

SPECIFICATIONS

for

ÉCOLE ÉLÉMENTAIRE NOUVEL HORIZON

621 QUAKER ROAD, WELLAND, ON

CONSEIL SCOLAIRE VIAMONDE

ARCHITECT: MZE Architecture and Design Inc.
St. Catharines, ON

CONSULTANTS:
ELECTRICAL Seguin Engineering, Caledonia, ON

SPECIFICATIONS

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SECTION 01 00 10 - GENERAL REQUIREMENTS

PART 1 – GENERAL

1.1 Division One Requirements:

1. The provisions of all Sections of Division One shall apply to each section of the Specifications, including those of Divisions 23, 26, 31, and 32.

1.2 Subdivision of Work:

1. The Specifications have generally been divided into trade divisions, and the trade divisions into sections for the purpose of ready reference, but a section may consist of more than one Subcontractor or supplier. The responsibility for determining which Subcontractor or Supplier provided labour, materials, products, equipment and services to complete the work rest solely with the Contractor.

1.3 CODES AND STANDARDS

1. Perform the work in accordance with the Ontario Building Code containing the Building Code Act and Ontario Regulation 423/06, latest amendments.
2. Comply with all regulations of all public authorities having jurisdiction.
3. Wherever a code or standard is referred to in the drawings or specifications, it shall be understood to be the latest revision of this code or standard that is intended.
4. Supply, to the Owner, copies of material safety data sheets (MSDS) for all products covered under the Ontario Health and Safety Act and Regulations and WHMIS Regulations. These are to be used on or in conjunction with the work. Include information regarding locations and conditions for use.

1.4 PERMITS

1. Note that the Municipal Building permit has been applied and paid for by the owner as has the Entrance Permit. These are to be transferred to the contractor.
2. Supply all permits required by local authorities required from them and pay expenses incurred. Permits pertaining to particular trades shall be paid for by the particular trade concerned. Include all permit fees in tender.
3. Be responsible for contacting the Municipal building authority for a field review of the work at those times and in accordance with the directions on the Municipal Building Permit and/or the requirements of the municipality concerned.

1.5 DISCREPANCIES OMISSIONS

1. Report omissions, ambiguities and/or contradictions in the project documentation to the Consultant immediately on discovery in writing. The Consultant will then provide written instructions, clarifications or explanations. The Consultant will not be responsible for oral instruction.

1.6 EXAMINATION DURING TENDERING

1. Examine the site carefully prior to the submission of a tender.

2. Extras will not be considered for any additional Work required to deal with difficulties encountered which could have been foreseen by a close site examination.

1.7 PUBLIC UTILITIES AND SERVICES

1. Verify limitations imposed on the Work by the presence of utilities and services. Ensure that they are not damaged.
2. Notify service authorities to enable them to take appropriate action with regard to the affected areas. Obtain locates as required.
3. Location of existing concealed or buried services or structure indicated in the documents has not necessarily been taken from "as-built" drawings and may be approximate only. Exercise appropriate precautions when carrying out the Work in the area of these services. Notify Consultants immediately of any discrepancies.
4. Locate poles, pipes, conduit, wires, fill pipes, vents, regulators, meters, and sanitary service Work in inconspicuous locations. If not shown on drawings, verify location of service Work with Consultant before commencing installation.

1.8 VERIFICATION OF INVERTS

1. Immediately following award of the Contract, verify all field service connections to ensure that drainage runs can meet the site service inverts.
2. Give notification immediately of any apparent difficulties or discrepancies. No extras will be considered for rerouting drainage lines without prior review with the Consultant.

1.9 COORDINATION OF OTHER CONTRACTORS' WORK

1. Cooperate with other Contractors who may have separate contracts with the Owner, permit the completion of the Work as expeditiously as possible.
2. Prior to commencement of the Work, ensure that all other Contractors understand the extent of the Work, the conditions and materials on the project, the schedule of completion, restrictions to safety, and to access. Ensure that all Sub-contractors fully understand the extent of Work involved with Other Contractors.

1.10 BUILDING DIMENSIONS AND COORDINATION

1. Ensure that all necessary job dimensions are taken and that the Work of trades is coordinated for the proper execution of the Work. Assume complete responsibility for the accuracy and completeness for dimensions, and for coordination.
2. Verify that all Work, as it proceeds is executed in accordance with dimensions and positions indicated. Maintain levels and clearances to adjacent Work, as set out in the drawings; assure that Work installed in error is rectified before constructions resumes.
3. Check and verify all dimensions and the interfacing of all services. Verify with each trade all dimensions, pertaining to the Work of other trades. Be responsible for the cooperation of various trades to achieve the proper performance of the Work.
4. Avoid scaling the drawings. Immediately inform the Consultant of ambiguity or lack of information. Assume the responsibility for non-compliance.
5. Field measure installed Work to assure the fit of dependent details.

6. Advise Consultant of discrepancies, omissions on drawings, such as reflected ceiling plans, jointing patterns for paving, or ceramic tile, which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without review with the Consultant.
7. Ensure that each Sub-contractor communicates requirements for site conditions and surfaces necessary for the execution of the Sub-contractor's Work, and that he provides setting drawings, templates and all other information necessary for the location and installation of material, holes, sleeves, inserts, anchors, accessories, fastenings, connections and access panels. Inform other Sub-contractors whose Work is affected by these requirements and preparatory Work.
8. Ensure that other Sub-contractors are assisted in the execution of required preparatory Work by Sub-contractors whose own Work is dependent on this preparatory Work
9. Prepare interference drawings to properly coordinate the Work where necessitated. Refer to Section 01340

1.11 LABELS AND NAMEPLATES

1. Do not install permanent or permanently-attached labels, trademarks, and nameplates in visible locations on materials and components, unless required for operating instruction or by Jurisdictional Authorities

1.12 USE OF PREMISES BEFORE SUBSTANTIAL PERFORMANCE

1. The Owner shall have the right to enter and occupy the building, in whole or in part, for the purpose of placing fittings, equipment and the like, before completion of the Contract, such entry and occupancy must not prevent or interfere with the Contractor in the performance of the Work. Such entry shall in no way be considered as an acceptance of the Work in whole, or in part, nor shall it imply acknowledgement that terms of the Agreement are fulfilled.
2. Provide facilities for such access and installation.

1.13 LINES, LEVELS, BUILDING LOCATION AND EXISTING BUILDING SURVEY

1. Existing grades and other known conditions of site are shown on Site Plan. This survey information has been established by personnel engaged by the Owner. No responsibility is assumed by the Owner or Consultant for accuracy of this survey information.
2. Establish all necessary lines and levels, and erect substantial batter boards and maintain their accurate position.
3. Where required, engage and pay an Ontario Land Surveyor to:
 - 3.1 Lay out new building on site and establish a permanent bench mark or widely separated bench marks, as required by building configuration.
 - 3.2 Verify elevations established for each floor as construction proceeds.
 - 3.3 Verify relation of building floor elevations to permanent bench marks.
 - 3.4 Correlate geodetic elevation of bench mark with the elevations in use by all public utilities adjacent to the project.
 - 3.5 Verify accuracy of all site dimensions shown on Drawings.
 - 3.6 Provide to the Consultant a survey certificate, verifying location of building on site.

- 3.7 Provide to the Consultant a survey certificate, verifying location of all footings relative to property lines, before construction proceeds on the footings.
4. At Substantial Performance take field elevations with respect to final grading and certify that the building constructed and lot grading is in conformity with the registered site plan agreement, and sign off on the site plan in accordance with the requirements of the Municipality.

1.14 WORKMANSHIP

1. Fabricate and install the Work of all Sections in accordance with the best practice by craftsmen skilled in the Work of the respective Section. Unless otherwise specified, the manufacturer's latest printed instructions shall be rigidly complied with in the methods and materials to be used in the installation of the Work. Notify the Consultant in writing if these Specifications and/or drawings conflict in any way with manufacturer's instructions. The Consultant will then rule which specifications shall be followed. If applicable, a copy of those instructions shall be made available at job site.

1.15 REGULATORY REQUIREMENTS

1. Minimum Standard: unless reference is made in the Contract Documents to other standards, all work shall conform to or exceed the minimum applicable standards of the Ontario Building Code, (latest edition), and/or the governing Jurisdictional Authorities.
2. Construction Safety: include all provision for construction safety, such as fences, barricades, bracing supports, storage facilities, sanitation facilities, fire protection, standpipes, electrical supply, temporary heat, ventilation, construction equipment with its supports and guards, stairs, ramps, platforms, runways, ladders, scaffolds, guardrails, temporary flooring, rubbish chutes, walkway lighting, and morality lighting, all as required by the Occupational Health and Safety Act (latest edition), and amendments thereto and the Fire Code (latest edition), as well as all other applicable regulations of Jurisdictional Authorities

1.16 EXAMINATION BEFORE EXECUTION OF WORK

1. Make good defects in the Work on which further execution of work depends.
2. Verify dimensions of prepared work before fabrication of that work which is dependent on the prepared work.
3. Do not proceed with the execution of the work unless the work which is to receive it and site conditions are satisfactory. Commencement of all work of all sections shall imply that prepared work and site conditions are satisfactory

1.17 SPECIFICATION REFERENCE TO STANDARDS AND CODES

1. Where reference is made to published standards and codes, such references shall be considered to refer to the latest edition (revision) approved by the organization issuing that publication, which is current at the date of this specification

1.18 LOCATION OF SERVICES

1. Record exact location of all services with dimensions to the Grid Lines and Datum lines, and show on Record Drawings **prior** to placing concrete. **DO NOT** place concrete until this is done. Coordinate Mechanical, Electrical, and concrete trades.

1.19 SLEEVING

1. Assess requirements for sleeving the structural elements for passing of pipes, conduits and other mechanical or electrical components, and include all work required for approved interfacing between the structure, all mechanical and electrical work, and other components of the work.

1.20 CONCEALING MECHANICAL AND ELECTRICAL COMPONENTS

1. Include work required to modify indicated location of pipes, ducts, conduits, and other mechanical or electrical components to fully conceal components from view in finished spaces.

1.21 LIFE AND FIRE SAFETY

1. Enforce all requirements established by jurisdictional authorities and underwriters for life safety, fire prevention, and fire protection

1.22 DRAINAGE

1. Ensure that positive drainage is provided to roof, floor, and site drains and catch basins, as set in their final positions, and at all other locations to prevent water infiltration into the buildings. Provide constant slopes for drained surfaces to drains and drainage courses.
2. If water is found to be ponding on roof areas due to incorrectly located drains, install additional drains to alleviated water ponding. If extra drains are required coordinate the location of rainwater leaders with Consultant.

1.23 MATERIALS SUPPLIED BY OWNER

1. Install materials supplied by Owner where called for in the technical sections of the specifications. Coordinate shipping and delivery with Owner. Provide protected storage on site. Do all work required to complete installation, in accordance with manufacturer's directions.

1.24 WORK SHOWN OR SPECIFIED OUTSIDE PROPERTY LINES

1. Unless specifically indicated or specified, work indicated outside the property lines is to be included in the Contract. Perform all work such as, but not, restricted to landscaping, asphalt, concrete, and mechanical and electrical services in accordance with specifications and details issued by the applicable Municipality.
2. Include connections to all municipal and public service lines, and modifications to sidewalks and roadways where so required to provide access to the project site, unless shown otherwise on the drawings.
3. Where work is required to be done by the Municipality, include cost in the Contract.

1.25 DOCUMENTS ON JOBSITE

1. Maintain at job site, one copy of each of the following and make same available to the Consultant upon request:
 - 1.1 Contract drawings
 - 1.2 Specifications
 - 1.3 Addenda
 - 1.4 Reviewed Shop drawings
 - 1.5 Change Orders

- 1.6 Other modifications to Contract
- 1.7 Field Test Reports
- 1.8 Building Permit Drawings
- 1.9 Copy of approved work schedule
- 1.10 Manufacturer's installation and application instructions
- 1.11 Ontario Building Code and Guide to the Ontario Building Code, latest editions.

1.26 SMOKING RESTRICTIONS

1. Smoking will not be permitted anywhere in the building. Any smoking shall take place outside the premises.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

SECTION 01 10 00 - SUMMARY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

1. This Section describes requirements applicable to all Sections within all Divisions.

1.2 WORDS AND TERMS

1. Refer to and acknowledge other words, terms, and definitions in CCDC 2 - 2020 Definitions.

1.3 COMPLEMENTARY DOCUMENTS

1. Drawings, specifications, and schedules are complementary each to the other, what is called for by one to be binding as if called by all. Should any discrepancy appear between documents, which leave doubt as to the intent or meaning, abide by Precedence of Documents article below or obtain direction from the Consultant.
2. Drawings indicate general location and route of conduit and wire/conductors. Install conduit or wiring/conductors and plumbing piping not shown or indicated diagrammatically in schematic or riser diagrams to provide an operational assembly or system.
3. Install components to physically conserve headroom, to minimize furring spaces, or obstructions.
4. Locate devices with primary regard for convenience of operation and usage.
5. Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed. Conflicts or additional work beyond work described to be brought to attention of Consultant.

1.4 PROJECT

1. Project Name: CSV Nouvel Horizon Elementary School
2. Owner's Name: Conseil scolaire Viamonde.
3. Consultant's Name: MZE Architecture and Design Inc.
4. The Project consists of interior alterations, mechanical and electrical system changes, curtainwall, hollow metal door and frame, door hardware replacement, and window dressing

1.5 WORK COVERED BY CONTRACT DOCUMENTS

1. The Work of this Contract comprises of interior alterations to the existing facilities at Conseil scolaire Viamonde Nouvel Horizon Elementary School at 621 Quaker Road, Welland, ON.
2. **Construction:**
 - 2.1 Existing: concrete slab-on-grade, and masonry wall construction. Refer to drawings for construction materials where work is to be performed

1.6 CONTRACT DESCRIPTION

1. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.7 WORK BY OWNER

1. Products indicated "N.I.C." (Not in Contract) or "E.O." (Equipment by Owner) will be furnished and installed by the Owner. Service lines for such products shall be included under these Construction Contract Documents, if indicated. Final connections from service lines to equipment will be by the Owner, unless otherwise indicated.

1.8 OWNER OCCUPANCY

1. Owner intends to occupy the Project upon Substantial Performance.
2. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
3. Schedule the Work to accommodate Owner occupancy.

1.9 CONTRACTOR USE OF SITE AND PREMISES

1. Before commencement of the Work, the Owner, Contractor and Consultant will agree on a mutually satisfactory access to the site and acceptable locations for the construction office, trailers, material storage area, toilet accommodation and the like
2. Provide access to and from site as required by law and by Owner:
 - 2.1 Emergency Building Exits During Construction: Keep exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2.2 Do not obstruct roadways, sidewalks, or other public ways without permit.

1.10 DESIGN STANDARDS

1. All construction in Ontario conforms to the requirements of the Ontario Building Code (OBC) and the Ontario Health and Safety Act (OHSA).

1.11 SPECIFICATION SECTIONS APPLICABLE TO ALL WORK PACKAGES

1. Unless otherwise noted, provisions of the sections listed below apply to all work packages contracts. Specific items of work listed under individual contract descriptions constitute exceptions.
2. Section 01 21 00 - Allowances.
3. Section 01 30 00 - Administrative Requirements.
4. Section 01 40 00 - Quality Requirements.
5. Section 01 50 00 - Temporary Facilities and Controls.
6. Section 01 51 00 - Temporary Utilities.
7. Section 01 60 00 - Product Requirements.
8. Section 01 78 00 - Closeout Submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 20 00 - PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 00 73 00 - Supplementary Conditions: Percentage allowances for contractor's overhead and profit.
2. Section 01 21 00 - Allowances: Payment procedures relating to allowances.
3. Section 01 78 00 - Closeout Submittals: Project record documents.

1.2 SCHEDULE OF VALUES

1. Prepare Schedule of Values in accordance with applications for progress payment described in CCDC 2 using Model Form contained in CCDC 24-Guide to Model Forms and Support Documents.
2. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Consultant for approval.
3. Forms filled out by hand will not be accepted.
4. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

1.3 APPLICATIONS FOR PROGRESS PAYMENTS

1. Payment Period: Submit at intervals stipulated in the Agreement.
2. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Consultant for approval.
3. Forms filled out by hand will not be accepted.
4. For each item, provide a column for listing each of the following:
 - 4.1 Item Number.
 - 4.2 Description of work.
 - 4.3 Scheduled Values.
 - 4.4 Previous Applications.
 - 4.5 Work in Place and Stored Materials under this Application.
 - 4.6 Authorized Change Orders.
 - 4.7 Total Completed and Stored to Date of Application.
 - 4.8 Balance to Finish.
 - 4.9 Hold back amounts associated with lien fund, deficiency fund, and seasonal deficiency fund.
5. Execute certification by signature of authorized officer.
6. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
7. Submit one electronic and three hard copies of each Application for Payment.

8. Include the following with the application:
 - 8.1 Transmittal letter as specified for submittals in Section 01 30 00.
 - 8.2 Construction progress schedule, revised and current as specified in Section 01 30 00.
 - 8.3 Current construction photographs specified in Section 01 30 00.
9. When Consultant requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.4 STATUTORY DECLARATION

1. Submit Statutory Declaration as follows:
 - 1.1 Submit after second and all subsequent applications for progress payment indicating that outstanding amounts from previous progress payments have been reconciled with accounts for labour, subcontracts, Products, Construction Equipment and other indebtedness, except for those amounts required for administration of deficiency fund.
 - 1.2 Submit after application for Substantial Performance of the Work and application for payment of holdback amounts using Model Form contained in CCDC 24-Guide to Model Forms and Support Documents indicating that outstanding amounts from application for final payment have been reconciled with accounts for labour, subcontracts, Products, Construction Equipment and other indebtedness, except for those amounts required for administration of deficiency fund.

1.5 APPLICATION FOR FINAL PAYMENT

1. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Price, previous payments, and sum remaining due.
2. Application for Final Payment will not be considered until the following have been accomplished:
 - 2.1 All closeout procedures specified in Section 01 70 00.
 - 2.2 All deficiencies have been completed.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 21 00 - ALLOWANCES

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Canadian Construction Documents Committee (CCDC)
 - 1.1 CCDC-2-2020 Stipulated Price Contract
2. Supplementary Conditions - Section 00 73 00
3. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

1.2 CASH ALLOWANCES

1. Administer cash allowances in accordance with Contract (CCDC2), will include any overhead and profit in connection with cash allowances in the Contract Price.
2. Include in the Contract Price, cash allowances stated herein.
3. Cash allowances, unless otherwise specified cover the net cost to the Contractor, Sub-Contractor, of services, products, construction machinery and equipment, freight, handling, unloading, storage, installation, and other authorized expenses incurred in performing the Work.
4. The Contract Price, and not the cash allowance, includes the Contractor's overhead and profit in connection with such cash allowance.
5. Where one cash allowance is exceeded amounts from other cash allowances can be used. Only when the sum of all cash allowances has been expended will the contractor be compensated for overhead and profit as set out in the contract documents.
6. Progress payments on accounts of work authorized under cash allowances will be included in the Consultant's monthly certificate for payment.

1.3 CONTINGENCY ALLOWANCE

1. Administer contingency allowances in accordance with Contract, (CCDC2) will include any overhead and profit in connection to contingency allowance as a component of the contingency allowance.
2. Funds will be drawn from the Contingency Allowance only by Change Order.
3. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.4 INSPECTING AND TESTING ALLOWANCES

1. Costs Included in Inspecting and Testing Allowances: Cost of engaging an inspecting or testing agency; execution of inspecting and tests; and reporting results.
 - 1.1 Re-bar placement
 - 1.2 Concrete Testing

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 00 73 00 - Supplementary Conditions: Duties of the Construction Manager.
2. Section 01 60 00 - Product Requirements: General product requirements.
3. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.
4. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.2 REFERENCE STANDARDS

1. CSI/CSC Form 12.1A - Submittal Transmittal; Current Edition.
2. CSI/CSC Form 13.2A - Request for Interpretation; Current Edition.

1.3 GENERAL ADMINISTRATIVE REQUIREMENTS

1. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
2. Make the following types of submittals to Consultant:
 - 2.1 Requests for Interpretation (RFI).
 - 2.2 Requests for substitution.
 - 2.3 Shop Drawings, product data, and samples.
 - 2.4 Test and inspection reports.
 - 2.5 Design data.
 - 2.6 Manufacturer's instructions and site reports.
 - 2.7 Applications for payment and change order requests.
 - 2.8 Progress schedules.
 - 2.9 Coordination Drawings.
 - 2.10 Correction Punch List and Final Correction Punch List for Substantial Performance.
 - 2.11 Closeout submittals.

1.4 PROJECT COORDINATOR

1. Project Coordinator: Construction Manager.
2. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for site offices and sheds, for access, traffic, and parking facilities.
3. During construction, coordinate use of site and facilities through the Project Coordinator.
4. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination Drawings, and recommendations; and resolution of ambiguities and conflicts.
5. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 10 00 - Summary.

6. Coordinate site engineering and layout work under instructions of the Project Coordinator.
7. Make the following types of submittals to Consultant through the Project Coordinator:
 - 7.1 Requests for Interpretation.
 - 7.2 Requests for substitution.
 - 7.3 Shop Drawings, product data, and samples.
 - 7.4 Test and inspection reports.
 - 7.5 Design data.
 - 7.6 Manufacturer's instructions and site reports.
 - 7.7 Applications for payment and change order requests.
 - 7.8 Progress schedules.
 - 7.9 Coordination Drawings.
 - 7.10 Correction Punch List and Final Correction Punch List for Substantial Performance.
 - 7.11 Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 DIGITAL DOCUMENT SUBMITTAL

1. All documents transmitted for purposes of administration of the contract are to be in digital (PDF, MS Word, or MS Excel) format, as appropriate to the document.
 - 1.1 Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, site reports and meeting minutes, contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 - 1.2 It is the contractor's responsibility to submit documents in allowable format.
 - 1.3 Paper document transmittals will not be reviewed; emailed digital documents will not be reviewed.
 - 1.4 All other specified submittal and document transmission procedures apply, except that digital document requirements do not apply to samples or colour selection charts.

3.2 PRECONSTRUCTION MEETING

1. Owner will schedule a meeting after Notice of Award.
2. Attendance Required:
 - 2.1 Owner.
 - 2.2 Consultant.
 - 2.3 Contractor.
3. Agenda:
 - 3.1 Execution of Owner-Contractor Agreement.
 - 3.2 Submission of executed bonds and insurance certificates.
 - 3.3 Distribution of Contract Documents.

- 3.4 Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 3.5 Designation of personnel representing the parties to Contract, and Consultant.
 - 3.6 Procedures and processing of site decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 3.7 Scheduling.
4. Contractor to record minutes and distribute copies within two days after meeting to participants, with two copies to Consultant, Owner, participants, and those affected by decisions made.

3.3 SITE MOBILIZATION MEETING

1. Consultant will schedule meeting at the Project site prior to Contractor occupancy.
2. Attendance Required:
 - 2.1 Contractor.
 - 2.2 Owner.
 - 2.3 Consultant.
 - 2.4 Contractor's superintendent.
 - 2.5 Major subcontractors.
3. Agenda:
 - 3.1 Use of premises by Owner and Contractor.
 - 3.2 Owner's requirements.
 - 3.3 Construction facilities and controls provided by Owner.
 - 3.4 Temporary utilities provided by Owner.
 - 3.5 Survey and building layout.
 - 3.6 Security and housekeeping procedures.
 - 3.7 Schedules.
 - 3.8 Application for payment procedures.
 - 3.9 Procedures for testing.
 - 3.10 Procedures for maintaining record documents.
 - 3.11 Requirements for start-up of equipment.
 - 3.12 Inspection and acceptance of equipment put into service during construction period.
4. Contractor to record minutes and distribute copies within two days after meeting to participants, with two copies to Consultant, Owner, participants, and those affected by decisions made.

3.4 PROGRESS MEETINGS

1. Schedule and administer meetings throughout the progress of the work at maximum biweekly intervals.
2. Contractor's Project Coordinator will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
3. Attendance Required:
 - 3.1 Contractor.

- 3.2 Owner.
 - 3.3 Consultant.
 - 3.4 Contractor's superintendent.
 - 3.5 Major subcontractors.
4. Agenda:
- 4.1 Review minutes of previous meetings.
 - 4.2 Review of work progress.
 - 4.3 Site observations, problems, and decisions.
 - 4.4 Identification of problems that impede, or will impede, planned progress.
 - 4.5 Review of submittals schedule and status of submittals.
 - 4.6 Review of RFIs log and status of responses.
 - 4.7 Review of off-site fabrication and delivery schedules.
 - 4.8 Maintenance of progress schedule.
 - 4.9 Corrective measures to regain projected schedules.
 - 4.10 Planned progress during succeeding work period.
 - 4.11 Coordination of projected progress.
 - 4.12 Maintenance of quality and work standards.
 - 4.13 Effect of proposed changes on progress schedule and coordination.
 - 4.14 Other business relating to work.
5. Contractor to record minutes and distribute copies within two days after meeting to participants, with two copies to Consultant, Owner, participants, and those affected by decisions made.

3.5 CONSTRUCTION PROGRESS SCHEDULE - See Section 01 32 16

- 1. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- 2. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- 3. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 3.1 Include written certification that major contractors have reviewed and accepted proposed schedule.
- 4. Within 10 days after joint review, submit complete schedule.
- 5. Submit updated schedule with each Application for Payment.

3.6 DAILY CONSTRUCTION REPORTS

- 1. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- 2. In addition to transmitting a digital copy to Owner and Consultant, submit two printed copies at weekly intervals.
 - 2.1 Submit in format acceptable to Owner.
 - 2.2 Submit using required form, a sample of which is appended to this section.

3. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
 - 3.1 Date.
 - 3.2 High and low temperatures, and general weather conditions.
 - 3.3 List of subcontractors at Project site.
 - 3.4 List of separate contractors at Project site.
 - 3.5 Approximate count of personnel at Project site.
 - 3.5.1 Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
 - 3.6 Major equipment at Project site.
 - 3.7 Material deliveries.
 - 3.8 Safety, environmental, or industrial relations incidents.
 - 3.9 Meetings and significant decisions.
 - 3.10 Unusual events (submit a separate special report).
 - 3.11 Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 - 3.12 Meter readings and similar recordings.
 - 3.13 Emergency procedures.
 - 3.14 Directives and requests of Authority(s) Having Jurisdiction (AHJ).
 - 3.15 Change Orders received and implemented.
 - 3.16 Testing and/or inspections performed.
 - 3.17 List of verbal instruction given by Owner and/or Consultant.
 - 3.18 Signature of contractor's authorized representative.

3.7 PROGRESS PHOTOGRAPHS

1. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
2. Submit new photographs at least once a month, within 3 days after being taken.
3. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
4. Photography Type: Digital; electronic files.
5. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Consultant.
6. In addition to periodic, recurring views, take photographs of each of the following events:
 - 6.1 Completion of site clearing.
 - 6.2 Excavations in progress.
 - 6.3 Foundations in progress and upon completion.
 - 6.4 Structural framing in progress and upon completion.
 - 6.5 Enclosure of building, upon completion.

- 6.6 Final completion, minimum of ten (10) photos.
7. Take photographs as evidence of existing project conditions as follows:
 - 7.1 Interior views
 - 7.2 Exterior views
8. Views:
 - 8.1 Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Performance.
 - 8.2 Consult with Consultant for instructions on views required.
 - 8.3 Provide factual presentation.
 - 8.4 Provide correct exposure and focus, high resolution and sharpness, maximum depth of site, and minimum distortion.
9. Digital Photographs: 24 bit colour, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 9.1 Delivery Medium: Via email.
 - 9.2 File Naming: Include project identification, date and time of view, and view identification.
 - 9.3 PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
 - 9.4 Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

3.8 COORDINATION DRAWINGS

1. Provide information required by Project Coordinator for preparation of coordination Drawings.
2. Review Drawings prior to submission to Consultant.

3.9 REQUESTS FOR INTERPRETATION (RFI)

1. Definition: A request seeking one of the following:
 - 1.1 An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in the Contract Documents.
 - 1.2 A resolution to an issue which has arisen due to site conditions and affects design intent.
2. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
3. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of the Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - 3.1 Prepare a separate RFI for each specific item.
 - 3.1.1 Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.

- 3.1.2 Do not forward requests which solely require internal coordination between subcontractors.
 - 3.2 Prepare in a format and with content acceptable to Owner.
 - 3.2.1 Use CSI/CSC Form 13.2A - Request for Interpretation.
 - 3.3 Prepare using an digital version of the form appended to this section.
 - 3.4 Combine RFI and its attachments into a single digital file. PDF format is preferred.
4. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 - 4.1 Include in each request contractor's signature attesting to good faith effort to determine from the Contract Documents information requiring interpretation.
 - 4.2 Unacceptable Uses for RFIs: Do not use RFIs to request the following:
 - 4.2.1 Approval of submittals (use procedures specified elsewhere in this section).
 - 4.2.2 Approval of substitutions (see Section - 01 60 00 - Product Requirements)
 - 4.2.3 Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
 - 4.2.4 Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
 - 4.3 Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 - 4.4 Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, the Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
 - 4.4.1 The Owner reserves the right to assess the contractor for the costs (on time-and-materials basis) incurred by the Consultant, and any of its consultants, due to processing of such RFIs.
5. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 - 5.1 Official Project name and number, and any additional required identifiers established in Contract Documents.
 - 5.2 Owner's, Consultant's, and Contractor's names.
 - 5.3 Discrete and consecutive RFI number, and descriptive subject/title.
 - 5.4 Issue date, and requested reply date.
 - 5.5 Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 - 5.6 Annotations: Site dimensions and/or description of conditions which have engendered the request.
 - 5.7 Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract

Time or the Contract Sum.

6. Attachments: Include sketches, coordination Drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
7. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
 - 7.1 Indicate current status of every RFI. Update log promptly and on a regular basis.
 - 7.2 Note dates of when each request is made, and when a response is received.
 - 7.3 Highlight items requiring priority or expedited response.
 - 7.4 Highlight items for which a timely response has not been received to date.
 - 7.5 Identify and include improper or frivolous RFIs.
8. Review Time: Consultant will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
 - 8.1 Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
9. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
 - 9.1 Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 - 9.2 Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 - 9.3 Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
 - 9.4 Notify Consultant within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.10 SUBMITTAL SCHEDULE

1. Submit to Consultant for review a schedule for submittals in tabular format.
 - 1.1 Submit at the same time as the preliminary schedule 01 32 16 - Construction Progress Schedule 01 32 16 - Construction Progress Schedule.
 - 1.2 Coordinate with Contractor's construction schedule and schedule of values.
 - 1.3 Format schedule to allow tracking of status of submittals throughout duration of construction.
 - 1.4 Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
 - 1.5 Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.

- 1.5.1 For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.11 SUBMITTALS FOR REVIEW

1. When the following are specified in individual sections, submit them for review:
 - 1.1 Product data.
 - 1.2 Design data.
 - 1.3 Shop Drawings.
 - 1.4 Samples for selection.
 - 1.5 Samples for verification.
2. Submit to Consultant for review for the limited purpose of checking for compliance with information given and the design concept expressed in the Contract Documents.
3. Samples will be reviewed for aesthetic, colour, or finish selection.
4. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below 01 78 00 - Closeout Submittals.

3.12 SUBMITTALS FOR INFORMATION

1. When the following are specified in individual sections, submit them for information:
 - 1.1 Design data.
 - 1.2 Sustainability design submittals and reports.
 - 1.3 Certificates.
 - 1.4 Test reports.
 - 1.5 Inspection reports.
 - 1.6 Manufacturer's instructions.
 - 1.7 Manufacturer's site reports.
 - 1.8 Other types indicated.
2. Submit for Consultant's knowledge as contract administrator or for Owner.

3.13 SUBMITTALS FOR PROJECT CLOSEOUT

1. Submit Correction Punch List for Substantial Performance.
2. Submit Final Correction Punch List for Substantial Performance.
3. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
 - 3.1 Project record documents.
 - 3.2 Operation and maintenance data.
 - 3.3 Warranties.
 - 3.4 Bonds.
 - 3.5 Other types as indicated.
4. Submit for Owner's benefit during and after project completion.

3.14 NUMBER OF COPIES OF SUBMITTALS

1. Digital Documents: Submit one digital copy in PDF format; a digitally-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
2. Documents for Review:
 - 2.1 Small Size Sheets, Not Larger Than 215 by 280 mm: Submit one copy; the Contractor shall make Contractor's own copies from original returned by the Consultant after making a file copy.
 - 2.2 Small Size Sheets, Not Larger Than 215 by 280 mm: Submit the number of copies that Contractor requires, plus two copies that will be retained by Consultant.
 - 2.3 Larger Sheets, Not Larger Than 910 by 1220 mm: Submit one reproducible transparency and one opaque reproduction.
 - 2.4 Larger Sheets, Not Larger Than 910 by 1220 mm: Submit the number of opaque reproductions that Contractor requires, plus two copies that will be retained by Consultant.
3. Documents for Information: Submit two copies.
4. Extra Copies at Project Closeout: See Section 01 78 00.
5. Samples: Submit the number specified in individual specification sections; one of which will be retained by Consultant.
 - 5.1 After review, produce duplicates.
 - 5.2 Retained samples will not be returned to Contractor unless specifically so stated.

3.15 SUBMITTAL PROCEDURES

1. General Requirements:
 - 1.1 Use a separate transmittal for each item.
 - 1.2 Use a single transmittal for related items.
 - 1.3 Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 - 1.4 Transmit using approved form.
 - 1.4.1 Use Form CSI/CSC Form 12.1A.
 - 1.4.2 Use Contractor's form, subject to prior approval by Consultant.
 - 1.5 Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 1.6 Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - 1.7 Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, site dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - 1.7.1 Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.

- 1.8 Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - 1.8.1 Deliver submittals to Consultant at business address.
 - 1.8.2 Send submittals in digital format via email to Consultant.
 - 1.9 Schedule submittals to expedite the Project, and coordinate submission of related items.
 - 1.9.1 For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
 - 1.9.2 For sequential reviews involving Consultant's consultants, Owner, or another affected party, allow an additional 7 days.
 - 1.9.3 For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Consultant's approval, allow an additional 30 days.
 - 1.10 Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - 1.11 Provide space for Contractor and Consultant review stamps.
 - 1.12 When revised for resubmission, identify all changes made since previous submission.
 - 1.13 Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 - 1.14 Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
 - 1.15 Submittals not requested will not be recognized or processed.
 - 1.16 Submittals not requested will be recognized, and will be returned "Not Reviewed",
2. Product Data Procedures:
 - 2.1 Submit only information required by individual specification sections.
 - 2.2 Collect required information into a single submittal.
 - 2.3 Submit concurrently with related shop drawing submittal.
 - 2.4 Do not submit (Material) Safety Data Sheets for materials or products.
 - 2.5 Submit sustainable design reporting submittals under separate cover.
 3. Shop Drawing Procedures:
 - 3.1 Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related work.
 - 3.2 Do not reproduce the Contract Documents to create Shop Drawings.
 - 3.3 Use of reproductions of the Contract Documents in digital data form to create Shop Drawings is only permitted as defined.
 - 3.4 Generic, non-project-specific information submitted as Shop Drawings do not meet the requirements for Shop Drawings.
 4. Samples Procedures:
 - 4.1 Transmit related items together as single package.
 - 4.2 Identify each item to allow review for applicability in relation to Shop Drawings showing installation locations.
 - 4.3 Include with transmittal high-resolution image files of samples to facilitate digital review and approval. Provide separate submittal page for each item image.

3.16 SUBMITTAL REVIEW

1. Submittals for Review: Consultant will review each submittal, and approve, or take other appropriate action.
2. Submittals for Information: Consultant will acknowledge receipt and review. See below for actions to be taken.
3. Consultant's actions will be reflected by marking each returned submittal using virtual stamp on digital submittals.
 - 3.1 Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
4. Consultant's and consultants' actions on items submitted for review:
 - 4.1 Authorizing purchasing, fabrication, delivery, and installation:
 - 4.1.1 In General Conformance with Design: Indicates that submittal has no notes, marks or changes; work affected by submittal can proceed.
 - 4.1.2 In General Conformance with Design as Noted: Indicates that submittal has notes, marks or changes that do not affect the submittal review process; work affected by submittal can proceed without resubmission.
 - 4.1.2.1 At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 - 4.2 Not Authorizing fabrication, delivery, and installation:
 - 4.2.1 Revise and Resubmit: Indicates that there is an error or concern within the submittal of a significant nature; work affected by the submittal cannot proceed and requires resubmission except as follows:
 - 4.2.1.1 Resubmit revised item, with review notations acknowledged and incorporated.
 - 4.2.1.2 Non-responsive resubmittals may be rejected.
 - 4.2.2 Rejected: Indicates that submittal is not appropriate for Consultant's review; work affected by submittal is at Contractor's risk if relied upon during the course of the Work.
 - 4.2.2.1 Submit item complying with requirements of Contract Documents.
5. Consultant's and consultants' actions on items submitted for information:
 - 5.1 Items for which no action was taken:
 - 5.1.1 Received: To notify the Contractor that the submittal has been received for record only.
 - 5.2 Items for which action was taken:
 - 5.2.1 Reviewed: No further action is required from Contractor.

END OF SECTION

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 01 21 00 - Allowances: Allowance for payment of testing services.
2. Section 01 30 00 - Administrative Requirements: Submittal procedures.

1.2 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Test Reports: After each test/inspection, promptly submit two copies of report to Consultant.
 - 2.1 Include:
 - 2.1.1 Date issued.
 - 2.1.2 Project title and number.
 - 2.1.3 Name of inspector.
 - 2.1.4 Date and time of sampling or inspection.
 - 2.1.5 Identification of product and specifications section.
 - 2.1.6 Location in the Project.
 - 2.1.7 Type of test/inspection.
 - 2.1.8 Date of test/inspection.
 - 2.1.9 Results of test/inspection.
 - 2.1.10 Compliance with Contract Documents.
 - 2.1.11 When requested by Consultant, provide interpretation of results.
3. Certificates: When specified in individual specification sections, submit certification by the manufacturer to Consultant, in quantities specified for Product Data.
 - 3.1 Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
4. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.3 Quality Assurance

1. Testing Agency Qualifications:
 - 1.1 Prior to start of work, submit agency name, address, and telephone number, and names of full time Professional Engineer and responsible officer.

1.4 REFERENCES AND STANDARDS

1. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

2. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
3. Obtain copies of standards where required by product specification sections.
4. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Performance.
5. Should specified reference standards conflict with Contract Documents, request clarification from Consultant before proceeding.
6. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Consultant shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.5 Testing and Inspection Agencies and Services

1. Owner will employ services of an independent testing agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 21 00; see Section 01 21 00 and applicable sections for description of services included in allowance.
2. Employment of agency in no way relieves contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

1. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
2. Comply with manufacturers' instructions, including each step in sequence.
3. Should manufacturers' instructions conflict with Contract Documents, request clarification from Consultant before proceeding.
4. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
5. Have work performed by persons qualified to produce required and specified quality.
6. Verify that site measurements are as indicated on shop drawings or as instructed by the manufacturer.
7. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

1. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.

2. Notify Consultant fifteen (15) working days in advance of dates and times when mock-ups will be constructed.
3. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
4. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
5. Consultant will use accepted mock-ups as a comparison standard for the remaining Work.
6. Where mock-up has been accepted by Consultant and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Consultant.

3.3 TOLERANCES

1. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
2. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Consultant before proceeding.
3. Adjust products to appropriate dimensions; position before securing products in place.

3.4 TESTING AND INSPECTION

1. Testing Agency Duties:
 - 1.1 Provide qualified personnel at site. Cooperate with Consultant in performance of services.
 - 1.2 Perform specified sampling and testing of products in accordance with specified standards.
 - 1.3 Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 1.4 Promptly notify Consultant of observed irregularities or non-compliance of Work or products.
 - 1.5 Perform additional tests and inspections required by Consultant.
 - 1.6 Submit reports of all tests/inspections specified.
2. Limits on Testing/Inspection Agency Authority:
 - 2.1 Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2.2 Agency may not approve or accept any portion of the Work.
 - 2.3 Agency may not assume any duties of the contractor.
 - 2.4 Agency has no authority to stop the Work.
3. Contractor Responsibilities:
 - 3.1 Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 3.2 Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3.3 Provide incidental labor and facilities:

- 3.3.1 To provide access to Work to be tested/inspected.
- 3.3.2 To obtain and handle samples at the site or at source of Products to be tested/inspected.
- 3.3.3 To facilitate tests/inspections.
- 3.3.4 To provide storage and curing of test samples.
- 3.4 Notify Consultant and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
- 3.5 Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required beyond specified requirements.
- 3.6 Arrange with Owner's agency and pay for additional samples, tests, and inspections required beyond specified requirements.
- 4. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Consultant.
- 5. Re-testing required because of non-compliance with specified requirements shall be paid for by contractor.

3.5 DEFECT ASSESSMENT

- 1. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 01 51 00 - Temporary Utilities.

1.2 TEMPORARY UTILITIES - See Section 01 51 00

1. **Water:**
 - 1.1 Provide a continuous supply of potable water for construction use. Arrange for connection with Owner or appropriate utility.
2. **Power and Light:**
 - 2.1 Power supply to be adequate to operate all sub-trades' equipment. Bring temporary power to within 50'-0" (15 M) of Sub-contractor's equipment. or obtain consent from Owner to use available power
 - 2.2 Temporary power distribution to comply with Ontario Electrical Safety Code
3. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes until Declaration of Substantial Performance.

1.3 TELECOMMUNICATIONS SERVICES

1. Provide, maintain, and pay for telecommunications services to site office at time of project mobilization.
2. Telecommunications services shall include:
 - 2.1 Internet Connections: Minimum of one; DSL modem or faster.

1.4 TEMPORARY SANITARY FACILITIES

1. Provide and maintain required facilities and enclosures. Provide at time of project mobilization or obtain consent from Owner to use available facilities..
2. Maintain daily in clean and sanitary condition.
3. At end of construction, return facilities to same or better condition as originally found.

1.5 BARRIERS

1. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
2. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
3. Provide protection for plants designated to remain. Replace damaged plants.
4. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.6 DUST NUISANCE, MUD, SNOW AND ICE REMOVAL

1. Prevent nuisance to adjacent properties near the works from dust raising and mud deposits, by taking appropriate anti-dust and mud measures, at such times as found necessary, and as

directed by the Consultant, or at any other times complaints of dust or mud are received from the public by either the Contractor, the Consultant, or the Municipality.

2. Keep walkways free of snow and ice, both on and adjacent to site. Replace grass and landscaping damaged by use of rock salt.
3. Remove mud deposits from all pavement.

1.7 FENCING

1. Construction: Contractor's option.
2. Provide 1.8 m high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.8 EXTERIOR ENCLOSURES

1. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.9 INTERIOR ENCLOSURES

1. Provide temporary partitions and ceilings to protect work areas as required.
2. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.10 VEHICULAR ACCESS AND PARKING

1. Coordinate access and haul routes with governing authorities and Owner.
2. Only use the haul roads allowed in the Contract for access to the Work site.
3. Include all temporary roads and walks required for construction purposes.
4. The granular base to receive permanent pavements may be used for temporary roads. Re-grade and re-compact base before installation of finished surfaces.
5. Provide adequate temporary crossings over water mains, sewers, heating lines, telephone and electrical conduits, and any other buried services.
6. Include temporary culverts and ditches to provide adequate site drainage within the site, and to maintain existing drainage without the site.
7. Provide for access of emergency vehicles to premises at all times
8. Provide and maintain access to fire hydrants, free of obstructions.
9. Provide means of removing mud from vehicle wheels before entering streets.
10. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.
11. Provide a stoned staff parking area clear of all construction

1.11 WASTE REMOVAL

1. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
2. Provide containers with lids. Remove trash from site periodically.
3. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
4. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 PROJECT IDENTIFICATION

1. Provide project identification sign of design and construction indicated on Drawings.
2. Erect on site at location indicated.
3. No other signs are allowed without Owner permission except those required by law.
4. Provide and erect, within three (3) weeks of signing contract, a project sign in a location designated by the Consultant.
5. Construct sign 4'-0 x 8'-0 (2400 x 4800mm), of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.
6. Indicate on sign, the names of Owner, Consultant, Principal, Contractor and Sub-contractors, of a design style as detailed herein. The design to reflect the Niagara Housing Authority Contribution Agreement.
7. Maintain sign in clean condition.
8. No other signs or advertisements, other than warning signs are permitted on site.
9. Obtain and pay for Permit for project sign and fabrication of sign.

1.13 SITE OFFICES

1. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
2. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
3. Locate offices a minimum distance of 10 m from existing and new structures.

1.14 TEMPORARY CLOSURES

1. Provide all necessary temporary closures, hoardings, fences, gates, guardrails, hoists, stairs, ladders, scaffolding, night lights, and barriers as necessary for the work.
2. Conform to all such requirements of the Labour Laws and other Provincial or local labour safety laws, applicable thereto.
3. Be responsible for all scaffolding, formwork, or other temporary supports used during the work. Support all scaffolding independently of the building's finished surfaces. Include covered walkways at protected exits.

4. Use temporary fire standpipes and hose, or other approved fire extinguishing equipment in the building(s) until the permanent fire protection system in the building(s) is available.
5. Should work be stopped for any cause, provide protection for the work and all necessary temporary cold weather heating during all such periods of work stoppages

1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

1. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Performance inspection.
2. Remove underground installations to a minimum depth of 600 mm. Grade site as indicated.
3. Clean and repair damage caused by installation or use of temporary work.
4. Restore existing facilities used during construction to original condition.
5. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 51 00 - TEMPORARY UTILITIES

PART 1 GENERAL

1.1 REFERENCE STANDARDS

1. OHS-ON - Occupational Health and Safety, Ontario; current edition.

1.2 TEMPORARY ELECTRICITY

1. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required.
2. Provide main service disconnect and over-current protection at convenient location and meter.
3. Permanent convenience receptacles may be utilized during construction.
4. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

1. Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of OHS-ON and authorities having jurisdiction.
2. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
3. Maintain lighting and provide routine repairs.
4. Prevent light spill onto adjacent properties.

1.4 TEMPORARY HEATING

1. Provide heating devices and heat as needed to maintain specified conditions for construction operations.
2. Maintain minimum ambient temperature of 10 degrees C in areas where construction is in progress, unless indicated otherwise in specifications.

1.5 TEMPORARY COOLING

1. Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.
2. Maintain maximum ambient temperature of 26 degrees C in areas where construction is in progress, unless indicated otherwise in specifications.

1.6 TEMPORARY VENTILATION

1. Existing ventilation equipment may not be used.
2. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.7 TEMPORARY WATER SERVICE

1. Cost of Water Used: By Contractor.

2. Provide and maintain suitable quality water service for construction operations at time of project mobilization.
3. Connect to existing water source.
 - 3.1 Exercise measures to conserve water.
 - 3.2 Provide separate metering and reimburse Owner for cost of water used.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 01 10 00 - Summary: Identification of Owner-supplied products.
2. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
3. Section 01 40 00 - Quality Requirements: Product quality monitoring.
4. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
5. Section 01 74 19 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

1.2 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
3. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
4. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 4.1 For selection from standard finishes, submit samples of the full range of the manufacturer's standard colours, textures, and patterns.

PART 2 PRODUCTS

2.1 NEW PRODUCTS

1. Provide new products unless specifically required or permitted by the Contract Documents.
2. See Section 01 40 00 - Quality Requirements, for additional source quality control requirements.
3. Use of products having any of the following characteristics is not permitted:
4. Where other criteria are met, Contractor shall give preference to products that:
 - 4.1 If used on interior, have lower emissions, as defined in Section 01 61 16.
 - 4.2 If wet-applied, have lower VOC content, as defined in Section 01 61 16.

2.2 PRODUCT OPTIONS

1. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
2. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

3. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions:
Submit a request for substitution for any manufacturer not named.

2.3 MAINTENANCE MATERIALS

1. Provide extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
2. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION LIMITATIONS

1. See Section 01 25 00 - Substitution Procedures.

3.2 OWNER-SUPPLIED PRODUCTS

1. See Section 01 10 00 - Summary for identification of Owner-supplied products.
2. Owner's Responsibilities:
 - 2.1 Arrange for and deliver Owner reviewed Shop Drawings, product data, and samples, to Contractor. .
 - 2.2 Arrange and pay for product delivery to site.
 - 2.3 On delivery, inspect products jointly with Contractor. .
 - 2.4 Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - 2.5 Arrange for manufacturers' warranties, inspections, and service.
3. Contractor's Responsibilities:
 - 3.1 Review Owner reviewed Shop Drawings, product data, and samples.
 - 3.2 Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - 3.3 Handle, store, install and finish products.
 - 3.4 Repair or replace items damaged after receipt.

3.3 TRANSPORTATION AND HANDLING

1. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
2. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
3. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
4. Transport and handle products in accordance with manufacturer's instructions.
5. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
6. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

7. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
8. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.4 STORAGE AND PROTECTION

1. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
2. Store and protect products in accordance with manufacturers' instructions.
3. Store with seals and labels intact and legible.
4. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
5. For exterior storage of fabricated products, place on sloped supports above ground.
6. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
7. Comply with manufacturer's warranty conditions, if any.
8. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
9. Prevent contact with material that may cause corrosion, discolouration, or staining.
10. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
11. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
2. Section 01 30 00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
3. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
4. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.
5. Section 01 50 00 - Temporary Facilities and Controls: Temporary interior partitions.
6. Section 01 51 00 - Temporary Utilities: Temporary heating, cooling, and ventilating facilities.
7. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.

1.2 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.3 QUALIFICATIONS

1. For surveying work, employ a land surveyor registered in the Province in which the Project is located and acceptable to Consultant. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

1.4 PROJECT CONDITIONS

1. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapours, or gases.
2. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
3. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
4. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, provincial, and local regulations.

1.5 COORDINATION

1. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
2. Notify affected utility companies and comply with their requirements.

3. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
4. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
5. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
6. Coordinate completion and clean-up of work of separate sections.
7. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
2. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
3. Examine and verify specific conditions described in individual specification sections.
4. Take site measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
5. Verify that utility services are available, of the correct characteristics, and in the correct locations.
6. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

1. Clean substrate surfaces prior to applying next material or substance.
2. Seal cracks or openings of substrate prior to applying next material or substance.
3. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 LAYING OUT THE WORK

1. Verify locations of survey control points prior to starting work.
2. Promptly notify Consultant of any discrepancies discovered.

3.4 GENERAL INSTALLATION REQUIREMENTS

1. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
2. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
3. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
4. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
5. Make neat transitions between different surfaces, maintaining texture and appearance.

3.5 CUTTING AND PATCHING

1. Each trade is responsible for their own cutting and patching.

3.6 PROGRESS CLEANING

1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
3. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
4. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.7 PROTECTION OF INSTALLED WORK

1. Protect installed work from damage by construction operations.
2. Provide special protection where specified in individual specification sections.
3. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
4. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
5. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
6. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
7. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.8 ADJUSTING

1. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.9 FINAL CLEANING

1. Use cleaning materials that are nonhazardous.

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. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
4. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
5. Clean filters of operating equipment.
6. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, drainage systems, and eavestroughs.
7. Clean site; sweep paved areas, rake clean landscaped surfaces.
8. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.10 CLOSEOUT PROCEDURES

1. Make submittals that are required by governing or other authorities.
2. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
3. Notify Consultant when work is considered ready for Consultant's Substantial Performance inspection.
4. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Consultant's Substantial Performance inspection.
5. Conduct Substantial Performance inspection and create Final Correction Punch List containing Consultant's comprehensive list of items identified to be completed or corrected and submit to Consultant.
6. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
7. Accompany Project Coordinator on preliminary final inspection.
8. Notify Consultant when work is considered finally complete and ready for Consultant's Substantial Performance final inspection.
9. Complete items of work determined by Consultant listed in executed Certificate of Substantial Performance.

3.11 MAINTENANCE

1. Provide service and maintenance of components indicated in specification sections.
2. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Performance or the length of the specified warranty,

whichever is longer.

3. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
4. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
5. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

1. Project Record Documents.
2. Operation and Maintenance Data.
3. Warranties and bonds.

1.2 RELATED REQUIREMENTS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Section 00 72 00 - General Conditions and 00 73 00 - Supplementary Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
3. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
4. Individual Product Sections: Specific requirements for operation and maintenance data.
5. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Project Record Documents: Submit documents to Consultant with claim for final Application for Payment.
3. Operation and Maintenance Data:
 - 3.1 For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3.2 Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Consultant comments. Revise content of all document sets as required prior to final submission.
 - 3.3 Submit two sets of revised final documents in final form within 10 days after final inspection.
4. Warranties and Bonds:
 - 4.1 For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 4.2 Make other submittals within 10 days after Date of Substantial Performance, prior to final Application for Payment.
 - 4.3 For items of Work for which acceptance is delayed beyond Date of Substantial Performance, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

1. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1.1 Drawings.
 - 1.2 Addenda.
 - 1.3 Change Orders and other modifications to the Contract.
2. Ensure entries are complete and accurate, enabling future reference by Owner.
3. Store record documents separate from documents used for construction.
4. Record information concurrent with construction progress.
5. As-Built Drawings: Drawings prepared and updated by the Contractor throughout the Work, indicating a compilation of construction changes indicated in the original Contract Documents: Legibly mark each item to record actual construction including:
 - 5.1 Site changes of dimension and detail.
 - 5.2 Details not on original Contract Drawings.

3.2 OPERATION AND MAINTENANCE DATA

1. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
2. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance Drawings.
3. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

1. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
2. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

1. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

1. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

2. Where systems involve more than one specification section, provide separate tabbed divider for each system.
3. Binders: Commercial quality, 216 by 280 mm three D side ring binders with durable plastic covers; 50 mm maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
4. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
5. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Consultants, Contractor and subcontractors, with names of responsible parties.
6. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
7. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
8. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
9. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.

3.6 WARRANTIES AND BONDS

1. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
2. Verify that documents are in proper form, contain full information, and are notarized.
3. Co-execute submittals when required.
4. Retain warranties and bonds until time specified for submittal.

END OF SECTION

SECTION 02 41 00 - DEMOLITION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Comply with NFBC General Terms and Conditions and Division 1 requirements
2. Section 01 10 00 - Summary: Limitations on Contractor 's use of site and premises.
3. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
4. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.2 QUALITY ASSURANCE

1. Demolition Firm Qualifications: Company specializing in the type of work required. Use a firm who specializes in demolition Work, has adequate equipment and skilled tradesmen to perform expeditiously, and has been responsible for similar Work during a period of at least five years

1.3 REGULATORY REQUIREMENTS

1. Perform demolition Work in accordance with requirements of the O.B.C. and, the Occupational Health and Safety Act Ont. Reg. 213/9 as amended.
2. Ministry of the Environmental and Energy "Waste Audits and Waste Reduction Work Plans O.R. 102/94".

1.4 EXISTING CONDITIONS

1. Base condition of structures scheduled for demolition on condition on date tender is accepted.
2. Contractor is responsible for proper removal and disposal of all hazardous materials.
3. Hazardous Materials reports have been included in Tender Documents. If additional Hazardous Materials are encountered, notify Consultant immediately.
4. Remove, protect and store salvaged items as directed by the Consultant. Deliver to Owner as directed

1.5 PROTECTION

1. Ensure that adjacent private and public properties, are protected from damage. This includes providing temporary fencing around areas of demolition.
2. Protect existing services. If necessary, relocate active services to ensure that they function continuously in safety and without risk of damage. Cap off and remove unused services encountered following approval of appropriate utilities or jurisdictional authorities.
3. Erect temporary, weathertight, dust tight, lockable partitions and sound proof (43 STC) to separate occupied areas in use from the remainder of the project (see Section 01650 Temporary Facilities).

4. Weatherproof openings made in walls and roofs of existing buildings left remaining, immediately they are opened.
5. Keep sidewalks, streets and roads free of dust and debris. Clean up accumulations as they occur.
6. Protect existing trees and planting with encircling snow fence barricades erected on posts. Protect trees close to demolition Work, with burlap wrappings and sturdy 2400mm high protective wood structures. Erect barricades on drip line of trees.
7. Immediately repair damage to trees, structures, buried and above-ground services, benchmarks and survey monuments caused as a result of Work.
8. Protect openings in floors and walls as required. Leave the work in a safe and stable condition at all times.
9. Provide for complete and safe access at all times to areas and building adjacent to demolition Work.

1.6 NOTICE

1. Notify Consultant before disrupting building access or services.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 DEMOLITION

1. Review Tender Documents for extent of demolition.
2. At end of each day's work, leave Work in safe and stable condition. Protect interiors of parts not to be demolished from exterior elements at all times.
3. Demolish to minimize dusting. Keep materials wetted as directed by Consultant.
4. Remove and dispose of demolished materials from site in accordance with authorities having jurisdiction. Submit weigh bills from disposal site when requested.
5. Perform the work with a competent foreman present at all times.
6. Demolish masonry and concrete in pieces not larger than 610mm x 610mm (2' x 2').
7. Do not burn or sell materials on site.
8. Remove flammable and contaminated materials and refuse from building before demolition commences.
9. Confine work only to the area where demolition is required.
10. Refer also to General Terms and Conditions paragraph 39
11. Slabs on Grade: Break up and remove from site concrete slabs on grade as noted on drawing

3.2 DEBRIS AND WASTE REMOVAL

1. Remove debris, junk, and trash from site.
2. Leave site in clean condition, ready for subsequent work.

3. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 Related Requirements

1. Comply with requirements of Division 1 and Supplementary Conditions
2. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.
3. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.2 Reference Standards

1. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete; 2017a.
2. CSA A23.1/A23.2 - Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete; 2019.
3. CSA A3000 - Cementitious Materials Compendium; 2018.
4. CSA O86 - Engineering Design in Wood; 2014.
5. CSA S269.1 - Falsework and Formwork; 2016 (Reaffirmed 2021).

1.3 Submittals

1. See Section 01 30 00 - Administrative Requirements for submittal procedures.
2. **Shop Drawings:**
 - 2.1 Indicate bar sizes, spacing, locations and the like.
 - 2.2 Detail placement of reinforcing where special conditions occur.
 - 2.3 Design and detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated.
 - 2.4 Each drawing submitted to bear signature and stamp of qualified Professional Engineer (Civil) registered in the Province of Ontario.
3. Test Reports: Submit report for each test or series of tests specified.

1.4 Quality Assurance

1. Concrete supplier to hold a valid "Certificate of Ready Mixed Concrete Production Facilities" as issued by Concrete Ontario.
2. The Independent Testing Laboratory testing the concrete shall be currently certified by CSA as a certified Concrete Test Laboratory, minimum category 0.
3. Technicians carrying out and documenting concrete tests (including sampling air content, slump, temperature, record, and casting, curing & testing of cylinders) shall be currently certified to: CSA A286 certified Field Testing Technicians or ACI-certified Field Testing Technicians.

1.5 ENVIRONMENTAL CONDITIONS

1. When air temperature is likely to fall below 5°C heat materials so that concrete at time of placing has a temperature between 10°C and 30°C. Heat mixing water and, if necessary, the

fine and coarse aggregates.

2. Remove all snow and ice from substrate and forms. Do not place concrete against a surface of which the temperature is less than 5°C.
3. When temperatures are below, or likely to fall, 5°C provide protective enclosures and apply heat to ensure that the above temperatures are maintained for a minimum period of 3 days or until sufficient strength has been developed to protect the concrete from frost damage.

PART 2 PRODUCTS

2.1 Formwork

1. **Form Design and Construction:** Comply with guidelines of CSA A23.1/A23.2, CSA S269.1, and CSA O86
2. **Form Materials:** Contractor 's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
3. **Formwork Lumber:** Plywood and wood formwork materials to CAN/CSA-S269-3-M92.
4. **Formwork Lumber for Exposed Architectural Concrete:** Coated or high density overlaid Douglas fir plywood to CSA 0121.
5. **Tubular Concrete Forms:** Round, spirally wound, laminated fibre forms, internally treated with release material. (Spiral of form not to show in hardened concrete. If exposed to view.)
6. **Form Ties:** Removable or snap off metal ties, fixed or adjustable length, free of devices leaving holes larger than 1" (25 mm) in concrete surface.
7. **Joint Tape:** Non-staining, water impermeable, self-release.
8. **Form Liner:** equal to Dupont Zemdrain ND - controlled permeability formwork liner cpf

2.2 Reinforcement Materials

1. **Concrete:** Proportion, mix and deliver in accordance with Specification CAN3-A23.1. Strength to be 20 MPA at 28 days (2900 psi at 28 days).
2. **"Plastocrete":** Water reducing agent as manufactured by SIKA Chemicals Admixtures, or equal. Use in accordance with manufacturer's latest recommendations.
3. **Reinforcing Steel:**
 - 3.1 Deformed bars in accordance with CSA Specifications G30 to G30.8, clean and free of mill scale and rust (fy-414 MPA) (fy-60,000 psi). Bend cold. Splices to be 30-bar diameters. Use steel chairs, spacers, and wire ties.
 - 3.2 To CSA G30.18 Billet grade deformed carbon steel bars, clean free of scale and rust. Grade: 400Ri
4. **Wire Mesh:** To be in accordance with CSA Specifications G30.5-M 1983. Use 150 x 150 x 1.7/W1.7 mm (6 x 6/9 x 9) unless otherwise noted.
5. Fabricate reinforcing in accordance with drawings and shop drawings and CAN3-A23.1. Ship bundles of bar reinforcement clearly identified in accordance with bar list. Field bend reinforcement only where indicated or authorized by Consultant

6. **Curing/Sealing Compound:** To CAN3-A23.1. Acceptable material Sika “Florseal”, Master Builders “Masterseal”, WR Meadows “Sealtite 1100 Clear”.
7. **Admixtures:**
 - 7.1 Air Entrainment: To CAN3-A266.1; acceptable material by BASF, SIKA, or Construction Chemicals.
 - 7.2 Plasticising Admixture: To CAN3-A266.2, type WN.
 - 7.3 Acceptable material: "Plastrocrete" by Sika Canada.
8. Reinforcement Accessories:
 - 8.1 Tie Wire: Annealed, minimum 1.29 mm.
 - 8.2 Provide stainless steel or galvanized components for placement within 38 mm of weathering surfaces.

2.3 Concrete Materials

1. Cement Type: Portland Cement in accordance with CSA A3000.
2. Aggregates: To CSA A23.1, natural sand, gravel, or crushed rock. Coarse aggregate to be suitable for Type ‘N’ concrete.
3. Lightweight Aggregate: ASTM C330/C330M. Expanded shale.
4. Supplementary Cementing Material (SCM): To CSA-A23.5, Type C1 ready mix concrete. Supplier to indicate type and percentage proposed.
5. Water: CSA A23.1/A23.2; clean, potable, and not detrimental to concrete.
6. Heavy Duty Hardener: pre-mixed emery aggregate cement and wetting agents
7. Non-Metallic Hardener: pre-mixed mineral shake applied surface hardener.
8. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents of pouring consistency capable of developing compressive strength of 35 MPA at 28 days.
9. Curing/Sealing Compound: To ASTM C309, Type 1 Class B. Water based, acrylic, compatible with surface hardener where hardener is used.
10. Control Joint Sealer: Single component, polyurethane non-sag elastomeric.
11. Dovetail Anchor Slots: Minimum 0.6 mm thick, galvanized steel with insulation filled slots.
12. Premoulded Joint Fillers:
 - 12.1 **Bituminous Impregnate Fibre Board:** ASTM D1751.
13. Colour Hardener: Equal to MBT “Mastercron” 200 by BASF or CPD (Pre-mix) premium.
14. Waterstop: Acceptable material equal to CPD PVC waterstop – polyvinyl chloride (see binder),
15. Vapour Retarder Membrane: To ASTM E 1745-11, Class A, B, C: 10mil (15mil) equal to W.R. Meadow “Perminiator” c/w 4” wide self-adhesive joint tape and primer.
16. Bonding Agent: Synthetic latex “Surfacrete” concentrate by SIKA, “Intralok” by WR Meadows, CPD concentrated latex adhesive.
17. Anti-Slip Mortar: Non-slip filling mortar

18. **Tactile Walking Surface**: by Kinesik Engineered Products, Mississauga (see binder for style and pattern).

PART 3 EXECUTION

3.1 Examination

1. Verify lines, levels, and dimensions before proceeding with work of this section.

3.2 INSTALLATION

1. **Concrete Mix Design**:
 - 1.1 Base mix design on CAN3-A23.1, alternative 1 and supplements S1 and S2, with concrete supplier responsible for mix proportioning
 - 1.2 To 2900 psi (20 MPA) at 28 days, unless noted otherwise.
 - 1.3 **Slumps of Plain Mix Design Concrete**:
Slabs on compacted fill and toppings -- 2" to 3" (51 to 76 mm)
2. Ensure reinforcement and inserts are not disturbed during concrete placement.
3. In locations where new concrete is dowelled to existing Work, drill holes in existing concrete. Place steel dowels and pack solidly with non-shrink grout to positively position and anchor dowels.
4. Check locations and sizes of sleeves and openings with architectural, mechanical, and electrical drawings.
5. Install concrete to depths and thicknesses noted with reinforcing as shown.
6. **Curing and Sealing**:
 - 6.1 Apply sealer/cure by means of low pressure spray. Hardener and curing and sealing compound to be by the same manufacturer.
 - 6.2 Five working days prior to installation of concrete, notify the admixture manufacturer's representative of the proposed Work.
 - 6.3 Consult with him to guarantee that optimum conditions and procedures are followed to obtain the desired results.
7. **Field Quality Control**:
 - 7.1 Inspection and testing of concrete and Concrete materials will be carried out by a Testing Laboratory designated by Consultant, in accordance with CAN3-A23.1.
 - 7.2 Payment for inspection and testing will be made from a cash allowance. See Section 01300 Cash Allowances.
 - 7.3 Testing Laboratory representative will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete, which they represent.
 - 7.4 Payment for re-testing and re-inspection of Work replacing that found defective under the contract Work, or at variance with the design specifications, will be the responsibility of the Contractor.
 - 7.5 The inspection and testing company will notify the Consultant immediately, of any materials, tests, or methods that vary from the design specification.

3.3 Curing and Protection

1. Provide temperature and moisture conditions for the period of time necessary for concrete to develop the required properties and according to CSA A23.1/A23.2.
2. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
3. Surfaces Not in Contact with Forms:
 - 3.1 Initial Curing: Start as soon as free water has disappeared and before surface is dry.
Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 3.2 Final Curing: Begin after initial curing but before surface is dry.

3.4 Site Quality Control

1. An independent testing agency will perform site quality control tests. See Section 01 40 00 - Quality Requirements for additional requirements.
2. Provide free access to concrete operations at project site and cooperate with appointed firm.

3.5 Protection

1. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Comply with requirements of Division 1 and Supplementary Conditions
2. Section 06 10 00 - Rough Carpentry: Wood nailers for sheet metal work.
3. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.2 REFERENCE STANDARDS

1. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2020.
2. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
3. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
4. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
3. Samples: Submit two samples, 8" by 8" in size illustrating material o.

1.4 DELIVERY, STORAGE, AND HANDLING

1. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
2. Prevent contact with materials that could cause discolouration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

1. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.61 mm thick base metal.
2. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.61 mm thick base metal, shop pre-coated with PVDF coating.
 - 2.1 PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 - 2.2 Colour: As selected by Consultant from manufacturer's standard colours.

2.2 FABRICATION

1. Form sections true to shape, accurate in size, square, and free from distortion or defects.

2. Form pieces in longest possible lengths.
3. Hem exposed edges on underside 13 mm; miter and seam corners.
4. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
5. Fabricate corners from one piece with minimum 450 mm long legs; seam for rigidity, seal with sealant.
6. Fabricate flashings to allow toe to extend 50 mm over roofing gravel. Return and brake edges.

2.3 ACCESSORIES

1. Fasteners: Galvanized steel.
2. Primer: Zinc chromate type.
3. Concealed Sealants: Non-curing butyl sealant.
4. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as colour to match adjacent material recommended by manufacturer for substrates to be sealed; colour to match adjacent material.
5. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

3.2 PREPARATION

1. Install starter and edge strips, and cleats before starting installation.
2. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 0.4 mm.

3.3 INSTALLATION

1. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.
2. Apply plastic cement compound between metal flashings and felt flashings.
3. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
4. Connect downspouts to downspout boots, and seal connection watertight.
5. Set precast concrete splash pads under downspouts, and set in place.
6. Install gutter guards.

3.4 SITE QUALITY CONTROL

1. See Section 01 40 00 - Quality Requirements, for site inspection requirements.

2. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

SECTION 07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapour retarders.
2. Section 08 71 00 - Door Hardware: Setting exterior door thresholds in sealant.

1.2 REFERENCE STANDARDS

1. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).
2. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.

1.3 QUALITY ASSURANCE

1. Maintain one copy of each referenced document covering installation requirements on site.
2. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 2.1 Adhesion Testing: In accordance with ASTM C794.
 - 2.2 Compatibility Testing: In accordance with ASTM C1087.
 - 2.3 Allow sufficient time for testing to avoid delaying the work.
 - 2.4 Deliver to manufacturer sufficient samples for testing.
 - 2.5 Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 - 2.6 Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

1.4 ENVIRONMENTAL AND SAFETY REQUIREMENTS

1. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.
2. Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.5 WARRANTY

1. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
2. Correct defective work within a five year period after Date of Substantial Performance.
3. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.
4. Contractor hereby guarantees that caulking Work will not leak, crack, crumble, melt, shrink, run, lose adhesion to or stain adjacent surfaces in accordance with GC 12.3 **but for a period of**

three (3) years from date of Substantial Performance. Provide sealant validation by the Sealant Weatherproofing Restoration Institute (SWRI).

PART 2 PRODUCTS

2.1 JOINT SEALANT APPLICATIONS

1. Scope:
 - 1.1 Exterior Joints: Seal open joints, whether or not the joint is indicated on Drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - 1.1.1 Wall expansion and control joints.
 - 1.1.2 Joints between door, window, and other frames and adjacent construction.
 - 1.1.3 Joints between different exposed materials.
 - 1.1.4 Openings below ledge angles in masonry.
 - 1.1.5 Other joints indicated below.
 - 1.2 Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - 1.2.1 Joints between door, window, and other frames and adjacent construction.
 - 1.2.2 Other joints indicated below.
 - 1.3 Do not seal the following types of joints.
 - 1.3.1 Intentional weepholes in masonry.
 - 1.3.2 Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - 1.3.3 Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - 1.3.4 Joints where installation of sealant is specified in another section.
 - 1.3.5 Joints between suspended panel ceilings/grid and walls.
2. Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.
3. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.

2.2 MATERIALS

1. **Primers:** Type recommended by sealant manufacturer.
2. **Joint backing material:**
 - 2.1 Vertical surfaces (excluding EIFS) – equal to Soft Rod an extruded polyolefin foam by Tremco Ltd.
 - 2.2 Horizontal surfaces and EIFS surfaces – equal to Standard Backer Rod closed cell polyethylene foam by Tremco Ltd.
3. **Bond breaker:** pressure sensitive plastic tape, which will not bond to the sealant 3M #226 or #481 or Valley Industries #40 place at the back of the joint.
4. **Void Filler:** Loose glass fibre.
5. **Sealants:** (types and applications)
 - 5.1 Ultra low modulus, one component, moisture curing silicone sealant: Dow Corning 790, Dow Corning CCS, Spectrum 1, equal to CAN/CGSB 19.13-M87.

Use Dow Corning 790 or Spectrum 1 at high joint movement applications at stone.

Use: at all locations, except where another type is specified.

5.2 One part moisture curing polyurethane: to CAN/CGSB-19.13-M, Classification MC-2-25-B-N Dymonic or Dymonic FC by Tremco Ltd. Use: interior locations

5.3 Medium modulus, moisture curing, one part silicone sealant: to ASTM C920, CAN/CGSB-19.13-M, Classification MCG-2-25-A-L equal to Dow Corning 795, Dow Corning CWS, or Spectrem 2 by Tremco Ltd.

Use in glass-to-glass, glass to metal, and metal-to-metal curtain wall joints.

5.4 Mildew resistant, one component silicone sealant: to ASTM C920 CAN/CGSB 19.13M equal to Dow Corning Tub, Tile, and Ceramic or Tremsil 200 White and Clear by Tremco Ltd.

Use on fixtures, bathtubs and vanity tops.

5.5 One component, non-skinning, non-hardening acoustical sealant: to CAN/CGSB-19.21-M equal to Acoustical Sealant by Tremco Ltd.

Use at all vapour barrier joints and openings in drywall systems as shown on the drawings or specified.

5.6 One component, paintable acrylic latex sealant: to CGSB-19-GP-17M equal to Tremflex 834 by Tremco Ltd.

Use in interior non-moving joints that may be painted.

5.7 Equivalent products by GE Sonneborn and SIKA are acceptable or other approved equivalent. Indicate the manufacturer and proposed product.

6. Colour selection from Manufacturer's standard range.

7. Cleaning material for surfaces to receive sealant as recommended by the manufacturer of sealant.

PART 3 EXECUTION

3.1 EXAMINATION

1. For unusual or complicated caulking conditions meet at the site with sealant manufacturer's representative to discuss procedures before commencing the Work.
2. Before commencing Work, verify at the site that joint configuration and surfaces have been provided as specified under Work of other sections to meet intent of sealant specification
3. Verify that joints are ready to receive work.
4. Verify that backing materials are compatible with sealants.

3.2 PROTECTION

1. Protect installed Work of other trades from staining or contamination.

3.3 PREPARATION OF JOINT SURFACES

1. Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
2. Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter, which may impair Work.

3. Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
4. Ensure joint surfaces are dry and frost free.
5. Prepare surfaces in accordance with manufacturer's directions

3.4 PRIMING

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

3.5 BACKUP MATERIAL

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

3.6 MIXING

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

3.7 APPLICATION

1. **Sealant:**
 - 1.1 Apply sealant in accordance with manufacturer's written instructions.
 - 1.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - 1.3 Apply sealant in continuous beads.
 - 1.4 Apply sealant using gun with proper size nozzle.
 - 1.5 Use sufficient pressure to fill voids and joints solid.
 - 1.6 Form surface of sealant with bull bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - 1.7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - 1.8 Remove excess compound promptly as Work progresses and upon completion.
2. **Caulk But do not Restrict it to The Following:**
 - 2.1 Exterior and interior hollow metal steel door frames: interior screens (both sides of frames).
 - 2.2 Exposed control joints in masonry walls; masonry wall corners; masonry-to-column junctures; joints in front of steel lintels bearing on exterior masonry jambs.
 - 2.3 Raked joints in junction of walls running at different angles, and at junction of walls to columns.
 - 2.4 Joints between washroom vanities, and other counters, urinals, and adjacent surfaces.
 - 2.5 Wall to floor junctions and joints in floor, where typically indicated on drawings.
 - 2.6 Joints between masonry and concrete surfaces.
 - 2.7 Joints between new work and existing.
 - 2.8 Joints between gypsum board and masonry, or other materials.
 - 2.9 Penetrations through roofs, floors and walls other than firestopping.

2.10 At locations shown on drawings

3. **Curing:**

3.1 Cure sealants in accordance with sealant manufacturer's instructions.

3.2 Do not cover up sealants until proper curing has taken place.

4. **Cleanup:**

4.1 Clean adjacent surfaces immediately and leave Work neat and clean.

4.2 Remove excess and droppings, using recommended cleaners as Work progresses.

4.3 Remove masking tape after initial set of sealant.

END OF SECTION

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 08 71 00 - Door Hardware.
2. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.
3. Section 09 91 13 - Exterior Painting: Site painting.
4. Section 09 91 23 - Interior Painting: Site painting.

1.2 REFERENCE STANDARDS

1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
2. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2021a.
3. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
4. CSDMA Storage and Installation Guide - Guide Specification for Installation and Storage of Hollow Metal Doors and Frames; 2012.
5. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
3. Samples: Submit two samples of metal, 50 mm by 50 mm in size showing factory finishes, colours, and surface texture.

1.4 DELIVERY, STORAGE, AND HANDLING

1. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.1 DESIGN CRITERIA

1. Requirements for Hollow Metal Doors and Frames:
 - 1.1 Steel used for fabrication of doors and frames shall comply with one or more of the following requirements; Galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.
2. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for

instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.2 HOLLOW METAL DOORS

1. **Steel:** Commercial grade tension-levellled to ASTM A924-97 (M97), galvanized to ASTM A653-97 (M97), coating designation A 40 (ZF 120) paintable galvaneal.
2. **Door Cores:**
 - 2.1 **Standard Interior:** Honeycomb 1" (25mm) Kraft paper - weight 36.3 kg. (80lbs) per ream, minimum density: 16.5 kg/m; (1.03 pcf) minimum sanded to required thickness.
 - 2.2 **Insulated Exterior:** Rigid foam polyisocyanurate to ASTM C1289 closed cell board total R= 11.
 - 2.3 **Temperature Rise Rated (T.R.R):** core composition to limit temperature rise on exposed side to 250°C @ 30 minutes.
3. **Adhesives:**
 - 3.1 **Honeycomb cores and steel components:** Heat resistant, single component polyurethane reactive (water) hot melt ULC approved.
 - 3.2 **Lock Seam Doors:** Resin reinforced polychloroprene fire resistant high viscosity UL approved.
 - 3.3 **Insulated core:** Epoxy based ULC contact cement.
4. **Primers:** Rust inhibitive touch-up only.
5. **Miscellaneous:**
 - 5.1 **Door Silencers:** Single stud neoprene/rubber type.
 - 5.2 **Exterior Topcaps:** Rigid polyvinylchloride extension.
 - 5.3 **Frame Thermal Breaks:** As topcaps.
 - 5.4 **Fire Labels:** Metal rivetted

2.3 HOLLOW METAL FRAMES

1. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
2. **General:**
 - 2.1 **Exterior Frames:** 16 gauge welded construction thermally broken.
Interior Frames: 16 gauge welded construction.
 - 2.2 Blank, reinforce, drill and tap for mortised, templated hardware.
 - 2.3 Protect mortised cutouts with steel guard boxes. Delete at drywall applications.
 - 2.4 Reinforce frames where required, for surface mounted hardware. Drilling and tapping is by others, on site, at time of installation.
 - 2.5 Provide for appropriate anchorage to floor and wall construction. Locate each wall anchor immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb. For rebate opening heights up to and including 1520mm (60") provide two (2) anchors, and an additional anchor for each additional 760mm (30") of height except as indicated below. Provide frames in previously placed concrete, masonry or structural steel with anchors located not more than 150mm (6")

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from the top and bottom of each jamb, and intermediate anchors at 660mm (26") on centre maximum. Fasteners for such anchors: Provided by others.

- 2.6 Prepare each door opening for single stud rubber door silencers, three (3) for single door openings, two (2) for double door openings.
- 2.7 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

3. **Welded Type:**

- 3.1 Accurately mitred or mechanically jointed, securely welded on the inside of the profile.
- 3.2 Cope butt joints of mullions, transom bars, centre rails and sill accurately and weld securely.
- 3.3 Welding: To CSA W59-M89.
- 3.4 Grind welded joints to a smooth, uniform finish.
- 3.5 Attach floor anchors securely to the inside of each jamb profile.
- 3.6 Weld in two (2) temporary jamb spreaders per frame to maintain proper alignment during shipment.
- 3.7 Glazing stops: Formed channel, minimum 16mm (5/8") height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- 3.8 When required due to site access, as specified on Architect drawings or due to shipping limitations, frame product for large openings shall be fabricated in sections, with splice joints for field assembly by others.

2.4 FABRICATION

1. **General:**

- 1.1 Swing type, flush, with provision for glass and/or louvre openings as indicated on schedules.
- 1.2 Blank, reinforce, drill and tap for mortised, templated hardware.
- 1.3 Holes 12.7mm (.5") diameter and larger factory prepared in shop.
- 1.4 Reinforce where required, for surface mounted hardware. Drilling and tapping is by others, on site, at time of installation.
- 1.5 Fit top and bottom of doors with inverted, recessed, spot welded channels.
- 1.6 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- 1.7 Include fire labeled doors where scheduled.
- 1.8 Transoms or Other Panels: Construct in same manner as doors.

2. **Exterior:**

- 2.1 Form each face from 16 GA steel.
- 2.2 Reinforce with vertical stiffeners, fully welded to each face sheet at 150 mm (6") oc.
- 2.3 Fill all voids between stiffeners with polyurethane core.
- 2.4 Weld longitudinal interlocked edges continuously to a flat plane, to a uniform, smooth finish where noted - see door frame schedule.
- 2.5 Fit with flush p.v.c. top caps.

3. **Interior:**

- 3.1 Form each face from 16 GA steel.
- 3.2 Laminate each face to Honeycomb core under pressure.
- 3.3 Mechanically interlock longitudinal edges.
- 3.4 Fill all voids with honeycomb for temperature rise rated core.

2.5 FINISHES

1. Fill and sand smooth tool marks, abrasions, and surface blemishes to present smooth uniform surfaces.
2. Primer: Shop apply zinc rich primer to repair damaged zinc coatings arising from fabrication; cure primer fully before shipping to site; include compatible primer for site finishing and correction of surface abrasions to zinc coatings and factory applied primer.
3. Factory Finish: Manufacturer's standard coating.
 - 3.1 Colour: As selected by Consultant from manufacturer's standard range.
 - 3.2 Colour: As indicated on Drawings.

2.6 ACCESSORIES

1. Glazing: As specified in Section 08 80 00, factory installed.
2. Grout for Frames: Portland cement grout with maximum 100 mm slump for hand troweling; thinner pumpable grout is prohibited.
3. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
4. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify existing conditions before starting work.
2. Verify that opening sizes and tolerances are acceptable.
3. Verify that finished walls are in plane to ensure proper door alignment.

3.2 PREPARATION

1. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.3 INSTALLATION

1. Install doors and frames in accordance with reviewed Shop Drawings, CSDMA Storage and Installation Guide, manufacturer's instructions, related requirements of specified door and frame standards, and custom guidelines indicated.
2. Install prefinished frames after painting and wall finishes are complete.
3. Install fire rated units in accordance with NFPA 80.
4. Coordinate frame anchor placement with wall construction.

5. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
6. Install door hardware as specified in Section 08 71 00.
7. Comply with glazing installation requirements of Section 08 80 00.
8. Coordinate installation of electrical connections to electrical hardware items.
9. Touch up damaged finishes.

3.4 ADJUSTING

1. Adjust for smooth and balanced door movement.
2. Adjust sound control doors so that seals are fully engaged when door is closed.
3. Test sound control doors for force to close, latch, and unlatch; adjust as necessary in compliance with requirements.

END OF SECTION

SECTION 08 11 16 - ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 07 92 00 - Joint Sealants: Sealing joints between door frames and adjacent construction.
2. Section 08 71 00 - Door Hardware: Hardware for aluminum doors.
3. Section 08 80 00 - Glazing: Glazing materials for aluminum doors and frames.

1.2 REFERENCE STANDARDS

1. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements for submittal procedures.
2. Shop Drawings: Include elevations of each opening type.
3. Selection Samples: Complete set of colour and finish options, using actual materials, for Consultant's selection.
4. Verification Samples: Actual pieces of products in each finish specified, not less than 150 mm square or 150 mm long for linear components. For finishes subject to colour variation, include not less than two samples illustrating extreme range to be anticipated.
5. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

1. Deliver aluminum components in manufacturer's standard protective packaging, palletted, crated, or banded together.
2. Store components in clean, dry, indoor area, under cover in manufacturer's packaging until installation.
3. Delivery and Acceptance Requirements: Deliver doors and frames to project site; provide protection during transit and site storage to prevent distortion or indentation, and any additional protection required to prevent damage to finish of doors and frames and as follows:
 - 3.1 Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage is found.
 - 3.2 Minor damages may be repaired provided refinished items match new work and are acceptable to the Consultant.
 - 3.3 Remove and replace damaged items that cannot be repaired as directed by the Consultant, at no additional cost to the Owner.
4. Protect materials and finish from damage during handling and installation.

1.5 SITE CONDITIONS

1. Do not begin installation of interior aluminum components until space has been enclosed and ambient thermal conditions are being maintained at levels consistent with final project requirements.

1.6 WARRANTY

1. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
2. Correct defective Work within a five year period after Date of Substantial Performance.

PART 2 PRODUCTS

2.1 DOORS AND FRAMES

1. This Specification is based on Alumicor entrance systems.
 - 1.1 Approved manufacturers: Alumicor, Kawneer, Oldcastle and Commdor.
2. **Aluminum Extrusions:** Aluminium Association Alloy AA 6063-T5.
3. **Sheet and Plate Aluminum:** Aluminum Association Alloy AA 1100, anodizing quality.
4. **Steel Reinforcement:** To CAN3 G40.21-M, Grade 300W.
5. **Fasteners:** 300 Series stainless steel or 400 Series stainless steel cadmium plated.
6. **Weatherstripping:** Elastomeric weathering of tubular shape and Work pile at meeting rails.
7. **Aluminum Doors:**
 - 7.1 **Acceptable Material:** 400-A medium stile swing door, 600A wide stile Alumicor (for insulated doors add Insul).
Acceptable Alternates: Kawneer, Commdor, Old Castle.
 - 7.2 Centre rail nominal – Change door type to a eg. 100-B.
 - 7.3 Dual moment welded corner construction.
 - 7.4 **Glazing Stops:** Square interlocking snap-in type for dry glazing. Exterior stops: tamperproof type (Interior stops).
 - 7.5 **Hinges:** Butt stainless steel 5 knuckle 2 ball bearing – 2 pairs per door.
 - 7.6 Deadlock Cylinder at exterior doors.
 - 7.7 **Push:** 246.
 - 7.8 **Pull:** 1180 c/w mounting bolts.
 - 7.9 **Bolt:** Top and bottom on one leaf of pair doors.
 - 7.10 **Mullion:** Purpose-made removable extruded aluminum at pairs of doors - Von Duprin 5754.
 - 7.11 **Door Holder:** Glynn Johnson 90 series overhead door stops.
 - 7.12 **Exit Devices:** Von Duprin 98/99 Rim type.
 - 7.13 **Threshold:** Aluminum.
 - 7.14 **Glazing Tape at Doors:** equal to Tremco 100% premoulded polyisobutylene cross-link butyl.
 - 7.15 **Caulking:** To CGSB-19-13M one part silicone equal to Dow Corning 795 Sealant.
8. **Aluminum Frames:**
 - 8.1 Acceptable Material:

- 8.1.1 Alumicor 1800 series store front system 1¾" x 4½" (44.5 x 114.3) nominal dimension, non-thermal, weatherseal, centered weather seal glazed, shear block
AND/OR
- 8.1.2 Alumicor 3400 series store front system 2" x 4½" (50.8 x 114.3) nominal dimension, thermal, weatherseal, centered weather seal glazed, shear block.

9. **Aluminum Finishes:**

- 9.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association. Designation System for Aluminum Finishes.
- 9.2 Clear Anodic Finish: Designation AA-M12C22A41. Architectural Class 1.
- 9.3 Appearance and properties of anodized finishes designated by the Aluminum Association as Architectural Class 1, Architectural Class 2, and Protective and Decorative.

10. **Steel Finishes:** Finish steel clips and reinforcing steel with [steel primer to CGSB 1-GP-40M] [zinc coating to CSA G164].

11. **Fabrication:**

- 11.1 Doors and framing to be by same manufacturer.
- 11.2 Fabricate doors and frames to profiles and maximum face sizes as shown. Provide minimum 22mm bite for insulating glazed units.
- 11.3 Provide structural steel reinforcement as required.
- 11.4 Fit joints tightly and secure mechanically.
- 11.5 Conceal fastenings.
- 11.6 Mortise, reinforce, drill and tap doors, frames and reinforcements to receive hardware using templates provided from Door Hardware.
- 11.7 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

12. Dimensions and Shapes: As indicated on Drawings; dimensions indicated are nominal.

- 12.1 Provide the following clearances:
 - 12.1.1 Hinge and Lock Stiles: 3 mm.
 - 12.1.2 Between Meeting Stiles: 6 mm.
 - 12.1.3 At Top Rail and Bottom Rail: 3 mm.

PART 3 EXECUTION

3.1 EXAMINATION

- 1. Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.
- 2. Verify that frames installed by other trades for installation of doors of this section are in strict accordance with recommendations and approved Shop Drawings and within tolerances specified in manufacturer's instructions.
- 3. If substrate preparation is the responsibility of another installer, notify Consultant of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- 1. Perform cutting, fitting, forming, drilling, and grinding of frames as required for project conditions.

2. Replace components with damage to exposed finishes.
3. Separate dissimilar metals to prevent electrolytic action between metals.

3.3 INSTALLATION

1. Install doors and frames in accordance with manufacturer's instructions and approved Shop Drawings.
2. Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations and within specified tolerances.
3. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.
4. Hang doors and adjust hardware to achieve specified clearances and proper door operation.
5. Install door hardware as specified in Section 08 71 00.
6. Comply with glazing installation requirements of Section 08 80 00.
7. Where heads of frames, or screens, abut false ceiling or soffits, brace back to firm structure above. Do not fasten solely to the ceiling, or soffit.
8. Be responsible that anchors and inserts, whether installed by the Work of this section or others, are adequate to meet the specified requirements.
9. Coordinate frame installation with installation of electric swing door operator.

3.4 CAULKING

1. Seal joints to provide weathertight seal at outside [and air, vapour seal at inside].
2. Apply sealant in accordance with Section 07 92 00 - Sealant. Conceal sealant within the aluminum Work except where exposed use is permitted by Consultant.

3.5 CLEANING

1. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609 & 610.
2. Do not use abrasive, caustic, or acid cleaning agents.

3.6 PROTECTION

1. Protect products of this section from damage caused by subsequent construction until Date of Substantial Performance.
2. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

END OF SECTION

SECTION 08 42 29 - AUTOMATIC ENTRANCES

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1.2 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Shop Drawings:
 - 2.1 Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, recesses, materials, and finishes, electrical characteristics and connection requirements.
 - 2.2 Identify installation tolerances required, assembly conditions, routing of service lines and conduit, and locations of operating components and boxes.
3. Product Data: Provide data on system components, sizes, features, and finishes.
4. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
5. Maintenance Data: Include manufacturer's parts list and maintenance instructions for each type of hardware and operating component.
6. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.3 QUALITY ASSURANCE

1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience, and a member of AAADM.
2. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.4 WARRANTY

1. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
2. Correct defective Work within a five year period after Date of Substantial Performance.
3. Provide two year manufacturer warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

1. Swinging Automatic Entrance Door Assemblies:
 - 1.1 Horton Automatics: www.hortondoors.com/#sle.
 - 1.1.1 **Electrical Swing Door Operator(s):**
Where indicated on plans and door schedule: equal to units manufactured by Horton Automatics or equal by Stanley or BESAM, Mactech Systems Inc., Burlington, 6100 series, and LCN Benchmark auto door operators series 9130
 - 1.2 Substitutions: See Section 01 60 00 - Product Requirements.

2.2 ELECTRIC SWING OPERATED DOORS

1. **Power Operated Doors:** Provide products that comply with CAN/CGSB 69.26 and requirements of Authority Having Jurisdiction (AHJ); provide equipment selected for actual door weight and for light pedestrian traffic, unless otherwise indicated.
2. **Easy Access® Header:** a side access extruded aluminum case running full width of door, available in two sizes: 4" x 6 (102mm x 152mm) or 6" x 6" (152mm x 152mm).
3. **Electric Operating Mechanism Series 7100LE:** mounted and concealed in an extruded aluminum case for smooth and quiet operation.
 - 3.1 **Opening Action:** by a 1/15 HP D.C. permanent magnet motor working through reduction gears to the output shaft.
 - 3.2 **Closing Action:** by field replaceable spring. When the door is in the closing mode or fully closed, motor voltage shall not be required and will be off. The door can be manually operated with power on or off without damage to the operator. Supply an On/Off/Hold Open switch.
 - 3.3 **Master Control:** includes the following
 - 3.3.1 Adjustable time delay of 2 to 30 seconds (ANSI A156.19 requirement is 5 second minimum time delay).
 - 3.3.2 Infinite adjustment to openings and open check speeds including adjusting the opening force without affecting the opening speed.
 - 3.3.3 Immediate reversal of door motion without undue strain on the drive train, accomplished by supplying stepped voltage to the motor. The door to reverse when closing if an object stops the door.
 - 3.3.4 Motor Protection Circuit: supply a locked door motor protection circuit that will shut off current to the motor when the door is inadvertently locked or otherwise prevented from opening.
4. **Operation:** Automatic and/or Manual
 - 4.1 **Automatic:** Pushbutton switch actuates door open; door closes after time delay expires. Opening and closing force, measured 1" (25.4mm) out from the lock stile of the door, not to exceed 15 pounds (67 N) of force to stop the door when operating in either direction. Operator to include the following variable adjustments so as to comply with ANSI Standard A156.19: Opening speed – 4 to 6 seconds; Closing speed - 4 to 6 seconds.
 - 4.2 **Manual:** Push-N-Go™: manually pushing door activates automatic opening cycle; door closes after time delay expires (approximately 30% less than after pushbutton actuation).
5. **Door Units:** type 7100LE Surface Applied Operator with Connecting Arms – mount the operator header to the surface of the door frame or wall.
 - 5.1 **Connecting Hardware:** double arm arrangement that ca either push the door or pull the door open to suit the job condition. When the operator mounting is on the pull side and adjacent wall is within 4" (102mm) of the door frame, specify a parallel arm.
6. **Activating Device:** located on each side of the opening as per ANSI Safety Standard A117 and the Ontario Building Code.
 - 6.1 **Push Plate:** 6" diameter (152mm) round, stainless steel switch.

6.2 **Security:** at Doors indicated with security device include a relay to coordinate with a building security system.

7. **Electrical:** 120 VAC, 60 cycle, 1 phase, 15 amp.

8. **Materials, Finishes and Fabrication:**

8.1 **Extruded Aluminum:** structural header sections – minimum 1/8" (3mm) thickness and to meet ASTM B221, 6063-T5 alloy and temper, clear anodized

8.2 **Finishes:** to match frame finish.

9. **Operator Construction:** electromechanical.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify that surfaces are ready to receive work and dimensions are as indicated on Shop Drawings.
2. Verify that electric power is available and is of the correct characteristics.

3.2 INSTALLATION

1. Install equipment in accordance with manufacturer's instructions.
2. **General:** by factory-trained mechanics certified by AAADM, and experienced to perform work of this section. Install door operators plumb, level and true to line. Provide support and anchor in place.
3. **Dissimilar Materials:** comply with AAMA 101, Appendix Dissimilar Materials by separating aluminum materials and other corrodible surfaces from sources of corrosion or electrolytic action contact points.
4. **Weather Tight Construction:** Install header with joint filler or gaskets. Coordinate installation with wall flashings and other construction components.
5. **Electrical:** Electrical contractor to install all wiring to operator on a separate circuit breaker (to nearest electrical panel) routed into header. Conceal wiring in door frame.

3.3 ADJUSTING

1. Adjust door equipment for correct function and smooth operation.

3.4 CLEANING

1. Remove temporary protection, clean exposed surfaces.

3.5 CLOSEOUT ACTIVITIES

1. Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.6 MAINTENANCE

1. Provide service and maintenance of operating equipment for one year from Date of Substantial Performance, at no extra charge to Owner.

END OF SECTION

SECTION 08 44 13 - GLAZED ALUMINUM CURTAIN WALLS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
2. Section 08 80 00 - Glazing.

1.2 REFERENCE STANDARDS

1. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
2. OBC - Ontario Building Code (Regulation 332/12); 2012.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and site welding required.
3. Samples: Submit two samples 50mm by 100 mm in size illustrating finished aluminum surface, glazing, infill panels, and glazing materials.
4. Test Reports: Submit results of full-size mock-up testing. Reports of tests previously performed on the same design are acceptable.
5. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

1. Handle products of this section in accordance with AAMA CW-10.
2. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.5 SITE CONDITIONS

1. Do not install sealants when ambient temperature is less than 5 degrees C. Maintain this minimum temperature during and 48 hours after installation.

1.6 WARRANTY

1. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
2. Correct defective Work within a 2 year period after Date of Substantial Performance.
3. Provide a warranty issued in the name of the Owner, covering materials and labour, against leakage, defects and malfunction under normal usage for a period of two (2) years from the date of Substantial Performance

PART 2 PRODUCTS

2.1 MATERIALS

1. **Extruded Aluminum:** Aluminum Association alloy 6063-T6 and tempered. Sections of minimum size and shape as shown on drawings.

- 1.1 This specification is based on Kawner outside glazed 1600 System 1 Curtain Wall series.
- 1.2 Acceptable Alternates: Alumicor, United States Aluminum, Old Castle/Fulton Windows.
2. **Fastening Devices:** 400 series stainless steel cadmium plated or 304 stainless steel. Bolts shall be grade 5 steel cadmium plated, sized as required.
3. **Weather Gaskets:** Dense E.P.D.M., durometer 50 (shore A) per ASTM C 50G.
4. **Glazing Seats:** Silicone gaskets compatible with structural silicone adhering I.G. unit to frame.
5. **Setting Blocks:** Silicone, between 70 and 90 durometer.
6. **Vision and Spandrel Glass:** Section 08800.
7. **Sealants:**
 - 7.1 Weather seal of one part silicone to CGSB-19-13 M87, Dow Corning 795 or equal.
 - 7.2 Adhesive sealant of two-part neutral cure silicone, to ASTM CG20-7G type M, Dow Corning 983 or equal, by approved manufacturer only.
8. **Isolation Coating:** Bituminous paint, to CGSB 1-GP-108M at dissimilar materials.
9. **Miscellaneous Aluminum Sections:** Extrude form of 1\16" (1.6mm) sheet laminated to plywood sills, stools.
10. **Screens:**
 - 10.1 To CAN/CGSB-71.1 3 fasteners, tamper proof.
 - 10.2 Fit vents with fiberglass screens in aluminium frames that match finish of windows.
11. **Finish:**
 - 11.1 **Exterior:** finish aluminum components and flashings in accordance with American Aluminum Manufacturers Associations latest standards.
 - 11.2 **Exterior Exposed Components:** Duranar AAMA Spec 605 - black.
 - 11.3 **Interior:** aluminum components and trim with Duracron Super 600 thermosetting acrylic enamel. AAMA Spec 603 - black.
 - 11.4 **Finish Steel Clips and Reinforcing Steel with Steel Primer:** 380 g/m zinc coating to CSA G164-1965 (R1972).
 - 11.5 **Interior and Exterior Colours will be Different:** Selected from standard range.
12. **Pressure Plates:**
 - 12.1 In lieu of the standard metal pressure install Pultruded Fiber-Reinforced Polymer (FRP) Pressure Plate as designed for 2½" wide curtain wall mullion by Inline Fibreglass.
 - 12.2 FRP Profile to be 59.5mm wide, 8.5mm overall thickness at extreme ends, and 5.0mm thickness over central 32mm of profile identical to metal plate

2.2 FABRICATION OF WINDOWS

1. **Window Units:** Heavy duty: to CGSB 63-GP 12M, Type 1, Class A, Style 1, Category 2 Level A, complete with heavy duty neoprene extrusion weatherstripping frame with PVC thermal break insulated exterior cap mouldings, size 6" deep x 2¼" wide (152.4 x 63.5mm).
 - 1.1 **Venting Sash:** Equal to Kawneer Series 526 including the following:
 - 1.1.1 **Thermal Break:** extruded PVC.
 - 1.1.2 **Weathering and Glazing Gasket:** extruded black closed cell or dense elastomer.

1.1.3 **Glazing Tapes:** glazing tapes macro polyisobutylene with continuous built-in

1.1.4 **Glass:** 1" (25mm) insulating units - see Section 08800.

1.2 **Hardware:**

1.2.1 **Top Projected - Open out Sash:**

1.2.2 Two Anderberg friction arms.

1.2.3 Two satin finish white bronze locking handles **OR**

1.2.4 Two white aluminium underscreen push bars

1.2.5 Include opening limiting restrictor

2. Fabricate window units square and true with maximum tolerance of plus or minus 1.5mm for units with diagonal measurement of 1.8m or less, and plus or minus 3mm for units with diagonal measurement over 1.8m.
3. Carry vertical elements full height.
4. Make allowance for deflection of structure. Ensure that structural loads are not transmitted to aluminium windows.
5. Make provision for expansion and contraction joints:
 - 5.1 Horizontally for elements over 6000mm.
 - 5.2 Vertically for elements over 3650 mm joints: as on approved shop drawings.
6. Manufacturer's name plates on windows are not acceptable. Place manufacturer's name plates in semi-concealed locations

2.3 FABRICATION EXECUTION

1. **Window Frames:** Factory assembled, unitized components, machined and mechanically fastened.
2. **Extrusions:** Neat and well defined.
3. **Jointing Assembly:** accurate and joints adjusted so as to be perfectly air, vapour tight.
4. **Gasket Seal Between Unitized Frames:** to provide air/vapour seal of completed assembly. Submit details for review.
5. Make provision for brackets and reinforcements to meet design requirements.
6. Shop prime paint steel components.

2.4 ISOLATION COATING

1. Isolate aluminum from following components, by means of isolation coating:
 - 1.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - 1.2 Concrete, mortar and masonry.
 - 1.3 Wood.

2.5 GLAZING

1. Tremco "Vision Strip" exterior glazing system.
2. Interior: Elastomeric glazing gasket

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify dimensions, tolerances, and method of attachment with other related work.
2. Verify that curtain wall openings and adjoining air and vapour seal materials are ready to receive work of this section.
3. Verify that anchorage devices have been properly installed and located.

3.2 INSTALLATION

1. **General:** Install windows and sills plumb level and in accordance with approved shop drawing. Take site dimensions as required.
2. **Frames:**
 - 2.1 Secure units with non-corrosive and inorganic anchorage materials.
 - 2.2 Install all reinforcing and supporting members required and not shown as supplied under other sections.
 - 2.3 Fill voids between frames and rough openings and at mullions with loose fibreglass insulation.
 - 2.4 Apply cover trim at exterior jointing between unitized windows and perimeter assembly trim profiles as detailed. Submit details of assembly fixing for review.
3. **Caulking:**
 - 3.1 Seal joints between frames members and other non-operating building components with sealant to provide weather-tight seal at outside and air vapour seal at inside.
 - 3.2 Apply sealant in accordance with Section 07900. Conceal sealant within aluminum except where exposed use is permitted by the Consultant.

3.3 ADJUSTING

1. Adjust operating sash for smooth operation.

3.4 CLEANING

1. Remove protective material from pre-finished aluminum surfaces.
2. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, take care to remove dirt from corners, and wipe surfaces clean.

3.5 PROTECTION

1. Protect installed products from damage until Date of Substantial Performance.

END OF SECTION

SECTION 08 71 00 - INSTALLATION OF DOORS, FINISH HARDWARE AND ELECTRONIC DEVICES

PART 1 - GENERAL

COMPLY WITH REQUIREMENTS OF DIVISION 1 AND SUPPLEMENTARY CONDITIONS.

1.1 RELATED WORK

1. Section 08 11 13 - Hollow Metal Doors and Frames

1.2 PRODUCT DELIVERY, STORAGE AND HANDLING

1. Accept delivery of doors and finish hardware.
2. Inspect doors for damage, upon delivery to the site. Hollow metal doors, which cannot be readily corrected by sanding, should be promptly returned to the manufacturer for replacement.
3. Store doors in a dry and clean location. Store in a temperature and humidity controlled area. Stack 150mm off the floor.
4. Be responsible for any damage to doors and hardware from time of delivery until accepted by Owner after installation.

1.3 JOBSITE CONTROL AND DISTRIBUTION OF HARDWARE

1. Provide locked room for storage of hardware at the job and a person responsible for the control and distribution of hardware.
2. It is the intent of this section to establish a single, competent source to be responsible for the installation of finish hardware, which is listed in Section 08710. Faulty installation of electronic hardware shall therefore be traced back to this section, not to division 26

PART 2 – PRODUCTS

2.1 Not Used

PART 3 – EXECUTION

3.1 EXAMINATION

1. Examine substrate surfaces to receive the Work of this Section and ensure that Work done as part of the Work of other Sections is complete and that there are no conditions which will adversely affect the performance of the Work. Notify the Contractor of any unsatisfactory conditions. Do not proceed with this Work until unsatisfactory conditions have been corrected. Commencement of Work implies acceptance of surfaces and conditions.

3.2 INSTALLATION

1. Finish Hardware:
 - 1.1 Handling, Storage, and Installation: to ANSI/DH1 A115.1G.94 – for finishing hardware, doors and frames.
 - 1.2 Other trades installing hardware must follow all manufacturers instructions including door closer adjustment, handing of locksets as required, and degree of door swing. Advise the Consultants if door frames are not square and plumb and prevent proper door installation.

- 1.3 Mount hardware to suit door elevations. Unless otherwise directed by the Consultant, install hardware at the following mounting heights:
 - 1.3.1 38" (965mm)
 - 1.3.2 38" (965mm)
 - 1.3.3 38" (965mm)
 - 1.3.4 60" (1524mm)
 - 1.3.5 48" (1220mm) per OBC intent
- 1.4 When requested, the hardware supplier will instruct the installer regarding the installation of unfamiliar items.
- 1.5 Set, fit and adjust hardware according to manufacturer's directions. For trouble-free operation. After installation, adjust door closers for closing and latching speed and panic devices for proper latching. Protect installation from damage and paint spotting.
- 1.6 Predrill kickplates and doors before attachment of plates. Apply with water resistant adhesive and countersunk steel screws.
- 1.7 Locate hardware in accordance with requirements specified in Section 08 71 00.
- 1.8 Thresholds: site measure openings before cutting. Set thresholds on two continuous beads of caulking conforming to Section 07 92 00.
- 1.9 Door Closers and Holders: Install door closers so that door opening is unaffected, and to allow maximum swing.
- 1.10 Weatherstripping of Doors:
 - 1.10.1 Install weatherstripping so that the entire perimeter of doors is tightly sealed. Secure in place with non-ferrous screws, in accurate alignment.
 - 1.10.2 Maintain integrity of weatherseal at head of doors fitted with closers. Adapt weatherstripping as required to achieve specified performance and provide any necessary accessories.
2. Hollow Metal Swing Doors:
 - 2.1 Hang doors to swing easily and freely on their hinges, to remain stationary in any position, and to close tightly and evenly on frames without binding.
 - 2.2 Provide 2mm clearance at head and jambs, 3mm clearance between pairs of doors, or panels and no more than 10 mm at floor. Provide clearance for specified finished flooring.

3.3 ADJUSTING, AND CLEANING OF FINISH HARDWARE

1. Check and adjust each operating hardware item to ensure proper operation and function of unit.
2. Lubricate moving parts as recommended by hardware manufacturer. Use graphite type lubricant if no other is recommended.
3. Repair or replace defective materials and units which cannot be adjusted and lubricated to operate freely and smoothly. Re-install items found improperly installed.
4. Prior to date of Substantial Performance, re-adjust and re-lubricate as necessary.

5. Instruct Owner's designated personnel in the proper adjustment and maintenance of hardware and finishes at time of final hardware adjustment.

END OF SECTION

FINISHING HARDWARE SPECIFICATION

FOR
NOUVEL HORIZON
EXTERIOR DOOR REPLACEMENT
621 QUAKER ROAD
WELLAND, ON L3C 3H1

ARCHITECT: MZE ARCHITECTURE + DESIGN
96 CHURCH ST.
ST. CATHARINES, ON L2R 3C8

CONTRACTOR:

SUPPLIER:



GROUP 87

ARCHITECTURAL HARDWARE INC.

UNIT #1 – 3245 HARVESTER RD,
BURLINGTON, ONT. L7N-3T7

PH# 905-639-4676

FAX# 905-639-7561

E-MAIL: glen@group87.ca

WEB: www.group87.ca

CONSULTANT: **GLEN C. WIKKERINK**

DATE: March 21, 2024

REVISION:

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Supply of finishing hardware as listed in the hardware schedule, 3.06
2. Supply of bolts, screws, expansion shields and special fastening devices required to properly install finishing hardware.

B. Related Sections:

1. Installation of finishing hardware.
2. Metal doors and frames.
3. Wood doors.
4. Roll-up doors and fire shutters.
5. Aluminum door hardware.
6. Toilet partition hardware.
7. Miscellaneous specialties.
8. Power connection to automatic door operators. Provision of conduit between operators and activators, power connection to electric hold open devices, section 16000.

1.02 REFERENCES

1. Hardware for Labeled Fire Doors.
2. N.F.P.A. 80. Fire Doors and Windows.
3. N.F.P.A. 101. Life Safety Code.
4. N.F.P.A. 105. Installation of Smoke Control Door Assemblies.
5. Ontario Building Code.

1.03 SUBMITTAL

1. Make submittal in accordance with section 01340.
2. Prepare a detailed finishing hardware schedule itemizing each opening. List all doors by number including size, hand, swing and any and all relevant details effecting the application of finishing hardware.
3. Submit catalogue cuts of all proposed hardware.
4. Submit samples for approval as required.
5. Submit template information to the General Contractor for preparation of product in related sections' and installation of finishing hardware.
6. Prepare for review a detailed key schedule.
7. Submit wiring diagrams and a description of operation for electrified hardware systems specified.
8. Upon job completion, submit to the owners two 'Owners Operation and Maintenance Manuals' containing the following information:
 1. Maintenance instructions for each item of hardware.
 2. Final Hardware Schedule.
 3. Final Keying Schedule.

1.04 QUALITY ASSURANCE

1. Proposed substitutions must be approved by the Architect prior to submission of tender.
2. The hardware supplier must be regularly involved in supplying and expediting contract hardware for projects of this nature. The supplier must employ a certified **"Architectural Hardware Consultant"** to co-ordinate and oversee scheduling, ordering and the supplying of finishing hardware.

1.05 DELIVERY, STORAGE AND HANDLING

1. Hardware is to be delivered to the site in the Manufacturers original packaging. Each item of hardware to be clearly marked with the door number and item number corresponding to the approved hardware schedule. The General Contractor shall receive, check and be responsible for all items of hardware delivered to the jobsite.
2. Hardware supplier to co-ordinate delivery of hardware to the site or to the appropriate parties as noted in section 1.01.B "Related Sections" for installation.
3. Prior to delivery to the jobsite, a dry, secure room is to be provided for storage of the finishing hardware.

1.06 WARRANTY

1. Provide a minimum one year warranty for finishing hardware.
2. Provide a minimum ten year warranty for door closers.
3. Warranty to commence from date of Substantial Completion.

1.07 MAINTENANCE

1. Provide three wrenches for door closer adjustment.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- | | |
|------------------------------|------------------|
| 1. Hinges | Ives |
| 2. Exit Devices | Von Duprin |
| 3. Locksets | Schlage Lock Co. |
| 4. Cylinders | Schlage Lock Co. |
| 5. Door Pulls | Standard Metal |
| 6. Door Closers | LCN Closers |
| 7. Overhead Stops | Glynn-Johnson |
| 8. Push, Kick, Armor Plates | Standard Metal |
| 9. Floor, Wall Stops | Standard Metal |
| 10. Thresholds, Weatherstrip | KN Crowder |
| 11. Auto Door Operators | Horton |

GROUP 87 ARCHITECTURAL HARDWARE INC.

2.02 MATERIALS

1. All hardware shall be supplied complete with the necessary screw, bolts and other fasteners so as to anchor in position all finishing hardware to the Consultants approval. Exposed fasteners to be finished to match hardware. When a door pull is utilized on one side of the door and a push plate on the other, the plate is to be applied so as to conceal the door pull fasteners.

2. Hinges:
Specified: Five knuckle 5BB1 series by Ives
Acceptable Substitute:

3. Continuous Hinges
Specified:
Acceptable Substitute:

3. Locksets:
Specified: L series mortise lock Schlage
Acceptable Substitute:

4. Exit Devices:
Specified: 98 series by Von Duprin
Acceptable Substitute:

5. Door Closers:

Specified: LCN
Acceptable Substitute:

Specified: 4040XP LCN
Acceptable Substitute:

6. Overhead Stops:
Specified: GJ90 series by Glynn Johnson
Acceptable Substitute:

2.03 FINISHES

- | | | |
|----|----------|-----------------------|
| 1. | 15/652 | SATIN NICKEL |
| | 28 | ANODIZED ALUMINUM |
| | 26D/ 626 | SATIN CHROME |
| | 32D/630 | SATIN STAINLESS STEEL |
| | 689 | ALUMINUM PAINTED |
| | AL | ALUMINUM |
| | PT | PRIMED FOR PAINT |

2.04 KEYING

1. All locks to be supplied with factory construction keying.
- 2.
- 3.

PART 3 - EXECUTION

3.01 EXAMINATION

1. Size and condition of opening shall be verified as to door frames being plumb and of correct tolerance to receive doors and hardware. [General Contractor]

3.02 INSTALLATION

1. Review proper mounting heights with the Architect and/or Owner.
2. Standard mounting heights [unless otherwise noted]
 - A. Locks/Latches 40-5/16" to centre line of strike from finished floor.
 - B. Deadlocks 48" to centre line of strike from finished floor.
 - C. Exit Devices 40-5/16" to centre line of strike from finished floor.
 - D. Door Pulls 42" to centre line of pull from finished floor.
 - E. Push Plate 45" to centre line of Push Plate from finished floor.

The above noted mounting heights are a recommended standard and may vary under special applications and conditions.

3.03 FIELD QUALITY CONTROL

1. After installation of hardware, inspect the installation and certify that the hardware is correctly installed and in accordance with the Manufacturers recommendations.

3.04 ADJUSTING AND CLEANING

1. Upon final completion the hardware is to be left clean and free from defect. Hardware found defective is to be repaired or replaced.
2. All door closers are to be inspected for proper installation and adjustment. Provide a written report from the Manufacturers Representative confirming proper door closer installation and submit the report to the Architect.

3.05 PROTECTION

1. Contractor shall provide proper protection of hardware until turned over to the Owner.

3.06 HARDWARE SCHEDULE

1. Provide hardware in accordance with the schedule as follows:

GROUP 87 ARCHITECTURAL HARDWARE INC.

LEGEND

AL	ALUMINUM
CLSR	CLOSER
DR	DOOR
DS	DEAD STOP
HLDR	HOLDER
HM	HOLLOW METAL
HW	HEAVY WEIGHT
LBR	LESS BOTTOM ROD
MNT	MOUNT
MTG	MOUNTING
NRP	NON REMOVABLE PIN
P.A.	PARALLEL ARM
WD	WOOD

FINISHES

15/652	SATIN NICKEL
28	ANODIZED ALUMINUM
26D/ 626	SATIN CHROME
32D/630	SATIN STAINLESS STEEL
689	ALUMINUM PAINTED
AL	ALUMINUM
PT	PRIMED FOR PAINT

MANUFACTURERS

HINGES	IVES
LOCKSETS	SCHLAGE
EXIT DEVICES	VON DUPRIN
DOOR CLOSERS	LCN
OVERHEAD STOPS	GLYNN-JOHNSON
FLATWARE	STANDARD METAL
DOOR PULLS	STANDARD METAL
FLOOR/ WALL STOPS	STANDARD METAL
THRESHOLDS	K.N. CROWDER
WEATHERSTRIP	K.N. CROWDER
AUTO OPERATORS	HORTON

Heading 01 (HwSet)

1 PR DOOR(S) 121A EXTERIOR FROM VESTIBULE 121

Degree
Hand Act InAct
LHRA 90 90

6'4" x 6'10" x 1-3/4" x ALD x ALF x NON-RTD

Opening Remark: PAIR OF DOORS. CONFIRM DOOR THICKNESS

Totals	Each Assembly to have:					Act	InAct
(2)	2	EA	CONTINUOUS HINGE	112XY 83"	628	IVE	1 1
(1)	1	EA	PANIC HARDWARE	35A-EO 4'	626	VON	1
(1)	1	EA	PANIC HARDWARE	35A-NL-OP 4'	626	VON	1
(1)	1	EA	RIM CYLINDER	Reuse the existing Assa abloy cylinder	626	SCH	1
(2)	2	EA	DOOR PULL	3015-2 #2	32D	SMH	1 1
(1)	1	EA	SURFACE CLOSER	4021	689	LCN	1
(1)	1	EA	ADAPTER PLATE	4020-18G	689	LCN	1
(1)	1	EA	AUTO OPERATOR	4100 LE	CL	HOR	1
(2)	2	EA	OVERHEAD STOP	104S	630	GLY	1 1
(2)	2	EA	DOOR SWEEP	W-24S 38"	628	KNC	1 1
(2)	2	EA	THRESHOLD	CT-65 38"	627	KNC	1 1
(1)	1	EA	WEATHER-STRIPPING	BY ALUMNUM FRAME PROVIDER			
(2)	2	EA	ACTUATOR	CM-45/2	32D	CAM	2
(2)	2	EA	MOUNTING BOX SQR.	CM-43CBLA		CAM	2
(1)	1	EA	INTEGRATION BOX	TA2902G3 E-CR-AO		KMT	1
(1)	1	EA	INSTALLATION	AUTO OPERATOR		G87	1
(1)	1	EA		WIRING DIAGRAMS		G87	1

120V, LOW VOLTAGE WIRE, CONDUIT AND BACK BOXES BY ELECTRICAL CONTRACTOR

Heading 02 (HwSet)

1 PR DOOR(S) 130A EXTERIOR FROM MECHANICAL RM 130

Degree
Hand Act InAct
RHRA 90 90

5'11" x 7'1" x 1-3/4" x HMD x HMF x NON-RTD

Opening Remark: PAIR OF DOORS

Totals	Each Assembly to have:					Act	InAct
(6)	6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE	3 3
(2)	2	EA	FLUSHBOLT	F65 UL 12"	26D	SMH	2
(1)	1	EA	STOREROOM LOCK	Dead bolt no cylinder	626	SCH	1
(2)	2	EA	SURFACE CLOSER	4040XP.SHCUSH	689	LCN	1 1
(2)	2	EA	KICKPLATE	K10A 8" X 34" TAPE MNT	32D	SMH	1 1
(1)	1	SET	WEATHERSTRIP	W-17N 1/76" 2/84"	628	KNC	
(2)	2	EA	DOOR SWEEP	W-24S 38"	628	KNC	1 1
(1)	1	EA	THRESHOLD	CT-10 72"	627	KNC	

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Heading 02 (HwSet) Continued.....

							Hand	Degree
							Act	InAct
(1)	1	EA	ASTRAGAL	43SP		P	ZER	1

Heading 03 (HwSet)

1 SGL DOOR(S) C101A EXTERIOR FROM CORRIDOR C101
3'1" x 6'8" x 1-3/4" x HMD x HMF x NON-RTD

Hand Degree
LHR Act InAct
90

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE		
(1)	1	EA	PANIC HARDWARE	98NL-OP 4'	626	VON		
(1)	1	EA	DOOR PULL	3015-2 #2	32D	SMH		
(1)	1	EA	AUTO OPERATOR	4100 LE	CL	HOR		
(1)	1	EA	OVERHEAD STOP	904S	630	GLY		
(1)	1	EA	KICKPLATE	K10A 8" X 35" TAPE MNT	32D	SMH		
(1)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC		
(1)	1	EA	THRESHOLD	CT-10 38"	627	KNC		
(2)	2	EA	ACTUATOR	CM-45/2	32D	CAM		
(2)	2	EA	MOUNTING BOX SQR.	CM-43CBLA		CAM		
(1)	1	EA	INTEGRATION BOX	TA2902G3 E-CR-AO		KMT		
(1)	1	EA	INSTALLATION	AUTO OPERATOR		G87		
(1)	1	EA		WIRING DIAGRAMS		G87		

120V, LOW VOLTAGE WIRE, CONDUIT AND BACK BOXES BY ELECTRICAL CONTRACTOR

Heading 04 (HwSet)

1 PR DOOR(S) C104A EXTERIOR FROM CORRIDOR C104
5'11" x 6'10" x 1-3/4" x HMD x HMF x NON-RTD
Opening Remark: PAIR OF DOORS

Hand Degree
LHR Act InAct
90 90

Totals Each Assembly to have:

							Act	InAct
(6)	6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE	3	3
(1)	1		FIXED MULLION	BY HOLLOW METAL FRAME PROVIDER			1	1
(2)	2	EA	PANIC HARDWARE	98EO 3'	626	VON	1	1
(2)	2	EA	PULL PLATE	H413 4" X 16"	32D	SMH	1	1
(2)	2	EA	SURFACE CLOSER	4040XP.SCUSH	689	LCN	1	1
(2)	2	EA	KICKPLATE	K10A 8" X 33.5" TAPE MNT	32D	SMH	1	1
(2)	2	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC	1	1

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Heading 04 (HwSet) Continued.....

							Hand	Degree	
								Act	InAct
(2)	2	EA	DOOR SWEEP	W-24S 38"	628	KNC	1	1	
(2)	2	EA	THRESHOLD	CT-10 38"	627	KNC	1	1	

Heading 05 (HwSet)

1 PR DOOR(S) C106A EXTERIOR FROM CORRIDOR C106
 5'11" x 6'10" x 1-3/4" x HMD x HMF x NON-RTD
 Opening Remark: PAIR OF DOORS

Hand	Degree	
LHR	Act	InAct
	90	90

Totals	Each Assembly to have:						Act	InAct
(6)	6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE	3	3
(1)	1	EA	REMOVABLE MULLION	42-7-CNI-TR		PLI	1	1
(2)	2	EA	PANIC HARDWARE	98EO 3'	626	VON	1	1
(2)	2	EA	PULL PLATE	H413 4" X 16"	32D	SMH	1	1
(2)	2	EA	SURFACE CLOSER	4040XP.SCUSH	689	LCN	1	1
(2)	2	EA	KICKPLATE	K10A 8" X 33.5" TAPE MNT	32D	SMH	1	1
(2)	2	EA	WEATHERSTRIP	6216 1/8" X 3/8" X 84"	BLK	KNC	1	1
(2)	2	SET	WEATHERSTRIP	W-17N 1/76" 2/84"	628	KNC	1	1
(2)	2	EA	DOOR SWEEP	W-24S 38"	628	KNC	1	1
(1)	1	EA	THRESHOLD	CT-10 72"	627	KNC		

End of Schedule

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SECTION 08 80 00 - GLAZING

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.
2. Section 08 42 29 - Automatic Entrances: Glazing provided as part of door assembly.
3. Section 08 44 13 - Glazed Aluminum Curtain Walls: Glazing provided as part of wall assembly.
4. Section 08 45 00 - Translucent Wall and Roof Assemblies.
5. Section 08 51 13 - Aluminum Windows: Glazing provided as part of aluminum framing curtainwall assembly.

1.2 REFERENCE STANDARDS

1. CAN/CGSB 12.1 - Safety Glazing; 2017.
2. CAN/CGSB 12.3 - Flat, Clear Float Glass; 1991 (R2017).

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements for submittal procedures.
2. Samples: Submit one sample 12" by 12" mm in size of glass units for both vision and prefinished aluminium insulated panel.
3. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.4 WARRANTY

1. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
2. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.
3. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

PART 2 PRODUCTS

2.1 GLASS MATERIALS

1. **Tempered and Laminated Safety Glass:** To CAN/CGSB-12.1-M90.
 - 1.1 Insulating Glass Units: except as later noted.
 - 1.2 To CAN/CGSB-12.8-M90. 6mm per sheet, ½" air space and overall thickness 1". Dual seal design with a black 1.35" warm edge spacer as manufactured by Trulite Industries, Triple Seal or Surelite
 - 1.2.1 **Unit Description:** Equal to Guardian "Sun-Guard Low E" series SN-68, argon filled air space.
 - 1.2.2 **Outdoor Appearance:** Neutral
 - 1.2.3 **Outboard Lite Substrate:** Clear, 6 mm float, tempered.
 - 1.2.4 **Inboard Lite Substrate:** 6 mm float.
 - 1.2.5 **Coatings, Location:** Surface # 2 coating SN-68.

1.2.6 **Performance Values:** As published.

2. **Sealants:** One part high modulus silicone equal to 999 by Dow.

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

1. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
2. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.2 PREPARATION

1. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
2. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
3. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.3 INSTALLATION, GENERAL

1. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
2. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
3. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
4. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
5. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.
6. **Interior Glazing:** Steel Doors and screens
 - 6.1 Bed glass continuously on both faces to ensure a solid, rattle free installation.
 - 6.2 Remove and replace screw-on stops where applicable.
7. **Exterior Glazing:** Entrances, curtain wall
 - 7.1 Glazing Gaskets
 - 7.2 Size glass units to accurately fit openings with a $\frac{1}{8}$ " (3mm) edge clearance.
 - 7.3 Solvent clean contact surfaces, apply primer sealer.
 - 7.4 Apply glazing tape to face of stop.
 - 7.5 Install glass on setting blocks to centre in opening and maintain clearance; ensure full contact and adhesion with tape at perimeter.
 - 7.6 Use butyl tape, reinforced butyl tape or spacer blocks to maintain glass in centre of rebate in accordance with glazing systems manufacturer's specifications.
 - 7.7 Apply continuous heel bead (air seal); one part polyurethane.

7.8 Apply cap bead at exterior perimeter of glass; one part silicone.

7.9 Cap beads to be sloped to shed water away from face of glass.

7.10 Install materials to ensure vent holes in frame remain clear.

8. **Unit Glazing:** all sash-factory glazed.

9. **Finishing:**

9.1 Remove labels after Work is completed.

9.2 Immediately remove stains, deposits, marks or blemishes caused by the work of this Section.

9.3 Replace scratched, etched or defective glazing.

3.4 CLEANING

1. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
2. Remove non-permanent labels immediately after glazing installation is complete.
3. Clean glass and adjacent surfaces after sealants are fully cured.
4. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Performance in accordance with glass manufacturer's written recommendations.

3.5 PROTECTION

1. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
2. Remove and replace glass that is damaged during construction period prior to Date of Substantial Performance.
3. Replace scratched, etched, or defective glazing.

END OF SECTION

SECTION 09 65 00 - RESILIENT FLOORING

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 09 05 61 - Common Work Results for Flooring Preparation: Independent agency testing of concrete slabs, removal of existing floor coverings, cleaning, and preparation.

1.2 REFERENCE STANDARDS

1. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2018).
2. ASTM F1303 - Standard Specification for Sheet Vinyl Floor Covering with Backing; 2004 (Reapproved 2021).
3. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2020.
4. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.
5. ASTM F1913 - Standard Specification for Vinyl Sheet Floor Covering Without Backing; 2019.
6. CAN/ULC S102.2 - Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies; 2018.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Shop Drawings: Indicate seaming plans and floor patterns.
3. Selection Samples: Submit manufacturer's complete set of colour samples for Consultant's initial selection.
4. Verification Samples: Submit two samples, 150 by 150 mm in size illustrating colour and pattern for each resilient flooring product specified.
5. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
6. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 6.1 See Section 01 60 00 - Product Requirements, for additional provisions.
 - 6.2 Extra Flooring Material: 2 square metres of each type and colour.
 - 6.3 Extra Wall Base: 4 linear metres of each type and colour.

1.4 DELIVERY, STORAGE, AND HANDLING

1. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, colour, quantity and run numbers.
2. Store all materials off of the floor in an acclimatized, weather-tight space.
3. Maintain temperature in storage area between 13 degrees C and 72 degrees C.
4. Protect roll materials from damage by storing on end.
5. Do not double stack pallets.

1.5 SITE CONDITIONS

1. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 21 degrees C to achieve temperature stability. Thereafter, maintain conditions above 13 degrees C.

PART 2 PRODUCTS

2.1 SHEET FLOORING

1. **Rubber Base:**
 - 1.1 **Rubber Base - 1:** To CAN/CSA-A12 6.5
 - 1.1.1 Type 4" (100 mm), top set and coved. Include pre-molded external corners. The colours will be selected by the Consultant. Approved material: Johnsonite, Amtico Finer Craft, Roppe.
 - 1.1.2 Tarkett, Johnsonite Traditional Wall Base (Base Cabinet Kickplates at Typical Unit Kitchens & WRs) or approved equal.
 - 1.1.3 4" high w/ Toe
 - 1.1.4 Allow selection from full colour range.
 2. **Primer:** As recommended by manufacturer of each material for each sub-floor condition or equal to Mapei U.P.
 3. **Sealers and Wax:** As recommended by manufacturer of flooring.
 4. **Floor Protection:** Heavy Kraft paper laminated to both sides of glass fibre reinforcing mesh.
 5. **Resilient Thresholds:** To be equal to Johnsonite Rubber in a colour to be selected by the Consultant.
 6. **Patching Compound:** Equal to Mapei "Plani Patch".

2.2 TILE FLOORING

1. Vinyl Composition Tile: Homogeneous, with colour extending throughout thickness.
 - 1.1 Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
 - 1.2 Type 1: in Armstrong "Excelon" standard colour and pattern and manufacturer as selected by the Consultant.
 - 1.3 Type 2: Azrock textile by Tarkett
 - 1.4 Size: 300 by 300 mm.
 - 1.5 Thickness: 3.2 mm.
2. Acceptable material: Mannington (Amtico) Flextile homogeneous non-directional with through colour & pattern, Armstrong "Stonetex" or approved equivalent.
3. Adhesive: Mapei Ultraboard Eco 6111 or

2.3 RESILIENT BASE

1. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style C, Butt-to.
 - 1.1 Height: 100 mm.
 - 1.2 Thickness: 3.2 mm.

1.3 Finish: Satin.

PART 3 EXECUTION

3.1 EXAMINATION

1. Unless specified or indicated otherwise, the Work of this section will be done after all other Trades including paint finishes, are completed.
2. Before proceeding with the laying of any flooring, test the substrate at all areas to ensure that moisture level and acid alkali balance is within the limits recommended by the adhesive and resilient flooring manufacturer.
3. Examine substrate to ensure it is satisfactory to receive the Work of this section. Report any unsatisfactory or questionable conditions to the Consultant in writing. Defective Work resulting from a failure to advise will be the responsibility of this section.

3.2 SUBFLOOR TREATMENT

1. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with patching compound. Allow to dry and cure before proceeding.
2. Thoroughly clean surfaces to receive flooring products of soil, dirt, dust, oil, grease, or any deposit that might affect the bond or the appearance of the finished Work.
3. Prime or seal sub-floor as required by and in accordance with adhesive and flooring manufacturer's specifications.

3.3 APPLICATION

1. **General:**
 - 1.1 Install each material in accordance with manufacturer's printed instructions.
 - 1.2 Before installing the resilient flooring materials, ensure that variations in shade or pattern of production runs are grouped to avoid variations apparent within any one area.
 - 1.3 Unless indicated otherwise flooring in closets to be the same as the room off which they open.
 - 1.4 Carry floor patterns uninterrupted under movable-type partitions.
 - 1.5 Install floorings to pattern shown with feature strips and floor markings where indicated.
 - 1.6 All resilient floors whether tile or sheet goods to be rolled in two directions with 100 lb. (45 kg) three section roller.
 - 1.7 Remove and replace any adhesive that may have been left longer than its working time.
2. **Rubber Base:**
 - 2.1 Install base to minimize number of end joints.
 - 2.2 Apply adhesive to base and bed firmly to wall using 6 lb. (3 kg) hand roller.
 - 2.3 At rooms where base is scheduled, install at walls, toe space of counters, and around freestanding columns.
 - 2.4 Mitre internal and external corners.
 - 2.5 Install a matching rubber base in closets off rooms scheduled for resilient flooring.
3. **Resilient Thresholds:** Install at all locations where resilient flooring abuts another flooring material.

4. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.4 Installation - Tile Flooring

1. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.5 Installation - Resilient Base

1. Fit joints tightly and make vertical. Maintain minimum dimension of 45 mm between joints.
2. Install base on solid backing. Bond tightly to wall and floor surfaces.

3.6 CLEANING, SEALING AND WAXING

1. Remove excess adhesive from floor, base, and wall surfaces without damage.
2. Clean, seal, and wax in accordance with manufacturer's written instructions.

3.7 PROTECTION

1. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 91 13 - EXTERIOR PAINTING

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 05 50 00 - Metal Fabrications: Shop-primed items.
2. Section 09 91 23 - Interior Painting.

1.2 REFERENCE STANDARDS

1. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.
2. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements for submittal procedures.
2. Samples: Submit two paper chip samples, 215mm x 280 mm in size illustrating range of colours and textures available for each surface finishing product scheduled.

1.4 QUALITY ASSURANCE

1. Retain Purchase Orders, Invoices and other documents to prove that all materials utilized in the project meet this specification.
2. **Standard of Acceptance:**
 - 2.1 Walls: No defects visible from a distance of 1000 mm at 90° to surface.
 - 2.2 Ceilings: No defects visible from floor at 45° to surface when viewed using final lighting source.
 - 2.3 Final coat to exhibit uniformity of sheen across full surface area.

1.5 DELIVERY, STORAGE, AND HANDLING

1. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
2. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and instructions for mixing and reducing.
3. Paint Materials: Store at minimum ambient temperature of 7 degrees C and a maximum of 32 degrees C, in ventilated area, and as required by manufacturer's instructions.

1.6 SITE CONDITIONS

1. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
2. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
3. Provide lighting level of 860 lx measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 PAINTS AND FINISHES - GENERAL

1. **Qualified Products:**
 - 1.1 **Paint:** Sherwin-Williams, Para, ICI (formerly Glidden and Devoe, CIL), Pittsburg, Benjamin Moore or approved equivalent. Final coat tints to include "Low" to "0" VOC's. Provide data sheets prior to commencing on site.
 - 1.2 Exposed pre-cast concrete ceilings: spray a 20-25 mil thickness of Niagara Protective Coatings "Liquistone" # 50 in a 2 coat application
2. **Paints and Finishes:** Ready mixed, unless required to be a site-catalyzed paint.
 - 2.1 Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2.2 Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 2.3 Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
3. **Colours:**
 - 3.1 Colour schedule will be based upon the selection of 5 base colours and 5 accent colours. No more than 5 colours will be selected for the entire project and no more than 3 colours will be selected in each area.
 - 3.2 Selection of colours will be from manufacturers full range of colours.
 - 3.3 Where specific products are available in a restricted range of colours, selection will be based on the limited range.
 - 3.4 Perform all colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials allowed only with Consultant's written permission.
 - 3.5 Tint second coat in a three coat system slightly lighter colour than top coat to show visible difference between coats.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
2. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
3. If substrate preparation is the responsibility of another installer, notify Consultant of unsatisfactory preparation before proceeding.
4. Test shop-applied primer for compatibility with subsequent cover materials.
5. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 5.1 Exterior Plaster and Stucco: 12 percent.
 - 5.2 Fibre Cement Siding: 12 percent.
 - 5.3 Masonry, Concrete, and Concrete Masonry Units: 12 percent.

5.4 Exterior Wood: 15 percent maximum, measured in accordance with ASTM D4442.

5.5 Concrete Floors and Traffic Surfaces: 8 percent.

3.2 PREPARATION

1. Clean surfaces thoroughly and correct defects prior to application.
2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
3. Remove or repair existing paints or finishes that exhibit surface defects.
4. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
5. Seal surfaces that might cause bleed through or staining of topcoat.
6. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
7. Clean all paintable surfaces and floors of loose dirt, dust or grit prior to application of materials.
8. Solvent-clean metal surfaces to remove grease and oil.
9. Fill with wood paste filler nail holes, cracks, etc... in woodwork after first coat specified has been applied.
10. If applied prime coat does not dry to uniform sheen over entire surface, spot-prime areas indicating suction before applying finish.
11. Spot-prime coat with shop coat caused by cleaning, repairing, erection, etc...
12. Tint filler to match stain for stained woodwork.
13. Wash galvanized metal surfaces thoroughly with mineral spirits followed by one coat of purpose made etch type primer.
14. Ensure that humidity level and concrete floor cure are acceptable to permit application of Dry-Fall paint at exposed structure and steel deck areas.
15. Preparation of existing surfaces may include but not be confined to cleaning, filling, sanding, scraping, wire brushing, acid etching and sand blasting.

3.3 APPLICATION

1. Install each material in strict accordance with the manufacturer's printed instructions.
2. Workmanship to be of the very best; materials uniformly spread and flowed on without runs, sags or evidence of applicator marks.
3. Employ only skilled mechanics to do finish Work
4. Remove unfinished louvres, grilles, covers, and access panels on mechanical and electrical components and paint separately.
5. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
6. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

7. Apply each coat to uniform appearance.
8. Unless otherwise indicated in the schedule, or in alteration Work where they have been previously painted, no painter's finishes are required on acoustic tile ceilings, concrete floors, exterior concrete, exterior brick, rubber base, ceramic tile, copper, bronze, chromium plate, nickel, stainless steel, anodized or lacquered aluminum monel metal, factory-finished metals, cork.
9. Paint metal access and electrical panels with doors open and leave until dry.
10. Paint both sides and edges of plywood backboards for mechanical/electrical equipment before installation.
11. Fill all voids and pinholes before application of final coat(s).
12. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
13. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
14. **Finishing:**
 - 14.1 Sand gloss enamel, varnish and undercoater, prior to applying succeeding coats. Sand lightly with 00 sandpaper between coats on wood and metal.
 - 14.2 Tint undercoats of paint or enamel to approximate finish colour, allowing enough colour variation for guide coat. Allow coats to dry thoroughly before applying succeeding coats.
 - 14.3 Four Door Edges: Finished similarly to door face after fitting.
 - 14.4 Paint paintable surfaces reasonably visible through grilles and openings in ducts, convectors, walls, or ceilings, or through grilles and baffles.
 - 14.5 Finish closets same as adjoining rooms unless otherwise specified.
 - 14.6 Exposed wiring, piping, ductwork, and insulation shall be painted.
 - 14.7 Prime caulking with oil paint before application of final finish.
15. **Gloss Values:**
 - 15.1 Gloss value shall be in accordance with ASTM D523 tentative method of test for 60 Deg. Specular gloss.
 - 15.2 Gloss values shall be as follows:

Flat	Less than 10
Eggshell	10 to 35
Semi-gloss	35 to 60
Gloss	60 to 80
High Gloss	80 to 90

3.4 EXTERIOR FINISHES

1. **General:**
 - 1.1 Paint only new paintable surfaces.
 - 1.2 Paint exposed gas piping.
2. **Metal:**
 - 2.1 One coat zinc chromate primer (unless shop primed by others).

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2.2 Two coats exterior acrylic, semi-gloss.

3. **Galvanized Metal:**

3.1 One coat galvanized iron primer.

3.2 Two coats exterior acrylic, semi-gloss.

3.5 SITE QUALITY CONTROL

1. See Section 01 40 00 - Quality Requirements for general requirements for site inspection.

3.6 CLEANING

1. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
2. On completion, touch up and refinish minor defective Work. Refinish entire surfaces where finish is damaged or not acceptable. Remove spills or spots from surfaces of others and be totally responsible for damage to same

3.7 PROTECTION

1. Protect finishes until completion of project.
2. Touch-up damaged finishes after Substantial Performance.
3. Protect existing building surfaces not scheduled for paint from spatters, markings and other damage. If damaged, clean and restore surfaces as directed by Consultant.
4. Cover or mask floors, windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.
5. Protect items that are permanently attached such as fire labels on doors and frames.
6. Protect factory finished products and equipment

END OF SECTION

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Section 05 50 00 - Metal Fabrications: Shop-primed items.
2. Section 09 91 13 - Exterior Painting.

1.2 REFERENCE STANDARDS

1. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements for submittal procedures.
2. Samples: Submit paper "draw down" samples, 216 by 279 mm in size, illustrating range of colours available for each finishing product specified.
 - 2.1 Where sheen is specified, submit samples in only that sheen.
 - 2.2 Where sheen is not specified, submit each colour in each sheen available.

1.4 QUALITY ASSURANCE

1. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
2. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years experience and approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

1. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
2. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and instructions for mixing and reducing.
3. Paint Materials: Store at minimum ambient temperature of 7 degrees C and a maximum of 32 degrees C, in ventilated area, and as required by manufacturer's instructions.

1.6 SITE CONDITIONS

1. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
2. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
3. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 3 degrees C above the dew point; or to damp or wet surfaces.
4. Minimum Application Temperature for Paints: 10 degrees C for interiors unless required otherwise by manufacturer's instructions.
5. Provide lighting level of 860 lx measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 PAINTS AND FINISHES - GENERAL

1. **Qualified Products:**
2. **Paint:** Sherwin-Williams, Para, ICI (formerly Glidden and Devoe, CIL), Pittsburg, Benjamin Moore or approved equivalent. Final coat tints to include "Low" to "0" VOC's. Provide data sheets prior to commencing on site.
3. **Paints and Finishes:** Ready mixed, unless intended to be a site-catalyzed paint.
 - 3.1 Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 3.2 Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 3.3 Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

2.2 COLOURS

1. Colour schedule will be based upon the selection of 5 base colours and 5 accent colours. No more than 10 colours will be selected for the entire project and no more than 3 colours will be selected in each area.
2. Selection of colours will be from manufacturers full range of colours.
3. Where specific products are available in a restricted range of colours, selection will be based on the limited range.
4. Perform all colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials allowed only with Consultant's written permission.
5. Tint second coat in a three coat system slightly lighter colour than top coat to show visible difference between coats.

PART 3 EXECUTION

3.1 EXAMINATION

1. Do not begin application of paints and finishes until substrates have been properly prepared.
2. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
3. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
4. If substrate preparation is the responsibility of another installer, notify Consultant of unsatisfactory preparation before proceeding.
5. Test shop-applied primer for compatibility with subsequent cover materials.
6. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 6.1 Gypsum Wallboard: 12 percent.
 - 6.2 Plaster and Stucco: 12 percent.

- 6.3 Masonry, Concrete, and Concrete Masonry Units: 12 percent.
- 6.4 Interior Wood: 15 percent, measured in accordance with ASTM D4442.
- 6.5 Concrete Floors and Traffic Surfaces: 8 percent.

3.2 PREPARATION

1. Remove electrical cover plates, light fixtures, surface hardware on doors, door stops, bath accessories. Reinstall when painting is completed.
2. As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Consultant.
3. Cut out as required and fill depressions, scratches, cracks, abrasions, etc... flushing patches with adjoining surfaces and allowing to dry before sealing and priming.
4. Fill or remove drywall imperfections, which become visible after prime coat has been applied. Make flush with adjoining surfaces, and spot-primed.
5. Clean all paintable surfaces and floors of loose dirt, dust or grit prior to application of materials.
6. Solvent-clean metal surfaces to remove grease and oil.
7. Fill with wood paste filler nail holes, cracks, etc... in woodwork after first coat specified has been applied.
8. If applied prime coat does not dry to uniform sheen over entire surface, spot-prime areas indicating suction before applying finish.
9. Spot-prime coat with shop coat caused by cleaning, repairing, erection, etc...
10. Tint filler to match stain for stained woodwork.
11. Wash galvanized metal surfaces thoroughly with mineral spirits followed by one coat of purpose made etch type primer.
12. Ensure that humidity level and concrete floor cure are acceptable to permit application of Dry-Fall paint at exposed structure and steel deck areas.
13. Preparation of existing surfaces may include but not be confined to cleaning, filling, sanding, scraping, wire brushing, acid etching and sand blasting.

3.3 APPLICATION

1. **General:**
 - 1.1 Install each material in strict accordance with the manufacturer's printed instructions.
 - 1.2 Workmanship to be of the very best; materials uniformly spread and flowed on without runs, sags or evidence of applicator marks.
 - 1.3 Employ only skilled mechanics to do finish Work.
 - 1.4 Unless otherwise indicated in the schedule, or in alteration Work where they have been previously painted, no painter's finishes are required on acoustic tile ceilings, concrete floors, exterior concrete, exterior brick, rubber base, ceramic tile, copper, bronze, chromium plate, nickel, stainless steel, anodized or lacquered aluminum monel metal, factory-finished metals, cork.
 - 1.5 Paint metal access and electrical panels with doors open and leave until dry.

- 1.6 Paint both sides and edges of plywood backboards for mechanical/electrical equipment before installation.
- 1.7 Fill all voids and pinholes before application of final coat(s).
2. **Finishing:**
 - 2.1 Sand gloss enamel, varnish and undercoater, prior to applying succeeding coats. Sand lightly with 00 sandpaper between coats on wood and metal.
 - 2.2 Tint undercoats of paint or enamel to approximate finish colour, allowing enough colour variation for guide coat. Allow coats to dry thoroughly before applying succeeding coats.
 - 2.3 Four Door Edges: Finished similarly to door face after fitting.
 - 2.4 Paint paintable surfaces reasonably visible through grilles and openings in ducts, convectors, walls, or ceilings, or through grilles and baffles.
 - 2.5 Finish closets same as adjoining rooms unless otherwise specified.
 - 2.6 Exposed wiring, piping, ductwork, and insulation shall be painted.
 - 2.7 Prime caulking with oil paint before application of final finish.
3. **Gloss Values:**
 - 3.1 Gloss value shall be in accordance with ASTM D523 tentative method of test for 60 Deg. Specular gloss.
 - 3.2 Gloss values shall be as follows:

Flat	Less than 10
Eggshell	10 to 35
Semi-gloss	35 to 60
Gloss	60 to 80
High Gloss	80 to 90

3.4 INTERIOR FINISHES

1. **General:**
 - 1.1 Paint as noted where applicable.
 - 1.2 Where a room bears an identifying room number on the drawings but is not listed in the "Room Schedule" or "Work Schedule", the Work will be confined to patch painting of any disturbed areas.
2. **Metal:**
 - 2.1 One coat Zinc Chromate primer (unless shop primed by others).
 - 2.2 Two coats oil based enamel.
Note: Galvanized metal to receive one coat of galvanized iron primer.
3. **Masonry Block:**
 - 3.1 One coat tinted block filler. Spray applied, then rolled.
 - 3.2 Two coats of acrylic latex, Eggshell.
4. **Drywall:**
 - 4.1 One coat latex sealer.
 - 4.2 Two coats acrylic latex paint, eggshell.
5. **Concrete Floors:**

- 5.1 Equal to Sherwin-Williams armor-seal tread-flex water-based single component acrylic coating.
 - 5.2 First coat application 1.5-2.0 mils primer - second coat 1.5-2.0 finish- semi-gloss.
 - 5.3 Remove sealer, fill bug hole, voids, sweep clean.
 - 5.4 Entire installation to manufacturers latest printed instruction. Including adequate curing time, moisture content and temperature.
6. **Glazed Coated Areas:** Doors, door frames, grilles, convectors, trims and the like in glazed coated areas are to be painted as specified.
 7. Painting Above New Open Grid or Louvered Luminous Ceiling or Luminous Interior Soffit Areas: All structure, pipes, ducts and the like, above the level of the lamps of the luminous ceiling shall receive one spray coat of flat back acrylic latex paint. Portions between the lamps and the ceiling shall receive two coats of white alkyd paint.

3.5 CLEANING

1. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
2. On completion, touch up and refinish minor defective Work. Refinish entire surfaces where finish is damaged or not acceptable. Remove spills or spots from surfaces of others and be totally responsible for damage to same.

3.6 PROTECTION

1. Protect finishes until completion of project.
2. Touch-up damaged finishes after Substantial Performance.

END OF SECTION

SECTION 12 24 00 - WINDOW SHADES

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

1. Comply with requirements of Division 1 and Supplementary Conditions

1.2 REFERENCE STANDARDS

1. ASTM B429/B429M - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube; 2020.

1.3 SUBMITTALS

1. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
2. Product Data: Provide manufacturer's standard catalogue pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
3. Shop Drawings: Include shade schedule indicating size, location and keys to details, head, jamb and sill details, mounting dimension requirements for each product and condition, and operation direction.
4. Shop Drawings - Motorized Shades: Provide schematic system riser diagram indicating component interconnections. Include requirements for interface with other systems.
5. Selection Samples: Include fabric samples in full range of available colours and patterns.
 - 5.1 Submit duplicate samples of the specified fabric / shade cloth of each color and texture minimum size 8.5" x 11" (215mm x 280mm) for review.
 - 5.2 Submit duplicate samples of the specified sections of fascia, closure, pocket, housing, trim, roller tube, hembar, operating hardware, brackets, and side channel for review.
 - 5.3 Submit duplicate copies of operating and maintenance instructions including, name and telephone number of local service company.

1.4 QUALITY ASSURANCE

1. Installer Qualifications: Company specializing in performing work of this type with minimum 10 years of documented experience.
 - 1.1 Install one complete operating sample with accessories on site. Review the installation before proceeding with the remainder of the work. Adjust sample installation to gain acceptance. Accepted work may form part of the final installation.
2. All work specified under this section supplied and installed entirely by one Subcontractor using his own forces.
3. Manufacturer: with a minimum of fifteen (15) years experience in the manufacture of specified shading system. Teleshade Series by Legrand or approved equal.

1.5 DELIVERY, STORAGE, AND HANDLING

1. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.

2. Deliver units to site only when areas to receive shades are completely finished, including walls and ceilings
3. Handle and store shades in accordance with manufacturer's recommendations.
4. Protect materials and finishes from damages, marring or soiling.

1.6 EXAMINATION

1. Prior to commencement of erection, check all surfaces to be checked for irregularities, trueness and rigidity, reporting any defects immediately to the General Contractor for correction.
2. On completion of the installation, review all materials and workmanship for proper operation, rigidity and appearance, replace any defective materials with new materials prior to final review.

1.7 WARRANTY

1. Provide manufacturer's warranty from Date of Substantial Performance, covering the following:
 - 1.1 Shade Hardware: Ten years.
 - 1.2 Fabric: Ten years.
 - 1.3 Aluminum and Steel Coatings: Ten years.
 - 1.4 Chain: Ten years
2. Provide a limited installation warranty from Date of Substantial Completion, covering a period of one (1) year.
3. Submit standard manufacturers maintenance contract for review by Owner.

PART 2 PRODUCTS

2.1 WINDOW SHADE APPLICATIONS

1. Interior Roller Shades: Privacy shades.
 - 1.1 Type: Roll down, closed position is at window sill.
 - 1.2 Fabric Performance Requirements:
 - 1.2.1 Openness Factor: $\pm 3\%$.
 - 1.2.2 Fabric weight: 12.7 oz/yd²
 - 1.2.3 Fabric Thickness: 21 mil
 - 1.2.4 Flame Res.: 0.0 sec after flame
 - 1.2.5 Fuel contributed value: 0
 - 1.2.6 Colorfastness to light: 7/8
 - 1.2.7 Composition: PVC coated fiberglass yarns (Fiberglass 36%, PVC 64%)
 - 1.2.8 Waterproof, washable, rot proof
 - 1.3 Colour: As selected by Consultant from manufacturer's full range of colours.
 - 1.4 Mounting: Inside (between jambs).
 - 1.5 Operation: Manual.

2.2 ROLLER SHADES

1. Roller Shades: Fabric roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories.
 - 1.1 Drop: Regular roll.
 - 1.2 Size: As indicated on Drawings.
2. Fabric: Non-flammable, colour-fast, impervious to heat and moisture, and able to retain its shape under normal operation.
 - 2.1 Privacy Shades: Soften the light yet still reveal some details to the outside; moderate privacy; Openness Factor approximately equal to 1 percent.
3. Roller Tubes: As required for type of operation.
 - 3.1 Material: Extruded aluminum in accordance with ASTM B429/B429M or galvanized steel; as required for shade location.
 - 3.2 Size: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.
 - 3.3 Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.
4. Hembars: Designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
 - 4.1 Style: Exposed aluminum bottom bar, flat profile with closed ends, containing a spline groove top to receive and secure fabric end.
5. Manual Operation for Interior Shades: Clutch operated continuous loop; beaded ball chain.

2.3 ACCESSORIES

1. Fascias: Size as required to conceal shade mounting.
 - 1.1 Style: As selected by Consultant from shade manufacturer's full selection.
 - 1.2 Style: As indicated on Drawings.
 - 1.3 Material and Colour: To match shade.
2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.
3. Interior Side Channels: As required for light sealing blackout shade applications.
4. Exterior Side Channels: As required in exterior applications for guiding and securing shade material.
5. Lifting Cables: Nylon coated cable for lifting bottom-up type shades.
6. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

2.4 FABRICATION

1. Site measure finished openings prior to ordering or fabrication.
2. Fabricate shades to fit openings within specified tolerances.
 - 2.1 Vertical Dimensions: Fill openings from head to sill with 13 mm space between bottom bar and window stool.
 - 2.2 Horizontal Dimensions - Inside Mounting: Fill openings from jamb to jamb.

2.3 Horizontal Dimensions - Inside Mounting: Provide symmetrical light gaps on both sides of shade not to exceed 19 mm total.

3. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

PART 3 EXECUTION

3.1 EXAMINATION

1. Examine finished openings for deficiencies that may preclude satisfactory installation.
2. If substrate preparation is the responsibility of another installer, notify Consultant of unsatisfactory preparation before proceeding.
3. Start of installation shall be considered acceptance of substrates.

3.2 PREPARATION

1. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
2. Coordinate with window installation and placement of concealed blocking to support shades.

3.3 INSTALLATION

1. Install in accordance with manufacturer's instructions and approved Shop Drawings, using mounting devices as indicated.
2. Installation Tolerances:
 - 2.1 Inside Mounting: Maximum space between shade and jamb when closed of 1.5 mm.
 - 2.2 Maximum Offset From Level: 1.5 mm.
3. Replace shades that exceed specified dimensional tolerances at no extra cost to Owner.
4. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

3.4 ADJUSTING AND CLEANING

1. Adjust shades and operating components to ensure smooth and trouble free operation without binding.
2. Adjust shade and shade-cloth to hang flat without buckling or distortion.
3. Clean soiled shades and exposed components as recommended by manufacturer.
4. Replace shades that cannot be cleaned to "like new" condition.

3.5 PROTECTION

1. Protect installed products from subsequent construction operations.
2. Touch-up, repair or replace damaged products before Date of Substantial Performance.

END OF SECTION