



Brock University
Scotia Bank Hall Renovation

Brock Project No: DB25-03
aTRR Project No. 2615-24

Technical Specifications
ARCHITECTURAL
ISSUED FOR TENDER

21 March 2025



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Owner: Brock University
1812 Sir Isaac Brock Way
St. Catharines, Ontario, L2S 3A1

Project Number: DB25-03 (Brock University)
2615-24 (architects Tillmann Ruth Robinson)

Project Name: Brock University
Scotia Bank Hall Renovation

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These following specification sections were prepared under the supervision of the following registered coordinating professionals:

ARCHITECTURAL	STRUCTURAL
 <p>The seal is circular with the text "ONTARIO ASSOCIATION of ARCHITECTS" around the top. In the center, there is a signature and the text "MICHAEL GORDON RUTH LICENCE 6560".</p>	 <p>The seal is circular with the text "LICENSED PROFESSIONAL ENGINEER" around the top and "PROVINCE OF ONTARIO" around the bottom. In the center, there is a signature and the text "R. A. STRANGES".</p>
MECHANICAL	ELECTRICAL
 <p>The seal is circular with the text "LICENSED PROFESSIONAL ENGINEER" around the top and "PROVINCE OF ONTARIO" around the bottom. In the center, there is a signature, the text "D. B. VAKARAS", and the date "14 March 25".</p>	 <p>The seal is circular with the text "LICENSED PROFESSIONAL ENGINEER" around the top and "PROVINCE OF ONTARIO" around the bottom. In the center, there is a signature, the text "D. B. VAKARAS", and the date "14 March 25".</p>

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- 1.2 STRUCTURAL DRAWING LIST
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PART 1 LIST OF DRAWINGS

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E-803	ELECTRICAL DETAILS

END OF SECTION

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PART 1 GENERAL

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- 1.2 OWNER HARASSMENT/DISCRIMINATION POLICIES
- 1.3 OWNER POLICY ON SMOKING
- 1.4 CITY INSPECTIONS
- 1.5 NEGLIGENT FALSE ALARMS
- 1.6 BACKFLOW PREVENTION - TESTING

PART 1 GENERAL

1.1 PREPARATION OF CONTRACT DOCUMENTS

- .1 The Consultant will prepare Contract Documents within seven (7) working days of the issue of a Letter of Intent to the General Contractor. These Contract Documents will be delivered to the Owner for review who will in turn pass them on to the General Contractor within five (5) working days. The General Contractor will be expected to sign and return the Contract Documents to the Owner within ten (10) working days of receipt.
- .2 No payments may be made without signed documents regardless of the issue of a Letter of Intent.

1.2 OWNER HARASSMENT/DISCRIMINATION POLICIES

- .1 All documents relating to construction projects are to include the following details as they relate to the Owner Policies on Harassment and Discrimination.
 - .1 Please be advised that the Owner has policies on harassment and discrimination. Contractors are required to ensure that employees and those of subcontractors are advised of these policies.
 - .2 Details of the policies are included in the Owner Policies and Procedures, copies of which are available from the Owner upon request.

1.3 OWNER POLICY ON SMOKING

- .1 All documents relating to construction projects are to include the following details as they relate to the Owner Policy on Smoking.
 - .1 Please be advised that the Owner has a Policy on Smoking. Contractors are requested to ensure that employees and those of subcontractors are advised of the policy.
 - .2 Details of the Policy are included in the Owner Policies and Procedures, copies of which are available from the Owner upon request.

1.4 CITY INSPECTIONS

- .1 The General Contractor will be required to complete the building inspections required for this project by using the local municipality standard forms to facilitate all inspections required by the local municipality. It should be extended to include any other inspections from any statutory authorities. The permit and list shall be displayed together in the site office and copies provided to the Consultant and Owner. As each inspection is arranged and completed the process is to be recorded appropriately and copies forwarded to both the Consultant and Owner for record.

1.5 NEGLIGENT FALSE ALARMS

- .1 The Corporation of the Local Municipal Council has enacted a By-law which allows the municipality to impose fees for certain services provided by the Local Fire Department.
- .2 Negligent false alarms caused by the Contractors work. The Contractor will be levied fees in accordance with the Municipalities charges for all false alarms for which the Contractor is responsible.

1.6 BACKFLOW PREVENTION - TESTING

- .1 The Mechanical Contractor, or the Contractor responsible for the plumbing system, is to be a certified Cross Connection and Backflow Prevention Tester who is registered with the local Municipality. Any testing and/or inspection of the backflow prevention devices (reduced pressure backflow preventers, double check valves, and pressure vacuum breakers) must adhere to the regulations specified by the Municipality, including all testing procedures, and submittals of appropriate testing and inspection reports. The Contractor is to clearly indicate on the submitted forms, the location of the backflow assembly, i.e. building name, room number, and what system on which the device is installed.

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PART 1 GENERAL

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- 1.23 CLEANING
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PART 1 GENERAL

1.1 DESCRIPTION

- .1 Work under this Contract as detailed in the contract documents includes but is not restricted to, the supply of all labour, materials, services and incidentals in order to perform the work.
- .2 Except where specified otherwise, all requirements of Section 01 00 10 General Requirements shall apply to the Work of all other sections of the specifications.

1.2 DOCUMENTS REQUIRED AT JOB SITE

- .1 Maintain at job site, one copy each of following:
 - .1 Drawings and Specification
 - .2 Addenda
 - .3 Change Orders
 - .4 Other modifications to Contract
 - .5 Field review reports
 - .6 Test reports
 - .7 Copy of approval, up to date, work schedule
 - .8 Manufacturer's installation and application instructions
 - .9 Copy of the "Material Safety Data Sheet" (MSDS) for all materials and products on site as required by the "Workplace Hazardous Materials Information System" (WHMIS).
 - .10 A day-to-day record of all work performed
 - .11 Approved shop drawings and samples

1.3 SUBCONTRACTING

- .1 The Contractor cannot subcontract the Work.

1.4 WORK SCHEDULE

- .1 Schedules required
 - .1 Construction progress schedule
 - .2 Schedule of values of the work
 - .3 Schedule for processing shop drawings, product data and samples
 - .4 Schedule for mock-up reviews of the key building components.
- .2 Provide a schedule in accordance with GC 3.5.1 showing anticipated progress stages and final completion of Work within time period quoted in the Bid Form. Schedule to include dates for the following:

- .1 Submission of shop drawings, material lists and samples
- .2 Start and completion of all major elements of Work including removals, structural repairs, interior fit-up, by area of Work
- .3 Substantial completion and total completion
- .3 Submit an updated and revised schedule with each claim for payment.
- .4 Format
 - .1 Prepare schedules in form of horizontal bar chart.
 - .2 Provide separate bar for each trade or operation.
 - .3 Provide horizontal time scale identifying first work day of each week.
 - .4 Format for listings: Chronological order of start of each item of work.

1.5 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Owner's use of premises during construction.
- .2 Adhere to approved construction schedule and coordinate with owner occupancy during construction.
- .3 Construct Work in stages to provide for continuous public usage; Do not close off public usage of facilities until use of one stage of work will provide alternate usage.

1.6 SUBMITTALS

- .1 Administrative
 - .1 Submit to the Consultant submittals listed for review with reasonable promptness and in an orderly sequence as to not cause delay in the Work.
 - .2 Work affected by submittal shall not proceed until review is complete.
 - .3 Review submittals prior to 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 the Work and Contract Documents.
 - .4 Verify field measurements and affected adjacent Work are coordinated.
- .2 Shop Drawings and Product Data
 - .1 "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 the Work.

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- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes and other information necessary for completion of Work.
 - .3 Mark-ups done by Consultant are not intended to change Contract Price.
 - .4 Make changes in shop drawings as consultant may require.
 - .5 Submit four (4) prints of shop drawings for each component requested in specification Sections and as Consultant may request.
 - .6 Submit four (4) copies of product data sheets or brochures for requirements requested in specification Sections and as Consultant may request where shop drawings will not be prepared due to standardized manufacture of product.
- .3 Samples
- .1 Submit for review, samples in triplicate as requested in respective specification Sections.
 - .2 Deliver samples prepaid to Consultant's business address.
- .4 Operating Maintenance Manuals
- .1 Two (2) weeks prior to Substantial Performance of the Work, submit to Consultant, two (2) copies of operating and maintenance manual/documentation upon project completion.
 - .2 Manuals to contain operational information on equipment, cleaning and lubrication schedules, filters, overhaul and adjustment schedules and similar maintenance information.
 - .3 Bind contents in a three-ring, hard covered, plastic jacketed binder. Organize contents into applicable categories of work, parallel to specifications Sections.
- .5 Record Drawings
- .1 After award of Contract, Consultant will provide a set of drawings for purpose of maintaining record drawings. Accurately and neatly record deviations from Contract Documents caused by site conditions and changes ordered by Consultant.
 - .2 Record locations of concealed components of mechanical and electrical services.
 - .3 Identify drawings as "Project Record Copy". Maintain in new condition and make available for review on site by Consultant.
 - .4 On completion of Work and prior to final review, submit record documents to Consultant.
 - .5 Record drawings not submitted on completion of Work will be cause for the Consultant to withhold a retainage amount.

.6 Progress Reports

- .1 Supply for distribution a minimum of every two (2) weeks a written description of the project status and specific information about the work that will affect the building occupants. Increase the frequency of the submission as necessary to keep the Owners informed. Liaise with Owner's Representative and Consultant with respect to all issues impacting the building occupants' use of the site and building.

1.7 PROGRESS CLAIMS

- .1 Progress claims submitted for payment during the course of the project shall be based on the cost breakdown in accordance with the Schedule of Value, or modified as requested by the Consultant at the beginning of the project.
- .2 Progress claims shall be submitted in duplicate the first week of each month for the Work completed the previous month. Only one claim per month shall be submitted.
- .3 A revised and updated work schedule is to be submitted by the Contractor with each progress claim.
- .4 All claims shall be submitted to the Owner's Representative and the Consultant.

1.8 MEASUREMENT FOR PAYMENT

- .1 Notify Consultant sufficiently in advance of operations to permit required measurements for payment.

1.9 CONTRACTOR'S USE OF SITE

- .1 Due to occupancy of the existing buildings and grounds, areas of work, storage, and disposal bin location on site will be designated by the Consultant before commencement of Work. The boundaries established thereby shall be strictly observed. Do not unreasonably encumber site with materials or equipment which interfere with the Owner.
- .2 Obtain and pay for use of additional storage or work areas as needed for operations at no additional expense to the Owner.
- .3 When required for Contractor to conduct the Work, close off access to site by placing barricades or posting guards to prevent access to unauthorized personnel. Unauthorized personnel shall mean the public and anyone not directly concerned with the execution, supervision or inspection of the Work.
- .4 Existing or new roofs areas must be protected with plywood or suitable sheet material if they are to be used for the transportation of materials or equipment or excessive traffic. Coordinate use with the Owner.

- .5 There is no provision for parking of private vehicles for the Contractor's work force or any other vehicles.
- .6 No advertisements or company signs, other than safety or warning signs, are permitted on the building or site.
- .7 The Contractor shall be responsible for care and cleaning of areas within the building that are affected by the Work.
- .8 Washroom Facilities
 - .1 Contractor to provide and maintain washroom facilities for all workers and subtrades. Washrooms inside the building are not to be used by the Contractor.
- .9 Emergency Contact
 - .1 Provide a 24 hour emergency contact telephone number in the event that an emergency arises as a result of the work being undertaken.
 - .2 Ensure that emergency service has a maximum response time of 3 hours and can accommodate all conditions that may arise from the work including water damage, hoarding, security, mechanical failure, electrical failure, gas service interruption, utility interruption, broken glass and any other related failure.
- .10 Access to Interior
 - .1 Co-ordinate interior access with the Owners' Representative with a written notice a minimum of 72 hours prior to commencing work for anywhere work affects the interior public space.
 - .2 All effort must be made to complete all interior work as quickly and efficiently as possible with a minimum amount of disruption to the occupants.

1.10 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

- .1 Provide construction facilities and temporary controls to execute work efficiently. Remove from site all such work after use.
- .2 Erect hoarding to protect public, workers, public and private property from injury or damage.
- .3 Provide sufficient sanitary facilities for workers in accordance with local health authorities. Maintain in clean condition. Existing facilities, if designated for the Contractor's use, are to be maintained throughout the construction period.
- .4 Provide temporary heating required during construction period, including attendance, maintenance and fuel, at no additional cost to the Owner. Ventilate heated areas and keep building free of exhaust or combustion gases.

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- .5 The Owner will provide potable water for construction use.
 - .6 The Owner will pay for power required during construction for the operating of power tools, to a maximum supply of 120 volts 20 amps. Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal. Temporary power in excess of that provided by the Owner is the responsibility of the Contractor.
 - .7 Provide and pay for temporary telephone necessary for own use at no additional charge to the Owner.
 - .8 Prevent overloading of any part of the building. Do not store or stockpile material or equipment on floors or roofs. Do not cut, drill or sleeve any load-bearing structural member.
 - .1 Do not apply undue loads onto slab of underground garage without obtaining written approval from a registered structural engineer.
 - .9 Protect existing Work or Work of other trades from damage. Damaged Work shall be made good by appropriate trades at the expense of the Contractor.
 - .10 Provide weathertight enclosures to unfinished areas or openings, and all openings in roofs. Take precautions to protect openings made in the building from entry of elements and of persons during the Work and to protect existing structure and finishes from damage as a result of the Work. Work damaged or defaced, due to a failure in providing such protection, is to be removed and replaced, or repaired, as directed by the Consultant at no additional cost to the Owner.
 - .11 The Contractor shall provide tarpaulins and/or other coverings for the protection of interior finishes and exterior surfaces adjacent to work areas.
 - .12 Drips or smears of bitumen, adhesives, caulking or sealing compounds on adjacent Work, interior finishes, carpet or furniture, shall be removed completely without damage to the building.
 - .13 Suitable platforms, wheeling stages and/or plywood shall be provided to protect the roof system from possible damage caused by material and equipment being moved, mounted or stored on the roof system.
 - .14 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
 - .15 Provide temporary dust screens, barriers and warning signs in locations where renovation and alteration work is adjacent to occupied areas.

- .16 Execution of Work within occupied premises shall cause a minimum interference with the use of the building. Maintain maximum safety to occupants during Work. Take reasonable measures for control of noise and dust. Dust protection measures will be judged by their effectiveness. Any clean-up required is to be completed by the Contractor at no cost to the Owner.
- .17 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .18 Do not operate any equipment or machinery, or undertake any dust generating operations, near or adjacent to air intakes. Provide protection to air intakes as required to prevent the entry of dust or other contaminants into the building or building mechanical systems or those of the surrounding buildings.
- .19 Dispose of rainwater off roofs and away from the buildings until the roof drains, scuppers, eaves troughs and downspouts are installed and connected properly
- .20 Open fires and burning of rubbish are not permitted on the site.
- .21 Protect existing building, curbs, roads and lanes. If, during work, any portion of the building, curbs, roads or lanes are damaged, the damage shall be repaired at no extra expense to the Owner.
- .22 At commencement of work protect all fences, trees, shrubs, and landscape elements from incidental damage as required.
- .23 Interior Protection:
 - .1 Undertake a pre-construction survey of interior prior to undertaking any work. Record all observations in writing or by photographic or video record and notify the Consultant in writing of any pre-existing conditions prior to commencing work.
 - .2 While working inside, all workmen must, at all times, wear either clean footwear used only for interior work or clean footwear guards.
 - .3 All traffic paths shall be protected by canvas drop cloths and protection of the floors must be maintained at all times. Remove the traffic paths and clean areas at the end of each working day.
 - .4 Repair any interior damage caused by the work.

1.11 PROJECT MEETINGS

- .1 A start-up meeting will be held prior to commencement of Work and at a suitable time and location, as approved by Consultant.

- .2 The Contractor will schedule and administer project progress meetings at least every two (2) weeks. The Contractor shall assume responsibility for recording and distributing minutes within three (3) working days following the meeting. The minutes shall indicate actions to be taken, and by which party.

1.12 CODES AND STANDARDS

- .1 The Specifications are not intended as a detailed description of installation methods, but do indicate particular requirements in the completed Work.
- .2 Conform to the Vancouver Building By-Law, together with all its related supplements, hereinafter referred to as the "Code" or "code". Where Drawings and Specifications exceed the requirements of the code requirements, provide such additional requirements.
- .3 Where a material is designated on Drawings or in the Specifications for a certain application, unless otherwise specified, that material shall conform to standards designated in the applicable Code. Similarly, unless otherwise specified, installation methods and standards of workmanship shall also conform to standards invoked by the aforementioned code.
- .4 Where reference is made to a specification/code/standard, conform to the latest edition of the specification/code/standard, as amended, as of the date of the Contract.

1.13 QUALITY CONTROL

- .1 Work will be reviewed by the Consultant to evaluate general conformance with the contract documents. The Contractor is responsible to maintain quality control over all aspects of the Work.
- .2 Review and testing are specified as precautions against oversight or errors in the performance of the Contract. These precautions do not in any way relieve the Contractor of his responsibility to perform the Work in conformance with the Contract Documents.
- .3 The Owner and the Consultant shall have unlimited access to all Work at any time requested. If parts of the Work are in preparation at locations other than the Place of the Work, access shall be given to such Work whenever it is in progress.
- .4 Give forty-eight (48) hours notice requesting review if Work is designated for review or approvals by the Consultant.
- .5 If the Contractor covers or permits to be covered Work that has been designated for special tests, review, or approvals before such is made, the Contractor must, at its own expense, uncover the Work, have the Work reviewed or tests satisfactorily completed and make good all Work.

- .6 The Consultant may order any part of the Work to be reviewed if such Work is suspected to be not in accordance with the Contract Documents. The Contractor shall be responsible for the cost of examination, replacement or repair.
- .7 Remove defective Work, whether the result of poor workmanship, use of defective products or damage and whether incorporated in the Work or not, which has been rejected by the Consultant as failing to conform to the Contract Documents. Replace or re-execute in accordance with the Contract Documents.
- .8 Make good other Contractor's Work damaged by such removals or replacements promptly.

1.14 SETTING OUT OF WORK

- .1 Line and levels are generally as shown on drawings.
- .2 Verify lines, levels and dimensions and report errors or inconsistencies in the drawings to the Consultant before commencing.
- .3 Examine the Work of others upon which the new Work depends. Report to the Consultant in writing any defects in such Work.
- .4 Assume full responsibility for and execute complete layout of Work to locations, lines and elevations indicated.
- .5 Provide devices and equipment required to lay out and construct Work.
- .6 Drawings are, in part, diagrammatic and are provided to convey the design intent and scope of Work, as well as indicate the general and approximate location, arrangement and size of fixtures and equipment. Obtain more accurate information about locations, arrangements and sizes at the site and become familiar with conditions and spaces affecting these matters before proceeding with Work. Where job conditions require reasonable changes in indicated locations and arrangements, make changes at no additional cost to owner. Similarly, where existing conditions interfere with new installations and require relocation, include such relocation in the Work of this Contract.

1.15 MOCK-UPS

- .1 Prepare mock-ups as requested by the Consultant and where mock-ups are required by the specifications herein.
- .2 Construct in locations as directed by the Consultant.
- .3 Prepare mock-ups for Consultant review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the Work.

- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 Remove mock-ups at conclusion of Work or when acceptable to Consultant.
- .6 The approved mock-up may form part of the completed contract Work at the discretion of the Consultant.

1.16 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Consultant of impending installation and obtain his approval for actual location.
- .4 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .5 All electrical work to be completed by a licensed contractor certified to work the voltage ratings. Acquisition of the necessary permits is the responsibility of the electrical contractor.
- .6 All vents and vent terminations for natural gas or propane fire appliances removed during repairs must be replaced by a licensed gas fitter employed by a registered gas contractor. The installation of gas appliance is to be in accordance with Document MA00-188SA "Reinstallation of Gas Appliance Vents - Update" by the Ministry of Municipal Affairs and as amended by any later regulations.

1.17 ADDITIONAL DRAWINGS

- .1 Consultant may furnish additional drawings to assist proper execution of Work. These drawings will be issued for clarification only. Such drawings shall have same meaning and intent as if they were included in Contract documents.

1.18 CUTTING AND PATCHING

- .1 Submit written request in advance of cutting or alteration which affects the integrity of structural elements, weather-exposed or moisture resistant elements, visual qualities of sight-exposed elements, or Work of the Owner or separate Contractors.
- .2 Inspect existing conditions, including elements subject to damage or movement during cutting and patching. After uncovering, inspect conditions

- affecting performance of the Work. Beginning of cutting or patching means acceptance of existing conditions.
- .3 Perform cutting, fitting, and patching as necessary to complete the Work. Provide openings in non-structural elements for penetrations of mechanical and electrical Work. Prepare proper surfaces to receive patching and finishing. Restore Work with new products in accordance with the Contract Documents or to match existing.
 - .4 At penetration of fire-rated wall, ceiling, or floor construction, completely seal voids with fire rated material for full thickness of construction element.
 - .5 Cut rigid materials using power saw or core drill. Pneumatic or impact tools not allowed.
 - .6 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
 - .7 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

1.19 MATERIAL AND EQUIPMENT

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of the best quality for the purpose intended. If requested, supply evidence as to type, source and quality of products provided. Should any dispute arise as to quality or fitness of items incorporated in the Work, decision rests strictly with the Consultant based upon requirements of the Contract Documents.
- .2 Defective products will be rejected, regardless of previous inspections and/or reviews. Inspections and reviews do 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 Provide and maintain, in a clean and orderly condition, lockable weatherproof trailers for storage of tools, equipment and materials.
- .4 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause the least interference with work activities.
- .5 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .6 Notify the Consultant in writing of any conflict between these specifications and the manufacturer's instructions. The Consultant will designate which document is to be followed.

- .7 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact. Store material and equipment in accordance with supplier's instructions.
- .8 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site.
- .9 Touch-up damaged factory finished surfaces to the Consultant's satisfaction. Use primer or enamel to match original. Do not paint over name plates.
- .10 Store products subject to damage from weather in dry, off-ground, weatherproof enclosures. Remove only in quantities required for same day use.

1.20 REMOVED MATERIALS

- .1 Except as expressly stated otherwise, material indicated for removal becomes the property of the Contractor and shall be taken from the site. Material removed from the site shall be disposed of in accordance with all Federal, Provincial and Municipal regulations.

1.21 WORKMANSHIP

- .1 Workmanship shall be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ any unfit person or anyone unskilled in their required duties. the Owner and the Consultant, reserve the right to require the dismissal from the site any worker(s) deemed incompetent, careless or insubordinate.
- .3 Decisions as to the quality or fitness of workmanship in cases of dispute rest solely with the Consultant, whose decision is final.
- .4 Furnish all labour, materials and equipment to complete the Work as described. "Work as described" includes all incidental items that by implication, good trade practice, or customary usage, are required to complete the Work, even though they may not be specifically mentioned or shown.

1.22 PUBLIC UTILITIES

- .1 Notify Public Utilities and obtain locations of utilities prior to excavation.

1.23 CLEANING

- .1 When the Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for the performance of the remaining Work.
- .2 At least once per day, remove accumulations of waste material and debris. Provide a waste container and remove waste materials and debris from the site at regularly scheduled times or dispose of as directed by the Consultant. Cost for removal and disposal of waste material shall be included in the Contract Price.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Remove dirt and dust, clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, mechanical, electrical fixtures and interior and exterior surfaces. Vacuum carpets. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer. As directed by the Consultant, replace or repair broken, scratched, stained or disfigured building elements.
- .5 Clean roofs, gutters, downspouts, and drainage systems upon completion of the Work.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly repaired surfaces nor contaminate building systems.
- .9 Broom clean paved surfaces, rake clean other surfaces of grounds as directed by the Owner or the Consultant.
- .10 Make good any damage to the landscaping, sodding and flower beds outside the area of Work damaged by the Contractor's equipment, materials or his work force.
- .11 Clean interior areas prior to start of the interior finishing work, maintain areas free of dust and other contaminants during finishing operations.
- .12 Clean the inside of all windows affected by or adjacent to work at the completion of interior repairs.
- .13 Clean the outside of all windows immediately after the completion of the exterior work.

1.24 DOCUMENTS UPON SUBSTANTIAL COMPLETION

- .1 Prior to applying for Substantial Completion, carefully inspect the Work and ensure it is substantially complete.
- .2 Following the date of Substantial Completion, the Contractor is to provide warranties fully executed and notarized.
- .3 Submit a final statement of accounting, giving total adjusted Contract Price, previous payments, and monies remaining due.
- .4 Provide a statutory declaration that all sub trades and suppliers have been compensated for materials and labour.
- .5 Submit certificate of good standing from the Workers' Compensation Board.
- .6 Comply with the requirements of the Construction Act, Ontario. The sixty (60) day lien period shall commence upon the date of Substantial Completion as certified by the Consultant.

1.25 TAKEOVER PROCEDURES

- .1 Notify the Consultant, in writing, of satisfactory completion of the Work and request for the final review.
- .2 During the final review by the Consultant and the Owner, a list of deficiencies and defects will be tabulated. Correct same.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 DESCRIPTION OF WORK
- 1.4 CONSTRUCTION SCHEDULE
- 1.5 SPECIFICATIONS
- 1.6 DIVISION 00 and 01, GENERAL REQUIREMENTS
- 1.7 DRAWINGS
- 1.8 WORK PERFORMED UNDER SEPARATE CONTRACTS
- 1.9 LIST OF MATERIALS AND MANUFACTURERS
- 1.10 EXAMINATION
- 1.11 PROTECTION OF WORK, PROPERTY AND PERSONS
- 1.12 FASTENINGS
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- 1.17 FINISHES, APPEARANCE
- 1.18 CLEANING DURING CONSTRUCTION
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- 1.20 SALVAGE
- 1.21 OWNER OCCUPANCY
- 1.22 EQUIPMENT/ITEMS SUPPLIED BY OWNER FOR INSTALLATION BY CONTRACTOR

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Documents and terminology.
- .2 Associated requirements.
- .3 Work expectations.
- .4 Work by other parties.
- .5 Premises usage.

1.2 RELATED SECTIONS

- .1 Section 01 78 10 - Closeout Submittals.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49

1.3 DESCRIPTION OF WORK

- .1 The modification to Scotia Bank Hall involves renovating the existing open access computer lab and associated seminar room into a series of new computer labs – five (5). The 623m² renovation includes architectural, structural, electrical and mechanical work. The scope of the project includes but is not limited to the following: select demolition, new partitions, doors and frames including door hardware, flooring, ceilings, electrical infrastructure including IT and AV infrastructure, and minor mechanical modifications. The five (5) new labs will continue to support the Department of Computer Science programs. Partial occupancy for the purposes of workstation and computer hardware installation and set-up by Brock is expected August 1, 2025. All work is to be completed **August 29, 2025 (Ready-for-Takeover)** prior to the start of the Fall semester in September.
- .2 Division of the work among subcontractors or other contractors is solely the Contractor's responsibility. Neither the Owner nor Consultant assumes any responsibility to act as an arbiter to establish subcontract items between sectors or disciplines of work.

1.4 CONSTRUCTION SCHEDULE

- .1 Separate from the requirements of the Bid Submission, submit a detailed construction schedule within ten (10) working days of notification of bid acceptance, for approval.
- .2 Correct, revise, update, and otherwise maintain schedule during progress of construction. Supply each corrected, revised and updated schedule to Owner, Consultant, and Subcontractors. Include the Critical Path.
- .3 Prepare schedule as indicated in Section 01 33 00, Submittal Procedures.

- .4 Refer to Appendix E RFP Particulars regarding construction start date and substantial completion.

1.5 SPECIFICATIONS

- .1 Division 01, General Requirements, of the Specifications generally specifies work and coordination that is the direct responsibility of the Contractor, but should not be interpreted to define absolutely the limits of responsibility that must be established between the Contractor and his Subcontractors.
- .2 Ensure that Subcontractors understand that the General Conditions of the Contract, Supplementary Conditions, and Division 01, General Requirements, apply to all sections of the Specifications governing their work.
- .3 Work in these Specifications is divided into descriptive sections which are not intended to identify absolute contractual limits between Subcontractors, nor between the Contractor and his Subcontractors. The Contractor shall organize division of labour and supply of materials essential to complete the Project in all its parts and provide a total enclosure and protection from weather of interior spaces, as established in the General Conditions of the Contract.
- .4 Wherever in the Contract Documents the words "approval", "approved", "direction", "directed", "selection", "selected", "request", "requested", "report", and similar words are used, such approvals, directions, selections, requests and reports shall be given by the Consultant.
- .5 Wherever in the Contract Documents the word "provide" is used in any form, it shall mean that the work concerned shall include both supply and installation of the products required for completion of specified work to which reference is made.
- .6 Wherever in the Contract Documents the word "include" is used in any form, the items of Work listed following shall not be interpreted to be restricted to only those items that are listed.
- .7 Wherever in the Contract Documents the words "indicated" or "shown" are used they shall apply as meaning "indicated on Drawings and/or Schedules" or "shown on Drawings and/or Schedules" unless the context expresses another meaning.
- .8 Wherever in these specifications it is specified that work to which reference is made shall proceed or shall meet approval, direction, selection or request of jurisdictional authorities or others, such approval, direction, selection or request shall be in writing.
- .9 Wherever in these specifications it is specified that work shall be repaired, made good or replaced, it shall be performed without any additional cost to the Owner.

- .10 Wherever in the Contract Documents the term "exposed to view" is used it shall refer to surfaces that are within the line of vision of persons from any accessible viewpoint, both within and without the building. Where any part of a surface is exposed to view, all other portions of that surface shall also be considered as exposed to view.

1.6 DIVISION 00 and 01, GENERAL REQUIREMENTS

- .1 The provisions of all Division 00 and Division 01 and all sections contained therein shall apply to each Section of Divisions 02 to 50, inclusive, which form a part of the specifications for this Project.

1.7 DRAWINGS

- .1 Drawings indicate scope of the Work and the general and approximate location, arrangement and size of fixtures, equipment, ducts, piping, conduit and outlets. The Contractor will determine accurate locations, arrangements and sizes by study and coordination of architectural, structural, mechanical, electric and equipment drawings and shop drawings. Before proceeding with the Work, ensure that spaces and arrangements which affect installations are adequate and coordinated. Where construction conditions require reasonable revisions to indicated locations and arrangements, make such revisions at no additional cost to the Owner.

1.8 WORK PERFORMED UNDER SEPARATE CONTRACTS

- .1 Work which is not to be included in this Contract and/or noted as "N.I.C." and "OS/OI" on the Drawings shall be governed by Amendments to CCDC 2-2020 GC 3.2 herein.
- .2 Work which may be performed under separate contracts or by Owner and which will affect the work of the Contract include:
- .1 The supply and installation of loose furniture.
 - .2 The supply and installation of select equipment.
 - .3 The supply and installation of access control systems.
 - .4 The supply and installation of CCTV cameras and associated equipment.
 - .5 The supply and installation of IP clock units.
 - .6 The supply and installation of IT equipment and IT racks.
 - .7 The supply and installation of audio/visual systems.

1.9 LIST OF MATERIALS AND MANUFACTURERS

- .1 Upon award of the Contract, the Contractor shall within fifteen (15) days submit to the Consultant a complete list of materials together with quality

descriptions, manufacturers and the names of Sub-Contractors responsible for installation and delivery dates.

- .2 Such list must verify compliance with Specifications.
- .3 Materials not complying with Specifications will not be accepted.

1.10 EXAMINATION

- .1 Site: Examine the site and ensure that each Section performing work related to site conditions has examined it, so that all are fully informed on all particulars which affect Project Work.
- .2 Ensure by examination that all physical features at the Work, and working restrictions and limitations which exist are known, so that the Owner is not restricted in his use of the premises for their needs.
- .3 Previously Completed Work
 - .1 Where dimensions are required for proper fabrication, verify dimensions of completed work in place before fabrication and installation of work to be incorporated with it.
 - .2 Verify that previously executed work and surfaces are satisfactory for installation or application, or both and that performance of subsequent work will not be adversely affected.
 - .3 Ensure that work installed in an unsatisfactory manner is corrected by those responsible for its installation before further work proceeds.
 - .4 Commencement of work will constitute acceptance of site conditions and previously executed work as satisfactory.
 - .5 Rejected work resulting from application to, or installation on, or incorporation with, unsatisfactory previous work will be considered the responsibility of those performing the later work.
- .4 Construction Measurements:
 - .1 Before commencing installation of work, verify that the layout is accurate in accordance with intent of Drawings, and that positions, levels, and clearances to adjacent work are maintained.
 - .2 Before commencing any work, verify that all clearances required by jurisdictional authorities can be maintained.
 - .3 If work is installed in wrong location, correct it before construction continues.

- .5 Existing Photographs:
 - .1 Prior to the commencement of the work, prepare a photographic record of both the interior and exterior spaces that clearly demonstrate the existing conditions of sensitive areas including:
 - .1 The main south and secondary west entrance on Level 1.
 - .2 East-west corridor north of the renovation area.

1.11 PROTECTION OF WORK, PROPERTY AND PERSONS

- .1 Provide necessary methods, materials, and construction to ensure that no damage or harm to work, materials, property and persons results from the Work of this Contract. Temporary facilities relating to protection are specified in Section 01 53 00, Temporary Construction.
- .2 Protect excavated areas from damage by frost, and water from natural sources and from backed up drain lines and sewers.
- .3 Keep excavations, basements, and pits free of water. Pump dry as required.
- .4 Protect building from damage by water and exposure to weather. Remove snow and ice immediately from interior of building.
- .5 Protect adjacent private and public property from damage and, if damaged, make good to match in all details. Re-sod and replant damaged lawns and planting to its original condition, except in areas designated to receive landscaping under this Contract or other contracts.
- .6 Keep surfaces, on which finish materials will be applied, free from grease, oil, and other contamination which would be detrimental in any way to the application of finish materials.
- .7 Protect glass and other finishes against heat, slag and weld spatter by provision of adequate shielding.
- .8 Do not permit strippable tape or coatings to become baked on surfaces which they protect.
- .9 Do not apply visible markings to surfaces exposed to view in finished state or that receive transparent finishes.
- .10 Protect existing surfaces and surfaces of completed work exposed to view from staining, disfigurement and all other damage by restriction of access or by use of physical means suitable to the material and surface location. Establish with each Subcontractor the suitability of such protection in each case.
- .11 Schedule finish work at end of construction when interference from tradesmen is at a minimum.

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- .12 Brace and shore masonry walls until their designed lateral support is incorporated at both top and bottom. Do not permit backfilling at masonry walls below grade until floor systems are installed and lateral bracing is thus achieved.
 - .13 Enforce fire prevention methods at site. Do not permit bonfires, open flame heating devices or accumulation of debris. Use flammable materials only if proper safety precautions are taken, both in use and storage.
 - .14 Provide and maintain in working order, suitable U.L.C. labelled fire extinguishers and locate them in prominent locations and to approval of jurisdictional authorities.
 - .15 Do not store flammable materials in the building. Take necessary measures to prevent spontaneous combustion. Place cloths and other disposable materials that are a fire hazard in closed metal containers and remove them from the building every night.
 - .16 Where flammable materials are being applied, ensure that adequate ventilation is provided, spark-proof equipment is used, and smoking and open flames are prohibited.
 - .17 Ensure that volatile fluid wastes are not disposed of in storm or sanitary sewers or in open drain courses.
 - .18 Public Utilities and Services:
 - .1 Verify location of and limitations imposed by, existing mechanical, electrical, telephone and similar services, and protect them from damage. If necessary, relocate active services to ensure that they function continuously in safety and without risk of damage.
 - .2 Cap off and remove unused utility services encountered during work after approval is given by the utilities concerned or jurisdictional authorities, whichever may apply. Relocation, removal, protection and capping of existing utility services shall be performed only by the applicable utility, and of other services by licensed mechanics.
 - .3 Coordinate the capping off, removal and reconnection of a utility with the utility concerned, and make payment for costs involved.
 - .19 Ensure that precautions are taken to prevent leakage and spillage from plumbing and mechanical work that may damage surfaces and materials.
 - .20 Give constant close supervision to roofing and/or waterproofing membranes following their installation, during the time they are temporarily protected or exposed, to ensure that no damage occurs to them before completion of building. Protect especially against damage from traffic or work performed on top of completed roofing when temperature is over 27°C (85°F).
 - .21 Ensure that physical protection and barriers to prevent traffic are installed for waterproofing membranes. Provide barricades or guards to prevent traffic over horizontal membranes until permanent protection is provided.

Inspect membranes with waterproofing Subcontractor before they are finally covered. Make good damaged membranes by Section 01 10 00 Summary of Work.

- .22 Floors:
 - .1 Keep trowelled concrete floors free from oils, grease or other materials likely to damage them, discolour them or affect bond of applied finishes. Keep floors as dry as possible.
 - .2 To prevent soiling or damage to finish flooring where pedestrian traffic occurs after the flooring has been installed, install and maintain 0.152 mm (6 mil) polyethylene membrane or reinforced kraft paper temporary protection, secured in place and with joints sealed by reinforced pressure sensitive tape.
 - .3 Install plywood panels of minimum 6 mm ($\frac{1}{4}$ ") thickness over completed finish flooring materials on which further construction work is performed or delivery of products is made, or both. Seal joints between panels with reinforced pressure sensitive tape.
- .23 Protect metal deck on which construction personnel work, and on which materials are stored, with substantial planking.
- .24 Prevent spread of dust, dirt and other such materials beyond the construction site by wetting, or by other approved means, as it accumulates.
- .25 Provide safety helmets to loan to visitors to the site.

1.12 FASTENINGS

- .1 Include in the work of each Section necessary fastenings, anchors, inserts, attachment accessories, and adhesives. Where installation of devices is in work of other Sections, deliver devices in ample time for installation, locate devices for other Sections and cooperate with other Sections as they require.
- .2 Do not install fiber, plastic or wood plugs or blocking for fastenings in masonry, concrete, or metal construction, unless specified or indicated on Drawings.
- .3 Do not use fastenings which cause spalling or cracking of materials in which installed.
- .4 Do not use powder actuated fastening devices which are stressed in withdrawal on any part of this work without written approval of the Consultant. Take particularly stringent safety precautions when using powder actuated fastenings. Devices and use must comply with CSA A166-1961 "Safety Code for Explosive Actuated Tools" and latest amendment. Only low velocity plunger-type devices are permitted.
- .5 Use only approved driven fasteners.

- .6 Expansion Bolts:
 - .1 Whenever expansion type fastening devices of any kind which rely upon friction forces created by expansion of the device in concrete or masonry are to be used, submit following data to Consultant for review:
 - .1 load carrying capacity of device
 - .2 nature and magnitude of force to be applied to device with supporting data
 - .3 materials to which device is fastened
 - .4 whether device is self-drilling or, if not, the size of bit to be used to drill holes to receive the device
 - .5 installation procedure to ensure that fastener is secure and reliable and that metal reinforcing is not damaged.

The Consultant may request that all such data bear the seal of a professional structural engineer licensed to practice at the location of the Work.
 - .2 If requested by the Consultant, conduct on-site tests of installed fasteners using an approved independent testing company with properly designed and calibrated force measuring apparatus. Costs for such testing shall be borne by the Owner.
- .7 Install metal-to-metal fastenings fabricated of the same metal, or of a metal which will not set up electrolytic action causing damage to fastenings or components, or both. Use non-corrosive or hot dip galvanized steel fastenings for exterior work, and where attached to, or contained within, exterior walls and slabs, unless stainless steel or other material is specifically requested in the affected specification Section. Leave steel anchors bare where cast in concrete.
- .8 Install work with fastenings or adhesives in sufficient quantity to ensure permanent secure anchorage of materials, construction, components, and equipment. Space anchors within limits of load-bearing or shear capacity.
- .9 Space exposed fastenings evenly and in an organized pattern. Keep number to a minimum. Provide exposed fastenings and accessories in same material, texture, colour and finish as adjacent materials on which they occur, unless indicated otherwise.

1.13 LIGHTING FIXTURES AT SUSPENDED CEILINGS

- .1 Ensure that secure support for lighting fixtures is provided by suspended ceilings, or by separate hangers, or by both.
- .2 Coordinate the ceiling system and lighting fixture installations to provide adequate support.

- .3 Submit affidavits with acceptable design information confirming that the installation of the suspended ceiling system and/or separate fixture hangers provided by the lighting fixture installer will provide adequate support for the lighting fixtures without exceeding specified deflection tolerances for the ceiling system.
- .4 Conform to current requirements of the Electrical Inspection Department of Ontario Hydro.

1.14 DIELECTRIC SEPARATION

- .1 Ensure that a dielectric separator approved by the Consultant is provided in a permanent manner over entire contact surfaces to prevent electrolytic action (galvanic corrosion) between dissimilar metals. Similarly, prevent corrosion to aluminum in contact with alkaline materials such as contained in concrete, masonry and like construction.

1.15 EMBEDDED CONDUIT, PIPE AND SLEEVES

- .1 Slabs on Grade:
 - .1 Conduits or pipes embedded in concrete slabs on grade shall not be larger in outside diameter than 1/3 the thickness of the slab, and shall have minimum 50 mm (2") concrete cover to finished surface.
 - .2 Where crossovers occur, one conduit or pipe shall be depressed to pass under the other and subgrade depressed to increase the slab thickness locally.
 - .3 Parallel conduits or pipes shall not be closer than three diameters center to center.
 - .4 For conduits greater than 1/3 slab thickness, depress subgrade to maintain minimum 50 mm (2") concrete above and below conduit, extend coverage 150 mm (6") minimum each side of conduit.
- .2 Suspended Slabs, Beams or Walls:
 - .1 Sleeves, conduits and pipes which pass through suspended slabs, beams or walls, shall be in approved locations which do not impair strength of construction. Space them at not less than 3 diameter o.c.
 - .2 Conduits or other pipes which are continuously embedded in concrete slabs or walls, shall be installed in center of slab or wall, shall have a maximum outside diameter of 50 mm (2"), and shall, in parallel installation, be not less than 150 mm (6") on centers. A maximum of 6 such conduits shall be run in any bay of slab or wall. Crossovers shall not be permitted within slab or wall thickness unless the crossing conduits can remain within the mid third of slab or wall thickness. No conduit other than light (19 mm (3/4") OD maximum) shall be embedded in suspended slabs or walls thinner than 150 mm (6").

1.16 THERMAL EXPANSION AND CONTRACTION

- .1 Conform to manufacturer's recommended installation temperatures. If finishes such as tile, resilient flooring, stone, etc. are installed at temperatures different from operation of service temperatures, make provision for expansion and contraction in service as approved by the Consultant. Repair all resulting damage should expansion provisions prove inadequate.

1.17 FINISHES, APPEARANCE

- .1 Exposed surfaces shall be finished to approval of the Consultant. Colour, tone, texture, grain, pattern, smoothness, flatness, evenness, transparency and translucency matching and appearance of elements in finished surface and of surface shall be to Consultant's approval.

1.18 CLEANING DURING CONSTRUCTION

- .1 The General Contractor will be responsible to keep the site clean during construction to meet the requirements listed below.
- .2 Ensure that spatters, droppings, soil, labels, and debris are removed from surfaces to receive finishes, before they set up. Leave work and adjacent finished work in new condition.
- .3 Use only cleaning materials which are recommended for the purpose by both the manufacturer of the surface to be cleaned and of the cleaning material.
- .4 Maintain premises "broom clean" at all times. Vacuum clean interior areas immediately before finish painting commences.
- .5 Do not burn or bury waste material at site. Remove as often as required to avoid accumulation.
- .6 Do not allow waste material and debris to accumulate in an unsightly or hazardous manner. Sprinkle dusty accumulations with water. Provide containers in which to collect waste material and debris.
- .7 Control lowering of materials. Use as few handlings as possible. Do not drop or throw materials from storeys above grade.
- .8 Ensure that cleaning operations are scheduled to avoid deposit of dust or other foreign matter on surfaces during finishing work and until wet or tacky surfaces are cured.
- .9 Each Section shall supply the Contractor with instructions for final cleaning of his work, and for inclusion in Project Data Book as specified in each trade Section and in Section 01 33 00, Submittals.
- .10 Powerwash all new concrete and stone horizontal surfaces to remove construction vehicle tire markings. This will also apply to concrete curbs. Leave no trace of construction vehicle traffic on the site.

1.19 ADJUSTING

- .1 Ensure that all components of assemblies fit snugly, accurately and in true planes, and that moving parts operate positively and freely, without binding and scraping.
- .2 Verify that work functions properly, and adjust it accordingly to ensure satisfactory operation.
- .3 Lubricate products as recommended by the supplier.

1.20 SALVAGE

- .1 Unless otherwise specified, materials on the site at the time of signing of Contract shall remain property of Owner. The Contractor shall deliver those items indicated on the drawings to the Owner as directed by the Consultant.
- .2 Unless otherwise specified, salvaged material resulting from construction, and surplus materials and construction debris shall become property of Contractor, who shall dispose of it away from site.
- .3 Treasure, such as coins, bills, papers of value, and articles of antiquity, discovered during digging, demolition and cutting at the site shall remain property of Owner, and shall be delivered immediately into his custody.
- .4 When salvage items and materials are delivered to the Owner by the Contractor, the Contractor shall submit to the Owner a Certificate of Receipt which is to be endorsed by the Owner's representative. The Contractor shall incorporate copies of the Certificate of Receipt in the Project Data Books in accordance with Section 01 33 00, Submittals.

1.21 OWNER OCCUPANCY

- .1 The Owner reserves the right to occupy and use portions of the premises, whether partially or entirely completed, or whether completed on schedule or not, provided such occupancy does not interfere with the Contractor's continuing work.
- .2 Partial occupancy or installation by the Owner of his equipment shall not imply acceptance of the Work in whole, or in part, nor shall it imply acknowledgment that terms of the Agreement are fulfilled.
- .3 The Contractor shall not be entitled to indemnity for interference with performance of the Work due to Owner's occupancy of areas of Project prior to Total Performance but after date of Substantial Performance.

1.22 EQUIPMENT/ITEMS SUPPLIED BY OWNER FOR INSTALLATION BY CONTRACTOR

- .1 The Owner intends to supply for installation under this Contract certain pieces of equipment, fittings, furniture, etc.
- .2 Coordinate the shipping and delivery with the Owner.

- .3 Store on site protected from damage.
- .4 Install all pieces of equipment, fittings, furniture, etc. and leave in operating condition.
- .5 The Owner will supply the following items:
 - .1 Fire Extinguishers and Brackets.
 - .2 The following washroom accessories:
 - .1 Paper Towel Dispensers
 - .2 Soap Dispensers
 - .3 Toilet Tissue Dispensers
 - .4 Feminine Hygiene Disposal

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED DOCUMENTS
- 1.3 WORDS AND TERMS
- 1.4 COMPLEMENTARY DOCUMENTS
- 1.5 PRECEDENCE OF DOCUMENTS
- 1.6 SPECIFICATION GRAMMAR

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Words and terms.
- .2 Complementary documents.
- .3 Precedence of Documents.
- .4 Specification grammar.

1.2 RELATED DOCUMENTS

- .1 Section 01 10 00 – Summary of Work.
- .2 This section describes requirements applicable to all sections within Divisions 02 to 49.

1.3 WORDS AND TERMS

- .1 Conform to definitions and their defined meanings in the Agreement and Definitions portion of CCDC 2 for supplementary words and terms.
- .2 The following words and terms are applicable to the Contract Documents for this project:
 - .1 Addendum: A document that amends the Bid Documents during the Bidding Period and becomes part of the Contract Documents when a Contract is executed. (Plural: Addenda)
 - .2 Agreement: The signed and sealed legal instrument binding parties in a Contract, describing in strict terms their mutual arrangement, roles and responsibilities, commencement, and completion responsibilities.
 - .3 Alternative Price: The amount stipulated by a Bidder for an Alternative and stated as an addition, a deduction, or no change to the Bid Price.
 - .4 Bid: To offer as a Bid stating for what price a Contractor will assume a Contract.
 - .5 Bid Documents: A set of documents consisting of the Instructions to Bidders, Bid Form, Contract Documents, and other information issued for the benefit of Bidders to prepare and submit a Bid.
 - .6 Bid Form: The specific and detailed form used to collect information about a Bid.
 - .7 Bidding: The process of preparing and submitting a Bid.
 - .8 Construction Documents: The Drawings and Project Manual. When combined with a Contract and Contract conditions, these documents form the Contract Documents.

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- .9 Contingency Allowance: An additional monetary amount added to a Project cost estimate and designated to cover unpredictable or unforeseen items of Work. The amount is usually based on some percentage of the estimated cost and expended and adjusted by Change Order. It is not intended to cover additions to the scope of Work.
- .10 Cost Plus Contract: A Contract under which a Contractor is reimbursed for the direct and indirect costs for the performance of a Contract and, in addition, is paid a Fee for services. The Fee is usually stated as a stipulated price or as a percentage of cost.
- .11 General Conditions: That part of the Contract Documents which sets forth many of the rights, responsibilities and relationships of the parties involved in a Contract.
- .12 Install: To remove from site storage, move or transport to intended location, install in position, connect to utilities, repair site caused damage, and make ready for use.
- .13 Instructions To Bidders: Instructions contained in the Bid Documents to convey an Owner's expectations and criteria associated with submitting a Bid.
- .14 Request for Information: Requests for Information (RFI's) are documents issued by the Contractor to the Consultant requesting clarification or to obtain additional information where the intent of the Contract Documents is unclear or information is missing.
- .15 Section: A portion of a Project Specification covering one or more segments of the total Work or requirements. Sections are included in a Project manual as required to meet Project requirements.
- .16 Separate Price: A separate price for work to be added to the base price if selected by the Owner. This price type is not a part of the base bid price.
- .17 Standard: A document describing a grade or a level of quality, which has been established by a recognized agency or organization, utilizing an internal voting process.
- .18 Stipulated Price: An amount set forth in a Stipulated Price Contract as the total payment for the performance of the Work. Sometimes referred to as a stipulated sum or a lump sum stipulated price.
- .19 Submittals: Submittals are documents or items required by the Contract Documents to be provided by the Construction Manager, such as:
- .1 Shop Drawings, samples, models, mock-ups to indicate details or characteristics, before the portion of the Work that they represent can be incorporated into the Work; and
 - .2 As-built drawings and manuals to provide instructions to the operation and maintenance of the Work.

- .20 Supply: To acquire or purchase, ship or transport to the site, unload, remove packaging to permit inspection for damage, re-package, replace damaged items, and safely store on-site.
- .21 Tender: A term that was formally abandoned by CCDC and the Canadian Construction industry in the early 1980's in favour of the preferred term Bid.
- .22 Unit Price: The amount payable for a single unit of Work as stated in a Schedule of Prices.

1.4 COMPLEMENTARY DOCUMENTS

- .1 Generally, drawings indicate graphically, the dimensions and location of components and equipment. Specifications indicate specific components, assemblies, and identify quality.
- .2 Drawings, specifications, diagrams and schedules are complementary, each to the other, and what is required by one, to be binding as if required by all.
- .3 Should any conflict or discrepancy appear between documents, which leaves doubt as to the intent or meaning, apply the Precedence of Documents article below or obtain guidance or direction from Consultant.
- .4 Examine all discipline drawings, specifications, schedules, diagrams and related Work to ensure that Work can be satisfactorily executed.
- .5 All specification sections of the Project Manual and Drawings are affected by requirements of Division 01 sections.

1.5 PRECEDENCE OF DOCUMENTS

- .1 In the event of conflict within and between the Contract Documents, the order of priority within specifications and drawings for this project are - from highest to lowest:
 - .1 In the event of conflict within and between the Contract Documents, the order of priority within specifications and drawings are - from highest to lowest:
 - .2 Agreement - Between Owner and Contractor including Definitions,
 - .3 Supplementary Conditions,
 - .4 General Conditions of the Contract,
 - .5 Sections of Division 01 of the specifications,
 - .6 Specifications:
 - .1 Sections of Divisions 02 through 49 of the specifications, and
 - .2 Specifications as annotated on drawings.
 - .7 Schedules and keynotes:
 - .1 Schedules within the specifications, then

- .2 Schedules on drawings.
- .8 Drawings:
 - .1 Drawings of larger scale shall govern over those of smaller scale of the same date, then
 - .2 Dimensions shown on drawings shall govern over dimensions scaled from drawings, then
 - .3 Location of utility outlets indicated on architectural detail drawings takes precedence over positions or mounting heights located on mechanical or electrical drawings.
- .9 Later dated documents shall govern over earlier documents of the same type.
- .2 In the event of conflict between documents, the decision of the Consultant shall be final.
- .3 The requirements stated in Division 01 specification sections apply to all other specification sections within Division 02 to 49. Refer to precedence statements above.

1.6 SPECIFICATION GRAMMAR

- .1 Specifications are written in the imperative (command) mode, in an abbreviated form.
- .2 Imperative language of the technical sections is always directed to the Contractor identified as a primary constructor, as sole executor of the Contract, unless specifically noted otherwise.
 - .1 This form of imperative (command) mode statement requires the primary constructor to perform such action or Work.
 - .2 Perform all requirements of the Contract Documents whether stated imperatively or otherwise.
- .3 Division of the Work among subcontractors, suppliers, or others is solely the prime constructor's responsibility. The Consultant(s) and specification authors assume no responsibility to function or act as an arbiter to establish subcontract scope or limits between sections or divisions of Work.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 APPLICATIONS FOR PROGRESS PAYMENT
- 1.4 PROGRESS PAYMENT
- 1.5 UNIT PRICE ADJUSTMENTS ON DEFICIENT WORK
- 1.6 PROGRESSIVE RELEASE OF HOLD-BACK
- 1.7 SUBSTANTIAL PERFORMANCE OF THE WORK
- 1.8 PAYMENT OF HOLD-BACK ON SUBSTANTIAL PERFORMANCE OF THE WORK
- 1.9 FINAL PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Applications for progress payments.
- .2 Substantial performance procedures.
- .3 Release of hold-back procedures.
- .4 Price adjustments.

1.2 RELATED SECTIONS

- .1 Refer to CCDC 2-2020 for specific requirements.
- .2 Section 01 62 00 - Product Exchange Procedures.

1.3 APPLICATIONS FOR PROGRESS PAYMENT

- .1 Submit an Application for Payment prepared based on templated provided in CCDC 24 - A Guide to Model Forms and Support Documents, current edition, in digital or printed format with an authorized signature.
- .2 Make applications for payment on account as monthly provided in Agreement as Work progresses.
- .3 Accompany applications with the following:
 - .1 CCDC 9A Statutory Declaration of Progress Payment Distribution by Contractor”, current edition, with the second and all subsequent applications.
 - .2 Current copy of Workplace Safety & Insurance Board Clearance Certificate
 - .3 Supporting documents for requested payment.
- .4 Date applications for payment last day of agreed payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work as of that date.
- .5 Submit to Consultant for review, minimum fourteen (14) days before first application for payment, schedule of values for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment.
 - .1 Schedule of Values:
 - .1 Provide an itemized breakdown of the Contract Price in sufficient detail to facilitate the review of the monthly payment applications.
 - .2 The itemized breakdown of Contract Price shall include, but not limited to, the following:
 - .1 General Accounts

- .2 Mobilization
- .3 Supervision
- .4 Bonds and Insurance
- .5 Permits and Licenses
- .6 Operations and Maintenance Manuals/ As-built Drawings
- .7 All principal Subcontracts or parts of the Work, generally in order of Master Specs divisions
- .8 Provision of other Products and/or services
- .9 Cash Allowance Expenditures
- .10 Changes in the Work
- .3 The amounts under each principal Subcontracts, parts of the Work, and provisions of other Products and/or services shall be further broken down into quantifiable separate line items to facilitate evaluation of progress to Consultant's satisfaction.
- .4 The total Contract amount for each principal Subcontracts, parts of the Work, and provisions of other Products and/or services shall be listed beside each item.
- .2 For the purposes of monthly payments, the value of not less than \$5,000.00 per discipline shall be assigned for Maintenance Manuals and As-Built Drawings, including but not limited to:
 - .1 Architectural Maintenance Manuals
 - .2 Architectural As-Built Drawings
 - .3 Structural As-Built Drawings
 - .4 Mechanical, Plumbing, and Electrical Operation and Maintenance Manuals
 - .5 Mechanical, Plumbing and Electrical As-Built Drawings.
- .3 Refer to Appendix 'A' – Schedule of Values Format

1.4 PROGRESS PAYMENT

- .1 Submit a progress payment schedule on CCDC 24 electronic form using an authorized electronic signature, or a printed copy with an authorized signature.
- .2 Accompany applications with a CCDC 9A - Statutory Declaration of Progress Payment Distribution by Contractor, current edition, and current copy of Workplace Safety & Insurance Board Clearance Certificate.
- .3 Consultant will issue to Owner, no later than ten (10) days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be properly due.

- .4 If Consultant amends application, Consultant will give notification in writing giving reasons for amendment.

1.5 UNIT PRICE ADJUSTMENTS ON DEFICIENT WORK

- .1 Reserved

1.6 PROGRESSIVE RELEASE OF HOLD-BACK

- .1 Where legislation permits, if Consultant has certified that Work has been performed prior to Substantial Performance of the Work, Owner will pay hold-back amount retained for such Work, or products supplied, on day following expiration of hold-back period for such Work stipulated in lien legislation applicable to Place of the Work.
- .2 Notwithstanding provisions of preceding paragraph, and notwithstanding wording of such certificates, ensure that Subcontract Work or Products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued

1.7 SUBSTANTIAL PERFORMANCE OF THE WORK

- .1 Submit a schedule of payments on CCDC 24 electronic form using an authorized electronic signature.
- .2 Accompany applications with a CCDC 9A Statutory Declaration of Progress Payment Distribution by Contractor”, current edition, and current Workplace Safety & Insurance Board Clearance Certificate.
- .3 Prepare and submit to the Consultant a comprehensive list of items to be completed or corrected. Failure to include an item on the list does not alter responsibility to complete the Contract.
- .4 Request Consultant review to establish Substantial Performance of the Work.
- .5 Where permitted by local lien legislation, Contractor may apply for substantial performance of a designated portion of the Work, subject to Owner acceptance of that portion of the Work being substantially performed.
- .6 No later than ten (10) days after receipt of list and application, Consultant will review Work to verify validity of application, and no later than seven (7) days after completing review, will notify Contractor if the Work, or the designated portion of the Work, is substantially performed.
- .7 Consultant will state in their certificate the date of Substantial Performance of the Work, or the date of the designated portion of the Work, as applicable.

- .8 Immediately following issuance of certificate of Substantial Performance of the Work. Contractor in consultation with the Consultant will establish reasonable date for finishing Work and advise the owner in writing.

1.8 PAYMENT OF HOLD-BACK ON SUBSTANTIAL PERFORMANCE OF THE WORK

- .1 After issuance of Certificate of Substantial Performance of the Work:
 - .1 Submit an application for payment of hold-back amount.
 - .2 Submit sworn statement that all accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of the Work and for which Owner might in any way be held responsible have been paid in full, except for amounts properly retained as hold-back or as identified amount in dispute.
- .2 After receipt of application for payment and sworn statement, Consultant will issue certificate for payment of hold-back amount.
- .3 Amount authorized by certificate for payment of hold-back amount is due and payable on day following expiration of hold-back period stipulated in lien legislation applicable to Place of the Work.
 - .1 Where lien legislation does not exist or apply, hold-back amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties.
 - .2 Owner may retain out of hold-back amount any sums required by law to satisfy any liens against Work or, if permitted by lien legislation applicable to Place of the Work, other third-party monetary claims against Contractor which are enforceable against Owner.

1.9 FINAL PAYMENT

- .1 Submit an application for final payment on a CCDC 24 electronic form using an authorized electronic signature.
- .2 Consultant will, no later than ten (10) days after receipt of an application for final payment, review Work to verify validity of application. Consultant will give notification that application is valid or give reasons why it is not valid, no later than seven (7) days after reviewing Work.
- .3 Consultant will issue final certificate for payment when application for final payment is determined valid.

END OF SECTION

APPENDIX 'A' SCHEDULE OF VALUES FORMAT

NAME OF PROJECT: _____

Progress Draw No. _____
 Date: _____
 Period Covered: _____

Contractor: _____

ITEM NO.	DESCRIPTION	CONTRACT AMOUNT	%	COMPLETE TO DATE	PREVIOUSLY COMPLETE	CURRENT MONTH	BALANCE TO COMPLETE
	Provide itemized breakdown in accordance with Paragraph 1.3.5.1						
	CASH ALLOWANCES						
	BASE CONTRACT TOTAL						
	CHANGE ORDERS (Including CHANGE DIRECTIVES)						
	CHANGE ORDER TOTAL						
	TOTAL CONTRACT VALUE						

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 COORDINATION
- 1.4 PROJECT MEETINGS
- 1.5 CONSTRUCTION ORGANIZATION AND START-UP
- 1.6 ON-SITE DOCUMENTS
- 1.7 SCHEDULES
- 1.8 CONSTRUCTION PROGRESS MEETINGS
- 1.9 COORDINATION DRAWINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Scheduled progress and Pre-installation meetings.

1.2 RELATED SECTIONS

- .1 Section 01 32 00 - Construction Progress Documentation.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 COORDINATION

- .1 Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, under instructions of Project Manager and Consultant.

1.4 PROJECT MEETINGS

- .1 Schedule and administer bi-weekly project meetings throughout progress of Work as determined by the Consultant.
- .2 Schedule and administer pre-installation meetings when specified in sections and when required to coordinate related or affected Work.
- .3 Prepare agenda for meetings.
- .4 Distribute written notice of each meeting four (4) days in advance of meeting date to all Consultants and Owner.
- .5 Provide physical space and make arrangements for meetings.
- .6 Preside at meetings.
- .7 Record minutes. Include significant proceedings and decisions. Identify action by parties.
- .8 Reproduce and distribute copies of minutes within three (3) days after each meeting and transmit to meeting participants, affected parties not in attendance, Owner and all Consultants.

1.5 CONSTRUCTION ORGANIZATION AND START-UP

- .1 Within fifteen (15) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Consultant(s), Owner, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.

- .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include following:
 - .1 Bid Review
 - .1 Contract Amount/HST
 - .2 Separate Prices
 - .3 Itemized Prices
 - .4 Allowances
 - .5 List of Subcontractors & Suppliers
 - .6 Post Bid Addenda/Negotiations
 - .2 Approvals
 - .1 Building Permit Status
 - .2 Site Plan Approval
 - .3 Owner Internal Approvals
 - .3 Schedule
 - .1 Mobilization
 - .2 Locates and Service Interrupts
 - .1 Owner
 - .2 Ontario One Call
 - .3 Long Delivery Items
 - .4 Phasing
 - .5 Completion
 - .4 Site Set-Up
 - .1 Access & Staging Area
 - .2 Hoarding & Signage
 - .3 Security & Lighting
 - .4 Use of Temporary Services
 - .1 power
 - .2 elevators
 - .3 water
 - .4 washrooms
 - .5 caretaking equipment/ladders, etc.
 - .6 waste holding & removal
 - .5 Parking
 - .6 Keys & I.D.

- .7 Site Contacts
 - .1 Contractor (24 hrs.)
 - .2 Consultants
 - .3 Owner
- .8 Hours of Work
- .9 Building/Ground/Road Closures
- .6 Contract Administration
 - .1 Testing & Inspection
 - .1 Owner
 - .2 Consultants
 - .3 Contractor
 - .2 Shop Drawings
 - .3 Contractors Purchase Orders
 - .4 Site Meetings - set date for 1st
 - .5 Change Orders, Change Instructions, and Supplemental Instructions
 - .6 Progress Draws
 - .7 Correspondence
 - .8 Contract Closeout
 - .1 As-Builts & Manuals
 - .2 Substantial Completion and Holdback
 - .3 WSIB & Stat. Declaration
 - .4 Commissioning
 - .5 Warranties (extended)
 - .6 Spare Materials & Parts
 - .7 Building Permit Inspections
 - .8 Backflow Prevention
 - .9 Balancing & Testing
- .7 Owner Policies and Procedures
- .8 Award
 - .1 Letter of Intent
 - .2 Purchase Order
 - .3 Contract Preparation
 - .1 Proof of Insurance
 - .2 Must name Owner & Consultant
 - .3 Notice of Project - MOL
 - .4 Contractor Safety Policy

- .5 Bonding
- .6 WSIB Clearance Certificate
- .7 Ontario PST Vendor Permit
- .8 Cash Flow Schedule
- .9 Construction Schedule
- .4 CCDC2 - 2020 Contract
 - .1 Payments with Contract only
- .9 Comply with Consultant's allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.
- .10 During construction, coordinate use of site and facilities through Consultant's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
- .11 Comply with instructions of the Consultant for use of temporary utilities and construction facilities.
- .12 Coordinate field engineering and layout work with the Consultant.

1.6 ON-SITE DOCUMENTS

- .1 Maintain at job site, one copy each of the following:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed shop drawings.
 - .5 Change orders.
 - .6 Other modifications to Contract.
 - .7 Field test reports.
 - .8 Copy of approved Work schedule.
 - .9 Manufacturers' installation and application instructions.
 - .10 Labour conditions and wage schedules.
 - .11 Applicable current editions of municipal regulations and by-laws. Current building codes, complete with addenda bulletins applicable to the Place of the Work.

1.7 SCHEDULES

- .1 Submit preliminary construction progress schedule as specified in Section 01 32 00 to Consultant coordinated with Consultant's project schedule.
- .2 After review, revise and resubmit schedule to comply with revised project schedule.
- .3 During progress of Work revise and resubmit as directed by Consultant.

1.8 CONSTRUCTION PROGRESS MEETINGS

- .1 During course of Work and weeks prior to project completion, schedule progress meetings bi-weekly.
- .2 Contractor, major subcontractors involved in Work, Owner and Consultant are to be in attendance.
- .3 Notify parties minimum five days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three days after meeting.
- .5 Agenda to include following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for effect on construction schedule and on completion date.
 - .12 Review site safety and security issues.
 - .13 Other business.

1.9 COORDINATION DRAWINGS

- .1 Provide coordination Drawings.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 SCHEDULES
- 1.4 CONSTRUCTION PROGRESS SCHEDULING
- 1.5 CRITICAL PATH SCHEDULING
- 1.6 PROGRESS PHOTOGRAPHS

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Schedules, form, content, submission.
- .2 Critical path scheduling.
- .3 Progress photographs.
- .4 Submittals schedule.

1.2 RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 12.
- .2 Section 01 33 00 - Submittal Procedures.

1.3 SCHEDULES

- .1 Submit schedules as follows:
 - .1 Submittal Schedule for Shop Drawings and Product Data.
 - .2 Submittal Schedule for Samples.
 - .3 Submittal Schedule for timeliness of Owner-furnished Products.
 - .4 Product Delivery Schedule.
 - .5 Cash Allowance Schedule for acquiring Products only or Products and Installation, or Installation only.
 - .6 Shutdown or closure activity.
- .2 Schedule Format.
 - .1 Prepare schedule in form of a horizontal Gantt bar chart.
 - .2 Provide a separate bar for each major item of work.
 - .3 Split horizontally for projected and actual performance.
 - .4 Provide horizontal time scale identifying first Working Day of each week.
 - .5 Format for listings: Chronological order of start of each item of work.
 - .6 Identification of listings: By specification section numbers.
- .3 Schedule Submission.
 - .1 Submit initial format of schedules within fifteen (15) days after award of Contract.
 - .2 Submit schedules in electronic format, forward through e-mail as.pdf files.
 - .3 Submit one (1) electronic copy to be retained by Owner.
 - .4 Owner will review schedule and return review copy within ten (10) days after Owner receipt.

- .5 Resubmit finalized schedule within seven (7) days after return of review copy.
- .6 Submit revised progress schedule with each application for payment.
- .7 Distribute copies of revised schedule to:
 - .1 Job site office.
 - .2 Subcontractors.
 - .3 Other concerned parties.
- .8 Instruct recipients to report to Contractor within ten (10) days, any problems anticipated by timetable shown in schedule.

1.4 CONSTRUCTION PROGRESS SCHEDULING

- .1 Submit initial schedule in duplicate within fifteen (15) days after date of Owner-Contractor Agreement.
- .2 Revise and resubmit as required.
- .3 Submit revised schedules with each Application for Payment, identifying changes since previous version.
- .4 Submit a computer-generated chart with separate line for each section of Work, identifying first work day of each week.
- .5 Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- .6 Indicate estimated percentage of completion for each item of Work at each submission.
- .7 Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.
- .8 Include dates for commencement and completion of each major element of construction.
- .9 Indicate projected percentage of completion of each item as of first day of month.
- .10 Indicate progress of each activity to date of submission schedule.
- .11 Indicate changes occurring since previous submission of schedule:
 - .1 Major changes in scope.
 - .2 Activities modified since previous submission.
 - .3 Revised projections of progress and completion.
 - .4 Other identifiable changes.
- .12 Provide a narrative report to define:
 - .1 Problem areas, anticipated delays, and impact on schedule.

- .2 Corrective action recommended and its effect.
- .3 Effect of changes on schedules of other prime contractors.

1.5 CRITICAL PATH SCHEDULING

- .1 Include complete sequence of construction activities.
- .2 Include dates for commencement and completion of each major element of construction.
- .3 Show projected percentage of completion of each item as of first day of month.
- .4 Indicate progress of each activity to date of submission schedule.
- .5 Show changes occurring since previous submission of schedule:
 - .1 Major changes in scope.
 - .2 Activities modified since previous submission.
 - .3 Revised projections of progress and completion.
 - .4 Other identifiable changes.
- .6 Provide a narrative report to define:
 - .1 Problem areas, anticipated delays, and impact on schedule.
 - .2 Corrective action recommended and its effect.
 - .3 Effect of changes on schedules of other prime contractors.

1.6 PROGRESS PHOTOGRAPHS

- .1 Digital Photography:
 - .1 Submit electronic copy of colour digital photography in *.jpg format, minimum 4 megapixel resolution.
 - .2 Identification: Name and number of project and date of exposure indicated.
- .2 Frequency: Monthly with progress statement.
- .3 Number of photos required:
 - .1 Prior to construction: Provide necessary number of photographs, as required to document existing conditions to verify damage to adjacent property which may or may not have occurred during construction: minimum 12 photos.
 - .2 Each progress draw: Provide twenty-four (24) construction photographs each month to accompany each application for progress draw to document the stage of the work from points selected by the Consultant showing as much as possible of the work installed during the previous month.

- .3 Provide minimum of eight (8) photographs on each Meeting Report and for each Progress Meeting.
- .4 Completion: when the work is completed, contractor shall arrange to take final photographs of the project from a minimum of six (6) points of view.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 ADMINISTRATIVE
- 1.4 SHOP DRAWINGS AND PRODUCT DATA
- 1.5 SAMPLES
- 1.6 CERTIFICATES AND TRANSCRIPTS

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 32 00 - Construction Progress Documentation.
- .2 Section 01 78 10 - Closeout Submittals.
- .3 Other sections requesting submittals.
- .4 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 ADMINISTRATIVE

- .1 Submit to Consultant submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Present Shop Drawings, product data, samples and mock-ups in Imperial inch-pound units.
- .4 Review submittals prior to 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.
- .5 Submittals not stamped, signed, dated, identified as to specific project, and attesting to their being reviewed will be returned without being examined and shall be considered rejected.
- .6 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field 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 (1) reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "Shop Drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 The Consultants will review each submission and return in a timely manner.
- .4 Adjustments made on Shop Drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .5 Make changes in Shop Drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of any revisions other than those requested.
- .6 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .7 Submissions shall 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 field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.

- .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 other parts of the 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 copy 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 Delete information not applicable to project.
 - .12 Supplement standard information to provide details applicable to project.
 - .13 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 re-submission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.5 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to 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 prior to 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.

1.6 CERTIFICATES AND TRANSCRIPTS

- .1 Submit to the Consultant within two (2) weeks after award of contract the following:
 - .1 Workers Compensation Bond status.
 - .2 Insurance Forms.
 - .3 Performance Bond.
 - .4 Materials and Labour Bond.
 - .5 Monthly billing format indicating detailed line items and values.
 - .6 Sample of quotation format.
 - .7 Construction Schedule.
 - .8 Shop Drawing Schedule.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 WORK IN EXISTING BUILDINGS – GENERAL
- 1.4 DEFICIENCY LIST
- 1.5 SCHEDULING
- 1.6 PROTECTION
- 1.7 REMOVAL OF EXISTING WORK AND SALVAGE
- 1.8 NEW AND REPLACEMENT WORK
- 1.9 CONTRACTOR'S USE OF EXISTING BUILDINGS
- 1.10 INTERRUPTION OF SERVICES
- 1.11 EXISTING SERVICES
- 1.12 FIRE SEPARATIONS
- 1.13 FIRE SAFETY DURING CONSTRUCTION IN EXISTING BUILDINGS
- 1.14 SPECIAL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Work in existing buildings.
- .2 Connecting to existing services.
- .3 Special scheduling requirements.

1.2 RELATED SECTIONS

- .1 Section 01 53 00 - Temporary Construction.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 WORK IN EXISTING BUILDINGS – GENERAL

- .1 Perform Work in or on existing buildings in accordance with each applicable Section of the Specification, together with architectural, structural, mechanical, and electrical Drawings in their entirety as they apply.
- .2 Schedule demolition to avoid interference with progress of new construction Work, and the operation of the existing buildings.
- .3 Make existing building surfaces straight and true where existing walls are removed to suit new layout. This Work includes grinding down or filling of existing floor toppings which may be uneven between existing rooms, to result in flat, level floors in the finished Project.
- .4 Where existing walls are removed to form a new room layout, base profile shall be made the same for each wall, full length of wall. Where door or wall openings are blocked-up extend base profile across patched wall area.
- .5 Make good substrate for all floor and base finishes.
- .6 Patching or replacement of damaged Work shall be done by workers experienced in the type of Work to be patched. Make patches indistinguishable in final assembly. Paint surfaces out, wall-to-wall in accordance with requirements of Section 09 21 16, where areas are patched.
- .7 Contractor shall take necessary precautions to keep noise volumes to a minimum so as not to disrupt adjacent occupied buildings.

1.4 DEFICIENCY LIST

- .1 Before beginning Work and admittance of any workers on the site, the Contractor shall furnish the Owner with a report in the form of photographs and a deficiency list, covering all fittings, fitments, fixtures, surfaces, and any other building component in the existing buildings and exterior building

surfaces or site Work where Work is being done, whose proximity to alteration Work renders it vulnerable to damage.

- .2 Any deficiency not recorded in the report will result in the Contractor being required to make good such deficiency without an increase to the Contract Price.

1.5 SCHEDULING

- .1 Provide and maintain continuation of fire protection, fire walls and fire rated assemblies in existing buildings.
- .2 Execute Work as quietly as possible in and around existing buildings at all times. Schedule noisy operations with Owner to achieve least disturbance. The use of powder activated fastening devices shall not be permitted on this project without written consent from the Owner.

1.6 PROTECTION

- .1 Work shall include temporary, weathertight, dust tight, and lockable partitions to enclose areas within the existing buildings where Work is being performed.
- .2 Provide weatherproof coverings over openings made in walls and roofs of existing buildings, immediately they are opened.
- .3 Protection of existing buildings, including roofs, shall be substantial enough to prevent damage to them by falling objects, demolition, and mandatory construction traffic during new Work.
- .4 Protection of property in, or on, existing buildings shall include equipment, furniture, and other similar furnishings, hardware, trim, and supplies, whether fixed to buildings or not.
- .5 Take all precautions to ensure that no structural damage is caused to existing buildings by demolition and alteration Work, or by new construction.
- .6 Ensure during demolition Work that materials, components, and similar items to be reused are protected from damage, and that measures are taken to keep down dust.
- .7 Take extraordinary means to protect relics, stained glass windows, weathered surfaces, and materials and components which cannot be replaced.
- .8 Perform all work relating to temporary controls and temporary construction according to the provisions of CSA Standard Z317.13-07 Infection Control During Construction.

1.7 REMOVAL OF EXISTING WORK AND SALVAGE

- .1 Store and protect relocated items until built into new locations.

- .2 Limit removal of items to smallest areas possible, and make good disturbed existing Work.
- .3 Salvageable items may be used in new Work where suitable and approved by Owner.
- .4 Materials not relocated and recovered from Work in existing buildings, shall become the property of the Contractor and shall be disposed of away from site, except for the following which shall remain the property of the Owner. The following materials or equipment shall be carefully removed, protected and transported to Owners' place of storage:
 - .1 Reserved.
- .5 Remove debris and accumulated dirt from existing buildings immediately as it accumulates. Ensure that during removal operations through the existing buildings that existing Work is not damaged and dirt, debris, and dust is not spread.
- .6 Maintain Work areas in existing buildings constantly broom clean to avoid tracking of dirt into adjacent areas. Immediately clean up debris resulting from Work of Contract that is deposited in existing buildings outside of Work areas. Make a daily inspection to ensure that Work and construction access areas are maintained clean and undamaged as specified.
- .7 Comply with Article on Cutting and Patching in Section 01 73 30 for similar Work in existing buildings.

1.8 NEW AND REPLACEMENT WORK

- .1 Make good materials, and prepare surfaces and refinish all finished surfaces damaged, marred, replaced, or otherwise remedied in the existing building.
- .2 Finish new surfaces flush with existing surfaces. Make junctions between existing and new Work, or at replaced or remedial Work indistinguishable. Make surfaces adjacent to one another of the same material, unit sizes, colour, and texture. If this is impossible, make a proposal of intended method of making good for the Consultant's approval, before installation.
- .3 Preparation for New Finish Flooring:
 - .1 Remove existing finish flooring as noted on drawings and schedules.
 - .2 Fill cracks and depressions with filler suitable for subfloor and new flooring as recommended by flooring manufacturer, and finish smooth.
 - .3 Grind protrusions level with subfloor and finish smooth.
 - .4 Remove all evidences of existing adhesive, grease, oil, soil and other encrustations of foreign material by washing, scraping and grinding if necessary.
 - .5 Rinse subfloor clean, and vacuum clean.

1.9 CONTRACTOR'S USE OF EXISTING BUILDINGS

.1 Construction Areas:

A Construction Area does not include an area that is occupied by the Owner and Public. The following areas are designated as Construction Areas and shall be secured by the Contractor to separate and prevent the Owner and the Public from entering the work space without authorization by the Contractor.

- .1 The existing Scotia Bank Hall Computer Commons that is subject to the interior renovation.
- .2 Spaces within the vicinity of the main entrance of the Scotia Bank Hall Computer Commons that are separated by interior hoardings as indicated on the drawings.

.2 Owner Occupied Areas:

The Owner may occupy any area that is not considered a "Construction Area" and shall include but not be limited to:

- .1 Any area that is not a Construction Area.

.3 Work in Owner Occupied Areas:

The Contractor shall submit to the Owner a written Safe Work Plan and Procedure a minimum of one (1) week prior to the Contractor's proposed start date for any Work including the delivery of materials and equipment that is within an Owner-Occupied area. The Work shall not proceed unless the Owner provides a written consent to proceed with Work which may be withheld until the Contractor demonstrates that the Owner's staff, members or guests are not at risk of injury that could result from the Work. The Safe Work Plan and Procedure shall include the following:

- .1 A description or diagram indicating the Work to be performed,
- .2 A description or diagram indicating the limits of the work areas including a description of all temporary barricades, hoardings and protection.
- .3 The proposed access route to the work area,
- .4 The proposed start and completion date, days to be worked and hours of work,
- .5 A detailed plan and procedure for ensuring that the Owner's staff, members or guests are protected from any risk of injury as a result of the Contractor performing Work in the Owner-Occupied Area.
- .6 06:00 to 18:00, 5 days per week.

.4 Contractor Hours of Work:

Unless the Contractor has received written consent from the Owner for an alternate Contractors Work Plan and Procedure, the Contractor shall work the following times:

- .1 Normal working hours are 7:00 a.m. to 5:00 p.m. daily.
- .2 Extended working hours from 6:00 am to 6:00 p.m. or later daily if necessary.
- .5 Premium Time Costs:

The Contractor shall be responsible for all overtime and premium labour and services costs required to complete the work within the Contract Time, in all areas. Contractor's schedule shall reflect the required after hours work.
- .6 Assume total responsibility for security of Construction Area upon commencement of Work except for those areas specifically retained by the Owner for his exclusive use during Construction.
- .7 Secure existing buildings except for those parts retained by the Owner for his use, by methods compatible with the total security established for building.
- .8 Construction personnel shall use areas of the existing buildings only in a manner as determined by the Work.
 - .1 Prohibit use of washroom and services in existing buildings by construction personnel.
- .9 Contractor's access to the project area(s) of Work shall be as directed by the Owner.
- .10 The Contractor shall be responsible for scheduling the use of the elevators, providing temporary protection for the elevators only when the elevators are intended to be used by the contractors and paying for all costs associated with repairing any damage to the elevators resulting from the Contractors use of the elevators.

1.10 INTERRUPTION OF SERVICES

- .1 Prior to commencing with the demolition and removals, the Contractor shall trace and locate all existing mechanical and electrical services in the area of the Work. The Contractor shall take care to ensure that existing services are not interrupted as a result of performing the work. If existing services are damaged or interrupted as a result of the Contractor's construction operation, the Contractor shall immediately repair and make the service operational and shall be responsible for all costs to repair and make good. Existing services shall include but not be limited to all plumbing, heating, ventilating, air conditioning, fire alarm, life safety, security, utility services including water, electricity, natural gas, telephone, cable TV, internet service and data communications.

1.11 EXISTING SERVICES

- .1 Ensure that existing services are not damaged during demolition and construction. Immediately cut off and cap concealed services uncovered during Work by qualified mechanical and electrical workers.
- .2 Relocate exposed existing mechanical and electrical services where alteration Work occurs.
- .3 Do not interrupt mechanical or electrical services of the existing buildings except for temporary close-downs to make connections to new Work, and as approved by prior arrangements with Owner. Give the Owner seven (7) working days 'notice of intention to interrupt mechanical or electrical services in existing buildings in any area, and obtain written permission from Owner.
- .4 Should existing services be accidentally uncovered and disrupted, make complete restoration immediately, and provide adequate protection to avoid further disruption until alternative means of providing permanent continuation of the services are made.
 - .1 Payment for Work specified in the foregoing shall be made by the Contractor at no additional cost to the Owner, if, in the opinion of the Owner, such Work could have been foreseen at time of tendering and which has been caused by lack of proper care and protection.
 - .2 Payment for Work specified in the foregoing shall be paid for by the Owner at standard rates established in the industry if, in the opinion of the Owner, such Work could not have been foreseen at time of tendering.
 - .3 Advise Owner of the commencement, duration and termination dates of this Work. Contractor shall keep a record of work hours, number of workers, tools, equipment rentals, quantities of material used, mileage, etc. to present with his claim if requested by Owner.
- .5 Unless otherwise specified, restore services on which Work is performed to original condition.

1.12 FIRE SEPARATIONS

- .1 Ensure that fire separations are installed to maintain total integrity and that they are not breached by Work following their installation.
- .2 Replace fire separations which have suffered a lessening of their required rating during construction.
- .3 Existing walls and partitions which are shown on the Drawings as fire separations are assumed to provide the degree of separation indicated.
- .4 The Contractor shall inspect Fire Separation partitions in their entirety to ensure that they form a continuous separation from the floor to the underside of the structural slab above. Any instance where an existing

partition shown as being fire-rated does not form a continuous separation shall be brought to the attention of the Owner so that remedial action can be instituted.

1.13 FIRE SAFETY DURING CONSTRUCTION IN EXISTING BUILDINGS

- .1 **Maintaining Building Exits:** All exits, including stairways and exterior doors to the outside, serving the existing buildings shall be maintained. Where an exit is blocked off or deleted due to construction activities, an acceptable alternative exit shall be provided.
- .2 **Fire Department Access:** Construction activities shall not obstruct the access roadways designated for fire department equipment. If it is necessary that existing access be obstructed or deleted, alternative access, acceptable to the fire department, shall be pre-planned and provided prior to commencement of construction. Section 2.5 of the Fire Code provides the design criteria for required access routes.
- .3 **Combustible Materials:** Stockpiling of construction materials adjacent existing buildings shall be carefully controlled. The Ontario Fire Code prohibits such storage where the materials create a fire hazard to the existing buildings or its occupants. Materials stored and equipment used in the portion of the buildings under construction could create a fire hazard; for instance, the storage of excessive amount of foam plastic insulation or the placement of open flame portable heating appliances. The control of combustibles on a construction site is also regulated under the Occupational Health and Safety Act.
- .4 **Temporary Protection of Openings in Fire Separations:** Openings in existing floor assemblies and vertical fire separations necessitated by installation of equipment and systems or construction in general shall be temporarily sealed with fire barrier materials such as mineral wool or other non-combustible insulation.
- .5 **Existing Fire Alarm Systems:**
 - .1 Existing FIRE ALARM SYSTEM is to remain active at all times. Wrap detectors and devices in plastic in the area to prevent false alarms. All alterations to existing fire alarm system are to be coordinated with the Owner. Should the fire alarm system need to be deactivated, deactivation will be done on a daily basis from 8:30 am to 15:30 pm. A minimum of four (4) hours advance notice is required for extended hours.
 - .2 Use of battery powered smoke alarms in a construction Site may be considered if written approval is obtained by the Project Co. from the Local Fire Department and presented to the Owner.
 - .3 False fire alarms in the construction area that result in the Local Fire Department responding to the site and are due to the Contractor or their Sub's failure to obtain confirmation of a deactivated system will

- result in the Owner invoicing the Contractor for costs at the rate determined by Fire Department Bylaw charge, per occurrence.
- .4 Provide minimum 24 hours of advance notification to alert St. Catharines dispatch of the shutdown by calling: 905-684-4311.
 - .6 **Existing Fire Protection Systems:** Conform to the appropriate requirements in the Ontario Fire Code, where temporary shut down of sprinkler systems, standpipe systems or other fire protection systems are necessary due to alterations, repairs or extensions.
 - .1 Provide minimum 24 hours of advance notification to alert St. Catharines dispatch of the shutdown by calling: 905-684-4311.
 - .7 **Fire Watch:** Fire watch requirements during the construction period shall be performed by the Contractor. The Contractor shall provide an adequate number of portable fire extinguishers in the areas of Work.

1.14 SPECIAL REQUIREMENTS

- .1 Welding Procedure Guidelines:
 - .1 The following is a minimum standard for any welding procedures required for this Project.
 - .1 Equipment and Protection
 - .1 Provide protective screens around welding areas;
 - .2 Provide an adequate number of fire extinguishers;
 - .3 Provide protective garments, eyeglasses and gloves;
 - .4 Provide smoke and fume exhaust system;
 - .5 Provide signage to protect occupants from potential injury.
- .2 Noise and Vibration Control
 - .1 The Contractor shall schedule construction activities that produce noise and vibration to minimize the impact on the Owner's Operations and Services. The main interior demolition and removal operations shall be expedited and completed as early as possible in the construction program and executed with a minimal number of mobilizations.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SAFETY PLAN
- 1.5 RESPONSIBILITY
- 1.6 SUBMITTALS
- 1.7 SAFETY ACTIVITIES
- 1.8 HEALTH AND SAFETY COORDINATOR
- 1.9 POSTING OF DOCUMENTS
- 1.10 CORRECTION OF NON-COMPLIANCE
- 1.11 WORK STOPPAGE
- 1.12 FIRE PROTECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Safety requirements and adherence.

1.2 RELATED SECTIONS

- .1 Section 01 31 00 - Project Managing and Coordination.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

- .1 Province of Ontario: Occupational Health and Safety Act, Regulation and Code R.S.A -Amended 1995, including requirements for a "Prime Contractor" as defined by the Act.

1.4 SAFETY PLAN

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.5 RESPONSIBILITY

- .1 Reserved.

1.6 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00.
- .2 Submit site-specific Health and Safety Plan: Within ten (10) days after award of contract and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of safety and health risk or hazard analysis for site tasks and operation.
 - .2 Results of site specific safety hazard assessment.
- .3 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to authority having jurisdiction.
- .4 Submit copies of reports or directions issued by Federal, Provincial health and safety inspectors.

- .5 Submit copies of incident and accident reports.
- .6 Submit Material Safety Data Sheets (MSDS) to Consultant.
- .7 Consultant's review of Contractor's Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.
- .9 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.
- .10 File Notice of Project with Provincial authorities prior to commencement of Work.

1.7 SAFETY ACTIVITIES

- .1 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.
- .2 Perform Work in accordance with Section 01 41 00 - Regulatory Requirements and this section.
- .3 Work shall include protection measures consisting of materials, constructions and methods required by the Occupational Health and Safety Act, 2006 as amended, of the Province of Ontario, and as otherwise imposed by jurisdictional authorities to save persons and property from harm.
- .4 Ensure that pollution and environmental control of construction activities are exercised as required during the Work.
- .5 Except where special permission is obtained, maintain clear access for roads and sidewalks on public property.
- .6 Maintain roads and sidewalks clear of construction materials and debris, including excavated material, according to the local Municipality standards and requirements. Clean roads and sidewalks as frequently as required to ensure that they are cleared of materials, debris and excavated materials.
- .7 Remove snow and ice from sidewalks as required by the Municipality.

1.8 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - .1 Have working knowledge of occupational safety and health regulations.

- .2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .3 Be responsible for implementing, enforcing and monitoring site-specific Contractor's Health and Safety Plan.

1.9 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

1.10 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.11 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

1.12 FIRE PROTECTION

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

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 LAWS, NOTICES, PERMITS AND FEES
- 1.4 HAZARDOUS MATERIAL DISCOVERY
- 1.5 PERSONNEL SMOKING
- 1.6 REFERENCE STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Laws, notices, permits and fees.
- .2 Discovery of hazardous materials.

1.2 RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 LAWS, NOTICES, PERMITS AND FEES

- .1 The laws of the Place of the Work shall govern the Work.
- .2 The Owner shall obtain and pay for the building permit, permanent easements and rights of servitude. The Contractor shall be responsible for permits, licenses or certificates necessary for the performance of the Work which were in force at the date of executing the Agreement.
- .3 Give the required notices and comply with the laws, ordinances, rules, regulations or codes which are or become in force during the performance of the Work and which relate to the Work, to the preservation of the public health and to construction safety.
- .4 If the Contractor knowingly performs or allows work to be performed that is contrary to any laws, ordinances, rules, regulations or codes, the Contractor shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations or codes.
- .5 Determine detailed requirements of authorities having jurisdiction.
- .6 Pay construction damage deposits levied by municipality in connection with the issuance of a building permit.

1.4 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: If material resembling asbestos is encountered in course of demolition work, immediately stop work and notify Consultant.

1.5 PERSONNEL SMOKING

- .1 Comply with regulatory and Owner imposed smoking restrictions during execution of the Work within or outside the premises.

1.6 REFERENCE STANDARDS

- .1 Standards, specifications, associations and regulatory bodies are generally referred to throughout the specifications by their abbreviated designations. These are, but not necessarily limited to:

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- | | | |
|-----|-------|--|
| .1 | AA | The Aluminum Association |
| .2 | AAMA | Architectural Aluminum Manufacturers Association |
| .3 | ACI | American Concrete Institute |
| .4 | AISI | American Iron and Steel Institute |
| .5 | ANSI | American National Standards Institute |
| .6 | ASTM | American Society for Testing and Materials |
| .7 | AWI | Architectural Woodwork Institute |
| .8 | AWMAC | Architectural Woodwork Manufacturers' Association of Canada |
| .9 | CGSB | Canadian General Standards Board (designated CAN/CGSB) |
| .10 | CISC | Canadian Institute of Steel Construction |
| .11 | CPMA | Canadian Paint Manufacturers Association |
| .12 | CSA | Canadian Standards Association (designated CAN/CSA) |
| .13 | CSSBI | Canadian Sheet Steel Building Institute |
| .14 | MFMA | Maple Flooring Manufacturers Association |
| .15 | MTC | Ministry of Transportation and Communications, Ontario |
| .16 | NBC | National Building Code |
| .17 | OAA | Ontario Association of Architects |
| .18 | OBC | Ontario Building Code |
| .19 | OGCA | Ontario General Contractors Association |
| .20 | SAE | Society of Automotive Engineers |
| .21 | ULC | Underwriters Laboratories of Canada |
| .22 | ULI | Underwriters Laboratories Incorporated |
| .23 | USAS | United States of America Standards, of American National Standards Institute |
- .2 Where edition date is not specified, consider that references to manufacturer's and, published codes, standards and specifications are made to the latest edition (revision) approved by the issuing organization, current at the date of the Specifications.
- .3 Reference standards and specifications are quoted in the Specifications to establish minimum standards. Work of quality or of performance characteristics that exceeds these minimum standards will be considered to conform.
- .4 Should the Contract Documents conflict with specified reference standards or specifications, the more stringent in each case shall govern.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 INSPECTION BY AUTHORITY
- 1.5 REVIEW BY CONSULTANT
- 1.6 INDEPENDENT INSPECTION AGENCIES
- 1.7 ACCESS TO WORK
- 1.8 PROCEDURES
- 1.9 REJECTED WORK
- 1.10 REPORTS
- 1.11 TESTS AND MIX DESIGNS
- 1.12 MOCK-UP
- 1.13 EQUIPMENT AND SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Tests and mix designs.
- .3 Written and electronic reports.
- .4 Equipment and system adjust and balance.

1.2 RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

- .1 ISO/IEC 17025-20065 - General Requirements for the Competence of Testing and Calibration Laboratories.
- .2 SCC (Standards Council of Canada).

1.4 INSPECTION BY AUTHORITY

- .1 Allow Authorities Having Jurisdiction access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection whenever portions of the Work are designated for special tests, inspections or approvals, either when described in the Contract Documents or when required by law in the Place of the Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

1.5 REVIEW BY CONSULTANT

- .1 Consultant may order any part of the Work to be reviewed or inspected if Work is suspected to be not in accordance with Contract Documents.
- .2 If, upon review such work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.
- .3 If such Work is found in accordance with Contract Documents, Owner will pay cost of review and replacement.

1.6 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection and Testing Agencies will be engaged by Owner for purpose of inspecting and testing portions of Work, except for the specific inspection and testing that are under Cash Allowances of the Contract.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection and testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to Owner. Pay costs for retesting and re-inspection.

1.7 ACCESS TO WORK

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

1.8 PROCEDURES

- .1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.9 REJECTED WORK

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

1.10 REPORTS

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

1.11 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as may be requested.
- .2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Consultant and may be authorized as recoverable.

1.12 MOCK-UP

- .1 Prepare mock-up for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.
- .2 Construct in all locations acceptable to Consultant.
- .3 Prepare mock-ups for Consultant's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Consultant will assist in preparing a schedule fixing dates for preparation.
- .6 Approved mock-up may remain as part of Work.

1.13 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 INSTALLATION AND REMOVAL
- 1.4 WATER SUPPLY
- 1.5 TEMPORARY HEATING AND VENTILATION
- 1.6 TEMPORARY POWER AND LIGHT

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Temporary utilities.
- .2 Salvaging products for reuse.

1.2 RELATED SECTIONS

- .1 Section 01 52 00 - Construction Facilities.
- .2 Section 01 53 00 - Temporary Construction.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Salvage and assist in recycling products for potential reuse.
- .3 Remove from site all such work after use.

1.4 WATER SUPPLY

- .1 Provide continuous supply of potable water for construction use.
- .2 Arrange for connection with appropriate utility company and pay all costs for installation, maintenance and removal.

1.5 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Maintain temperatures of minimum 15°C (60°F) in areas where construction is in progress.

-
- .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
 - .6 Permanent heating system of building may be used when available if approved by the Owner and Consultants. The building must be considered water and air tight and an acceptable level of cleanliness. Be responsible for damage to heating system if use is permitted.
 - .1 If it is used, the Contractor shall be totally responsible for its operation, and for replacing and repairing damage it may suffer, and shall assume operation and maintenance of the system in all its parts and payment for fuel consumed. Operation and maintenance shall include inspection at least once a week of thermostats; valves switches; lubrication; fan, belt and motor adjustment; cleaning and/or replacement of filters; and replacement of filters and re-servicing of system at completion of the work. Connect electric motors only to permanent sources of power, or otherwise provide source with correct design characteristics and with no fluctuation in voltage. Commence warranty period after re-servicing and from time of Substantial Performance of the Work.
 - .2 On completion of Work for which permanent heating system is used, clean all components including ductwork, replace filters and re-service the entire system.
 - .3 Ensure date of Substantial Performance of the Work and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Consultant.
 - .4 Pay costs for maintaining temporary heat, when using permanent heating system.
 - .7 Owner will pay utility charges when temporary heat source is existing building equipment.
 - .8 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

- .1 Conform with applicable codes and standards.
- .2 Enforce safe practices.
- .3 Prevent abuse of services.
- .4 Prevent damage to finishes.
- .5 Vent direct-fired combustion units to outside.
- .9 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6 TEMPORARY POWER AND LIGHT

- .1 Owner will provide a source for temporary power during construction for temporary lighting and operating of power tools, to a maximum supply of 120 volt, 30 amp.
- .2 Provide and maintain temporary lighting throughout project. Ensure level of illumination is not less than 15 foot candles.
- .3 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Consultant provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than two (2) months.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 INSTALLATION AND REMOVAL
- 1.5 SCAFFOLDING
- 1.6 HOISTING
- 1.7 ELEVATORS/LIFTS
- 1.8 USE OF THE WORK
- 1.9 CONSTRUCTION PARKING
- 1.10 SECURITY
- 1.11 OFFICES
- 1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE
- 1.13 SANITARY FACILITIES

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 51 00 - Temporary Utilities.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

- .1 CAN/CSA-Z321-96 (R2006) - Signs and Symbols for the Workplace.

1.4 INSTALLATION AND REMOVAL

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

1.5 SCAFFOLDING

- .1 Provide and maintain ladders, ramps, platforms, scaffolding, temporary stairs, swing staging and as required.

1.6 HOISTING

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

1.7 ELEVATORS/LIFTS

- .1 Permanent elevators/lifts may be used by construction personnel and transporting of materials, when scheduled with the Owner.
- .2 Provide plywood protective coverings for finish surfaces of cars and entrances.

1.8 USE OF THE WORK

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with Products.

- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.9 CONSTRUCTION PARKING

- .1 Parking will be permitted on site in Owner designated areas provided it does not disrupt the continuing operation of the facility and performance of Work at the Contractor's expense. Provide and maintain adequate access to project site.
- .2 Build and maintain temporary roads for construction where required and provide snow removal during period of Work.
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.10 SECURITY

- .1 Provide temporary fire rated and completely secure dust free construction partition/barrier to separate the existing facility from the construction site. Any doors in this portion/barrier shall be fire rated with locking hardware coordinated with the Owner. When the above cannot be achieved, the Contractor shall provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays. Contractor to notify the Owner in advance of such conditions.

1.11 OFFICES

- .1 The Contractor will be required to utilize space within the site to set up a site office.
- .2 Provide office heated, lit and ventilated, of sufficient size to accommodate site meetings and furnished with drawing layout table.
- .3 Provide a clearly marked and fully stocked first-aid case in a readily available location.
- .4 Subcontractors may provide their own offices as necessary. Direct location of these offices.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.13 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

- .2 Post notices and take such precautions as required by local health authorities.
- .3 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building.
- .4 Except where connected to municipal sewer system, periodically remove wastes from Site.
- .5 New permanent facilities may not be used.
- .6 Keep sanitary facilities clean and fully stocked with the necessary supplies at all times.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 INSTALLATION AND REMOVAL
- 1.5 SITE ENCLOSURE
- 1.6 GUARD RAILS AND BARRIERS
- 1.7 SCAFFOLDING
- 1.8 OVERHEAD WORK PROTECTION
- 1.9 DUST TIGHT BARRIERS
- 1.10 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY
- 1.11 PROTECTION OF APPLIED FINISHES
- 1.12 PROTECTION OF SURROUNDING WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 This section includes but not limited to: Site enclosure, Guardrails and barriers, Overhead Work Protection, Scaffolding, Weather enclosures, Dust tight barriers, Protection for off-site and public property, Protection of applied finishes, Protection of surrounding Work.

1.2 RELATED SECTIONS

- .1 Section 01 51 00 - Temporary Utilities.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

- .1 CAN/CSA-S269.2 "Access Scaffolding for Construction Purposes".
- .2 CAN/CSA-Z271 "Safety Code for Suspended Elevating Platforms".
- .3 Occupational Health and Safety Act of Ontario.
- .4 Workers' Compensation Board of Ontario.

1.4 INSTALLATION AND REMOVAL

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

1.5 SITE ENCLOSURE

- .1 Erect temporary site enclosure using new 1.83 m (6'-0") high modular metal, self-supporting, construction fence, if required. Maintain site enclosure in good repair.
- .2 Provide barriers around existing trees and plants.
- .3 Protect from damage by equipment and construction procedures.

1.6 GUARD RAILS AND BARRIERS

- .1 Reserved.

1.7 SCAFFOLDING

- .1 Design:

- .1 The scaffolding and/or suspended scaffolding shall be designed and constructed in accordance to the requirements of the referenced standards and codes.
- .2 When required, the scaffolding and/or suspended scaffolding is to be equipped with an enclosure capable of providing protection to pedestrians and adjacent property from dust, dirt, debris, water spray, falling tools and/or materials, and any other workplace hazards.
- .3 Support Conditions:
 - .1 The bearing condition of the soil and/or supporting structure shall be verified by the Scaffolding Contractor.
 - .2 Where the existing structure is to be used for the support of the scaffolding and/or suspended scaffolding, the Contractor must verify that the existing structure can safely support the imposed loads from the scaffolding. Should the existing structure require strengthening for support of the scaffolding, the Contractor must provide details from a professional engineer for the shoring or strengthening requirements.
 - .3 When the Contractor relies on the structural integrity of the existing exterior walls of the building for lateral support of the scaffolding, the Contractor must establish whether the existing wall components can adequately support the additional lateral loads. The Contractor takes responsibility for providing adequate anchorage of the lateral supports for the scaffolding, and any damage to the existing wall due to the anchorage of the scaffolding must be restored to its original condition.
- .4 Enclosure:
 - .1 The Contractor is responsible for taking into account wind loads that are imposed on the scaffolding as a result of the scaffolding being enclosed.
- .5 Access to Scaffolding:
 - .1 Access to all working levels of the scaffolding shall be provided by means of either stairs or fixed vertical ladders.
 - .2 All stairs are to have handrails and all landings to have railings such that if a workman trips and falls while descending the stairs, it will not be possible for the workman to fall through the railing system.
 - .3 All stair openings on planked working areas of the scaffolding shall be surrounded by railings to prevent workmen from walking into the back or the sides of the open stair.
- .6 Working Platforms:

- .1 Levels of the scaffolding designated for work must be fully planked. On a designated working platform, the Contractor is not to remove isolated areas of planking such that the fully planked platform has areas of missing planks. All damaged planks are to be replaced by the Contractor immediately.
 - .2 If the Contractor deems that fully planked working platforms are not required, or a partially planked platform is required to facilitate lowering or raising material, guardrails must be installed to prevent a workman from falling off the partially planked platform.
 - .3 With the exception of the front of stair openings, all openings in working platforms are to have railings to prevent workmen from accidentally walking into the openings.
- .2 All metal scaffolding components to be provided by a single source supplier of metal scaffolding components.
 - .3 The supplier of metal scaffolding components shall provide test data and test information upon request.
 - .4 All commercially manufactured suspended scaffolds must be erected, operated in accordance with written operating procedures developed by the manufacturer, and in accordance with a professional engineer's design including instructions on erection, use and design.
 - .5 Scaffolding Drawings:
 - .1 Prior to erection of the scaffolding and/or suspended scaffolding, the Contractor shall prepare and submit erection drawings and connection details for review by the Consultant. The drawings are to be stamped by a professional engineer (with experience in the structural design of scaffolding) registered in the Province of Ontario. The Consultant's review does not relieve the Contractor from any contractual requirement and/or responsibility.
 - .2 The erection drawings shall show the following:
 - .1 Reference specifications, materials and sizes for structural members
 - .2 Main dimensions of scaffolding. Prepare surfaces in strict accordance with manufacturer's directions.
 - .3 Locations of tie backs and bracing
 - .4 Guardrails
 - .5 Planking
 - .6 Stairs
 - .7 Ladders
 - .8 Where necessary, shoring or strengthening of existing structures.

- .9 Connection details
 - .10 Support details for suspended scaffolding.
 - .11 Tie back arrangement for suspended scaffolding
 - .12 Counter weight arrangement and outrigger design for suspended scaffolding
- .6 Professional Engineer's Certification:
- .1 All scaffolding and/or suspended scaffolding are to be erected in accordance with the erection drawings.
 - .2 After the scaffolding and/or suspended scaffolding is erected, the Contractor must provide written certification from a professional engineer that the scaffolding is erected in accordance with the reviewed erection drawings.
 - .3 Any revisions to the lateral and gravity support arrangements for suspended scaffolding made by the Contractor must be reported to the professional engineer who certified the erection drawings. In addition, the Professional Engineer must certify that the revisions have been reviewed and are acceptable.
 - .4 Any inspection reports, orders to comply, etc., issued to the Contractor by the representative of the Workers' Compensation Board of Ontario, are to be provided to the Consultant and the Professional Engineer responsible for certifying the scaffolding erection drawings and confirming that the scaffolding is erected in accordance with the reviewed erection drawings. Any life safety instructions / work orders by the Workers' Compensation Board of Ontario are to be immediately followed by the Contractor prior to continuing with the Work.
- .7 Existing Structure:
- .1 The Contractor must verify that the existing structure can safely support all loads imposed by the scaffolding.
 - .2 The Contractor will be responsible for all damage to the existing building caused by the erection and dismantling of the scaffolding, and by loads imposed by the scaffolding.

1.8 OVERHEAD WORK PROTECTION

- .1 Provide continuous sheet layer (minimum 6 mil polyethylene sheet) at ceiling / truss bottom chord level to collect and contain dust and small debris and separate occupied areas below from falling minor dust and debris caused by the work activities and for the protection of the public and building equipment.
- .2 Install any necessary temporary members or hoarding to provide sufficient support to the collection sheet layer. Ensure openings at sides of layer to allow air movement from building HVAC systems.

- .3 Maintain protection until such work is complete.
- .4 Make good all damages caused by the installation.
- .5 Remove and dispose of sheet and debris.
- .6 Clean up area and affected trusses and make good to pre-construction condition.

1.9 DUST TIGHT BARRIERS

- .1 Provide dust tight barriers and screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and to separate the construction from the existing building and public.
- .2 Screens shall consist of 12 mm drywall on steel stud framing and 4 mil polyethylene. All joints shall be taped. Insulated wall at exterior locations and at separation to existing building. These screens are to be maintained at all times until completion of the work when they are to be removed.
- .3 Maintain and relocate protection until such work is complete.
- .4 Locate in such a manner as to maintain means of egress to all exits as required by jurisdictions having authority.

1.10 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.

1.11 PROTECTION OF APPLIED FINISHES

- .1 Provide protection for finished and partially finished surfaces and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Consultant locations and installation schedule one (1) week prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.12 PROTECTION OF SURROUNDING WORK

- .1 Provide protection for finished and partially finished Work from damage.
- .2 Provide necessary cover and protection.
- .3 Be responsible for damage incurred due to lack of or improper or inappropriate protection.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 TERMINOLOGY
- 1.4 PRODUCT QUALITY
- 1.5 AVAILABILITY
- 1.6 STORAGE AND PROTECTION
- 1.7 TRANSPORTATION AND HANDLING
- 1.8 PRODUCT CHANGES
- 1.9 EXISTING UTILITIES
- 1.10 MANUFACTURER'S WRITTEN INSTRUCTIONS
- 1.11 QUALITY OF WORK
- 1.12 COORDINATION
- 1.13 CONCEALMENT
- 1.14 REMEDIAL WORK
- 1.15 LOCATION OF FIXTURES
- 1.16 FASTENINGS
- 1.17 FASTENINGS - EQUIPMENT
- 1.18 PROTECTION OF WORK IN PROGRESS

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 62 00 - Product Exchange Procedures.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 TERMINOLOGY

- .1 New: Produced from new materials.
- .2 Renewed: Produced or rejuvenated from an existing material to like-new condition to serve a new or existing service.
- .3 Defective: A condition determined exclusively by the Owner and Consultant.

1.4 PRODUCT QUALITY

- .1 Products, materials, equipment, parts or assemblies (referred to as products) incorporated in Work: New, not damaged or defective, of best quality (compatible with specification requirements) for purpose intended. If requested, provide 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 a 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 any dispute arise as to the quality or fitness of products, decision rests strictly with Consultant.
- .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.

1.5 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.
- .2 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.
- .3 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.

1.6 STORAGE AND PROTECTION

- .1 Store and protect products in accordance with manufacturers' written instructions.
- .2 Store with seals and labels intact and legible.
- .3 Store sensitive products in weather tight, climate controlled, enclosures in an environment favourable to product.
- .4 For exterior storage of fabricated products, place on sloped supports above ground.
- .5 Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- .6 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- .7 Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- .8 Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.7 TRANSPORTATION AND HANDLING

- .1 Transport and handle products in accordance with manufacturer's written instructions.
- .2 Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- .3 Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.8 PRODUCT CHANGES

- .1 Change in product/products: Submit request for substitution or alternative in accordance with Section 01 62 00.

1.9 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 vehicular traffic and pedestrian traffic, building occupants and the construction schedule.
- .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.

1.10 MANUFACTURER'S WRITTEN INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products to manufacturer's written 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 may 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.

1.11 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 any 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.

1.12 COORDINATION

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

1.13 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.

1.14 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate 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.

1.15 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.

1.16 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.

1.17 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 Type 304 or 316 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.

1.18 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of any part of the project.

- .2 Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated, without written approval of Consultant.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 SUBSTITUTIONS
- 1.4 ALTERNATIVES

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Product Substitution Procedures.
- .2 Alternatives Product Request Procedures.

1.2 RELATED SECTIONS

- .1 Section 01 29 00 - Payment Procedures.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 SUBSTITUTIONS

- .1 Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.
- .2 Consultant will not consider requests for Substitutions after the Bidding period.
- .3 Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- .4 If item .3 occurs, document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- .5 A request constitutes a representation that the Contractor and Subcontract:
 - .1 Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - .2 Will provide the same warranty for the Substitution as for the specified product.
 - .3 Will coordinate installation and make changes to other work which may be required for the Work to be complete with no additional cost to Owner.
 - .4 Waives claims for additional costs or time extension which may subsequently become apparent.
 - .5 Will reimburse Owner and Consultant for review or redesign services associated with re-approval by authorities.
- .6 Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- .7 Substitution Submittal Procedure:
 - .1 Submit complete electronic data in *.pdf format and appropriate size samples (if required) of request for Substitution for consideration. Limit each request to one (1) proposed Substitution.

- .2 Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
- .3 The Consultant will notify Contractor in writing of decision to accept or reject request. Accepted substitutions may be identified in Addendum.

1.4 ALTERNATIVES

- .1 Accepted Alternatives will be identified in Owner-Contractor Agreement.
- .2 Submit alternatives identifying the effect on adjacent or related components.
- .3 Alternatives quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement.
- .4 Coordinate related work and modify surrounding work to integrate the Work of each alternative.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 SUBSURFACE CONDITIONS
- 1.7 EXAMINATION
- 1.8 PREPARATION
- 1.9 EXISTING SERVICES
- 1.10 LOCATION OF EQUIPMENT AND FIXTURES
- 1.11 SURVEY RECORD

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Recording of subsurface conditions found.
- .2 Requirements and limitations for cutting and patching the Work.

1.2 RELATED SECTIONS

- .1 Section 01 62 00 - Product Exchange Procedures.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

- .1 Reserved.

1.4 SUBMITTALS FOR REVIEW

- .1 Reserved.

1.5 SUBMITTALS FOR INFORMATION

- .1 Submit name and address of Surveyor to Consultant.
- .2 On request of Consultant, submit documentation to verify accuracy of field engineering work.

1.6 SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if discovered surface or subsurface conditions at place of work differ materially from those indicated in Contract Documents.
- .2 Advise the Consultant of a reasonable assumption of probable conditions when determined.
- .3 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in work as provided in Changes or Change Orders set out in Section 01 29 00.

1.7 EXAMINATION

- .1 Inspect existing conditions, including elements or adjacent work subject to irregularities, damage, movement, including Work during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of the work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.

1.8 PREPARATION

- .1 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .2 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.9 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.
- .2 Remove abandoned service lines within 1.83m (6'-0") of structures. Cap or seal lines at cut-off points as directed by Consultant.

1.10 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Consultant of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.11 SURVEY RECORD

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 SUBMITTALS FOR REVIEW
- 1.4 SUBMITTALS FOR INFORMATION

PART 2 PRODUCTS

- 2.1 MATERIALS

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 CUTTING
- 3.4 PATCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 10 00 - Summary of Work.
- .2 Section 01 32 00 - Construction Progress Documentation: Submittals and scheduling.
- .3 Section 01 61 00 - Product Requirements.
- .4 Section 01 62 00 - Product Exchange Procedures: Product options and substitutions.
- .5 Section 07 84 00 - Firestopping.
- .6 This section describes requirements applicable to all Sections within Divisions 02 to 49.
 - .1 Cutting and patching incidental to work of the section.
 - .2 Advance notification to other sections of openings required in work of those sections.
 - .3 Limitations on cutting structural members.

1.3 SUBMITTALS FOR REVIEW

- .1 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of any element of project.
 - .2 Integrity of weather exposed or moisture resistant element.
 - .3 Efficiency, maintenance, or safety of any operational element.
 - .4 Visual qualities of sight exposed elements.
 - .5 Work of owner or separate contractor.
- .2 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected work.
 - .3 Necessity for cutting or alteration.
 - .4 Description of proposed work and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on work of owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.4 SUBMITTALS FOR INFORMATION

- .1 Reserved.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Primary Products: Those required for original installation.
- .2 Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 62 00 – Product Exchange Procedures.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering existing Work, assess conditions affecting performance of work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- .1 Provide temporary supports to ensure structural integrity of the work. Provide devices and methods to protect other portions of project from damage.
- .2 Provide protection from elements for areas which may be exposed by uncovering work.
- .3 Maintain excavations free of water.

3.3 CUTTING

- .1 Execute cutting and fitting [including excavation and fill] to complete the work.
- .2 Uncover work to install improperly sequenced work.
- .3 Remove and replace defective or non-conforming work.
- .4 Remove samples of installed work for testing [when requested].
- .5 Provide openings in the Work for penetration of mechanical and electrical work.
- .6 Employ [skilled and experienced] [original] installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

- .7 Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

3.4 PATCHING

- .1 Execute patching to complement adjacent work.
- .2 Fit Products together to integrate with other work.
- .3 Execute work by methods to avoid damage to other work, and which will provide appropriate surfaces to receive patching and finishing.
- .4 Employ original installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- .5 Restore work with new products in accordance with requirements of Contract Documents.
- .6 Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .7 At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material to Section 07 84 00, to full thickness of the penetrated element.
- .8 Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS

PART 2 PRODUCTS

- 2.1 CLEANING MATERIALS

PART 3 EXECUTION

- 3.1 PROGRESSIVE CLEANING
- 3.2 CLEANING PRIOR TO ACCEPTANCE
- 3.3 FINAL PRODUCT CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Progressive cleaning.
- .2 Cleaning prior to acceptance.

1.2 RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS

- .1 Cleaning Agents and Materials: Low VOC content.

PART 3 EXECUTION

3.1 PROGRESSIVE CLEANING

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- .3 Clear snow and ice from area of construction. Do not bank or pile snow on any existing parking lot or roadway. Bank or pile snow in designated areas only as identified by the Owner.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Containers:
 - .1 Provide on-site steel framed, hinged lid containers for collection of waste materials and debris.
 - .2 Provide and use clearly marked, separate bins for recycling.
- .6 Remove waste material and debris from site and deposit in waste container at end of each working day.
- .7 Dispose of waste materials and debris off site.
- .8 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.
- .9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

- .10 Provide adequate ventilation during use of volatile or noxious substances. Use of enclosure ventilation systems is not permitted for this purpose.
- .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

3.2 CLEANING PRIOR TO ACCEPTANCE

- .1 Prior to applying for substantial performance of the work, remove surplus products, tools, construction machinery and equipment not required for performance of remaining work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste materials from site at regularly scheduled times. Do not burn waste materials on site.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .6 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .7 Remove stains, spots, marks and dirt from all finished work, electrical and mechanical fixtures, furniture fitments, signage, etc.
- .8 Clean lighting reflectors, lenses, and other lighting surfaces.
- .9 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .10 Clean and polish surface 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 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .15 Sweep and wash clean paved areas.
- .16 Clean equipment and fixtures to a sanitary condition.
- .17 Replace filters of mechanical equipment.

- .18 Clean roof surfaces, down-spouts, and drainage components.
- .19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .20 Remove snow and ice from access to facilities.

3.3 FINAL PRODUCT CLEANING

- .1 Execute final cleaning prior to final project assessment.
- .2 Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- .3 Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- .4 Replace filters of operating equipment.
- .5 Clean site; sweep paved areas, rake clean landscaped surfaces.
- .6 Remove waste and surplus materials, rubbish, and construction facilities from the site.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 DEFINITIONS
- 1.4 OWNER WASTE MANAGEMENT GOALS
- 1.5 STORAGE, HANDLING AND PROTECTION
- 1.6 SCHEDULING

PART 2 PRODUCTS

- 2.1 CONSTRUCTION DISPOSAL CHUTE

PART 3 EXECUTION

- 3.1 PREPARATION
- 3.2 SITE VISIT
- 3.3 USE OF SITE AND FACILITIES
- 3.4 DISPOSAL OF WASTE
- 3.5 CLEANING
- 3.6 SPECIAL PROGRAMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Waste goals.
- .2 Third party responsibilities.
- .3 Disposal of waste.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 00 – Cleaning and Waste Processing.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 12.

1.3 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 but not limited to, building materials, packaging, trash, debris, and rubble resulting from construction, re-modelling, repair and demolition operations.
- .3 Hazardous: Exhibiting the characteristics of hazardous substances including, but not limited to, ignitability, corrosiveness, toxicity or reactivity.
- .4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including, but not limited to, ignitability, corrosiveness, toxicity, or reactivity.
- .5 Non-toxic: Neither immediately poisonous to humans nor poisonous 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 re-manufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the Project site to another site for re-manufacture 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 particle board, 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 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.

1.4 OWNER WASTE MANAGEMENT GOALS

- .1 Owner has established this Project is to generate the least amount of waste possible. This requires that construction processes ensure as little waste as possible, either due to error, poor planning, breakage, mishandling, contamination, or other factors.
- .2 Owner recognizes that waste in any project is inevitable, but indicates that as much of the waste materials as economically feasible. Reused, salvage, or recycle as required.
- .3 Minimize waste disposal to landfills.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Owner.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Owner.
- .7 Protect surface drainage, storm sewers, sanitary sewers, and utility services from damage and blockage.

1.6 SCHEDULING

- .1 Coordinate work with other activities at site to ensure timely and orderly progress of the work.

PART 2 PRODUCTS

2.1 CONSTRUCTION DISPOSAL CHUTE

- .1 Acceptable Manufacturers DURACHUTE, Tel: 1-888-422-4883, www.chutes.com. Or approved alternate. Acceptable substitutions, is per Owner approval. Provider of the approved alternate substitution must assume all costs of installation modifications, if any.
- .2 Model: DURAFLAT Plastic Debris Chute system. The construction disposal chute shall be 30" (762 mm) diameter, by 4' (1220 mm) lengths high impact resistant polyethylene debris chute.
- .3 Mounting Hardware: All mounting hardware is to be hot dipped galvanized structural steel including basic support framing, outriggers and chains.

PART 3 EXECUTION

3.1 PREPARATION

- .1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 SITE VISIT

- .1 Pre-bid site visit: Walk-through of project site prior to completion of bid submittal is mandatory. Refer to Section 00 21 13, Instructions to Bidders for time and location.

3.3 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility.
- .3 Provide temporary security measures as approved by Owner.

3.4 DISPOSAL OF WASTE

- .1 Burying of rubbish and waste materials is prohibited unless approved by authority having jurisdiction.
- .2 Disposal of mineral spirits, waste, oil, volatile materials, paint thinner, etc. into waterways, storm, or sanitary sewers is prohibited.

3.5 CLEANING

- .1 Remove tools and waste materials on completion of work, leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

3.6 SPECIAL PROGRAMS

- .1 Be responsible for final implementation of programs involving tax credits or rebates or similar incentives related to recycling, if applicable to the Project.
- .2 Revenues or other savings obtained for recycling or returns to accrue to Contractor.
- .3 Use Recycling facility closest to the Project site.
- .4 Obtain information packets relevant to all of the above listed programs prior to starting work on the Project, and confirm facility's ability to accept waste from Project.
- .5 Document work methods, recycled materials, alternate disposal methods that qualify for tax credits, rebates, and other savings under programs listed by authority having jurisdiction.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 INSPECTIONS AND DECLARATIONS
- 1.4 CLOSEOUT SUBMITTALS
- 1.5 OPERATION AND MAINTENANCE MANUAL FORMAT
- 1.6 CONTENTS - EACH VOLUME
- 1.7 RECORDING ACTUAL SITE CONDITIONS
- 1.8 AS-BUILT DOCUMENTS AND SAMPLES
- 1.9 RECORD DOCUMENTS
- 1.10 FINAL SURVEY
- 1.11 WARRANTIES AND BONDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 This section includes but not limited to: Inspections & Declarations, Closeout Submittals, Operation & Maintenance manuals, Final survey and Warranties & Bonds.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 INSPECTIONS AND DECLARATIONS

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of work, identify deficiencies and defects, and repair as required to conform to contract documents.
 - .1 Notify Consultant in writing of satisfactory completion of Contractor's and Sub Contractor's Inspection and that corrections have been made.
 - .2 Request Consultant's Inspection.
- .2 Consultant's Inspection: Consultant and Contractor will perform inspection of work to identify defects or deficiencies. Correct defective and deficient work accordingly.
- .3 Completion: Submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with contract documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted, balanced and are fully operational.
 - .4 Certificates required by authorities having jurisdiction have been submitted.
 - .5 Operation of systems have been demonstrated to Owner's personnel.
 - .6 Work is complete and ready for final inspection.

- .4 Final Inspection: When items noted above are completed, request final inspection of work by Consultant. If work is deemed incomplete by Consultant, complete outstanding items and request re-inspection.
- .5 Declaration of Substantial Performance: When Consultant consider deficiencies and defects have been corrected and it appears requirements of contract have been substantially performed, make application for Substantial Performance of the Work.
- .6 Commencement of Warranty Periods: The date of Substantial Performance of the Work shall be the date for commencement of the warranty period.
- .7 Commencement of Lien Periods: The date of publication of the certificate of Substantial Performance of the Work shall be the date for commencement of the lien period, unless required otherwise by the lien legislation applicable at the Place of the Work.
- .8 Final Payment: When Consultant and Owner consider final deficiencies and defects have been corrected and it appears requirements of Contract have been completed, make application for final payment.
- .9 Payment of Hold-back: After issuance of certificate of Substantial Performance of the Work, submit an application for payment of hold-back amount.

1.4 CLOSEOUT SUBMITTALS

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection with Consultant's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Four (4) weeks prior to Substantial Performance of the Work, submit to the Consultant one (1) in complete progress copy of operating and maintenance manuals in Canadian English for review by the Consultants. Known information that is missing or not available at the time of this submission shall be identified with a contrasting colour placeholder page clearly indicating the information and the expected date to be received. The progress copy will be returned with Consultant's comments no ore that 2 weeks (2) later form Contractor/Subcontractor completion. Resubmit one (1) week prior to Substantial Performance the completed document for final Consultant approval. Contractor to provide one (1) pdf copy and three (3) hard copies of the final document to the Consultant prior to Substantial Performance. One (1) hard copy of the above may be delivered to the site if directed by the Owner.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.5 OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 8.5 x 11 inch with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. 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. Bind in with text; fold larger drawings to size of text pages.
- .9 Provide *.PDF format on DVD.

1.6 CONTENTS - EACH VOLUME

- .1 Table of Contents: Provide:
 - .1 Title of project.
 - .2 Date of submission.
 - .3 Names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .4 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system, 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 clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00.

- .4 Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Certificate of Acceptance: Relevant certificates issued by authorities having jurisdiction, including code compliance certificate.

1.7 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and within the Project Manual, provided by Consultant.
- .2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.
- .3 Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded. Failure to document this information may result in adjustments to the billing.
- .4 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: Maintain manufacturer's certifications, field test records, inspection certifications as required by individual specifications sections.

1.8 AS-BUILT DOCUMENTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Owner and Consultant, one (1) record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.

- .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store as-built documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
 - .3 Label as-built documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.
 - .4 Maintain as-built documents in clean, dry and legible condition. Do not use as-built documents for construction purposes.
 - .5 Keep as-built documents and samples available for inspection by Consultant.

1.9 RECORD DOCUMENTS

- .1 Four (4) weeks prior to Substantial Performance of the Work, provide on DVD the marked up information from the as-built documents to a master set of drawing and specification files provided by the Consultant, as follows:
 - .1 Drawings: Adobe Acrobat and AutoCAD current release.
 - .2 Specifications: Adobe Acrobat and Microsoft Word.
- .2 Mark revised documents as "RECORD DOCUMENTS". Include all revisions, with special emphasis on structural steel, electrical, reinforced concrete, and mechanical.
- .3 Employ a competent computer draftsman to indicate changes on the electronic set of record drawings. Provide updated record drawings in AutoCAD current release.
- .4 Employ a competent specification writer to indicate changes to the electronic set of record specifications. Provide updated record specifications in Adobe Acrobat and Microsoft Word on DVD.
- .5 Submit completed record documents to Consultant on a DVD, accompanied by one (1) hard copy set.

1.10 FINAL SURVEY

- .1 Submit final site survey certificate in accordance with Section 01 70 00, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

- .2 Inaccurate or neglectful information shall become a liability of the Contractor.

1.11 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of work.
- .4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittals.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 ADMINISTRATIVE REQUIREMENTS
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 QUALITY ASSURANCE
- 1.8 REGULATORY REQUIREMENTS
- 1.9 EXISTING CONDITIONS
- 1.10 DEMOLITION DRAWINGS

PART 2 PRODUCTS

PART 3 EXECUTION

- 3.1 PREPARATION
- 3.2 DEMOLITION REQUIREMENTS
- 3.3 DEMOLITION
- 3.4 SALVAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Disconnecting and capping, removal of identified utilities.
- .3 Refer to items as indicated in the demolition drawings.
- .4 Work performed by Others which is related to Work of this Section:
 - .1 Restriction of noise, dust, interference, obstruction, access, hours of work. Refer to Section 01 35 00 - Work in Existing Buildings.
 - .2 Dust barriers or partitions. Refer to General Conditions, Meetings, Site set-up.

1.2 RELATED SECTIONS

- .1 Section 00 31 16 - Available Project Information Data.
- .2 Section 02 41 19 - Selective Demolition.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Sequencing: Sequence work to requirements of Section 01 10 00.
- .2 Scheduling: Schedule work to requirements of Section 01 31 00.
 - .1 Schedule Work to precede new construction.
 - .2 Describe demolition removal procedures and schedule.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Shop Drawings: Indicate demolition, removal sequence and location of salvageable items; location and construction of temporary work.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.
- .2 Record Documentation: Accurately record actual locations of capped utilities, subsurface obstructions.

1.7 QUALITY ASSURANCE

- .1 Unless otherwise specified, carry out demolition work in accordance with the Occupational Health and Safety Act, 1978 and Regulations for

Construction Projects and applicable regulations as amended and revised to date of award of Contract including the regulation respecting asbestos made under O.H.S.A., Ontario Regulation 654/85 or latest edition.

1.8 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for demolition work, dust control, products requiring electrical disconnection, and reconnection.
- .2 Obtain required permits from authorities.
- .3 Notify affected utility companies before starting work and comply with their requirements.
- .4 Do not close or obstruct roadways, sidewalks, hydrants without permits.
- .5 Do not close or obstruct egress width to any building or site exit.
- .6 Do not disable or disrupt building fire or life safety systems without seven (7) days prior written notice to Owner.

1.9 EXISTING CONDITIONS

- .1 Take over spaces to be demolished based on their condition on date that the Bid is accepted.
- .2 Inspect adjacent spaces and ensure that its condition and stability are recorded in a suitable manner for evaluation of possible damage caused by Work of this Section.
- .3 Photograph existing spaces in sufficient detail to record conditions and stability before work of this Section commences. These photographs will be used to compare to condition of adjacent construction before and after performance of work of this Section should any damage to the adjacent construction occur. Submit all photographs to the Owner prior to the commencement of the work.

1.10 DEMOLITION DRAWINGS

- .1 Reserved.

PART 2 PRODUCTS

- .1 Not Applicable

PART 3 EXECUTION

3.1 PREPARATION

- .1 Provide, erect, and maintain temporary barriers as required.
- .2 Mark location and termination of utilities.

- .3 Provide appropriate temporary signage including signage for exit or building egress.

3.2 DEMOLITION REQUIREMENTS

- .1 Conduct demolition to minimize interference with building occupants.
- .2 Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.
- .3 Sprinkle Work with water to minimize dust. Provide hoses and water connections for this purpose.
- .4 Before starting any work, ensure examination of the site and all spaces to be demolished that all possible factors concerning demolition are investigated and that the following items are known:
 - .1 Methods of material handling, disposal, storage and transporting.
 - .2 Construction of elements to be demolished.
 - .3 Construction of adjacent elements and properties.
 - .4 Location of concealed services.
 - .5 Obtain approval of all demolition methods before starting work.
- .5 Dispose of demolished materials except where noted otherwise. Salvaged materials shall be removed from the project area to a place in existing building determined by Owner. Comply with salvage, disposal, and recycling requirements of authorities having jurisdiction.
- .6 Prevent debris from blocking surface drainage inlets and system and mechanical and electrical systems which must remain in operation.
 - .1 Barricade all access by unauthorized persons to areas in which demolition is in progress.
- .7 Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction.

3.3 DEMOLITION

- .1 Perform all demolition under direction of a foreman experienced in similar work at all times.
- .2 Water down debris as often as required to stop the spread of dust. Provide water connections and supply for this purpose.
- .3 Confine demolition and associated work only to the area where demolition is required.
- .4 Provide for safe access to areas and buildings adjacent to demolition work.
- .5 Small pieces of concrete and masonry broken from demolition work to be removed.

- .6 Remove existing equipment, services and obstacles where required for refinishing or making good of existing surfaces, and replace same as work progresses.
- .7 At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling.
- .8 Demolish in a manner to minimize dusting. Keep dusty materials wetted.
- .9 Demolish masonry and concrete walls in small sections. .
- .10 Selling or burning materials on site is not permitted.

3.4 SALVAGE

- .1 Refer to Section 02 41 19 – Selective Demolition.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 ALTERATION PROJECT PROCEDURES
- 1.4 ADMINISTRATIVE REQUIREMENTS
- 1.5 SUBMITTALS FOR REVIEW
- 1.6 SUBMITTALS FOR INFORMATION
- 1.7 CLOSEOUT SUBMITTALS
- 1.8 REGULATORY REQUIREMENTS
- 1.9 PROJECT CONDITIONS
- 1.10 PRODUCTS

PART 2 EXECUTION

- 2.1 PREPARATION
- 2.2 DEMOLITION REQUIREMENTS
- 2.3 DEMOLITION NOT INCLUDED
- 2.4 REPORT BY ENVIRONMENTAL ENGINEER
- 2.5 EXISTING CONDITION REVIEW
- 2.6 SCHEDULES

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
 - .1 Alteration project procedures.
 - .2 Disposal of materials.
 - .3 Identification of utilities.
 - .4 Refer to items scheduled at end of section.

1.2 RELATED SECTIONS

- .1 Section 00 31 16 – Available Project Information Data.
- .2 Section 02 41 00 – Demolition.

1.3 ALTERATION PROJECT PROCEDURES

- .1 The general intent is to completely remove all materials noted and shown on the drawings from the site in its entirety.
- .2 Include all equipment necessary (cranes, conveyors, hoists and scaffolds, garbage chutes) and disposal bins.
- .3 Include the removal of all rubble and debris and to legally dispose of these materials off-site, and to the regulations of authorities having jurisdiction.
- .4 Co-operate and co-ordinate the access, hoisting and scheduling of selective demolition works with the Owner and other Contractors.
- .5 Provide and co-ordinate the installation of temporary covers, railings, supports and other protection as required and as directed by the Consultant.
- .6 Provide all measures to ensure the structural integrity of the existing facility and ensure the safety of all personnel on site.
- .7 If any existing features noted to remain are damaged, restore it to the original condition or as directed by the Consultant.
- .8 Protect all the existing building features to remain as noted in the documents and in accordance with applicable local regulations.

- .9 Schedule a pre-construction survey/site walk thru determine present condition of the building and identify any material/equipment that is specified to be salvaged. Unless specifically noted, carefully remove, clean, store and turn over to the Owner. The decision on the items to be recycled/re-used will be determined by the Owner.
- .10 Where existing structures or walls are noted to be removed or new openings are to be made in the existing structure, include for shoring and bracing as required to safely support the existing structure (walls and floors) until new structural elements are installed in place. Include for needling and pinning as required for the installation of new lintels in existing walls. Provide demolition shop drawings with temporary support system, stamped by a Professional Engineer, where required.
- .11 Include for providing weatherproof partitions / enclosures for all exterior openings when existing structures/windows are removed. Co-ordinate the work with the other Trades and prevent all unauthorized accesses through the area.
- .12 Locate/cap all utilities entering/exiting the building as required and shown on the mechanical and electrical documentation.
- .13 All cutting and patching required by the mechanical and electrical trades, to be provided by this Contractor, unless specifically noted otherwise.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Sequencing: Sequence work to requirements of Section 01 10 00.
- .2 Scheduling: Schedule work to requirements of Section 01 31 00.
- .3 Schedule Work to precede new construction.
- .4 Describe demolition removal procedures and schedule.

1.5 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Shop Drawings: Indicate demolition, removal sequence and location of salvageable items; location and construction of temporary work.

1.6 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.

1.7 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.
- .2 Record Documentation: Accurately record actual locations of capped utilities, subsurface obstructions

1.8 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for demolition work, dust control, products requiring electrical disconnection, and reconnection.
- .2 Obtain required permits from authorities.
- .3 Do not close or obstruct egress width to any building or site exit.
- .4 Do not disable or disrupt building fire or life safety systems without seven (7) days prior written notice to Owner.
- .5 Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

1.9 PROJECT CONDITIONS

- .1 Conduct demolition to minimize interference with adjacent building areas.
- .2 Cease operations immediately if structure appears to be in danger and notify Consultant. Do not resume operations until directed.

1.10 PRODUCTS

- .1 Not Used

PART 2 EXECUTION

2.1 PREPARATION

- .1 Provide, erect, and maintain temporary barriers at locations indicated.
- .2 Erect and maintain weatherproof closures for exterior openings.
- .3 Erect and maintain temporary partitions to prevent spread of dust, odours, and noise to permit continued Owner occupancy.
- .4 Protect existing materials which are not to be demolished.
- .5 Prevent movement of structure; provide bracing and shoring.
- .6 Notify affected utility companies before starting work and comply with their requirements.
- .7 Mark location and termination of utilities.
- .8 Provide appropriate temporary signage including signage for exit or building egress.

2.2 DEMOLITION REQUIREMENTS

- .1 Designated Substance Removal is to be carried out by pre-approved and qualified Contractors, of this Contractor, as part of the work this Contract, if required.

- .2 Retain the services of a qualified electrician or electrical sub-contractor, as part of this Contractor's workforce.
- .3 Retain the services of a qualified plumber or plumbing sub-contractor, as part of this Contractor's workforce.
- .4 Retain the services of a qualified pipe fitter/heating sub-contractor, as part of this Contractor's workforce.
- .5 All selective demolition work as indicated on the drawings, which includes but not limited to:
 - .1 Except as otherwise noted, remove all millwork, shown dashed on the drawings or identified on the drawings to be removed.
 - .2 Carefully remove existing doors and hardware as required. Store for later re-use in the building, at the discretion of the Owner.
 - .3 Remove all lay in 2' x 4' ceiling panels and ceiling suspension grid as shown on the drawings.
 - .4 Remove all signage, directories, identification plates, name plates, bulletin boards, mirrors, and other similar features hanging on and secured to the walls as identified in preconstruction site walk-through.
 - .5 Remove all supply air diffusers, ducting, related mechanical equipment, wiring and controls.
 - .6 Remove thermostats. Remove switches, controls, receptacles and outlets where indicated on drawings. Remove speakers. Remove all surface mounted conduit, wiring and wire mould.
 - .7 Remove all light fixtures and controls.
 - .8 Remove carpeting and wall base throughout.
 - .9 Remove guards where indicated on drawings.
- .6 Remove all debris and leave the building and site in a safe, clean, tidy and dry condition.

2.3 DEMOLITION NOT INCLUDED

- .1 Removal of any structural elements, shown shaded or noted on the drawings. Except as otherwise noted above, the removal of any exterior walls, insulation or finishes as well as the removal of any interior partitions shown in solid line on the drawings.

2.4 REPORT BY ENVIRONMENTAL ENGINEER

- .1 If material resembling hazardous material is encountered in course of demolition work, immediately stop work and notify the Owner and Consultants.

2.5 EXISTING CONDITION REVIEW

- .1 If designated substances are discovered, properly abated and prior to any further demolition work proceeding, conduct a survey of the property to determine the present condition of all features and finishes.
- .2 Include in survey, Contractor, Owner, and Consultant.
- .3 Provide 48 hours prior notice to all participants.
- .4 Upon completion of the demolition work of this Contract, conduct a similar survey of the above features by the same individuals.
- .5 Finishes and features found damaged, marked, cracked or broken, resulting from the demolition work will be refinished, repaired or restored to original condition, as found just prior to the demolition work of this Contract, by others. Cost of the refinished, repair or restoration will be borne by the Contractor, except only if it can be shown that the damage was caused beyond his control.

2.6 SCHEDULES

- .1 Reserved.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 QUALITY ASSURANCE
- 1.8 DELIVERY, STORAGE AND HANDLING
- 1.9 SITE CONDITIONS

PART 2 PRODUCTS

- 2.1 MATERIALS
- 2.2 MIXES

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 MORTAR TYPES
- 3.4 FIELD QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Mortar, and grout for masonry.

1.2 RELATED SECTIONS

- .1 Section 04 20 00 – Unit Masonry.

1.3 REFERENCES

- .1 ASTM C207, Specification for Hydrated Lime for Masonry Purposes.
- .2 ASTM C270-89, Standard Specification for Mortar for Unit Masonry.
- .3 CAN/CSA-A5/A8/A362-93, Portland Cement/Masonry Cement/Blended Hydraulic Cement.
- .4 CAN3-A371-94, Masonry Construction for Buildings.
- .5 CSA S304.1-94, Masonry Design for Buildings (Limit States Design).
- .6 CAN3-S304-M84, Masonry Design for Buildings.
- .7 CSA A179-94, Mortar and Grout for Unit Masonry.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Include design mix, indicate whether the Proportion or Property specification of CSA-A179 is to be used, required environmental conditions, and admixture limitations.
- .3 Affidavits: Submit to Consultant affidavits of an inspection company that mortar materials conform to requirements of the Specifications.
- .4 Product Data Sheets: Submit manufacturer's Product data Sheets.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Procedures for submittals.
- .2 Test Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 QUALITY ASSURANCE

- .1 Requirements of Regulatory Agencies: Modify requirements of the Specifications only as jurisdictional authorities may direct.
- .2 Provide mortar for strength testing in accordance with CSA A179-04.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Handle and store cementitious materials, protect against moisture.
- .3 Maintain packaged materials clean, dry, and protect against dampness, freezing, and foreign matter.

1.9 SITE CONDITIONS

- .1 When air temperature is less than 5°C (40°F), mix mortar as specified in CSA A371-94.
- .2 Cold and Hot Weather Requirements: CAN/CSA-A371 - Masonry Construction for Buildings.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Use materials only as specified in CSA Standard A179-04, referenced from CSA A371-94 and CAN3-S304-M84 or CSA S304.1-94 as applicable. Ensure that water and aggregate used in mortar, other than in walls buried in earth, will not cause efflorescence.
- .2 Incorporate only materials from same source in mortar exposed to view.
- .3 Portland Cement: to meet specified requirements of CSA A5, Type 10.
- .4 Masonry Cement: to meet specified requirements of CSA A8-M93, Type H.
- .5 Lime: to meet specified requirements of ASTM C207, Type S.
- .6 Water: Verify that potable water used contains no salts to cause efflorescence.
- .7 Sand: To CSA A179-04, per table 1 (aggregate gradation).
- .8 Non-Shrink Grout for Structural Steel Base Plates: SET grout as manufactured by The Master Builders Company, or In Pakt as manufactured by C.C. Chemicals Limited, or N-S Grout by the Euclid Chemical Company, or M-Bed by Sternson Ltd., or CG-86 by H.R. Meadows.
- .9 Grout for Reinforced Masonry: coarse grout with portland cement and coarse sand, to meet specified requirements of CSA A179, with maximum

slump of 200mm and minimum compressive strength at 28 days of 15.0 MPa.

- .10 Non-Shrink grout for structural steel base plates: grout as manufactured by C.C. Chemical Limited, or N-S Grout by the Euclid Chemical Company, or M-Bed by Sternson Ltd.

2.2 MIXES

- .1 Mortar mixes shall be prepared as defined in the current Ontario Building Code.
- .2 For exterior walls use only mortar consisting of 1-1-6 mix of portland cement, hydrated lime and aggregate. Betomix 1-1-6 by Daubois is an acceptable product or approved alternate.
- .3 Mix mortars as specified in CSA A179-94. Use only dry aggregate. Test for bulking to determine accurate proportioning.
- .4 Do not incorporate antifreeze liquids, salts or calcium chloride in mortar mix to lower freezing point of mortar. In cold weather non-chloride accelerating admixtures may be utilized such as Accelguard 80 by Euclid Chemical Canada Inc., or equivalent meeting specified requirements of ASTM Specification C270.
- .5 Integral mortar waterproofer shall be Omicron as manufactured by the Master Builders Company Limited or approved metallic stearate type.
- .6 Concrete Grout (for reinforced masonry): Mix one part portland cement and three parts sand with water.
- .7 Parging: Use Type "N" mortar with integral water-proofing.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Request inspection of spaces to be grouted.

3.2 PREPARATION

- .1 Provide waterproof protection over construction surfaces at mixing areas to prevent deposit on them of mortar and mortar materials.
- .2 Apply bonding agent to existing surfaces.
- .3 Plug clean-out holes. Brace masonry for wet grout pressure.

3.3 MORTAR TYPES

- .1 For laying concrete unit masonry, use mortar type:

- .1 "N" for interior non-load bearing walls. Mortar strength to be minimum 3.5 MPA job site tested after 28 days.
- .2 "S" for interior loadbearing walls based on proportion specifications. Mortar strength to be minimum 8.5 MPA job site tested after 28 days.

3.4 FIELD QUALITY CONTROL

- .1 Provide mortar for samples as required for field quality control specified in masonry section of the Specifications.
- .2 Provide protection where required at mixing areas to prevent damage attributed to the materials of this section.

END OF SECTION

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PART 1 GENERAL

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- 1.9 REGULATORY REQUIREMENTS
- 1.10 DELIVERY, STORAGE, AND PROTECTION
- 1.11 WASTE MANAGEMENT AND DISPOSAL
- 1.12 ENVIRONMENTAL REQUIREMENTS

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- 2.1 CONCRETE BLOCK
- 2.2 WALL, COLUMN AND PARTITION REINFORCEMENT
- 2.3 MORTAR
- 2.4 CONTROL JOINTS
- 2.5 DEFLECTION FILLER
- 2.6 GROUT

PART 3 EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS
- 3.2 PREPARATION
- 3.3 LAYING MASONRY - GENERAL
- 3.4 LAYING CONCRETE BLOCKWORK
- 3.5 REINFORCING
- 3.6 MASONRY ANCHORS
- 3.7 MORTAR
- 3.8 SEAL AT DUCTS, PIPES AND DECK
- 3.9 CONTROL JOINTS
- 3.10 GROUTED REINFORCED MASONRY
- 3.11 PROTECTION
- 3.12 CLEAN-UP

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Supply and installation of interior concrete unit masonry, reinforcing and all accessories to provide a complete masonry installation.
- .2 Install all loose steel angles and/or plates over all openings in masonry walls.

1.2 RELATED SECTIONS

- .1 Section 04 05 13 - Masonry Mortar and Grout
- .2 Section 05 50 00 - Metal Fabrications.
- .3 Section 07 84 00 - Firestopping.
- .4 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES

- .1 ASTM A167-99 (2009) - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 ASTM A653/A653M-10 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM B370-09 - Standard Specification for Copper Sheet and Strip for Building Construction.
- .4 ASTM C1330-02(2007) - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- .5 CAN/CSA-A370-04 (R2009) - Connectors for Masonry.
- .6 CAN/CSA-A371-04 (R2009) - Masonry Construction for Buildings.
- .7 CSA-S304.1-04 (R2010) - Design of Masonry Structures.
- .8 CSA A165 Series 94 (R2000) - Standards on Concrete Masonry Units.
- .9 ULC - Building Materials Directory.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on masonry units, reinforcements and sealants.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.
- .2 Extra Stock Materials: Provide ten (10) of each size, colour, and type of masonry units

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

- .1 Perform Work to CAN/CSA-A371, CSA-S304.1.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .3 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience.
- .4 Construct masonry as required by jurisdictional authorities.
- .5 Before commencing masonry work, verify that site conditions will allow construction of masonry within required limitations for wall heights, wall thicknesses, openings, bond, anchorage, lateral support, and compressive strengths of masonry units and mortars.
- .6 Construct masonry fire rated assemblies, which are validated by ULI, ULC or NRC fire tests, in complete accordance with the test design specification. Fire rated assemblies constructed otherwise shall be approved only on presentation of affidavits that they are acceptable to the authorities having jurisdiction.
- .7 An inspection and testing company will be selected to inspect and report on masonry installed by this Section as required by jurisdictional authorities and as directed.
- .8 The inspection and testing company will inspect and report on compressive strength of mortar samples as laying of masonry progresses. Provide six 50mm (2") cubes of mortar from samples taken randomly at the site, for each test, as directed.

1.9 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for requirements for fire rated masonry construction.

1.10 DELIVERY, STORAGE, AND PROTECTION

- .1 Package and protect masonry units to arrive undamaged at the job site.
- .2 Store masonry under waterproof cover on pallets or plank platforms held off ground.

1.11 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, and corrugated cardboard packaging material for recycling.
- .4 Unused metal materials are to be diverted from landfill to a metal recycling facility.
- .5 Unused or damaged masonry materials are to be diverted from landfill to a local quarry facility.

1.12 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain materials and surrounding air temperature to minimum 5°C (40°F) prior to, during, and 48 hours after completion of masonry work.
- .2 Cold and Hot Weather Requirements: CAN/CSA-A371 - Masonry Construction for Buildings.
- .3 No masonry shall be laid when the temperature of the outside air is below 4°C unless means, approved by the Consultant, are provided to heat and maintain the temperature of masonry materials and protect the complete work from freezing. Materials and completed work not adequately protected from freezing shall be removed from Site on the direction of the Consultant.
- .4 Protection shall consist of heating and maintaining the temperature of the masonry materials to at least 4°C but not more than 22°C and maintaining an air temperature above 4°C on both sides of the masonry for a period of at least 72 hours. Protection to conform to CAN3-S304-M84 (R1997)
- .5 When air temperature is less than 5°C (40°F), mix mortar as specified in the applicable standard.

PART 2 PRODUCTS

2.1 CONCRETE BLOCK

- .1 Unless otherwise noted, all concrete block shall conform to CSA A165 Series 94, having a fire rating as shown on the drawings based on National Research Council Fire Study No. 25 (1970) and National Building Code Supplement (1990).

- .2 Concrete block classifications shall be as follows:
 - .1 For use where interior concrete block units will not be exposed to view shall be H/15.0/A/M or S/15.0/A/M. Concrete block with 3rd facet designations of B, C, or D, but of equal compressive strength, may be substituted on approval by the Consultant.
 - .2 For use where interior concrete block units will be exposed to view shall be H/15.0/C/M or S/15.0/C/M.
 - .3 Where there is a combination of the two conditions described above, the exposed-to-view condition in item 2. shall govern.
- .3 All concrete blocks shall be metric modular size and of thickness called for on drawings.
- .4 Provide bullnose block on all exposed external corners, at interior walls and at exposed corners at all door and view window jambs.
- .5 Provide 100% solid block where shown on drawings and where required by jurisdictional authorities.
- .6 Exposed concrete block shall be uniform in texture and dimension and shall be free of spalled or broken edges, corners or other defects detrimental to appearance.
- .7 Provide partitions with fire resistance ratings as shown on drawings to meet all ULC certification.
- .8 Block Types: Refer to plans, details, elevations and Room Finish Schedule for locations.

2.2 WALL, COLUMN AND PARTITION REINFORCEMENT

- .1 Concrete block reinforcement shall be Dur-O-Wal DA3200 or Blok-Lok BL-10. Hot dip galvanized after fabrication, widths, approximately 50mm less than nominal block thickness, prefab corners and tees conforming to current CSA G30.3-M1983 (R1991) cold-drawn steel wire for concrete reinforcing.
- .2 Reinforcement shall be ladder type having two parallel side rods 3.66mm dia. welded to 3.66mm cross rods forming a ladder design with cross rods spacing not exceeding 400mm o.c. Side rods shall be notched or knurled. Design ladder reinforcement to allow placement of side rods at the center-line of both face shells of the concrete block. Cross rods are to be designed without a drip feature.
- .3 All block reinforcement, wall (vener) ties and anchors shall be hot dip galvanized after fabrication to ASTM A 153-82 and CSA G164-M92.

2.3 MORTAR

- .1 Refer to Section 04 05 13 - Masonry Mortar and Grout.

2.4 CONTROL JOINTS

- .1 Refer to Section 07 92 00 - Joint Sealants.

2.5 DEFLECTION FILLER

- .1 Compressible, self-restoring cellular foam type strips approximately 25.4mm wide and of thickness to suit void above all non-bearing masonry partitions.
- .2 Filler in fire-rated fire separations for deflection space and around pipes shall be non-combustible and in conformity with required fire rating, and comply with requirements specified in Section 07 84 00 - Firestopping.

2.6 GROUT

- .1 Refer to Section 04 05 13 Masonry Mortar and Grout.

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 PREPARATION

- .1 Furnish, install and maintain safe and adequate scaffolding, centering and other equipment necessary for the proper execution of the work. During erection, walls shall be properly braced.
- .2 All equipment for mixing and transporting the mortar and units shall be clean and free from set mortar, dust or other foreign matter.
- .3 Ensure that steel and concrete surfaces are ready to receive masonry and that there are no protuberances or sharp edges which may tear or puncture the membrane flashing.
- .4 Protection:
 - .1 Provide waterproof protection over construction surfaces at mixing areas to prevent deposit on them of mortar and mortar materials.
 - .2 Cover exposed tops of masonry walls when laying is not in progress and until protected by completed construction. Cover with non-staining waterproof material to overhang top edges of wall by 600mm (24") minimum and secured to prevent dislodgement.
 - .3 Protect exposed external corners of masonry with materials which will not damage or soil finished surfaces.
 - .4 Protect all finished surfaces from mortar droppings.

- .5 Take particular care to protect faces of concrete unit masonry from mortar droppings and smears as laying proceeds.
- .5 Steel Lintels:
 - .1 Install lintels supplied by Section 05 10 00, Structural Steel. Level, adjust and secure angles permanently in place.

3.3 LAYING MASONRY - GENERAL

- .1 Lay masonry to meet specified requirements of CSA-A370-94 and CSA-A371-94, unless otherwise specified.
- .2 Lay masonry, plumb, level and true to line, in running bond, with vertical joints of alternate courses in line (interior partitions to extend to underside of roof deck or to structure above), properly jointed to connecting work (except for stack bond), vertical and horizontal joints of equal and uniform thickness. Constantly check levels and coursing with a graduated "storey" rod. All corners to be square unless shown otherwise on drawings. Minimize cutting of units.
- .3 Distribute exposed masonry of varying colours, textures, and tones over wall area to produce a homogeneous blend. Discard units which are too contrasting in appearance to achieve satisfactory blending.
- .4 Use chipped and blemished units only where concealed. Do not use defective or broken units. Do not lay concrete units with markedly smooth face that will appear slick where exposed to view, whether painted or not.
- .5 Maintain bracing of walls and piers continuously during construction until structure provides support.
- .6 Lay each hollow unit in full bed of mortar for face shells. Butter vertical joints full. When laying closure units butter vertical units already in place and ends of units being placed.
- .7 Stop off horizontal runs of walls by racking back a half unit in each horizontal course: do not tooth.
- .8 All solid concrete block units shall receive full head and bed mortar joints.
- .9 Bond units at intersection of walls by overlapping units using full masonry bond or by pre-fabricated "tee" metal reinforcing.
- .10 Spread mortar only so far ahead that it remains plastic when masonry is laid. Use ample mortar on closures. Shove closure unit into place carefully so that adjoining masonry is not disturbed.
- .11 No masonry unit shall be shifted or re-aligned after being laid. If necessary to do so, remove unit, clean off and re-lay with fresh mortar.
- .12 Where new masonry abuts fully set masonry clean existing surfaces and dampen to obtain bond.

-
- .13 Build in all anchors, plugs, lintels, ties, inserts, flashings, reinforcement, window and door frames, etc., filling hollow metal door frames with cement mortar.
 - .14 Built-In Items
 - .1 Verify that built-in items specified in other Sections are available for building in before laying of masonry commences. Cooperate in the setting and aligning of built-in items and provide for later installation of items which are installed by other Sections, to avoid cutting, fitting, and patching.
 - .2 Build masonry around pressed steel door frames supplied and set as specified in other Sections. Ensure that anchors are well-secured and that frames are true and plumb. Completely fill frames with mortar as each course is laid. Maintain protective frame covering and ensure that no mortar is left on frame faces.
 - .15 Tolerances - to standards referenced herein.
 - .16 Use only dry and unfrozen materials.
 - .17 Joints
 - .1 Make joints of uniform thickness with vertical joints from course to course maintained plumb.
 - .2 Provide full bed and head joints for shear walls.
 - .3 When laying is resumed on walls previously laid with mortar either partially or totally set, remove loose units and mortar from top and adjoining surfaces. Remove mortar completely when masonry is removed and replaced with new.
 - .4 Form tooled concave joints wherever exposed to view, whether behind cabinets, fittings, and wall accessories, or not. When mortar has become "thumb-print" hard, tool joints and clean off burrs with trowel or burlap. Use a tool with a bearing surface of 550mm minimum length on horizontal joints to avoid uneven depressions.
 - .5 Trowel point joints in unparged masonry in contact with earth.
 - .6 Rake out joints of masonry exposed to view to provide for caulking:
 - .1 At juncture of interior and exterior walls with columns.
 - .2 At interior with exterior walls.
 - .3 Intersections of walls and partitions where joint reinforcement is installed.
 - .4 At caulked joints where indicated typically.
 - .7 Cut joints off flush where thin-set tile will be applied, and where treatment is not otherwise specified.

- .18 Cope, cut and split concrete masonry units with power-driven abrasive discs. Cut units wherever electrical outlets, grilles, and pipes occur. Allow 3.2mm (1/8") clearance around items which are incorporated in walls.

3.4 LAYING CONCRETE BLOCKWORK

- .1 Lay each hollow unit in full bed of mortar for inner and outer face shells. Butter vertical joints full. When laying closure units, butter vertical units already in place and ends of units being placed. In addition, the webs shall be laid in a full bed in all courses of piers where adjacent to cells that are to be reinforced or filled with concrete grout. Where walls or partitions abut concrete columns or beams build block tight to concrete and fill all voids with mortar and build in metal anchors.
- .2 Extend walls and partitions to underside of structural deck or structural members, as applicable, except where otherwise noted on Drawings. Incorporate both lateral support and deflection space at termination of walls as required by this Section.
- .3 Incorporate a deflection space between tops of non- load-bearing walls and partitions and structure to prevent transference of structural loads to masonry.
- .4 Fill deflection space with glass fiber board compressed to 50% of original thickness to completely seal space.
- .5 Coordinate laying of masonry with installation of lateral support specified in this Section and as provided by Section 05 50 00, Metal Fabrications.
- .6 All cutting of concrete block shall be done with a masonry saw.
- .7 Align webs of concrete unit masonry vertically and with thick ends on top.
- .8 Do not wet concrete block.
- .9 Do not expose open cells, cores or frogs of masonry units to view.

3.5 REINFORCING

- .1 Concrete block walls, including interior partitions shall have continuous masonry reinforcing in every second block course vertically starting at first joint above floor. Stop reinforcing at each side of all masonry control joints. Lap ends of reinforcement at least 200mm (8") at splices.
- .2 Place reinforcement additionally in courses 200mm (8"), 400mm (16") and 800mm (32") above and below openings, and extending 600mm (24") beyond jambs of openings.
- .3 Wherever walls and partitions intersect one another, or each other, continue reinforcement through. Do not carry reinforcement through intersections where lateral support anchors are installed or at intersections of walls and partitions with solid piers.

3.6 MASONRY ANCHORS

- .1 Provide adjustable anchors at steel structure.
- .2 Keep masonry a minimum of 12.7mm ($\frac{1}{2}$ ") clear of faces of structural members or as indicated on Drawings, and fill space with glass fiber board, leaving space for caulking at joints exposed to view or the weather.
- .3 Bed anchors solidly in mortar joints.

3.7 MORTAR

- .1 Mortar materials shall be measured either by weight or by volume and the methods of measurement shall be such that the proportions can be controlled with an error of not over 2%.
- .2 Mix mortar in accordance to CSA Standard A179-94 proportioned and mixed to suit location and type of masonry.

3.8 SEAL AT DUCTS, PIPES AND DECK

- .1 Neatly seal with masonry and mortar to within 19mm ($\frac{3}{4}$ ") around all ducts, sleeves, conduits, pipes and structural members which penetrate through masonry walls or partitions, maintaining the required fire resistance rating of the fire separation.
- .2 Fill in open flutes of structural deck along top of all block walls serving as fire separations. Leave cut block openings in block walls where required to leave clearances for deflection of structural members. In fire separation walls, these openings will be sealed in accordance with Section 07 84 00, Firestopping.
- .3 At service and structural penetrations through masonry fire-rated separations, and at the joint between the top of masonry fire-rated separations and structural deck above, seal all penetrations and joints in accordance with Section 07 84 00, Firestopping.

3.9 CONTROL JOINTS

- .1 Incorporate vertical shrinkage control joints in walls of which concrete masonry units are a part.
- .2 Install control joints at junctions of walls and columns, at intersections of unit concrete masonry load-bearing walls, and wherever indicated on Drawings, and otherwise in walls with no openings, at a maximum spacing of 10m (30'-0") o.c. Carry joints full height of walls.
- .3 Ensure complete vertical separation through walls incorporating control joints. Make control joints 9.5mm ($\frac{3}{8}$ ") wide, rake back 19mm ($\frac{3}{4}$ ") at junctures with concrete, and leave joints free and clear for caulking, as specified in Section 07 92 00, Joint Sealants.

- .4 Construct control joints of standard block and fill void between block with 20 MPa concrete grout to form a continuous key full height of joint. Maintain separation between walls on each side of joint by installation of continuous building paper between concrete key and block on one side of joint.

3.10 GROUTED REINFORCED MASONRY

- .1 Incorporate reinforcing steel and construct masonry to meet specified requirements of CSA-A371-94 and CAN3-S304-M84 (R1997), and as indicated on structural Drawings.
- .2 Fill first core of concrete blocks adjacent to door jambs solid with concrete.
- .3 Fill voids of concrete block with 20 MPa concrete where shown on Consultants' Drawings. Use metal lath strip in horizontal joint to prevent concrete from falling into lower blocks.

3.11 PROTECTION

- .1 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

3.12 CLEAN-UP

- .1 Point all holes in masonry (except weepers) and cut out all defective joints to a depth of 13mm (½") and repaint with mortar.
- .2 Patch damaged masonry walls which have been rejected.
- .3 Thoroughly clean all exposed masonry walls of all dirt, stains and excess mortar with stiff brushes and solution of tri-sodium phosphate and water. Scrapers may be used only where necessary with prior approval by the Consultant. Work from the top of wall towards bottom, completing work without interruption. Do not use wire brushes for cleaning masonry.
- .4 Should specified cleaning methods be insufficient, proceed with other methods only with approval.
- .5 Protect adjacent materials, construction and finished surfaces from damage while cleaning.
- .6 Ensure that all efflorescence and mortar deposits are removed from all exposed masonry surfaces.
- .7 Masonry work shall be left in a finished condition satisfactory to the Consultant.
- .8 Remove all equipment, surplus materials and debris immediately after completion of the work.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
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- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
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PART 2 PRODUCTS

- 2.1 MATERIALS
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- 3.1 EXAMINATION
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- 3.6 CLEAN-UP
- 3.7 SCHEDULES

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 All miscellaneous metal items not specifically described in other Sections of these specifications, but are required for a complete and operable facility including all steel staircases, handrails, guards, steel angles, supports, brackets, straps, anchors, runners, and other fixing members required by other trades.

1.2 RELATED SECTIONS

- .1 Section 04 20 00 - Unit Masonry.
- .2 Section 06 20 00 - Architectural Woodwork and Millwork.
- .3 Section 08 43 13 - Aluminum Framed Storefront.
- .4 Section 08 11 00 - Doors and Frames.
- .5 Section 09 91 00 - Painting.

1.3 REFERENCES

- .1 ASTM A53/A53M-12 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- .2 ASTM A153/A153M-09 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- .3 ASTM A307-12 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
- .4 ASTM A500/A500M-10a - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- .5 ASTM A501-07 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- .6 ASTM B177/B177M-11 - Standard Guide for Engineering Chromium Electroplating.
- .7 ASTM B209-10 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .8 ASTM B209M-10 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .9 ASTM B210-12 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.

- .10 ASTM B210-12 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.
- .11 ASTM B211M-12e1 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
- .12 ASTM B211-12e1 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
- .13 ASTM B221-12a - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .14 ASTM B221M-12a - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .15 CAN/CGSB 1.40-97 - Anticorrosive Structural Steel Alkyd Primer.
- .16 CAN/CGSB 1.181-99 - Ready-Mixed Organic Zinc-Rich Coating.
- .17 CSA-G40.20-04/G40.21-04 (R2009) - General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steel.
- .18 CSA-W47.1-09 - Certification of Companies for Fusion Welding of Steel.
- .19 CSA-W47.2-11 - Certification of Companies for Fusion Welding of Aluminum.
- .20 CSA-W48-06 (R2011) - Filler Metals and Allied Materials for Metal Arc Welding.
- .21 CSA-W55.3-08 - Certification of Companies for Resistance Welding of Steel and Aluminum.
- .22 CSA-W59-03 (R2008) - Welded Steel Construction (Metal Arc Welding).
- .23 CSA-W59.2-M1991 (R2008) - Welded Aluminum Construction.
- .24 SSPC (The Society for Protective Coatings) - Steel Structures Painting Manual.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Shop Drawings:
 - .1 Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - .2 Indicate welded connections using standard welding symbols. Indicate net weld lengths.
 - .3 Shop drawings for steel stairs, handrails and guards shall bear the stamp of a Registered Professional Engineer licensed to practice in the Province of Ontario.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.
- .3 Welders' Certificates: Submit to Section 01 33 00, certifying welders employed on the Work, verifying qualification within the previous twelve (12 months).
- .4 Requirements of Regulatory Agencies:
 - .1 Metal fabrications which function to resist forces imposed by dead and live loads shall conform to requirements of jurisdictional authorities.
- .5 Submit shop drawings to authorities along with required General Commitments to Review documents signed and sealed by Registered Professional Engineer overseeing the project.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Unless detailed or specified otherwise, standard products will be acceptable if construction details and installation meet intent of Drawings and Specifications.
- .2 Include all materials, products, accessories, and supplementary parts necessary to complete assembly and installation of metal fabrications specified in this Section.

- .3 Incorporate only metals that are free from defects which impair strength or durability, or which are visible. Install only new metals of best quality, and free from rust or waves and buckles, and that are clean, straight, and with sharply defined profiles.
- .4 Rolled steel sections and plates to CAN/CSA-G40.21-M92, grade 300W.
- .5 Hollow structural sections to CAN/CSA-G40.21-M92, grade 350W, Class H.
- .6 Steel pipe to meet requirements of ASTM Specification 120, extra strong.
- .7 Stainless steel to ASTM A269-85, Type 302, Commercial Grade, seamless welded to AISI No. 4 finish, exposed surface to have a No. 4 polished finish.
- .8 Welding materials to CSA W59-1989.
- .9 Galvanizing: Hot dipped galvanized with minimum zinc coating of 600G/M2 to CAN/CSA-G164-M92.
- .10 Shop coat primer to CAN/CGSB 1.40-M89.
- .11 Bolts and Anchor Bolts: to ASTM A307-89 and ASTM A325M-89 (high strength) where exposed to view; to match metal anchored.
- .12 Fastenings: Steel, cadmium plated screws and bolts.
- .13 Grout: non-shrink, non-metallic, flowable 24h, MPa 15, pull out strength 7.9 MPa.

2.2 FABRICATION

- .1 General
 - .1 Fabricate metal fabrications specified in this Section with machinery and tools specifically designed for the intended manufacturing processes and by skilled tradesmen.
 - .2 Fit and assemble metal fabrications in shop. When this is not possible, make a trial shop assembly.
 - .3 Incorporate means for fastening of other installations secured to metal fabrications.
 - .4 Welding shall conform to CSA W59-M1989 and be undertaken by a fabricator approved by Canadian Welding Bureau to CSA W47.1-1992.
- .2 Construction:
 - .1 Fabricate metal fabrications with materials, component sizes, metal gauges, reinforcing, anchors, and fasteners of adequate strength to withstand intended use, and within allowable design factors imposed by jurisdictional authorities.
 - .2 Ensure that metal fabrications will remain free of warping, buckling, opening of joints and seams, distortion, and permanent deformation.

-
- .3 Construct railings and balustrades to withstand both required vertical and horizontal loadings of jurisdictional authorities.
 - .3 Assembly:
 - .1 Accurately cut, machine and fit joints, corners, copes and miters so that junctions between components fit together tightly and in true planes.
 - .2 Conceal fastenings from view unless otherwise indicated on Drawings.
 - .3 Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
 - .4 Weld all connections where possible; bolt where not possible, and cut off bolts flush with nuts. Countersink bolt heads, and provide method to prevent loosening of nuts. Ream holes drilled for fastenings.
 - .5 Weld joints tight, flush, and in true planes with base metals. Make welds continuous where steel work is exposed, at joints where entry of water into building, or into voids of members or assemblies is possible. Seal exterior steel fabrications to provide corrosion protection in accordance with CAN/CSA-S16.1-M89.
 - .6 Grind welds smooth where exposed to view.
 - .7 Provide for differential movements within assemblies and at junctions of assemblies with surrounding construction.
 - .4 Finish Work:
 - .1 Incorporate holes and connections for products installed under other Sections of the Specifications and for bolted connections. Burned holes are not acceptable.
 - .2 Cleanly and smoothly finish exposed edges of materials including holes.
 - .3 Cap open ends of sections exposed to view, such as pipes, channels, angles, and other similar members.
 - .4 Machine or grind components to ensure level bearings.
 - .5 Prime Painting of Steel:
 - .1 Clean all loose mill scale, rust, dirt, weld flux and spatter from work after fabrication. Grind smooth sharp projections. Unless otherwise specified apply to steel surfaces a shop prime coat of paint. Force paint into corners and cover open areas smoothly with a uniform coating. Deliver metal fabrications to site with primer undamaged. Paint all surfaces except those to be welded in field, encased in concrete, or that are machined or galvanized. Give surfaces that are inaccessible to finish field painting two coats of primer.

- .2 Paint steel members under cover in shop and keep them under cover until paint has dried.
- .6 Galvanized Steel:
 - .1 Hot dip galvanize assemblies following their fabrication except where impossible.
 - .2 Fabricate items to be galvanized as recommended in Appendix A and Appendix B of CAN/CSA-G164-M92.
 - .3 Paint galvanized surfaces that are cut, welded or threaded with zinc rich paint to ensure a minimum coating of 0.102mm, immediately following damage to galvanized protection. Prepare and repair surfaces to meet specified requirements of ASTM Practice A780.

2.3 FABRICATION TOLERANCES

- .1 Squareness: 3mm (1/8 inch) maximum difference in diagonal measurements.
- .2 Maximum Offset Between Faces: 1.6mm (1/16 inch).
- .3 Maximum Misalignment of Adjacent Members: 1.6mm (1/16 inch).
- .4 Maximum Bow: 3mm in 1.2m (1/8 inch in 4 ft).
- .5 Maximum Deviation From Plane: 1.6mm in 1.2m (1/16 inch in 4 ft).

2.4 FINISHES

- .1 Prepare surfaces to be primed in accordance with SPCC SP 2.
- .2 Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- .3 Do not prime surfaces in direct contact with concrete or where field welding is required.
- .4 Prime paint items with one (1) coat.
- .5 Structural Steel Members: Galvanize after fabrication to appropriate grade for type and size of steel material indicated.
- .6 Non-structural Items: Galvanized after fabrication to appropriate grade for type and size of steel material indicated.

2.5 PAINTING

- .1 All painting shall be done under cover and steel shall remain under cover until the paint is dry. No painting shall be done on wet steel nor in a temperature below 7°C.
- .2 Unless otherwise specified, all finished painting of steel shall be as specified under Section 09 91 00, Painting.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify that field conditions are acceptable and are ready to receive work.
- .3 Verify dimensions, tolerances, and method of attachment with other work.

3.2 PREPARATION

- .1 Clean and strip aluminum and/or primed steel items to bare metal where site welding is required.
- .2 Supply steel items required to be embedded in masonry or cast into concrete with setting templates to appropriate sections.

3.3 INSTALLATION

- .1 Install items plumb and level, accurately fitted, free from distortion or defects.
- .2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- .3 Field weld components indicated on Shop Drawings.
- .4 Perform field welding to CSA requirements.
- .5 Obtain approval prior to site cutting or making adjustments not scheduled.
- .6 After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
- .7 Insulate metals where necessary to prevent corrosion due to contact between dissimilar metals and between metals and concrete. Use bituminous paint, butyl tape, paper or other approved means.
- .8 Supply all fastenings, anchors and accessories required for fabrication and secure installation of metal fabrications as required by loading and jurisdictional authorities. Make exposed metal fastenings and accessories of same material, texture, colour and finish as base metal on which they occur unless otherwise shown or specified. Keep exposed fastenings to an absolute minimum and inconspicuous, spacing them evenly and setting them out neatly. Make fastenings of permanent type. Make field connections with high tensile bolts to CAN/CSA-S16.1-M89 or weld.

3.4 ERECTION TOLERANCES

- .1 Maximum Variation From Plumb: 6mm ($\frac{1}{4}$ inch) per story, non-cumulative.
- .2 Maximum Offset From True Alignment: 6mm ($\frac{1}{4}$ inch).

- .3 Maximum Out-of-Position: 6mm (¼ inch).

3.5 ADJUSTMENT

- .1 Check all movable or removable items to ensure that everything operates correctly and as intended.
- .2 After installation of each item, touch up rivets, field welds, bolts and burnt or scratched surfaces with primer. Touch up galvanized surfaces with zinc rich primer where burned by field welding.

3.6 CLEAN-UP

- .1 At completion of work, remove all debris, rubbish surplus materials, scaffolding and equipment from the site.
- .2 Aluminum finishes shall be thoroughly cleansed, and if necessary, a solution such as mild soap or detergent shall be used.
- .3 Under no circumstances should abrasive acidic or alkaline cleansing materials be used.

3.7 SCHEDULES

- .1 The following Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.
 - .1 Countertop and Bench Supports
 - .1 Supply for installation under Section 06 20 00 Architectural Woodwork and Millwork, posts, angle supports and plates all welded and drilled to receive anchor bolts and wood screws. Provide in size and quantity as shown on drawings.
 - .2 Miscellaneous Brackets, Support and Angles
 - .1 Supply for installation by respective trades, steel brackets, supports and angles, etc., as indicated on drawings. Drilled openings for countersunk screws or anchor bolts. Prime paint for interior installations and hot-dipped galvanize for exterior installations. Items included but not limited to steel lintels and wall supports etc..
 - .3 Steel Stairs
 - .1 Refer to sections and details shown on Drawings.
 - .2 Steel stairs shall be constructed of plate, angle and channel stringers and bent steel treads and risers formed as shown, one piece for tread and riser supported on steel angles.
 - .3 All stringers shall be as per details and shall include all returns and finishing pieces.
 - .4 Stair treads and risers shall be perfectly flat and uniform and worked to suit conditions throughout with allowance for

- concrete toppings by General Contractors. Finished riser height must be maintained at landings and finished floor levels.
- .5 The entire structure shall be assembled in the most substantial manner and shall be welded rigid.
 - .6 Steel stairs and landings shall be connected to and supported from the structure of the building.
 - .7 The stairs and landings shall be designed to support a live load of 4800 N/m².
- .4 Handrails
- .1 Supply for installation by respective trades, steel brackets for wall-mounted handrails. Drilled openings for countersunk screws or anchor bolts.
 - .2 Refer to sections and details shown on Drawings.
- .5 Perforated Metal Panels (**PM**)
- .1 Material: Hot rolled steel, minimum 1.9mm (14 ga.) base metal thickness.
 - .2 Finish: Factory applied satin clear coat.
 - .3 Perforation Pattern: Refer to details shown on Drawings.
 - .4 Dimensions:
 - .5 Sizes: Refer to details shown on Drawings.

END OF SECTION

PART 1 GENERAL

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- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
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PART 2 PRODUCTS

- 2.1 MANUFACTURES
- 2.2 MATERIALS
- 2.3 ACCESSORIES

PART 3 EXECUTION

- 3.1 PREPARATION
- 3.2 INSTALLATION
- 3.3 CLEAN-UP

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Provide all labour and materials for rough carpentry required on Site with the exception of concrete formwork which shall be performed as specified under Division 3.
- .3 Furnish rough hardware, cements, glue, adhesives and fasteners for the complete fabrication and installation of carpentry items.
- .4 Supply and install all wood framing, furring, rough bucks and nailing strips shown to be required and not otherwise specified in other Sections of this Division.
- .5 Supply and install backboards for mounting electrical equipment.
- .6 Supply and install wood preservative where required.

1.2 RELATED SECTIONS

- .1 Section 04 20 00 - Unit Masonry
- .2 Section 05 10 00 - Structural Steel
- .3 Section 06 20 00 - Architectural Woodwork and Millwork.
- .4 Section 09 21 16 - Wall Board Assemblies
- .5 Division 26 - Electrical

1.3 REFERENCES

- .1 CAN/CSA-O80 Series 08 Wood Preservation
- .2 CSA-O121-08 - Douglas Fir Plywood.
- .3 CSA-O141-05 (R2009) - Softwood Lumber.
- .4 CSA-O151-09 - Canadian Softwood Plywood.
- .5 CSA-O153-M1980 (R2008) - Poplar Plywood.
- .6 CSA-O437 Series 93 (R2006) Standards on OSB and Waferboard.
- .7 NPA A208.1-2009 - Particleboard.
- .8 APA (American Plywood Association) - Grades and Specifications.
- .9 CANPLY (Canadian Plywood Association) - Canadian Plywood Handbook.
- .10 NLGA (National Lumber Grades Authority) - Standard Grading Rules for Canadian Lumber, 2010 edition.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide technical data on wood preservative materials.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Procedures for submittals.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

- .1 Lumber Products: Graded and stamped to NLGA requirements.
- .2 Plywood Products: Certified and graded to APA and CANPLY requirements.

1.9 DELIVERY, STORAGE AND PROTECTION

- .1 Section 01 60 00 – Material and Equipment
- .2 Protect work from moisture damage.

PART 2 PRODUCTS

2.1 MANUFACTURES

- .1 Acceptable Manufacturers: As listed in paragraphs below.

2.2 MATERIALS

- .1 Lumber:
 - .1 Lumber shall be of same species and grade, equally seasoned and shall be processed and stamped at same mill.
 - .2 CSA O141 and NLGA Standard Grading Rules for Canadian Lumber.
 - .3 Board quality: Construction or better.
 - .4 Roof lumber: NLGA, Construction grade light framing, Jack Pine, S4S, pressure treated to CAN/CSA-O80 series using copper based waterborne preservative treatment, impregnated to a net retention of

4 kg/ m³ of preservative unless otherwise specified by preservative manufacturer.

- .2 Sheet:
 - .1 Plywood: CSA O121-M, sheathing grade, laminated with waterproof adhesive, exterior grade.
 - .2 Nails, Staples, Screws for Pressure Treated Wood: Hot dip galvanized or stainless steel.
- .3 Treatments:
 - .1 Surface applied wood preservative: Green coloured copper naphthenate or 5% pentachlorophenol solution, water repellent preservative or same copper based preservative as used for shop impregnation, in accordance with CAN/CSA O80.
 - .2 Fire retardant treatment of lumber and plywood: , conforming to CAN/CSA-O80.20 and CAN/CSA-O80.27 respectively, to provide a flame spread rating of 25 or less in accordance with CAN/ULC-S102.

2.3 ACCESSORIES

- .1 Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
- .2 Anchors: Toggle bolt type for anchorage to hollow masonry, Expansion shield and lag bolt type for anchorage to solid masonry or concrete, bolt or ballistic fastener for anchorages to steel, as required.
- .3 Rough Hardware: Nails, spikes, screws, bolts or other required to complete the work covered by this Section conforming to current C.S.A. Standard G164. Hardware for exterior applications shall be non-corrosive, hot dip galvanized.
- .4 Glue: Waterproof, synthetic resins.

PART 3 EXECUTION

3.1 PREPARATION

- .1 Treat surfaces with wood preservative or fire-retardant applications before installation.
- .2 Apply preservative by dipping or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak for plywood.
- .3 Treat all material exterior and material within an envelope wall or exterior floor assembly.
- .4 Coordinate with other Sections providing blocking, nailing strips and trims as required for installation of work.

3.2 INSTALLATION

- .1 Properly frame together parts of The Work with members accurately cut to size, closely fitted, well spiked, and erected in a substantial manner, plumb, level, square and true to dimension.
- .2 Provide running members full length wherever possible.
- .3 Design for expansion and contraction of the materials.
- .4 After cutting, drilling and fitting "treated" wood and plywood but before installation, apply 1 full coat of wood preservative to exposed surfaces, including ends of blocking, furring, nailers and rough carpentry. Retreat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative or fire retardant before application.
- .5 Provide fasteners and rough hardware for a rigid and secure installation.
- .6 Miscellaneous Interior Carpentry:
 - .1 Provide plywood, blocking, furring, nailers, rough carpentry, grounds and nailing strips as indicated and/or as required for proper installation. Provide furring, blocking as required to support miscellaneous work indicated on Drawings or as required to meet design requirements.
- .7 Equipment Mounting Panels:
 - .1 Install all wood panels required for mechanical, electrical and communication trades for mounting of controls, panel boards, pull boxes, splitters, switches, wall mounted switch gear, junction boxes in sizes to suit design, electrical cabinets, data control equipment, disconnect switches, fire alarm control equipment, lighting control equipment, sound/communication equipment and other similar devices.
 - .2 Provide 19mm ($\frac{3}{4}$ ") thick exposed plywood backboard panels in one piece screw-fastened to fire treated wood strapping. Refer to Electrical Drawings for sizes and locations and securely mount panels to wall surfaces.
 - .3 Panel size and mounting height shall suit mechanical and electrical requirements acceptable to Consultant. Apply all surfaces and edges of plywood panels with 1 coat of fire retardant wood preservative.
 - .4 Provide "fire treated" plywood.

3.3 CLEAN-UP

- .1 Upon completion of each day's work, clean up and dispose of, off-site, all debris resulting from the work of this trade.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 REGULATORY REQUIREMENTS
- 1.10 DELIVERY, STORAGE, AND PROTECTION
- 1.11 ENVIRONMENTAL REQUIREMENTS
- 1.12 WARRANTY

PART 2 PRODUCTS

- 2.1 MATERIALS
- 2.2 SHEET MATERIALS
- 2.3 PLASTIC LAMINATE
- 2.4 PLASTIC LAMINATE CABINETRY
- 2.5 SOLID SURFACING
- 2.6 ACCESSORIES
- 2.7 HARDWARE

PART 3 EXECUTION

- 3.1 FABRICATION
- 3.2 INSTALLATION
- 3.3 INSTALLATION OF SOLID SURFACES
- 3.4 INSTALLATION OF HARDWARE
- 3.5 ADJUSTMENT
- 3.6 CLEAN-UP

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with the requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Supply and install all finish carpentry items including all related millwork hardware and accessories.

1.2 RELATED SECTIONS

- .1 Section 04 20 00 - Unit Masonry.
- .2 Section 05 50 00 - Metal Fabrications.
- .3 Section 06 10 00 - Rough Carpentry.
- .4 Section 07 92 00 - Joint Sealants.
- .5 Section 09 91 00 - Painting.

1.3 REFERENCES

- .1 AHA A135.4-2004 - Basic Hardboard.
- .2 ASTM E84-12c - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .3 BHMA A156.9-2010 - Cabinet Hardware.
- .4 CAN/CGSB 11.3-M87 - Hardboard.
- .5 CAN/CGSB 11.5-M87 - Hardboard, Pre-coated, Factory Finished, for Exterior Cladding.
- .6 CAN/CSA-O80 Series-08 (R2012) - Wood Preservation.
- .7 CSA-O121-08 (R2013) - Douglas Fir Plywood.
- .8 CSA-O141-05 (R2009) - Softwood Lumber.
- .9 CSA-O151-09 - Canadian Softwood Plywood.
- .10 CSA-O153-13 - Poplar Plywood.
- .11 NPA A208.1-2009 - Particleboard.
- .12 NPA A208.2-2009 - Medium Density Fiberboard (MDF) for Interior Applications.
- .13 NAAWS – North American Architectural Woodwork Standards – Most current edition.
- .14 CHPVA (Canadian Hardwood Plywood and Veneer Association) - Official Grading Rules for Canadian Hardwood Plywood-2010.

- .15 NEMA LD3-2005 - High Pressure Decorative Laminates (HPDL).
- .16 NLGA (National Lumber Grades Authority) - Standard Grading Rules for Canadian Lumber, 2010 edition.
- .17 NHLA (National Hardwood Lumber Association).

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on fire retardant treatment materials and application instructions.
- .3 Shop Drawings:
 - .1 Indicate materials, component profiles, fastening methods, jointing details, accessories, and plastic laminate types, to a minimum scale of 1:8 (38mm = 0.3m) (1½ inch = 1 ft).
 - .2 List all finish hardware being used.
- .4 Samples:
 - .1 Submit two (2) samples of each plastic laminate selected.
 - .2 Submit two (2) samples of cabinet hardware, trims and base.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Procedures for submittals.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

- .1 Perform work to North American Architectural Woodwork Standards, most current edition, Premium Grade.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three (3) years documented experience.
- .3 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.

1.9 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for fire retardant requirements.

1.10 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 60 00 – Material and Equipment
- .2 Protect work from moisture damage.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain building and millwork temperature between 19 and 21°C for a period of at least 72 hours before and until takeover of project by Owner.

1.12 WARRANTY

- .1 The warranty shall cover making good any defects in Millwork due to faulty workmanship or defective materials supplied by the Millwork Contractor which appears during a two (2) year period following Substantial Completion of the building contract.
- .2 Submit three (3) copies of signed and written guarantee for incorporation in the Project Record Document Manuals in accordance with Section 01 77 00, Close-Out Procedures.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Hardwood Lumber:
 - .1 Shall conform to AWMAC (AWMAC (NAAWS)) Premium Grade, AWS Section 3, conforming to NHLA requirements; Moisture Content: Kiln dried to 8% or less and of uniform grain and colour.
 - .2 Refer to Architectural Drawings for sizes and profiles.
 - .3 All hardwood lumber to receive paint finish will be Birch, custom grade.
 - .4 All hardwood lumber to receive clear finish will be maple, premium grade.
- .2 Softwood Lumber:
 - .1 Shall conform to CAN/CSA-O141, and AWMAC (NAAWS), Premium Grade, AWS Section 3, Ontario White Pine, Yellow Pine or other Pine species.
- .3 Framing Lumber (Concealed Framing): Select Merchantable Western White Spruce, kiln dried, or other sound material of other species for framing concealed members, free from sap, shakes, knots, splits and other defects. Grade marked by appropriate authorized association by National Lumber

Grades Authority. Provide concealed wood of most appropriate grade required to satisfy fabrication, utility and structural requirements.

- .4 Architectural Lumber (Exposed Framing): Conform to AWMAC (NAAWS) Premium Grade, AWS Section 3. Clear, straight, kiln dried, Maple for fitments and door jambs. Provide kiln dried lumber to 7% moisture content, free from blemishes that would be apparent after finish is applied.

2.2 SHEET MATERIALS

- .1 Shall conform to the requirements of AWMAC (NAAWS), Premium Grade, AWS Section
- .2 Hardwood Plywood:
 - .1 Shall conform to the current C.S.A. Standard 0115-M1982 (R2001), the CHPVA Official Grading Rules for Canadian Hardwood and shall be of thickness and sizes as shown on details.
 - .2 Where two sides are exposed to view, provide interior type, medium density fiberboard, sound two sides with both veneers of Canadian Birch, without patches, all for stain finish.
 - .3 Where one side is exposed to view, provide interior type, medium density fiberboard, sound one side with exposed face veneer of Canadian Birch without patches, all for stain finish.
 - .4 All exposed edges shall be faced with veneer.
- .3 Veneers:
 - .1 Open-grain species: minimum 0.71mm thick.
 - .2 Close-grain species: minimum 0.61mm thick.
 - .3 Matching edge banding on all edges exposed to view.
- .4 Marine Grade Plywood: 19mm ($\frac{3}{4}$ ") thick. to be used in all washrooms.
- .5 Plywood Backs:
 - .1 Shall be 6mm ($\frac{1}{4}$ ") veneer core, good one side, with face veneer of Canadian Birch, to Architectural Woodworks Standard, Custom Grade.
- .6 Medium Density Fiberboard (MDF):
 - .1 NPA A208.2; composed of fire retardant wood fibers, medium density, balanced designed, manufactured from 100% recycled materials, without the use of added formaldehyde resins. Finish and Texture: To match Consultant's sample.
 - .2 Provide industrial grade MDF certified to meet Class 1 surface burning characteristic of ATSM E84, CAN/ULC-S102 with a maximum Flame Spread rating of 25 and maximum Smoke Developed of 50.

- .3 Do not use MDF panels in moist areas.
- .4 Acceptable Products:
 - .1 Decorative panels, "Medite FR®" by Sierra Pine Ltd; www.sierrapine.com or approved equivalent products manufactured by Flakeboard Company Limited; www.flakeboard.com, Uniboard Canada Inc.; www.uniboard.com, or Tafisa Canada and Company, Ltd.; www.tafisa.ca.
- .7 Hardboard: CAN/CGSB 11.3, Type 2; pressed wood fiber with resin binder, tempered grade, 6mm (1/4"), minimum density 476 Kg/m³.
- .8 Banding:
 - .1 Door, drawers, shelving, gables and other exposed edges of plywood shall be finished on all exposed edges with matching solid T-edge hardwood 10mm (3/8") thick minimum, unless otherwise specified, applied using a hot glue process.

2.3 PLASTIC LAMINATE

- .1 Products of the following manufactures are acceptable to conformance to requirements of Drawings, Schedules and Specifications:
 - .1 Tafisa; <https://tafisa.ca/en>
 - .2 Abet Incorporated; www.abetlaminati.com
 - .3 Arborite; www.arborite.com
 - .4 Formica Inc.; www.formica.com
 - .5 Nevamar Company, LLC; www.nevamar.com
 - .6 Wilsonart Canada; www.wilsonart.com
 - .7 Pionite Decorative Laminates: www.pionite.com
- .2 Provide following types and thicknesses conforming to NEMA LD3 and AWS Section 4, Item 4.2c:
 - .1 Horizontal General Purpose:HGS - 1.2mm (0.048").
 - .2 Vertical General Purpose:VGS - 0.7mm (0.028").
 - .3 Postforming Horizontal: HGP - 1.0mm (0.039").
 - .4 Postforming Vertical:VGP - 0.7mm (0.028").
 - .5 Fire Rated: HGF - 1.2mm (0.048")
 - .6 Cabinet Liner:CLS - 0.5mm (0.020").
 - .7 Backer Sheet: BKV - 0.7mm (0.028").
 - .8 Backer Sheet:BKH - 1.2mm (0.048").
 - .9 Special Purpose:HSM - 1.5mm (0.059").
 - .10 Flooring Grade, High Wear: HDS - 1.2mm (0.048").
 - .11 Flame Retardant:HGF - 1.2mm (0.048").

- .3 Thermofused Decorative Overlay (Melamine): NEMA LD3, melamine-impregnated decorative paper thermally fused to MDF core; white colour.
 - .1 Shall be manufactured by the same manufacturer as facing sheet or approved equal.
- .4 Backer sheet shall be supplied by the same manufacturer as facing sheet.
- .5 Colours and Finishes:
 - .1 **PL1:**
 - .1 Manufacturer: Formica.
 - .2 Product: ColorCore 2.
 - .3 Colour: Brock Red.
 - .4 Finish: Matte.
 - .2 **PL2:**
 - .1 Manufacturer: Formica.
 - .2 Product: ColorCore 2.
 - .3 Colour: 949C-58 White.
 - .4 Finish: Matte

2.4 PLASTIC LAMINATE CABINETRY

- .1 Cabinet Construction: Flush overlay, adjustable shelving MDF core.
- .2 Exposed Surfaces: Shall be plastic laminate finish to match adjacent exterior face.
- .3 Drawers and Drawer Fronts: High pressure laminate.
- .4 Edges: Plastic laminate.
- .5 Semi-exposed Surfaces:
 - .1 Surfaces (other than drawer bodies): Thermofused melamine.
 - .2 Shelves: Thermofused melamine.
 - .3 Edges: Plastic laminate.
 - .4 Drawer Sides and Backs: Edgebanded, thermofused Melamine.
 - .5 Drawer Bottoms: Edgebanded, thermofused Melamine.

2.5 SOLID SURFACING

- .1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.
 - .1 LX Hausys (www.lxhausys.com)
- .2 **SS1:** HI-MACS.
 - .1 Thickness: 3/4" (19mm).
 - .2 Colour: M552 Shadow Concrete.

- .3 **SS2: HI-MACS.**
 - .1 Thickness: 3/4" (19mm).
 - .2 Colour: M607 Aurora Cream.

2.6 ACCESSORIES

- .1 Adhesives:
 - .1 Polyvinyl adhesive to C.S.A. 0112.5-M1977. All wood and laminate adhesives must be free of added urea-formaldehyde.
 - .2 Plastic Laminate Adhesive: As recommended by plastic laminate manufacturer.
 - .3 Laminated Plastic Core Sealer: Water resistant sealer or glue as recommended by laminate manufacturer.
- .2 Nails And Staples:
 - .1 Shall conform to the current C.S.A. Standard B111-1974 (R2003) plain finish. Use non-corrosive hardware for exterior applications.
- .3 Fasteners: Size and type to suit application.
 - .1 Exposed Fasteners: Use only stainless steel fasteners with stainless steel components unless otherwise shown or noted.
 - .2 Bevelled hexagon head bolts: Conforming to ASTM A307
- .4 Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; Stainless steel finish were exposed.
- .5 Concealed Joint Fasteners: Threaded steel.

2.7 HARDWARE

- .1 Reserved:

PART 3 EXECUTION

3.1 FABRICATION

- .1 Standards: Fabricate all millwork to Architectural Woodwork Standard, most current edition, Premium Grade – Flush Overlay.
- .2 Finishing: Sand work smooth with the grain, set all nails and screws, apply wood filler, and leave ready to receive finish. Prepare all work which will be covered or otherwise hidden or inaccessible after installation ready for sealing.
- .3 Plastic Laminate: Shop apply plastic laminate finish to units by pressure bonding. Adhere plastic laminate over entire surface. Make corners with hairline joints. Use full-sized laminate sheets. Make joints only where

approved. Flat surfaces not fastened down rigidly to a frame shall have a bonded plastic laminate backing sheet.

- .4 Edging: Fit all exposed MDF edges with plastic laminate edging.
- .5 Hardware: Supply and install hardware required for fabrication.
- .6 Miscellaneous Interior Finish: All members shall be finish sizes as shown. Trim members for application on flat surfaces shall normally have the reverse side "backed-out", except such members as will have exposed ends.

3.2 INSTALLATION

- .1 Install Work to AWMAC (NAAWS) Premium Grade.
- .2 Set and secure all materials and components in place, rigid, plumb and square.
- .3 Use fixture attachments in concealed locations for wall mounted components.
- .4 Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- .5 Secure counter bases to floor using appropriate angles and anchorages.
- .6 Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.
- .7 At junction of millwork and adjacent wall finish, apply small bead of silicon rubber sealant.

3.3 INSTALLATION OF SOLID SURFACES

- .1 Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
 - .1 Provide product in the largest pieces available.
 - .2 Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
 - .1 Exposed joints/seams shall not be allowed.
 - .3 Reinforce field joints with solid surface strips extending a minimum of 25mm on either side of the seam with the strip being the same thickness as the top.
 - .4 Cut and finish component edges with clean, sharp returns.
 - .5 Rout radii and contours to template.
 - .6 Anchor securely to base cabinets or other supports.

- .7 Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in colour to match countertop.
- .8 Carefully dress joints smooth, remove surface scratches and clean entire surface.
- .9 Install countertops with no more than 1/8" (3mm) sag, bow or other variation from a straight line.

3.4 INSTALLATION OF HARDWARE

- .1 Reserved.

3.5 ADJUSTMENT

- .1 Reserved.

3.6 CLEAN-UP

- .1 Upon completion of work, clean up and dispose of, off site, all debris resulting from the work of this trade.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 REGULATORY REQUIREMENTS
- 1.10 ENVIRONMENTAL REQUIREMENTS
- 1.11 WARRANTY

PART 2 PRODUCTS

- 2.1 MATERIALS

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 INSPECTION
- 3.4 WORKMANSHIP
- 3.5 ACOUSTICAL BATT INSULATION
- 3.6 FIELD QUALITY CONTROL
- 3.7 PROTECTION OF FINISHED WORK
- 3.8 CLEAN-UP

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Supply and install all insulation where indicated on drawings.
- .3 Supply and install all adhesive and fastening devices for all insulation specified under this section.
- .4 Supply and install acoustical putty pads.

1.2 RELATED SECTIONS

- .1 Section 04 20 00 - Unit Masonry.
- .2 Section 09 21 16 - Wall Board Assemblies.

1.3 REFERENCES

- .1 ASTM C1029-10 - Standard Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation.
- .2 ASTM E84-12c - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .3 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide product description, insulation properties, preparation requirements.
- .3 Provide shop drawings for sloped insulation layout.
- .4 Provide two (2) samples, 305mm (12") square, of each insulation type for review.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements, perimeter conditions requiring special attention.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordinate with other work having a direct bearing on work of this section.
- .3 Coordinate work to ensure timely placement of insulation within construction spaces.
- .4 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience.

1.9 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for concealment, over coat, and flame and smoke requirements.

1.10 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain temperature and humidity recommended by the materials manufacturer before, during and after installation.
- .2 Coordinate the work of this section with all sections referencing this section.

1.11 WARRANTY

- .1 Warrant work of the Section against defects or deficiencies for a period of two years from date. Work is certified as substantially performed in accordance with General Condition of the Contract.
- .2 Promptly correct, at own expense, defects or deficiencies which become apparent within the warranty period.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Insulation Types:

- .1 Batt Insulation: Fiberglass insulation EcoTouch Pink as manufactured by Owens Corning, or approved alternative. Thickness as shown on drawings.
 - .2 Semi-rigid Insulation: Mineral wool insulation having a density of 48kg/m³ (3 lbs/cu.ft.) by Rockwool Inc. or approved alternative. Thickness as shown on drawings.
 - .3 Sound Attenuation Batts: Shall be ROCKWOOL AFB as manufactured by Rockwool Inc., or Thermafiber SAFB as manufactured by Owens Corning in thicknesses as shown on drawings.
- .2 Acoustical Putty Pads: Shall be SpecSeal SSP Putty Pads as manufactured by Specified Technologies Inc., or 3M Fire Barrier Moldable Putty pads MPP+ or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify work within construction spaces or crevices is complete prior to insulation application.
- .3 Verify that surfaces are clean, dry, and free of matter that may inhibit insulation adhesion.
- .4 Verify that all work by other trades that may penetrates through the thermal insulation is in place and complete.

3.2 PREPARATION

- .1 Mask and protect adjacent surfaces from over spray or dusting.
- .2 Apply primer in accordance with manufacturer's written instructions.

3.3 INSPECTION

- .1 Condition of Surfaces: Inspect surfaces and materials to which this material is to be applied. Notify the Consultant in writing when surfaces or materials are not suitable or acceptable and do not proceed until any such defects have been rectified.
- .2 Cleaning: Clean all surfaces to which insulation is to be adhered of oil, grease foreign material which may affect the bond of the adhesive.
- .3 Priming: All surfaces and materials to which insulation is to be adhered shall be primed prior to application of work.

3.4 WORKMANSHIP

- .1 Install insulation after building substrate materials are dry.

- .2 Fit insulation closely around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
- .3 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges.
- .4 Install materials in accordance with manufacturer's instructions.

3.5 ACOUSTICAL BATT INSULATION

- .1 Install insulation to manufacturer's written instructions and recommendations.
- .2 Install in walls spaces without gaps or voids. Fill entire stud cavity. Do not compress insulation.
- .3 Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- .4 Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation.
- .5 Acoustical insulation where back-to-back electrical/ mechanical back boxes are located apply acoustical putty pads around each box.

3.6 FIELD QUALITY CONTROL

- .1 Section 01 45 00: Quality Control.

3.7 PROTECTION OF FINISHED WORK

- .1 Do not permit subsequent construction work to disturb applied insulation.

3.8 CLEAN-UP

- .1 Upon completion of work, clean up and dispose of, off Site, all debris resulting from the work of this trade.

END OF SECTION

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PART 1 GENERAL

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- 1.9 SYSTEM DESCRIPTION
- 1.10 PERFORMANCE REQUIREMENTS
- 1.11 REGULATORY REQUIREMENTS
- 1.12 DELIVERY, STORAGE, AND PROTECTION
- 1.13 ENVIRONMENTAL REQUIREMENTS

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 MATERIALS
- 2.3 ACCESSORIES

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 APPLICATION
- 3.4 CLEANING
- 3.5 PROTECTION OF FINISHED WORK
- 3.6 SCHEDULES

GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 The work of this Section comprises the furnishing of all labour, materials and equipment required for the firestopping and smoke seals at penetrations through walls and floor openings as applicable on this Project.
- .3 Firestopping and smoke seals, in vertical and horizontal openings in fire-rated assemblies, hereinafter titles "Joint Firestop Systems", will be installed as per U.L.C. numbers.
- .4 Firestopping and smoke seals around mechanical assemblies, hereinafter titled "Service Penetration Firestop Systems", will be installed as per ULC numbers.
- .5 Firestopping and smoke seals around electrical assemblies, hereinafter titled "Service Penetration Firestop Systems", will be installed as per ULC numbers.
- .6 Firestopping and smoke seals within electrical assemblies (i.e. inside ducts, dampers) and electrical assemblies (ie. Inside cable trays) are specified in Division 21 and 26 respectively.
- .7 Refer to the schedules attached to the end of this section for ULC data and detailed requirements.

1.2 RELATED SECTIONS

- .1 Section 05 10 00 - Structural Steel.
- .2 Section 04 20 00 - Unit Masonry.
- .3 Section 09 21 16 - Wall Board Assemblies.
- .4 Division 23 - Mechanical.
- .5 Division 26 - Electrical.

1.3 REFERENCES

- .1 ASTM E84-12c - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 ASTM E119-12a - Standard Test Methods for Fire Tests of Building Construction and Materials.
- .3 ASTM E814-11a - Standard Test Method for Fire Tests of Penetration Firestop Systems.

- .4 ASTM E1966-07 (2011) - Standard Test Method for Fire-Resistive Joint Systems.
- .5 CAN/ULC-S101-07 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- .6 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .7 CAN/ULC-S115-11 - Standard Method of Fire Tests of Firestop Systems.
- .8 FM (Factory Mutual) - FM 4991-2001, Approval Standard for Approval of Firestop Contractors.
- .9 FCIA (Firestop Contractors International Association) - Manual of Practice.
- .10 NFPA 251 - Standard Methods of Tests of Fire Endurance of Building Construction and Materials, 2006 edition.
- .11 OPL (Omega Point Laboratories).
- .12 UL 263-2011 - Standard for Fire Tests of Building Construction and Materials (14th Edition).
- .13 UL 1479-2003 - Standard for Fire Tests of Through-Penetration Firestops (3rd Edition).
- .14 UL 1709-2011 - Standard for Rapid Rise Fire Tests of Protection Materials for Structural Steel (4th Edition).
- .15 UL 2079-2004 - Standard for Tests for Fire Resistance of Building Joint Systems (4th Edition).
- .16 ULC - Building Materials Directory.
- .17 WHI (Intertek/Warnock Hershey).

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on product characteristics, performance and limitation criteria.
- .3 System Design Listings: Submit system design listings, including illustrations from a qualified testing and inspection agency that is applicable for each firestop configuration.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special preparation and installation requirements.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

- .4 MSDS Sheets

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum ten (10) years' experience.
- .2 Contractor Qualifications: Company specializing in performing the work of this section and as follows:
- .3 Successfully completed not less than five (5) comparable scale projects.
- .4 Single Source Responsibility: Obtain firestop systems for each type of penetration and construction situation from a single primary firestop systems manufacturer.

1.9 SYSTEM DESCRIPTION

- .1 Firestopping systems installed to resist spread of fire and passage of smoke and other gases at penetrations through fire resistance rated wall, roof or floor assemblies, materials and components.

1.10 PERFORMANCE REQUIREMENTS

- .1 Use only materials, accessories and application procedures listed by cUL, ULC or tested to CAN/ULC-S115 to comply with building code requirements.
- .2 Firestopping Materials: CAN/ULC-S101, ASTM E814, ASTM E119 to achieve a fire rating as noted on Drawings.

1.11 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for fire resistance ratings and surface burning characteristics.
- .2 Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.12 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Deliver firestopping products in original, unopened containers with labels intact and legible, identifying product and manufacturer.
- .3 Store and handle firestopping materials to manufacturer's instructions.

1.13 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply materials when temperature of substrate material and ambient air is below 15°C (60°F) unless otherwise recommended by the manufacturer.
- .2 Maintain this minimum temperature before, during, and for three (3) days after installation of materials.
- .3 Provide ventilation to manufacturer's instructions in areas to receive solvent cured materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.
 - .1 3M Fire Protection Products; www.solutions.3m.com
 - .2 Hilti (Canada) Limited; www.ca.hilti.com
 - .3 A/D Fire Protection System Inc., www.adfire.com.
 - .4 Specified Technologies Inc., www.stifirestop.com
 - .5 Tremco Ltd., www.tremco.com .
 - .6 Or approved alternate.

2.2 MATERIALS

- .1 Service penetration firestop systems, if applicable: in accordance with requirements of CAN4-S115 and listed in ULC Guide No. 40U19.
- .2 Joint firestop systems: in accordance with requirements of CAN4-S115 and listed in ULC Guide No. 40U19.
- .3 Systems are to be of asbestos-free materials, capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115 and are not to exceed opening sizes for which they are intended.
- .4 Primers: To manufacturer's recommendation for specific material, substrate and end use.

- .5 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .6 Damming and backup materials and supports and anchoring devices: to manufacturer's recommendations and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
- .7 Sealants for vertical joints: non-sagging.

2.3 ACCESSORIES

- .1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.
- .2 Dam Material: Permanent.
 - .1 Mineral fiberboard.
- .3 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping are ready to receive the work of this section.
- .3 Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- .1 Ensure surfaces to receive firestopping are free of dirt, dust, grease, oil, rust, loose materials, release agents, frost, moisture or any other matter which would impair bond of firestopping material to substrate of penetrating items.
- .2 Prime substrates in accordance with manufacturer's written instructions.
- .3 Do not apply firestopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellents or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in actual fire tests are provided.
- .5 Mask where necessary to prevent firestopping materials from contacting adjoining surfaces that will remain exposed upon completion of work.

Remove tape as soon as it is possible to do so without damaging firestop material or substrate.

3.3 APPLICATION

- .1 Apply primer and firestopping materials to manufacturer's written instructions.
- .2 Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- .3 Apply firestopping material in sufficient thickness to achieve rating to uniform density and texture.
- .4 Compress fibered material to achieve a density of 40% of its uncompressed density.
- .5 Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.
- .6 Place intumescent coating in sufficient coats to achieve rating required.
- .7 Dam Material: Remove dam material after firestopping material has cured.
- .8 Tool or trowel exposed surfaces to a neat finish.
- .9 Remove excess compound promptly as work progresses and upon completion.

3.4 CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Clean adjacent surfaces of firestopping materials.

3.5 PROTECTION OF FINISHED WORK

- .1 Protect installed work. Remove and replace all damaged areas.
- .2 Protect adjacent surfaces from damage by material installation.

3.6 SCHEDULES

- .1 Provide firestopping of all conduit, duct, piping and other miscellaneous penetrations as required by the Ontario Building Code current edition.
- .2 Fire resistance rating of installed firestop system will not be less than the fire resistance rating of surrounding floor and wall assembly.
- .3 Alternative U.L.C. Designs are acceptable providing the system complies with the requirements of the specified systems.
- .4 If alternative U.L.C. Designs are proposed, the contractor must submit in writing within 30 days of award of contract, the systems intended to be used, along with all U.L.C. Design data.

- .5 The contractor is responsible for including an updated schedule, listing all joint firestop systems (JF) and service penetration systems (SP) as part of the as-built drawing submittal. The location of each joint firestop system used will be indicated on the as-built drawings.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 PERFORMANCE REQUIREMENTS
- 1.10 DELIVERY, STORAGE, AND PROTECTION
- 1.11 ENVIRONMENTAL REQUIREMENTS
- 1.12 WARRANTY

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 SEALANTS
- 2.3 COMPONENTS
- 2.4 ACCESSORIES

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 APPLICATION
- 3.4 EXTERIOR SEALANT SCHEDULE
- 3.5 INTERIOR SEALANT SCHEDULE
- 3.6 FIELD QUALITY CONTROL
- 3.7 MANUFACTURER'S FIELD SERVICES
- 3.8 CLEANING
- 3.9 PROTECTION OF FINISHED WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Preparing substrate surfaces.
- .3 Sealant and joint backing.
- .4 Supply and install all sealants as called for on drawings and in this Section to ensure a weather tight building.
- .5 Provide all skilled labour and equipment to perform this work.
- .6 Sealing of roofing and drywall shall be supplied and installed under Division 7 and 9 respectively.

1.2 RELATED SECTIONS

- .1 Section 03 30 00 - Cast-in-Place Concrete.
- .2 Section 04 20 00 - Unit Masonry.
- .3 Section 06 20 00 - Architectural Woodwork and Millwork.
- .4 Section 07 84 00 - Firestopping.
- .5 Section 08 11 00 - Doors and Frames.
- .6 Section 08 43 13 - Aluminum Framed Storefront.
- .7 Section 08 80 00 - Glass and Glazing.

1.3 REFERENCES

- .1 ASTM C834-10 - Standard Specification for Latex Sealants.
- .2 ASTM C919-11 - Standard Practice for Use of Sealants in Acoustical Applications.
- .3 ASTM C920-13 - Standard Specification for Elastomeric Joint Sealants.
- .4 ASTM C1184-13 - Standard Specification for Structural Silicone Sealants.
- .5 ASTM C1193-13 - Standard Guide for Use of Joint Sealants.
- .6 ASTM C1401-09a - Standard Guide for Structural Sealant Glazing.
- .7 ASTM E330-02 (2010) - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submittal Procedures.
- .2 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, colour availability.
- .3 Colour: Submit sealant colours for acceptance in accordance with following general colour hierarchy. Between 2 dissimilar materials, colour the sealant to match the material with the higher relative position on the colour hierarchy scale (highest is at ".1"):
 - .1 Concrete.
 - .2 Masonry.
 - .3 Metal extrusions.
 - .4 Metal (formed).
- .4 Material Safety Data Sheets: Submit MSDS for inclusion in Operation and Maintenance Manual without limitations for adhesives, sealants and other materials later designated by Consultant.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submittal Procedures.
- .2 Installation Data: Manufacturer's special installation requirements.
 - .1 Indicate special procedures, surface preparation, perimeter conditions requiring special attention.
- .3 Material Safety Data Sheet (MSDS).
- .4 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.

- .2 Applicator Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.
- .3 Perform work to sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- .4 Perform sealant application work to ASTM C1481 ASTM C1193.
- .5 Perform acoustical sealant application work to ASTM C919.
- .6 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.
- .7 Comply with ASTM C920 and other requirements indicated for each liquid-applied chemically curing sealant, including those referencing ASTM C920 classifications for type, grade, class, and uses.
- .8 Provide joint sealants, primer(s) and backings that are compatible with one another and with joint substrates under conditions of service and application as demonstrated by joint sealant manufacture based on proven test results and field experience.
- .9 For sealants to be applied to porous substrates: Provide products that have undergone testing according to ASTM D1245-05 and have not stained porous joint substrates indicated for Work.
- .10 Sealants supplied shall not exude any material(s) which travels into adjacent materials, or travels onto surfaces of adjacent materials; causing damage, or attracting soiling, which becomes apparent during the service life of the building.

1.9 PERFORMANCE REQUIREMENTS

- .1 Sealant Design: Design sealant to withstand specified loads without breakage, loss, failure of seals, product deterioration, and other defects.
- .2 Design installed sealant to withstand:
 - .1 Dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall as measured in accordance with ASTM E330.
 - .2 Movement and deflection of structural support framing.
 - .3 Water and air penetration.

1.10 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Deliver sealants products in original, unopened containers with labels intact and legible, identifying product and manufacturer.

- .3 Store and handle sealant materials to manufacturer's instructions.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.12 WARRANTY

- .1 Section 01 78 10: Warranties.
- .2 Provide a five (5) year warranty to include coverage for failure to meet specified requirements.
- .3 Include coverage for installed sealants and accessories which fail to achieve water tight seal, air tight seal and, exhibit loss of adhesion or cohesion, or do not cure.
- .4 Include coverage for installed sealants and accessories which fail to achieve water tight seal, air tight seal and, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:
 - .1 ChemRex Inc.; www.chemrex.com
 - .2 CPD Construction Products; www.cpd.com
 - .3 Dow Corning; www.dowcorning.com
 - .4 Euclid Chemical Canada Ltd.; www.euclidchemical.com
 - .5 Momentive Performance Materials; www.gesilicones.com
 - .6 Sika Canada Inc.; www.sikacanada.com
 - .7 Tremco Canada; www.tremcosealants.com
 - .8 W. R. Meadows; www.wrmeadows.com
 - .9 Pecora Corporation: www.pecora.com
 - .10 Hilti: www.hilti.ca

2.2 SEALANTS

- .1 Exterior All-purpose Weatherseal Sealant: Non-sag type, 1 component medium-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:

- .1 "Dow Corning 795 Silicone Building Sealant" or "791 Silicone Weatherproofing Sealant" or Contractor's Weatherproofing Sealant [CWS]" or "Contractor's Concrete Sealant [CCS] by Dow Corning.
 - .2 "GE SilPruf SCS2000" or "GE Silpruf SCS9000" or "UltraPpruf II SCS2900" or "Silicone Weatherproofing Sealant [SWS]" by Momentive Performance Materials or by Dow Corning.
 - .3 "Spectrem 2" or "Spectrem 3" or "Tremsil 400" by Tremco Canada.
- .2 Interior Sealants:
- .1 VOC limit: Less than 250g/L.
 - .2 Interior sealant at Vertical Movement and Non-Movement Joints, no detectible odour: One-component sealant in accordance with the following:
 - .1 ASTM C920, Type M or S, Grade NS, Class 25.
 - .2 CAN/CGSB 19.13-M87.
 - .3 SWR Institute Sealant Validation Program.
 - .3 Interior Sealant Mildew Resistant: One part silicone sealant in accordance with the following:
 - .1 ASTM C920, Type S, Grade NT, Class 25
 - .2 CAN/CGSB 19.22-M89.
 - .4 Interior Sealant Acoustical Sealing Materials: for sound isolation and for interior joints.
 - .1 Acoustic Sealant: ASTM C834 and ASTM C919, Non-hardening. Provide 1 of following:
 - .1 "QuietZone Acoustic Sealant" by Owens-Corning Canada Inc.
 - .2 "Smoke and Acoustic Sealant CP 506" by Hilti
 - .3 "QuietSeal" by Serious Materials or QuietSeal 350 by Serious Materials.
 - .2 Gaskets: Closed cell neoprene, 3mm (1/8") thick x 64mm (2½") wide.
 - .3 Asphalt Felt: CSA A123.3; No. 15 Type.

2.3 COMPONENTS

- .1 Joint Backing: Preformed, compressible, resilient, non-waxing, non-extruding, non-staining strips of closed cell polyethylene or urethane foam, compatible with joint substrates and are approved by sealant manufacturer based on field experience and laboratory test. Sizes and shapes to suit various conditions, diameter 25% greater than joint width. Backing shall be compatible with sealant, primer and substrate.

- .2 Bond Breaker Tape: As recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
- .3 Joint Primer: Non-staining, suitable for substrate surfaces, compatible with joint forming materials and as recommended by sealant manufacturer for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- .4 Masking Tape: Provide non-staining, non-absorbent tapes and sheets which effectively mask sealant without leaving an adhesive residue compatible with joint sealants and surfaces adjacent to joints.
- .5 Cleaning Material: Non-corrosive, non-staining, solvent type, xylol, methyl-ethyl-ketone (MEK), toluol, isopropyl alcohol (IPA) or as recommended by sealant manufacturer and acceptable to material or finish manufacturers for surfaces adjacent to sealed areas free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants with joint substrates.

2.4 ACCESSORIES

- .1 Setting Blocks and Spacers: Compatible with silicone sealant and recommended by sealant manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Examine joints for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Ensure joints are suitable to accept and receive sealants.
- .2 Verify that joint surfaces are clean, sound, free of defects and that dimensions are within sealant manufacturer's size requirements.
- .3 Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work implies acceptance of surfaces and conditions.
- .4 Do not apply sealant to masonry until mortar has cured.
- .5 Before any sealing work is commenced, test materials for indications of staining or poor
- .6 Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.

3.2 PREPARATION

- .1 Ensure joint interfaces are clean.
- .2 Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
- .3 Clean joints and spaces which are to be sealed and ensure they are dry and free of dust, loose mortar, oil, grease, oxidation, coatings, form release agents, sealers and other foreign material.
- .4 Clean porous surfaces such as concrete, masonry or stone by wire brushing, grinding or blast cleaning, mechanical abrading or combination of these methods as required to obtain clean and sound surfaces.
- .5 Remove laitance by grinding or mechanical abrading.
- .6 Remove oils by sandblast cleaning.
- .7 Remove loose particles present or resulting from grinding, abrading or sandblast cleaning by thorough brushing.
- .8 Clean ferrous metals of rust, mill scale and foreign materials by wire brushing, grinding or sanding.
- .9 Wipe non-porous surfaces such as metal and glass to be sealed, except pre-coated metals, with cellulose sponges or clean rags soaked with ethyl alcohol, ketone solvent, xylol or toluol and wipe dry with clean cloth. Where joints are to be sealed with silicone based sealants clean joint with methyl-ethyl-ketone (MEK) or xylol. Do not allow solvent to air-dry without wiping. Clean pre-coated metals with solutions or compounds which will not injure finish and which are compatible with joint primer and sealant. Check ferrous metal surfaces are painted before applying sealant.
- .10 Examine joint sizes and where depth of joint exceed required depth of sealant correct to achieve proper following width/depth ratio:
- .11 Maintain 2:1 width/depth ratio: minimum joint size to be 6mm x 6mm ($\frac{1}{4}$ " x $\frac{1}{4}$ "), maximum depth of sealant to be 13mm ($\frac{1}{2}$ ").
- .12 Install joint backing material to achieve correct, uniform joint profile and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- .13 Do not leave gap between ends of sealant backing; do not stretch, twist, puncture, or tear sealant backings; remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- .14 Where joint design or depth of joint prevents use of joint backing material, apply bond breaker tape to prevent 3-sided adhesion.

- .15 Do not stretch, twist, puncture or tear joint backing. Butt joint backing at intersections. Install bond breaker tape at back of joint where joint backing is not required or cannot be installed.
- .16 On horizontal traffic surfaces, support joint filler against vertical movement which might result from traffic loads, including foot traffic.
- .17 Where surfaces adjacent to joints are likely to become coated with sealant during application, mask them prior to priming and sealing.
- .18 Do not exceed shelf life and pot life of materials and installation times, as stated by manufacturer.
- .19 Be familiar with work life of sealant to be used. Do not mix multiple component materials until required for use.
- .20 Use materials as received from manufacturer, without additions, deletions and adulterations of materials.
- .21 Mix multiple component sealants and bulks sealants using mechanical mixer capable of mixing without mixing air into material, in accordance with manufacturer's directions and recommendations. Continue mixing until material is homogeneously blended, uniform in colour and free from streaks of unmixed material. Install compound prior to start of hardening or curing cycle.
- .22 Seal joints in surfaces to be painted before surfaces are painted. Where surfaces to be sealed are prime painted in shop before sealing check to make sure prime paint is compatible with primer and sealant. If they are incompatible, inform Consultant and change primer and sealant to compatible types approved by Consultant.
- .23 Where irregular surface or sensitive joint border exists, apply masking tape at edge of joint to ensure joint neatness and protection.
- .24 Prime exterior horizontal joints. Prime sides of joints for type of surface being sealed prior to application of joint backing, bond breaker or sealant as recommended by sealant manufacturer.

3.3 APPLICATION

- .1 Apply in accordance with manufacturer's directions and recommendations unless more stringent requirements apply.
- .2 Apply sealant by proven techniques using hand operated guns or pressure equipment fitted with suitable nozzle size and equipment approved by sealant manufacturer.
- .3 Force sealant into joint and against sides of joints to obtain uniform adhesion. Use sufficient pressure to completely fill all voids in joint regardless of variation in joint widths and to proper joint depth as prepared. Ensure full firm contact with interfaces of joint. Superficial pointing with skin bead is not acceptable.

- .4 Finish face of compound to form smooth, uniform beads. At recesses in angular surfaces, finish compound with flat face, flush with face of materials at each side. At recesses in flush surfaces, finish compound with concave face flush with face of materials at each side.
- .5 Compound may be tooled, provided such tooling does not damage seal or tear compound. Avoid pulling of sealant from sides.
- .6 Tool surfaces as soon as possible after sealant application or before any skin formation has occurred, particularly when using silicone sealants.
- .7 Ensure joint surfaces are straight, neatly finished, free from ridges, wrinkles, sags, dirt, stains, air pockets and embedded foreign matter or other defacement and be uniform in colour, free from marbling and/or colour streaking due to improper mixing or use of out of shelf-life Products.
- .8 Do not use solvent curing sealants indoors.

3.4 EXTERIOR SEALANT SCHEDULE

- .1 Include in work of this section joint sealants in exterior assemblies to seal open joints in surfaces exposed to view, and to make building weather-tight and air-tight, as applicable, as indicated, and as otherwise specified, expect where specified under work of other sections.
- .2 Install exterior sealant to:
 - .1 Perimeters of penetrations at exterior façade of building.
- .3 Joint designation in preceding paragraphs and fact that Drawings do not show all locations to be sealed does not limit responsibility of this Section to seal all locations except those indicated in other Sections of work, required to create and ensure continuous enclosure.

3.5 INTERIOR SEALANT SCHEDULE

- .1 Include in work of this section all penetrations above and below ceilings in partitions and walls to be sealed regardless of fire rating or STC ratings.
- .2 Include in work of this section tops and bottoms of gypsum board partitions to be sealed regardless of fire or STC ratings.
- .3 Install Interior sealant to:
 - .1 Interior control joints in floor and wall surfaces.
 - .2 Perimeters of door and window frames.
 - .3 Joints at tops of non-load bearing masonry walls at the underside of decking or slab.
 - .4 Exposed interior control joints in gypsum board.
 - .5 Millwork or casework junctions with walls.
 - .6 Joints between dissimilar materials exposed to view.

- .7 Interior control joints in masonry
- .8 Where shown in Drawings.
- .4 Mildew Resistant sealant to:
 - .1 Surfaces in interior wet areas.
 - .2 Joints around plumbing fixtures.
 - .3 Joints around washroom accessories.
 - .4 Joints between vanity countertops and walls.
- .5 Acoustical sealant:
 - .1 Apply acoustical sealant to every air gap, such as gaps around perimeter of wall, between wall panels and around any penetrations made for plumbing or electrical wiring. Seal off any piping, electrical output boxes, and duct work with acoustical treatments. Treat junction boxes with acoustic putty, treat piping and duct work either with fiberglass duct liner or damping material or both. Treat frame with gasket material (weather-strip) and Install security flap on bottom of door to seal it off.
 - .2 Apply acoustical sealant around partition cutouts including, but not limited to, gaps between wall stud plates and subfloor, electrical outlets and boxes, plumbing and duct outlets, air ducts and boots, doors, windows and other miscellaneous wall and floor penetrations or gaps.
 - .3 Apply sealant between track or runner, walls, floors and ceiling; areas may require pre-moulded, loose-cell filler between tracks and drywall at top and bottom edges to meet design requirements.
 - .4 Apply minimum 13mm (1/2") diameter bead of acoustic sealant continuously around periphery of each face of partition to seal wall board/structure junction where partitions abut fixed building components in accordance with recommendations of "CGC Drywall/Steel Framed Systems, Folder SA923 09250".
- .6 Joint designation in preceding paragraphs and fact that Drawings do not show all locations to be sealed does not limit responsibility of this Section to seal all locations except those indicated in other Sections of work, required to create and ensure continuous enclosure.
- .7 Firestopping and Smoke Seal: Sealants part of firestopping systems and smoke seals provided within fire rated assemblies shall be part of work of Section 07 84 00 and shall be carried out under supervision of this Section.

3.6 FIELD QUALITY CONTROL

- .1 Section 01 45 00: Quality Control.
- .2 Independent inspection and testing company may be appointed to carry out inspection and testing as directed by Consultant.

- .3 Inspect joints for complete fill, for absence of voids and for joint configuration complying with specified requirements. Record results in a manner acceptable to Consultant.
- .4 Tests may include sampling of installed Product where adhesion, cohesion or reversion failure is suspected.
- .5 Where work or materials fail to meet requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials.
- .6 Confirm in writing by manufacturer's representative to be on site throughout construction period work to inspect application of sealant and surface preparation.

3.7 MANUFACTURER'S FIELD SERVICES

- .1 Notify the product manufacturer prior to commencement of the application and obtain instructions as to recommended use of materials.

3.8 CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Clean adjacent soiled surfaces.
- .3 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess and droppings, using recommended cleaners as work progresses. Remove masking tape after tooling of joints.
- .4 Remove all packaging and debris from project area.

3.9 PROTECTION OF FINISHED WORK

- .1 Protecting installed work.
- .2 Remove masking tape and excess sealant.
- .3 Protect sealants until cured.

END OF SECTION

PART 1 GENERAL

- 1.1 SUMMARY
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUTSUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 PERFORMANCE REQUIREMENTS
- 1.10 DELIVERY, STORAGE, AND HANDLING
- 1.11 WARRANTY

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 MATERIALS
- 2.3 ALUMINUM HINGED DOORS
- 2.4 FABRICATION
- 2.5 FINISHES
- 2.6 ACCESSORIES

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 INSTALLATION
- 3.3 FIELD QUALITY CONTROL
- 3.4 CLEANING AND PROTECTION

PART 1 GENERAL

1.1 SUMMARY

- .1 Section includes glazed, aluminum-framed storefronts and accessories.

1.2 RELATED SECTIONS

- .1 Section 05 50 00 - Metal Fabrications
- .2 Section 07 92 00 - Joint Sealants.
- .3 Section 08 80 00 - Glass and Glazing.
- .4 Section 09 21 16 - Wall Board Assemblies.
- .5 Section 09 91 00 - Painting.

1.3 REFERENCES

- .1 AA DAF 45 [2003], Designation System For Aluminum Finishes.
- .2 AAMA-501-[2005], Methods of Test for Exterior Walls.
- .3 AAMA-2603-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
- .4 AAMA-2604-[2013], Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- .5 AAMA-2605-[2013], Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- .6 AAMA CW-10-[2012], Care and Handling of Architectural Aluminum From Shop to Site.
- .7 AAMA CW-11-[1985], Design Wind loads for Buildings and Boundary Layer Wind Tunnel Testing.
- .8 AAMA-TIR A1-[2004], Sound Control for Fenestration Products.
- .9 ASTM A653 / A653M – [09a], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .10 ASTM B209-[2010], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .11 ASTM B221-[2013], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .12 ASTM C612 – [2014], Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

- .13 ASTM E283 [2012], Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .14 ASTM E331 [2009], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
- .15 ASTM E413 – [04], Classification for Rating Sound Insulation.
- .16 ASTM E1105 – [2008], Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
- .17 ASTM D2240 – [2010], Standard Test Method for Rubber Property—Durometer Hardness.
- .18 CAN/CGSB-12.8-[97], Insulating Glass Units.
- .19 CAN/CGSB-12.20-[M89], Structural Design of Glass for Buildings.
- .20 CAN/CGSB-19.13-[M87], Sealing Compound, One-Component, Elastomeric, Chemical Curing.
- .21 CAN/CSA-S157 [2005], Strength Design in Aluminum.
- .22 CAN/CSA-S136–[2007], North American Specification for the Design of Cold-Formed Steel.
- .23 CAN/CSA W59.2 [M1991(R2003)], Welded Aluminum Construction.
- .24 CCD 45 [1995], Sealants and Caulking Compounds.
- .25 CAN/ULC-S710.1 [2005], Standard for Thermal Insulation – Bead-Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials
Standard for Thermal Insulation - Bead - Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .1 Product Data: Submit product data including manufacturer’s literature for glazed aluminum assemblies extruded members, panels, components and accessories, indicating compliance with specified requirements and material characteristics.
 - .1 Submit list on aluminum assemblies manufacturer’s letterhead of materials, components and accessories to be incorporated into Work.
 - .2 Include product names, types and series numbers.
 - .3 Include contact information for manufacturer and their representative for this Project.

- .2 Design Data: Provide framing member structural and physical characteristics, calculations, and dimensional limitations.
- .3 Shop Drawings: Submit drawings stamped and signed by Professional Engineer registered or licensed in the Province of Ontario, Canada. Include on shop drawings:
 - .1 Aluminum assemblies component dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, and field welding required. Indicate location of manufacturer's nameplates.
- .4 Samples:
 - .1 Submit duplicate 300mm x 300mm (12" x 12") sample sections showing prefinished aluminum surface, finish, colour and texture, and including section of infill panel.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.

1.6 CLOSEOUTSUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
 - .1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- .3 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the Section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum thirty (30) years' experience in the sale of folding-sliding door systems for large openings in the North American market.
- .2 Installer Qualifications: Installer experienced in the installation of manufacturer's products or other similar products for large openings. Installer to provide reference list of at least three (3) projects of similar scale and complexity successfully completed in the last three (3) years.
 - .1 Installer to be trained and certified by manufacturer.

- .3 Single Source Responsibility: Furnish Folding Glass Storefront system materials from one manufacturer for entire Project.

1.9 PERFORMANCE REQUIREMENTS

- .1 Design aluminum-framed storefront to AAMA CW-DG-1.
- .2 Design aluminum components to CAN/CSA S157.
- .3 Design and size aluminum-framed storefront to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of wall using design pressure of 0.48 kPa (10 psf) to AAMA CW 11 or ASTM E330.
- .4 Ensure system is designed to accommodate:
 - .1 Movement within aluminum-framed storefront assembly.
 - .2 Movement between system and perimeter framing components.
 - .3 Dynamic loading and release of loads.
 - .4 Deflection of structural support framing.
- .5 Sound attenuation through wall system: STC 33 to AAMA T1R A1 ASTM E413.
- .6 Glass dimensions: Size glass units to CAN/CGSB-12.20.
- .7 Flatness criteria: 6 mm (0.25 inches) maximum in 6 m (20 feet) for each panel.
- .8 Limit mullion deflection to flexure limit of glass 19 mm (0.75 inches) L/175 maximum with full recovery of glazing materials.
- .9 Reinforce aluminum-framed storefront system where necessary.

1.10 DELIVERY, STORAGE, AND HANDLING

- .1 Suitable storage at site shall be provided by the Contractor. Parts shall be stored in this area to permit natural ventilation over their finished surfaces.
- .2 Under conditions of high humidity, heating or forced ventilation shall be provided to prevent the accumulation of surface moisture.
- .3 Deliver, handle and store units by methods approved by manufacturer. Store units at site on wood platforms raised above grade or in enclosures protected from elements and corrosive material, and with resilient pads provided for full bearing support of frame. Stack units vertically in manner to prevent racking. Do not remove from crates or other protective covering until ready for installation.
- .4 Protection of this work shall be the responsibility of this Section and the methods used shall be agreed to with the Contractor.
- .5 Do not permit foreign materials such as splashing of concrete, mortar, plaster or paint, which could damage the finish, to remain on the surface of

finished work. All materials of this nature must be immediately removed, and where conditions are such that this will not be possible, surfaces exposed to abuse shall be protected by removable aluminized vinyl protection throughout the period that work proceeds on the building. The protective materials must be carefully removed on completion of the building, and in such a manner that no damage occurs to the aluminum finish.

1.11 WARRANTY

- .1 Warrant installation specified in this Section covering the period for five (5) years beyond the expiration of the warranty period specified in the General Conditions to the Contract. Without restricting the generality of the warranty, defects shall include failure to maintain true line, plumbness and weathertightness under all conditions.
- .2 Promptly remedy defects and/or failures upon written notification that such exist. Remedy shall include labour, materials, equipment and services required to make good defective work, and to replace such work, without removal of non-defective work, and to make good any work, components and finishes and Owner's property damaged or disturbed in course of remedying defects and/or failures.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.
 - .1 Alumicor Ltd., www.alumicor.com.
 - .2 Kawneer, www.kawneer.com.
 - .3 Oldcastle Building Envelope, www.obe.com .
 - .4 Or approved alternate.

2.2 MATERIALS

- .1 Aluminum-Framed Storefront System and Components:
 - .1 Product:
 - .1 Thermally Broken Frame: FlushGlaze BF3400 Series Storefront as manufactured by Alumicor, or approved alternate.
 - .2 Extruded aluminum: To ASTM B221, 6063 alloy with T5 or T6 temper.
 - .3 Sheet aluminum: To ASTM B209, utility grade for unexposed surfaces.

- .4 Fasteners, screws and bolts: Cadmium plated stainless steel 300 or 400 series to meet aluminum-framed storefront requirements and as recommended by manufacturer.
- .5 Glass units: To meet specified requirements of Section 08 80 00.
- .6 Glazing Materials: To meet specified requirements of Section 08 80 00.
- .7 Sealant: To meet specified requirements of Section 07 92 00.

2.3 ALUMINUM HINGED DOORS

- .1 Glass: Refer to Door and Frame Schedule on Architectural 900 Series Drawings.
- .2 Hardware: Prepare doors for, and install hardware supplied by Section 08 71 00. Refer to Door Schedule and Hardware Group Schedule for typical hardware.
- .3 Model and Manufacturer:
 - .1 Canadiana Entrance Doors "600A" by Alumicor, or approved alternate.

2.4 FABRICATION

- .1 Do aluminum welding to CAN/CSA W59.2.
- .2 Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated.
 - .1 Ensure verticals and horizontals are extrusions designed for shear block or screw spline corner construction.
- .3 Construct units square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.
- .4 Fabricate aluminum-framed storefront with minimum clearances and shim spacing around panel perimeter and ensure installation and dynamic movement of perimeter seal is enabled.
- .5 Accurately fit and secure joints and corners.
 - .1 Ensure joints are flush, hairline.
- .6 Prepare aluminum-framed storefront to receive anchor devices.
- .7 Use only stainless steel or zinc plated concealed fasteners
 - .1 Ensure fasteners do not penetrate thermal break.
 - .2 Where fasteners cannot be concealed, countersunk screws finished to match adjacent material may be used upon receipt of written approval from Consultant.
- .8 Prepare components to receive doors and openings as indicated.

.9 Reinforce framing members for exterior imposed loads where required.

.10 Visible manufacturer's labels are not permitted.

2.5 FINISHES

.1 Interior exposed aluminum surfaces: To AA DAF-45-M10C21A41, Architectural Class I, anodized 18 µm (0.0007 inches) minimum thickness.

.1 Acceptable material: Alumicor Ltd., Class I Anodic Finish.

.2 Colour: Clear.

2.6 ACCESSORIES

.1 Gasketing: To CCD-45 Extruded EPDM gaskets.

.2 Setting Blocks: To CCD-45 and ASTM D2240, neoprene, 80 - 90 Shore A Durometer hardness.

.3 Spacers: To CCD-45 and ASTM D2240, neoprene, 50 - 60 Shore A Durometer hardness.

.4 Sealant: To CAN/CGSB-19.13, Class 40, one-component, cold-applied, non-sagging silicone.

.5 .1 Acceptable material: Dow Corning 795.

.6 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.

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 aluminum-framed storefront installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Consultant.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 INSTALLATION

.1 Install aluminum-framed storefront in accordance with manufacturer's written recommendations.

.2 Do aluminum welding to CAN/CSA W59.2.

- .3 Attach aluminum-framed storefront assemblies to structure plumb and level, free from warp, and allow for sufficient adjustment to accommodate construction tolerances and other irregularities.
 - .1 Maintain dimensional tolerances and align with adjacent work.
 - .2 Use alignment attachments and shims to permanently fasten elements to building structure.
 - .3 Clean welded surfaces and apply protective primer to field welds and adjacent surfaces.
- .4 Install glass units in accordance with Section 08 80 00 Glass and Glazing and to manufacturer's written instructions.
- .5 Install perimeter sealant to method required to achieve performance criteria, backing materials, and installation criteria in accordance with Section 07 92 00 Joint Sealants.

3.3 FIELD QUALITY CONTROL

- .1 Field Inspection: Coordinate field inspection in accordance with Section 01 45 00 Quality Control.
- .2 Site Installation Tolerances:
 - .1 Variation from plumb: 12 mm per 30 m (0.5 inches per 100 feet) maximum.
 - .2 Misalignment of two adjacent panels or members: 0.8 mm (0.03 inches) maximum.
 - .3 Sealant space between aluminum-framed storefront and adjacent construction: 13 mm (0.5 inches) maximum.

3.4 CLEANING AND PROTECTION

- .1 Progress Cleaning: Perform cleanup as work progresses in accordance with Section 01 74 00 Cleaning and Waste Processing.
 - .1 Leave work area clean end of each day.
- .2 Final cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 74 00 – Cleaning and Waste Processing.
- .3 Waste Management:
 - .1 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
 - .2 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 ALLOWANCES
- 1.4 PRODUCTS SUPPLIED BUT NOT INSTALLED IN THIS SECTION
- 1.5 REFERENCES
- 1.6 SUBMITTALS
- 1.7 QUALITY ASSURANCE
- 1.8 DELIVERY, STORAGE AND HANDLING
- 1.9 WARRANTY
- 1.10 MAINTENANCE

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 MATERIALS
- 2.3 FINISHES
- 2.4 CYLINDERS, KEYING SYSTEMS AND KEY CONTROL

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 INSTALLATION
- 3.3 FIELD QUALITY CONTROL
- 3.4 ADJUSTING AND CLEANING
- 3.5 PROTECTION
- 3.6 HARDWARE GROUPS APPENDIX A

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Furnish, deliver and install finish hardware.
- .2 It is intended that the following list of hardware will cover finish hardware to complete the project. Bring to the Consultants attention any omissions, discrepancies that will affect work in this section during the bidding period.

1.2 RELATED SECTIONS

- .1 General Requirements Division 1
- .2 08 10 00 Doors and Frames
- .3 Division 26 Electrical
- .4 Division 28 Electronic Safety and Security

1.3 ALLOWANCES

- .1 Reserved.

1.4 PRODUCTS SUPPLIED BUT NOT INSTALLED IN THIS SECTION

- .1 Power supplies, compressor/control boxes, junction boxes installed by Division 26.

1.5 REFERENCES

- .1 Door and Hardware Institute - Recommended locations for Architectural Hardware for Standard Steel Doors and Frames
- .2 Door and Hardware Institute - Recommended locations for Architectural Hardware for Flush Wood Doors
- .3 CSDMA-Recommended Dimension Standards for Commercial Steel Doors and Frames (Hardware Locations)
- .4 NFPA 80-Standard for Fire Doors and Windows, 1999 Edition
- .5 Door and Hardware Institute - Sequence Format for Hardware Schedule
- .6 Door and Hardware Institute - Key Systems and Nomenclature
- .7 Door and Hardware Institute - Abbreviations and Symbols used in Architectural Door and Hardware Schedules and Specifications
- .8 Door and Hardware Institute – Installation Guide for Doors and Hardware
- .9 Ontario Building Code

1.6 SUBMITTALS

- .1 Updated Finish Hardware Schedule:
 - .1 Submit submittals in accordance with Section 01 30 00 Submittal Procedures. Prepare detailed hardware schedules in Door and Hardware (DHI) vertical format as detailed in Reference 1.5.5.
- .2 Product Data:
 - .1 Submit in a three-ring binder six (6) copies of product data sheets with the finish hardware schedule showing items of hardware to be used on the project.
- .3 Samples:
 - .1 When requested in writing, provide (to the Consultants Site Office) one sample of each hardware item complete with fasteners, within thirty (30) calendar days of award of a purchase order. Samples to be clearly labeled with their hardware schedule designation and manufacturers' name and model number. Samples will be incorporated into the work.
- .4 Templates:
 - .1 Submit templates within to related trades when requested.
- .5 Keying Schedule:
 - .1 After a keying meeting between representatives of the Owner, Pinders' Security Products to furnish a keying schedule listing the levels of keying as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. Utilize "Door and Hardware Institute - Key Systems and Nomenclature" as a guideline for nomenclature, definitions, and approach for selecting the optimal keying system. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
- .6 Wiring Diagrams
 - .1 Co-ordinate with related trades, meet with the owner and security provider and submit a written description of the functional use (mode of operation) of electrical hardware products specified. Include operation for ingress, egress, fire alarm, and after hours use where

applicable. Include door and frame elevations showing the location of each item of electrical hardware to be installed, mode of operation including a diagram showing number and size of conductors. Indicate on elevation drawing items provided by related trades, include for back boxes, and 120V power sources. Provide point to point drawings showing terminal connections necessary for a complete installation.

.7 Operations and Maintenance Data

- .1 Prior to Substantial Completion, furnish to the owner, two (2) copies of an owner's operation and maintenance manuals in a three-ring binder with the following information:
 - .1 Name of hardware distributor, address and contact name
 - .2 Copy of final "as-built" finish hardware schedule
 - .3 As installed "wiring diagrams, elevations, risers, point to point"
 - .4 Copy of final keying schedule
 - .5 Copy of floor plans with keying nomenclature assigned to door numbers as per the approved keying schedule
 - .6 Catalogue cut sheets and product specifications for each product
 - .7 Parts list for each product
 - .8 Installation instructions and templates for each product

1.7 QUALITY ASSURANCE

- .1 Review installation procedures with the Contractor's Designated Installers. Hold instruction meetings with installers prior to installation and subsequent review meetings during the installation period. Submit minutes of meetings to the Consultant.
- .2 Substitutions
 - .1 Only approved products specified are accepted. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the project.
- .3 Supplier Qualifications
 - .1 Successful hardware distributor to have a minimum of five (5) years' experience in the door and hardware industry. Distributor to have on staff an Architectural Hardware Consultant (A.H.C.) whose name will be listed on the hardware schedule title page submittal and will be responsible for scheduling, detailing, (see Reference 1.5.4) ordering and co-ordination of the finishing hardware for this project. If so, requested by the Consultant and or installer this individual will be required to visit the jobsite for any installation problems that may occur.

.4 Designated Installers

- .1 Hardware Installers must have a minimum of five (5) years' experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. Installers to attend review meetings with the Hardware Distributor.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Marking and Packaging

- .1 Mark cartons with heading number, door number, and key-set symbol where applicable in original packaging provided by the manufacturer. Pack packaged hardware in suitable wrappings and containers to protect it from damage during shipping and storage. Enclose accessories, fastening devices and other loose items with each applicable item of hardware.

.2 Delivery

- .1 Deliver hardware to related trades.

.3 Storage

- .1 Store in a clean, dry room with lockable man door and adequate shelving to permit organization so item numbers are readily visible.

1.9 WARRANTY

- .1 Furnish warranties by the accepted manufacturers:

Hardware Item	Length of Warranty
Mortise Hinges	1 year
Locks (Mortise)	10 years
Exit Devices, 35A, 98 mechanical	10 years
Exit Devices, 35A, 98, electro-mechanical	3 years
Door Closers - Mechanical	30 years
Electric Auto Door Operators	1 year
Overhead Stops/ Holders	10 years
Floor/Wall stops	1 year
Zero	5 years
Electric Strikes	5 years
Key Switches/Power Supplies	3 years

1.10 MAINTENANCE

.1 Maintenance Service

- .1 After the building is occupied arrange an appointment with the maintenance staff from Brock University for instruction of proper use,

servicing, adjusting and lubrication of hardware furnished. Submit to the consultant a list of attendees and meeting date.

- .2 Extra Materials
 - .1 Furnish the following items in proper manufacturer's cartons once the job has been completed:
 - .1 5 of each installation tool used for locks/passage/privacy, type of door closers, and exit devices.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products listed are Brock University standards for hardware from the manufacturers listed below:

ITEM	MANUFACTURER NAME
Full Mortise Hinges	Ives
Locksets, Latchsets/Deadbolts	Schlage
Cylinders	Medeco
Exit Devices	Von Duprin
Removeable Mullions	Post Latch Industries
Surface/Flush Bolts	Ives
Door Closers	LCN
Overhead Door Holders/Stops	Glynn Johnson
Door Pulls/Flatware	Ives, Canadian Builders
Hardware	
Wall/Floor Stops	Ives
Weather/Smoke/Sound Seals	Zero
Door Sweeps/Thresholds	Zero
Keyswitch	Dorma Kabba (RCI)
Magnetic Locks	Schlage Electronics
Electric Strikes	Von Duprin
Power Supplies	Schlage Electronics, Von Duprin

2.2 MATERIALS

- .1 Screws and Fasteners:
 - .1 Screws and fasteners to be matching finish to their product and to be manufacturer's standard. Door closers, door holders and exit devices installed on fire rated wood doors and hollow metal doors to be attached with fasteners to meet NFPA 80 requirements.
- .2 Materials-Acceptable Manufacturers (Note: Supply products in a given category from the same manufacturer):

- .1 Mortise Hinges
 - .1 Provide five knuckle bearing hinges with NRP option on reverse bevel doors with locking hardware. Hinge width to accommodate door closer projection, door trim and allow for 180-degree swing. Hollow metal and wood doors up to 2286mm (90") in height, supply 3 hinges, doors greater than 2286mm in height add one hinge for every additional 760mm of door height. Aluminum doors, up to 2286mm (90") in height, supply 4 heavy weight hinges, doors greater than 2286mm in height add one hinge for every additional 760mm of door height. Doors 915mm (36") wide and less furnish 114mm (4-1/2") high standard weight hinges, doors greater than 915mm (36") wide furnish 127mm (5") high heavy weight hinges. Supply ferrous (steel), stainless steel material for all interior and/or fire-rated doors and stainless steel for exterior doors.
 - .2 As Specified: Ives Hinges, 5BB1, 5BB1HW
- .2 Surface/Flush Bolts/Co-Ordinators:
 - .1 Manual Flush Bolts-Metal Doors:
 - .1 Manual flush bolt for metal doors to be cUL listed for 3-hour fire doors with 13mm (1/2") diameter bolt tip with 19mm (3/4") throw. Standard rod length to be 305mm (12"), supply longer length rods to suit higher door heights. Provide dustproof strikes with flush bolts that incorporate a bottom bolt.
 - .2 Supply as Specified: Ives FB458 series.
- .3 Locksets/Deadlocks/Privacy Sets:
 - .1 Mortise:
 - .1 Grade 1 Operational, Grade 1 Security, mortise lock for commercial and institutional buildings. Manufacture lock cases from fully wrapped, heavy 12 gage steel with a protected leading edge and screw configuration that limits access to operating parts. Lock components to be manufactured of zinc dichromate plated steel. Latch bolts to have a standard 70mm (2 3/4") backset with a full 19mm (3/4") throw. Latchbolts to be non-handed, field reversible without opening the lock case. Latchbolts to be 2-piece anti-friction, manufactured from stainless steel. Solid latchbolts and/or plastic anti-friction devices are not acceptable. Deadbolts to be 45mm (1 3/4") total length have standard 25mm (1") throw with a minimum 19mm (3/4") internal engagement when fully retracted. Deadbolts to be constructed of stainless steel, incorporating a security roller pin with a minimum Rc60 rating for surface hardness. Lever

assembly (external) to be one-piece design attached by threaded bushing. Lever assembly (internal) to be attached by screw less shank. Lever attachments by common tools (allen nuts and/or set screws) are not acceptable. Thru bolt lever assemblies through the door for positive interlock. Levers to have independent rotation in both directions. Lever operation to be freewheeling (clutch) when in the locked mode. Spring cages are to be incorporated into the lever assemblies. Hub blocking plate to be solid, cast stainless steel. Manufacturers utilizing open hub designs are not acceptable. Spindles to be independent, designed to "break away" at a maximum of 75psi torque. Mounting tabs are to be automatic self-adjusting, vertically and horizontally for door bevel and strike alignment. Cylinders to be secured by a cast stainless steel, dual retainer. Manufacturers utilizing screws and/or stamped retainers are not acceptable.

.2 Supply as Specified: Schlage "L" series

.2 Strike Plates

.1 Provide lockset and latchset strike plates with lip centre dimensions sized to minimally clear trim. Where strike lip extends beyond the projection of the casing or other trim, provide curved lip strikes. Strike plates applied to inactive leaf of paired openings to have flat lip sized to fit flush with the face of the door skin.

.4 Exit Devices/Device Trims/Mullions:

.1 Heavy Duty

.1 Exit device to be cUL listed for panic hardware and fire exit hardware. Supply panic hardware and fire exit devices featuring coil compression springs on device mechanism subassemblies and dead latching mechanisms for active latch bolts. Supply exit devices with smooth mechanism case and "the quiet one" fluid dampener to eliminate noise associated with exit device operations. Non-handed device with touchpad assemblies with no exposed fasteners and cast end caps, reinforced aluminum with stainless steel touchpad and raised edge to minimize pinching. Roller strikes to be standard on rim devices, mortise exit devices ASA strike (626) complete with strikes that match the same finish as the device. Doors greater than 950mm (37-13/32") wide supply long bar exit

- devices. Exit devices tested to 1,000,000 cycle testing independently certified by ETL.
- .2 Supply as Specified: Von Duprin 98 series
 - .2 Exit Device Trim
 - .1 Supply device trim featuring recessed cylinder mounting and coil compression spring design with shear pin protection for lever designs. Similar lever designs for exits as specified for locksets.
 - .2 Supply as Specified Von Duprin 996 series
 - .3 Mullions Non-Rated:
 - .1 Steel mullion prepared for two 264 or 299 strikes for use with Von Duprin rim devices and key removable kit to provide quick removal to provide single door performance and security on double door applications.
 - .2 Supply as Specified: Post Latch
 - .4 Mullions Rated:
 - .1 Fire rated cUL approved mullion for up to three-hour openings up to 8' x 8' using Von Duprin rim devices prepared for 499F strikes. Supply with key removable kit to provide quick removal to provide single door performance and security on double door applications.
 - .2 Supply as Specified: Post Latch
 - .5 Door Closers:
 - .1 Door closers to have the following features;
 - .1 Fully hydraulic, rack and pinion action with high strength cast iron cylinders and one-piece forged steel pistons.
 - .2 Include high efficiency, low friction pinion bearings.
 - .3 Hydraulic fluid of a type requires no seasonal adjustments, ULTRA X™ fluid has constant temperature control from -35 degrees Celsius to +49 degrees Celsius.
 - .4 Hydraulic regulation controlled by tamper-proof, non-critical screw valves, adjustable with a hex wrench.
 - .5 Separate adjustments for backcheck, general speed and latch speed.
 - .6 Door closers with special template (ST-) numbers include required associated product, information sheets and instructions
 - .7 Size 1 manual door closers to provide less than 5 pounds opening force on a 900mm door leaf.

- .8 Door closer with Pressure Relief Valves are not accepted.
- .9 Door closer bodies, arms, covers to be powder coated
- .10 Closers with powder coat finishes to exceed a minimum 100-hour salt spray test, as described in ANSI A156.18 and ASTM B117.
- .11 Closers detailed with plated finishes to include plated covers (or finish plates), arms and visible fasteners.
- .2 Medium Duty Mechanical (Interior/Exterior):
 - .1 On doors with standard weight hinges provide non-sized (1-6) and non-handed cylinder body to have 32mm (1 ¼") piston diameter with 16mm (5/8") single heat-treated shaft. Track closer cylinder body non-sized (2-4) or (1-2). Closers to have forged steel main arm and forearm EDA and SPRING CUSH type arms. Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck.
 - .2 Supply as Specified: LCN1460 HD series
- .3 Heavy Duty Mechanical (Pull Side Mount):
 - .1 On doors with heavy weight hinges provide non-sized (1-5) and handed cylinder body to have 38mm (1 1/2") piston diameter with 17mm (11/16") double heat-treated shaft and certified to exceed ten million (10,000,000) full load operating cycles by a recognized independent testing laboratory. Track closers sized 1, 3 or 4. Closers to have forged steel main arm. Provide drop plates, brackets or adapters for arms as to suit details.
 - .2 Supply as Specified: LCN 4010 series
- .4 Heavy Duty Mechanical (Parallel Arm Mount):
 - .1 On doors with heavy weight hinges provide non-sized (1-5) and handed cast iron cylinder body to have 38mm (1 1/2") piston diameter with 17mm (11/16") double heat-treated shaft and certified to exceed ten million (10,000,000) full load operating cycles by a recognized independent testing laboratory. Track closers sized 1,3 or 4. Closers to have forged steel main arm and forearms. Stop/stop hold open arms type arms are not acceptable. Provide drop plates, brackets, long rod and shoe or adapters for arms as to suit details.

- .2 Supply as Specified: LCN 4110 series
- .6 Overhead Door Stops/holders:
 - .1 Heavy Duty Surface Mounted:
 - .1 Surface overhead stops/holders to be stainless steel base, non-handed for single-acting doors with a heavy-duty channel/slide-arm design and offset jamb bracket to allow for simple field modifications of functions. Channel to be surface mounted to the door with thru bolts and the jamb bracket is surface mounted to the frame soffit.
 - .2 Supply as Specified: Glynn-Johnson 90 series
 - .2 Heavy Duty Concealed Mounting:
 - .1 Concealed overhead stops/holders to be stainless steel base, non-handed for single or double-acting doors with a low-profile channel, mortised in the door and jamb bracket is mortised in the doorframe. Unit to be fully concealed when door is in the closed position. Units to be field adjustable for function changes if required.
 - .2 Supply as Specified: Glynn-Johnson 100 series
- .7 Door Pulls/Flatware/Coat Hooks:
 - .1 Door Pulls are to be 19.05mm (7/8"), 25.4mm (1"), 31.2mm (1 1/4") diameter. Flatware to be of stainless-steel material, 1mm (.050 gauge).
 - .2 Door pulls, aluminum exterior and vestibule doors, CBH 6037-2, 31.2mm diameter, 400mm high less door height. Doors 2150mm high and less provide five stand offs, doors greater than 2150mm high provide five stand offs. Interior vestibule doors provide Von Duprin 350 series dummy push bar, length of push bar to suit door width.
 - .3 Door pulls, hollow metal and wood doors, CBH 7008-1, 25.4mm diameter.
 - .4 CBH 923 T304 push plates, tape mounting for installation, sizes as specified in hardware groups
 - .5 CBH 903 T304, kick plates, tape mounting for installation (40mm (1-5/8") less door width single door and 25mm (1") less door width double doors)
- .8 Floor/Wall Stops:
 - .1 Floor Stops:
 - .2 Wall Stops (No Button on Locking Hardware):

- .1 Wall stops to be constructed of stainless-steel base with special retainer cup that makes the rubber stop tamper resistant. Convex design of rubber bumper.
- .3 Supply as Specified: Ives WS406/407CVX
- .9 Weather/Smoke/Sound Seals:
 - .1 Supply as Specified:Zero 429AA (head seal)
Note: Mount head seal prior to soffit mounted hardware.
Zero 328AA-S (jamb seal, head/jamb seal)
Zero 188SBK (head/jamb seal)
Zero 364AA (door bottom)
- .10 Thresholds/Weatherstrip/Door Sweeps:
 - .1 Supply as Specified:Zero 8192AA (Door Sweep)
Zero 626A-223(Threshold)
- .11 Sliding Door Hardware
 - .1 Supply as Specified: KN Crowder CCSF-1-493-W x required length
- .12 Keyswitch/Electric Strikes, Power Supplies, Power Transfers:
 - .1 Keyswitch:
 - .1 Keyswitch housing to be cast zinc to protect against vandalism, housing to provide a concealed rear mounting attachment which cannot be compromised when the cylinder is attached with a set screw. Standard stainless-steel cover plate.
 - .2 Supply as Specified: RCI 960N-MA-LED SPDT
 - .2 Electric Strikes:
 - .1 Grade 1, electric strikes to be cUL listed burglary-resistant and electric strike for fire doors and frames. A label for single doors and B label for double doors. Electric strikes to be stainless steel construction, non-handed available in 12V or 24V AC or DC with continuous duty solenoid and accept 19mm (¾") throw latchbolts.
 - .2 Supply as Specified: Von Duprin 6000 series, HESS 1006, 4500C, 9500 series
 - .3 Power Supplies:
 - .1 Power supplies to be tested and certified to meet UL294. Universal 120-240 VAC input, low voltage DC output, regulated and filtered. Power supplies to have 2A, 4A, 6A output,12/24VDC field selectable with jumper. Provide emergency release terminals, where

- required, that allow the release of devices upon activation of the fire alarm system complete with fire alarm input for initiating "no delay" exiting mode. Power supply to be flat mounting design and polarized locking connections for additional option boards specified.
- .2 Supply as Specified: Schlage Electronics PS-902, PS-904, PS-906
- .4 Power Transfer
- .1 Provide a means to transfer power from frame to door stile. Devices shall be reversible and allow a full 180° door swing with 114mm x 114mm (4 1/2" x 4 1/2") butt hinges or 19mm (3/4") offset pivots. When door is in closed position, transfer unit shall be concealed. Transfer units shall contain ten 24awg UL approved conductors. Rating: 10 Amps at 24 VDC (Class 1 low voltage)
 - .2 Supply as Specified: Von Duprin EPT
- .5 Molex Connectors:
- .1 Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with sufficient number and wire gauge with standardized Molex plug connectors to accommodate electric function of specified hardware. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.
- .6 Junction Box:
- .1 Provide high quality NEMA 1, junction box to provide convenient installation for electrified hardware. Units are surface mounted 254mm (10") high, 254mm (10") wide, 152mm (6") deep and includes hinged door with twist turn lock, 20 position terminal strips to accept 24 to 12 gauge wire.
 - .2 Supply as Specified: Von Duprin JB7
- .7 Door Position Switch:
- .1 Provide contacts hermetically sealed magnetic reed switch. Contact and magnetic housing to snap lock into a 19.05mm or 25.4mm diameter hole. Housing molded

- of flame retardant ABS plastic, magnet made of Alnic V. Rare earth magnet made of neodymium iron boron.
- .2 Supply as Specified: FLAIR MSS100-4WY DPDT
- .8 Electric Washroom Accessories:
 - .1 Provide electric washroom accessories to compete the installation of automatic door operators for universal and barrier free washroom requirements
 - .2 Supply as Specified:
 - Camden - Push to lock, CM45/8GRS/SE1
 - Camden – Illuminated Actuator CM45/4GRS/SE1
 - Camden – LED annunciator CM-AF500
 - Camden – Advanced Logic Relay CX-EMF-2
 - Camden – Emerg. Call Kit CX-WEC10K2
- .9 Safety Coat Hooks:
 - .1 Supply as Specified: Frost Code 1150

2.3 FINISHES

- .1 Unless otherwise specified, finishes to be brushed chrome (BHMA 626/652).
- .2 Finishes are specified as follows:

ITEM	BHMA#	DESCRIPTION	BASE MATERIAL
Hinges	630	satin stainless steel	stainless steel
Hinges	652	satin chrome plated	steel
Lock Trim	630	satin stainless steel	stainless steel
Exit Devices	630	satin stainless steel	stainless steel
Door Closer	689	powder coat aluminum	steel
Door Pulls	630	satin stainless steel	stainless steel
Protective Plate	630	satin stainless steel	stainless steel
Protective Plate	629	polished stainless steel	stainless steel
Door Stops/holders			
Overhead	630	satin stainless steel	stainless steel
Wall/Floor	626	satin chrome plated	brass/bronze
Thresholds	628	anodized aluminum	aluminum
Weatherstrip	628	anodized aluminum	aluminum
Miscellaneous			
Coat hooks	630	satin stainless steel	stainless steel
Mullions	628	powder coat aluminum	steel
Key Switches	630	satin stainless steel	stainless steel
Electric Strikes	630	satin stainless steel	stainless steel

2.4 CYLINDERS, KEYING SYSTEMS AND KEY CONTROL

- .1 Provide permanent cylinders and keys to an existing Medeco keyway, sub-assembled complete with cylinder housing, cylinder collars, plug, pins and cam or tail bar and 2 blank keys. Cylinders to be forwarded to Pinder's Security Products for keying/pinning and installation. Supply of Medeco cylinders in by this section.
- .2 Provide temporary keyed-like cylinders for use during the construction period.
- .3 Pinder's will meet with the Owner to finalize keying requirements and obtain keying instructions in writing as outlined in Division 1. Cost of establishing the key system, pinning of cylinders and installation by allowance in Division 1.
- .4 Permanent cylinders to be pinned/keyed by Pinder's Security Products, combined in sets or subsets, master keyed, grand master keyed or great grand master keyed as directed by Owner. Pinder's to supply key data and location data to Owner formatted for import into Key Wizard software. Supply key inventory and keying schedule formatted for Owner input into Key Wizard software.
- .5 Furnish as sum total of two change keys per cylinder. Keyed alike groups supply two change keys as per keyed alike group. This sum of keys shall be cut and furnished as directed by the Owner. Any unused balance of cut keys shall be furnished as key blanks directly to the Owner.
- .6 Prior to substantial completion Pinder's will remove construction cylinders, turn over to Owner and install permanent Medeco cylinders as per the approved keying schedule.
- .7 Keying requirements to be confirmed by owner.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Ensure that doors and frames are prepared and reinforced to receive finish hardware prior to installation.
- .2 Ensure that door frames and finished floor are plumb and level to permit proper engagement and operation of hardware.
- .3 Verify power is run to door opening requiring electrified hardware.
- .4 Submit in writing a list of deficiencies determined as part of inspection required in 3.1.1 and 3.1.2 to supervising consultant prior to installation of finished hardware. Correct door frame installation before proceeding with finish hardware installation.

3.2 INSTALLATION

- .1 Hardware Installers must have a minimum of five (5) years' experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. Installers to attend review meetings conducted by the hardware distributor.
- .2 Install hardware at mounting heights as specified in the manufacturer's templates or specific references in approved hardware schedule or approved elevation drawings.
- .3 Where mounting height is not otherwise specified, install hardware at mounting heights as indicated in 1.5.1, 1.5.2.
- .4 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.
- .5 Ensure locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. Handing is part of installation procedure.
- .6 Ensure that exit devices are of the correct hand and adjust device cam/drive screw for proper outside trim function prior to installation. Handing is part of installation procedure.
- .7 Follow manufactures installation instructions. Adjustment of door closers is inclusive of spring power, closing speed, latching speed and back-check at the time of installation.
- .8 Adjust delayed action door closers to forty (40) second delay for barrier free accessibility and movement of materials. Time period to be approved by Owner.
- .9 Install head seal weatherstrip prior to installation of soffit mounted hardware. Trim cut and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Install thresholds and saddles in a bed of caulking completely sealing the underside from water and air penetration.
- .10 Counter sink through bolt of door pull under push plate during installation.
- .11 Install blocking material in cavities of metal and wood stud walls and partitions. Located concave and convex type door bumpers at the appropriate height to properly contact protruding door trim.
- .12 Outlet back boxes, provisions for power, conduit complete with pull strings for security systems power and control boxes for integrating of security system with fire alarm system and coordination of complete system to be furnished under the Electrical Division for the project.
- .13 Owner is responsible for mounting card readers, controllers, master controllers, input panels and interface with EAC hardware and power supplies. Division 26/28 responsible for low voltage wiring. Wire terminations, final hookup, testing, system setup, by Owner

- .14 Prior to installation of hardware, install hardware on the following doors for review by the consultant. Do not proceed with installation of hardware until mock up doors have been reviewed for proper installation. Install hardware on a classroom door, exterior pair of doors with outside cylinder operation and auto door operator, pair of stair doors with magnetic hold open device, pair for doors with a hardware removeable mullion, any other doors as directed by the Consultant. Upon written approval of hardware installation by the Consultant remaining doors and hardware can be installed.

3.3 FIELD QUALITY CONTROL

- .1 Verify each door leaf opens closes and latches. Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements. Test access control system and electrified hardware devices for proper operation with owner to sign off on verification of operation. Verify electric door release hardware operates to close the door upon activation of the fire alarm system.
- .2 Perform bi-monthly on-site inspections during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.
- .3 Before completion of the work but after the hardware has been installed, submit a certificate to the Consultant stating that final inspection has been made and that hardware has been checked for installation and operation.

3.4 ADJUSTING AND CLEANING

- .1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.
- .2 Adjust doors with self-closing devices or automatic closing devices for operation after the HVAC system is balanced and adjusted. Adjust spring power of non sized door closers to close and latch the door.
- .3 Hardware to be left clean and free of disfigurements.
- .4 Instruct owner personnel in the operation, adjustment and maintenance of hardware.
- .5 Check locked doors against approved keying schedule.

3.5 PROTECTION

- .1 Protect hardware from damage during construction. Wrap locks, panic hardware, and fire exit hardware, door pull trim with kraft paper or plastic bubble materials to protect finish from damage until date of substantial completion. Remove and reinstall or where necessary, use temporary hardware to maintain finish in new condition and maintain manufacturer's warranty.

3.6 HARDWARE GROUPS APPENDIX A

END OF SECTION

APPENDIX A

HARDWARE GROUPS

Brock University-Scotia Bank Hall Reno

Legend:

-  Link to catalog cut sheet
-  Electrified Opening

Hardware Group No. 1

For use on Door #(s):

214 215 216 217A 218

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	HINGE	5BB1HW RC1 127X114MM		652	IVE
1	EA	ELECTRIC HINGE	5BB1HW RC1 127X114MM CON TW8		 652	IVE
1	EA	EU MORTISE LOCK	L9090EU 03B RX CON 12/24 VDC		 626	SCH
1	EA	CONST MORTISE CYL	30-001 KA1		626	SCH
1	EA	MEDECO MORTISE CYLINDER	SUPPLIED AND INSTALLED BY BROCK LOCK SHOP		626	MED
1	EA	SURFACE CLOSER	4011 DEL		689	LCN
1	EA	FLOOR STOP	FS439		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	SURFACE DOOR BOTTOM	367AA		AA	ZER
1	EA	WIRE HARNESS	CON-___ TO SUIT			SCH
1	EA	WIRE HARNESS	CON-6W			SCH
1	EA	POWER SUPPLY	BY SECURITY SUPPLIER		 600	
1	EA	DOOR CONTACT	FLAIR MSS100-4WY DPDT			UNK
1	EA	CARD READER	BY SECURITY SUPPLIER			UNK








NOTE: CONFIRM WITH ALUMINUM DOOR SUPPLIER, 1/4" ROUND CORNERS OR 5/8 PRIOR TO PLACING ORDER.

Hardware Group No. 2

For use on Door #(s):

217B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW RC1 127X114MM		652	IVE
1	EA	CLASSROOM LOCK	L9070L 03B		630	SCH
1	EA	CONST MORTISE CYL	30-001 KA1		626	SCH
1	EA	MEDECO MORTISE CYLINDER	SUPPLIED AND INSTALLED BY BROCK LOCK SHOP		626	MED
1	EA	SURFACE CLOSER	4011 DEL		689	LCN
1	EA	FLOOR STOP	FS439		630	IVE
1	EA	GASKETING	188SBK PSA		BK	ZER
1	EA	SURFACE DOOR BOTTOM	367AA		AA	ZER

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTAL FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 PERFORMANCE REQUIREMENTS
- 1.10 DELIVERY, STORAGE AND HANDLING
- 1.11 ENVIRONMENTAL REQUIREMENTS
- 1.12 WARRANTY

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 GLASS TYPES
- 2.3 Glazing FILM
- 2.4 FABRICATION

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 INSTALLATION
- 3.4 PROTECTION
- 3.5 CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Provide glass and glazing including but not limited to following:
 - .1 Laminated glass.
 - .2 Tempered glass.
 - .3 Glazing films.
- .3 Provide glass and glazing for applications non-exhaustively including:
 - .1 Glazing for doors.
 - .2 Glazing for borrowed lites, screens and aluminum assemblies.
- .4 Miscellaneous specialty glass, gaskets, tapes and glazing materials.

1.2 RELATED SECTIONS

- .1 Section 07 92 00 - Joint Sealants.
- .2 Section 08 43 13 - Aluminum Framed Storefront.

1.3 REFERENCES

- .1 ASTM C509-06: Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
- .2 ASTM C510-05a: Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants
- .3 ASTM C794-10: Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- .4 ASTM C864-05: Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
- .5 ASTM C920-10: Standard Specification for Elastomeric Joint Sealants
- .6 ASTM C1036-06: Standard Specification for Flat Glass
- .7 ASTM C1048-04: Standard Specification for Heat-Treated Flat Glass—Kind HS, Kind FT Coated and Uncoated Glass
- .8 ASTM C1115-06: Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories
- .9 ASTM C1172-09: Standard Specification for Laminated Architectural Flat Glass

- .10 ASTM C1349-04: Standard Specification for Architectural Flat Glass Clad Polycarbonate
- .11 ASTM E1300-09a: Standard Practice for Determining Load Resistance of Glass in Buildings
- .12 ANSI Z97.1-2004: Safety Glazing Material Used in Buildings - Safety Performance Specifications and Methods of Test.
- .13 BS EN 14179-2-2005: Glass in building. Heat-soaked thermally-toughened soda lime silicate safety glass. Evaluation of conformity/product standard
- .14 CAN/CGSB 12.1-M90: Tempered or Laminated Safety Glass
- .15 CAN/CGSB 12.3-M91: Flat, Clear Float Glass
- .16 CAN/CGSB 12.20-M89: Structural Design of Glass for Buildings
- .17 CAN/CGSB 19.13-M87: Sealing Compound, One-Component, Elastomeric, Chemical Curing
- .18 CAN/ULC S104-10: Standard Method for Fire Tests of Door Assemblies
- .19 CAN4 S106-M80 (92): Standard Method for Fire Tests of Window and Glass Block Assemblies
- .20 GANA: Glass Association of North America - Glazing Manual
- .21 LSGASM: Laminators Safety Glass Association Standards Manual
- .22 NFPA 80-10: Standard for Fire Doors and Other Opening Protectives
- .23 ULC: Underwriters' Laboratories of Canada Building Materials and Systems Directory, Fire Resistance Directory, Current Edition including Supplements to date

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data:
 - .1 Submit manufacturer's literature and data sheets for each type of material provided under this Section for Project in accordance with requirements of Division 01. Ensure data sheets Provide required information including detailed instructions for installing as well as maintaining, preserving and keeping materials in clean and safe conditions. Provide adequate warning of maintenance practices or cleaning agents detrimental to specified materials.
- .3 Samples:
 - .1 All film types and associated patterns.
 - .1 Provide sample of each film design.
 - .2 Submit samples of materials identifying quality and type of glass if required by Consultant before commencing work. Ensure samples

are clearly labelled with manufacturer's name and type. Submit following samples:

- .1 Laminated safety glass,
- .2 Fire rated glass,
- .4 Submit test report from an independent testing agency that tempered glass was manufactured at plant which performs in house statistical heat soak program to identify and reduce nickel sulphide inclusions in their glass products.
- .5 Maintenance Data: Provide maintenance data indicating cleaning instructions for inclusion into Maintenance Manual.

1.5 SUBMITTAL FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Material Safety Data Sheets: Submit MSDS for inclusion in Operation and Maintenance Manual without limitations for adhesives, sealants, patching and leveling compound, solid polymer and as designated later by Consultant.
- .3 Manufactures Certificate: Signed by manufacturers of glass and glazing products meets or exceeds specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.
- .4 Sequencing: Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
- .5 Scheduling:
 - .1 Prior to commencing work of this section arrange for manufacturer's technical representative to review with Contractor and Consultant, procedures to be adopted and conditions under which work shall be performed. Inspect surfaces to determine adequacy of existing and proposed conditions.
 - .2 Co-operate fully with other Subcontractors on the work and promptly proceed with work of this Section as rapidly as job conditions permit.

- .3 Supply items to be built-in in ample time to be incorporated into work of other Subcontractors, together with measurements and other information required for location of it.
- .4 Ensure work which may create dust does not proceed during work related to painting and final finishing.

1.8 QUALITY ASSURANCE

- .1 **Manufacturer Qualifications:** Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.
- .2 **Installer Qualifications:** Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.
- .3 **Testing Agencies' Qualifications:** Quality assurance protocols and capability of testing agencies to perform designated tests on construction materials shall be evaluated in accordance with ASTM E329 and ASTM E699.
- .4 **Single Source Responsibility:** Ensure primary materials provided in this section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers. Ensure consistent quality of performance by providing glazing sealant and seals from single manufacturer.
- .5 **Preconstruction Testing:** Submit to sealant manufacturer, samples of each type of glass, gasket, glazing accessory and glass framing member that will contact or affect glazing sealants for compatibility and adhesion testing. Submit test samples in sufficient time for testing and analysis of results to prevent delay in progress of work.

1.9 PERFORMANCE REQUIREMENTS

- .1 Provide glass for work of this Section free from bubbles, waves, discolouration and other defects, of types specified herein for locations indicated on drawings or noted on schedules. Ensure glass bears manufacturer's label indicating quality and testing agency certifications. Leave labels in place until final cleaning.
- .2 Design glass and glazing to requirements of these specifications, CAN/CGSB-12.20-M, ASTM E1300, the OBC and regulations of authorities having jurisdiction. In case of conflict, comply with most stringent requirements.
- .3 Perform work of this section in accordance with GANA - Glazing Manual; www.glasswebsite.com and LSGASM - Standards Manual for laminated glazing installation methods.
- .4 Ensure tempered glass is heat soaked in accordance with BS EN 14179.

- .5 Deflection: Limit glass deflection to flexural limit of glass with full recovery of glazing materials.
- .6 Design units to accommodate live, dead, lateral, seismic, handling, transportation and erection loads, and comply with Part 4 of the Ontario Building Code for load on guards.
- .7 Confirm glazing material thicknesses by analyzing project loads and in-service conditions. Provide glazing material for various size openings in nominal thicknesses indicated, but not less than thicknesses and in strengths required to meet or exceed performance criteria.
- .8 Human Impact Load Resistance: Provide glazing materials listed and labeled as complying with testing requirements of ANSI Z97.1 - Class A.
- .9 Ensure solvents and/or other volatile elements in glazing system do not affect properties and performance of materials used for edge seal and sealant glass bond.
- .10 Ensure materials used for edge seals are compatible with other materials they come in contact within glazing system. If required, perform compatibility tests to ASTM C510, ASTM C794 and ASTM C1087, or others as applicable.
- .11 Use sealants and other materials in glazing system which are unaffected by long term UV light exposure.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Deliver glass and associated materials to site in original crates and containers with manufacturer's name and brand distinctly marked thereon and with glass labelled as to types. Do not remove labels on glass until after work is accepted by Consultant.
- .2 Store materials within the building, in a clean, dry location, acceptable or as designated by Consultant. Fully protect materials from damage until ready for use.
- .3 Protect work of other trades from damage resulting from work of this Section.
- .4 Identify glazed openings immediately following glass installation. Use coloured tapes or flags suspended near, but not in contact with glass. Attach to frames or surround with suitable non-staining strippable adhesives or tapes.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Do not carry out glazing when temperature is less than 7°C (44°F) or when sash or frames are wet, damp or frosted.

1.12 WARRANTY

- .1 Warrant laminated glass for period of 5 years against defects and deficiencies in accordance with General Conditions of the Contract. Promptly correct defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no additional expense. Defects include but are not limited to: deterioration, edge separation, delamination, material obstructing vision glass and blemishes exceeding those allowed by GANA (LGSA) standards. Upon notification of such deterioration within the warranty period, provide full replacement of glass units showing defects.
- .2 Glazing film: Provide the manufacturer's standard limited warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of the following manufacturers are acceptable subject to conformance to requirement of Drawings, Schedules and Specifications.
 - .1 Glazing:
 - .1 AGC Flat Glass North America, Ltd.; www.na.agc-flatglass.com
 - .2 Global Security Glazing; www.security-glazing.com
 - .3 Guardian Industries Corp.; www.guardian.com
 - .4 Pilkington Special Glass Limited; www.pilkington.com
 - .5 Vitro Architectural Glass.; www.vitroglazings.com
 - .6 Schoff North America Inc.; www.us.schoff.com
 - .7 Trulite Industries Limited; www.trulite.com
 - .8 Viracom; www.viracon.com
 - .2 Glazing Sealants and Gaskets:
 - .1 Dow Corning; www.dowcorning.com
 - .2 GE Silicones; www.qesilicones.com
 - .3 Tremco Canada; www.tremcosealants.com
 - .3 Glazing Films:
 - .1 3Form; www.3-form.com
 - .2 3M Films; www.3m.com
 - .3 Pilkington Special Glass Limited; www.pilkington.com

2.2 GLASS TYPES

- .1 **GL-1: Tempered Glass:** shall be minimum 6mm (1/4") float glass tempered to meet National Building Code Safety Glass requirements in Sub-Section 3.3.1.13 (1) (2) and to conform to CAN/CGSB-12.1-M90.

- .2 **GL-3: Laminated Safety Glass:**
 - .1 First Layer: Heat strengthened glass conforming to CAN/CGSB-12.3-M. Minimum thickness 12mm (1/2" +/-);
 - .2 Interlayer: clear PVB interlayer of 0.76 mm (0.030") thickness. Ensure glass is laminated to interlayers to produce laminated lites free of foreign substances, air and glass pockets. PVC interlayer to be "v" grooved at all exposed edges.
 - .3 Second Layer: Heat strengthened glass conforming to CAN/CGSB-12.3-M. Minimum thickness 8mm (5/16" +/-).

2.3 GLAZING FILM

- .1 Shall be 2-mil optically clear vinyl film for solvent, UV and latex inkjet printing and screen printing, Scotchcal Clear View Graphic Film IJ8150 by 3M, or approved alternative. Refer to building elevations for location. Consultant to provide a design with gradient pattern at a later date.

2.4 FABRICATION

- .1 Fabricate glazing units in sizes required to glaze openings indicated for project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of Product manufacturer and referenced glazing standard, to comply with system performance requirements.
- .2 Label each lite of glazing with registered name of product and weight and quality.
- .3 Check dimensions on job site before cutting materials.
- .4 Grind and chamfer edges of unframed glass and mirrors. Grind and chamfer edges of glass shelves and sliding doors.
- .5 Ensure minimum bite or lap of glazing on stops and rabbets as recommended by glazing manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify actual site dimensions and location of adjacent materials prior to commencing work.
- .2 Obtain glass dimensions on the job site. Glass shall not be more than 4mm (3/16") less than the rebate size in either dimension, with allowance for edge spacers, shims and setting blocks as required.
- .3 Ensure framing to be glazed is plumb, secure and permanently fixed in position.

- .4 Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.
- .5 Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.

3.2 PREPARATION

- .1 Thoroughly clean glass rebates and glass of dust, dirt, mortar and other foreign materials prior to glazing. Remove oils and grease with non-staining solvents such as Xycol or Methyl Ethyl Ketone solutions.

3.3 INSTALLATION

- .1 Comply with glazing lites, sealants, gaskets, and other glazing materials manufacturers' written instructions unless more stringent requirements are indicated herein.
- .2 Provide necessary maximum bite on lites, minimum edge and face clearances and adequate sealant thicknesses, with reasonable tolerances to ensure proper performance of glazed assemblies. Adjust as required by project conditions during installation.
- .3 If required, thoroughly mix glazing compound as recommended by manufacturer. Thinning of glazing compound will not be permitted.
- .4 Carefully remove glazing stops and replace after glazing. Take care to prevent damage to stops. Provide silicone cap beads at every lite.
- .5 Doors, Screens, Sidelites and View Windows:
 - .1 Place setting blocks on sill at $\frac{1}{4}$ points from each corner unless otherwise directed by glazing manufacturer.
 - .2 Place continuous glazing gaskets on edges of glass.
 - .3 Centre and space each piece of glass with spacers located and installed according to manufacturer's directions.
 - .4 Place glass so no voids occur between glass and glazing material, and glazing stops.
 - .5 Secure glass in place with stops, secured in place with screws.
- .6 Glazing Sealant:
 - .1 Compatibility: Select sealants with proven compatibility with surfaces contacted in installation and under service conditions indicated, as demonstrated by testing and field experience.
 - .2 Apply glazing sealant to clean, dry, grease and oil free surfaces. Provide exposed glazing sealant smooth, free from ridges, wrinkles, air pockets and embedded foreign materials.

- .3 Prime surfaces if required by glazing sealant manufacturer.
- .4 Trim glazing sealant flush with tops of stops and glazing channels.
- .5 Remove excess glazing sealant or droppings which would set up or become difficult to remove from finished surfaces. Remove excess sealant immediately. Do not use chemicals, scrapers, or other tools which would affect finished surfaces.
- .7 Interior Glazing Methods:
 - .1 Tape/Tape Method:
 - .1 Cut glazing tape to proper length and Install against permanent stop projecting 1.5mm (1/16") above sightline.
 - .2 Place glazing tape on free perimeter of glass projecting 1.5mm (1/16") above sightline.
 - .3 Trim off excess tape to sightline.
 - .2 Tape/Sealant Combination Method:
 - .1 Cut glazing tape to proper length and Install against permanent stop projecting 1.5mm (1/16") above sightline.
 - .2 Fill gap between glass and applied stop with sealant to depth equal to bite of frame on glass to uniform and level line.
 - .3 Trim off excess tape to sightline.
 - .3 Compound/Compound Method:
 - .1 Apply sealant to back and bottom of rabbet.
 - .2 Bed glass in position with non-hardening compound sealant.
 - .3 Position and secure glass of smaller dimension only using spring wire or glaziers' clips. Apply face compound and trim sealant to slope away from lite.
 - .4 Fill gaps between glass and stops with compound until flush with sightline and tool to smooth straight line.
- OR
- .4 Dry Method (Gaskets):
 - .1 Place gasket against permanent stop and position glass sheet.
 - .2 Apply removable stops. Install gaskets in frame channels.
- .5 Two Sided Butt - Joint Glazing:
 - .1 2 side glazing at head and sill use wet, dry, or wet/dry glazing systems.
- .6 Position glazing so that vertical edges are spaced slightly apart and seal with silicone sealant.
 - .1 Grind vertical joint with slight kerf and polish for aesthetics.
- .8 Glazing Film:

- .1 Install window film in accordance with manufacturer's printed instructions by experienced film applicators as recommended by glass film manufacturer.
- .2 Ensure glass surfaces are clean and ambient temperature is between 16°C and 38°C (61°F and 100°F).
- .3 Whenever 2 or more pieces of film are seamed together, they shall be matched to assure uniform reflected Daytime colour and transmitted night appearance. Apply film to create a seamless appearance seamed together with no gaps.
- .4 All edges of film at glass stop shall have temper resistant clear sealant.

3.4 PROTECTION

- .1 Provide and maintain necessary protection of completed work against damage.
- .2 Do not mark or attach anything directly to exposed glass and framing surfaces.
- .3 If welding is to take place above or near completed glazing work, protect glass with plywood or other suitable means to reduce likelihood of weld spatter damaging glass surfaces.
- .4 Replace cracked, broken, or defective glass at no additional cost and to Consultant's satisfaction.
- .5 Protect glass from other trades, workers, tools and other similar materials.
- .6 Identification of Glazing: Mark glass lites with temporary, easily removable, large safety markings, immediately after glass installation. Maintain safety markings until final clean-up.

3.5 CLEANING

- .1 Clean installed glass and metal frequently during construction. Avoid etching and staining glass and metal during construction.
- .2 Clean and polish glass. Do not remove labels until final acceptance is given by Consultant.
- .3 Remove sealant and compound droppings from finished surface.
- .4 Periodically clean installed glass during construction to avoid permanent etching and staining.
- .5 Remove markings at time of final clean-up. Carry out final clean- in accordance with glass and sealant manufacturer's recommendations and to Consultant's satisfaction.

- .6 Wash glazing units on both exposed surfaces in each area of Project prior to scheduled inspections. Wash glazing units as recommended by glazing unit manufacturer.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 SYSTEM DESCRIPTION
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PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 FRAMING MATERIALS
- 2.3 SUSPENSION SYSTEM COMPONENTS
- 2.4 CONCEALED REINFORCING
- 2.5 WALL BOARD MATERIALS
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PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 METAL STUD INSTALLTION
- 3.3 PARTITION TYPES
- 3.4 CONCEALED REINFORCING
- 3.5 ACCESS DOORS AND PANELS
- 3.6 ACOUSTICALLY CRITICAL ASSEMBLIES
- 3.7 WALL BOARD APPLCIATION
- 3.8 ACCESSORIES INSTALLATION
- 3.9 JOINT TREATMENT
- 3.10 TOLERANCES
- 3.11 LEVELS OF FINISH
- 3.12 INTERIOR CEILINGS AND SUSPENDED COMPONENTS APPLICATION
- 3.13 CUTTING AND PATCHING
- 3.14 PROTECTION AND RESPONSIBILITY
- 3.15 CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Work Included but not limited to following:
 - .1 Supplementary steel supports for ceilings.
 - .2 Reinforcement for suspension systems for lighting fixtures, access hatches, etc.
 - .3 Metal studs and furring channels.
 - .4 Concealed sheet steel reinforcing for grab bars, handrails, millwork, modular furniture etc.
 - .5 Ceiling and bulkhead suspension system.
 - .6 Wall board ceilings, partitions and bulkheads.
 - .7 Wall board directly applied to masonry and concrete surfaces.
 - .8 Corner beads, casing beads, trim, control joints and corner reinforcement.
 - .9 Taping, filling and sanding.
 - .10 Acoustically insulated wall board partitions.
 - .11 Acoustic caulking for acoustically insulated wall board partitions.
 - .12 Installation in wall board, access hatches, panels and doors supplied by other trades.

1.2 RELATED SECTIONS

- .1 Section 06 10 00 - Rough Carpentry.
- .2 Section 07 21 00 - Building Insulation.
- .3 Section 07 84 00 - Firestopping.
- .4 Section 07 92 00 - Joint Sealants.
- .5 Section 08 43 13 - Aluminum Framed Storefront.
- .6 Section 09 91 00 - Painting.

1.3 REFERENCES

- .1 ANSI A118.9 - Specifications for Test Methods and Specifications for Cementitious Backer Units.
- .2 ASTM C475/C475M-12 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

- .3 ASTM C514-04(2009)e1 - Standard Specification for Nails for the Application of Gypsum Board.
- .4 ASTM C557-03(2009)e1 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
- .5 ASTM C645-13 - Standard Specification for Nonstructural Steel Framing Members.
- .6 ASTM C665-12 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- .7 ASTM C754-11 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .8 ASTM C840-13 - Standard Specification for Application and Finishing of Gypsum Board.
- .9 ASTM C1002-07(2013) - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .10 ASTM C1047-10a - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .11 ASTM C1278/C1278M-07a - Standard Specification for Fiber-Reinforced Gypsum Panel.
- .12 ASTM C1288-99(2010) - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets.
- .13 ASTM C1325-08b - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.
- .14 ASTM C1396/C1396M-13 - Standard Specification for Gypsum Board.
- .15 ASTM E90-09 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .16 CAN/ULC-S101-07 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- .17 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .18 CAN/ULC-S702-09 - Standard for Mineral Fibre Thermal Insulation for Buildings (Includes Amendment 1, 2012).
- .19 Gypsum Association GA-214-10 - Recommended Levels of Gypsum Board Finish.
- .20 Gypsum Association GA-216-13 - Application and Finishing of Gypsum Panel Products.
- .21 Gypsum Association GA-600-12 - Fire Resistance Design Manual.

- .22 Gypsum Association GA-801-07 - Handling and Storage of Gypsum Panel Products: A Guide for Distributors, Retailers, and Contractors.
- .23 UL - Fire Resistance Directory.
- .24 ULC-FR-14 - Fire Resistance Directory (2014 Edition).

1.4 SUBMITTALS FOR REVIEW

- .1 Product Data:
 - .1 Submit manufacturer's literature, product data sheets for each type of material provided under this Section for Project. Data sheets shall provide all required information.

1.5 SUBMITTALS FOR INFORMATION

- .1 Reserved.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.

1.7 ADMINSTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
 - .1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Provide work of this Section executed by competent installers with minimum of five (5) years' experience in application of Products, systems and assemblies specified.
- .3 Comply with ASTM C840 for application and finishing wall board and manufacturer's written information.

1.9 SYSTEM DESCRIPTION

- .1 Steel Thickness:
 - .1 Base Steel Thickness: Thickness of bare steel exclusive of coatings.
 - .2 Design Thickness: Target or "nominal" thickness used to determine structural properties of the cold formed Products.

- .3 Minimum Thickness: Design thickness minus minimum allowable under-tolerance required by CSA S136 (95% of design thickness) or material specification; whichever is more stringent.
 - .4 Designation Thickness: For the purposes of this specification; thicknesses provided will be minimum base steel thicknesses in accordance with CSA S136.
- .2 Design Requirements:
- .1 Design ceiling suspension system in accordance with manufacturer's printed directions and conforming to ASTM C754 requirements. Do not suspend any items from structural steel deck. Do not support work of this Section from, nor make attachments to, ducts, pipes, conduits or support framing of other trades.
 - .2 Design metal ceiling suspension system and metal framing for partitions to sustain loads imposed to L/240 deflection limit in any direction. Use grid of hangers, runner and furring channels securely anchored to structure above. Allow for thermal movement. Design suspended ceiling system for adequate support of electrical fixtures as required by current bulletin of Electrical Inspection Department of Ontario Hydro.
 - .3 Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.
 - .4 Design suspension system to support weight of mechanical and electrical items such as air grilles, lighting fixtures, roller shades, drapery track, drapes and with adequate support to allow rotation / relocation of light fixtures.
 - .5 Design sub-framing as necessary to accommodate, and to circumvent, conflicts and interferences where ducts or other equipment prevent regular spacing of hangers.
 - .6 Design metal stud reinforcements from hollow structural steel, stud, angle and steel plate sections, galvanized sheet steel minimum 1.214mm (designation thickness 43mils/minimum base steel thickness 1.087mm (0.0428 in.) where required to support of manufactured components without limitations items such as washroom accessories, expansion control covers and similar items. Design weld connections ensuring rigid and secure installation capable of offering resistance to minimum 227kg (500 lbs) pull force. Galvanize items in moist areas. Do not design using wood blocking for this purpose.
 - .7 Design fire rated construction including ceiling, partition or fire protective membranes and furring in accordance with OBC, Supplementary Standards SB-3 and to approved ULC design or other design acceptable to authorities having jurisdiction, to provide

design fire rating indicated and/or required. Submit written evidence of acceptable test design.

- .8 Provide sound rated construction having STC rating indicated in accordance with OBC, Supplementary Standards SB-3 and tested in accordance with ASTM E90.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Comply with GA-801.
- .2 Deliver materials to site with manufacturer's original labels intact. Do not remove wrappings until ready for use.
- .3 No outside storage permitted. Store in clean, dry area, off ground. Provide adequate ventilation to avoid excess moisture, surface relative humidity and mould or fungal growth. Remove immediately any board showing signs of mould, mildew or fungal growth.
- .4 Stack wall board flat on level and dry surface without overhanging boards. Prevent sagging and damage to edges, ends and surfaces. Protect bagged Products from moisture or wetting.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Cooperate and coordinate with Sections applying wet trades and trades installing mechanical and electrical services. Do not install work of this Section in any area unless satisfied that work in place has dried out and that no further installation of materials requiring wetness, moisture or dampness is contemplated. Relative humidity in area of work of this Section shall not exceed 55% for duration of Project. Coordinate stud layout at partitions accommodating wall mounted fixtures by other trades.
- .2 Ensure temperature of surrounding areas is min 13°C (55°F) and max 21°C (70°F) for 7 days before and during application of wall board; maintain for 4 Days thereafter. Ensure heat is provided at appropriate time before work has started to bring surrounding and adjacent materials up to required temperature and maintained as specified. Avoid concentrated or irregular heating during drying by means of deflectors or protective screens.
- .3 Ensure ventilation is provided for proper drying of joint filler and adhesive and to prevent excessive humidity. Do not force dry adhesives and joint treatment.
- .4 Provide protection of materials and work of this Section from damage by weather and other causes. Perform work in areas closed and protected from damage due to weather. Protect work of other trades from damage resulting from work of this Section. Make good such damage immediately.
- .5 Coordinate installation and cooperate with mechanical and electrical trades to accommodate mechanical electrical items and any other work required to be incorporated into or coordinated with ceiling and soffit systems.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:
 - .1 Bailey Metal Products Ltd.; www.bmp-group.com
 - .2 CertainTeed Gypsum Canada Inc.; www.certainteed.com
 - .3 Chicago Metallic; www.chicagometallic.com
 - .4 CGC Inc; www.cgcinc.com
 - .5 Dietrich Metal Framing; www.dietrichmetalframing.com
 - .6 Georgia-Pacific Canada, Inc.; www.gpgypsum.com
 - .7 Gordon Incorporated; www.gordongrid.com
 - .8 Roll Formed Specialty; www.rollformed.com
 - .9 Fry Reglet; www.fryreglet.com
 - .10 Trim-Tex Inc.; www.trim-tex.com
 - .11 Unifix Inc.; www.unfixinc.ca

2.2 FRAMING MATERIALS

- .1 Galvanized Sheet Steel: Conforming to ASTM A653/A653M, structural and commercial quality sheets; specially treated by phosphate conversion process if steel is to be exposed and finish painted.
- .2 Interior Non-Load Bearing Steel Studs: Steel shall have metallic coatings of Z120 that conform to ASTM A653/A653M or ASTM A792/A792M respectively. Alternative coatings shall be permitted to be used if provided to have equivalent corrosion protection. Provide knockout openings in web at 460mm (18") oc to accommodate (if required) horizontal mechanical and electrical service lines and bracing.
- .3 Heavy Duty Steel Studs: ASTM C645, galvanized sheet steel, 54 mils Heavy Duty Steel Studs (at Openings and Unrestrained Heights): ASTM C645, galvanized sheet steel, 68 mils (0.0538" – 1.367mm – 16ga – Green) where indicated on Drawings and Schedules. Steel shall have metallic coatings of Z120 that conform to ASTM A653/A653M or ASTM A792/A792M respectively. Alternative coatings shall be permitted to be used if provided to have equivalent corrosion protection. Provide crimped web and returned flange; of depth shown in maximum continuous lengths practicable. Provide heavier gauges where required for unrestrained heights. Provide knockout openings in web at 460mm (18") oc to accommodate (if required) horizontal mechanical and electrical service lines and bracing.
- .4 Floor and Ceiling Partition Track for Wall Board: ASTM C645, galvanized sheet steel, 33 mils (0.0329 in – 0.836mm – 20ga – White) or 18 mils

- (0.0179" – 0.455mm – 25ga – Not Painted) thick. Steel shall have metallic coatings of Z120 that conform to ASTM A653/A653M or ASTM A792/A792M respectively. Alternative coatings shall be permitted to be used if provided to have equivalent corrosion protection. Minimum Leg Length: 30mm (1¼") legs. Provide top track with longer legs where required to compensate for deflection of structure above. Width: to suit metal studs.
- .5 Stud Spacer Bars: Pre-notched bridging and spacing bar to facilitate erection of interior, non-load-bearing studs and to provide resistance to stud rotation and displacement. Acceptable Product: "Spazzer® 9200 Spacing Bar" by Dietrich Metal Framing or approved equivalent.
 - .6 Furring Channels: Galvanized sheet steel, 33 mils (0.0329" – 0.0836mm – 20ga – White) thick. Steel shall have metallic coatings of Z120 that conform to ASTM A653/A653M or ASTM A792/A792M respectively. Alternative coatings shall be permitted to be used if provided to have equivalent corrosion protection. Screw channels: 67mm (2- 5/8") wide x 22mm (7/8") deep.
 - .7 Carrying Channels for Wall Board: ASTM C645, galvanized sheet steel, 54 mils (0.0538" – 1.367mm – 16 ga – Green) Steel shall have metallic coatings of Z120 that conform to ASTM A653/A653M or ASTM A792/A792M respectively. Alternative coatings shall be permitted to be used if provided to have equivalent corrosion protection. Items to be 38mm (1½") high with 19mm (¾") flanges, for primary carrying member in suspended ceilings and as horizontal stiffeners or bracing in metal stud systems.
 - .8 Screws for Sheet Steel Members: ASTM C954, self-drilling, self-tapping wall board screws, 25mm (1") long #6 for single layer application, 41mm (1- 5/8") long #7 for double layer application and as follows:
 - .9 For single layer application over metal framing; self-drilling, self-tapping, case hardened, No. 6 contoured Phillips head or Type S bugle head, sized for minimum 15.9mm (5/8") penetration into steel framing. All fasteners shall be corrosion resistant. Use drill point screws for abuse resistant wall fiber panels.
 - .10 For double layer application over wall board backing and existing wall board; 44mm (1¾") Type G bugle head. For each additional layer of board, increase length of fasteners proportionally.

2.3 SUSPENSION SYSTEM COMPONENTS

- .1 Interior Gypsum Board Ceiling Suspension System: Shall be Drywall Suspension System as manufactured by CGC or approved equal.
- .2 Hangers: Comply with ASTM C754-07 for maximum ceiling area and loads to be supported.

- .3 Hanger wire: ASTM A641-03, soft, Class 1 galvanized, minimum 3.26mm (8 AWG).
- .4 Size devices for 5 times load imposed by completed system as determined in accordance with ASTM E488-96.
- .5 Power actuated fastening systems are not permitted.

2.4 CONCEALED REINFORCING

- .1 Concealed Sheet Steel Reinforcing: 150mm (6") wide 48 mils (0.0478" – 1.214mm – 18 ga) thick, commercial quality cold rolled galvanized sheet steel. Zinc Coating: Z275 (G90) ASTM A653/A653M.

2.5 WALL BOARD MATERIALS

- .1 Gypsum Board and Fire Rated Gypsum Board:
 - .1 Conforms to ASTM C1396/C1396M, Type X, 15.9 mm (5/8") thick gypsum board 1200mm (4') wide, maximum practical length and tapered edge as required by each fire resistance assembly; complete with Testing Agency Fire Rating Identification Stamp on Each Sheet. "Gyproc Fireguard Type X or Type C" by Georgia-Pacific or "CGC Sheetrock Firecode or Firecode C" by CGC Inc., or "ProRoc Type X or Type C" by CertainTeed Gypsum Canada Inc.
 - .2 When applied in a ceiling application. Gypsum Board sheets to have anti-sag characteristics.

2.6 ACCESSORIES

- .1 Corner Beads: GA-216, metal corner bead.
- .2 Edge Trim: GA-216; LC bead.
- .3 Joint Materials: ASTM C475/C475M.
- .4 Reinforcing tape, adhesive, and water.
- .5 Joint compound: Asbestos-free dust-controlled.
- .6 Gypsum Board Fasteners: ASTM C1002, Type S.
- .7 Access Doors for Architectural, Mechanical and Electrical:
 - .1 Where supplied by Division 21, 22, 23 and 26 shall be installed under this Section.
 - .2 Non-Rated Recessed Access Panels: "R/W Series, Recessed Non-Rated Access Panels" by Nystrom Building Products; www.nystrom.com or "DW-5015" by Acudor Products Inc.; www.acudoracornltd.com, or "Van-Met NDI Series" by Mexam Metal Products; www.maxammetal.com by Zurn Industries Canada Ltd., or by LeHage Industries Ltd., or by A. G. Baird Limited, or by Stelpro Limited sized to suit design requirements, minimum size 406mm x

406mm (16" x 16") or as indicated on drawings, with drywall bead frame and recessed door to accept wall board finish for concealed appearance. Key operated cylinder lock. Access panels shall be flush to edge of frame, concealed continuous rod hinge with key operated cylinder lock to suit design requirements. Non-fire rated shall have 1.9mm (14 ga) galvanized frame and 1.52mm (16 ga) door;

2.7 SOUND CONTROL MATERIALS

- .1 Sound Attenuation Batts: Refer to specification Section 07 21 00 - Building Insulation.
- .2 Strip Impalement Clips: 25mm (1") wide strip of Insul-Hold by Insul-Hold Canada Ltd., fabricated from 0.531mm (designation thickness 18mils/minimum base steel thickness 0.455mm (0.0179"))/25 ga) galvanized sheet metal in 30m (100') rolls with punch-out insulation securement arrows. Alternatively, use special studs with punch-out impalement strips.
- .3 Acoustic Sealant: Refer to specification Section 07 92 00 - Joint Sealants.
- .4 Acoustical Putty Pads: Refer to specification Section 07 21 00 - Building Insulation.
- .5 Gaskets: Closed cell neoprene, 3mm (1/8") thick x 64mm (2½") wide.
- .6 Asphalt Felt: CSA A123.3; No. 15.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Examine the mechanical and electrical drawings and coordinate with appropriate Sections to establish openings, additional support, furring out, and other special provisions required for mechanical and electrical fixtures and fittings and access hatches built into the work of this Section.
- .3 Examine the architectural drawings and coordinate with appropriate Sections to establish openings, additional support, and other special provisions required for items build into or partially supported by the work of this Section.
- .4 Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

3.2 METAL STUD INSTALLTION

- .1 Comply with ASTM C754 and with ASTM C840 requirements that apply to framing installation and recommendations of CGC Drywall Steel-Framed

Systems for metal stud partition, ceiling, column fireproofing and bulkhead detailing.

- .2 Install members true to lines and levels and to maintain surface flatness with maximum variation of 3mm (1/8") in 3048mm (10'-0") in any direction.
- .3 Provide partition tracks at floor and underside of ceiling or structure above. Align accurately. Lay out to partition layout. Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use 50mm (2") leg ceiling tracks.
- .4 Install stud spacer bars specified herein as required to restrain studs against lateral and torsional movement, and to provide supplementary horizontal bracing.
- .5 Provide heavy duty 1.367mm (16 ga) double boxed studs at top and each side of doors openings to extend in 1 piece from floor to underside of structure above.
- .6 Provide heavy duty 1.367mm (16 ga) double boxed studs at top, bottom and each side of screens and fire damper openings to extend in 1 piece from floor to underside of structure above.
- .7 Provide continuous gasket to separate metal framing from masonry and concrete.

3.3 PARTITION TYPES

- .1 Refer to Drawings for partition types and their respective sound attenuation and fire rating requirements.
- .2 Provide partitions complete to underside of structure, unless otherwise indicated on Drawings.
- .3 Sealant is provided at top, bottom of partitions and around all penetrations unless of otherwise indicated.

3.4 CONCEALED REINFORCING

- .1 Provide hollow structural steel, stud, angle and steel plate sections, galvanized sheet steel as specified herein, where required to support manufactured components. Weld connections. Ensure rigid and secure installation capable of offering resistance to minimum 227kg (500lbs) pull force. Galvanize stud reinforcements in moist areas. Do not use wood blocking for this purpose. Provide additional reinforcing framing studs or furring channels secured between studs for attachment and support without limitations following:
 - .1 Miscellaneous specialties.
 - .2 Fitments and fixtures.
 - .3 Wall mounted equipment.
 - .4 Handrails.

- .2 Cooperate and coordinate reinforcement requirements with Sections requiring concealed reinforcements in partitions. Provide sheet steel reinforcing in locations indicated on Drawings to support grab bars, chair rails and other wall mounted products.
- .3 16 Ga vertical studs at each wall mounting fastening point to be provided from floor to underside of deck at each fold down shower seat and change table.

3.5 ACCESS DOORS AND PANELS

- .1 Install access doors and panels supplied as part of work of Divisions 21, 22, 23, and 26 and where required as part of work of this Section in walls, bulkheads, ceilings and soffits.

3.6 ACOUSTICALLY CRITICAL ASSEMBLIES

- .1 Keep penetrations to minimum and ensure penetration sizes have maximum 3mm (1/8") gap around openings. Seal around pipes and ducts and ensure active pipes and ducts are not in contact with metal stud framing and wall board.
- .2 Seal penetrations of acoustical partitions by ductwork. Cover gaps larger than 25mm (1") with wall board lapped minimum 50mm (2") and screwed; before using acoustical sealant or firestopping and smoke seal. Pack gap with soft insulation before performing work.
- .3 Provide closed cell polyurethane foam or fire rated silicone at single conduit or multiple conduit penetrations; cable or pipe or sleeve with multiple cables to achieve acoustical partitions. Pack gap with soft insulation before performing work.
- .4 Place device backboxes in separate stud spaces, do not install device backboxes back to back. Plug unused knock outs in device backboxes with knock out caps. Where it cannot be avoided and all other efforts are exhausted and device backboxes are placed back to back. Apply Acoustical Putty Pads to each device backbox located within the same stud space.
- .5 Provide sound attenuation insulation to completely fill height of stud cavities. Tightly butt ends and sides of blankets within cavities. Cut blankets to fit small spaces. Carefully fit blankets behind electrical outlets, bracing, fixture attachments and mechanical and electrical services.
- .6 Staple blankets to back of gypsum board as recommended by gypsum board manufacturer.
- .7 Sealant:
 - .1 Conform to ASTM C919 for use of sealants in sound attenuation partitions.
 - .2 Apply acoustical sealant to every air gap, such as gaps around perimeter of wall, between wall panels and around any penetrations

made for plumbing or electrical wiring. Seal off any piping, electrical output boxes, and duct work with acoustical treatments. Treat junction boxes with acoustic putty, treat piping and duct work either with fiberglass duct liner or damping material or both. Treat frame with gasket material (weather-strip) and Install security flap on bottom of door to seal it off.

- .3 Apply acoustical sealant around partition cutouts including, but not limited to, gaps between wall stud plates and subfloor, electrical outlets and boxes, plumbing and duct outlets, air ducts and boots, doors, windows and other miscellaneous wall and floor penetrations or gaps.
- .4 At partitions except shaft walls, apply 1 continuous 6mm ($\frac{1}{4}$ ") bead of acoustical sealant to each side of partition where gypsum board meets dissimilar materials. Where 2 layers of gypsum board per face are required, apply bead of sealant at perimeter of base layer only.
- .5 Apply continuous acoustical sealant around edge of frame on both sides of partitions.
- .6 Apply minimum 13mm ($\frac{1}{2}$ ") diameter bead of acoustic sealant continuously around periphery of each face of partition to seal gypsum board/structure junction where partitions abut fixed building components in accordance with recommendations of "CGC Drywall/Steel Framed Systems, Folder SA923 09250".
- .7 Provide non hardening resilient sealant or firestop putty for cable tray isolation requirements.
- .8 Install displacement ventilation ducts in party walls tightly without touching wall board on side of wall being served. Install packing insulation between duct and other side and seal around duct grilles. Follow details where applicable.

3.7 WALL BOARD APPLCIATION

- .1 Do not install gypsum board until bucks, anchors, blocking, sound attenuation, electrical, and mechanical work are approved.
- .2 Do not install damaged or damp gypsum board.
- .3 Install gypsum board to ASTM C840.
- .4 Apply gypsum board on ceilings prior to application on walls.
- .5 Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- .6 Apply single layer gypsum board to concrete surfaces, where indicated, using laminating adhesive.
- .7 Comply with gypsum board manufacturer's recommendations.
- .8 Brace or fasten gypsum board until fastening adhesive has set.

- .9 Mechanically fasten gypsum board at top and bottom of each sheet.
- .10 Use screws when fastening gypsum board to metal furring or framing.

3.8 ACCESSORIES INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid, and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm (5-7/8") on center.
- .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 cornice cap where gypsum board partitions do not extend to ceiling. Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300mm (12") on center.
- .5 Splice corners and intersections together and secure to each member with 3 screws.
- .6 Install access doors to electrical and mechanical fixtures specified in respective Sections.
- .7 Rigidly secure frames to furring or framing systems.

3.9 JOINT TREATMENT

- .1 Finish to ASTM C840, Level 5.
- .2 Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- .3 Feather coats on to adjoining surfaces so that camber is maximum 0.8mm (1/16").

3.10 TOLERANCES

- .1 Maximum Variation of Finished Gypsum Board Surface from True Flatness: 3mm in 3m (1/8" in 9.6') in any direction.

3.11 LEVELS OF FINISH

- .1 Provide Level 5 finish in accordance with ASTM C840.

3.12 INTERIOR CEILINGS AND SUSPENDED COMPONENTS APPLICATION

- .1 Comply with recommendations of CGC Drywall Steel-Framed Systems Folder SA923- 09250
- .2 Provide hanger wires spaced at maximum 1200mm (4') oc along carrying channels and within 150 mm (6") of ends of carrying channel runs. Secure

hanger wires to inserts in structure above. Hanger wires to be straight and plumb.

- .3 Provide carrying channels maximum 1200mm (4') oc and within 150mm (6") of walls. Secure with hanger wire saddle-tied along channels. Provide 25mm (1") clearance between runners and walls. Provide splicers behind joints. Level channels to a maximum tolerance of 3mm (1/8") over 3600mm (12').
- .4 Provide metal furring channels at right angles to carrying channels at maximum 600mm (24") oc and within 150mm (6") of walls. Provide 25mm (1") clearance between furring ends and abutting walls. Attach furring channels to carrying channels with saddle-tie of double strand tie wire.
- .5 Provide additional cross-reinforcing at bulkheads and at other openings.
- .6 Provide ceiling wall board, smooth and level.

3.13 CUTTING AND PATCHING

- .1 Cooperate and coordinate with other Sections to obtain satisfactory wall board finish work. Do all cutting, patching and make good as required by installation of work of other Sections.
- .2 It is the responsibility of this section to repair severed service penetration seals in fire-rated assemblies using approved methods.

3.14 PROTECTION AND RESPONSIBILITY

- .1 Protect all finished work of other trades from damage or splattering as a result of the performance of this trade.
- .2 Before leaving an area, remove all splattering from all finished surfaces without damaging such surfaces. Any damage must be repaired or replaced to the satisfaction of the Consultant

3.15 CLEANING

- .1 Clean off beads, casings, joint cement droppings and similar items and remove surplus materials and rubbish on completion and as directed.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
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PART 2 PRODUCTS

- 2.1 MANUFACTURERS
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- 2.3 PERIMETER METAL TRIM
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PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM
- 3.3 INSTALLATION - ACOUSTIC UNITS
- 3.4 ERECTION TOLERANCES
- 3.5 ADJUSTING AND CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Supply and installation of all acoustic tile, metal trims and suspension systems.

1.2 RELATED SECTIONS

- .1 Section 07 21 00 - Building Insulation.
- .2 Section 07 92 00 - Joint Sealants.
- .3 Section 09 21 16 - Wall Board Assemblies
- .4 Division 21 - Fire Suppression.
- .5 Division 23 - Heating, Ventilating, and Air-Conditioning (HVAC).
- .6 Division 26 - Electrical.
- .7 Division 28 - Electronic Safety and Security.

1.3 REFERENCES

- .1 ASTM C635/C635M-12 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- .2 ASTM C636/C636M-08 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- .3 ASTM C665-12 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- .4 ASTM E580/E580M-11b - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
- .5 ASTM E1264-08e1 - Standard Classification of Acoustical Ceiling Products.
- .6 CAN/CGSB-92.1-M89 - Sound Absorptive Prefabricated Acoustical Units.
- .7 CAN/ULC-S702-09 - Standard for Mineral Fiber Thermal Insulation for Buildings (Includes Amendment 1, 2012).
- .8 AWCCBC (Association of Wall and Ceiling Contractors of British Columbia).
- .9 UL - Fire Resistance Directory.
- .10 ULC - Fire Resistance Directory.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on metal grid system components, acoustic units and accessories.
- .3 Shop Drawings: Indicate grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to ceiling system.
- .4 Samples:
 - .1 Submit two (2) samples, 300mm (12") in size, illustrating material and finish of acoustic units.
 - .2 Submit two (2) samples each, 300mm (12") long, of suspension system main runner, perimeter molding and cross runner.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements, including perimeter conditions requiring special attention.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 77 00: Closeout procedures.
- .2 Extra Stock Materials: Provide 5% of each tile type to Owner, at the completion of the project.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
 - .1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- .3 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

- .1 Conform to AWCCBC requirements.
- .2 Grid Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.

- .3 Acoustic Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.
- .4 Install ceilings within 3mm (1/8") of dimensional height above floor unless approved otherwise, and level with a maximum tolerance of 3mm (1/8") in 3m (10'-0").
- .5 Suspension System: Maximum deflection of 1:360 for acoustic ceiling system including integral mechanical and electrical components.

1.9 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for fire rated assembly and combustibility requirements for materials.

1.10 DELIVERY, STORAGE, AND PROTECTION

- .1 Deliver materials in original packages, containers and bundles, bearing brand and manufacturer's name.
- .2 Store materials in a covered area, off ground, on flat, smooth, dry surfaces. Protect from moisture. Remove damaged or deteriorated materials from site.
- .3 Comply with ceiling panel manufacturer's recommendations regarding temperature and humidity conditions before, during and after ceiling installation.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Continuously maintain rooms or areas scheduled to receive acoustical treatment at not less than 21 deg C (70 deg F), and at occupancy humidity, at least 3 days prior to installation and 3 days after work is completed. Schedule work to eliminate risk of damage to these materials due to adverse environmental conditions in rooms or areas when and after work is installed.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.
 - .1 CGC Ceilings, www.usg.com .
 - .2 Armstrong Ceilings, www.armstrongceilings.com .
 - .3 Certainteed, www.certainteed.com .
 - .4 Or approved alternate.

2.2 MATERIALS

- .1 General
 - .1 Acoustic ceiling tiles as manufactured by Armstrong World Industries Canada Ltd. are specified.
 - .2 Suspension systems shall be as manufactured by Armstrong World Industries Canada Ltd. or approved alternate.
- .2 Acoustic Ceiling Units
 - .1 Type '**ACT1**':
 - .1 Style: 24" x 48"x 5/8" Cortega 769 series as manufactured by Armstrong World Industries Canada Ltd.; square edge and colour white.
- .3 Suspension System for Lay-In Ceilings:
 - .1 Components shall be formed from commercial quality cold-rolled steel, electro-galvanized.
 - .2 Main Tee: with a double web design and with a rectangular bulb shall be 0.5mm (.020") thick, 38.1mm (1½") high with 24mm (15/16") exposed flange with a rolled cap; with cross tee holes at 152.4mm (6") o.c.; with hangar wire holes at 50.8mm (2") o.c.; with integral reversible splice.
 - .3 Cross Tees: design same as main tees, designed to connect at main tees forming positive lock without play, loss or gain in grid dimensions with offset over-ride of face flange over main tee flange to provide flush joint.
 - .4 Wall Moulding: Standard L-shaped moulding, formed from commercial quality cold rolled steel, electro-galvanized with pre-painted flanges. Flanges shall be 19mm (3/4").
 - .5 Accessories - Splices, clips, wire ties and retainers to complement suspension system components shall be as recommended by system manufacturer.

2.3 PERIMETER METAL TRIM

- .1 Perimeter Prefinished Metal Trim- Shall be 100mm (4") COMPÄSSO trim manufactured by CGC Inc. or approved alternate.
 - .1 100mm (4") wide face, 14.2mm (9/16") horizontal legs with hems formed for attachment to the COMPÄSSO mounting clip; commercial quality cold-rolled 24-gauge steel, factory finished in baked enamel paint finish, to match ceiling tile colour.
 - .2 Splice plate: steel in finish to match trim pans; formed for snap-fit into 100mm (4") pan ends.

- .3 Attachment clips: hot-dipped galvanized steel in finish to match pans formed for snap-fit into 100mm (4") pan and attached to DONN DX and MERIDIAN suspension system members.
- .4 90° corner trim pieces: to match COMPÄSSO trim.
- .5 Refer to Reflected Ceiling Plan drawings for locations.

2.4 ACCESSORIES

- .1 Touch-up Paint: Type and colour to match acoustic and grid units.
- .2 Hangers
 - .1 Galvanized annealed steel wire;
 - .2 2.6mm (12GA) diameter to support a maximum weight of 68kg (150lbs.) per hanger;
 - .3 3.8mm (9GA) to support a maximum weight of 140kg (308lbs.) per hanger; Galvanized annealed steel rod; 4.9mm (6 Ga.) diameter to support a maximum weight of 250kg (550lbs.) per hanger.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Inspect substrates and previously placed work to determine suitability and completeness. Start of work constitutes an acceptance of existing conditions, and failure of work due to unsatisfactory existing conditions shall be corrected at no cost to Owner. Similarly, if work needs to be removed to correct defects in substrates or previously placed work, both removal and replacement shall be done at no cost to Owner.
- .2 Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM

- .1 Install suspension system to manufacturer's written instructions, and as supplemented in this section.
- .2 Install system to ASTM E580/E580M.
- .3 Install system capable of supporting imposed loads to a deflection of 1/360 maximum.
- .4 Lay out system to a balanced grid design with edge units no less than 50% of acoustic unit size.
- .5 Locate system on room axis according to reflected plan.
- .6 Install after major above ceiling work is complete. Coordinate the location of hangers with other work.

- .7 Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- .8 Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected carrying channels and/or hangers to span the extra distance.
- .9 Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 150mm (6") of each corner; or support components independently.
- .10 Do not eccentrically load system, or produce rotation of runners.

3.3 INSTALLATION - ACOUSTIC UNITS

- .1 Install acoustic units to manufacturer's written instructions.
- .2 Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
- .3 Lay directional patterned units one way with pattern parallel to longest room axis. Fit border trim neatly against abutting surfaces.
- .4 Install units after above ceiling work is complete.
- .5 Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
- .6 Cutting Acoustic Units:
 - .1 Cut to fit irregular grid and perimeter edge trim.
 - .2 Double cut and field paint exposed edges of tegular units.
- .7 Where bullnose concrete block corners or round obstructions occur, provide preformed closures to match perimeter molding.
- .8 Lay acoustic insulation for a distance of 1 200mm (48") either side of acoustic partitions where indicated.

3.4 ERECTION TOLERANCES

- .1 Maximum Variation from Flat and Level Surface: 3mm in 3m (1/8" in 10').
- .2 Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 1 degree.

3.5 ADJUSTING AND CLEANING

- .1 After interior finishing work has been substantially completed, or when directed by Consultant, inspect acoustical treatment work. Replace broken, chipped or damaged work, reset loose units or units out of place and touch up marred surfaces with matching paint. Upon completion of Project,

acoustical treatment finished surfaces shall be clean and free from dirt and other markings and in good condition acceptable to Consultant.

END OF SECTION

PART 1 GENERAL

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- 1.12 WARRANTY

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 MATERIALS
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PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 INSTALLATION
- 3.4 ADJUSTMENT AND CLEANING
- 3.5 ADJUSTMENT, CLEANING, SEALING AND WAXING
- 3.6 PROTECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Supply and installation of resilient flooring and all associated trim and transitions.
- .2 Supply and installation of all resilient base.

1.2 RELATED SECTIONS

- .1 Section 04 20 00 - Unit Masonry.
- .2 Section 09 21 16 - Wall Board Assemblies.
- .3 Division 26 - Electrical.

1.3 REFERENCES

- .1 ASTM E84-10b - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 ASTM F1066-04(2010)e1 - Standard Specification for Vinyl Composition Floor Tile.
- .3 ASTM F1700-04(2010) - Standard Specification for Solid Vinyl Floor Tile.
- .4 ASTM F1861-08 - Standard Specification for Resilient Wall Base.
- .5 CAN/ULC-S102.2-10 - Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.
- .6 ASTM D 2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
- .7 ASTM E 648/NFPA 253, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
- .8 ASTM E662, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- .9 ASTM F710, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- .10 ASTM F 970, Standard Test Method for Static Load Limit.
- .11 ASTM F1482, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring.
- .12 ASTM F1303, Standard Specification for Sheet Vinyl Floor Covering with Backing.
- .13 ASTM F2170, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- .14 RFCI Standard Slab Moisture Test Method (Calcium Chloride Method)

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colours available.
- .3 Shop Drawings: Indicate layout, profiles, floor accessories detail, finish colours, patterns and textures.
- .4 Samples:
 - .1 Submit two (2) samples, 300 x 300mm (12 x 12") in size illustrating colour and pattern for each floor material for each colour specified.
 - .2 Submit two (2) 300mm (12") long samples of base material for each colour specified.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements including special procedures, perimeter conditions requiring special attention.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals
- .2 Extra Stock Materials:
 - .1 Extra stock material to be of same production dye lot as installed material.
 - .2 Flooring: Deliver to Owner on completion of construction, 2% of the quantity of flooring installed, of each material and colour, in labelled packages.
 - .3 Base: Deliver to Owner on completion of construction, 1% of the quantity of base installed, of each material and colour, in labelled packages.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
 - .1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.

- .3 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the Section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.
- .3 Single Source Responsibility: Ensure primary materials provided in this section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

1.9 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for flame/smoke rating requirements of CAN/ULC-S102.2 and ASTM E84.

1.10 DELIVERY, STORAGE, AND PROTECTION

- .1 Deliver packaged materials in original unopened containers, clearly identify contents.
- .2 Keep delivered material dry and free from stains. Store cementitious material off damp surfaces.
- .3 Store materials for a minimum of 24 hours immediately before installation at not less than 18°C.
- .4 Store materials in a clean, dry, secure, and well-ventilated area free from strong contaminant sources and residues with ambient air temperature maintained above 18°C.
- .5 Remove resilient flooring products from packaging to allow ventilation prior to installation. Protect materials from the direct flow of heat from hot-air registers, radiators and other heating fixtures and appliances. Observe ventilation and safety procedures specified in the MSDS. Do not store rubber surface products with materials that have a high capacity to absorb volatile organic compound (VOC) emissions. Do not store exposed rubber surface materials in occupied spaces. Do not store near materials that may off gas or emit harmful fumes, such as kerosene heaters, fresh paint, or adhesives.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Store materials for three days prior to installation in area of installation to achieve temperature stability.
- .2 Maintain ambient temperature required by adhesive manufacturer three (3) days prior to, during, and after installation of materials.

1.12 WARRANTY

- .1 Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official: Manufacturer's warranty is in addition to, and not a limitation of other rights Owner may have under Contract Documents.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.
 - .1 Polyflor Canada; www.polyflor.ca .
 - .2 Tarkett; www.tarkett.com.
 - .3 Roppe; www.roppe.com.
 - .4 Altro; www.altrofloors.com.
 - .5 Or approved alternate.

2.2 MATERIALS

- .1 Static Dissipative Sheet Flooring:
 - .1 **ESD:** Shall be iQ Granit SD vinyl flooring as manufactured by Tarkett.
 - .1 Thickness: 2mm (1/16").
 - .2 Width: 1980mm (6'-6") W. rolls.
 - .3 Colour: 3096950 - Black Grey.
 - .4 Welding Rod: As recommended by flooring manufacturer in colour 1287842.
 - .5 Location: Refer to Architectural 700 Series Drawings.
Maintain flush conditions at change of floor finish materials.
- .2 Luxury Vinyl Flooring:
 - .1 **LVT:** Shall be Event+ Stone Collection by Tarkett.
 - .1 Style: Urban Stone, PEUS 11200.
 - .2 Thickness: 3mm (0.120").
 - .3 Size: 305mm x 610mm (12" x 24").
 - .4 Colour: Malibu.

- .5 Welding Rod: As recommended by flooring manufacturer in colour to be selected by Consultant.
- .6 Location: Refer to Architectural 700 Series Drawings. Maintain flush conditions at change of floor finish materials.
- .3 Rubber Base:
 - .1 **RB**: Shall be Johnsonite Duracove Thermoplastic Rubber.
 - .1 Colour: ML3 - Concrete Charcoal B.
 - .2 Height: 102mm (4").
 - .3 Thickness: 3mm (1/8") thick.
 - .4 Base Accessories: Premoulded end stops and external corners, of same material, size, and colour as base.
 - .5 Acceptable alternative manufacturers: Roppe and Mannington.
 - .4 Vinyl Nosing Trim:
 - .1 **NT**: Shall be VDL-XX-SQ by Tarkett.
 - .1 Colour: ML3 - Concrete Charcoal B.
 - .2 Acceptable alternative manufacturers: Roppe and Mannington.
 - .5 Rubber Tactile Indicator:
 - .1 Safe Sense Tactile Walking Surface Indicator as manufactured by Tarkett Johnsonite.
 - .2 Size: 610mm x 610mm (24" x 24").
 - .3 Thickness: 3mm (1/8") base thickness with domes; 7.2mm (0.28") overall thickness.
 - .4 Colour: To be selected from manufacturer's standard colour range by the Consultant.

2.3 ACCESSORIES

- .1 Subfloor Filler: White premix latex only; type recommended by adhesive material manufacturer.
- .2 Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
- .3 Static Dissipative Adhesive: Use a manufacturer approved static dissipative adhesive.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Ensure floor surfaces are smooth and flat to plus or minus 3mm (1/8") over 3m (10'0"). Ensure that subfloors have been provided as specified without holes, protrusions, cracks greater than 2mm (3/32") wide, unfilled control joints, depressions greater than 3mm (1/8") deep, or other major defects.
- .2 Ensure concrete floors are dry (maximum 3% moisture content) and exhibit negative alkalinity carbonization or dusting.
- .3 Concrete slabs shall be at least 28 days old and shall be fully cured before work of this Section commences.
- .4 Commencement of installation signifies acceptance of surfaces and if repairs to these surfaces or finish materials are required after installation of finishes, they shall be done at no expense to the Owner.

3.2 PREPARATION

- .1 Remove dirt, soil, oil, grease and other deposits which would lessen the adhesive bond of flooring, and which would telegraph through flooring.
- .2 Remove chalking and dusting from concrete surfaces with wire brushes.
- .3 Remove prime paint and wire brush steel surfaces.
- .4 Fill minor defects such as cracks, depressions and scars from damage with filler, and level to smooth surface.
- .5 Prime subfloors if recommended by adhesive manufacturer, and as he specifies.
- .6 Protection: Prevent traffic and work on newly laid floors by barricading until adhesive is cured.
- .7 Levelling:
 - .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler including recess left by removal of existing flooring.
 - .2 Clean floor and apply, trowel and float filler to leave smooth, flat hard surface. Prohibit traffic until filler is cured.
 - .3 Feather out filler as indicated on drawings and as required at doorways and at change of floor finish materials to maintain flush conditions at change of floor finish materials.
- .8 Priming of Concrete Sub-floors
 - .1 Apply primer, if required in accordance with the flooring manufacturer's written recommendations.

- .2 Primer shall be allowed to dry thoroughly before application of adhesive. Rooms should be well-ventilated to allow dissipation of solvent vapours.
- .9 Moisture Testing:
 - .1 Moisture emissions from concrete subfloors must not exceed 5 lbs. per 1000 sf per 24 hours (2.25 kg H₂O/24 hr/93m²) via the Calcium Chloride Test Method (ASTM F1869) and not exceed 85% internal concrete relative humidity as tested in accordance with ASTM F2170-02.
 - .2 If subfloor moisture exceeds the allowable maximum, please contact the flooring manufacturer and the Consultant. Independent testing shall be arranged and paid for by this section.
 - .3 Contractor to supply written reports to the Consultant as they are executed and prior to proceeding with any flooring installation.

3.3 INSTALLATION

- .1 General
 - .1 Lay each material in accordance with manufacturer's full written specification.
 - .2 Lay flooring with joints closely butted. Scribe, cut and fit around floor outlets and openings, door frames, and heavy equipment supports.
 - .3 Cut flooring and bases to fit within 0.8mm (1/16") of abutting surfaces where exposed to view.
 - .4 Avoid abrupt variations in shades between adjacent flooring material. Do not install units that are off-colour or contain untypical pattern variations.
 - .5 Carry floor patterns through openings.
 - .6 Roll flooring with three-section, 45kg (100 lbs.) roller, in two directions from center of area.
 - .7 Maintain rollers clean and polished.
- .2 Adhesive
 - .1 Apply adhesive uniformly over surfaces with a notched trowel, at rate recommended by manufacturer.
 - .2 Cover only an area into which flooring can be set during working time of adhesive: do not lay flooring over hardened adhesive.
 - .3 Use only waterproof type adhesive in all areas where plumbing fixtures or floor drains are installed.
 - .4 Protect adjacent surfaces from soil by adhesive.
 - .5 Clean trowels and maintain profile of notches as installation of flooring progresses to ensure a constant rate of application.

.3 Resilient Sheet Flooring

- .1 Install flooring in full width sheets as per approved shop drawings.
- .2 Cut sheets to sized required, lay them out flat and allow them to reach room temperature before installation.
- .3 Double cut seams.
- .4 Remove all wrinkles and air pockets.
- .5 At seams, using a welding rod, butt sheets tightly together and weld together in accordance with manufacturer's full written instructions.

.4 Rubber Bases

- .1 Install bases in lengths as long as possible: do not make up runs of short lengths.
- .2 In areas where bases are indicated, install them on built-in fitments, columns, walls.
- .3 Cut and miter internal corners.
- .4 Double cut seams between adjoining lengths.
- .5 Apply adhesive to wall, masked to prevent spreading above base, and firmly bed base in place.
- .6 Press top set base down to force cove against flooring.
- .7 Install straight base before flooring, with bottom edge against subfloor and top edge level.

.5 Reducer Strips

- .1 Install strips at terminations of flooring where edges are exposed to view and as detailed.
- .2 Install strips in straight lines and relate their terminations to significant building features, and within a tolerance of 3mm (1/8") in 3m (10'-0").
- .3 Install strips under doors at openings.
- .4 Cut and fit strip terminations to profile of abutting construction.
- .5 Secure strips to subfloor with contact bond adhesive to ensure complete bond.
- .6 Install metal edge strips at unprotected or exposed edges where flooring terminates and at junction of other floor finishes.

3.4 ADJUSTMENT AND CLEANING

- .1 Replace defective resilient flooring installations so that there is no discernible variation in appearance between installed and replaced materials.
- .2 Clean off excess adhesive as installation of flooring progresses and before it sets.

- .3 Sweep and vacuum floor after installation.
- .4 Do not wash floor until after time period as recommend by flooring manufacture.
- .5 Damp mop flooring to remove black marks and soil.
- .6 Clean resilient flooring no sooner than 48 hours after installation. Use neutral floor cleaner where required and proceed as recommended by manufacture.

3.5 ADJUSTMENT, CLEANING, SEALING AND WAXING

- .1 Replace defective resilient flooring installations so that there is no discernible variation in appearance between installed and replaced materials.
- .2 Clean off excess adhesive as installation of flooring progresses and before it sets.
- .3 Clean resilient flooring, but no sooner than 48 hours following installation. Use neutral floor cleaner where required, and proceed as recommended by manufacturer.
- .4 Apply vinyl floor finish in accordance with manufacturer's specifications.

3.6 PROTECTION

- .1 After materials have set, and until Project completion, coordinate with other Sections to ensure that floors are not damaged by traffic. Ensure that flooring is not subjected to any static loading during the week following installation.
- .2 At completion of flooring installation, install floor protection in areas where finishing operations, repair and installation of equipment, and foot traffic will occur. Lap joints of material by 150mm (6") and seal with non-asphaltic tape.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 REGULATORY REQUIREMENTS
- 1.10 DELIVERY, STORAGE, AND PROTECTION
- 1.11 ENVIRONMENTAL REQUIREMENTS
- 1.12 WARRANTY

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 MATERIALS
- 2.3 MIXING
- 2.4 PAINT COLOURS

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 PREPARATION
- 3.3 APPLICATION
- 3.4 FIELD QUALITY CONTROL
- 3.5 PAINTING SCHEDULE
- 3.6 CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Supply all labour, materials, tools and equipment necessary to properly execute and complete all painting and finishing according to the drawings and as specified herein. Paint Finish to be pin hole free to CCAC and OMAFRA standards.
- .3 Colour Schedule and drawings will be issued by the Consultant for colour locations following award of contract.

1.2 RELATED SECTIONS

- .1 Section 05 50 00 - Metal Fabrications: Shop primed items.
- .2 Section 06 20 00 - Architectural Woodwork and Millwork.
- .3 Section 09 16 21 -Wall Board Assemblies.
- .4 Division 23 - Heating, Ventilating, and Air-Conditioning (HVAC).
- .5 Division 26 - Electrical: Electrical identification.

1.3 REFERENCES

- .1 ASTM C472-99(2009) - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete.
- .2 CSA-A23.1-09/A23.2-09 - Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
- .3 OPCA (Ontario Painting Contractors Association) - Architectural Painting Specification Manual.
- .4 Paint systems shall be "Premium Grade" as referenced in the Systems Selection Guide of the MPI ASPM.
- .5 CCAC – Canadian Council on Animal Care.
- .6 OMAFRA – Ontario Ministry of Agriculture, Food and Rural Affairs.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on all finishing products.
- .3 Samples: Submit two (2) samples, 216mm x 280mm (8½" x 11") in size illustrating range of colours available for each surface finishing product scheduled at least 30 days before materials are required.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submittal procedures.
- .2 Installation Data: Manufacturer's special installation requirements indicating special surface preparation procedures, substrate conditions requiring special attention.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Closeout Submittals.
- .2 Extra Stock Materials:
 - .1 Deliver to Owner on completion of painting and finishing, and as he directs, sealed containers of each finish painting material applied, and in each colour. Label each container as for original, including mixing formula. Provide 1L of extra stock when less than 50L are used for project, 4L of extra stock when 50 to 200L are used, and 8L of extra stock when over 200L are used.
 - .2 Submit to Owner, for endorsement, an Extra Stock Certificate as verification of receipt of the specified extra stock materials.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
- .3 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- .4 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the Section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

- .3 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

1.9 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for flame and smoke rating requirements for finishes.
- .2 Apply coatings that require fire hazard classification exactly as specified in Underwriters' Laboratories test specification that validates specified rating.
- .3 Coatings shall meet fire hazard classification requirements of jurisdictional authorities for each material in each installation location as applicable.
- .4 Fire retardant coatings shall meet fire hazard classification requirements of jurisdictional authorities for each installation location.
- .5 Fire hazard classification ratings shall not exceed for:
 - .6 Flame Spread: not to exceed the ratings.
 - .1 Smoke Developed and Fuel Contributed: Shown in Section 3.1.12.1 and 3.1.13.2 of the Ontario Building Code 2012.

1.10 DELIVERY, STORAGE, AND PROTECTION

- .1 Section 01 61 00: Product Requirements, handle, store, and protect products.
- .2 Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- .3 Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and written instructions for mixing and reducing.
- .4 Store paint materials at minimum ambient temperature of 7°C (45°F) and a maximum of 32°C (90°F), in ventilated area, and as required by manufacturer's written instructions.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- .2 Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- .3 Minimum Application Temperatures for Latex Paints: 7°C (45°F) for interiors; 10°C (50°F) for exterior; unless required otherwise by manufacturer's written instructions.

- .4 Minimum Application Temperature for Varnish 21°C (70°F). Finishes: 18°C (65°F) for interior or exterior, unless required otherwise by manufacturer's written instructions.
- .5 Provide lighting level of 860 lx (80 ft candles) measured mid-height at substrate surface.
- .6 Ensure that all areas in which paint is applied are well ventilated and broom clean.
- .7 Do not finish wood surfaces that contain over 15% moisture.
- .8 Do not apply finishes on porous surfaces such as concrete, plaster, wall board, pipe insulation, masonry, that contain over 12% moisture.
- .9 Do not apply finishes when dust is being raised.
- .10 Do not apply finishes when relative humidity is over 85%, when condensation has formed or is likely to form, nor immediately following rain, frost or formation of dew.

1.12 WARRANTY

- .1 Warrant work of this Section for period of 1 year against defects and deficiencies in materials and workmanship in accordance with General Conditions of the Contract. Promptly correct defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no additional expense. Material Defects include but are not limited to: material cracking and splitting. Workmanship defects include but are not limited to: bubbling, blistering and delamination.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.
 - .1 General Purpose Applications:
 - .1 Benjamin Moore & Co. Ltd.
 - .2 Para Paint.
 - .3 Dulux Paints.
 - .4 Canadian Industries Ltd.
 - .5 Olympic Stains, Canfor Limited.
 - .6 Pratt & Lambert Inc.
 - .7 Sherwin-Williams Of Canada Ltd.
 - .8 Sikkens Stains, Thomes (Canada) Ltd.
 - .2 All general purpose painting materials products are to be **Ultra Spec Scuff-X** by Benjamin Moore & Co., or approved alternative.

- .3 All materials used on the work shall be exactly as specified in quality. No claim by the Painting Trade to the unsuitability or unavailability of a material specified, or his willingness to use same or his inability to produce first-class work with same, will be entertained, unless such claims are made in writing and submitted with his bid. All paint, varnishes, enamels, lacquers, stains, paste fillers and similar materials must be delivered in the original containers with the seals unbroken and labels intact.
- .4 Paint materials to conform to MPI Standards listed in finishing formulae and as supplied by MPI Approved Product List manufacturers.
- .5 Paint materials for each coating formulae to be products of a single manufacturer.
- .6 All materials shall be used only as specified by the manufacturer's direction label on the container.
- .7 All painting materials, such as linseed oil, shellac and turpentine shall be pure and of highest quality and approved by the Consultants. They shall bear identifying labels on the containers.
- .8 Materials shall not exceed Flame Spread, Fuel Contributed and Smoke Developed ratings permitted by the Ontario Building Code, and Ontario Fire Marshal for rooms specified to receive application.
- .9 Low VOC or zero VOC paints to be used for interior work.

2.2 MATERIALS

- .1 Coatings:
 - .1 Interior paint: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.
- .2 Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
- .3 Patching Materials: Latex filler.
- .4 Fastener Head Cover Materials: Latex filler.

2.3 MIXING

- .1 Refer to room finish plans for surface finishes.
- .2 Paints shall be supplied ready-mixed unless otherwise specified. Do not incorporate adulterants.

- .3 Mix specified paste or powder coatings, or those that are field-catalysed at job, to meet specified requirements of manufacturer. Otherwise, all paints shall be shop tinted.
- .4 Pigment shall be well ground to form a soft paste in the vehicle during its storage life. Paddle mixing at job shall evenly disperse paste throughout mixture to ensure paint of smooth-flowing, easy brushing, consistency.
- .5 Mix paints only in mixing pails placed on suitably sized, non-ferrous or oxide resistant metal pans.

2.4 PAINT COLOURS

- .1 Paint Colours (**PT**):
 - .1 Allow for maximum ten (10) interior colours.
 - .1 PT1: Custom colour, Brock White
 - .2 PT2: Custom colour, Brock Light Grey
 - .3 PT3: Custom colour, Brock Dark Grey
 - .4 PT4: Custom colour, Brock Arrow Wood
 - .5 PT5: Custom colour, Brock Red
 - .6 PT6: to be selected by Consultant at a later date.
 - .7 PT7: to be selected by Consultant at a later date.
 - .8 PT8: to be selected by Consultant at a later date.
 - .9 PT9: to be selected by Consultant at a later date.
 - .10 PT10: to be selected by Consultant at a later date.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Test shop applied primer for compatibility with subsequent cover materials.
- .2 Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - .1 Plaster and Gypsum Wallboard: 12%.
 - .2 Masonry, Concrete, and Concrete Unit Masonry: 12%.
 - .3 Interior Wood: 15%.
 - .4 Exterior Wood: 15%.
 - .5 Concrete Floors: 8%.
- .3 Defective painting and finishing applications resulting from failure to properly test surfaces and/or from application to unsatisfactory surfaces will be considered the responsibility of this Section.
- .4 Commencement of work implies acceptance of previously completed work.

3.2 PREPARATION

- .1 Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- .2 Correct defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.
- .3 Seal with shellac and seal marks which may bleed through surface finishes.
- .4 Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- .5 Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high-pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
- .6 Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply compatible sealer or primer.
- .7 Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- .8 Concrete Floors: Remove contamination; acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- .9 Copper Surfaces Scheduled for a Paint Finish: Remove contamination by steam, high pressure water, or solvent washing. Apply vinyl etch primer immediately following cleaning.
- .10 Copper Surfaces Scheduled for a Natural Oxidized Finish: Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid. Rub on repeatedly for required effect. Once attained, rinse surfaces with clear water and allow to dry.
- .11 Data/ Communication Cabling. Protect all existing or new data and communication cabling from paint and overspray.
- .12 Wall Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- .13 Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- .14 Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

- .15 Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- .16 Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- .17 Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- .18 Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- .19 Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.
- .20 Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.
- .21 Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior caulking compound after sealer has been applied.
- .22 Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.3 APPLICATION

- .1 Apply products to manufacturer's written instructions. **Pin hole free application.**
- .2 Do not apply finishes to surfaces that are not dry.
- .3 Apply each coat to uniform finish.
- .4 Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- .5 Sand metal wood lightly between coats to achieve required finish.
- .6 Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
- .7 Allow applied coat to dry before next coat is applied.

- .8 Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- .9 Prime concealed surfaces of interior exterior woodwork with primer paint.
- .10 Prime concealed surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25% with mineral spirits.
- .11 Finish glazing rebates before glazing commences.
- .12 Do not paint caulked joints.
- .13 Remove splatters of finished material from adjacent surfaces, including glass, before they set up, and by methods not harmful to the surfaces.
- .14 All existing walls that require only a portion of the wall to be painted, shall be painted to the nearest corner and/or door frame or similar major elements as directed by the consultant.

3.4 FIELD QUALITY CONTROL

- .1 Section 01 45 00: Quality Control.
- .2 Arrange for periodic visits to site by paint manufacturers' representatives while painting and finishing applications are in progress. On each visit he shall verify that specified materials and methods are used, and that procedures agreed upon at the initial site meeting are followed.
- .3 Manufacturers' representatives shall submit reports of each site visit to the Consultant as specified.

3.5 PAINTING SCHEDULE

- .1 General
 - .1 This Section shall include painting and/or finishing of all surfaces exposed to view that have been installed with no final finish provided by the installer, unless otherwise specified.
 - .2 Finish interior surfaces, including objects within each area unless otherwise excluded, as indicated on Room Finish Plans.
 - .3 Wall surfaces partially finished with other finish materials shall have remainder of surfaces finished as for surrounding surfaces.
 - .4 Finish equipment, panels, fitments, services, structure, attachments, accessories, prime coated hardware, or similar appurtenances on or near finished surfaces to match finish of the surface.
 - .5 Finish edges and tops of trim, projecting ledges, fitments, cupboards, and similar surfaces to match adjacent surfaces, whether or not they are above or beyond sight lines.
 - .6 Finish interiors of alcoves, recesses, closets, cupboards, fitments, and similar spaces to match adjacent surfaces unless otherwise indicated.

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- .7 Finish surfaces visible through grilles, grille cloth, perforated metals, screening, convector covers, louvres, linear metal ceilings, and other openings, including inside of ductwork, with two coats of matte black paint. If it is the intention that finished surfaces be seen behind the elements listed above, finish the surfaces to match adjoining surfaces.
 - .8 Finish exposed wood and exposed ferrous metals, whether primed or galvanized or not, on surfaces that are indicated as unfinished.
- .2 Doors
- .1 Finish edges of wood and metal doors exposed to view with the same number of coats of material and colour adjoining surface finishes. Where not exposed to view, finish with two coats of varnish.
 - .2 Paint exposed plywood edges of doors to match stained finish.
 - .3 Paint metal door grilles to match door faces.
 - .4 Ensure that all joints around openings for access panels and access doors are not to be bridged with paint.
- .3 Finishing Mechanical and Electrical Equipment
- .1 This section is for both existing and new Mechanical and Electrical Equipment
 - .2 Refer to Division 23 and Division 26 for schedule of colour coding and identification banding of equipment, duct work, piping, and conduit.
 - .3 Paint shop primed equipment.
 - .4 Paint shop prefinished items occurring at interior areas.
 - .5 Remove unfinished louvres, grilles, covers, and access panels on mechanical and electrical components and paint separately.
 - .6 Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
 - .7 Paint interior surfaces of air ducts convector and baseboard heating cabinets that are visible through grilles and louvres with one (1) coat of flat black paint, to visible surfaces. Paint dampers exposed behind convector and baseboard heating cabinets, louvres, grilles to match face panels.
 - .8 Paint exposed conduit and electrical equipment occurring in finished areas.
 - .9 Paint both sides and edges of plywood backboards for electrical and telephone (1) equipment before installing equipment.
 - .10 Colour code equipment, piping, conduit, and exposed duct work in accordance with colour schedule.

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- .11 Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
 - .12 **DO NOT PAINT** any exposed data or communication cabling.
 - .4 Steel lintels where exposed to view.
 - .5 Interior ferrous metal hardware, fasteners and accessories.
 - .6 Interior galvanized hardware, fasteners and accessories.
 - .7 Exterior ferrous metal hardware, fasteners and accessories.
 - .8 Exterior galvanized hardware, fasteners and accessories.
 - .9 Sheet metal ducts in interior spaces where exposed to view.
 - .10 Access doors.
 - .11 Unfinished or primed convector covers.
 - .12 Unfinished or primed baseboard units.
 - .13 Prime painted louvres, grilles, and diffusers at interior.
 - .14 Prime painted louvres, grilles, and diffusers at exterior.
 - .15 Prime painted fire hose and extinguisher cabinets.
 - .16 Prime painted electrical panel doors and frames.
 - .17 Fill pipes.
 - .18 Electrical service entry.
 - .19 Mechanical, electrical and other equipment and accessories on roof.
 - .20 Surfaces That Require No Finishing
 - .1 Painting or finishing of the following surfaces is not included in this Section:
 - .1 Plastics; metals with porcelain enamel, baked enamel or plated finishes; sound absorbent surfaces; vitreous, glazed ceramic or plastic facings; special coatings; factory finished surfaces as specified in other Sections; control panels, circuit breakers, switches, receptacles or similar electrical components; or name and specification plates on equipment; ducts, pipes and conduit concealed from view.
 - .21 Gloss
 - .1 Gloss value shall be determined in accordance with ASTM D523 Tentative Method of Test for 60° specular gloss.
 - .22 Gloss values for terminology specified shall be: less than 10 for flat, 10 to 35 for eggshell, 35 to 60 for semi-gloss, 60 to 80 for gloss, 80 to 90 for high gloss.

- .23 Gloss for various areas will be submitted by Consultant following award of Contract.
- .24 Schedule - Shop Primed Items for Site Finishing
 - .1 Section 05 50 00 - Metal Fabrications: Exposed surfaces of lintels, steel stairs, guards, freestanding/floor mounted and wall-mounted handrails, wall-mounted handrail brackets, supports for countertops and benches.
- .25 **Schedule - Interior Surfaces (Pin Hole Free Finish)**
 - .1 Wood - Painted:
 - .1 One (1) coat of latex prime sealer.
 - .2 Two (2) coats of latex enamel, semi-gloss.
 - .2 Wood - Transparent:
 - .1 Filler coat (for open grained wood only).
 - .2 One (1) coat of stain.
 - .3 One (1) coat sealer.
 - .4 Two (2) coats of polyurethane, satin.
 - .3 Concrete, Concrete Block:
 - .1 One (1) coat of block filler.
 - .2 One (1) coat of primer sealer latex.
 - .3 Two (2) coats of latex, semi-gloss.
 - .4 Steel - Unprimed:
 - .1 One (1) coat of latex primer.
 - .2 Two (2) coats of latex enamel, semi-gloss.
 - .5 Steel - Primed:
 - .1 Touch-up with latex primer.
 - .2 Two (2) coats of latex enamel, semi-gloss.
 - .6 Steel - Galvanized:
 - .1 One (1) coat galvanize primer.
 - .2 Two (2) coats of latex enamel, semi-gloss.
 - .7 Concrete Floors:
 - .1 One (1) coat of alkali resistant primer.
 - .2 Two (2) coats of alkyd floor enamel, gloss.
 - .8 Wall Board (Walls)
 - .1 One (1) coat of latex primer sealer.
 - .2 Two (2) coats of latex semi gloss in all areas, eggshell finish in offices.
 - .3 Provide 3 coats at high contrast colours
 - .9 Wall Board (Ceilings)

- .1 One (1) coat of latex primer sealer.
- .2 Three (3) coats of paint finish, flat.
- .10 Fire Retardant Finish.
 - .1 One (1) coat of fire-retardant primer.
 - .2 Two (2) coats of fire-retardant finish, gloss.
 - .3 Flame and smoke rating of 25/5.

3.6 CLEANING

- .1 Section 01 74 00: Cleaning and Waste Processing work.
- .2 Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.
- .3 Touch up and refinish minor defective applications. Refinish entire wall, ceiling or similar surfaces where finish is damaged or not acceptable.
- .4 Remove spilled or splattered finish materials from surfaces of installations provided by other Sections. Do not mark surfaces while removing.
- .5 Leave storage and mixing areas clean and in same condition as equivalent spaces in Project.

END OF SECTION

PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 SYSTEM DESCRIPTION
- 1.10 DELIVERY, STORAGE AND HANDLING
- 1.11 WARRANTY

PART 2 PRODUCTS

- 2.1 SUSPENDED ACOUSTIC CEILING FIN SYSTEM
- 2.2 MODULAR WALL PANEL SYSTEM

PART 3 EXECUTION

- 3.1 INSTALLATION
- 3.2 ADJUSTMENT AND CLEANING

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 To supply and install miscellaneous specialties specified in this Section at locations as shown on Drawings.

1.2 RELATED SECTIONS

- .1 Section 09 21 16 - Wall Board Assemblies.
- .2 Section 09 51 13 - Acoustic Panel Ceilings.

1.3 REFERENCES

- .1 Not used.

1.4 SUBMITTALS FOR REVIEW

- .1 Submit under provisions of Section 01 33 00.
- .2 Product Data: Provide data for components.
- .3 Shop Drawings
 - .1 Submit shop drawings for each listed item in this Section.
- .4 Samples
 - .1 Submit samples for each listed item in this Section.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements including special procedures, perimeter conditions requiring special attention.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed Products specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.

- .1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- .3 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the Section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.
- .2 Applicator Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

1.9 SYSTEM DESCRIPTION

- .1 Tolerances
 - .1 Fabricate specialties specified in this Section within tolerances specified for construction into which they are built.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Package, crate and brace products to prevent distortion in shipment and handling. Label package and crates. Protect finish surfaces by sturdy wrappings.
- .2 Deliver products to location at building site designated by Contractor.

1.11 WARRANTY

- .1 Provide manufacturer's full warranty for each product specified.

PART 2 PRODUCTS

2.1 SUSPENDED ACOUSTIC CEILING FIN SYSTEM

- .1 Acoustic Ceiling Fin System (**ACF**)
 - .1 Basis-of-Design System: Atmosphaera Adaptive Contour Ceiling System as manufactured by Arktura, LLC. (www.arktura.com).
 - .2 Single-Source Responsibility: Provide panels and method of attachment by a single manufacturer.
 - .3 Pre-manufactured and panelized system; overall dimensions and configurations of panels as shown on Drawings.
 - .4 Suspension System.

- .1 Fin Supporting Ribs: 12 gauge, cold rolled steel complete with end-to-end connectors between sections; prefinished in colour "Shadow".
- .2 Unistrut Hanger Ribs: 12 gauge, cold rolled steel; prefinished in colour "Shadow".
- .3 Threaded rods: Painted, colour to match fin supporting ribs.
- .5 Fins: Soft Sound Premium Wood Texture.
 - .1 Dimensions: 203mm (8") deep x 12mm (1/2") thick; length varies.
 - .2 Material: To ASTM E-84 Class A, PET.
 - .3 Finish: White Oak.
 - .4 Core Colour: Group A - Taupe.
 - .5 Fin layout: 83% open.
- .6 Installation Hardware:
 - .1 Custom engineered system designed to receive threaded rod via P1008 channel nut and P1063 flat plate for attaching to building structural above.
- .7 **Alternative Price** (Refer to Pricing Form)
 - .1 Submit Alternative Price for Acoustic Ceiling Baffles System as manufactured by Akustus in lieu of the basis-of-design system:
 - .1 Design: Cargo Baffles.
 - .2 Suspension System: Prefinished steel channels, aircraft wire and all associated fittings.
 - .3 Fins.
 - .1 Dimensions: 305mm (12") deep x 36mm (1.42"); maximum length to suit design.
 - .2 Material: To ASTM E84 Class A, CAN/ULC-S102.2-10; 100% polyester fibre.
 - .3 Finish: Printed wood texture; colour to be selected from manufacturer's standard range by Consultant.
 - .4 Spacing: 203mm (8").
 - .4 Provide complete suspension system for supporting the baffles.

2.2 MODULAR WALL PANEL SYSTEM

- .1 Perforated Screen Wall Panel System (**AWP**)
 - .1 Basis-of-Design System: SoftScreen Acoustic Wall Panel System as manufactured by Arktura, LLC. (www.arktura.com).

- .2 Single-Source Responsibility: Provide panels and method of attachment by a single manufacturer.
- .3 Pre-manufactured and panelized system; overall dimensions and configurations of panels as shown on Drawings.
- .4 Suspension System.
 - .1 Top and bottom metal channels: Prefinished to match panel colour.
 - .2 Minimum 1.2mm (3/64") diameter cables and miscellaneous hardware.
 - .3 Threaded rods: Painted, colour to match fin supporting ribs.
- .5 Panels: Soft Sound perforated panels; NRC 0.35.
 - .1 Thickness: 12mm (1/2").
 - .2 Material: To ASTM E-84 Class A, PET.
 - .3 Perforation Pattern:
 - .1 Wall Panels: Frequency, 14% Open
 - .2 Help Desk (millwork): Frequency Half, 5% Open.
 - .4 Colour: Group A - Carbon.
- .6 Installation:
 - .1 Cable tension mounts to floor and ceiling and direct installation by construction adhesives as shown on Drawings.

PART 3 EXECUTION

3.1 INSTALLATION

- .1 Supplier shall provide information and templates required for installation of Work of this Section, and assist or supervise, or both, the setting of anchorage devices, and construction of other Work incorporated with products specified in this Section in order that they function as intended.
 - .1 Install Work to meet manufacturer's recommended specifications, true and tightly fitted to adjacent surfaces, suitable for installation.

3.2 ADJUSTMENT AND CLEANING

- .1 Verify under Work of this Section that installed products function properly, and adjust them accordingly to ensure satisfactory operation.
- .2 Refinish damaged or defective Work so that no variation in surface appearance is discernible. Refinish Work at site only if approved.

END OF SECTION

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PART 1 GENERAL

- 1.1 SECTION INCLUDES
- 1.2 RELATED SECTIONS
- 1.3 REFERENCES
- 1.4 SUBMITTALS FOR REVIEW
- 1.5 SUBMITTALS FOR INFORMATION
- 1.6 CLOSEOUT SUBMITTALS
- 1.7 ADMINISTRATIVE REQUIREMENTS
- 1.8 QUALITY ASSURANCE
- 1.9 DELIVERY, STORAGE AND HANDLING
- 1.10 WARRANTY

PART 2 PRODUCTS

- 2.1 MANUFACTURERS
- 2.2 WHITE BOARDS (WB)
- 2.3 FABRICATION

PART 3 EXECUTION

- 3.1 EXAMINATION
- 3.2 INSTALLATION
- 3.3 ADJUSTMENT AND CLEANING
- 3.4 PROTECTION OF FINISHED WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.
- .2 Supply and install whiteboards.

1.2 RELATED SECTIONS

- .1 Section 04 20 00 - Unit Masonry.
- .2 Section 09 21 16 - Wall Board Assemblies.
- .3 Section 09 91 00 - Painting.

1.3 REFERENCES

- .1 ASTM E84-10b - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 CAN/CGSB 11.3-M87 - Hardboard.
- .3 CANPLY (Canadian Plywood Association) - Canadian Plywood Handbook.
- .4 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .5 CHPVA (Canadian Hardwood Plywood and Veneer Association) - Official Grading Rules for Canadian Hardwood Plywood-2010.
- .6 PEI (Porcelain Enamel Institute) - Specifications for Porcelain Enamel Marker Boards and Chalkboards.
- .7 CAN/CSA 0188.1 M78, Interior, Mat Formed Wood Particleboard.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on accessories describing size, finish, details of function, and attachment methods.
- .3 Shop Drawings:
 - .1 Indicate wall elevations, dimensions, joint locations, special anchor details.
- .4 Samples:
 - .1 Submit samples of whiteboards including trim sections. Submit two (2) 300mm (12") square samples of each product.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements including special procedures, perimeter conditions requiring special attention.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 78 10: Submission procedures.

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
 - .1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.
- .3 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the Section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience.
- .3 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

1.9 DELIVERY, STORAGE AND HANDLING

- .1 Deliver products to site only immediately prior to installation.
- .2 Package items to protect finish surfaces during handling and storage.
- .3 Deliver wallcoverings to the project site in unbroken and undamaged original factory wrappings and clearly labelled with the manufacturer's identification label, quality or grade, and lot number.
- .4 Store materials in a clean, dry storage and locked area with temperature maintained above 13°C (55°F) with normal humidity.

1.10 WARRANTY

- .1 Section 01 78 10: Warranties.
- .2 Provide manufacturer's five (5) year warranty on materials and manufacturing defects.
- .3 Warranty: Include coverage of marker board, surfaces from crazing or cracking discolouration due to cleaning.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.
 - .1 ASI Visual Display Products www.asi-visualdisplayproducts.com
 - .2 Koroseal; www.koroseal.com
 - .3 Claridge; www.charidgeproducts.com
 - .4 Global; www.globalindustrial.ca
 - .5 Levey industries; www.leveyindustries.com
 - .6 Or approved alternate.

2.2 WHITE BOARDS (WB)

- .1 9100 Series as manufactured by ASI Visual Display Products or approved alternate.
 - .1 Surface mounted with concealed brackets.
 - .2 Writing surface shall be white porcelain enamel.
 - .3 All framing to be clear anodized aluminum; pre-framed with square corners.
 - .4 #544112 bottom marker tray; C1 map rail.
 - .5 Sizes as shown on drawings.

2.3 FABRICATION

- .1 Frames and Trim:
 - .1 Form aluminum extrusions to receive specified boards and include end stops as applicable at exposed terminations of trays.
 - .2 Marker trays shall run full width of board.
 - .3 Fabricate frames and trim for concealed fastening. Frames shall be self-supporting.
- .2 White Boards:
 - .1 Fabricate writing surface of minimum 0.076mm (.003") thick porcelain enamel after firing at temperatures between 800°C

(1500°F) and 900°C (1600°F) as manufactured by P. G. Bell Associates, Georgetown and in accordance with Porcelain Enamel Institute Standard P.E.I. S104, with a gloss factor of 6.8 as measured by 45° glossometer.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that specified environmental conditions are ensured before commencing application of covering.

3.2 INSTALLATION

- .1 Install products specified in this Section to meet requirements of manufacturer's specifications, and plumb level and in true planes.
- .2 Install whiteboards to walls with concealed tamperproof fasteners, recommended by Manufacturer.
- .3 Fasten hangers to walls with screw fasteners into concrete masonry units or blocking provided by others.
- .4 Verify location and mounting heights of all products with Consultant before installation.

3.3 ADJUSTMENT AND CLEANING

- .1 Remove soil or dirt deposits from products, resulting from fabrication and installation.
- .2 Final cleaning as specified in Section 01 74 00.

3.4 PROTECTION OF FINISHED WORK

- .1 Protect finished Work from damage.

END OF SECTION

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