2 Sub girts: Structural quality steel to ASTM A653, with Z275 zinc coating to ASTM A792, adjustable double-angle profile as indicated to accept panel with structural attachment to building frame.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

.1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts acceptable in accordance with manufacturer's written instructions.

3.3 PREPARATION

.1 Clean surfaces thoroughly before installation.

.2 Repair substrate flaws or defects before applying siding or soffits.

.3 Fur surfaces to even plane and free from obstructions.

.4 Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under project conditions.

3.4 INSTALLATION

.1 Installation to be in accordance with Installation Guide published by Maibec.

.2 Install siding in straight aligned lengths, set level with plumb ends and corners. Spread the boards out on the wall surface in order to limit joints and cutting operations.

.3 Cut board joints at 45-degrees. Position cut ends over bearing surfaces. Apply touch-up finish and sealant to cut ends to minimize weather entry and humidity.

.4 Conceal fasteners.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

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

.3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

3.6 PROTECTION

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

.2 Repair damage to adjacent materials caused by wood siding installation.

END OF SECTION

Section 07 52 00
Modified Bituminous Membrane Roofing

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Convene pre-installation meeting oneweek before beginning waterproofing Work, with roofing contractor's representative and Consultant in accordance with Quality Control Requirements to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Coordination with other building subtrades.

.4 Review manufacturer'sinstallation instructions and warranty requirements.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Provide one copies of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Provide one electronic copy of WHMIS SDS in accordance with Section 01 35 43 - Environmental Procedures, and indicate VOC content for:

.1 Primers.

.2 Asphalt.

.3 Sealers.

.4 Filter fabric.

.3 Provide shop drawings:

.1 Indicate flashing, control joints, tapered insulation details.

.2 Provide layout for tapered insulation.

.3 Provide wind (uplift) calculations and confirmation that system as designed is compliant with wind (uplift) design requirements.

.4 Manufacturer's Certificate: certify that products meet or exceed specified requirements.

.5 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.

.6 Manufacturer's field report: in accordance with Section 01 43 00 - Quality Assurance.

1.3 QUALITY ASSURANCE

.1 Installer qualifications: company or person specializing in application of modified bituminous roofing systems is approved, authorized or licensed by manufacturer to install roofing system.

1.4 SITE CONDITIONS

.1 Ambient Conditions

.1 Do not install roofing when temperature remains below -18 degrees C for torch application, or to manufacturers' recommendations for mop application.

.2 Minimum temperature for solvent-based adhesive is -5 degrees C.

.2 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.5 WARRANTY

.1 Extend the 12 month warranty period to 15 years for Work of this Section 07 52 00 - Modified Bituminous Membrane Roofing.

Part 2 Products

2.1 ROOFING SYSTEM MANUFACTURER

.1 Acceptable roof system manufacturers, subject to compliance with requirements of the Agreement, Drawings, Schedules, and Specifications:

.1 Henry Company.
Johns Manville.
Soprema.
Tremco Incorporated.

2.2 PERFORMANCE CRITERIA

.1 Compatibility between components of roofing system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

.2 Roofing System: to CSA A123.21 for wind uplift resistance.

2.3 DECK COVERING

.1 Plywood:

.1 To CSAO151 sheathing grade, tongue and groove,thickness as indicated.

2.4 AIR AND VAPOUR RETARDER

.1 Self adhesive air/vapour barrier modified bitumen membrane. Compatible with wall and roof air/vapour retarder membranes as recommended by accepted membrane manufacturers.

2.5 POLYISOCYANURATE INSULATION

.1 General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

.2 Rigid polyisocyanurate insulation board, inorganic felt faced:

.1 Description: Closed-cell polyisocyanurate foam core integrally laminated to heavy, durable and dimensionally stable inorganic coated-glass facers, CAN/ULC S704-11 Type 2 and Class 3, HCFC free, 138 kPa (20 psi) minimum compressive strength (at 10% deformation), CAN/ULCS126-06, LTTR value to CAN/ULC S770-15.

.2 Tapered insulation: Provide factory-tapered insulation boards fabricated to slope of 1:48 (1/4 inch per 12 inches) unless otherwise indicated.

.3 Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated, and no less than 1:48 (1/4 inch per 12 inches) in addition to roof structure slope or to tapered insulation slope as applicable.

2.6 RIGID COVER BOARD

.1 Cover board; multi-ply, semi-rigid asphaltic roofing substrate board: Mineral fortified asphaltic core formed between two asphaltic saturated fibreglass liners.

.2 Thickness: Use 3.2 mm (1/8") at horizontal condition and 6.4 mm (1/4") at vertical conditions, unless otherwise indicated.

2.7 INSULATION ACCESSORIES

.1 General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with roofing assembly.

.2 Insulation adhesive: as recommended by insulation and membrane manufacturer.

.3 Cant strips: as recommended by membrane manufacturer.

2.8 MEMBRANE

.1 Roofing membrane requirements:

.1 The use of thermofusible (torched) base sheet and cap sheet membranes and flashing membranes is not permitted.

.2 Base sheet: to CGSB 37-GP-56M SBS-modified asphalt membrane sheet..

.1 Reinforcement: 180 gm/m2 non-woven polyester or polyester/fibreglass composite.

.2 Base sheet membrane can be:
Self-adhesive.
Hot asphalt applied.
Cold adhesive applied.
Mechanically fastened.

.3 Base sheet flashing membrane can be:
Self-adhesive.

.3 Cap sheet membrane: to CGSB 37-GP-56M asphalt membrane sheet with reinforced elastomeric bitumen, protected by granules.

.1 Reinforcement: 250 gm/m2 non-woven polyester or polyester/fibreglass composite

.2 Cap sheet membrane can be:
Self-adhesive.
Hot asphalt applied.
Cold adhesive applied.

.3 Cap sheet flashing membrane can be:
Self-adhesive.

.4 Granule colours as selected by Consultant:
Roofing material shall have minimum initial SRI (Solar Reflectance Index) of 78, according to ASTM E1980-11.

2.9 ASPHALT MATERIALS

.1 Asphalt primer: CGSB 37-GP-9Ma-1983

.2 Roofing asphalt: CAN/CSA A123.4-04, Type 2 or Type 3

.3 Roofing asphalt: ASTM D6152/D6152M-12, SEBS modified.

2.10 ACCESSORIES

.1 Sealers

.1 Sealants: Polyisobutylene, plain or modified bitumen, non-hardening, nonmigrating, non-skinning, and non-drying. …….

.2 Flashing and sheet metal in accordance with section 07 62 00 - Sheet Metal Flashing and Trim.

.3 Fasteners

.1 General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing system.

.2 Factory-coated steel fasteners and plates complying with corrosion-resistance provisions in FM 4470, designed for fastening roofing components to substrate, tested by manufacturer for required pullout strength and wind uplift resistance, and acceptable to roofing manufacturer.

.3 Termination bars: Pre-punched aluminum bar 25 mm (1") wide x 1.5 mm (1/16") thick x 3048 mm (10 ft) long with 6.4 mm (1/4") x 9.5 mm (3/8") slotted holes on 200 mm (8") centres.

.4 Roof walkways

.1 Description: Waterproofing membrane composed of SBS modified bitumen and unwoven polyester reinforcement. The top face is covered with black granules; the underface is protected by a thermofusible film.

.1 Primer: as recommended by roofing manufacturer.

2.11 PIPE SUPPORTS

.1 Roof drain pans, vent stack covers and other roof penetration flashings: pre manufactured, stainless steel construction, purpose made to suit application and location, designed to tie-in to SBS modified membrane roofing systems.

.2 Premanufactured Pipe Supports: fabricated from 100% recycled content, with 2.7 mm thickness galvanized steel frame, 150 mm wide x 100 mm tall x length to suit installation;

including fasteners, bridge components, and angled supports as required for a complete installation and having the following accessories:

.1 Pipe and Conduit Support: Galvanized pipe clamp sized to suit gas pipe in accordance with manufacturer's instructions.

.2 Multi-Pipe and Conduit Support: Galvanized pipe support system size and number to suit pipes being supported in accordance with manufacturer's instructions.

.3 Extendable Height Support: Galvanized steel pipe extensions to suit installation in accordance with manufacturer's instructions.

Part 3 Execution

3.1 EXAMINATION OF ROOF DECKS

.1 Verification of Conditions:

.1 Inspect with Consultant deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

.2 Evaluation and Assessment:

.1 Before beginning of work ensure:

.1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.

.2 Curbs have been built.

.3 Roof drains have been installed at proper elevations relative to finished roof surface.

.4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.

.3 Do not install roofing materials during rain or snowfall.

.4 Provide fire protection during installation.

3.2 PROTECTION OF IN-PLACE CONDITIONS

.1 Cover walls, walks , slopped roofs and adjacent work where materials hoisted or used.

.2 Maintain in good order warning signs and barriers until completion of Work.

.3 Clean off drips and smears of bituminous material immediately.

.4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.

.5 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.

3.3 AIR AND VAPOUR RETARDER (PLYWOOD DECK)

.1 Modified bituminous vapour retarder sheet.

.1 Prime substrate if required by manufacturer. Install self-adhering sheet over area to receive sheet, side and end lapping each sheet a minimum of 90 mm (3-1/2") and 150 mm (6"), respectively. Seal laps by rolling.

.2 Completely seal air and vapour barrier at terminations, obstructions, and penetrations to prevent air movement into roofing.

3.4 CONVENTIONAL MEMBRANE ROOFING APPLICATION

.1 Insulation: fully adhered, adhesive application:

.1 Adhere insulation to laminated vapour barrier using solvent-based adhesive.

.2 Place boards in parallel rows with ends staggered, and in firm contact with one another.

.3 Cut end pieces to suit.

.4 Apply adhesive in continuous ribbons at 300 mm on centre.

.5 Separate membrane and insulation with a drainage layer or slip sheet.

.2 Rigid cover board:

.1 Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 300 mm (12") in each direction. Loosely butt cover boards together. Tape joints if required by roofing manufacturer.

.3 Base Sheet Application (Mopped):

.1 Starting at low point of roof, perpendicular to slope, unroll base sheet, align and reroll from both ends.

.2 Unroll and embed base sheet in uniform coating of asphalt applied at rate of thickness as per manufacturer's recommendation, at 230 degrees C.

.4 Base Sheet Application - Adhered:

.1 Install membrane base sheet in full bed of adhesive applied at rate recommended by roofing membrane manufacturer using a notched 5 mm neoprene squeegee starting at drain and perpendicular to slope.

.2 Apply base sheet in parallel strips, lapping side joints 100 mm and end joints 150 mm; stagger end joints a minimum of 300 mm.

.3 Roll surface installed membrane using a 30 kg steel roller to smooth membrane and to provide continuous and uniform adhesion to insulation.

.4 Seal lap joints of base sheet at end each workday; perform work without interruption to avoid tears and formation of fish mouths, air pockets or wrinkles.

.5 Cut off corners at end laps being covered by next roll.

.6 Terminate base sheet at top of cant or at perimeter.

.5 Base sheet flashing installation:

.1 Apply base sheet flashing when primer coat is dry and in accordance with manufacturer's written instructions.

.2 Position pre-cut membrane pieces; peel back 100 mm to 150 mm of silicone release paper to hold the membrane in place at the top of the parapet, then

gradually peel back remaining silicone release paper, pressing down on the membrane with aluminium applicator to provide good adhesion and to provide smooth transition between up-stand and field surface; smooth entire membrane surface with a roller for full adhesion.

.3 Cut off corners at end laps being covered by next roll.

.4 Install a reinforcing gusset in all inside and outside corners.

.5 Seal overlaps at the end of each workday.

.6 Cap Sheet Application (Adhered):

.1 Install cap sheet in a full bed of adhesive applied at a rate recommended by membrane manufacturer using notched 5 mm neoprene squeegee starting at drains and perpendicular to the slope; use brush grade or trowel grade adhesive as required for different membrane installation requirements as recommended by manufacturer's written installation requirements.

.2 Lap side joints 100 mm and end joints 150 mm; stagger end joints and joints between membranes plies a minimum of 300 mm; stagger base and cap sheet membranes by 300mm.

.3 Brush surface to provide complete and uniform adhesion immediately after placement of membrane into adhesive.

.4 Cut off corners at end laps being covered by next roll.

.5 Provide a smooth application, free of wrinkles, fish mouths, air pockets or tears.

.6 Terminate cap sheet at top of cant or at perimeter.

.7 Cap Sheet Application (Mopped):

.1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.

.2 Unroll and embed cap sheet in uniform coating of asphalt applied at rate of thickness as per manufacturer's recommendation, EVT at point of contact.

.8 Flashings:

.1 Complete installation of flashing base sheet stripping before installing membrane cap sheet.

.2 Provide 75 mm minimum side lap and seal.

.3 Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.

.4 Do work in accordance with manufacturer's recommendations.

.9 Roof penetrations:

.1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with manufacturer's recommendations and details.

3.5 CANTS

.1 Install prefabricated cants over rigid insulation.

.2 Apply hot bitumen to receiving surface and embed cant firmly by hand.

.3 Angle cut cants to fit tightly on back and bottom where roof to wall angle varies from 90 degrees.

3.6 WALKWAYS

.1 Install walkway membrane as indicated.

3.7 SITE QUALITY CONTROL

.1 Inspections:

.1 Inspection and testing of roofing application will be carried out by testing laboratory designated by Owner and Consultant.

.2 Testing:

.1 Manufacturers' Field Services:

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.

.2 Manufacturer's field services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits to review Work at stages listed:

.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Upon completion of Work, after cleaning is carried out.

.4 Obtain reports within three days of review and submit.

3.8 CLEANING

.1 Remove bituminous markings from finished surfaces.

.2 Consult manufacturer of surfaces for cleaning advice and complying with their documented instructions in areas where finished surfaces are soiled caused by work of this section.

.3 Repair or replace defaced or disfigured finishes caused by work of this section.

.4 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

.1 Place materials defined as hazardous or toxic in designated containers.

.2 Clearly label location of salvaged material's storage areas and provide barriers and security devices.

.3 Ensure emptied containers are sealed and stored safely.

.4 Do not dispose of unused adhesive, sealant and asphalt materials into sewer system, streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

END OF SECTION

Section 07 62 00
Metal Flashing

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's printed product literature including product specifications and technical data sheets for sheet metal flashing fasteners and accessory materials. Include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit shop drawings for all sheet metal fabrications.

.2 Indicate sheet thickness, flashing dimensions and fastenings. Include anchorage, expansion joints and other provisions for thermal movement.

.3 Submit manufacturer's catalogue cut sheets for manufactured items.

.4 Samples:

.1 Submit 50 x 50 mm samples of each type of sheet metal material, finishes and colour.

1.2 QUALITY ASSURANCE

.1 Installer: Engage an experienced installer having a minimum of three years experience who has completed projects similar in material, design, and extent to that indicated for this Project and with a record of successful in service performance.

.2 Construct and install roof metal flashings in accordance with CRCA Manual details and in accordance with the CRCA Manual. If requirements conflict, this specification takes precedence over the manual.

.3 Mock-ups

.1 Include flashings in mock-ups as specified for work of other affected sections.

1.3 WARRANTY

.1 The same warranty provisions apply to flashings associated with roofing as to the roofing.

.2 Provide Warranty for sheet metal flashing and trim to include in maintenance manuals as specified in Section 01 78 00 - Operations and Maintenance Data Manuals.

Part 2 Products

2.1 BASE SHEET METAL MATERIALS

.1 Provide sheet metal in base metal thickness specified. Where no thickness specified, provide base sheet metal in thickness recommended in SMACNA Architectural Sheet

Metal Manual for type of item being fabricated, but not less than the thickness required by the authority having jurisdiction.

.2 Zinc coated galvanized steel sheet: .76 mm thickness, commercial quality to ASTM A653/A653M, with Z275 designation zinc coating, and as follows:

.1 Class: F1S-Finished one side.

.2 Factory Finish: pre-finished as indicated below

2.2 FABRICATION

.1 Fabricate sheet metal building flashings and trim in accordance with the recommendations of SMACNA's Architectural Sheet Metal Manual that apply to the design, dimensions, metal, and other characteristics as required.

.2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AAI Aluminum Sheet Metal Work in Building Construction.

.3 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.4 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

.5 Make flashings of prefinished metal for all cap flashings, for all flashings adjacent to roofing at roof edges and area dividers and where exposed to view from ground. Make flashings for other locations, of plain galvanized metal as follows:

.6 S Lock all straight run joints.

.7 Make joints allow for thermal movement, space S Lock joints at 2440 mm maximum centers.

.8 Form non-expansion but movable joints in metal to accommodate elastomeric sealant in accordance with SMACNA standards.

.9 Make flashings so that joints can be lapped 100 mm or more for building into masonry and concrete.

.10 Strengthen free edges of metal flashings by folding to form a 13 mm hem.

.11 Make flashings to curbs, walls and parapets a minimum of 200 mm high, where possible.

.12 Provide flashing sleeves and collars for all pipes and conduit extending through the roof where curb mounted roof penetrations are not required. Sleeves shall be soldered to a piece of sheet metal extending at least 150 mm onto the surrounding roof.

.13 Make joints for corners and intersections with standing seams except where exposed of pre finished metal when seams shall be flat locked.

.14 All bends machine made; form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.15 Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, non corrosive metal recommended by sheet metal manufacturer, and as follows:

.16 Size as recommended by SMACNA manual or sheet metal manufacturer for application but not less than thickness of metal being secured.

.17 Back paint metal flashings in contact with dissimilar metals or materials with bituminous paint that would result in electrolytic action or corrosion.

2.3 FINISHES

.1 Prefinished Steel Sheet

.1 Prefinished steel sheet with coating system consisting of base metal pre-treatment, primer, silicone modified polyester or polyester topcoat meeting requirements of CSSBI S8.

.1 Finished one side with wash coat on back.

.2 Colourchip, or peel (lose adhesion) for 40 years from date of installation, 40.5 yrs from application of coatings. This does not include minute fracturing that may occur during the normal fabrication process.

.3 Coating shall not chalk in excess of a number 6 rating, in accordance with ASTM D-4214-98 method D659 at any time for 30 years from date of installation, 30.5 yrs from application of coating

.4 Coating shall not change colour more than 8.0 Hunter ΔE units as determined by ASTM D2244-16.

.5 Colours to later selection by Contract Administrator from manufacturer's full range (assume 3 - use Duranar Sunstorm Bronze (UC120894F) as a basis for costing).

.6 Acceptable Products:
ArcelorMittal Dofasco ‘Perspectra Series’.
Baycoat ‘Perspectra Plus Series’.
Firestone Metal Products (SMP or Kynar).
Valspar ‘WeatherXL’.

2.4 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Sealants: provide in accordance with Section 07 92 00 - Joint Sealants, in colour to match flashing finish colour.

.3 Cleats and hook strips: of same material, and temper as sheet metal, minimum continuous. Thickness greater than flashing material.

.4 Screws: of same material as sheet metal, TO ASTM F1667 Suitable for substrate and material being fastened, coloured head, EPDM washer.

.5 Touch-up paint: as recommended by prefinished material manufacturer.

.6 Metal Accessories: Provide non-corrosive sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work. Accessories shall match or be compatible with material being installed; size and thickness as require.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking and fastener disengagement.

.2 Install metal flashings on all surfaces such as roof cant edges, sleepers, parapets and cap type, wall junctions, roof dividers, curbs, roof control joints, through roof penetrations and the like, and as otherwise required to provide flashing type protection to details. Extend all flashings down and onto the horizontal portion of the roof unless otherwise directed. Install counter and base flashings unless otherwise directed by the Consultant.

.3 Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects:

.1 Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements.

.2 Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

.3 Temperature change (range): 67 degrees Celsius ambient; 100 degrees Celsius material surfaces.

.4 Provide sheet metal flashing and trim to create a rain screen assembly to the completed air/vapour and roofing membrane termination details.

.5 Install prefinished metal fascia to complete edge details. Install as separate piece from flashing.

.6 Coordinate installation of flashing work of this Section with flashing work of other Sections which ties into this work. Coat surfaces of different metals such as aluminum and galvanized steel which are in contact to each other, with bituminous paint to prevent electrolysis.

3.3 INSTALLATION: METAL FLASHING

.1 Install sheet metal flashing and trim in accordance with performance requirements, manufacturer's installation instructions, and SMACNA's Architectural Sheet Metal Manual.

.2 Do not install metal flashings over flexible roof flashing until the flexible roof flashing has been inspected and approved by the Roofing Inspector. This includes curbs for roof mounted items.

.3 Fasten metal base flashing to walls or upstands along top of flashing. Do not secure to cant strip. Form lapped corner joints. Extend rolled edge of base flashing approximately 25 mm on to roof from toe of cant, and rest on top of roof surface.

.4 Use concealed fastenings except where approved before installation.

.5 Provide underlay under sheet metal.

.1 Secure in place and lap joints 100 mm.

.2 Provide self-adhesive membrane to tie into adjacent assemblies.

.6 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.

.7 Lock end joints and caulk with sealant.

.8 Install surface mounted reglets true and level, and caulk top of reglet with sealant.

.9 Insert metal flashing into reglets and under cap flashing to form weather tight junction.

.10 Separate metal from non compatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.

.11 Underlayment: Install a slip sheet of red rosin paper and a course of polyethylene underlayment where installing stainless steel or aluminum directly on cementitious or wood substrates.

.12 Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.

.13 Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm. Lead wedge flashing securely into joint.

.14 Caulk flashing at reglet and cap flashing with sealant.

.15 Install pans, where shown around items projecting through roof membrane.

.16 Install drainage items to drain roof in the most efficient manner fabricated from sheet metal, with straps, adhesives, and anchors recommended by SMACNA's Manual or the Item manufacturer.

.17 Coordinate roof drain flashing installation with roof drainage system installation.

.18 Provide a smooth flat surface free of indentations, bumps, oil canning, or twists, all edges, bends hard, sharp and true to line for all exposed and pre finished flashings.

.19 Install fasteners in slots or oversize holes to allow expansion and contraction of flashings where flashing installed with mechanical fasteners..

.20 Provide isolation coating or impervious self-adhesive membrane to separate aluminum items from concrete and masonry.

3.4 CLEANING

.1 Proceed in accordance with Section 01 74 00 - Cleaning.

.2 Remove surplus materials, excess materials, rubbish, tools and equipment on completion and verification of performance of installation.

.3 Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.

.4 Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Performance.

.5 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

Section 07 72 33
Roof Hatches

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Product literature and data sheets for roof hatches and roof hatch safety railing systems, including product characteristics, performance criteria, physical sizes, finishes, and limitations.

.3 Shop Drawings:

.1 Signed and sealed by a qualified professional in accordance with Section 01 43 00 - Quality Assurance.

.2 Indicate size and description of components, materials, attachment devices, description of frame and finish, and construction details.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data:

.1 Include, in the operation and maintenance manual, manufacturer's maintenance and operating instructions and recommended cleaning materials and methods for:

.1 roof hatches; and

.2 roof hatch safety railing systems.

1.3 WARRANTY

.1 Manufacturer Warranty: Manufacturer's standard warranty document, executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights the Owner may have under the Contract.

.1 Manufacturer's warranty period: 5 years minimum.

Part 2 Products

2.1 ROOF HATCHES; LADDER ACCESS

.1 Description: Preassembled, insulated cover and insulated metal curb, welded corner construction, c/w padlock latch, hinge, handle, and other hardware as required.

.2 Cover: Break formed, hollow-metal design with concealed insulation, overlapping flange, and internally reinforced live load to meet building code.

.1 Steel: Cover and frame; 1.9 mm (0.07") (14 gauge) Z275 (G-90) paint bond galvanized steel.

.3 Gasket: Extruded EPDM rubber gasket permanently adhered to cover.

.4 Hinges: Heavy-duty pintle hinges with 9.5 mm (3/8") type 316 stainless steel hinge pins.

.5 Latch: Slam latch with interior and exterior turn handles and padlock hasps.

.6 Lift Assistance: Compression spring operators enclosed in telescopic tubes. Automatic hold-open arm with grip handle release.

.7 Hardware:

.1 Steel: Engineered composite compression spring tubes. Steel compression springs with electrocoated acrylic finish. All other hardware is zinc plated/chromate sealed.

.8 Size: 914 mm x 762 mm (36" x 30") size

.9 Include safety bar/post for access.

.10 Safety railing system; safety yellow colour, self-closing gate with latch, model size to fit hatch:

.1 Acceptable Product: Bilco ‘Bil-Guard 2.0 Hatch Safety Railing System’.

.11 Finish: Steel: Alkyd base red oxide primer.

.12 Acceptable Product: Bilco model 'Type S' complete with 'LadderUP Safety Post'.

Part 3 Execution

3.1 INSTALLATION

.1 Erect components plumb, level, and in proper alignment in accordance with manufacturer's instructions and reviewed Shop Drawings.

.2 Flash and detail installation to maintain integrity of the building envelope.

.3 Test units for proper function and adjust until proper operation is achieved.

.4 Repair finishes damaged during installation to the satisfaction of the Consultant.

END OF SECTION

Section 07 84 00
Firestopping

Part 1 General

1.1 SUMMARY

.1 This Section specifies fire stop and smoke seal systems and materials intended to fill gaps between fire separations, between fire separations and other construction assemblies, or used in or around items which fully or partially penetrate a fire separation, to restrict the spread of fire and smoke thus maintaining the integrity of a fire separation.

.2 This Section includes requirements for:

.1 Through-penetration fire stops:

.1 For openings created to allow a penetrating item such as piping, conduits, raceways, ducts, cable trays, cables, tubing or structural components to pass completely through a fire separation or fire-resistance rated assembly.

.2 Construction joint fire stops:

.1 For locations where adjacent fire separations or components of fire separations meet. Locations include: ceiling/wall and roof/wall joints, wall/wall joints at corners or in the same plane, wall/floor joints, floor/floor joints and ceiling/ceiling joints.

.2 Includes fire stops for seismic joints, vertical control joints, expansion joints, and joints which occur at the tops and bottoms of fire separation walls.

.3 Includes fire stops for head-of-wall to non-rated roof or floor assemblies.

.3 This Section includes fire stopping and smoke seal work for the entire Project including selection, installation and inspection of all required fire stops.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:

.1 Hold pre-installation meeting one week before beginning Work of this Section, with Contractor, Subcontractor Consultant in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review installation and substrate conditions.

.3 Discuss coordination with other Subcontractors.

.4 Review system design listings, manufacturer's installation instructions and warranty requirements.

.5 Review quantity and location of mock-ups.

.2 Submit copies of applicable listed fire stop system details to each trade for opening preparation. Include installation details required for the listed system.

.2 Sequencing:

.1 Proceed with installation only when submittals have been reviewed by Consultant.

.2 Pipe and duct insulation: Certified fire stop system component.

.1 Ensure pipe and duct insulation installation precedes fire stopping.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's product data for each type of fire stopping and smoke seal. Submit complete product data for each individual component and include:

.1 Product name and product number

.2 Product characteristics and performance criteria

.3 Physical size, finish and limitations

.2 Manufacture Product Certification:

.1 Submit manufacturer certification certifying products supplied comply with local regulations controlling use of Volatile Organic Compounds (VOC's) and are non-toxic to building occupants.

.2 Submit test reports showing compliance to ASTM E595.

.3 Submit a comprehensive list of all products and components included in submittal.

.3 Shop Drawings:

.1 Submit shop drawings showing system design listings for Project including proposed materials, reinforcement, anchorage, fastenings and method of installation.

.2 Construction details to accurately reflect actual job conditions for each product and assembly.

.3 Submit details for materials and prefabricated devices.

.4 Submit electronic copy of shop drawings and include:

.1 Title page, labelled "Fire and Smoke Stop System Listings". Include project name, date and the names of the installation company and the manufacturer of proposed products. ……

.2 Table of Contents …….

.3 List of each proposed listed fire stop system and corresponding service penetration type or joint type in a matrix spreadsheet schedule, indicating floor and wall system, including rating for each.

.4 Location of penetrations:

.1 Drawings showing the location of each penetration with a unique penetration identification number and associated listing number.

.5 System Design Listings:

.1 Submit design listings for each listed fire stop system and each application identified in accordance with CAN/ULC-S115

.2 When more than one product is specified for the listed fire stop system or more than one packing/damming material is indicated, identify the item that will be used on this Project.

.6 Certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.4 Quality Assurance Submittals: Submit the following in accordance with Section 01 43 00 - Quality Assurance:

.1 Test reports in accordance with CAN/ULC-S101, CAN/ULC-S102, and CAN/ULC-S115.

.1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.

.2 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.3 Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

.4 Manufacturer's Site Reports: Submit manufacturer's reports within three days of review, verifying compliance of Work, as described in SITE QUALITY CONTROL in Part 3 of this Section.

.5 Closeout Submittals:

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.6 Operation and Maintenance Data: Submit maintenance data for incorporation into manual, including:

.1 WHMIS Safety Data Sheets (SDS),

.2 product data and manufacturer's installation and maintenance instructions for each product/system used on this project,

.3 approved system design listings and EJs, and

.4 matrix schedule listing all system design listings and EJs with a description of their penetration or joint type.

.5 Certifications:

.1 Provide proof of training for each worker that performed installation on the Project.

.2 Provide proof of company installing fire stopping and smoke sealsis a Member in Good Standing with FCIA.

.3 Certification of company as a ULC Qualified Approved Firestop Contractor, including the Designated Responsible Individual (DRI) certificate.

.4 Accreditation of third-party inspection firm.

.6 Manufacturer's field reports.

.7 Warranty information on fire stop installations.

.8 Life expectancy of each product installed as part of Project. For each system, list the installation date of products and the expected expiration date (month/year).

.7 Record Documentation:

.1 Maintain a daily log of all activities on site during the course of construction. Submit a copy of all daily logs after completion of fire stopping work.

.2 As-built Drawings:

.1 Submit a marked-up set of Drawings to provide referencing system identifying the location of each fire stop.

.2 Identify each penetration type fire stop with their penetration identification number.

.3 Provide detailed Drawings of system design listings for each type of fire stop (i.e., through-penetration, membrane penetration, blank opening, construction joint, building perimeter).

.4 Fire Stop Schedules:

.1 Submit complete fire stop schedules for floors, walls and ceilings.

.2 Indicate all penetration fire stops and joint fire stops through each reference wall, floor and ceiling in the schedules.

.3 Cross-reference firestop schedules with as-built drawings and indicate design listing numbers associated to each penetration fire stop and joint fire stop.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements: Use materials and methods of determining required thickness of application that have the full acceptance of AHJ and that are tested in accordance with CAN/ULC-S115, and form a part of a ULC or cUL listed system, Engineered Judgement or Equivalent Fire Resistance Rated Assembly.

.2 Provide systems selection and analysis, installation and inspection of fire stop systems in accordance with the recommended practices detailed in the following guides:

.1 FCIA Firestop Manual of Practice (MOP).

.3 Qualifications:

.1 Contractor specializing in selection and installation of fire stops with years experience. Submit a list of five successfully completed projects of similar scale and type.

.2 The installers are recognized as a Member in Good Standing with the Firestop Contractors International Association (FCIA). Submit proof of current membership.

.4 Manufacturer Site Visits:

.1 Conducted after delivery and storage of products, and when preparatory Work is complete, but before installation begins.

.2 During progress of work at 25 % , and 75 % completion.

.3 Conducted again upon completion of Work and after final cleaning is complete.

1.5 AMBIENT CONDITIONS

.1 Ambient Conditions:

.1 Install fire stops and smoke seals when ambient and substrate temperatures are within the limits prescribed by the manufacturer and when the substrate is dry and without risk of condensation.

.2 Maintain manufacturer's recommended ambient and substrate temperatures for 48 hours before and 72 hours after installation.

.2 Ventilate fire stops and smoke seals in accordance with manufacturers' instructions by natural means or, where this is inadequate or not available, use forced air circulation.

1.6 WARRANTY

.1 Extend 12 month warranty period to 24 months for Work of this Section.

.2 Manufacturers shall warrant work of this Section against defects and deficiencies in the product material for a period of 24 months. Promptly correct any defects or deficiencies which become apparent within warranty period at no expense.

.3 Contractor warrants workmanship on materials and installation for a period of 24 months. Promptly correct any defects or deficiencies which become apparent within warranty period at no expense.

Part 2 Products

2.1 MANUFACTURERS

.1 Provide products from a single manufacturer, to the greatest extent possible, to perform all fire stopping work. Materials of different manufacturers will not be permitted without authorization from Consultant.

.2 Provide a listed system from an alternative where there is no specific tested listed fire stop system available from the manufacturer for a particular fire stopping application to avoid providing an Engineering Judgment.

.3 Subject to compliance with requirements, provide products by one of the following:
3M Canada Inc.
Hilti Canada Corp.
NUCO Inc.
STI Firestop.
Tremco Commercial Sealants & Waterproofing.

2.2 PERFORMANCE/DESIGN CRITERIA

.1 Fire stop and smoke seal systems consisting of a material or combination of materials installed to maintain the integrity of the fire-resistance rating of a fire separation in accordance with the requirements of the NBC.

.2 Performance Requirements: Manufacturer shall design proprietary assemblies to withstand the listed ratings in accordance with the NBC, ULC Standards, and AHJ, and as follows:

.1 Non-rated fire separations: Provide L-Rated smoke protection fire stop system for application on both sides of separation.

.2 Provide through-penetration fire stop and joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of penetrated assembly, such as:

.1 Fire-resistance rated loadbearing walls, including partitions, with fire protection rated openings.

.2 Fire-resistance rated non-loadbearing walls, including partitions with fire protection rated openings.

.3 Fire-resistance rated floor assemblies.

.3 Fire stopping and Smoke Seal Systems Exposed to View: Provide products that after curing do not deteriorate when exposed to view, traffic, moisture, and physical damage both during and after construction, and as follows:

.1 Provide moisture resistant through-penetration fire stop systems for piping penetrations for plumbing and wet pipe sprinkler systems.

.2 Provide fire stopping and smoke seal systems capable of supporting anticipated floor loads either by installing floor plates or by other means for floor penetrations with annular spaces exceeding 100 mm in width and exposed to possible loading and traffic.

.3 Provide fire stopping and smoke seal systems not requiring removal of insulation for penetrations involving insulated piping.

.4 Provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 50 for fire stopping, smoke seal, and joint systems exposed to view.

.5 Architectural considerations: When fire stop system is exposed to view, consider architectural finish, potential traffic, and exposure to moisture and heat.

.4 Fire Resistance of Joint Systems: Assembly ratings and movement capabilities shall be as indicated with assembly ratings equal to or exceeding the fire-resistance rating of constructions in which joints are located.

.3 Dynamic Joints: Where required, design fire stop and smoke seal systems to accommodate a defined amount of movement in structural elements, construction joints and mechanical piping caused by expansion or contraction. Systems should also accommodate movement and sound and vibration control in mechanical installations.

.4 Insulated Pipes and Ducts: Design and test listed fire stop system with the actual insulation materials penetrating the fire separation, as indicated on the system design listing.

.5 Use in Wet Areas: water-based products are unacceptable in wet areas or areas that may be subject to occasional water exposure or flooding during and after construction.

2.3 MATERIALS

.1 Compatibility: Under conditions of service and application, provide fire stopping and smoke seal systems that are compatible with one another, with the substrates forming

openings, and with the items, if any, penetrating the systems, as demonstrated by fire stopping and smoke seal system manufacturer based on testing and site experience, and as follows:

.1 Asbestos-free materials and systems capable of maintaining an effective barrier against the passage of flame, smoke and water and the transmission of heat in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended, as indicated on System Design Listing.

.2 Service penetration assemblies and fire stop components: Certified by testing laboratory to CAN/ULC-S115.

.3 Provide elastomeric seal or non-shrink foam cement mortar for fire and smoke stop systems at openings intended for re-entry, such as cables. Do not use cementitious or rigid seal at such locations.

.4 Provide elastomeric protection for fire and smoke stop systems at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control. Do not use a cementitious or rigid seal at such locations. Exemption for fire dampers.

.5 Provide elastomeric seal for fire and smoke seals behind and around mechanical and electrical boxes within wall, floor, and ceiling assemblies.

2.4 MIXING

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

2.5 FIRE-RESISTIVE ELASTOMERIC JOINT SEALANTS

.1 Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer that comply with ASTM C920 requirements, including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants.

.2 Single-Component, Neutral-Curing Silicone Sealant: Type S; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, G, A, and (as applicable to joint substrates indicated) O.

.1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the changes in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.

.3 Multicomponent, Non-sag, Urethane Sealant: Type M; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, A, and (as applicable to joint substrates indicated) O.

.1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the change in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.

.4 Single-Component, Non-sag, Urethane Sealant: Type S; Grade NS; Class 25; and Uses NT, M, A, and (as applicable to joint substrates indicated) O.

2.6 FIRE STOP IDENTIFICATION

.1 Identification Labels and Markings: Permanent for the expected service life of the installation.

.2 Fire Stopped Penetrations:

.1 Provide identification labels at each penetration.

.2 Identification labels: embossed metal tags with metal fastening device with the following information:

.1 penetration number

.2 room number

.3 product name and number

.4 system design number

.5 fire rating required in hours.

.6 fire stop contractor's name and phone number

.7 installer's name

.8 date of installation

.3 Indicate on label that fill material around the penetration is a fire stop system and shall not be disturbed except by authorized personnel.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that conditions of substrates previously installed are acceptable for product installation in accordance with manufacturer's instructions and approved system design listings for each condition.

.2 Verify each opening/annular space to ensure it does not exceed the maximum and minimum dimensions indicated on the approved system design listing.

.3 Verify that all joints, service penetrating elements and supporting devices/hangers have been properly installed as indicated on approved system design listings. Remove all temporary lines and markings to meet the approved system design listings.

.4 Verify that proposed fire stop system consists of components that are compatible with each other, with substrates forming the openings, and with items, if any, penetrating the fire stop under conditions of application and service, as demonstrated by the fire stop manufacturer based on testing and site experience.

.5 Pipe and Duct Insulation: Confirm that proposed fire stop system has been tested with the actual insulation penetrating the fire separation on site, as indicated in the approved system design listing. Maintain insulation around pipes and ducts penetrating the fire separation.

.6 Ensure no additional items have been installed through opening that does not appear on the approved system design listing.

.7 Ensure fire stopped areas are accessible for proper application and that conditions are suitable for installation of the fire stop system. Areas to remain accessible for inspection.

.8 Report in writing to Consultant any defective surfaces or conditions affecting the fire stop system installation immediately and before commencing any installations.

.9 Proceed only once defected surfaces or conditions have been corrected.

.10 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.

.1 Ensure that substrates and surfaces are clean, dry and frost free.

.2 Ensure substrates and surfaces are free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.

.2 Prepare surfaces in contact with fire stop and smoke stop materials to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

.5 Protect adjacent work areas and finish surfaces from damage during product installation.

.6 Prime surfaces as required.

.7 Ensure multi-penetration openings have been framed and boarded out around annular openings, as indicated in the system design listing before prepping the opening.

3.3 INSTALLATION

.1 Install fire stop and smoke seal materials and components in accordance with manufacturer's certified tested system listing.

.2 Coordinate with other sub-trades to ensure that all pipes, conduits, cables, and other items, which penetrate fire separations, have been permanently installed before installation of fire stop systems.

.3 Schedule work to ensure that fire separations and all other construction that conceals penetrations are not erected before installation of fire and smoke seal systems

.4 Seal holes or voids made by through-penetrations, poke-through termination devices, and un-penetrated openings or joints to ensure that both continuity and integrity of fire separation are maintained.

.5 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing per manufacturer's instructions.

.6 Tool or trowel exposed surfaces to neat finish.

.7 Remove excess compound promptly as work progresses and upon completion.

.8 Protect gaps around recessed components (e.g., panels, electrical boxes, outlets) with sealing putty in accordance with manufacturer's instructions.

.9 Do not use damaged or expired material.

3.4 INSTALLATION - JOINT FIRE STOPS

.1 For sealant applications, install joint fillers to support fire stop materials during application. Position joint fillers to ensure fire stop material cross-sectional shape and thickness relative to the joint width allows for optimum sealant movement, while developing the required fire-resistance rating.

.2 Install fire stops using techniques recommended by the manufacturer:

.1 Fully wetting joint substrates to optimize adhesion.

.2 Completely filling recesses provided for each joint configuration.

.3 Tool non-sag fire stop materials immediately after their application and before the time skinning begins. Form smooth, uniform beads of configuration indicated or required to

.1 provide required fire-resistance rating,

.2 eliminate air pockets, and

.3 ensure contact and adhesion with sides of joint.

.4 Joint Systems and Perimeter Fire Containment Systems:

.1 For systems with dynamic joints, ensure movement capabilities of the installation meet or exceed the movement expectations of the system design listing and manufacturer's installation instructions.

3.5 INSTALLATION - THROUGH PENETRATION JOINT SEALANTS

.1 Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position required to achieve fire ratings of designated through-penetration fire stop systems.

.2 Install fill materials for through-penetration fire stop systems by techniques recommended by the manufacturer to produce the following results:

.1 Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.

.2 Apply materials so they contact and adhere to substrates formed by openings and penetrating items.

.3 For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

.3 Remove combustible forming materials and other accessories not indicated as permanent components of fire stop systems.

3.6 SITE QUALITY CONTROL

.1 Inspections: Notify Consultant when ready for inspection and before concealing or enclosing fire stop materials and service penetration assemblies.

.2 Manufacturer's Field Services:

.1 Mock-ups: Manufacturer to provide confirmation that the fire stop system installed meets or exceeds the system design listing requirements for each mock-up application.

.2 Obtain report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Site Reports as described in SUBMITTALS in Part 1 of this Section.

.3 Provide manufacturer's site services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.7 INSPECTIONS

.1 Third-Party Inspection Firm: Provide the services of a third-party inspection firm to conduct random inspections and direct exploratory review (i.e., destructive testing) during the course of construction and before closing off any concealed areas. Perform inspections and destructive testing in compliance with ASTM E2174 and ASTM E2393.

.2 Upon completion of construction and before requesting substantial performance review, fire stop contractor and manufacturer's representative shall inspect all fire stopping work and prepare a deficiency list. Submit deficiency list to Contractor and Consultant for review. Repair any deficiencies and re-inspect work to ensure that all deficiencies have been completed.

.3 Submit formal request for substantial performance review of work once all work is completed, quality control has been performed and all fire stop installations have been inspected and identified with the approved fire stop identification labels.

3.8 CLEANING

.1 Perform cleaning in accordance with Section 01 74 00 - Cleaning.

.2 Remove equipment, excess materials and debris and clean adjacent surfaces immediately after application. Use methods and cleaning materials approved by manufacturer.

.3 Protect fire stops during and after curing period from contact with contaminating substances

.4 Remove temporary dams after initial set of fire stop and smoke seal materials.

END OF SECTION

Section 07 92 00
Joint Sealants

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's product data for each type of primer,backer rod, and sealants and include product characteristics, performance criteria, available colours, compatibility warnings, compliance standards and limitations.

.3 Samples:

.1 Submit two cured samples of exposed sealants of each colour to match adjacent material.

1.2 QUALITY ASSURANCE

.1 Qualifications:

.1 Manufacturer: Obtain each type of joint sealant from a single manufacturer.

.2 Minimum 5 years successful experience in Work of similar size and complexity.

.2 Compatibility: Ensure sealants are compatible with adjacent materials and are approved by manufacture for use with adjacent materials.

.3 Mock-Ups:

.1 Before performing sealant work do sample applications of each type of sealant forreview.

.2 Site locations for sample applications shall be designated by Consultant.

.3 Construct joint sealant mock-ups in assemblies of other Sections with joint sealants, which are referenced in this Section.

1.3 AMBIENT CONDITIONS

.1 Proceed with installation of joint sealants only when:

.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.

.2 Joint substrates are dry.

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

1.4 WARRANTY

.1 Manufacturer's warranty: Provide manufacturer's standard warranty documentation.

.2 Installer's Warranty: Provide an installation warranty, installer agrees to repair or replace joint sealants that do not comply with requirements of this Section for 2 years from Substantial Performance.

Part 2 Products

2.1 PERFORMANCE REQUIREMENTS

.1 Each sealant system shall meet the following requirements for warranty period:

.1 Waterproof, flexible, and compatible with substrate under applicable service conditions.

.2 Provide a weather-tight seal that does not allow moisture penetration.

.3 Shall not de-bond, crack, or craze.

.4 Shall not leak.

2.2 SEALANT MATERIALS

.1 In air handling units and supply air system, use sealants without strong odours, without toxic chemicals, and are mould-resistantWhen low toxicity sealants are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.2 Provide primers in accordance with manufacturer recommendation.

2.3 SEALANTS

.1 Where no specific type of sealant is scheduled, provide one of the sealants indicated in this Section appropriate for its application and consistent with manufacturer's recommendations and the recommendations of SWRI, Sealants: The Professionals' Guide.

.2 Make sealant selections consistent with manufacturer's recommendations.

.3 Exterior sealants; joints in vertical surfaces:

.1 Sealant: single-component, non-sag, neutral cure, medium modulus low dirt pickup and non-bleed, 100% inorganic silicone sealant, in accordance with the following:

.1 Comply with: ASTM C920-11, Type S, Grade NS, Class 50 and SWR Institute Sealant Validation Program.

.2 Acceptable Products:
DOWSIL ‘756 SMS’.
Momentive ‘SCS9000 Silpruf NB’.

.4 Exterior general sealants; horizontal trafficable joints:

.1 Sealants: silicone low modulus pour grade traffic sealant in accordance with the following:

.1 Comply with: ASTM C920-11, Type S, Grade P, Class 25 and CAN/CGSB 19.13-M87.

.2 Acceptable Products:
DOWSIL ‘SL Parking Structure Sealant’.
Momentive ‘Tosseal 817’.

Sika ‘Sikasil-728 SL’.
Tremco, Inc. ‘Spectrem 900SL’.

.5 Interior general sealants:

.1 VOC limit: less than 250 g/L.

.2 Interior sealant; at joints with painted gypsum board: one-component paintable acrylic or polyurethane sealant in accordance with the following:

.1 Comply with: ASTM C834-10 and CGSB 19-GP-5M-1984.

.2 Acceptable Products:
Sika ‘Sikaflex 1A’.
Tremco, Inc. ‘Tremflex 834’.

.3 Interior sealant; at movement paintable joints in vertical surfaces, one-component sealant in accordance with the following:

.1 Comply with: ASTM C920-11, Type M or S, Grade NS, Class 25 and CAN/CGSB 19.13-M87.

.2 Acceptable Products:
BASF ‘MasterSeal NP100’.
Sika ‘Sikaflex 15LM’.

.4 Interior sealant; at movement joints in vertical surfaces: one-component organic sealant in accordance with the following:

.1 Comply with: ASTM C920-11, Type M or S, Grade NS, Class 25 and CAN/CGSB 19.13-M87.

.2 Acceptable Products:
BASF ‘MasterSeal NP1.
Sika ‘Sikaflex 15LM’.
Tremco, Inc. ‘Dymonic’.

.5 Interior sealant, mildew resistant one part silicone sealant in accordance with the following:

.1 Comply with: ASTM C920-11, Type S, Grade NT, Class 25 and CAN/CGSB 19.22-M89.

.2 Acceptable Products:
BASF ‘OmniPlus’.
DOWSIL ‘786’.
Momentive ‘Sanitary SCS1700 Sealant’.
Sika ‘Sikasil GP’.
Tremco, Inc. ‘Tremsil 200’.

2.4 ACCESSORIES

.1 Preformed compressible and non-compressible back-up materials that are non-staining, compatible with joint substrate, sealants, primers, and other joint fillers, and are approved for applications indicated by sealant manufacturer based on site experience and laboratory testing:

.1 Rod Type Sealant Backings:

.1 ASTM C1330, Type C (closed cell material with a surface skin), Type O (open cell material) or Type B (bi cellular material with a surface skin).

.2 Provide any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated.

.3 Size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

.4 Non adhering to sealant, to maintain two sided adhesion across joint.

.2 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.

.3 Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, non absorbent to water and gas, capable of remaining resilient at temperatures down to 15 deg C. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance.

.4 Bond Breaker Tape:

.1 Polyethylene bond breaker tape or other tape recommended by sealant manufacturer which will not bond to sealant.

.2 Preformed Sealants:

.1 Preformed Silicone Sealant System: Manufacturer's standard system consisting of pre-cured low modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral curing silicone sealant for bonding extrusions to substrates.

.2 Preformed Hollow Neoprene Gasket: Manufacturer's standard preformed polychloroprene elastomeric joint seal of the open cell compression type complying with ASTM D2628 and with requirements for size, profile and cross sectional design.

.3 Bond Breaker: Pressure-sensitive plastic tape that will not bond to sealants.

.4 Joint Cleaner: Provide a non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's recommendations

.5 Primer: Provide in accordance with sealant manufacturer's recommendations.

.6 Masking Tape: Non-absorbent type, non-staining, compatible with joint sealant and joint substrates.

2.5 COLOURS

.1 Sealant Colours: Match colour of adjacent materials where visible, as selected by Consultant, from manufacturer's complete colour range.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed are acceptable for joint sealants installation in accordance with manufacturer's instructions.

.1 Visually inspect substrate.

.2 Verify joint surfaces are dry and frost free.

.3 Verify substrates are without contaminants capable of interfering with sealant adhesion. Remove contaminants where occurring.

.4 Examine joint sizes and conditions to establish acceptable depth to width ratio for installation of backup materials and application of sealants.

.5 Verify joint widths are within the limits recommended by joint sealant manufacturer for applications indicated.

3.2 SURFACE PREPARATION

.1 Clean bonding joint surfaces of harmful contaminates including dust, rust, oil grease, and other matter which may impair adhesion.

.2 Do not apply sealants to joint substrates treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.3 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Mask adjacent surfaces prior to priming and sealing where necessary to prevent staining.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately applying sealant, except when manufacturer's instructions explicitly state priming is not required.

.3 Prime all porous material (e.g. wood, masonry, concrete, ceramic or paver tile, etc).

3.4 BACKUP MATERIAL

.1 Provide backer rod as specified, to limit depth of sealant and to act as bond breaker at back of joint.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

.3 Apply paper masking tape to back of joint to act as bond break where depth of joint does not permit the use of backer rod.

.4 Ensure that no joints are formed which are bonded on adjacent sides where there is any possibility of movement.

3.5 MIXING

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

3.6 APPLICATION

.1 Sealant: Application: Apply sealants to recommendations of ASTM C1193, ……, and in accordance with manufacturer's instructions, and as follows:

- .1 Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature range.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 For joints where movement is possible, apply backer rod to achieve a joint depth of one half the joint width but not less than 9 mm; for joints larger than 25 mm use a depth of 13 mm
- .4 Apply sealant in a continuous beads.
- .5 Apply sealant using gun with proper size nozzle.
- .6 Fill voids and joints solid.
- .7 Form sealant surface with a smooth full bead, without from ridges, wrinkles, sags, air pockets, embedded impurities.
- .8 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .9 Ensure bead is solid, filling entire space between sides and bedding material, exerting sufficient pressure to obtain maximum bond, by allowing sealant to bulge out in advance of nozzle.
- .10 Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature range.
- .11 Seal at all locations where dissimilar material meet.

.2 Sealant Curing:

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

3.7 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

- .1 Clean adjacent surfaces immediately of excess primers and sealants.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning upon completion.

3.8 PROTECTION

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

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

Section 08 11 13
Hollow Metal Doors and Frames

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's product data for each type of door and frame. Indicate door designation, type and model, product characteristics, core description, fabrication details, dimensions, fire-protection rating, finishes, and limitations.

.3 Shop Drawings:

.1 For each type of door, indicate material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, arrangement of hardware, fire-protection rating, and finishes.

.2 For each type of frame, indicate material, core metal thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, fire-protection rating, and finishes.

.3 Include a schedule identifying each unit with door marks and numbers matching numbering on Drawings and door schedule.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Warranty Documentation: Submit manufacturer's material and fabrication warranty.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Manufacturer: A member in good standing of the Canadian Steel Door Manufacturers Association.

.2 Installers: Experienced with installation of hollow metal doors and frames of similar complexity and scope to that required for the Project.

.3 Testing Agencies: Provide doors and frames under label service program of a testing agency acceptable to authorities having jurisdiction (AHJ).

.2 Manufacturer: Obtain doors and frames from a single manufacturer.

1.4 SITE CONDITIONS

.1 Site Measurements: Before fabrication, verify actual dimensions of openings by measuring on site, and indicate actual measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

.2 Established Dimensions: When site measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating doors and frames without site

measurements. Coordinate site construction to ensure that actual site dimensions correspond to established dimensions.

1.5 WARRANTY

.1 Manufacturer's Warranty: Submit manufacturer's standard warranty.

Part 2 Products

2.1 REGULATORY REQUIREMENTS

.1 Steel Fire-Protection Rated Doors, Frames, and Screens: Labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN/ULC-S104 and CAN/ULC-S105 for ratings indicated.

.2 Affix appropriate label to each opening indicating the labelling requirement, as follows:

.1 At standard size openings: Fire endurance rating; radiation protection

2.2 PERFORMANCE REQUIREMENTS

.1 Design exterior frame assembly to accommodate expansion and contraction when subjected to a minimum and maximum surface temperature of -35°C to 35°C.

.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

.3 Steel Fire-Rated Doors and Frames: Labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN/ULC-S104 for ratings specified or indicated.

.4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN/ULC-S104 and listed by a nationally recognized agency having factory inspection services.

2.3 MATERIALS

.1 Exterior Doors and Frames and Interior High Humidity Areas: Metallic coated steel sheets in accordance with ASTM A924/A924M, coated to ASTM A653/A653M, Commercial Steel (CS), Type B, ZF120 galvannealed, stretcher levelled standard of flatness where used for face sheets.

.2 Interior Doors and Frames: Metallic coated steel sheets in accordance with ASTM A924/A924M, coated to ASTM A653/A653M, Commercial Steel (CS), Type B, ZF75 galvannealed, stretcher levelled standard of flatness where used for face sheets.

.3 Metallic Coated Steel Sheet Thickness: Minimum thickness in accordance with CSDMA, Recommended Specifications for Commercial Steel Door and Frame Products, Table 1 and Appendix 1.

2.4 DOOR CORE MATERIALS

.1 Honeycomb: Structural small cell, maximum 25-mm kraft paper, minimum 36 kg weight per ream, minimum 16.5 kg/m^3 density, and sanded to required thickness.

.2 Polyisocyanurate: To CAN/ULC-S704, rigid modified polyisocyanurate, closed cell faced board, density 32 kg/m^3, RSI 1.9/25 mm, to ASTM C1289-18a

2.5 ADHESIVES

.1 Honeycomb Core and Steel Component Adhesive: Heat resistant, spray grade, polyurethane.

.2 Polystyrene and Polyurethane Core Adhesive: Heat resistant, epoxy resin based, low viscosity, contact cement.

.3 Lock-Seam Edge Adhesive: Fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.6 ACCESSORIES

.1 Touch-up Primer: To CAN/CGSB-1.181

.2 Exterior Top Caps: Rigid polyvinylchloride extrusion conforming to [CGSB 41-GP-19Ma]

.3 Frame Thermal Breaks: Rigid polyvinylchloride extrusion.

.4 Fire Labels: Metal riveted.

.5 Glazing Stops: Formed steel having 1.0 mm metal core thickness, screw attached. Accurately fit and butt at corners, glazing trim and stops, locate on secure side of door or facing interior of room.

2.7 FABRICATION - FRAMES

.1 Fabricate frames to profiles and maximum face sizes as indicated.

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

.3 Protect mortised cut-outs with steel guard boxes.

.4 Reinforce frames for surface-mounted hardware.

.5 Manufacturer's nameplates on frames and screens are not permitted.

.6 Conceal fastenings except where exposed fastenings are indicated.

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

.8 Insulate exterior frame components with polyurethane insulation.

.9 Provide fire labelled frame products for openings requiring fire protection ratings, as scheduled. Test products in conformance with CAN/ULC-S104, …… and list by a nationally recognized agency having factory inspection services and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

2.8 FRAME ANCHORAGE

.1 Provide concealed anchorage to floor and wall construction.

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

.3 Provide 2 anchors for rebate opening heights up to 1520 mm, and one additional anchor for each additional 760 mm of height or fraction thereof.

.4 Locate anchors for frames in previously placed concrete, masonry or structural steel a maximum 150 mm from top and bottom of each jamb and intermediate anchors at a maximum 660 mm on centre.

2.9 FRAMES - WELDED TYPE

.1 Perform welding to CSA W59.

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

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails, and sills.

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

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

.6 Weld in two temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 FABRICATION - DOORS, GENERAL

.1 Doors: Swing type, flush, with provision for glass openings as indicated.

.2 Exterior Doors: Insulated polyisocyanurate core construction.

.3 Interior doors: Honeycomb core …… construction.

.4 Blank, reinforce, drill, and tap doors for mortised, templated hardware and electronic hardware.

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

.6 Reinforce doors for surface-mounted hardware where required. Provide flush PVC top caps to exterior doors. Provide inverted top and bottom channels to interior doors.

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

.8 Provide fire labelled doors for openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN/ULC-S104, listed by a nationally recognized agency having factory inspection services, and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.9 Manufacturer's nameplates on doors are not permitted. Nameplates on hinge edge are acceptable.

2.11 FABRICATION - THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with a continuous interlocking thermal break.

.2 Thermal Break: Rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts from interior parts with a continuous interlocking thermal break.

.4 Fill frame cavity with low pressure spray-applied polyurethane foam to AAMA 812.

2.12 FABRICATION - GLAZING STOPS FOR DOORS AND FRAMES

.1 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide stainless steel glazing stops for use with glazing tapes and compounds and secured with countersunk stainless steel screws.

.2 Fabricate glazing stops as a formed channel that is a minimum 16 mm high, accurately fitted, butted at corners and fastened to frame sections with countersunk tamperproof screws.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for steel doors and frames installation in accordance with manufacturer's written instructions.

3.2 INSTALLATION - GENERAL

.1 Install doors and frames to CSDMA Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

.2 Install fire-rated doors and frames in accordance with NFPA 80.

3.3 INSTALLATION - FRAMES

.1 Set frames plumb, square, level, and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position until built-in:

.1 Remove temporary jamb spreaders.

.2 Provide temporary wood spreaders at third points of frame rebate height to maintain frame width until adjacent building-in work completed.

.3 Provide vertical support at centre of head for openings exceeding 1200 mm in width.

.4 Remove wood spreaders after frames have been built-in.

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

.5 Fill rough opening with low pressure spray-applied polyurethane foam to AAMA 812.

.6 Apply sealant at perimeter of frames between frame and adjacent material.

.7 Maintain continuity of air barrier and vapour retarder by sealing membrane to frame.

3.4 INSTALLATION - DOOR HARDWARE

.1 Install hardware in accordance with manufacturer's instructions and Section 08 71 00 - Door Hardware, using manufacturer's door hardware templates.

3.5 INSTALLATION - GLAZING

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

3.6 SITE QUALITY CONTROL

.1 Tolerances: Provide even margins between doors and jambs, and doors and finished floor and thresholds as follows.

.1 Hinge Side: 1.0 mm

.2 Latch Side and Head: 1.5 mm

.3 Finished floorand thresholds: Maximum 19 mm

.4 Refer to Section 01 91 13 - General Commissioning Requirements for commissioning requirements.

3.7 ADJUSTING

.1 Use primer to touch-up finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to uniform, smooth finish.

.3 Repair damage to zinc coatings in accordance with ASTM A780/A780M.

.4 Repair damage to adjacent materials caused by metal doors and frames installation.

.5 Adjust operable parts for correct function.

3.8 CLEANING

.1 Progress Cleaning: Perform in accordance with Section 01 74 00 - Cleaning, and as follows:

.1 Remove traces of primer, sealants, epoxy, and filler materials. Clean doors and frames.

.2 Clean glass and glazing materials with approved non-abrasive cleaner.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

.3 Waste Management: Perform in accordance with Section 01 74 19 - Waste Management and Disposal.

3.9 PROTECTION

.1 Protect installed products and components from damage during construction. Install temporary protective covering to exposed components.

.2 Protect thresholds, hardware, frames, doors, and glass from damage. Lock operative door bottom in up position.

END OF SECTION

Section 08 33 00
Overhead Coiling Doors and Grilles

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Submit manufacturer's instructions, product literature and data sheets for door components and grilles and include product characteristics, performance criteria, dimensions, finishes, and limitations.

.3 Shop Drawings:

.1 Indicate each type of door, arrangement of hardware, required clearances, electrical characteristics including voltage, size of motors, auxiliary controls and wiring diagrams.

.2 Indicate assembly details and dimensions of fabrication, required clearances and electrical connections.

.4 Test Reports: When requested, submit certified test reports showing compliance with specified performance characteristics and physical properties.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit operation and maintenance data for overhead coiling doors, and hardware and incorporat into manual.

Part 2 Products

2.1 MATERIALS

.1 Exterior coiling door:

.1 Overhead coiling insulated metal door:

.1 Interior face-of-wall mounted.

.2 Acceptable product:

.1 Overhead Door Company ‘Everserve 625S’.

.2 Curtain: Interlocking roll-formed slats as specified following. Endlocks shall be attached to each end of alternate slats to prevent lateral movement.

.3 Slat: F-265i, flat profile, 18 gauge.

.4 Insulation: CFC-free and HCFC-free, foamed-in-place, polyurethane, fully encapsulated. Thermal value: minimum R7.7.

.5 Bottom bar:
Two steel angles, 1.6 mm (1/16") thickness minimum, unless otherwise

indicated.
Angles shall be bolted back to back to reinforce curtain in the guides

.6 Guides: Three structural steel angles provided with high usage guide wear strip.

.7 Brackets: Galvanized steel to support counterbalance, curtain and hood.

.8 Hood: 0.5 mm (0.02") 24 gauge galvanized steel minimum with intermediate supports as required. Hood shall protect drive motor, barrel, chain. And sprocket from dirt and debris and extend between the support brackets. Provide with internal hood baffle weatherseal.

.9 Weatherstripping:
Vinyl bottom seal, exterior guide and internal hood seals.
Lintel weatherstripping, manufacturer's standard.

.10 Locking: Electric-motor operation doors shall lock through the operator gearing.

.11 Sound/vibration package: Supply and install neoprene isolators to track and fixing brackets, silent motor, neoprene chain pull and rubber wheels.

.12 Finish: Galvanized steel: Slats and hood shall be galvanized steel in accordance with ASTM A653/A653M-11 and receive rust-inhibitive, roll coating process, 5 microns (0.2 mils) thick baked-on prime paint, and 15 microns (0.6 mils) thick baked-on polyester (powder coated) top coat.

Powder coat: PowderGuard Premium.
Colour: custom, to match Alucobond Plus, The Natural Collection, Native Copper Mica

.2 Interior coiling door:

.1 Overhead coiling metal door.

.1 Between jambs mounting.

.2 Acceptable product:

.1 Overhead Door Company - Alurra

.2 Curtain: Interlocking extruded .05" aluminum slats. Nickel plated, steel screws and end locks to retain curtain within guides and prevent lateral movement.

.3 Locking: Slide bolts (interior; coil side); left and right slides.

.4 Finish: PowderGuard® Premium powder coat finish, colour by Consultant selection from standard colour range.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed are acceptable for overhead coiling doors …… installation in accordance with manufacturer's instructions.

3.2 INSTALLATION

.1 Install doors in accordance with manufacturer's instructions.

.2 Install electrical motors, controller units, pushbutton stations, relays and other electrical equipment required for door operation.

.3 Install electric wiring from power supply located near door.

.4 Install masterkeyed cylinder specified in Section 08 71 00 - Doors Hardware.

.5 Adjust door operating components to ensure smooth opening and closing of doors.

3.3 SITE QUALITY CONTROL

.1 Test labelled coiling doors for proper operation by activating fusible link. Test coiling door in presence of Consultant.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Perform cleaning of aluminum components in accordance with: AAMA 609.

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

.1 Clean aluminum and stainless steel with damp rag and approved non-abrasive cleaner in accordance with manufacturer's instructions.

.2 Remove traces of primer, sealants; clean doors and frames.

.3 Clean glass and glazing materials with approved non-abrasive cleaner.

END OF SECTION

Section 08 44 00
Aluminum Framed Glazing + Entry Systems

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, product literature and data sheets for doors and frames and include product characteristics, performance criteria, physical size, finishes, and limitations.

.3 Shop Drawings:

.1 Indicate materials and profiles and include comprehensive scaled details of components for each type of door and frame. Indicate:

.1 Interior and exterior trim.

.2 Connections with adjacent construction, including air and vapour membranes.

.3 Connections between combination units.

.4 Elevations of units.

.5 Core thicknesses of components.

.6 Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.

.7 Location of sealants.

.8 Each type of door system including location.

.9 Arrangement of reinforcing for hardware and joints.

.10 Arrangement of hardware and required clearances.

.11 Locations of manufacturer's nameplates.

.4 Samples for Initial Selection:

.1 Submit 50 x 75-mm samples of complete range of aluminum finishes for Consultant's initial selection.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit maintenance data for cleaning of aluminum finishes and maintenance of operable hardware, and incorporate into manual.

.3 Warranty Documentation: Submit manufacturer's warranty documents.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Manufacturer: Obtain aluminum doors and frames from a single manufacturer.

.2 Installers: Five years of experience with installation of aluminum doors and frames of similar complexity and scope to that required for the Project.

1.4 SITE CONDITIONS

.1 Site Measurements: Before fabrication, verify actual dimensions of openings by measuring on-site and indicate actual measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

.2 Established Dimensions: When site measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating doors and frames without site measurements. Coordinate site construction to ensure that actual site dimensions correspond to established dimensions.

1.5 WARRANTY

.1 Manufacturer's Warranty: Submit manufacturer's standard materials and fabrication warranty.

Part 2 Products

2.1 REGULATORY REQUIREMENTS

.1 Exterior Aluminum Doors, Frames, and Glazing Materials: Conforming to the requirements in AAMA/WDMA/CSA 101/I.S.2/A440, CSA A440S1, and CSA A440.2 as appropriate for the conditions and geographic location of each window and door.

2.2 DESIGN CRITERIA

.1 Design exterior door and frame systems to:

.1 Accommodate expansion and contraction within service temperature range of -35 to 35 degrees C.

.2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E330/E330M under wind load of 1.2 kPa. Submit certificate of tests performed.

.3 Accommodate movement between system and perimeter framing and other adjacent construction, including story drift and deflection from uniformly distributed and concentrated live loads.

.4 Accommodate dimensional tolerances of structural framing and other adjacent construction.

.2 Air Infiltration: To ASTM E283, maximum 0.3 L/s/sq.m at 300 Pa pressure differential.

.3 Water Penetration Resistance: To ASTM E331, to prohibit water from passing through interior glazing seals or frame joints at a test pressure of 300 Pa (6.24 psf).

.4 Include continuous air barrier and vapour retarder through door system, primarily in line with inside pane of glass and heel bead of glazing compound.

.5 Evidence of performance requirements failure includes:

.1 Deflection exceeding specified limits.

.2 Structural framing members transferring stresses to glazing.

.3 Noticeable noise or vibration created by wind or thermal movements.

.4 Loosening of fasteners and components.

.5 Sealant failure.

.6 Operating components not functioning properly.

.7 Failure of other specified requirements.

2.3 MATERIALS

.1 Aluminum Extrusions: To Aluminum Association alloy AA6063-T5 or T6 anodizing quality.

.2 Sheet and Plate Aluminum: To ASTM B209/B209M, and Aluminum Association alloy AA5005H14, anodizing quality.

.1 Minimum thickness of 3 mm (0.125”) for framing members, and 1.27 mm (0.050”) for glazing stops, snap caps and similar components unless indicated otherwise.

.3 Extruded Bars, Rods, Profiles, and Tubes: To ASTM B221, and ANSI H35.1/H35.1M, AA6061-T5 or AA6063-T6, anodizing quality.

.1 Minimum thickness of 3 mm (0.125”) for framing members, and 1.27 mm (0.050”) for glazing stops, snap caps and similar components unless indicated otherwise.

.4 Extruded Structural Pipe and Tubes: To ASTM B429/B429M and ANSI H35.1/H35.1M, AA6061-T6 ou AA6063-T6, anodizing quality.

2.4 ALUMINUM DOORS

.1 Factory fabricated from purpose made extruded aluminum framing, thermally broken.

.1 Exterior doors (100mm stile):

.1 Acceptable Products:
Alumicor ‘Thermaporte 7700.

.2 Reinforce mechanically-joined corners of doors by welding, spigotting, welding and spigotting or by one piece cast aluminum angle to produce sturdy door unit.

.3 Glazing stops: interlocking snap-in type for dry glazing. Exterior stops: tamperproof type.

.1 Glass: 6 mm (1/4") clear fully tempered safety glass.

.2 Use double glazed double sealed units at exterior doors.

.4 Door stiles shall be weathered with metal backed polypropylene pile weather-stripping. Provide weather-stripping sweeps at door bottoms.

2.5 ALUMINUM CURTAIN WALL / FRAMES

.1 Construct aluminum sidelight and transom frames with same profiles and thicknesses as adjacent aluminum door frames.

.2 Aluminum entrances (curtain wall), screens, and framing:

.1 Acceptable Product:

.1 Alumicor ‘ThermaWall TW 2200’.

.2 Description:

.1 Thermally broken assemblies.

.2 Mechanically fasten horizontal and vertical edges of infill materials and glass units with mechanically fastened continuous pressure plates complete with caps.

.3 Glazing cavity shall be compartmentalized at every floor level and every 6000 mm horizontally to prevent the movement of air in accordance with standard rain screen design.

.4 Fasteners: concealed.

.5 Cap extensions shall be extruded to profiles indicated and scheduled. Break-formed cap extensions will not be accepted.

.3 All sections shall be designed for shear block joinery.

2.6 FINISHES

.1 Aluminum Finishes:

.1 Exposed aluminum surfaces: 70% Kynar 500 or Hylar 5000 fluoropolymer resin systems, ceramic pigments and other select inorganic pigments to AAMA 2605-17a.

.1 Acceptable Products:

.1 PPG 'Duranar Sunstorm'.
Valspar ‘Fluropon Classic II’.

.2 Colour: to match Duranar Sunstorm Bronze (UC120894F)

2.7 FABRICATION

.1 Fabricate doors and frames with hardware installed to maximum extent practical.

.2 Provide structural steel reinforcement as required.

.3 Fit joints tightly and secure mechanically. Reinforce mechanically-joined corners of doors to produce sturdy door unit. Fabricate framing members with straight profiles, without distortions or defects and with mitered or coped corners.

.4 Framing systems to allow condensation occurring within framing to migrate to the exterior.

.5 Conceal fastenings, except where Consultant has accepted visible fastener locations that are unavoidable.

.6 Provide a minimum 22-mm bite for insulating glazed units. Isolate glass and glazing from framing members.

.7 Mortise, reinforce, drill, and tap doors, frames and reinforcements to receive hardware using templates indicated in Section 08 71 00 - Door Hardware.

.8 Locate operating devices (e.g., handles, pulls, latches, and locks) mounted between 900 mm and 1100 mm from the floor.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for beginning installation of aluminum doors and frames in accordance with manufacturer's instructions.

.1 Visually inspect substrates.

.2 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Install exterior aluminum doors and frames to CAN/CSA A440.4.

.2 Set frames plumb, square, and level at correct elevation in alignment with adjacent work and without warp or racking.

.3 Anchor frames securely and rigidly.

.4 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.

.5 Permanently isolate aluminum from direct contact with dissimilar metals, concrete, and masonry.

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

.7 Glaze aluminum doors and frames in accordance with Section 08 80 00 - Glazing.

.8 Provide weathertight joint sealant system at outside of frames in exterior walls.

.9 Provide airtight joint sealant system inside of frames in exterior walls.

.10 Apply sealants in accordance with ASTM C1193 and Section 07 92 00 - Joint Sealants.

.11 Adjust door components for a smooth and quiet operation with continuous contact with door edge seals.

3.3 TOLERANCES

.1 Limit variation from true location and plane to 3 mm in 3660 mm.

.2 Limit difference between diagonal measurements to 3 mm.

3.4 SITE QUALITY CONTROL

.1 Manufacturer Services: Provide manufacturer's site services consisting of periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.1 Have manufacturer of products of this Section review work involved in handling, installation, protection, and cleaning of its products, and submit written reports in acceptable format to verify compliance of this Section.

.2 Schedule of Site Visits:

.1 During progress of work at , 50% completion.

.2 Upon completion of work, after cleaning carried out.

3.5 CLEANING

.1 Progress Cleaning: Clean doors, frames, and glazing in accordance with Section 01 74 00 - Cleaning.

.1 Clean aluminum components in accordance with AAMA 609/610.

.2 Clean as soon as possible after installation to remove construction debris and dirt.

.3 Clean aluminum with damp rag and manufacturer recommended non-abrasive cleaner.

.4 Remove excess primer, sealants, and epoxy.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

.1 Clean glass and glazing materials with approved non-abrasive cleaner.

.3 Waste Management: Perform in accordance with Section 01 74 19 - Waste Management and Disposal.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction. Mark glass which may be subject to accidental breakage by Subcontractors. Use temporary markings that after removal do not stain or otherwise leave a perceptible effect.

.2 Repair damage to adjacent materials caused by aluminum door and frame installation.

END OF SECTION

Section 08 62 00
Unit Skylights

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Submit manufacturer's product data for each type of glazing, frame, finish, fasteners, and sealants. Include product characteristics, performance criteria and ratings, physical sizes, expansion provisions, and limitations.

.3 Shop Drawings: Indicate sizes and description of components, materials, rough opening and framing dimensions, anchorage to roof structure, continuity of air and vapour membranes, flashing and drainage, connections to roof membrane, and other relevant construction details.

.4 Samples for Initial Selection: Submit manufacturer's colour charts showing complete range of skylight frame colours.

.5 Test and Evaluation Reports: When requested, submit certified test reports showing compliance with specified performance characteristics and physical properties.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Warranty Documentation: Submit manufacturer's material and fabrication warranty.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: Approved by or acceptable to skylight manufacturer, and with five years of successful documented experience.

.2 Manufacturer: All skylight Products, flashings, and accessories supplied by a single manufacturer.

1.4 SITE CONDITIONS

.1 Site Measurements: Before fabrication, verify actual dimensions of openings by measuring on site, and indicate actual measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying Work.

.2 Established Dimensions: When site measurements cannot be made without delaying Work, establish dimensions and proceed with fabricating unit skylights without site measurements. Coordinate site construction to ensure that actual site dimensions correspond to established dimensions.

Part 2 Products

2.1 SKYLIGHT DESCRIPTION

.1 Velux traditional double dome commercial skylight - prismatic acrylic (https://www.velux.ca/en-ca/professional/commercial/products/commercial-domes/traditional-dome-ct)

.1 Size: custom to suit 1600x1600mm roof opening

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for unit skylights installation in accordance with manufacturer's instructions.

3.2 PREPARATION

.1 Review and follow the pre-installation checklist in the Annex of CSA A440.6.

3.3 INSTALLATION

.1 Install skylights in accordance with manufacturer's instructions and supplemented as follows:

.1 Erect components plumb, level and in proper alignment.

.2 Ensure continuity of envelope air barrier and continuity of vapour retarder systems.

.3 Adjust and seal assembly with provision for expansion and contraction of components.

.4 Secure and seal frame to curb.

3.4 SITE QUALITY CONTROL

.1 After skylight assembly and roofing assembly are complete and sealants have cured, test for water leaks in accordance with CSA A440.6.

.2 Perform testing for total area of each skylight assembly.

.3 Report test results, noting weather conditions and details of failures where occurring.

3.5 CLEANING

.1 Progress Cleaning: Perform in accordance with Section 01 74 00 - Cleaning and as follows:

.1 Clean interior and exterior glazing surfaces in accordance with manufacturer's instructions.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction. Install temporary protective covering to exposed components.

END OF SECTION

Section 08 71 00
Door Hardware

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's product data for each type of door hardware. Include product characteristics, performance criteria, profiles, dimensions, finishes, and limitations.

.3 Shop Drawings: Submit shop drawings indicating details of electrified door hardware including the following:

.1 Detailed interface between electrified door hardware and access control system.

.2 Theory of operation for electrified door hardware groups.

.3 Wiring diagrams for power, signal, and control systems. Identify manufacturer-installed wiring and site-installed wiring.

.1 System schematic

.2 Point-to-point wiring diagram

.3 Riser diagram

.4 Elevation of each electrified door.

.4 Source Quality Control Submittals: When requested, submit proof of door hardware schedule consultant's participation in Door and Hardware Institute (DHI) Continuing Education Program.

.5 Contract Door Hardware Schedule: Submit schedule prepared by or under the supervision of a qualified hardware consultant detailing fabrication and assembly of door hardware.

.1 Comply with DHI Sequence and Format for the Hardware Schedule.

.2 Organize the door hardware schedule into door hardware groups indicating a complete description of every item required for each door (or opening).

.3 Indicate hardware make, model, material, function, handing, size, fastening, and finish using codes in BHMA A156.18, and other pertinent information.

.4 Include keying schedule describing how each locking device is keyed in accordance with ANSI/BHMA A156.28. Index each key type to a specific door number.

.5 Indicate location of each door hardware set, cross-referencing door numbers indicated in the Contract Documents.

.6 Include an explanation of abbreviations, symbols, and alphanumeric codes in contract hardware schedule, where applicable.

.7 Include description of each electrified door hardware function, sequence of operation, and coordinating interface with other systems (e.g., fire alarm).

.8 Include DHI certification stamp on contract door hardware schedule.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit operation and maintenance data for door hardware and incorporate into manual.

.3 Warranty Documentation: Submit manufacturer's material and fabrication warranty.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Door Hardware Consultant: DHI-certified, including any of the following: Door + Hardware Consultant (DHC), Door + Hardware Specification Consultant (DHSC), or Access Control System Consultant (ACSC), or an Architectural Hardware Consultant.

.2 Installer: Completed door hardware projects similar in scope to this Project with a record of successful in-service performance in the past five years.

.2 Regulatory Requirements:

.1 Hardware for doors in fire separations and exit doors: To ANSI/BHMA A156.29, certified by a Canadian Certification Organization accredited by the Standards Council of Canada.

.2 Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labelled by a qualified testing agency for fire-protection ratings indicated.

Part 2 Products

2.1 DOOR HARDWARE

.1 Use products from only one manufacturer for similar items.

.2 Comply with codes and requirements of governing authorities, and as specified.

.3 Provide hardware items with characteristics to meet specified fire ratings, and conform to exit requirements of governing authorities.

.4 Finish hardware: in accordance with Finish Hardware Schedule, to be provided by Contractor based on Hardware functionality indicated in Door Schedule.

2.2 FASTENINGS

.1 Use only fasteners provided by the manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Match exposed fastening devices to finish of hardware.

.4 Where pull is positioned on one side of the door and push plate on the other side, supply fastening devices, and install to secure pull through the door from the reverse side. Install push plate to cover fasteners.

.5 Use fasteners compatible with the material they are used in.

2.3 KEYING

.1 Doors, padlocks and cabinet locks to be keyed differently. Prepare detailed keying schedule in conjunction with Owner and Consultant.

.2 Provide keys in duplicatesfor every lock of the Work.

.3 Provide 3 master keys for each master key or grand master key group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Provide construction cores.

.6 Provide permanent cores and deliver keys to Owner.

Part 3 Execution

3.1 INSTALLATION

.1 Manufacturer's Instructions: Comply with manufacturer's recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

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

.3 Provide manufacturers' instructions for proper installation of each hardware component.

.4 Install hardware to standard hardware location dimensions in accordance with CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames and CSA B651.

.5 Where door stop comes into contact with door pull, mount stop to strike bottom of pull.

.6 Install key control cabinet.

.7 Use only manufacturer's supplied fasteners.

.1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.8 Remove construction cores when directed by Owner.

.1 Install permanent cores and confirm locks operate correctly.

3.2 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to ensure tight fit at contact points with frames.

3.3 CLEANING

.1 Progress Cleaning: Perform in accordance with Section 01 74 00 - Cleaning and as follows:

.1 Remove protective coatings and wrappings from hardware items.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

3.4 DEMONSTRATION

.1 Keying System Setup and Cabinet:

.1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index, key change index, label shields, control book and key receipt cards.

.2 Place file keys and duplicate keys in key cabinet on their respective hooks.

.3 Lock key cabinet and provide key to Owner.

.2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.5 PROTECTION

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

END OF SECTION

Section 08 80 00
Glazing

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, product literature and data sheets for glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish, and limitations.

.3 Shop Drawings: Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.1 Show details of each type of glazing system in conjunction with the framing system indicating type of glass, sizes, shapes, glazing material and quantity. Show details indicating glazing material, glazing thickness, bite on the glass and glass edge clearance.

.2 Indicate analysis of glass including maximum deflection and allowable stresses from imposed dead/live loads and thermal loads.

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

.5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

1.2 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit maintenance data for glazing and incorporate into manual.

1.3 AMBIENT CONDITIONS

.1 Ambient Requirements:

.1 Install glazing when ambient temperature is 10°C minimum. Maintain ventilated environment for 24 hours after application.

.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

.3 Refer to manufacturer's instructions for minimum ambient temperature for application of bird deterrent glazing film.

Part 2 Products

2.1 MATERIALS

.1 Design Criteria:

.1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:

.2 Utilize inner lite of multiple lite sealed units for continuity of air and vapour seal.

.3 Size glass to withstand wind loads, dead loads and positive and negative live loads to ASTM E330.

.4 Limit glass deflection to 1/200 with full recovery of glazing materials.

.2 Subject to compliance with the requirements of the Agreement, Drawings, Schedules, and Specifications, provide primary glass by one of the following glass manufacturers:

.1 AGC Glass North America.
Cardinal Glass Industries.
Guardian Industries, LLC.
Pilkington North America.
Vitro Architectural Glass.

.2 Single source responsibility: Provide materials from a single manufacturer or fabricator for each kind and condition of glass indicated and composed of primary glass obtained from a single source and manufacturing plant for each type and class required.

.3 Flat Glass:

.1 Safety glass: to CAN/CGSB-12.1, transparent, 6 mm thick.

.1 Type tempered.

.2 Spandrel glass: to CAN/CGSB-12.9, back-painted glass to match to aluminum colour, 6 mm thick.

.1 Type tempered.

.2 Class float.

.3 Provide mineral wool insulation behind spandrel glass to suit manufacturer's standard details, compatible with aluminum window system and configuration shown on Architectural drawings.

.4 Insulating Glass Units:

.1 Insulating glass units: to CAN/CGSB-12.8, double unit, 24 minimum mm overall thickness.

.1 Glass: to CAN/CGSB-12.8-97.

.2 Glass thickness: [6] mm each lite.

.3 Inter-cavity space thickness: [12]mm.

.4 Glass coating: surface number #2 surface, low-E coating, clear colour.

.5 Inert gas fill: argon.

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

2.2 BIRD-FRIENDLY GLAZING FILM

.1 Bird Deterrent Glazing Film Markers: in accordance with CSA A460, single-layer PVC, 50 microns minimum thickness, with exterior-grade adhesive, on full area of Surface No. 1 (exterior).

.1 Bird deterrent glazing film markers required on all exterior glazing surfaces of the project.

.2 Visual pattern size: minimum 4 mm diameter for individual elements/dots, and minimum 2 mm wide by 8 mm long for linear elements.

.3 Spacing: no more than 50 mm vertically and horizontally between visual markers or other patterns.

.4 Contrast: dots or other visual marker pattern are to be high contrast between dots or other visual marker pattern to the colour/tint of the glazing material.

.1 Acceptable product: Feather Friendly Bird Deterrent Technology by 3M. Pattern to Consultant selection from standard product range.

2.3 ACCESSORIES

.1 Setting blocks: EPDM, 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass lite weight and area.

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

.3 Glazing tape:

.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; …… x …… mm size; black colour.

.4 Glazing clips: manufacturer's standard type.

.5 Lock-strip gaskets: to ASTM C542.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for beginning glazing installation in accordance with manufacturer's instructions.

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

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

.3 Visually inspect substrates.

3.2 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

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

.3 Prime surfaces scheduled to receive sealant.

.4 Preparation - Glazing films:

.1 Clean glazing before beginning installation using neutral cleaning solution.

.2 Ensure no deleterious material adheres to glazing.

.3 Ensure dust, grease, and chemical residue are removed from surface of glazing before installation of film.

.4 Examine glazing under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate or cause vision transparency or distortion problems.

3.3 INSTALLATION: GENERAL

.1 Comply with combined written requirements of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

.2 Adjust glazing channel dimensions as required by conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

.3 Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

.4 Clean glazing rebate surfaces of traces of dirt, dust, or other contaminants.

.5 Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

.6 Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

.7 Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

.8 Provide spacers for glass lites where length plus width is greater than 1270 mm (50").

.9 Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel.

.10 Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

.11 Set glass lites with proper orientation so that coatings face exterior or interior as specified.

.12 Glaze hollow metal doors and frames specified under work of Section 08 11 13 using tape glazing installation.

3.4 TAPE GLAZING

.1 Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

.2 Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening

.3 Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills

.4 Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

.5 Do not remove release paper from tape until right before each glazing unit is installed.

.6 Centre glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centres of openings.

3.5 GASKET GLAZING (DRY)

.1 Allow gaskets to relax and cut compression gaskets to lengths recommended by gasket manufacturer to fit openings to suit frame dimensions.

.2 Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

.3 Installation with drive-in wedge gaskets: Centre glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centres of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

.4 Installation with Pressure-Glazing Stops: Centre glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

.5 Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

.1 Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

.2 Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

.3 Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 BIRD-DETERRENT TREATMENT

.1 If there are green roofs or rooftop vegetation adjacent to glazing, follow CSA A460 for specific installation requirements.

.2 Refer to manufacturer's instructions for minimum ambient temperature for application of bird deterrent glazing film.

.3 Bird deterrent treatment to be installed from ground to 16 m or to the height of the adjacent mature tree canopy, whichever is greater.

.4 Bird deterrent treatment to be applied to glass corners for 5 m in each direction.

3.8 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Remove traces of primer and sealants.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels.

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

.2 Waste Management: Perform in accordance with Section 01 74 19 - Waste Management and Disposal.

3.9 PROTECTION

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

.2 After installation, mark each lite with an "X" by using removable plastic tape or paste.

.1 Do not mark heat absorbing or reflective glass units.

.3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

Section 09 21 16
Gypsum Board Assemblies

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.

1.2 AMBIENT CONDITIONS

.1 Maintain temperature 10 °C minimum, 21 °C maximum for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimumafter completion of joint treatment.

.2 Apply board and joint treatment to dry, clean, frost free surfaces.

.3 Ventilation: ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

Part 2 Products

2.1 MATERIALS

.1 Standard board: to ASTM C1396/C1396M-14regular, [16] mm thick, 1200 mm wide x maximum practical length, ends square cut, edges squared.

.2 Water-resistant board: to ASTM C1396/C1396M-14regular, [16] mm thick, 1200mm wide x maximum practical length.

.3 Metal furring runners, hangers, tie wires, inserts, and anchors: to standard required by assembly.

.4 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.5 Nails: to ASTM C514-14

.6 Steel drill screws: to ASTM C1002-14

.7 Laminating compound: as recommended by manufacturer, asbestos-free.

.8 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, metal, 0.5 mm base thickness, perforated flanges, one piece length per location.

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

.10 Joint compound: to ASTM C475, asbestos-free

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies installation in accordance with manufacturer's written instructions.

3.2 ERECTION

.1 Do application and finishing of gypsum board to ASTM C840-16 except where specified otherwise

.2 Do application of gypsum sheathing to ASTM C1280-13a

.3 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840-16 except where specified otherwise

.4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.5 Install work level to tolerance of 1:1200.

.6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, …….

.7 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.

3.3 INSTALLATION

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at a frequency and method appropriate for the material and use.

.2 Install casing beads around perimeter of suspended ceilings.

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

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Provide continuous polyethylene dust barrier behind and across control joints.

.6 Install control joints straight and true.

.7 Ensure that screws or nails are properly applied in process of attaching gypsum board to framing without damaging of gypsum board edges and ends.

.8 Install cornice cap where gypsum board partitions do not extend to ceiling.

.9 Splice corners and intersections together and secure to each member with 3 screws.

.10 Install access doors to electrical and mechanical fixtures specified in respective sections.

.1 Rigidly secure frames to furring or framing systems.

.11 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.12 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:

.1 Levels of finish:

.1 Level 0: no tapping, finishing or accessories required.

.2 Level 1: embed tape for joints and interior angles in joint compound. Surfaces free of excess joint compound; tool marks and ridges are acceptable.

.3 Level 2: embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.

.4 Level 3: embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.5 Level 4: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.6 Level 5: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.

.13 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.

.14 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board, invisible after surface finish is completed.

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

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

.17 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.

.18 Mix joint compound slightly thinner than for joint taping.

.19 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.

.20 Allow skim coat to dry completely.

.21 Remove ridges by light sanding or wiping with damp cloth.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

.2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

END OF SECTION

Section 09 22 00
Supports for Plaster and Gypsum Board

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for furring and lathing application and include product characteristics, performance criteria, physical size, finish and limitations.

Part 2 Products

2.1 MATERIALS - GENERAL

.1 For sheet metal Products: Sheet metal thickness indicated herein pertains to the “minimum base steel thickness exclusive of coating”.

.2 Protective coatings for metal supports and framing:

.1 Minimum corrosion protection: Z120 (G40) ASTM A653/A653M-11.

.3 Sheet metal screws shall have a minimum coating thickness of 0.008 mm (0.0003”) of zinc. Other coatings providing equal or better corrosion protection may be used, subject to acceptance of Contract Administrator.

.4 Screws:

.1 Steel screws shall be equal to or exceed minimum diameter indicated on shop drawings.

.2 Penetration beyond joined materials shall be not less than 3 exposed threads.

.3 Thread types and drilling capability shall conform to manufacturer's recommendations.

2.2 PARTITION SUPPORT MATERIALS

.1 Interior non-loadbearing channel stud framing: to ASTM C645-18; roll formed from 0.455 mm (0.0179”) minimum thickness unless otherwise indicated or as recommended by gypsum board manufacturer, galvanized steel sheet. Provide service holes starting at 450 mm (18") from bottom, then 914 mm (36") on centre to top of studs.

.1 Steel studs; at backer plate locations: 0.836 mm (0.0329”) minimum thickness.

.2 Steel studs at cement board locations: 0.836 mm (0.0329”) minimum thickness.

.3 Steel studs at impact resistant gypsum board locations: 0.836 mm (0.0329”) minimum thickness.

.4 Steel studs at tile backer board locations: 0.836 mm (0.0329”) minimum locations

.2 Interior floor and ceiling tracks (runners): to ASTM C645-18; in widths to suit stud sizes.

.1 Metal thickness: to match studs.

.2 For openings wider than 914 mm (36"), provide 0.836 mm (0.0329”) minimum thickness for header.

.3 Bracing channels: Minimum 19 mm x 10 mm x 1.087 mm (3/4" x 3/8" x 0.0428") cold rolled galvanized steel.

2.3 CEILING SUPPORT MATERIALS AND SYSTEMS

.1 General: Size ceiling support components to comply with ASTM C754-18 unless otherwise indicated.

.2 Main runners: Steel channels, hot or cold rolled; Z180 (G60) galvanized.

.3 Hanger wire: ASTM A641/A641M-09A(2014), soft, Class 1 galvanized, minimum 4.064 mm (0.160”, 8 AWG).

.4 Hanger rods and flats: Mild steel with zinc coating, galvanized for exterior applications.

.1 General: Size devices for 5 times load imposed by completed system as determined in accordance with ASTM E488/E488M-18.

.2 Screws, clips, bolts, concrete inserts or other devices for ceiling hangers whose suitability for use intended has been proven through standard construction practices or by certified test data.

.3 Hangers: Comply with ASTM C754-18 for maximum ceiling area and loads to be supported.

.5 Fasteners exposed to weather, condensation, and corrosion: Zinc-plated or stainless steel fasteners in applicable product lines specified in preceding paragraphs.

.6 Tie wire: 1.19 mm (0.047”, 18 AWG) minimum zinc coated, soft-annealed wire, to ASTM A641/A641M-09A(2014).

.7 Furring anchorages: 1.62 mm (0.0637”, 16 AWG) galvanized wire ties, manufacturer's standard wire type clips, bolts, nails or screws as recommended by furring manufacturer and complying with ASTM C754-18.

.8 Runner (carry) channels: 1.367 mm (0.0538”) thick cold rolled steel, primer painted or zinc coated for interior locations, to ASTM C754-18, with minimum 228 MPa yield strength:

.1 38 mm x 12.7 mm (1-1/2" x 1/2") where supported at centres of 914 mm (36") maximum.

.2 38 mm x 19 mm (1-1/2" x 3/4") where supported at centres of 1220 mm (48") maximum.

2.4 FURRING

.1 Furring channels: 0.455 mm (0.0179”) minimum typical thickness, cold rolled steel, wiped coated, nominal size of 22 mm (7/8") depth x 35 mm (1-3/8") face, hat type with knurled face.

.2 Z-furring members: Galvanized steel z-shaped furring members; ASTM A653/A653M-11, G60, 0.836 mm (0.0329”) minimum thickness of base metal, of depth indicated, designed for mechanical attachment of insulation boards or blankets.

.3 Fasteners for furring members: Type and size recommended by furring manufacturer for substrate and application indicated, corrosion resistant finish for exterior building

envelope applications, load rating and spacing to support materials carried by assembly with factor of safety of 3x per fastener manufacturer data sheets.

2.5 ACCESSORIES

.1 Backer plates:

.1 Metal backer plates: Steel, galvanized; minimum 150 mm (6") wide x 0.836 mm (0.0329”) minimum x length and width to suit size of items to be attached; fastened to studs for attachment of surface mounted fittings and accessories.

.2 Elimination of backer plates or direct attachment of accessories or equipment to studs will not be permitted.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for furring and lathing application in accordance with manufacturer's written instructions.

3.2 PREPARATION

.1 Use galvanized supports, members, angles and metal lathing in wet areas, exterior walls and exterior soffits.

.2 Leave finished work rigid, secure, square, level, plumb, curved to detailed radius and erected to maintain finish plaster line dimensions and contours.

.1 Make allowance for thermal movement.

.3 Provide clearance under beams and structural slabs to prevent transmission of structural loads to vertical furring.

3.3 INSTALLATION

.1 Ceiling Furring:

.1 Install runners level to tolerance of 3 mm over 3.5 m. Provide runners at interruptions of continuity and change in direction.

.2 Frame with furring channels, perimeter of openings to accommodate access panels, light fixtures, diffusers, grilles, and other ceiling-mounted devices as indicated or required.

.3 Furr for vertical bulkheads within or at termination of ceilings.

.4 Furr above suspended ceilings for fire and sound stops and to form plenum areas indicated.

.2 Wall Furring:

.1 Install steel furring for free standing walls as indicated.

.2 Frame openings and around built-in equipment, cabinets, access panels, on four sides, with channels. Extend furring into reveals.

.1 Check clearances with equipment suppliers.

.3 Construct bulkheads and boxed-in duct shafts, for beams, columns, pipes and around exposed services where indicated.

.1 Install 19 mm channels at corners and at 300 mm on centre.

.4 Fit ends and edges closely, but not forced together, stagger end joints in succeeding courses.

.5 Build in hollow metal frames in plastered furred walls.

.6 On exterior walls, install asphalt felt protection strip between furring channel and wall.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

.3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by furring and lathing application.

END OF SECTION

Section 09 30 13
Ceramic Tiling

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit product data for each type of product and accessory specified. Indicate compliance with this Section.

.3 Samples for Initial Selection: Submit samples of the following:

.1 Actual tiles or sections of tiles showing the full range of colours, textures, and patterns available for each type of tile indicated.

.2 Edging and trim accessories showing the full range of colours available.

.3 Actual sections of grout showing the full range of colours available for each type of grout indicated.

1.2 CLOSEOUT SUBMITTALS

.1 Warranty Documentation: Submit manufacturers' warranties.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Installers: Skilled in ceramic tile installation with five years of experience completing tile installations similar in material and scope as this Project , and member in good standing with TTMAC.

.2 Provide epoxy adhesive and epoxy grout from the same manufacturer.

1.4 AMBIENT CONDITIONS

.1 Maintain air temperature and substrate temperature at tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after installation.

.2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.

.3 Do not install epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

.4 Provide additional heat when there is a risk that surface temperatures may drop below manufacturer's recommended temperatures.

Part 2 Products

2.1 PERFORMANCE CRITERIA

.1 Perform work of this Section in accordance with TTMAC Tile Installer Technical Handbook as a minimum requirement.

.2 Provide tile products manufactured and tested in accordance with ANSI A108.

2.2 FLOOR TILE

.1 Floor Tile (T1):

.1 Acceptable Product: Mosa Tile Core Collection Terra

.2 Size: 600x1200mm

.3 Colour: 4105V - Sand Beige

2.3 WALL TILE

.1 Wall Tile (T2):

.1 Acceptable product: Mosa Tile Global Collection

.2 Size: 150x150mm

.3 Colours: 19950 in all areas except behind toilets, where colour to be 75230 V.

2.4 MORTAR AND GROUT MATERIALS

.1 Primer: Low viscosity primer as recommended by manufacturer to suit substrate and site conditions. Submit proof of bonding ability of setting system if manufacturer says primer is not necessary.

.2 Surface Preparation Materials: Provide the following underlayment materials:

.1 Portland Cement Mortar: Levelling Bed containing the following:

.1 Portland Cement: To CSA A3000, Type GU.

.2 Latex: Formulated for use with Portland cement mortars.

.3 Cleavage membrane: 0.10 mm (4 mil) thick polyethylene film to CAN/CGSB 51.34-M86 (amended 1988).

.4 Metal lath: Galvanized type, 1.4 kg/m3 to ASTM C847-18.

.5 Reinforcing mesh: 51 mm x 51 mm (2” x 2”) mesh size, fabricated from 1.6 mm (0.06") thick galvanized steel wire; welded fabric design.

.6 Sand: To ASTM C144, passing 16 mesh.

.7 Water: Potable, free of minerals and chemicals which are detrimental to mortar and grout mixes.

.2 Wall Tile Systems:

.1 Thin Set Interior Installation: To ANSI A118.1, dry set mortar, formulated for thin set applications, factory sanded mortar consisting of Portland cement, sand, and additives requiring only addition of potable water for installation with bond enhancing latex additive.

.1 Acceptable Products:
Ardex ‘X77 Microtec Fiber Reinforced Mortar’ with Ardex ‘E90 Mortar Admix’.
Custom Building Products ‘ProLite’.
Flextile ‘51’ mixed with Flextile ‘44’.
Laticrete 'Laticrete 4237 Latex Thin Set Liquid' with 'Portland 211 Crete Filler Powder'.
Mapei 'KERALASTIC' mixed with 'KERABOND'.

Profix ‘6500’ liquid latex mixed with ‘8500’ thin set mortar.
Promo Adhesives Inc. ‘Pro Bond Plus’ with ‘Pro Bond Plus Additive’.
TEC ‘Superflex Ultra-Premium Thin Set’.

.3 Grout: Non-fading pigments and as follows:

.1 Weather, frost and shock resistant

.2 ANSI A118.7 (ANSI A108/A118/A136.1-2017).

.1 Acceptable Products:
Custom Building Products: ‘Prism Ultimate Performance Grout’.
Laticrete ‘PermaColor Grout’.
Mapei 'Ultracolor Plus’.
Promo Adhesives Inc. ‘Pro Topgrout’.
TEC ‘Power Grout’.

2.5 ACCESSORIES

.1 Straight Edge and Transition Strips: Purpose made with integral perforated anchoring leg for setting transition strip into setting material, with manufacturer's alignment connector and end pieces, and designed for smooth curved applications, and as follows:

.1 Material: Roll formed stainless steel.

.2 Straight Edge Strip Profile: Schluter Systems profiles including inside and outside corners, exposed edge trims.

.3 Height: As required to suit tile installation.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions:

.1 Verify substrate and backing surface flatness tolerances. Section 03 30 00 - Cast-in-Place Concrete establishes a flatness requirement for 25 for slabs on grade for in-place concrete and is considered the starting flatness for work of this Section. Final measurement for flatness and levelness using mortar bed or self-levelling screed materials described in this Section will be measured in same manner as specified in Section 03 30 00 - Cast-in-Place Concrete to achieve the following:

.1 Standard Format Floor Tile: Tiles from 100 mm x 100 mm and with all sides less than 380 mm require floor flatness measured to a minimum of F_F35; equivalent to 5 mm with no more than 2 gaps under a 3000 mm straightedge measurement.

.2 Large Format Floor Tile: Tiles with any side greater than 380 mm require floor flatness measured to a minimum of F_F50; equivalent to 3 mm with no more than 2 gaps under 3000 mm straightedge measurement.

.3 Wall Tiles: Provide wall levelling similar to that specified for floors for tiles having similar sizes listed above.

.2 Examine substrates and conditions where tile will be installed for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

.1 Verify that substrates for bonding tile are firm, dry, clean, and free from oil, waxy films, and curing compounds.

.2 Verify substrates are within starting flatness tolerances as specified in Section 03 30 00 - Cast-in-Place Concrete, and are ready for application of levelling materials specified in this Section.

.3 Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar products located in, behind, or through tiling is complete.

.4 Verify that joints and cracks in substrates align with tile movement joint locations indicated on Drawings. Adjust joints in consultation with Consultant to align.

3.2 INSTALLATION - GENERAL

.1 Perform tile work in accordance with TTMAC Tile Installer Technical Manual, parts of ANSI A108 Series of tile installation standards that apply to types of bonding and grouting materials, and to methods required for complete tile installation as minimum requirements.

.2 Extend tile work into recesses and under equipment and fixtures, to create a complete uninterrupted floor covering.

.1 Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

.2 Do not split tile.

.3 Make cut edges smooth, even, and free from chips.

.3 Fit tile around corners, fitments, fixtures, drains, and other built-in objects.

.4 Accurately form intersections and returns. Cut and drill tile without marring visible surfaces:

.1 Cut, drill, and fit tile to accommodate work of other Subcontractors penetrating and abutting work of this Section.

.2 Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints.

.5 Lay tile in pattern indicated on Drawings as follows:

.1 Align joints when adjoining tiles on floor, base, walls, and trim are the same size.

.2 Lay out tile Work and centre tile sites in both directions in each space or on each wall area.

.3 Centre tile patterns between control and movement joints; notify Consultant for further instructions where tile patterns do not align with control or movement joints.

.6 Cut tile accurately and without damage.

.7 Smooth exposed cut edges with abrasive stone, where visible.

.8 Minimum tile width is half unit size unless specifically indicated otherwise on Drawings.

.9 Adjust tile layout to minimize tile cutting.

.10 Provide uniform joint widths.

.11 Make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished Work. Align tile sheet patterns.

.12 Slope floor tile towards floor drains in thick-bed mortar installations.

.13 Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, and covers overlap tile.

.14 Make joints between tile uniform, plumb, straight, true, and flush with adjacent tile.

.15 Maximum Surface Tolerance: 1:800.

.16 Lay out tiles so perimeter tiles are at least 1/2 of a full size.

.17 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.18 At termination of wall tile, provide edge strip.

.19 Install transition strips at junction of tile flooring and dissimilar floor finishes.

.20 Wait a minimum of 24 hours after installation of tiles, before grouting.

.21 Installation - Bonding Bed: Set tile in place while bond coat is wet and tacky.

.1 Apply a coat of mortar with pressure using the trowel's flat side to key the mortar into the substrate. Apply additional mortar, combing it in a single direction parallel to the tile's shortest dimension, with the trowel's notched side.

.2 Provide sufficient bond coat to achieve at least 80% contact for tiles smaller than 300 mm x 300 mm and areas with Residential or Light loadbearing performance requirements with bonding material evenly dispersed and pressed into back of tile. Perform back buttering for larger tiles and installations having moderate or higher loadbearing performance requirements.

.3 Place tiles firmly into the wet mortar. Push tiles back and forth in a direction perpendicular to trowel lines, to collapse the mortar ridges and help achieve maximum coverage.

.4 Verify that corners and edges are fully supported by bonding material. Periodically pick up freshly installed tile and inspect.

.5 Set tiles to prevent lippage greater than 1 mm over a 3 mm grout joint.

.6 Keep two-thirds of grout joint depth free of bonding materials.

.7 Clean excess bonding materials from tile surface before bonding materials' final set.

.8 Sound tiles after bonding materials have cured. Replace hollow sounding tiles before grouting.

.22 Back Buttering: Achieve 100% mortar coverage of tile in accordance with TTMAC Tile Installer Technical Manual and ANSI A108 series standards for the following applications:

.1 Tile at shower areas.

.2 Tile where either side is 300 mm or larger.

.23 Install transition strips at locations indicated on Drawings and where floor tiling edge abuts a different floor finish. Provide sloped profile transition strips where uneven transitions occur between 6 mm and 13 mm.

.24 Install reducer strips at locations indicated on Drawings and where tile abuts concrete flooring that will not receive an additional floor finish.

3.3 INSTALLATION - GROUT

.1 Grouting: Install grout in accordance with manufacturer's written instructions, the requirements of TTMAC Tile Installer Technical Manual, and as follows:

.1 Allow proper setting time before application of grout.

.2 Pre-seal or wax tiles that require protection from grout staining.

.3 Force grout into the joints with a rubber grout float. Make sure all joints are well-compacted and free of voids and gaps.

.4 Remove excess grout in accordance with manufacturer's instructions and polish tile with clean cloths.

3.4 CLEANING

.1 Perform cleaning in accordance with Section 01 74 00 - Cleaning. Clean tile surfaces so they are free of foreign matter using manufacturer recommended cleaning products and methods after completing grouting, and as follows:

.1 Remove latex-Portland cement grout residue from tile as soon as possible.

.2 Flush surface with clean water before and after cleaning.

.2 Waste Management and Disposal: Perform in accordance with Section 01 74 19 - Waste Management and Disposal.

3.5 PROTECTION

.1 Protect finished tile floor areas from traffic until setting materials have sufficiently cured in accordance with TTMAC Tile Installer Technical Manual.

.2 Protect floor tile areas from traffic after grouting is completed in accordance with manufacturer's instructions.

.3 Protect wall tiles and bases from impact, vibration, and heavy hammering on adjacent and opposite walls for a minimum of 7 days after installation.

END OF SECTION

Section 09 91 23
Interior Painting

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Provide manufacturer's instructions, printed product literature and data sheets for paint and paint products and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Upon completion, provide records of products used. List products in relation to finish system and include the following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour number s.

.4 Samples:

.1 Submit 200 x 300 mm sample panels of each paint with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:

.2 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

1.2 CLOSEOUT SUBMITTALS

.1 Provide in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual.

.3 Include:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour number s.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Contractor: to have a minimum of 5 years proven satisfactory experience. When requested, provide list of last 3 comparable jobs including, job name and location, specifying authority, and project manager.

.2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work.

.3 Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.

.4 Standard of Acceptance:

.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Soffits: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.4 SITE CONDITIONS

.1 Ambient Conditions:

.1 Heating, Ventilation and Lighting:

.1 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

.2 Provide continuous ventilation for 7 days after completion of application of paint.

.3 Provide minimum lighting level of 323 Lux on surfaces to be painted.

.4 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless pre-approved written approval by Specifying body and product manufacturer, perform no painting when:

.1 Ambient air and substrate temperatures are below 10 degrees C.

.2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.

.4 The relative humidity is under 85 % or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

.5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.

.2 Perform painting work when maximum moisture content of the substrate is below:

.1 12 % for concrete and masonry (clay and concrete brick/block). Allow new concrete and masonry to cure minimum of 28 days.

.2 15 % for hard wood.

.3 17 % for soft wood.

.4 12 % for plaster and gypsum board.

.3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.5 Surface and Environmental Conditions:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.

.3 Apply paint when previous coat of paint is dry or adequately cured.

.6 Additional interior application requirements:

.1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

Part 2 Products

2.1 MATERIALS

.1 Only Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project

.2 Provide paint materials for paint systems from single manufacturer.

.3 Conform to latest MPI requirements for interior painting work including preparation and priming

2.2 COLOURS

.1 Colour schedule will be based upon selection of 5 base colours and 3 accent colours. No more than 8 colours will be selected for entire project and no more than 3 colours will be selected in each area.

.2 Selection of colours will be from manufacturers full range of colours.

.3 Where specific products are available in restricted range of colours, selection based on limited range.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Consultant for tinting of painting materials.

.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.

.3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.4 Thin paint for spraying in accordance with paint manufacturer's instructions.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity. Strain as necessary.

2.4 GLOSS/SHEEN RATINGS

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

.1

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

.2 Gloss level ratings of painted surfaces shall be as selected by the Consultant. Locations as indicated or scheduled..

2.5 INTERIOR PAINTING SYSTEMS

.1 Concrete masonry units: smooth and split face block and brick:

.1 INT 4.2D - High performance architectural latex (over latex block filler) G4 finish.

.2 Structural steel and metal fabrications: columns, beams, joists:

.1 INT 5.1R - High performance architectural latex G5 (over Q.D. alkyd primer) finish.

.3 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.

.1 INT 5.3M - High performance architectural latex G5 (over W.B. galvanized primer) finish.

.4 Glue laminated beams and columns:

.1 INT 6.1W - Polyurethane, Clear, 2 component

.5 Dimension lumber: columns, beams, exposed joists, underside of decking:

.1 INT 6.2Q - Polyurethane, Clear, 2 Component.

.6 Dressed lumber: including doors, door and window frames, casings, mouldings:

.1 INT 6.3Z - Polyurethane, Clear, 2 component finish.

.7 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:

.1 INT 9.2B - High performance architectural latex G2 (over latex primer/sealer) finish.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 GENERAL

.1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted in accordance with manufacturer's written instructions.

3.4 PREPARATION

.1 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.

.2 Allow surfaces to drain completely and allow to dry thoroughly.

.2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.3 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

.1 Apply sealer to MPI #36 over knots, pitch, sap and resinous areas

.2 Apply wood filler to nail holes and cracks.

.3 Tint filler to match stains for stained woodwork.

.4 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.5 Carried out during shop priming: clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by blowing with clean dry compressed air.

.6 Touch up of shop primers with primer as specified.

.7 Do not apply paint until prepared surfaces have been accepted by Consultant

3.5 APPLICATION

.1 Method of application to be as approved by Consultant. Apply paint by brush, roller or air sprayer. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in uniform layer using brush and/or roller type suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.

.4 Brush out immediately all runs and sags.

.5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.

.5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.9 Finish inside of cupboards and cabinets as specified for outside surfaces.

.10 Finish closets and alcoves as specified for adjoining rooms.

.11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

.12 Wood, drywall, plaster, stucco, concrete, concrete masonry units and brick; if sprayed, must be back rolled.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.

.2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

.3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

.4 Do not paint over nameplates.

.5 Keep sprinkler heads free of paint.

.6 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.

.7 Paint fire protection piping red.

.8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.

.9 Paint natural gas piping yellow.

.10 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

.11 Do not paint interior transformers and substation equipment.

3.7 SITE TOLERANCES

.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.8 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

3.9 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

Section 10 28 00
Washroom Accessories

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

1.2 CLOSEOUT SUBMITTALS

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

1.3 MAINTENANCE MATERIAL SUBMITTALS

.1 Tools:

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

.2 Deliver special tools to Owner.

Part 2 Products

2.1 ACCESSORIES

.1 Toilet tissue dispenser: double roll type, surface mounted, chrome plated steel frame, capacity of 500 double ply roll, roll under spring tension for controlled delivery.

.1 Acceptable product: Bobrick Surface-Mounted Twin Jumbo-Roll Toilet Tissue Dispenser, stainless steel finish.

.2 Soap dispenser (deck-mounted in trough sink): EZFill™ Automatic desk mounted soap dispenser with accessories including:
ASI 0390-KIT - EZFILL™ Deck Mounted Top-Fill Port with Multi-Feed Tank
ASI 0390-BR - EZFILL™ Multi-Feed Soap Tank Mounting Bracket
ASI 0390-P - Soap Pump Assembly

.3 Soap dispenser: liquid push-in valve …… spout, self contained 1.5 L tank 1.14 L tank, stainless steel piston and valve assembly, tamper proof filler lock, surface mounted, exposed metal components chrome plated.

.1 Acceptable product: Bobrick Contura B-4112 Series Surface-Mounted Soap Dispenser, stainless steel finish.

.4 Feminine napkin disposal bin: stainless steel, recessed unit including rough-in frame, continuous hinged door, self closing, embossed with universally accepted symbol, removable plastic receptacles fitted with spring clip for deodorizer block.

.1 Acceptable product: Bobrick TrimLine Series B-35303 Recessed Sanitary Napkin Disposal

.5 Hand dryer: listed under re-examination service of ULC and CSA approved

.1 Individual Hand Dryer Unit (not part of washroom sink faucet fixture):

.1 Acceptable product: XLERATOReco Hand Dryer, stainless steel finish

.2 Sink Faucet / Hand Dryer Unit (at trough sink):

.1 Acceptable product: Dyson Airblade™ Wash + Dry - Short Low Voltage Hand Dryer - WD04 - Dyson 247659-01

.3 Provide all necessary mounting brackets. See electrical for power provisions.

.6 Shower rods: stainless steel tubing of required length with satin chrome finished flanges, 12 shower curtain hooks and curtain hold-back hook and chain. Shower rod material and anchorage to withstand downward pull of 0.9 kN.

.7 Shower seat: wall mounted folding, stainless steel and plastic laminate.

.1 Acceptable product: Bobrick B-5191 Folding Shower Seat

.8 Grab bars: 32mm diameter tubing of stainless steel, 38 mm diameter wall flanges, concealed screw attachment, flanges welded to tubular bar, provided with steel back plates and all accessories. Knurl bar at area of hand grips. Grab bar material and anchorage to withstand downward pull of 2.2 kN.

.1 Acceptable products:
Bobrick B-6898.99 90 Degree Grab Bar
Bobrick B-6806 Series Straight Grab Bar - 24"
Bobrick 125-Swing-Up Grab Bar

.9 Waste receptacle, Recessed type:

.1 Acceptable product: Bobrick B-35643 Trimline Series, recessed

.10 Waste receptacle, Surface-Mounted type:

.1 Bobrick B-35639 - TrimLine Series™ Surface Mounted Waste Receptacle w/ Disposal Door

.11 Tilt mirror: wall mounted unit, fixed framed mirror 6 mm, stainless steel frame …….

.1 Acceptable product: Bobrick B-293 2436 Fixed Position Tilt Mirror

.12 Flat mirror: individual unit for shower stalls, change rooms.

.1 Acceptable product: Bobrick B-1556 2436 Series, size as indicated in drawings.

.13 Flat mirror: large-scale polished stainless steel panel above trough sink.

.1 #8 mirror-polished stainless steel

.2 Size, configuration and location of seams as indicated in drawings.

.14 Diaper changing station: surface mounted wall unit, stainless steel, plastic laminate insert, moulded-in steel-on-steel hinge assembly, moulded-in integral support mechanism, 864 mm wide x 533 mm high, tamper resistant hardware, liner dispenser, safety belt, safety instructions in English and in French, labelled with universally accepted symbol.

.1 Acceptable product: KB300-SS Horizontal Surface-Mounted with Stainless Steel Veneer by Koala Kare.

.15 Adult change table:

.1 Acceptable product: Max-Ability Pressalit Care 3000 Height Adjustable Changing Table

.16 Ceiling Lift System

.1 Acceptable product: GH3 Ceiling Lift by Guldmann, capable of lifting 550lbs, including accessories necessary for full operation. Provide Rail B+ system mounted to roof/ceiling structure as required. Provide Active Micro Plus sling attachment, size large. Provide remote control operation as is standard for this equipment.

.17 Coat Hook - Single:

.1 Acceptable product: Bobrick B983 Vandal-Resistant Clothes Hook

.18 Coat Hook - Multi:

.1 Acceptable product: Bobrick B985 Vandal-Resistant Clothes Hook

.19 Sharps Disposal Unit:

.1 Acceptable product: Bradley recessed 989, stainless steel finish.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrates and surfaces to receive toilet and bathroom accessories previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to toilet and bathroom accessories installation.

3.2 INSTALLATION

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

.1 Stud walls: install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.

.2 Hollow masonry units, existing plaster or drywall: use toggle bolts drilled into cell or wall cavity.

.3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.

.4 Toilet and shower compartments: use male to female through bolts.

.2 Install grab bars on built-in anchors provided by bar manufacturer.

.3 Use tamper proof screws/bolts for fasteners.

.4 Fill units with necessary supplies shortly before final acceptance of building.

.5 Install mirrors in accordance with Section 08 80 00 - Glazing.

3.3 ADJUSTING

.1 Adjust toilet and bathroom accessories components and systems for correct function and operation in accordance with manufacturer's written instructions.

.2 Lubricate moving parts to operate smoothly and fit accurately.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by toilet and bathroom accessories installation.

END OF SECTION

Section 10 51 13
Metal Lockers

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 06 40 00 - Architectural Woodwork.

.2 Section 06 41 93 - Cabinet and Miscellaneous Hardware

.3 Section 08 71 00 - Doors Hardware

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Provide manufacturer's printed product literature and data sheets for metal lockers and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Indicate on drawings: type and class of locker, thicknesses of metal, fabricating and assembly methods, assembled banks of lockers, bases, trim, filler panels, end/back panels, doors, locking method, finishes.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Lockers: to CAN/CGSB-44.40, Type 2 - Double tier locker, Class 2 - A bank of two or more lockers, recessed.

.1 Size: 305 mm wide x 450 mm deep x 915 mm high, steel thickness No. 20 MSG.

.2 Assembly: [welded][pop-riveted][bolted] construction.

.3 Top: flat.

.4 Doors: one-piece double-wall envelope construction, steel thickness No.20 MSG, door swing as indicated.

.5 Door handle: recessed handle aluminum, anodized, colour to match locker body.

.6 Locker finish: exposed and semi-exposed surfaces: baked on polymer powder or alkyd enamel, colour by Consultant selection based on manufacturer's standard colour range. Frame colour shall match door colour unless otherwise indicated.

.7 Acceptable Products: Uline "Double Tier Lockers Model, Industrial Grade"

2.2 ACCESSORIES

.1 Locking system: suitable for padlocks.

.2 Number plates: Each door shall have a number plate riveted onto body or door pull, numbered sequentially starting at "1" for each locker type as directed by the Contract Administrator.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates and surfaces to receive metal lockers previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to metal locker installation.

3.2 INSTALLATION

.1 Assemble and install lockers in accordance with manufacturer's written instructions.

.2 Securely fasten lockers to grounds and nailing strips.

.3 Install wall trim around recessed locker banks.

.4 Install filler panels (false fronts) where indicated and where obstructions occur.

.5 Installation tolerances: Install plumb, level, tight and secured. Comply with the following tolerances:
Plumb and level: 3mm (1/8").
Variation from indicated position: plus/minus 3mm (1/8").

3.3 ADJUSTING

.1 Adjust metal lockers for correct function and operation in accordance with manufacturer's written instructions.

.2 Lubricate moving parts to operate smoothly and fit accurately.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

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

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by metal locker installation.

END OF SECTION

Section 12 24 13
Roller Window Shades

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Manually-operated roller window shades with single rollers.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Product literature and data sheets for roller window shades ……, including product characteristics, performance criteria, physical sizes, finishes, flammability performance data, installation instructions and limitations.

.3 Shop Drawings:

.1 Indicate product details, installation details, operational clearances, …… and relationship to adjacent Work.

.1 Indicate required clearances from glazing, …… and operating hardware (such as including cranks, handles, and locks) on operable glazed units, through entire operating range.

.2 Identify shade material on each roller, the shade material's orientation on the rollers, and seam and batten locations.

.3 Indicate constructed opening sizes on plans, elevations, and sections.

.2 Include a Location Schedule showing locations, sizes, and quantities of roller window shades. Use same room designations as the Drawings.

.3 Show locations and sizes of blocking reinforcement. Include concealed blocking and reinforcement specified in other Sections.

.4 Samples:

.1 Samples for initial selection: Full range of samples, representing available colours, patterns, textures, and finishes.

.5 Manufacturer's Instructions:

.1 Special delivery, storage, and handling requirements.

.2 Installation instructions.

.3 Cleaning procedures.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Include, in the operation and maintenance manual, manufacturer's maintenance and operating instructions and recommended cleaning materials and methods.

1.4 QUALITY ASSURANCE

.1 Mock-Ups: Install mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.1 Install one operational mock-up of each specified roller window shade type.

.2 Locations: As directed by the Consultant.

1.5 WARRANTY

.1 Submit warranty information in accordance with Section 01 78 00 - Closeout Submittals.

.2 Manufacturer Warranty: Manufacturer's standard warranty document, executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights the Owner may have under the Contract.

.1 Manufacturer's warranty period: 5 years.

Part 2 Products

2.1 PERFORMANCE/DESIGN CRITERIA

.1 Design blinds to:

.1 Allow wear-susceptible parts to be replaceable by either the user or the manufacturer.

.2 Permit effective disassembly of components to permit recycling of materials for which recycling markets exist.

.3 Mounting: As indicated on Drawings.

.1 Opaque shade materials: Provide minimum 51 mm clearance between shade cloth and inside face of glazing.

2.2 MANUALLY-OPERATED ROLLER WINDOW SHADES WITH SINGLE ROLLER

.1 Chain-and-Clutch Operating Mechanisms: Continuous-loop bead chain and clutch that stops shade movement when bead chain is released, shade to be permanently adjusted and lubricated.

.1 Bead chains: #10 stainless steel rated to minimum 400 N breaking strength, with pull chain tensioning device in accordance with ANSI/WCMA A100.1.

.1 Limit stops: Allow shade to stop when chain is released. Provide limit stops to prevent shade from being raised or lowered too far.

.2 Chain-retainer type: Chain tensioner.

.2 Shade Material: Light filtering.

2.3 SHADE MATERIALS

.1 Material: Sun control fabric; dimensionally stable shade fabric.

.2 Light Filtering Shades:

.1 Light filtering shade cloth openness:

.1 North elevation: 3%.

.2 East elevation: 3%.

.3 South elevation: 3%.

.4 West elevation: 3%.

.3 Shade Cloth Bottom/Hem Bar: extruded aluminum. Provide shade bar exposed with endcaps.

.4 Pattern/Colour: As selected by the Consultant from manufacturer's full colour range.

2.4 FINISHES

.1 Exposed Metal Trim and Accessories: Baked enamel, colour to match window mullion finish.

2.5 ACCESSORIES

.1 Mounting Hardware: Provide corrosion resistant brackets or endcaps compatible with roller assembly, operating mechanism, installation accessories, mounting location, and conditions indicated. Provide hardware to allow field adjustment or removal of shade roller tube and other operable hardware components without removal of brackets and end- or centre supports.

.2 Exposed Headbox Assembly: Rectangular, extruded aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure. Provide manufacturer's standard height fascia as required to conceal roller and shade band assembly when shade is fully open.

.3 Front Fascia: L-shaped aluminum extrusion to conceal shade roller and hardware that snaps onto end caps without requiring exposed fasteners of any kind. Fascia can be mounted continuously across two or more shade bands. Provide manufacturer's standard height fascia as required to conceal roller and shade band assembly when shade is fully open.

.4 Endcaps: Extruded aluminum with universal design suitable for mounting to window mullions. Provide size compatible with roller size. Provide end cap covers matching fascia/headbox finish.

.5 Recessed Shade Pocket: Rectangular, extruded-aluminum enclosure designed for recessed ceiling installation; with front, top, and back formed as one piece, end plates, and removable bottom closure panel. Provide manufacturer's standard height fascia as required to conceal roller and shade band assembly when shade is fully open. Provide pocket with lip at lower edge to support acoustical ceiling panel.

.6 Closure Panel and Wall Clip: Removable aluminum panel designed for installation at bottom of site-constructed ceiling recess or pocket and for snap-in attachment to wall clip without fasteners.

.7 Chain Guards: Tested and meeting SOR/2019-97.

Part 3 Execution

3.1 EXAMINATION

.1 Verify installation and substrate conditions in accordance with Section 01 71 00 - Examination and Preparation, and:

.1 there is no visual evidence of biological growth on roller shades.

3.2 INSTALLATION

.1 Install roller window shades as indicated on Drawings in accordance with reviewed Shop Drawings and manufacturer's instructions.

.2 Install roller window shades level, plumb, secure, and at proper height and location relative to curtain wall and window units.

.3 Provide supplementary or miscellaneous items, including hardware, brackets, anchors, fasteners, and accessories required for a complete, finished installation.

.1 Install centre brackets, where required, to prevent headrail deflection.

.2 Install chain guards on all bead chains.

.4 Isolate metal parts from direct contact with concrete, mortar, or dissimilar metals.

.5 Adjust roller window shades for form, appearance, balance, and proper operating condition.

3.3 CLOSEOUT ACTIVITIES

.1 Training:

.1 Appoint manufacturer's authorized representative to train Owner's maintenance personnel in accordance with Section 01 79 00 - Demonstration and Training.

.2 Instruct personnel to adjust, operate, and perform periodic maintenance on roller window shades as well as how to manage roller window shade software.

END OF SECTION

Section 12 48 16
Entrance Floor Grilles

Part 1 General

1.1 SUBMITTALS FOR REVIEW

.1 Submit required submittals in accordance with Section 01 33 00.

.2 Product data sheets:

.1 Submit manufacturer’s Product data sheets for Products proposed for use in the work of this section.

.3 Shop drawings:

.1 Layout of floor grilles including grid and frame, direction of traffic, dimensions, fabrication details, splice locations, profiles, hardware, and accessories.

1.2 CLOSE OUT SUBMITTALS

.1 Submit closeout submittals in accordance with Section 01 78 00.

.2 Operation and maintenance data:

.1 Submit manufacturer’s operation and maintenance instructions for inclusion in the operation and maintenance manuals.

Part 2 Products

2.1 MANUFACTURERS

.1 Acceptable Product: KN Crowder Manufacturing Inc. Model ‘FG-11’.

.1 Aluminum: Type 6061-T6 aluminum alloy.

.2 Finish: Mill finish.

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.

3.2 INSTALLATION

.1 Install the work of this section in accordance with the manufacturer's written requirements.

.2 Mill finish frames in contact with concrete to be primer coated.

.3 Set grid type at height recommended by manufacturer for most effective cleaning action.

.4 Include reinforcing, anchorage and mounting devices required for the installation of each Product.

.5 Back paint components where contact is made with building finishes to prevent electrolysis.

3.3 ADJUSTING

.1 Verify that installed Products function properly, and adjust them accordingly to ensure satisfactory operation.

3.4 CLEANING

.1 Refinish damaged or defective work so that no variation in surface appearance is discernible.

END OF SECTION

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